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WATER MANAGEMENT SYNTHESIS II

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2ND QUARTERLY REPORT FY86-FY87

January 1, 1986 through March 31, 1986

Submitted by:  
The Consortium for  
International Development

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 1st Quarterly Report FY86-FY87  
 Quarterly Report Covering Period October 1, 1985 - December 31, 1985

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## I. INTRODUCTION

WATER MANAGEMENT SYNTHESIS II PROJECT  
QUARTERLY REPORT COVERING PERIOD  
1 JANUARY, 1986  
TO  
31 MARCH, 1986

A. GENERAL

This report summarizes the activities of the Water Management Synthesis II Project for the first quarter of FY86, covering the period January 1, 1986 to March 31, 1986. This report includes information relative to current activities, finished activities as well as university highlights.

The central purpose of WMSII is to develop and disseminate (in AID assisted countries) more efficient water management technologies and practices to increase agricultural production and rural equity. The WMSII Program is a joint project of S&T/AGR, S&T/RD, the Africa Bureau and the Asia and Near East Bureau of AID. These offices contribute funds and participate in the development, approval, and execution of Project activities. The Consortium for International Development (CID) is the Prime Contractor for WMSII. Cornell University, Utah State University and Colorado State University, through the Consortium for International Development, share the lead university responsibilities for the Water Management Synthesis II Project.

B. ESTIMATES OF THE FUNDS AVAILABLE FOR THE FY87 WORKPLAN

The financial data and the status of activities presented in this Quarterly Report provided the activity level basis for the first effort to establish explicit estimates of the funds which will be available for the final phase of the WMSII project. The term "final phase" rather than "final year" is used since it is likely that a no cost time extension will probably have to be requested in order to complete all of the project work.

The procedure used for the first estimates of the funds available for the final phase of the project are spelled out in Tables I, II and III which are presented below.

Table I presents the approved budgets, estimated expenditures and budget balances for those activities which have been approved up through the 3rd edition of the FY86 87 Workplan. The figures in this table come from the 3rd ed. of the FY86 87 WP, the Quarterly Report for FY86 II and a special report developed by Maria Ramos of the EPD office on activities which have been (1) closed out and (2) proposed for close out. The total budget for all approved activities is \$18,252,440 and as of FY86 II, about 70% of these budgets have been recorded as expenditures. The budget balance is approximately \$5.5 million. The information in Table I provides the basis for determining unallocated funds and estimated savings in Table II.

In both Tables II and III, a "Conservative Estimate" and a "High Estimate" are presented. Given the information available at this time, the Conservative Estimates provide a sound basis for planning the FY87 Workplan. The High Estimates represent the upper limits as to the funds which could be available for FY87. To obtain a more precise estimate of the savings for those approved activities which have neither been closed out nor proposed for close out, each university will have to estimate savings on an activity by activity basis.

The first three rows of Table II are used to calculate the amount (\$1,393,493) of the budget ceiling (\$19,645,933) which have not been allocated to approved activities.

Rows 4 through 8 of Table II deal with estimated savings which can be reallocated from all approved activities. The first set of these activities are those activities which are either closed out or have been proposed for close out. The budget balance from this set of activities ( Row 4) have a budget balance of \$801,440 and this is taken as a firm estimate of the savings from these two sets of activities which can be reallocated.

The set of activities under Row 5. are those activities which (1) were approved in earlier Workplans, (2) do not appear in the FY86 87 Workplan since no work is to be done on the activity during FY86, (3) resulted in no new commitment of funds during FY86 and (4) have not been proposed for close out. The budget balance for these set of activities is \$661,613. As a Conservative Estimate, savings are calculated as 15.7% of approved budgets, which is equal to the percent of savings for activities proposed for close out (Row 3 Table I). Recorded expenditures during FY86 II were \$95,215 and this left a budget balance or \$661,637. It was on this basis that a High Estimate of \$600,000 was established.

Activities accounted for in Row 6 are those activities which (1) were approved in earlier Workplans, (2) work is to continue and (3) new commitments of expenditures are expected to be incurred. These activities can be found in Table 5, "Prior Years Activities Continuing in FY86" of the 3rd ed. of the FY86 87 Workplan. Expenditures for Row 6 activities in FY86 II were \$457,905, and the budget balance is \$897,679. The Conservative Estimate of savings is \$473,643. It is possible that savings could be slightly lower than this figure. The High Estimate of savings was placed at \$743,619. It seems highly unlikely that savings will be as high as 83% of the current budget balance.

Activities accounted for in Row 7 are those activities which were first approved in the FY86 87 Workplan. These activities are listed in Tables 2, 3, and 6 of the 3rd ed. of the FY86 87 Workplan. Generally, the budgets for 86 activities are tight and realized savings will be much lower than experienced for activities approved earlier in the project. The Conservative Estimate is based on a 5% rate of savings while the High Estimate is based on a 10% rate of savings on approved budget levels.

The Conservative Level of unallocated funds plus total estimated savings is \$3,413,173 while the High Estimate is \$3,945,504. It seems extremely unlikely that the High Estimate level will occur. This should be kept in mind while interpreting the information contained in Table III.

Table III is based on the estimated funds available for the FY87 Workplan (from Table II), the allocations agreed upon by the JPMT in August, 1985 and the uncommitted portion of those allocations as reported in Schedule C of the 3rd ed. of the FY86 87 Workplan. The estimated Core funds not allocated and available for FY87 is a residual and, as such, each dollar adjustment made in figures above this line are reflected in the estimated funds available for FY87. For example, if recorded expenditures are corrected and increased by \$50,000, funds available for FY87 under the Conservative Estimate would decrease to \$143,964. If the FY87 Reserve for Administration/Support were decreased by \$100,000, the funds available for FY87 would increase to \$293,964.

For reasons mentioned earlier, the High Estimate is extremely unlikely to occur, and the Conservative Estimate is reasonable and does not reflect undue caution. Given the small size of this estimate relative to earlier levels of WMSII expenditures, it is clear that (1) the estimated and actual expenditure figures as reported by the universities must be accurate and (2) the way the funds presented in Rows 2 through 6 of Tables III are used must be carefully reviewed. This is particularly true since it is likely that a no cost extension may be requested.

TABLE I Approved Budgets, Estimated Exenditures & Budget Balances  
as of the end of FY86II

Row	Status of Activities	Approved Budgets	Expenditures	Budget Balance	Balance as % of Appr.
(1)	Closed Out a)	3,055,952 b)	2,717,821	338,131	11.1%
(2)	Prior Years Not Closed Out (Rows 3 & 4) c)	6,390,541	5,265,595	1,124,946	17.6%
(3)	Prior Years Proposed Cl. Out b)	2,943,862	2,480,553	463,309	15.7%
(4)	Prior Years No Proposed Cl.Out d)	3,446,679	2,785,042	661,637	19.2%
(5)	Sub Total (1)+(3)+(4)	9,446,493	7,983,416	1,463,077	15.5%
(6)	FY86 WP (Rows 7 & 8) e)	8,805,947	4,817,527	3,989,420	45.3%
(7)	Prior Years FY86 WP	4,736,425	3,838,746	397,679	19.0%
(8)	New FY86 WP	4,069,522	978,781	3,090,741	76.0%
(9)	Total (5)&(6)	18,252,440	12,800,943	5,451,497	29.9%

a) Schedule C FY86 II Qtr.

b) Special Report Maria Ramos

c) Schedule B FY86 II Qtr.

d) Schedule B less line (3)

e) Schedule A FY86II Qtr.

f) Table 5, 3rd ed. FY86 W.P. plus Peru 1 01 112 84 @ 579,000

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Table II Un-allocated Funds and Estimated Savings  
 For the FY87 WP as Of End Of FY86-II  
 29 May, 1986

Row	Item	Conservative Estimate	High Estimate
1.	Budget Ceiling	\$19,645,933	\$19,645,933
2.	Approved Budgets	\$18,252,440	\$18,252,440
3.	Un-allocated Funds (1.- 2.)	\$1,393,493	\$1,393,493
4.	Savings - Close-outs Rows 1 + 3, Table I	\$801,440	\$801,440
5.	Est. Savings - Prior WP's Not Proposed to Close-out	\$541,121 a/	\$600,000 d/
6.	Est. Savings - Prior Years Act. 3rd ed. FY86-87 WP	\$473,643 b/	\$743,619 e/
7.	Est. Savings - 86 Act. 3rd ed. FY86-87 WP	\$203,476 c/	\$406,952 f/
8.	Est. Total Savings Rows 4 + 5 + 6 + 7	\$2,019,680	\$2,552,011
9.	Un-allocated Funds + Est. Total Savings, Row 3 + 8	\$3,413,173	\$3,945,504

a/ 15.7% of \$3,446,631 = \$541,121 - see Row 4, Table I

b/ 10% of \$4,736,425 = \$473,643 - see Row 7, Table I

c/ 5% of \$4,069,522 = \$203,476 - see Row 8, Table I

d/ Expenditures in FY86-II in excess of \$95,000, limited svngs

e/ 15.7% of \$4,736,425 = \$743,619. Seems very high given the  
tight budgeting which has been done for FY86 activities.

f/ 10% of \$4,069,522 = \$406,952

Table III: Estimated Funds Available for FY87 WP  
 By Allocation Category  
 as of FY86-II  
 29, May, 1986

Row	Item	Conservative Estimate	High Estimate
1.	Est. Funds Available	\$3,413,173 a/	\$3,945,504 a/
2.	Less FY87 Activities WP	-\$653,383 b/	-\$653,383 b/
3	Less FY87 Reserve Admin/Sup	-\$920,377 c/	-\$920,377 c/
4.	Less Aid Core not Alloc.	-\$258,906 c/	-\$258,906 c/
5.	Less Un Core not Apprv.	-\$44,528 c/	-\$44,528 c/
6.	Less Buy-in not Alloc.	-\$1,447,383 c/	-\$1,447,383 c/
7.	Plus Funds Double Counted in FY86 WP	+\$105,368 d/	+\$105,368 d/
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8.	Est. Core Funds Not Alloc. and Available for FY87	+\$193,964	+\$726,295

a/From Row 9, Table II

b/Table 6, Activity Funding for FY87, 3rd ed. FY86-87 WP

c/ Schedule C, 3rd ed. FY86-87 WP

d/For USU, "Lessons Learned", 2-14-039-85, \$85,176 was retained for accounting purposes, but also included in the approved amount for "Irrigation Exprc. Transfer" 2-07-026-86. For CSU, "JFS Workshop in Zim." 3-04-500a86 was approved for development work, but this amount was not deducted from "CSU Rehab Country A" 3-04-500-86

## II. SPECIAL FOCUS

In this section of the report, each university presents an in-depth report of current work undertaken by that university.

- A. Colorado State University
- B. Cornell University
- C. Utah State University

## COLORADO STATE UNIVERSITY SPECIAL FOCUS

### REHABILITATION SEMINAR

#### Irrigation System Rehabilitation

Over the years, many new irrigation systems have been constructed; and today, about 230 million hectares around the world receive irrigation water. Unfortunately, opportunities to build new irrigation projects is dwindling in many countries because land and water resources are limited and becoming much more costly to develop. To increase agricultural production, attention has been diverted to rehabilitating existing irrigation systems. While many rehabilitation projects have been undertaken, no systematic process for rehabilitation has been developed.

The International conference on Irrigation System Rehabilitation and Betterment will provide a forum for synthesizing existing information on irrigation system rehabilitation, for sharing perspectives, and for formulating guidelines for successfully developing and implementing rehabilitation programs.

To achieve these objectives, the conference will bring together representatives from donor and lending organizations, consulting firms, and universities; as well as developing country policy-makers, project implementors, and researchers. Information about the experiences in irrigation system rehabilitation and betterment will be shared through paper presentations, case studies, panel discussions, simulated field trips, and small group discussions.

#### The Conference

The concepts and objectives of rehabilitation and a summary of experience with irrigation system rehabilitation and betterment will be presented in two papers. The case studies will highlight innovative and successful approaches used to plan, design, and implement rehabilitation projects. They will also identify the constraints encountered during rehabilitation and will note deficiencies that have been undertaken in the past.

The panel discussion is designed to generate a better understanding and awareness of the rehabilitation programs, interests, and concerns of developing countries, donor organizations, project implementors, and performance evaluators. The simulated field trips provide the opportunity for interdisciplinary interaction and to draw on participants' expertise for planning rehabilitation and betterment programs. Topics that will be raised for discussion during the conference include:

- . Factors responsible for rapid deterioration of irrigation systems.
- . Operating and maintaining irrigation systems after rehabilitation.
- . Causal planning versus symptomatic planning of rehabilitation projects.
- . Improving management of irrigation systems.

- Farmer involvement in planning and implementing rehabilitation programs.
- Irrigation service fees and cost recovery.
- Pre-rehabilitation studies and training project staff.

Participants will receive a state-of-the-art paper on irrigation system rehabilitation and betterment and copies of conference papers and case studies prior to the conference. An interpretive summary will be prepared from the conference proceedings, which will be mailed to participants after the conference.

#### Who Should Attend

Water Management Synthesis Project is inviting 25 professionals from developing countries and the research community. Space is available for an additional 25 participants. Donor organizations, USAID missions, development foundations, and research organizations are invited to sponsor participants. Participants should be selected based on the extent of their experience and their association with rehabilitation projects. The conference will be held at the Xerox International Center for Training and Management Development near Washington D.C., October 27-31, 1986.

#### Tentative Conference Schedule

Monday, October 27

Concept and Objectives of Rehabilitation and Betterment  
(keynote presentation)

Perspectives on Rehabilitation and Betterment  
(panel discussion)

Criteria for Evaluating Rehabilitation and Betterment  
(small group discussion)

Tuesday, October 28

Past Experience with Rehabilitation and Betterment  
(paper and small group discussion)

Rehabilitated Irrigation Systems (case studies)

Wednesday, October 29

Implications of Experience for Planning,  
Implementing, and Evaluating Project  
Performance (small group discussion)

Thursday, October 30

Simulated field trips to irrigation systems in  
need of rehabilitation

Interdisciplinary discussion of simulated systems  
(small groups)

Preparation of project memorandum on rehabilitating  
the simulated systems (small groups)

Friday, October 31

Group recommendations for simulated systems and discussion  
(plenary session)

Pulling together conference "learning" about rehabilitation  
and betterment (plenary session)

## Cornell University Special Focus

### HAITI: CAYES PLAIN--DISTRIBUTION OF BENEFITS FROM IRRIGATION

In July, 1985, Laura Reynolds, a graduate student in rural sociology at Cornell, began a pilot study of the impacts of recent irrigation development on land values, land sales, and consolidation and on the local social structure in the Cayes Plain region of Haiti. Beginning with the assumption that, in areas where irrigation has increased agricultural potential, access to irrigated land is a determinant of distribution of benefits from development efforts, Reynolds explored the relationship of different land tenure patterns--ownership, sharecropping, tenancy--to the benefits which households derive from irrigation.

The purpose of the study was to provide USAID with some preliminary findings and to provide a basis for a master's thesis based on a more thorough analysis of the data gathered. The mission's expectation was that the pilot study would produce enough data to generate hypotheses for testing in future research--research which could then guide AID's irrigation development strategy for Haiti. Specifically, the mission requested (1) site-specific information on land tenure arrangements and the pattern of irrigation development and (2) generalizable conclusions regarding the relationship between land tenure and efforts to improve the productivity of land.

Reynolds began her research activities with intensive Creole language study and a review of relevant documents in Port-au-Prince. She then selected a small agricultural community consisting of 62 households close to the city of Les Cayes, for her intensive research activities. Foscave had experienced significant increases in agricultural productivity as a result of thirty years of irrigation and related development efforts.

Data were collected during a total of four months of residence in the Cayes plain region and Reynold's reesearch methodology included three major components: (1) observation and informal interviews regarding access to land and local experience with irrigation development; (2) a survey of all independent economic household units focusing on household characteristics, access to land and other resources and patterns of agricultural involvement; and (3) plot histories for forty randomly selected irrigated parcels in Foscave which traced changing land use and tenure arrangements and the occurrence of land conflicts.

The final report, published by WMS as a working paper, reviews research findings and analyzes the mechanisms through which land improvement projects may affect access to land and to the potentially increased product of that land. According to Reynolds, the distribution of benefits from irrigation projects clearly hinges on the local pattern of land tenure and distribution. In the Haitian context, access to land involves an elaborate web of tenancy and ownership arrangements. Data from Foscave suggest that, while the majority of peasant households own at least some land, sharecropping is the primary means of access to land, particularly irrigated land.

The degree to which households benefit from irrigation development is directly related to the amount of land owned within the irrigation perimeter. Land ownership in Foscave is far from equal and, while those who owned land before irrigation investments were made have benefitted from the rising value of their

assets, peasant households wishing to buy lands are often prevented from doing so by higher prices. Migrants from rapidly eroding hill lands continue to migrate to Foscave. The majority of these individuals work as day labor and cannot buy irrigated land.

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Problems related to land tenure insecurity and land conflicts do not appear to be major factors affecting agricultural production or cooperation in irrigation projects. While land fragmentation is often seen as a negative phenomenon, this process appears to help slow and ongoing process of land concentration. Rich peasants and affluent absentee landlords are now buying land through the local land market. Irrigation and related changes in agricultural production are making peasants more vulnerable to the vagaries of the national and international market systems. Peasant households are becoming less able to compete in the high input cost rice system. At the same time they find that sharecropping opportunities appear to be declining.

On the basis of her study, Reynolds makes the following recommendations:

- (1) USAID should continue its support for land tenure research, focusing attention on ownership patterns and on the collection of background maps and cadastral surveys.
- (2) The impacts of irrigation development should be assessed in the context of project monitoring unless further large-scale irrigation projects are being considered. In the latter case an in-depth study should be done in the Artibonite, an area with excellent land tenure data and severe problems with land appropriations.
- (3) Efforts should be made to restrict land sales to absentee owners, to eliminate bottlenecks in the fertilizer market, and to improve grainstorage and prevent grain loss to rats.

Reynolds is currently analyzing data from the Cayes Plain study in greater depth as a masters thesis. The Cayes Plain research served a dual end. By affording an opportunity for a moderately sustained pilot effort in Haiti, WMS contributed to the training of a social scientist in irrigation issues, thus building water management capacity in this country. Second, by looking at a set of issues critical to an understanding of the impacts of irrigation on agricultural communities, Reynolds has made a significant contribution to the irrigation literature.

## UTAH STATE UNIVERSITY - SPECIAL FOCUS

### FINISHING PLAN MERIS

Code #1-02-061-86

Utah State University and Cornell University were invited by USAID/Peru through a buy-in to the WMS II Project to assist in the design and implementation of a project for training and technology transfer for improved irrigation water management in small irrigation subprojects of Plan MERIS specifically and in the Peruvian Sierra in general.

WMS II sent a five-member interdisciplinary team to Peru in October, 1984 to design the effort and write a plan of work for the activity which came to be known as "Plan Piloto." The objectives of the plan of work were developed in an interdisciplinary approach which included four major components: research, extension, agricultural economics and rural sociology. Plan Piloto was implemented by hiring a project technical team consisting of Peruvians in the four disciplines plus an engineer as field team leader. Plan MERIS I counterparts to the technical team were provided in each discipline and the WMS II short-term team provided interim monitoring, supervision and evaluation through the termination date of December 31, 1985.

Several problems developed as the project unfolded, many of them related to the very short time period in which to accomplish the proposed activities. Vehicles and the sprinkle irrigation system did not arrive at the site. Budgeted operating funds were hard to access. Some of the activities contemplated had to be deleted, in particular the satellite studies in other subprojects in the Department of Cajamarca. Field work suffered several delays due to lack of inputs, proper seed, etc. Thus, it was necessary to provide an additional three months to analyze the collected data and write the final report to "finish Plan Piloto." Despite these problems the project moved quite well and resulted in some very positive achievements. A summary of these achievements by components follows.

#### Agronomic Research

Research activities of Plan Piloto were of two kinds: irrigated crop production and a drainage study. An intensive interaction study of nitrogen and irrigation intensity on two varieties of potatoes resulted in a response both to irrigation and nitrogen fertility. The maximum average yield in the experimental plots with the most intensive management, in terms of irrigation and fertility, was 36 t/ha, several times that of the average potato yields in the area.

The drainage study on 45 ha in Lower Huayobamba indicated that the principal source of groundwater that is being forced to the surface in the affected area is the unlined main canal. Alternatives for solving the problem include better irrigation water management, lining the main canal, and installation of a system of drains in the affected area.

This series of investigations served as an excellent internship for the research technicians who lacked this kind of experience. It also provided the first year's data to serve as the basis for continued research efforts.

### Agricultural Extension

One of the principal activities of the extension component was training in irrigation water management. This was carried out by use of the video modules developed at Utah State University as well as practical hands-on training in such principles as water measurement, infiltration, use of siphon tubes, determining soil moisture content and scheduling irrigation. This was followed by season-long experience in producing a crop under irrigation. Twenty-nine Plan MERIS technicians received this training and as a result there now exists a core of trained people in Cajamarca. In addition, a total of 91 farmers received training to various degrees regarding irrigated crop production.

Irrigated crop production was demonstrated on 17 plots of farmer cooperators. In addition to water management the practices included improved seed, weed control, pest control and fertilization. Yields from the demonstration plots indicated an average increase of 78 percent for potatoes, beans and peas over the general production levels in the area. Several small areas were used for vegetable production demonstrations with excellent results. The yields for such vegetables as cabbage, cauliflower, beets, onions and garlic were from three to six times the average yields for the Department of Cajamarca.

### Agricultural Economics

Crop production and cost data were collected from 17 farm fields during the rainy season and from 16 of the same fields in the dry season. Costs and returns were determined for these both on a farm and a crop basis. Field trial data were analyzed to determine net benefits from irrigation and nitrogen fertilizer. The highest intensity of irrigation and highest fertilizer levels indicate high payoffs for potatoes, however, beans do not appear to be profitable under irrigation.

Based on a single year's data, it appears that net profits can be increased significantly with improved cultural and water management practices in the production of potatoes in the Sierra. The payoff appears to be sufficient for a small farmer to seriously consider investing in an irrigation infrastructure and adopting improved cultural practices.

At least two more years of research are needed before suggesting to farmers that they adopt the technology package. They would likely need access to a source of credit to be able to move into the technology. Several issues need to be addressed in the continuation of Plan Piloto. These include analysis on a whole farm basis, rather than on a crop basis, since the farmers tend to grow several crops; profitability related to farm size; and what farm size and crop combination would constitute a viable farm operation.

## Sociology

Plan Piloto and Plan MERIS were studies in the context of the history of irrigation management and household productive strategies with the following principal lessons learned:

1. Water is used not only for agriculture, but for domestic, hydro-electric livestock and other purposes. Attention to these multiple uses may be a means of rallying broader support for new water management practices.
2. In previously irrigated areas, farmers start with a body of understandings about water and irrigation; training programs should build upon them.
3. Where community members request a project and they are fully involved in the planning process, contributions of labor and cash are more likely to be forthcoming. Full local participation is more likely to occur if local leaders are included in the promotion and planning.
4. Projects should only be undertaken with ample farmer participation in planning, construction, and operation and maintenance through water user organizations.
5. Factors which must be taken into account in promoting water management activities are the limited amount of time available to the farmer, risk protection and subsistence agriculture. These may limit the acceptance of cash intensive technology.

## The Model

The major objective of Plan Piloto was to develop a model for improving land and water use in the Sierra. The model is visualized as an evolutionary process involving irrigation research, demonstration, training and economic and sociological research. Plan Piloto is both the prototype and the advanced testing ground for the model.

The six stages of irrigation project development, that is, initiation, planning and design, construction, operation, maintenance and modification, and evaluation, are considered to replicate themselves within the model. The model should contemplate phasing into irrigation project development in such a way that by the time the irrigation project is completed and ready to deliver water to the users, a trained cadre of technicians is in place to assist and train the farmers in irrigated crop production. Thus, ideally, the model should be initiated at least by the latter part of stage two (planning and design) of project development. The sociological component of the model may very well be involved from the very beginning of the initiation stage of project development. This is not to say that the model cannot be implemented in existing or completed projects. However, to wait until then will delay the time when the project will be in full production.

Plan Piloto demonstrated that Peruvian technicians are eager and capable of learning the required skills and teach them to farmers who are in turn willing to use them in their irrigated crop production. These skills include all of the factors involved in irrigated agriculture, such as water control to prevent erosion, water management to satisfy the crop requirements, fertility and weed and pest control. Plan Piloto included four major disciplinary areas: irrigation engineering-agronomic research, extension, farm economics, sociology and anthropology. Peruvian professionals worked hand in hand, integrating and adapting their objectives and procedures in such a way as to provide mutual reinforcement in terms of project execution and interpretation of results. The model would broaden the four disciplinary areas to provide additional depth and be fine-tuned through validation of work already accomplished in San Marcos.

### Recommendations

Based on the very successful first year of Plan Piloto and its results and accomplishments, it is recommended that the activity be continued for a minimum of two years in San Marcos, in order to fulfill the contemplated objectives of the original plan of work for plan Piloto. Every effort should be made to maintain the Peruvian technical team intact and to reestablish their positions in San Marcos. It is also important that the Plan MERIS I counterparts be maintained in San Marcos.

Any amplification of Plan Piloto in 1986 should be limited to the other subprojects in the Department of Cajamarca. This modest expansion could build upon the limited training and exposure to water management that was accomplished with the technicians and farmers in the other subprojects during 1985. After a minimum of one, and preferably two, more years of experience the model may be transferred to other areas of the Sierra. Plan Piloto should not be picked up at this time and transplanted to an entirely new location.

In a continuation of Plan Piloto particular emphasis should be given to equipment and supply needs for the research and demonstration work as well as sociological and economic data gathering.

In summary, despite various problems, Plan Piloto was a very successful initial effort to improve water and land use in the Sierra through research, demonstration and training in an interdisciplinary mode. It merits the continued support of USAID and Plan MERIS.

### III. STATUS OF PROGRAMMED ACTIVITIES

The activities of the WMS II originate from three sources: (1) Mission initiated technical assistance and training; (2) University initiated special studies and training programs; and (3) AID/Washington initiated activities. The following listed activities were requests received by the WMS II Project Management from the beginning of the project up to and including December 31, 1985. Activities are categorized according to lead university as well as country.

The terms listed below are used to indicate activity status:

- Preliminary - denotes a request that requires further clarification (scope of work and/or dates are incomplete or are missing) before it can become a formal request.
- Formal - denotes a request for which all major details have been clarified and formal addition to the Workplan has been requested through the Overall Administration Office.
- Approved - denotes an activity that has been approved by the CPMT and AID/Washington and added to the Workplan through a request of the Overall Administration Office as of September 30, 1985.
- Initiated - denotes an approved activity that has been initiated and is currently ongoing.
- Finished - denotes an activity for which all technical responsibilities, including report writing, have been fulfilled.
- Completed - denotes an activity for which all technical and fiscal responsibilities have been fulfilled as of September 30, 1985.
- Pending - denotes a non-approved request for which addition to the Workplan has not been sought and/or approved even though clarification of major details has been obtained.
- Postponed - denotes an approved activity to be carried out in the following fiscal year. Reasons for postponement may be lack of host country approval, inability to identify personnel, scheduling conflicts, etc. The budget of such an activity shall be removed from the current fiscal year Workplan and included in an appendix to the one in which the work is to be done and expenditures made. The monies shall not be reallocated and reapproval will not be necessary for one fiscal year.

- Dropped - denotes a non-approved request dropped from further consideration.
- Cancelled - denotes an approved, yet uninitiated activity deleted from the Workplan and dropped from further consideration in the near future.
- Terminated - denotes an activity that has been initiated (expenditures charged against it), but then for some reason the decision is made to stop and further work. A new budget covering incurred expenses shall be submitted through the Overall Administration Office to AID/Washington and the status considered the same as completed.

The source of each activity is indicated by the following designations:

- UNIV - University initiated
- USAID - Mission initiated
- AID/WASH - AID Washington initiated

Colorado State University Activities FY 83 (3-31-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Bangladesh	TA-Curricula Dev. (BAU)	1-03-030-82	Completed	USAID
	TA-Consultant, Legal	1-03-029-82	Completed	USAID
	TA-Scope of Work	1-02-006-82	Completed	USAID
	T-DA Workshop	2-02-007-82	Completed	USAID
India	TT-Watercourse Hdbks.	2-13-025-82	Completed	USAID
	TA-Water Mgmt & Trng.	1-02-020-82a	Completed	USAID
	T-Meas. for Sys. Mgmt.	2-07-026-82	Completed	USAID
	TA-Evans Proj. Prep.	1-02-033-83	Completed	USAID
	TA-Clyma's TDY	1-02-035-83	Completed	USAID
	DA Workshop Planning	1-02-044-83	Completed	
	Development of Solutions	1-02-024-82	Completed	
Indonesia	TA-Oad's TDY	1-02-030-83	Completed	USAID
Pakistan	TA-WM (CWM) Meeting	1-02-029-83b	Completed	USAID
	TA-Clyma's TDY	1-02-031-83	Completed	USAID
Sri Lanka	T-DA Workshop	2-02-028-83	Completed	USAID
	WID-DA Workshop	2-02-034-83	Completed	
Worldwide	TT-Brochures;Newsltrs, Pub.	2-12-018-83	Completed	Univ
	TT-Survey&Str. for Trng.	2-09-019-83	Completed	Univ
	TT-Videotape Modules	2-03-021-83	Completed	Univ
	TT-Computer Applications	2-10-022-83	Completed	Univ
	T-Wkshop(Tech.& Soc.)	2-04-023-83	Completed	Univ
	SS-Comm. for Tech. Tran.	3-04-024-83	Completed	Univ
	SS-Irig. Systems Mgmt.	3-04-025-83	Completed	Univ
	TA-Water Resource Econ.	1-02-042-83	Completed	AID/Wash
	CSU Administration	0-02-998-83	Completed	

Colorado State University Activities FY 84 (3-31-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	TR--Africa Workshop	2-14-113-84	Completed	Univ.
Dominican Rep.	TA--Reconnaissance Team	1-02-110-84	Completed	USAID
India	TA-Rajasthan MIP-Cad.	1-02-026-84	Cancelled	USAID
	TR-DA Workshop M.P.	2-02-031-84	Completed	USAID
	Curriculum Development	1-02-094-84	Completed	
Indonesia	TA-Long Term WM Spec.	1-01-008-84	Cancelled	USAID
	TR-DA Workshop	2-04-010-84	Terminated	USAID
Nepal	TR-DA Workshop Planning	2-02-003-84	Completed	USAID
Pakistan	TR-Sr. Off. Workshop	2-04-019-84	Initiated	USAID
	TA-Command Water Mgmt	1-02-114-84	Initiated	USAID
Sri Lanka	TR-DA Workshop	2-02-006-84	Cancelled	USAID
	TA-WM Central Support	1-02-022-84	Completed	USAID
	TA-Design Team	1-02-102-84	Completed	USAID
	TA-Long-Term WM Spec.	1-01-109-84	Initiated	USAID
Worldwide	TR-Professional Visitors & Networking	2-11-039-84	Initiated	Univ.
	TR-DA Trainers Workshop	2-08-040-84	Finished	Univ.
	TT-Instructor's Guide DA	2-13-042-84	Initiated	Univ.
	TT-Brochures, Newsletter, Pubs.	2-12-044-84	Finished	Univ.
	TT-ICID Senior Off. Wkshop	2-04-048-84	Completed	USAID
	TT-Survey & Strategy	2-09-049-84	Finished	Univ.
	TR-Workshop; Soc & Tech.	2-04-050-84	Completed	Univ.
	TT-Microcomputers	2-10-051-84	Completed	Univ.
	CSU Administration	0-02-998-84	Completed	Univ.

Overall Activities FY 84 (3-31-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Worldwide	Administration	0-01-999-84	Completed	Univ.

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Colorado State University Activities FY 85 (3-31-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Egypt	TA-Eval. of IMS	1-02-072-85	Completed	USAID
El Salvador	TA-PID Preparation	1-02-059-85	Completed	USAID
India	TT-Dev. of Handbooks	2-13-027-85	Terminated	USAID
	TT-Technology Transfer	2-06-022-85	Cancelled	USAID
	TT-Training Materials	2-13-020-85	Cancelled	USAID
	TR-Training of Trainers	2-14-019-85	Cancelled	USAID
	TA-Priority Research	1-02-014-85	Cancelled	USAID
Indonesia	TA-Cost Recovery Study	1-02-074-85	Completed	USAID
Nepal	TR-DA Workshop	2-02-031-85	Completed	USAID
	Rapid Appraisal	1-02-087-85	Finished	USAID
Pakistan	TR-Mgmt Off. Trng.-Planning	2-01-065-85	Initiated	USAID
	TA-Cur. Development	1-02-071-85	Completed	USAID
	Baseline Survey	2-04-083-85	Completed	USAID
	Key Officials	2-04-080-85	Completed	USAID
Sri Lanka	SS-Landsat 85	3-04-038-85	Completed	Univ.
	SS-Interfacing OFWM	3-04-036B85	Completed	Univ.
	TA-Central Support-85	1-02-003-85	Completed	USAID
Swaziland	TA-Irrig. Priorities	1-02-069-85	Completed	USAID
Worldwide	TR-Seminar on System Rehab. Phase I	2-05-033-85	Finished	Univ.
	TR-Microcomputer Workshop	2-14-032-85	Initiated	Univ.
	SS-Interfacing OFWM Backstopping	3-04-036A85	Completed	Univ.
	CSU Administration	0-02-998-85	Completed	

Colorado State University Activities FY 86 (3-31-86)

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
India	Social Tech. Feasibility	1-04-059-86	Finished	USAID
Sri Lanka	Extension of Long Term	1-02-047-86	Formal	Univ.
	Central Support	1-02-048-86	Initiated	Univ.
	Interfacing OFWM	3-04-009-86	Initiated	Univ.
	Landsat '86	3-04-011-86	Initiated	Univ.
Thailand	Special Studies '86	3-04-008-86	Initiated	Univ.
Worldwide	Triad Synthesis #1	2-14-035-86	Initiated	Univ.
	Revision of Tr. Manuals	2-13-003-86	Initiated	Univ.
	Rev. & Dev. Videotapes	2-03-004-86	Initiated	Univ.
	Seminar on Irrig. Rehab #2	2-05-006-86	Initiated	Univ.
	Interfacing/Backstopping	3-04-010-86	Initiated	Univ.
	CSU Administration	0-02-998-86	Initiated	Univ.

CORNELL UNIVERSITY ACTIVITIES FY-84

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
India	SS-Community Kuhls in Himachal Pradesh	3-04-099-84	Cancelled	UNIV
Indonesia	TA-Small-Scale Irrigation and Management Project	1-02-011-84	Completed	USAID
Niger	SS-Small-Scale Irrigation in Niger, Preliminary	3-04-098-84	Completed	UNIV
	SS-Traditional and Developed Small-Scale Irrigation Study	3-04-111-84	Initiated	UNIV
Sri Lanka	TA-Farmer Organization Program	1-02-007-84	Completed	USAID
	SS-Impact of Physical and Operational Rehabilitation	3-04-097-84	Finished	UNIV
Worldwide	TR-Main System Irrig.Task Force	2-06-077-84	Completed	AID/W
	TR-FAO/AID Expert: Indonesia	2-14-067-84	Completed	AID/W
	TT-Small-Scale Irrig.Task Force	2-14-065-84	Completed	AID/W
	TT-Professional Visitors	2-11-068-84	Initiated	UNIV
	TT-Current Research Seminar "Planning"	2-14-075-84	Completed	UNIV
	SS-Small-Scale Completion	3-04-069-84	Initiated	UNIV
	SS-Analysis of Participation Completion (FY-83)	3-04-070-84	Initiated	UNIV
	SS-Management Intensities	3-04-096-84	Initiated	UNIV

CORNELL UNIVERSITY ACTIVITIES FY-85

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Haiti	Cayes Plain	1-02-084-85	Finished	USAID
India	TR-Farmer Organization Workshop	2-14-017-85	Cancelled	UNIV
Indonesia	TA-SSI Workshop	1-02-009-85	Initiated	USAID
Mauritania	TA-Peace Corps Assistance	1-02-061-85	Cancelled	USAID
Niger	SS-Traditional and Developed SSI	3-04-052-85	Initiated	UNIV
Pakistan	TR-Extension Training Recon.	2-06-063-85	Cancelled	USAID
Sri Lanka	TA-Socioeconomic Studies	1-02-004-85	Initiated	USAID
Worldwide	TA-Recurrent Costs	1-02-062-85	Finished	AID/W
	TR-Rehabilitation Game	2-13-048-85	Initiated	UNIV
	TR-Lessons Learned Workshop	2-14-049-85	Cancelled	UNIV
	TR-Current Research Seminar	2-14-050-85	Finished	UNIV
	SS-Indirect Investment Phase I	3-04-053-85	Finished	UNIV
	SS-Indirect Investment Phase II	3-04-054-85	Initiated	UNIV
	SS-Rural Employment	3-04-055-85	Initiated	UNIV
	SS-Management Intensities	3-04-056-85	Initiated	UNIV

CORNELL UNIVERSITY ACTIVITIES FY-86

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	TR-JFS-Rehabilitation-Country	3-04-502-86	Pending	AID/W
Kenya	TA-Small-Scale Irrigation Analysis	1-02-042-86	Initiated	USAID
Niger	SS-Small-Scale Irrigation	3-04-023-86	Initiated	UNIV.
Sri Lanka	TR-ARTI--Continuing Support	1-02-045-86	Formal	USAID
Worldwide	TR-Rehab Game Revision	2-13-018-86	Initiated	UNIV.
	TR-Conference--Lessons Learned	2-07-019-86	Initiated	UNIV.
	TR-Professional Visitors	2-11-016-86	Initiated	UNIV.
	TR-Triad Synthesis Phase I	2-14-037-86	Initiated	UNIV.
	TR-Synthesis--Local Resource	2-14-053-86	Formal	UNIV.
	TR-Workshop--Irrig.Bureaucracies	2-14-054-86	Formal	UNIV.
	SS-Indirect Investment '86	3-04-055-86	Initiated	UNIV.

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Utah State University Activities

FY 83

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	SS-Dev. of Social Parameters	3-04-057-83	Completed	UNIV
Dominican Republic	TA-Project PID	1-02-010-82	Completed	USAID
	TA-Project Paper (OFWM)	1-02-009-83	Completed	USAID
Ecuador	TT-Ecuavir Video	2-03-054-83	Completed	UNIV/USAID
Haiti	TA-Irrigation Project Eval.	1-02-039-83	Completed	USAID
India	TA-Water Mgmt. and Training, and Water Management CWM	1-02-020-82B) 1-02-029-83 )	Completed	USAID
	TA-Olsen's TDY	1-02-037-83	Completed	USAID
	TA-Institutional Analysis	1-02-053-83	Cancelled	AID/WASH
	TT-Senior Officers Workshop	2-04-007-83	Cancelled	UNIV
Jordan	TA-Review of Curriculum	1-02-041-82	Completed	USAID
Mali	TA-OFWM Specialist	1-02-006-82	Completed	USAID
Pakistan	TA-Mayfield's TDY	1-02-040-83	Completed	USAID
Peru	TA-Special Study	1-04-027-82A	Completed	USAID
West Africa	SS-Small-Scale Irrigation	3-04-036-83	Completed	UNIV
Worldwide	TT-Start-Up Workshop	2-14-055-83	Completed	UNIV
	TT-Short-Term Nondegree	2-08-056-83	Completed	UNIV
	SS-On-Farm Irr. System Sel.	3-04-058-83	Completed	UNIV
	SS-Main Sys. Mgmt. & Rehab., and Action Research	3-04-059-83) 3-04-060-83)	Completed	UNIV
	SS-Development of Handbook	3- - -83	Deleted	UNIV

Utah State University Activities

FY 84

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	TA-African Irrigation Overview	1-02-108-84	Initiated	AID/WASH
Chile	TT-Conference	2-14-058-84	Completed	AID/WASH
Dominican Republic	TA-Weed Control Specialist	1-02-091-84	Completed	USAID
Ecuador	TT-Finishing Original Modules	2-03-054-84	Finished	USAID
	TT-Instructional Manual	2-03-055-84	Cancelled	UNIV
Haiti	TA-Irrigation Sector Survey	1-04-017-84	Completed	USAID
India	TA-Short Course	1-02-100-84	Completed	USAID
	TA-Maharashtra MIP	1-02-018-84	Finished	USAID
	SS-Irrig. Project Monitoring	3-04-020-84	Cancelled	UNIV
	TA-Maharashtra IT&M	1-01-021-84	Finished	USAID
	TA-Soc/Tech Feas. Study	1-02-023-84	Cancelled	USAID
	TA-Madhya Pradesh MIP	1-01-025-84	Cancelled	USAID
	TT-Senior Officer's Workshop	2-04-053-84	Initiated	UNIV/USAID
	TA-Irr. Eval. & Strategy Review	1-02-103-84	Finished	USAID
Jordan	TA-Irrigation Sector Survey	1-04-013-84	Completed	USAID
	TA-WM Specialist (TDY)	1-02-014-84	Completed	USAID
	TT-On-Farm Water Management	2-01-015-84	Cancelled	USAID
Pakistan	TA-Irrigation Policies	1-02-101-84	Completed	USAID
	TA-Command Water Management	1-02-106-84	Completed	USAID
Peru	TA-Small & Med. Irri. Systems	1-02-035-84	Completed	USAID
	TA-Plan MERIS	1-01-112-84	Finished	USAID
Senegal	TA-Bakel Irr. Per. Assist.	1-02-033-84	Deleted	USAID
Swaziland	TA-Irri. System Monitoring	1-02-063-84	Deleted	USAID
Tanzania	TA-Irrigation Study	1-02-082-84	Completed	USAID
Worldwide	TT-French Language Training	2-11-059-84	Completed	UNIV
	TT-Irr. Sys. Mgmt. Task Force	2-14-060-84	Initiated	UNIV
	SS-Main Sys. Des. Mgmt., Rehab.	3-04-061-84	Completed	UNIV
	SS-Selection of Irrig. Tech.	3-04-062-84	Completed	UNIV

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Utah State University Activities

FY 85

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Bolivia	TT-Small-Scale Course	2-14-010-85	Completed	USAID
	TT-On-Farm Water Mgmt. Course	2-14-011-85	Cancelled	USAID
Dominican Republic	TT-On-Farm Water Mgmt. Course	2-14-030-85	Cancelled	USAID
Chad	TA-Irrigated Agric. Assessment	1-02-073-85	Initiated	USAID
Egypt	TA-Water Use Project Evaluation	1-02-066-85	Completed	USAID
El Salvador	TA-Project Paper	1-02-077-85	Finished	USAID
Honduras	TA-Irrigation Development	1-02-060-85	Completed	USAID
India	TA-Water Balance	1-02-023-85	Deleted	USAID
	TA-Hydraulic Conductivity	1-02-024-85	Deleted	USAID
	TA-Reservoir Operation	1-02-025-85	Deleted	USAID
	TA-University Curricula	1-02-013-85	Completed	USAID
	TT-Rapid Appraisal	2-14-016-85	Deleted	USAID
	TT-Innovative Teaching	2-03-012-85	Deleted	USAID
	TT-Main Systems Training	2-14-015-85	Deleted	USAID
	TT-Computer Assisted ISM	2-14-040-85	Deleted	USAID
	TT-Video Modules	2-14-075-85	Finished	USAID
Jamaica	TA-Planning Activities	1-02-007-85	Approved	USAID
	TA-System Study	1-02-008-85	Approved	USAID
Jordan	TA-Advisory Service	1-02-028-85	Approved	USAID
Mauritania	TA-Plan of Action	1-02-076-85	Finished	USAID
Morocco	TA-PID Development	1-02-002-85	Finished	USAID
Nepal	TA-Small & Medium-Scale Irrig.	1-02-067-85	Completed	USAID
Sri Lanka	TA-Model Calibration	1-02-005-85	Finished	USAID
Swaziland	TA-Irrigation Assistance	1-02-029-85	Cancelled	USAID
Thailand	TT-Maintenance Workshop	2-14-088-85	Finished	USAID
Worldwide	TT-Lessons Learned	2-14-039-85	Initiated	UNIV
	TT-French Language Training	2-11-041-85	Initiated	UNIV
	SS-Main Systems-Remote Sensing	3-04-042-85	Finished	UNIV
	SS-ISM Development	3-04-043A85	Initiated	UNIV
	SS-Thailand Case Study	3-04-043B85	Initiated	UNIV
	SS-Morocco Case Study	3-04-043C85	Initiated	UNIV
	SS-India Case Study	3-04-043D85	Deleted	UNIV
	SS-Interdisciplinary Workshop	3-04-043E85	Finished	UNIV

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Utah State University Activities

FY 86

COUNTRY	ACTIVITY	CODE	STATUS	SOURCE
Africa	SS-Joint Field Study	3-04-501-86	Approved	AID/UNIV
Egypt	TA-Irrig. Sector Assessment	1-02-052-86	Initiated	USAID
Guatemala	TT-Evaluation of Model	2-02-064-86	Initiated	USAID
India	TT-Demonstration Workshop	2-02-051-86	Pending	USAID
Italy	TT-Rome Consultation	2-01-063-86	Formal	UNIV
Morocco	TT-Internat'l Irrigation Center	2-04-027-86	Initiated	UNIV
Pakistan	TA-Irrigation Consultant	1-02-060-86	Finished	USAID
Paraguay	TA-Technical Assessment	1-02-067-86	Formal	USAID
Peru	TA-Finishing Plan MERIS	1-02-061-86	Finished	USAID
Rwanda	TA-Water Mgmt. & Drainage	1-02-062-86	Finished	USAID
Worldwide	TT-Triad Synthesis Phase I	2-14-036-86	Initiated	USAID
	TT-Irrig. Experience Transfer	2-07-026-86	Initiated	UNIV
	SS-Irrig. Project Analysis	3-04-005-86	Initiated	UNIV

#### IV. ACTIVITIES

This section is a summary of the status of each activity under the WMSII Project. The review includes a synopsis of the purpose and status of each activity, the participants, and the time spent by each individual.

In order to clarify the project activities, this section has been divided into three sections, FY84, FY85 and FY86; FY84, FY85 and FY86 are divided into the following categories: Technical Assistance, Training and Technology, Special Studies and Administration.

A. FY84

A.1 Technical Assistance Activities

1. AFRICA - Irrigation Overview

Code Number: 1-02-108-84

Status: Initiated

Lead University: Utah State University

Summary of Work: The Main Report of the Africa Irrigation Overview was worked on during the quarter and is almost completed. There are nine chapters in the main report. The introductory chapter is partially done and three chapters on African hydrology, irrigation agronomy, land tenure, and issues for donors have been edited by Derrick Thom. The chapter on socio-economic issues has been finished by Thom and Moris and technical issues is done. The chapters on case studies, and irrigation management are yet to be completed.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jon R. Moris	0.00 ppm	3.00 ppm	USU	Sociology
Linda Fields	0.00 spm	0.10 spm	USU	Typing

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2. PAKISTAN - Command Water Management Planning

Code Number: 1-02-114-84

Status: Initiated

Lead University: Colorado State University

Summary of Work: A team of Wayne Clyma, Gene Quenemoen, Mohammed Haider, Dick Tinsley, and Paul Wattenburger along with the University of Maryland consulting group initiated the management training phase of the project during early March. Assistance will be given each subproject area with help on a management plan and with management training during the next several months. The Punjab was the subproject area where the training began this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Mohammed Haider	2.50 ppm	14.50 ppm	CSU	Economics
Wayne Clyma	2.00 ppm	11.05 ppm	CSU	Agricultural Engr.
S. Sritharan	0.00 ppm	13.36 ppm	CSU	Civil Engr.
Ed Shinn	2.00 ppm	17.20 ppm	CSU	Sociology
M. Shafique	1.50 ppm	17.20 ppm	CSU	Agricultural Engr.
S. Karaki	0.00 ppm	0.80 ppm	CSU	Civil Engr.
Ralph Luebs	1.25 ppm	8.00 ppm	Consultant	Agronomy
J. Warner	1.00 ppm	5.84 ppm	CSU	Civil Engr.
Tom Sheng	1.75 ppm	4.50 ppm	CSU	Civil Engr.
Oguz Nayman	.67 ppm	3.84 ppm	CSU	Tech. Journalism
Max Donkor	0.00 gpm	5.67 gpm	CSU	Agricultural Engr.
Paul Wattenberger	2.00 ppm	7.00 ppm	CSU	Agricultural Engr.
Support Staff	1.00 ppm	3.65 ppm	CSU	Support Staff
Richard Tinsley	2.00 ppm	5.00 ppm	CSU	Agronomy
A.R. Robinson	0.00 ppm	1.85 ppm	CSU	Irrig. Engr.
Eugene Quenomen	3.00 ppm	4.50 ppm	Consultant	Economics
Ramchand Oad	.70 ppm	1.70 ppm	CSU	Agricultural Engr.
Robert Mohammed	2.75 ppm	3.75 ppm	CSU	Agricultural Engr.

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3. SRI LANKA - Long-Term WM Specialist

Code Number: 1-01-109-84

Status: Initiated                      Lead University: Colorado State University

Summary of Work: Larry Nelson continued work on reports from the diagnostic analyses that were done on two tank sites in Polonnaruwa during Yala season. All of the counterpart discipline leaders remain on a part-time basis, but the government has promised full-time counterparts beginning with the 1986 Yala season studies. Larry held a conference with government and AID personnel to discuss the 1985 Yala season reports. Because of the good response to that conference, Dr. Nelson is hopeful that the government and AID will ask him to extend until December 1986.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Larry Nelson	3.00 ppm	24.00 ppm	CSU	Agronomy

A. FY84

A.2 Training and Technology Transfer Activities

1. PAKISTAN - CWM Officials Workshop

Code: 2-04-019-84

Status: Initiated                      Lead University: Colorado State University

Summary of Work: This activity has been rescheduled for mid-June. The tour has been combined with the Extension tour with the itinerary to be India and Sri Lanka. CU and CSU will assist in the tour.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Ramchand Oad	0.00 ppm	2.25 ppm	CSU	Agricultural Engr.
Mohammed Haider	0.00 ppm	0.50 ppm	CSU	Economics
Wayne Clyma	0.00 ppm	1.14 ppm	CSU	Agricultural Engr.
Robby Laitos	0.00 ppm	0.25 ppm	CSU	Sociology

2. WORLDWIDE - Irrigation System Management Task Force

Code Number: 2-14-060-84

Status: Initiated

Lead University: Utah State University

Summary of Work: The Irrigation System Management Group met on May 6 and 7 in Logan, Utah to develop the Synthesis activity. The following main Special Study areas were represented at the meeting:

The system interface activities headed by David Freeman; the farmer participation activities headed by Norman Uphoff; the computerized Main System and Unit Command Area management models headed by Wynn Walker; and the irrigation system intensity activities headed by Randy Barker (who did not attend) and presented by Carol Furgeson.

The meeting was very successful in that we developed a framework for bringing all of the four major activities together. The overall irrigation system management framework involved the following major operational and structural activities:

- A. Management of Allocations  
Decision (Share System)
- B. Management Flows  
Execution (Hydraulic)
- C. Planning
- D. Execution

In addition, we delineated the hydraulic system into the following levels in which the interface zone occurs between levels 1, 2 and 3. We then decided on the following set of management entities.

As part of the Synthesis meeting activity, we developed a relatively detailed outline for developing a manual which would summarize the overall framework and each of the subsequent major studies. In addition, the intent of the manual is to also demonstrate that the Gal Oya Project provides an action research study which in effect deals with all of the major activities, and a review of this project will be included as one of the sections of the manual.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.82 ppm	0.82 ppm	USU	Irrig. Engineering

3. WORLDWIDE - Professional Visitors & Networking

Code Number: 2-11-039-84

Status: Initiated      Lead University: Colorado State University

Summary of Work: One visitor came to CSU during this quarter. Dr. Khun Nukool Tongtawee, director of operation and maintenance for the Royal Irrigation Department in Thailand, spent three days at CSU discussing possibilities of increased involvement of CSU with one of the Nessi projects at Lam Chamuak.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Oguz Nayman	0.00 ppm	0.67 ppm	CSU	Technical Journalism

4. WORLDWIDE - Instructor's Guide for DA

Code Number: 2-13-042-84

Status: Initiated      Lead University: Colorado State University

Summary of Work: No activity this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Larry Nelson	0.00 ppm	2.25 ppm	CSU	Agronomy
Robby Laitos	0.00 ppm	1.00 ppm	CSU	Sociologist
Ramchand Oad	0.00 ppm	0.88 ppm	CSU	Agricultural Engr.
Mohammed Haider	0.00 ppm	1.00 ppm	CSU	Economics

A. FY84

A.3 Special Studies

1. WORLDWIDE Small-Scale Irrigation Systems Study Completion

Code Number: 3-04-069-84

Status: Initiated Lead University: Cornell University

Summary of Work: E. Walter Coward, Jr.'s paper, "Improving Policies and Programs for the Development of Small-Scale Irrigation Systems," was published in September 1984 as Water Management Synthesis Report Number 27. "Community Participation and Local Organization for Small-Scale Irrigation" (Barbara D. Lynch) has been published as Water Management Synthesis Report Number 34. "Small-Scale Irrigation: An Examination of Critical Design Issues" (Wensley and Walter) has been published as WMS Report Number 39. James Nickum's redrafted paper on Investment Strategies for SSI will be published as a WMS Report.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E. Walter Coward, Jr.	0.0 ppm	3.1 ppm	Cornell	Rural Sociology
Michael Walter	0.0 ppm	3.1 ppm	Cornell	Agri. Engineering
James Nickum	0.50 ppm	6.5 ppm	Cornell	Economics
Barbara D. Lynch	0.0 ppm	7.5 ppm	Cornell	Rural Sociology
Beth Rose	0.0 ppm	2.4 ppm	Cornell	Editing
Ray Norman	0.0 gsm	12.0 gsm	Cornell	Agri. Engineering
Susan Turnquist	0.0 gsm	12.0 gsm	Cornell	Rural Sociology
Luin Goldring	0.0 gsm	0.1 gsm	Cornell	Rural Sociology

2. WORLDWIDE Comparative Analysis of Farmer Participation

Code Number: 3-04-070-84

Status: Initiated Lead University: Cornell University

Summary of Work: The draft state-of-the art paper by Uphoff, Meinzen-Dick and St. Julien was condensed and is being published as a WMS Professional Paper. The longer version has been revised for publication as a working paper.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Norman Uphoff	0.5 ppm	3.5 ppm	Cornell	Political Science
Nancy St. Julien	0.25 ppm	10.25 gsm	Cornell	City & Regional Planning
Bryan Bruns	0 gsm	3.0 gsm	Cornell	Rural Sociology
Ruth Meinzen-Dick	0 gsm	5.5 gsm	Cornell	Rural Sociology
Gerard Finnan	0 gsm	2.25 gsm	Cornell	City & Regional Planning

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A. FY84

A.5 Overall Administration

A. FY84

A.6 Summary FY84

A.6 Summary FY84

A review of the activity categories of technical assistance, training and technology, and special studies shows the following profile relative to institutional status and specialization areas of persons employed in each activity. This summary does not include administrative activities.

TABLE I. Amount of Employment Time Relative to Organizational Affiliations

<u>AFFILIATIONS:</u>	<u>QUARTERLY EMPLOYMENT TIME:</u>
Colorado State University	22.87
Colorado State Graduate Students	.00
Cornell University	1.25
Cornell University Graduate Students	.00
Utah State University	.82
Utah State Graduate Students	.00
Independent Consultants	4.25

One important objective and activity of the WMSII project is that of increasing the quality and expanding the pool of expertise in water management. The universities are fulfilling this objective by involving professionals from other institutions in activities, employing persons who are not affiliated with any institutions, and by incorporating graduate students whenever appropriate.

The employment profile for the project activities of Utah State University Colorado State University, and Cornell University, is shown on Tables II, III, and IV. These figures do not include administrative activities.

SOURCE OF PERSONNEL: QUARTERLY EMPLOYMENT TIME:

TABLE II. Colorado State University Employment Profile

Colorado State University	22.87
Colorado State Graduate Students	.00
Independent Consultants	4.25

TABLE III. Cornell University Employment Profile

Cornell University	1.25
Cornell Graduate Students	.00

TABLE IV. Utah State University Employment Profile

Utah State University	.82
Utah State Graduate Students	.00
Independent Consultants	.00

B. FY85

B.1 Technical Assistance

1. CHAD - Irrigated Agriculture Assessment

Code Number: 1-02-073-85

Status: Initiated

Lead University: Utah State University

Summary of Work: The "Strategies for Irrigation Development in Chad" report has been completed by the Team Leader, Tom Weaver. The final draft copy of the report was submitted to the Mission and the Mission staffs' final response was very positive. They commented on the quality of the report and the fact that it was well organized and written.

USU has also heard from others who have been involved in activities with AID in Chad, and they have complimented the report and said it was invaluable in their study activities related to irrigation development.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.00 ppm	0.00 ppm	USU	Irr. Engineering

2. INDONESIA Small-Scale Irrigation Workshop and Other Technical Assistance

Code Number: 1-02-009-85

Status: Initiated Lead University: Cornell University

Summary of Work: This activity consists of a series of efforts in support of irrigation development in Indonesia including technical assistance in analysis of irrigation regulation and water disputes, engineering assistance to various small-scale irrigation projects, and a workshop for selected Indonesian government officials from West Java, NTB and NTT. Jeff Brewer has compiled the final report for this activity, which is being prepared for publication as a working paper.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Loren Parks	0.0 ppm	1.0 ppm	University of California (Davis)	Economics
Ramchand Oad	0.0 ppm	1.0 ppm	CSU	Engineering
Andrew Keller	0.0 ppm	1.0 ppm	USU	Irri. Engineering
Jeff Brewer	0.0 ppm	1.25 ppm	CSU	Anthropology
Pierre LaRamee	.25 ppm	.25 ppm	Cornell	Editor

B. FY85

B.2 Training and Technology Transfer

1. PAKISTAN - TR-Mgmt. Officials Training Planning

Code Number: 2-01-065-85

Status: Initiated                      Lead University: Colorado State University

Summary of Work: No activity this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Wayne Clyma	0.00 ppm	0.75 ppm	CSU	Agricultural Engr.
Ed Kirdar	0.00 ppm	1.00 ppm	Salt River	Civil Engineer

2. WORLDWIDE - IDM (Irrigation Data Management) Workshop

Code Number: 2-14-032-85

Status: Initiated                      Lead University: Colorado State University

Summary of Work: No activity this quarter, although Pakistan and India still want a workshop. Pakistan will probably have two-week workshop in May.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
John Webb	0.00 ppm	2.25 ppm	Consultant	Tech. Journalism
Tom Sheng	.50 ppm	4.75 ppm	CSU	Civil Engr.
Darlene Fowler	0.00 ppm	0.50 ppm	CSU	Tech. Journalism

3. WORLDWIDE - French Language Training

Code Number: 2-11-041-85

Status: Initiated                      Lead University: Utah State University

Summary of Work: One Ag. and Irrigation Engineering staff member was taught French on a tutorial basis on non-department time. The cost of the activity was for only the tutor.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jean Paul Favre	0.20 gpm	0.65 gpm	USU	Engineering

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4. WORLDWIDE - Lessons Learned: Irrigation Systems Management

Code Number: 2-14-039-85

Status: Initiated

Lead University: Utah State University

Summary of Work: The Lessons Learned activity has been revised to better focus its underlying approach to the teaching of lessons which the project has learned since its inception. The social science component of the activity is being given more prominence which is reflected in the revised budget. Materials gathered during the Washington trip by Allen LeBaron and Bryant Smith were given to Mark Lusk and Brad Parlin for their study of sociological problems of irrigation system management.

Individual plans of activity were developed for the institutional analysis, agronomic issues, and irrigation engineering problems and were left with the principal participant of each of these issues. LeBaron went to England and got case study materials for training. Graduate students are working on estimates of on-farm costs of utilizing alternate irrigation technologies, according to expectations of relative water supply. The results will be incorporated into the training materials of this activity.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Jack Keller	0.82 ppm	0.82 ppm	USU	Irrig. Engineering
Allen LeBaron	1.00 ppm	1.00 ppm	USU	Ag. Economics
Bryant Smith	0.50 ppm	0.50 ppm	USU	Law/Institutions
R. Kern Stutler	0.50 ppm	0.85 ppm	USU	Irrig. Engineering
J. Perera	0.00 ppm	0.13 ppm	Sri Lanka (Honorary)	Sociology
M. Mulik	1.00 gpm	1.00 gpm	USU	Irrig. Engineering
B. Sawant	1.00 gpm	1.00 gpm	USU	Irrig. Engineering

B. FY85

B.3 Special Studies

1. MOROCCO - Case Study

Code Number: 3-04-043C85

Status: Initiated

Lead University: Utah State University

Summary of Work: This activity was postponed until USAID/Morocco decides to reorient its strategy to give emphasis to irrigation.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Wynn R. Walker	1.00 ppm	1.00 ppm	USU	Irrig. Engineering

2. THAILAND - Case Study

Code Number: 3-04-043B85

Status: Initiated

Lead University: Utah State University

Summary of Work: The Thailand case study effort was continued with the application of Utah State University software to the two irrigation projects in the northeast. One of the two Royal Irrigation Department engineers concluded his Water Management Synthesis training and returned to Thailand. The other, Mr. Kanching Kawsard, is still in the Utah State University M.S. program and is expected to finish in June 1986.

A related activity was the acquisition of a micro computer system for the NESSI headquarters. A PIO/C was issued by the USAID Mission and is being executed at Utah State University. All equipment and nearly all software is now at USU where Mr. Kanching is learning and using it. This makes it possible for him to apply his knowledge in Thailand when he returns.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Wynn R. Walker	0.25 ppm	0.25 ppm	USU	Irrig. Engineering
Kanching Kawsard	1.50 gpm	3.00 gpm	USU	Irrig. Engineering
C. Pajsoontorn	0.00 gpm	1.50 gpm	USU	Irrig. Engineering

3. WORLDWIDE Phase II: Comparative Analysis of Indirect Investment Strategies for Development of Small-Scale Irrigation Works

Code Number: 3-04-054-85

Status: Initiated Lead University: Cornell University

Summary of Work: Graduate assistants Wensley and Goldring revised a draft paper prepared on indirect investments in US Irrigation by the Soil Conservation Service, the Bureau of Reclamation, the Army Corps of Engineers, and the states. This paper includes an extensive literature review, analysis of indirect investment strategies in the US, and their application to Third World situations. Plans were made to select sites for field studies in Indonesia.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E. Walter Coward, Jr.	0.0 ppm	0.25 ppm	Cornell	Rural Sociology
Chris Wensley	0.0 gsm	8.0 gsm	Cornell	Agri. Engineering
Luin Goldring	0.0 gsm	4.0 gsm	Cornell	Rural Sociology

4. WORLDWIDE Rural Employment and Irrigation System Performance

Code Number: 3-04-055-85

Status: Initiated Lead University: Cornell University

Summary of Work: Graduate assistant Ruth Meinzen-Dick is completing a literature search and review of materials dealing with the relationships between employment and irrigation development. In December she visited ILO offices in Geneva to collect relevant documents. A draft paper has been circulated for comment.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Ruth Meinzen-Dick	1.0 gsm	10.0 gsm	Cornell	Rural Sociology
E. Walter Coward, Jr.	0 ppm	0.25 ppm	Cornell	Rural Sociology

5. WORLDWIDE Irrigation Systems Performance as Affected by Management Intensities

Code Number: 3-04-056-85 (formerly 3-04-096-84)

Status: Initiated Lead University: Cornell University

Summary of Work: Bob Yoder and Ed Martin have completed dissertations on the performance of farmer-managed irrigation in two small-scale systems with different supply constraints. Carol Ferguson is analyzing data from her research in the Philippines under the supervision of Randy Barker. The group also began work on a final report for AID distilling the research results.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Randolph Barker	0 ppm	3.25 ppm	Cornell	Agri. Economics
Edward Martin	0.0 gsm	16.5 gsm	Cornell	Agri. Economics
Robert Yoder	0.0 gsm	19.5 gsm	Cornell	Agri. Engineering
Fred Valera	0.0 gsm	9.0 gsm	Cornell	Agri. Engineering
Carol Ferguson	0.0 gsm	2.5 gsm	Cornell	Agri. Economics
Tammo Steenhuis	0.0 ppm	2.5 ppm	Cornell	Agri. Engineering

6. WORLDWIDE - Irrigation Systems Modeling Development

Code Number: 3-04-043A85

Status: Initiated Lead University: Utah State University

Summary of Work: This is an FY 85 activity and residual funds were carried forward into the FY 86 workplan.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Wynn R. Walker	0.25 ppm	1.17 ppm	USU	Irrig. Engineering
Willem Vlotman	0.00 ppm	1.00 ppm	USU	Irrig. Engineering

B. FY85

B. 4 Administration

B. FY85

B.5 Overall Administration

B. FY85

B.6 Summary FY85



C. FY86

C.1 Technical Assistance Activities

1. EGYPT - Irrigation Sector Assessment

Code Number: 1-02-052-86

Status: Initiated

Lead University: Utah State University

Summary of Work: Dean Peterson worked on the final report for the Egyptian Government and USAID/Cairo. Linda Fields worked on editing the draft and it as been sent to Egypt for final approval before printing.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Glen Stringham	0.00 ppm	1.45 ppm	USU	Irrig. Engineering
David W. James	0.00 ppm	1.35 ppm	USU	Soil Science
Dean F. Peterson	0.00 ppm	1.45 ppm	Consultant	Irrig. Engineering
Gerald Wheelock	0.00 ppm	1.20 ppm	Consultant	Anthropology
Keith Roberts	0.00 ppm	1.40 ppm	Consultant	Ag. Economics
Linda Fields	0.00 spm	0.20 spm	USU	Typing/Editing
Cindy Nielsen	0.15 spm	0.15 spm	USU	Typing

2. KENYA Small-Scale Irrigation Analysis

Code Number: 1-02-042-86

Status: Initiated Lead University: Cornell University

Summary of Work: A four-man team headed by E. Walter Coward, Jr. Rural Sociology, and including, Richard McConnen, economist, CID, Ramchand Oad, Agricultural Engineering, Colorado State University, and Francis Gichuki, an engineering graduate student from Utah State University, spent a month in Kenya assessing past experiences with the design, operation and management of small-scale irrigation in Kenya. This was augmented by two local consultants selected by the mission: anthropologist Joseph Ssenyonga and Leo Arao, an agricultural economist. While in Kenya, the team drafted substantial portions of their report. During the past quarter Watering the Shamba, WMS Report No. 40, was revised and edited for publication.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E.W. Coward, Jr.	0.5 ppm	2.0 ppm	Cornell	Rural Sociology
Richard McConnen	0 ppm	1.5 ppm	CID	Ag. Economics
Ramchand Oad	0 ppm	1.0 ppm	CSU	Ag. Engineering
Joseph Ssenyonga	0 ppm	1.0 ppm	Consultant	Anthropologist
Leo Arao	0 ppm	1.0 ppm	Consultant	Ag. Economics
Francis Gichuki	0 gsm	1.0 gsm	CSU	Ag. Engineering
Pierre LaRamee	.25 ppm		editor	Rural Sociology

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3. SRI LANKA - Extension of Long Term

Code Number: 1-02-047-86

Status: Initiated                      Lead University: Colorado State University

Summary of Work:

No activity this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
No Staffing				

4. SRI LANKA - Central Support

Code Number: 1-02-048-86

Status: Initiated                      Lead University: Colorado State University

Summary of Work: Leslie Stillwater went to Sri Lanka in February to assist in completing the Yala season engineering reports and to help with Maha season data analysis. She will be in Sri Lanka until May 1.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Tom Sheng	.25 ppm	1.25 ppm	CSU	Civil Engineer
Leslie Stillwater	2.00 ppm	2.00 ppm	CSU	

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5. ZIMBABWE - Small Scale Irrigation

Code Number: 1-02-050-86

Status: Initiated                      Lead University: Colorado State University

Summary of Work:

Terry Podmore and Richard McConnen completed a reconnaissance of irrigation systems in Zimbabwe during February and early March. Terry returned to Zimbabwe in April to present their preliminary findings. The final report will be done in May.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Terry Podmore	1.50 ppm	1.50 ppm	CSU	Ag. & Chem. Eng.
Richard McConnen	1.00 ppm	1.00 ppm		Economist

C. FY86

C.2 Training and Technology Transfer Activities

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1. GUATEMALA - Evaluation of Model

Code Number: 2-02-064-86

Status: Initiated

Lead University: Utah State University

Summary of Work: During the quarter the graduate student, Tom Tenney, was selected and sent to Guatemala with Bert Embry to begin conducting a study to evaluate the success of the small scale irrigation (mini-riego) systems which the national extension system (DIGESA) has been helping groups of farmers to install. Dr. Embry introduced Tom to the DIGESA mini-riego staff in Guatemala City and started the process of obtaining documentation for the evaluation. Dr. Embry and Tom also tested out the community level survey form through surveying farmers and Bert brought back comments which formed the basis of a revised form.

Then Bryant Smith went to Guatemala to test out the truckers and wholesalers surveys with Tom. They spent a week surveying truckers and wholesalers and concluded preliminarily that during summers with abundant summer harvests there is a problem moving produce from irrigated systems. More work will be done by Tenney on this issue. Tenney has completed already about half of the farmer level surveys. Because of Tenney's good rapport with the DIGESA staff, he has been able to get rides to the mini-riego systems and they have assisted Tenney and his wife (who also speaks Spanish well) to conduct surveys.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Bryant Smith	0.25 ppm	0.25 ppm	USU	Institutional
Bertis Embry	0.25 ppm	0.25 ppm	Consultant	Irr. Engineering
Tom Tenney	2.00 gpm	2.00 gpm	USU	Ag. Economics

2. PAKISTAN - TR-Baluchistan DA

Code Number: 2-04-065-86

Status: Initiated

Lead University: Colorado State University

Summary of Work:

Oguz Nayman, Tom Flack, Kerry Gee, and Robert Mohammed led the Baluchistan Analysis during February and March. An interdisciplinary report draft was completed and given to USAID before the team left in early April. The report is being finalized by the U.S. team now. This completes the diagnostic analysis in the four Pakistani provinces. The management training activity will follow in Baluchistan in July.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Wayne Clyma	0.50 ppm	0.50 ppm	CSU	Agricultural Engr.
Vicki Duneman	0.50 ppm	0.50 ppm	CSU	Tech. Journ.
Tom Flack	2.25 ppm	2.25 ppm	Consultant	Agronomist
Kerry Gee	2.25 ppm	2.25 ppm	Consultant	
Oguz Nayman	2.33 ppm	2.33 ppm	CSU	Tech. Journ.
Ramchand Oad	.50 ppm	.50 ppm	CSU	Ag. & Chem. Eng.
Richard Tinsley	1.00 ppm	1.00 ppm	CSU	Agronomist
Paul Wattenburger	1.00 ppm	1.00 ppm	CSU	Ag. & Chem. Eng.

3. WORLDWIDE - Revision of Training Manuals

Code Number: 2-13-003-86

Status: Initiated

Lead University: Colorado State University

Summary of Work: A number of editorial revisions have been made by Darlene Fowler in the reprints. An interdisciplinary team will make the appropriate revisions in the Volume I and Volume II of the DA training manual in May and June of 1986.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Darlene Fowler	2.25 ppm	3.75 ppm	CSU	Tech. Journalism

4. WORLDWIDE - Rev. & Dev. Videotapes

Code Number: 2-03-004-86

Status: Initiated

Lead University: Colorado State University

Summary of Work: A video on Technology In Irrigation Data Management was completed. Videotapes and slide shows produced by the project were reproduced and distributed worldwide.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
John Webb	2.71 ppm	5.71 ppm	CSU	Tech. Journalism

5. WORLDWIDE - Seminar on Irrigation Rehabilitation #2

Code Number: 2-05-006-86

Status: Initiated                      Lead University: Colorado State University

Summary of Work: Plans were made to hold the conference at the Xerox Center near Washington D.C., October 27-31, 1986. A brochure on the conference was prepared and is being distributed. Several organizations have agreed to prepare case studies. These include the Asian Development Bank, World Bank, Ford Foundation, and The International Irrigation Management Institute. For more information see the CSU Special Focus for this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Mohammed Haider	.50 ppm	.50 ppm	CSU	Economics
David Karmell	1.50 ppm	1.50 ppm	CSU	Agricultural Eng.

6. WORLDWIDE - Triad Synthesis #1

Code Number: 2-14-035-86

Status: Initiated                      Lead University: Colorado State University

Summary of Work: Dr. Ramchand Oad has been selected to coordinate this activity. He is in the process of preparing a proposal to present to the CPMT and JPMT for CSU's involvement.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
No Staffing				

7. WORLDWIDE Rehabilitation Game Revision

Code Number: 2-13-018-86

Status: Initiated Lead University: Cornell University

Summary of Work: Following a trial of the revised and improved Rehabilitation, Rob Oaks under the supervision of Ed Vander Velde and Tammo Steenhuis, has begun work on the development of a computer software and manual package for reproduction. A hard card has been designed and reproduced to adapt personal computers for the Rehab Game software. Roelef Sikkens was appointed as a graduate research assistant in mid-March to assist Oaks.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Robert Oaks	3.0 gsm	3.0 gsm	Cornell	Ag. Engineering
Ed Vander Velde	0.25 ppm	0.25 ppm	Aquinas Coll.	Geography
Roelef Sikkens	.50 gsm	.50 gsm	Cornell	Ag. Engineering
Tammo Steenhuis	0.50 ppm	0.50 ppm	Corneil	Ag. Engineering

8. WORLDWIDE Conference on Lessons Learned

Code Number: 2-07-019-86

Status: Initiated Lead University: Cornell University

Summary of Work: Mike Walter and Walt Coward proceeded conference planning in greater detail. The Forum on Irrigation Systems Research and Applications was scheduled for the week of May 13-15, 1986. Speakers and discussants were invited to address three themes: (1) analysis of irrigation systems management, (2) research on irrigation in Africa, and (3) a workshop on irrigation project design. Nancy St. Julien assisted with mailings, logistic arrangements, and other aspects of planning.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Michael Walter	0.25 ppm	0.50 ppm	Cornell	Ag. Engineering
Nancy St. Julien	2.0 ppm	2.0 gsm	Cornell	Regional Planning
Randy Barker	0 ppm	0.25 ppm	Cornell	Ag. Economics

9. WORLDWIDE Triad Synthesis I

Code Number: 2-14-037-86

Status: Initiated Lead University: Cornell University

Summary of Work: No activity this quarter.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E.W. Coward, Jr.	0 ppm	0.25 ppm	Cornell	Rural Sociology
Norman Uphoff	0 ppm	0.25 ppm	Cornell	Political Science

C. FY86

C.3 Special Studies

1. NIGER Traditional and Developed Small-Scale Irrigation Study

Code Number: 3-04-023-86

Status: Initiated Lead University: Cornell University

Summary of Work: W. Ray Norman has established research sites at Moullela and Guidan-Magagi, two ONAHA perimeters in the Maggia Valley and at Koumassa, a traditional onion gardening site. Data collected include plot measurements and mapping, plant density counts, timing of furrow and basin wetting, infiltration rates, soil moisture monitoring. Norman has been interviewing farmers to gather data outside of the research sites with Nigerien assistants. In addition, at the request of AID/Niamey, Norman has consulted with other groups in Niger who have an interest in small-scale irrigation. Luin Goldring began work in Niger on the socioeconomic aspects of small-scale irrigation in the Galmi and Konni schemes managed by ONAHA.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Ray Norman	3.0 gsm	15.5 gsm	Cornell	Agri. Engineering
Mike Walter	0.0 ppm	0.75 ppm	Cornell	"
John Wells	0.0 gsm	3.5 gsm	Cornell	"
Tammo Steenhuis	0.5 ppm	0.5 ppm	Cornell	"
Roelef Sikkens	1.5 gsm	1.5 gsm	Cornell	"
Luin Goldring	.25 gsm	1.5 gsm	Cornell	Rural Sociology

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2. SRI LANKA - Interfacing OFWM

Code Number: 3-04-009-86

Status: Initiated

Lead University: Colorado State University

Summary of Work: John and Pat Wilkens-Wells have all the counterparts hired and ready to begin data collection for Yala season starting in April. Dan Lattimore spent about 10 days in Sri Lanka during January. A videotape progress report was prepared. Major assistance that was needed was supervision of technical data gathering for Yala. To accomplish that Susan Smolnick, a civil engineer, was sent in late March to be in charge of the technical data. Ms. Smolnick will stay through Yala season.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
John Wilkens-Wells	2.25 ppm	4.50 ppm	CSU	Sociology
Pat Wilkens-Wells	2.25 ppm	4.50 ppm	CSU	Sociology
Dan Lattimore	1.00 ppm	1.00 ppm	CSU	Tech. Journ.
Susan Smolnik	2.00 ppm	2.00 ppm	CSU	Civil Eng.
WJW Arambepola	3.00 ppm	4.00 ppm	Consultant	
K Chandrasekera	3.00 ppm	6.00 ppm	Consultant	
Delunghawatta	3.00 ppm	6.00 ppm	Consultant	
SR Gunasekera	3.00 ppm	3.00 ppm	Consultant	
RJ Gunawardena	3.00 ppm	6.00 ppm	Consultant	
NK Labutale	3.00 ppm	3.00 ppm	Consultant	
DM Wimalasiri	1.00 ppm	3.00 ppm	Consultant	

3. SRI LANKA - Landsat '86

Code Number: 3-04-011-86

Status: Initiated

Lead University: Colorado State University

Summary of Work: Map of irrigation systems, in Polonnaruwa area, from aerial photos and ground data was taken to Sri Lanka. Researched computer classification of Landsat digital data on 1985 Landsat data from Thailand receiving station.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Tim Martin	1.50 gpm	3.00 gpm	CSU	Agronomy

4. THAILAND - Special Studies

Code Number: 3-04-008-86

Status: Initiated

Lead University: Colorado State University

Summary of Work: Two CSU professors were sent to Thailand during this quarter. Dr. Dan Lattimore stopped by for a week following a visit to Sri Lanka, and Dr. Robby Laitos spent a week there following an activity in Nepal.

Dr. Lattimore suggested more technical support for the project, a more definitive job description for the ICO supervisor and input from Robby Laitos to Kanda Parakian for socio-economic data gathering. Dr. Laitos stopped by to meet with Kanda and did assist her in preparing a questionnaire. Dr. Laitos found considerable change since the initiation of the project in November and thought the potential for success was quite good. He did feel that the farmers had not been asked to make any behavioral changes yet, that there was still confusion about the roles of the ICOs and the researchers, and that some of the engineers in the Royal Irrigation Department still found the process new and different and needed to be persuaded to participate fully in the project.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Al Early	0.25 ppm	1.00 ppm	CSU	Agricultural Engr.
William Laitos	0.25 ppm	0.75 ppm	CSU	Sociology

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5. WORLDWIDE - Irrigation Project Analysis and Management

Code Number: 3-04-005-86

Status: Initiated

Lead University: Utah State University

Summary of Work: Nearly all emphasis to Water Management Synthesis given by the Main Systems team at Utah State University is toward the development of micro computer software which is to be applied to the analyses of irrigation projects. During this report period, the command area model development has been concluded. The Main System hydraulic model has reached a stage where it is being transferred to IBM systems. The model is effectively finished except that refinements are continuing to the graphics and the user interface.

The Main System allocation model was reported earlier as somewhat disappointing. This work has been reassigned to another student and being reformulated.

During this quarter the Main Systems team presented several overviews of this activity, including a one-day seminar in Washington. As a result of this presentation, several comments and questions have been raised and addressed. The next logical step at this point is to begin introducing the USAID Missions to the potential use of the USU software and micro computer. To this end, a fairly high priority has been given to work which would enhance the presentation, including actual computer-based demonstration.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
Wynn R. Walker	0.00 ppm	0.92 ppm	USU	Irrig. Engineering
Gary Merkley	1.50 ppm	1.50 ppm	USU	Irrig. Engineering
Willem Vlotman	0.00 ppm	1.00 ppm	USU	Irrig. Engineering

6. WORLDWIDE - Interfacing/Backstopping

Code Number: 3-04-010-86

Status: Initiated                      Lead University: Colorado State University

Summary of Work:

- Campus group is processing data from Pakistan.
- Campus group has been a support to the Thailand activity. Dan Lattimore and Robby Laitos both visited Thailand this quarter.
- Synthesizing of experiences from several project activities is underway. Results were shared at the Triad-Synthesis meeting at Logan in early March.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION AREA
	Quart.	Cum.		
Ramchand Oad	0.00 ppm	.50 ppm	CSU	Ag. & Chem. Eng.
Dennis Wendell	0.00 ppm	1.50 ppm	CSU	Sociology
Al Early	.25 ppm	.25 ppm	CSU	Ag. & Chem. Eng.
Dave Freeman	.50 ppm	.50 ppm	CSU	Sociology
Dave Karmeli	.74 ppm	.74 ppm	CSU	Ag. & Chem. Eng.
Dan Lattimore	.50 ppm	.50 ppm	CSU	Tech. Journ.
Sarwat Rizwani	2.00 ppm	2.00 ppm	CSU	Sociology
Ed Shinn	1.00 ppm	1.00 ppm	CSU	Sociology

7. WORLDWIDE Phase III: Comparative Analysis of Indirect Investment Strategies for Development of Small-Scale Irrigation Works

Code Number: 3-04-055-86

Status: Initiated                      Lead University: Cornell University

Summary of Work: Walt Coward travelled to Indonesia to confer with USAID/Jakarta and BAPPENAS Staff, with Indonesian researchers at LP3ES and the Pusat Pengembangan Agribisnis, and with Ford Foundation and IIMI staff. He visited Aceh province and decided that it would be an excellent site for the special study.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E. Walter Coward, Jr.	.5 ppm	.50 ppm	Cornell	Rural Sociology

C. FY86

C.4 Administration

Administration

1. CSU Administration FY 86 0-02-998-86

NAME	QUARTERLY 1/1/86-3/31/86	CUMULATIVE 3/31/86
Duneman, V.	.50 ppm	.50 ppm
Freeman, Dave	0.00 ppm	1.00 ppm
Lattimore, Dan	.50 ppm	2.00 ppm
Lindburg, Mary	2.25 ppm	4.50 ppm
Madsen, Al	0.00 ppm	1.00 ppm
McPhaul, Vonni	2.50 ppm	5.00 ppm
Meyer, Beverly	2.50 ppm	5.50 ppm
Schmehl, W.	0.46 ppm	0.92 ppm
Sheng, T	.50 ppm	.50 ppm

CSU PPM on Other Institution's Activities

Cornell University-Kenya 1-02-042-86

Ramchand Oad            0.00 ppm            1.50 ppm

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PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
E. Walter Coward, Jr.	.5 ppm	1.5 ppm	Cornell	Rural Sociology
Barbara D. Lynch	2.0 ppm	5.0 ppm	Cornell	Rural Sociology
Fua M. Hazelman	2.5 ppm	5.5 ppm	Cornell	Secretarial
Beth Rose	0 ppm	0.5 ppm	Cornell	Editing
Betty Van Amburg	0.75 ppm	1.5 ppm	Cornell	Secretarial
Grace Saatman	1.5 ppm	3.0 ppm	Cornell	Accounts Coordinating

WORLDWIDE - Administration

Code Number: 0-02-997-86

Status: Initiated

Lead University: Utah State University

Summary of Work: Two CPMT and JPMT meetings were held to facilitate the work of the WMS project. In January Jack Keller and Bryant Smith traveled to Washington, D.C. and discussed at both a CPMT and a JPMT level issues regarding the International Conference and joint field studies programmed for Africa, the annual progress report, new proposals submitted by USU, add-ons to current activities, assignment of new activities, and the computerization of the roster of water management specialists.

At the Logan JPMT meeting a discussion was held with regard to estimated levels of budget cuts to the project as the result of the Gramm-Rudman-Hollings bill. The universities agreed to submit a preliminary estimate of funding reductions of each university's UIA (university-initiated activities) from which it plans to take those cuts. Jack Keller and Bryant Smith talked with each subactivity coordinator where reductions can be made in individual budgets, what elements of those activities would be eliminated, and how to prioritize those cuts among activities.

JoAnn Biery went to Tucson to work out better arrangements for the financial accounting procedures of the WMS Project. She, with the other university accountants decided the precise procedures and format for quarterly financial reports and all other accounting arrangements to make their reports compatible. Also she familiarized herself with the roster and the computer program which is being set up for project accounting.

Revised proposals were examined and set up for the African Overview activity, the Finishing of Plan MERIS, Guatemala Model, the Rome Water Charges Conference, the IIC/Morocco activity, and the Irrigation Experience Transfer activity.

Travel arrangements, including tickets, visas, shots, advances and clearing travel expense claims were arranged and done for the following people going to the following places: (1) Kern Stutler, David James, Bill Farnsworth, and Larry Bond to Peru; (2) Lyman Willardson to Rwanda; (3) Andy Keller, Wynn Walker, Gary Merkley and Tom Cronkice to Washington, D.C.; (4) Dean F. Peterson to Pakistan; (5) Thomas Tenney, Bertis Embry and Bryant Smith to Guatemala; (6) Allen LeBaron to Europe; and (7) Jack Keller and Bryant Smith to Washington, D.C. Consulting agreements were made or revised for the following people: (1) Bert Embry; (2) Jean-Louis Balbo; and (3) Thomas Weaver. Complications were worked out regarding the final payment for Djime Adoum.

The final draft of the Egypt Irrigation Sector Survey was edited and typed for printing and typing on the African Overview was done. Finally, arrangements were made for the Irrigation System Management Task Force meeting in Logan.

Staffing:

PERSON	ACTIVITY TIME		AFFILIATION	SPECIALIZATION
	Quart.	Cum.		
<u>Professional:</u>				
Jack Keller	0.82 ppm	2.93 ppm	USU	Irrig. Engineering
Bryant D. Smith	2.25 ppm	4.50 ppm	USU	Institutional
<u>Support Staff:</u>				
Angie Ballam	0.75 spm	1.50 spm	USU	Secretarial/Typing
JoAnn Biery	3.00 spm	6.00 spm	USU	Secretarial/Acctg.
Linda Fields	2.00 spm	5.00 spm	USU	Secretarial/Typing
Donna Gossner	0.75 spm	1.50 spm	USU	Secretarial/Typing
<u>Students:</u>				
Camille Loveland	0.75 gpm	1.43 gpm	USU	Secretarial/Typing

C. FY86

C.5 Overall Administration



C. FY86

C.6 Summary FY86

## C.6 Summary FY86

A review of the activity categories of technical assistance, training and technology, and special studies shows the following profile relative to institutional status and specialization areas of persons employed in each activity. This summary does not include administrative activities.

TABLE V. Amount of Employment Time Relative to Organizational Affiliations

<u>AFFILIATIONS:</u>	<u>QUARTERLY EMPLOYMENT TIME:</u>
Colorado State University	29.53
Colorado State Graduate Students	1.50
Cornell University	4.50
Cornell University Graduate Students	8.25
Utah State University	1.75
Utah State Graduate Students	2.15
Independent Consultants	23.75
CID	1.00
Aquinas College	.25
Editor	.25

One important objective and activity of the WMSII project is that of increasing the quality and expanding the pool of expertise in water management. The universities are fulfilling this objective by involving professionals from other institutions in activities, employing persons who are not affiliated with any institutions, and by incorporating graduate students whenever appropriate.

The employment profile for the project activities of Utah State University Colorado State University, and Cornell University, is shown on Tables VI, VII, and VIII. These figures do not include administrative activities.

<u>SOURCE OF PERSONNEL:</u>	<u>QUARTERLY EMPLOYMENT TIME:</u>
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TABLE VI. Colorado State University Employment Profile

Colorado State University	29.53
Colorado State Graduate Students	1.50
CID	1.00
Consultants	23.50

TABLE VII. Cornell University Employment Profile

Cornell University	4.50
Cornell Graduate Students	8.25
Aquinas College	.25
Editor	.25

TABLE VIII. Utah State University Employment Profile

Utah State University	1.75
Utah State Graduate Students	2.15
Consultants	.25

## V. FINISHED ACTIVITIES

The information contained in this section refers solely to finished activities. When activities appear in this section, the specific work has been finalized and reports have been distributed. After an activity has appeared in this section of the quarterly report, it will not be included again until a final tabulation of funding has been completed. At that time, it will appear as a completed activity in the financial section.

FINISHED ACTIVITIES

A. Technical Assistance Activities

Country: Haiti

Title of Activity: Cayes Plain—Distribution of Benefits from Irrigation Development

Code Number of Activity: 1-02-084-85

Finished Date: February 28, 1986

Lead University: Cornell University

Description of Activity:

Laura Reynolds, Rural Sociology graduate student, travelled to Haiti. She spent approximately one month learning Creole, then relocated in the Cayes Plain area and to study the impacts of irrigation development on land values, land sales, and land consolidation in the project area. Reynolds returned from Haiti in late November to work on data analysis and report preparation. Her preliminary findings have been published as a working paper.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Laura Reynolds	Cornell	Rural Sociology

Significant Findings and Results:

The purpose of the Cayes Plain study was to provide USAID with some preliminary findings and to provide a basis for a master's thesis based on a more thorough analysis of the data gathered to lay the ground work for development strategy for irrigation in Haiti. Specifically, the mission requested site information on land tenure arrangements and the pattern of irrigation development and generalizable conclusions regarding the relationship between land tenure and efforts to improve the productivity of land.

Methods. Reynolds carried out her research in Foscave, a small agricultural community near the city of Les Cayes which had experienced significant increases in agricultural productivity as a result of thirty years of irrigation and related development efforts.

Data were collected during four months of residence in the Cayes plain region and Reynolds' research methodology interviews, household surveys focused on access to land and other resources and patterns of agricultural involvement, plot histories tracing changing land use and tenure arrangements and the occurrence of land conflicts, and document review.

A WMS working paper reviews research findings and analyzes the mechanisms through which land improvement projects may affect access to land and to the potentially increased product of that land.

Findings. Distribution of benefits from irrigation projects hinges on the local pattern of land tenure and distribution. Foscave data suggest that, while the majority of peasant households own at least some land, sharecropping is the primary means of access to land, particularly irrigated land.

The degree to which households benefit from irrigation development is directly

related to the amount of land owned within the irrigation perimeter. Those who owned land in Foscave before irrigation development have benefitted from the rising value of their assets; peasant households are often unable to buy lands because of high prices. Migrants from rapidly eroding hill lands in Foscave generally work as day labor and cannot buy irrigated land.

Land tenure insecurity and land conflicts do not appear have a major effect on agricultural production or cooperation in irrigation projects. In Foscave, land fragmentation and concentration are occurring simultaneously. Rich peasants and absentee landlords tend to buy land from one another, while small holdings change hands through inheritance.

Irrigation and related changes in agricultural production are making peasants more vulnerable to the vagaries of the national and international market systems. Peasant households are becoming less able to compete in the high input cost rice system. At the same time they find that sharecropping opportunities appear to be declining.

Recommendations. On the basis of her study, Raynold makes the following recommendations:

- (1) USAID should continue to support land tenure research, focusing attention on ownership patterns and on the collection of background maps and cadastral surveys;
- (2) The impacts of irrigation development should be assessed in the context of project monitoring unless further large-scale irrigation projects are considered. In the latter case an in-depth study should be done in the artibonite, an area with excellent land tenure data and severe problems with land appropriations.
- (3) Efforts should be made to restrict land sale to absentee owners, to eliminate bottlenecks in the fertilizer market, and to improve grain storage, preventing grain loss to rats.

(See special focus for additional information)

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
The importance of Land Tenure in the Distribution of Benefits from Irrigation Development Projects: Findings from the Cayes Plain, Haiti	February 1986	USAID/Haiti JPMT other scholars and professionals

Country: India

Title of Activity: Socio-Technical Feasibility Study

Code Number of Activity: 1-04-059-86      Finished Date: March 31, 1986

Lead University: Colorado State University

Description of Activity:

Examine preliminary farmer involvement activities associated with the Madhya Pradesh Minor Irrigation Scheme.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
William Laitos	CSU	Sociology

Significant Findings and Results:

A good start has been made in this farmer involvement study. The M.P. Irrigation Department has asked an Indian social scientist to begin these activities. It does appear that the irrigation officials realize that long-term, effective farmer involvement might best be started by people who have experience in this area and come from outside the Irrigation Department.

The Irrigation Department is searching for a solution to problems at Ratapani. Farmer involvement is a potential solution they would like to try, but they don't really know how to implement it. They view farmer involvement as a kind of magic wand that will solve many of their problems. This is a misconception. Unless proper physical and managerial improvements are made at Ratapani, any organizational efforts will likely fail. Farmers will not organize if there is not adequate control of the water throughout the system. If all of Ratapani is similar to what we saw, water control would be difficult at best. To have any chance of success, physical and managerial improvements must be made together with organizational improvements. Without these improvements, farmer organizational activities will fail, the system will continue to deteriorate, and then some irrigation officials will blame the concept of farmer participation for the failure.

To keep this from happening, limited funds available for maintenance will be used on the most critical areas of the system. Farmers also should be involved in deciding where and how the maintenance funds should be spent.

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
TDY Report: Madhya Pradesh Farmer Involvement Study	January 1986	JPMT

Country: Nepal

Title of Activity: Rapid Appraisal

Code Number of Activity: 1-02-087-85      Finished Date: March 26, 1986

Lead University: Colorado State University

Description of Activity:

From September 23 to December 13, 1985, and February 4 to March 2, 1986, personnel from WMS II conducted a series of rapid appraisals of irrigation systems in Nepal. Conducted in conjunction with AID/Nepal's Irrigation Management Project (IMP) to provide AID/Nepal and GON officials with relevant information on potential project sites. Based on this information, AID/Nepal and GON officials should be able to make informed decisions about where the Irrigation Management Project should be implemented.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Robby Laitos	CSU	Sociology
Al Early	CSU	Agricultural Engr.
John Baxter	Consultant	Agronomist
Darlene Fowler	CSU	Tech. Journ.

Significant Findings and Results:

The stated objectives and the activities were a success. A number of rapid appraisals were conducted and data were collected that should help decision-makers choose the best sites for IMP.

Seven criteria were used in the rapid appraisals. These criteria included:

1. Accessibility - As IMP is to generate "visible success stories," we felt it was important that potential sites be accessible to outsiders. Because of Nepal's rugged country and resulting logistical problems, we decided that potential sites must not be more than a half-day's walk from a motorable road.
2. Size - The IMP project paper presented general guidelines for a system's size.

DIHM Terai Systems	- 1,500 ha (one site) 2,000 ha (one site)
DIHM Hill Systems	- 500 ha (total)
Farmer-Managed Terai Systems	- 500 ha (total)
Farmer-Managed Hill Systems	- 500 ha (total)

3. Control of water source, including reliability - As most irrigation in Nepal is run-of-the-river, we felt that it was important that potential sites have control over their water source, and that this source be reliable.
4. Minimum external conflict - This criterion relates to number three, as external conflict over water could seriously hamper reliable water supplies.
5. Potential for expanding command area and cropping intensity - We wanted to study sites whose irrigated area and cropping intensity could be expanded due to improved management procedures.
6. Potential for increased crop production - This could result from improved management procedures, as well as using more improved agricultural technologies.
7. Replicability - Finally, we wanted to study sites that were representative of Nepali irrigation, so that lessons learned could be replicated in other Nepali irrigation systems.

These criteria were most applicable to DIHM systems. The above criteria were adapted when necessary for the farmer-managed systems.

Rapid appraisal methods in the study included the following:

1. Entry - Gather as much information as possible from written materials, past reports, and studies. Also identify key government and farmer informants who are particularly knowledgeable about the system. Don't reinvent the wheel; find out what other people have concluded about the site. (Unfortunately, there were usually no written reports on farmer-managed systems.)
2. Walk-Through - The entire team walks through the system from head to tail. Team members would generally walk together and exchange observations and insights. Key informants would also accompany the team.
3. Individual Studies - Individual team members would collect their disciplinary data through observations, field measurements, and informal interviews. Particularly useful was purposively contacting all socio-economic strata of the irrigation system: rich and poor, men and women, landlords and tenants.
4. Compare Findings - At the conclusion of individual data collection, the team members would reassemble to compare findings, correlate data, and draw tentative conclusions.
5. Strengths and Weaknesses - Finally, each team member would report his own subjective impressions of the system's strengths and weaknesses.

The rapid appraisal team did not draw overall conclusions, nor recommend specific sites, but conducted the Rapid Appraisals and represented the findings in reports. The actual site selection will be done by AID/Nepal and GON.

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
TDY Report: Nepal Rapid Appraisals Sept. 23-Dec. 13, 1985	December 23, 1985	JPMT
TDY Report: Completion of Nepal Rapid Appraisals	March 26, 1986	JPMT

Country: Pakistan

Title of Activity: Irrigation Consultation

Code Number of Activity: 1-02-060-86

Completion Date: 3/86

Lead University: Utah State University

Description of Activity: The purpose of this activity was to assess progress on the ISM and Water Management Projects of the Pakistan Mission and evaluate priority issues under consideration. This included a review and making recommendations on the ISM Project advisor's work, plans for in-country training including the role of universities and other institutions, recommend measures to the successful implementation of the CWM component of the ISM Project and evaluate in a general matter the usefulness of the extensive in-country training activities being provided through WMS II.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Dean F. Peterson	Consultant	Irrig. Engineering

Significant Findings and Results: USAID Pakistan's irrigation portfolio consists of the On-Farm Water Management (OFWM) Project, which is nearing completion and the Irrigation Systems Management Project (ISM). OFWM provides technical assistance for institutional development of the Provincial OFWM Directorates. ISM, which is closely linked to a parallel World Bank project, finances rehabilitation of canals (ISM/R) and is just beginning to finance an integrated program of Command Area Management (ISM/CWM). Besides rehabilitation of canals and watercourses by AID or World Bank on seven commands at distributary or branch level located throughout the country, ISM/CWM provides support for a large program of technical assistance. TA is now being handled through three expatriate contracts; a fourth contract is under negotiation.

The report suggests that USAID plan to continue its institutional development support under OFWM and given reasonable performance, remain involved in continuing ISM/R and ISM/CWM. It suggests an intervention investment involving possible reimbursement of recurrent costs initially to put in place a continuing program of improved maintenance and operation for systems where canals have been rehabilitated. Performance-based criteria for reimbursement are suggested.

Improvement of main systems operations using Operations Research (OR) type approaches will have to be delayed pending settlement of inter-provincial disputes over Indus water allocations. On a contingent basis USAID could consider supporting transfer of large deteriorating public tubewells to the private sector by encouraging their replacement as they are retired by smaller private ones, or investments in tile drain or surface drainage, depending on level of funding available and constraints to expatriate technical assistance. A number of policy and institutional questions are raised. Besides the main report on Post '87 strategy, shorter reports attached as Annexes to the main paper, were prepared as follows:

- Comments on Consultant's report on surface drainage;
- Spread of waterlogging and salinity, 1977-84;
- Comments on Consultant's plans for implementing canal maintenance;
- Water pricing and recurrent costs;
- Improvement of main systems operations;
- Review of design criteria for canal rehabilitation;
- Content of scope-of-work for a social science study;
- Review of ISM/Research plans;
- Irrigation Department perceptions about CWM; and
- Comments on ARD's draft Post '87 paper.

<u>Repor ts/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
Trip Report	3/86	USU, CSU, CU, CID AID/Washington

Country: Peru

Title of Activity: Plan MERIS and Finishing Plan MERIS

Code Number of Activity: 1-01-112-84 & 1-02-061-86      Completion Date: 3/86

Lead University: Utah State University

Description of Activity: Utah State University and Cornell University were invited by USAID/Peru through a buy-in to the WMS II Project to assist in the design and implementation of a project for training and technology transfer for improved irrigation water management in small irrigation subprojects of Plan MERIS specifically and in the Peruvian Sierra in general.

WMS II sent a five-member interdisciplinary team to Peru in October, 1984 to design the effort and write a plan of work for the activity which came to be known as "Plan Piloto." The objectives of the plan of work were developed in an interdisciplinary approach which included four major components: research, extension, agricultural economics and rural sociology. Plan Piloto was implemented by hiring a project technical team consisting of Peruvians in the four disciplines plus an engineer as field team leader. Plan MERIS I counterparts to the technical team were provided in each discipline and the WMS II short-term team provided interim monitoring, supervision and evaluation through the termination date of December 31, 1985.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
R. Kern Stutler	USU	Irrig. Engineering
David James	USU	Soil Science
William Farnsworth	USU	Ag. Extension
Larry Bond	USU	Ag. Economics
Mark Lusk	USU	Sociology
Barbara Lynch	Cornell	Rural Sociology
Dale Allred	Consultant	Engineering
Bruce Anderson	Consultant	Irrig. Engineering
Ivan Corbridge	Consultant	Ag. Economics
Mark Anderson	Consultant	Irrig. Engineering
Renato Rossi	Consultant	Irrig. Engineering
Don Kidman	Consultant	Agronomy
Luis Barrios	Consultant	Extension
Julio Guerra	Consultant	Administration
Jose Luis Villaran	Consultant	Sociology
Carlos Villanueva	Consultant	Ag. Economics
Carlos Nonone	Consultant	Agronomy

Significant Findings and Results: Several problems developed as the project unfolded, many of them related to the very short time period in which to accomplish the proposed activities. Vehicles and the sprinkle irrigation

system did not arrive at the site. Budgeted operating funds were hard to access. Some of the activities contemplated had to be deleted, in particular the satellite studies in other subprojects in the Department of Cajamarca. Field work suffered several delays due to lack of inputs, proper seed, etc. Thus, it was necessary to provide an additional three months to analyze the collected data and write the final report to "finish Plan Piloto." Despite these problems the project moved quite well and resulted in some very positive achievements.

Agronomic research activities of Plan Piloto were of two kinds: irrigated crop production and a drainage study. An intensive interaction study of nitrogen and irrigation intensity on two varieties of potatoes resulted in a response both to irrigation and nitrogen fertility. The maximum average yield in the experimental plots with the most intensive management, in terms of irrigation and fertility was several times that of the average potato yields in the area.

The drainage study on 45 ha in Lower Huayobamba indicated that the principal source of groundwater that is being forced to the surface in the affected area is the unlined main canal.

One of the principal activities of the extension component was training in irrigation water management. This was carried out by use of the video modules developed at Utah State University as well as practical hands-on training in such principles as water measurement, infiltration, use of siphon tubes, determining soil moisture content and scheduling irrigation. This was followed by season-long experience in producing a crop under irrigation. Twenty-nine Plan MERIS technicians received this training and as a result there now exists a core of trained people in Cajamarca. In addition, a total of 91 farmers received training to various degrees regarding irrigated crop production.

Crop production and cost data were collected from 17 farm fields during the rainy season and from 16 of the same fields in the dry season. Costs and returns were determined for these both on a farm and a crop basis. Field trial data were analyzed to determine net benefits from irrigation and nitrogen fertilizer. The highest intensity of irrigation and highest fertilizer levels indicate high payoffs for potatoes, however, beans do not appear to be profitable under irrigation.

Based on a single year's data, it appears that net profits can be increased significantly with improved cultural and water management practices in the production of potatoes in the Sierra. The payoff appears to be sufficient for a small farmer to seriously consider investing in an irrigation infrastructure and adopting improved cultural practices.

Plan Piloto and Plan MERIS were studies in the context of the history of irrigation management and household productive strategies with a number of lessons learned: 1) water is used not only for agriculture, but for domestic, hydro-electric livestock and other purposes; 2) where community members request a project and they are fully involved in the planning process, contributions of labor and cash are more likely to be forthcoming. Full local participation is

more likely to occur if local leaders are included in the promotion and planning; and 3) projects should only be undertaken with ample farmer participation in planning, construction, and operation and maintenance through water user organizations.

The major objective of Plan Piloto was to develop a model for improving land and water use in the Sierra. The model is visualized as an evolutionary process involving irrigation research, demonstration, training and economic and sociological research. Plan Piloto is both the prototype and the advanced testing ground for the model.

The six stages of irrigation project development, that is, initiation, planning and design, construction, operation, maintenance and modification, and evaluation, are considered to replicate themselves within the model. The model should contemplate phasing into irrigation project development in such a way that by the time the irrigation project is completed and ready to deliver water to the users, a trained cadre of technicians is in place to assist and train the farmers in irrigated crop production. Thus, ideally, the model should be initiated at least by the latter part of stage two (planning and design) of project development.

Plan Piloto demonstrated that Peruvian technicians are eager and capable of learning the required skills and teach them to farmers who are in turn willing to use them in their irrigated crop production.

### Recommendations

Based on the very successful first year of Plan Piloto and its results and accomplishments, it is recommended that the activity be continued for a minimum of two years in San Marcos, in order to fulfill the contemplated objectives of the original plan of work for plan Piloto. Every effort should be made to maintain the Peruvian technical team intact and to reestablish their positions in San Marcos. It is also important that the Plan MERIS I counterparts be maintained in San Marcos.

Any amplification of Plan Piloto in 1986 should be limited to the other subprojects in the Department of Cajamarca. This modest expansion could build upon the limited training and exposure to water management that was accomplished with the technicians and farmers in the other subprojects during 1985. After a minimum of one, and preferably, two more years of experience the model may be transferred to other areas of the Sierra. Plan Piloto should not be picked up at this time and transplanted to an entirely new location.

In a continuation of Plan Piloto particular emphasis should be given to equipment and supply needs for the research and demonstration work as well as sociological and economic data gathering.

In summary, despite various problems, Plan Piloto was a very successful initial effort to improve water and land use in the Sierra through research, demonstration and training in an interdisciplinary mode. It merits the continued support of USAID and Plan MERIS.

Reports/Documents

Completion Date

Distribution

Final Report - San Marcos  
Plan Piloto

3/86

USAID/Peru

Various Trip Reports

AID, CID, CU  
CSU

Country: Rwanda

Title of Activity: Water Management and Drainage Expert

Code Number of Activity: 1-02-062-86

Completion Date: 3/86

Lead University: Utah State University

Description of Activity: The AID Mission asked WMS II to carry out an exploratory survey which was to include a study of water management practices in the Smaller Marais, determine the major problems encountered, particularly with respect to drainage, flood control, water storage, irrigation techniques and related practices; identify any immediate improvements that can be recommended to farmers through appropriate extension themes; identify areas for research; and recommend lines of possible donor assistance in the context of host country programs and plans for the development of Marais.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Lyman S. Willardson	USU	Drainage

Significant Findings and Results: Marais areas in Rwanda represent a considerable potential for increased food production in the country. Development of the Marais can fall into one of two categories, bringing into cultivation new areas not previously cultivated, and improvement of the water and land management in the Marais already developed by farmers and by the Government. Improvement of existing small Marais developments will be the most rapid and cost-effective way of increasing food production in the short run. Development of larger Marais will require careful preliminary studies and greater capital investments.

Improvement and future development of Marais will require a change in the basic premise of development. In the past, the Marais have been seen as swamps requiring drainage. To be properly developed, they must be considered as irrigation water management projects with drainage being only an incidental part of the irrigation water management scheme.

It is recommended that USAID seriously consider funding a project for development of design criteria, construction procedures and extension materials to provide farmers and the Government with effective guidance for Marais improvement and development. These criteria would be useful throughout the developing world.

It is also recommended that funds be provided to assist Rwanda in the immediate expansion of areas of rice production for which they already have the necessary design criteria, experience and expertise. With such funding, projects already planned and under construction for rice culture in Marais could be quickly brought into production.

Reports/Documents

Completion Date

Distribution

Trip Report

3/86

USU, CSU, CU, AID/W

Exploratory Study of  
Rwanda's Wetlands

3/86

USAID/Kigali, CID,  
CSU, CU, AID/W

FINISHED ACTIVITIES

B. Training and Technology

Country: Worldwide

Title of Activity: Brochures, Newsletters, Publications

Code Number of Activity: 2-12-044-84      Finished Date: January 1986

Lead University: Colorado State University

Description of Activity:

Prepare project newsletter, brochures and reprint various publications.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Darlene Fowler	CSU	Technical Journalism

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
Water Management Review	October 1985	JPMT Mailing to USAID Mission Mailing to Third World Professionals
Water Management Synthesis Brochure	September 1984 January 1985	JPMT, universities, visitors, AID
Water Management Synthesis Publications Brochure (3 printings)	September 1984 January 1985 August 1985	JPMT, universities, visitors, AID USAID Mission

FINISHED ACTIVITIES

C. Special Studies

Country: Sri Lanka

Title of Activity: Impact of Physical and Operational Rehabilitation on Equity of Water Distribution and Performance of Farmer Organizations

Code Number of Activity: 3-04-097-84      Finished Date: February 28, 1986

Lead University: Cornell University

Description of Activity:

This study assesses experience in the Left Bank/Gal Oya, Sri Lanka in shifting and sharing responsibilities for main system management, with a focus on activities such as measuring and monitoring water deliveries with farmer participation. Zolezzi's draft report was published as a working paper.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Hammond Murray-Rust	Cornell	Irri. Engineering
Oscar Zolezzi	Cornell	Irri. Engineering

Significant Findings and Results:

This special study was carried out during the 1984 yala or dry season as a complement to the ongoing activities carried out by Cornell University in conjunction with USAID/Sri Lanka and ARTI. WMS II contributed to the special study by providing support for short-term assistance by Hammond Murray-Rust. Murray-Rust developed the scope-of-work and methodological guidelines for a long term research project carried out by Agricultural Engineer Oscar Zolezzi.

Research Objectives. In general, the objective of the special study was to gather new data needed for further refinement of the Gal Oya farmer organization effort. The following are the specific objectives of the study:

- (1) Evaluation of changes in main system operations in the Gal Oya scheme and their impact on the capacity of farmer organizations to develop water allocation and distribution procedures and to monitor water deliveries and on-farm water conditions. This evaluation was carried out in collaboration with the Irrigation Department, the PRC and ARTI.
- (2) Evaluation of the managerial implications of changing main system flows from rotation to continuous flow--both in terms of measurement and monitoring procedures, and assistance to the Irrigation Department/PRC in the development of an operational plan for the Gal Oya system.
- (3) Assessment of the relative importance of physical and operational changes on the overall performance of the Gal Oya scheme in terms of farmer-Irrigation Department cooperation and on the adoption of better

water management practices. This assessment would be undertaken in conjunction with ARTI.

Methodology. Field work was conducted in three areas of the Gal Oya Left Bank. In the Uhana Branch, UB 9, UB 8, UB 10, and UB 11 were selected as examples of medium and small channels close to the head of the system. In Mandur Branch, M 5 and M 12 were selected for their proximity to the middle and to the tail.

Water height measurements were taken daily on all of the field channels served by each of the tributaries, as well as on some points along the tributary where good sections were found. The heights were then calibrated by measuring the corresponding water flows with a pygmy current meter. From each field channel, two fields were selected at the head and tail, and daily observations were taken of water conditions as well as inputs, management, and yields. In addition, survey data was used to determine farmer attitudes and understandings vis-a-vis irrigation and actual water management practices.

Findings. Zolezzi lists the following findings in his preliminary report:

- (1) At the start of the season, cash was in short supply due to the previous season's flood damage. This increased the staggering of rice planting and did not permit farmers to use all of the inputs that are recommended.
- (2) The 25 percent moisture depletion point, where the rice plant experiences significant stress, is reached in two to five days for soils with low to average clay content in Gal Oya.
- (3) According to the information from the inclined gauge, water use is estimated to be in the neighborhood of 14 to 24 mm/day in normal and very sandy soils, respectively.
- (4) Even with the plentiful supply of water, the tails of long distributaries and long field channels did not receive an equitable share of water; although, judging from the yields obtained in these areas, it was almost adequate to produce a normal yield.
- (5) There are still some places where there are defects in the rehabilitated structures that interfere with water flow.
- (6) Small distributaries and field channels and some of the field channels close to the tail but with adequate water supply used too much water.
- (7) Some farmers were keeping their poles open continuously draining water from the tails of their fields. This practice should be discouraged, especially if this system is to be used in water-short years.
- (8) According to the average water use in the field channels, an irrigation depth of 130 to 160 cm for normal and low clay content soils in Gal Oya is adequate to produce a good paddy yield.
- (9) According to my observations, the continuous system of water

distribution is easier for the Irrigation Department to manage and is preferred by the majority of the farmers.

- (10) Even with plentiful water, rotations are needed between heads and tails of medium and long distributaries to be able to serve the tails adequately.
- (11) One option that was suggested by farmers is to have a combination of continuous flow for the first two months and then switch to an intermittent or a rotation system.
- (12) Water availability conditions in Yala 1984 were extremely good (average WAI was 188). Only a few places did not get enough. But the highest WAI do not necessarily correlate with the highest yields.
- (13) In water-short years, water can be economized during the land preparation stage. Some farmers can manage with as little as 35 cm while the average is 50 cm.
- (14) Preemergence weedicides are recommended when the water supply is not reliable.
- (15) Height of ponding was reduced on the average from 8 to 5 cm as a result of continuous water flow.
- (16) With continuous flow, there is generally less work for the farmer to do to get the water. For the first time, this season it was not necessary to guard the water supply at night.
- (17) With continuous flow, farmers may be willing to grow other crops such as vegetables, chilies, and dhal.
- (18) There has been a general improvement in relations between farmers as a result of the formation of the farmers' organizations.
- (19) There is no mechanism in the organization to solve the problems of small minorities of farmers. They only get together when the majority are affected.
- (20) Farmers have a better relation with the TA than with the other government agents. But the relations of IOs with the TAs could be improved by reminding the former of their role as facilitators and not as messengers.
- (21) The representatives that have been selected from the FO have been very successful as spokesmen for the farmers, and they keep themselves well informed by meeting regularly.

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
Gal Oya Water Management: Preliminary Report on a Special Study carried out in Ampara During Yala 1984	February 28, 1986	ARTI, Sri Lanka Mission, JPMT.

Country: Worldwide

Title of Activity: Rapid Irrigation Project Appraisal Using Remote Sensing System Systems

Code Number of Activity: 3-04-042-85

Completion Date: 3/85

Lead University: Utah State University

Description of Activity: The principal objective was to test the use of remote sensing systems as methods for rapid appraisal of irrigation systems. The specific objectives were: (1) to determine the specific factors related to irrigation project appraisal which would be identified from the aerial photographs and Landsat data and that were useful indicators for the evaluation of irrigation projects; (2) to identify the interpretations of the data which could be made to characterize the status and long-term dynamics of irrigation projects; (3) to determine the nature and extent of required groundtruth and the consequences of the timing of such measurements or observations on the adequacy of the remote sensing application; and (4) to apply the remote sensing techniques to support the CSU irrigation rehabilitation activities in Sri Lanka and serve as a case study in training activities.

The final analysis by IRIS International was submitted during this quarter. All Water Management Synthesis funded effort was concluded. There is a small level of ongoing follow-up assessment being conducted by Mrs. Amala Jayasakara, but on separate funding. A final report is planned at the end of FY 86.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Wynn R. Walker	USU	Irrig. Engineering
Amala Jayasakaran	USU	Irrig. Engineering
IRIS International	Subcontractor	Landsat Data

Significant Findings and Results: The more difficult task is not the analysis of remote sensing data as one would expect, but in fact the acquisition of data. The official down-link in the south Asian region is in India. This data are for practical purposes unavailable because of Indian bureaucratic problems. Some data is down-loaded to Thailand and Indonesia, but while this data are more accessible, it is not complete. Thus, it appears at this point that a separate down-link would be necessary if this information were to be usable in rapid irrigation project appraisal.

If longer lead times are available, it is possible to use satellite data analyses for several important and interesting evaluations. The area of the irrigation system actually being irrigated can be quickly and easily measured. Various crops can be identified and their relative vigor detected. From such information, statistical analyses can determine the variations in project effectiveness as a function of distance from headworks or for major conveyance

channels. Analyses of such data over a multiple year period can evaluate the long-term evaluation of a project. Utah State University does not have future activities planned in this area, but the results are promising enough to justify further special study investment at some point.

Landsat analysis has been able to show patterns of change and consistent problem areas that can focus the direction of the field investigation. It can provide a perspective on the long-term operation of the system that a field observer can not provide in a single season or even in a one or two year analysis. It is also not subject to bias arising from distortions introduced by non random sampling.

Some of the results from this study confirm previous field studies while other conclusions evidence that is contrary. The previous study by ARTI observed significant differences in yield depending on the location of the unit from the head of a main canal, the farther the units from the canal, the lower the yield. The data was from the dry seasons in 1980 and 1981 and set seasons in 1979/1980 and 1980/1981. This analysis supports the dry season findings, but not those of the wet season.

In defense of the Landsat analysis the field study had a limitation in sample size, a starting sample of 500 and only 235 in 1980 and 191 farmers reporting in 1981. Bias in the self-selected reporting may make the conclusions less valid than if the data on the full sample were collected. The validity of the conclusions may also be compromised if data collection is restricted to a single section of the irrigation area since year to year difference in areas are great.

Recent field work also support the value of Landsat analysis. The July 1985 data show a dramatic decrease in the cultivation of rice. This was not observed by the field investigator because areas in the east were not visited. These areas were the ones with the most significant decrease in rice cultivation.

This is not an argument to replace field investigations. Landsat should be used to focus and supplement not as a substitute for data collection in the field. Field investigation using Landsat analysis can concentrate on areas of high and low productivity to determine if the Landsat results are valid and if so to find the underlying causes.

The analysis has provided an overview for field work prior to the planned rehabilitation of the system. While there are no specific field samples with which to compare the Landsat results with the actual field conditions, the consistency of findings of the seasonal data seems to indicate a high level of reliability.

<u>Reports/Documents</u>	<u>Completion Date</u>	<u>Distribution</u>
Landsat Analysis of Gal Oya Right Bank Irrigation Project	2/86	USU, AID/W

Country: Worldwide

Title of Activity: Irrigation Systems Modeling Workshop

Code Number of Activity: 3-04-043E85

Completion Date: 3/86

Lead University: Utah State University

Description of Activity: The purpose of this activity was to assess the engineering and economic aspects of the USU irrigation systems analysis program via a select group of internationally experienced and interdisciplinary experts. The workshop reviewed the modeling strategy and its applicability to various irrigation projects. The participants were given actual experience with detailed analysis of the Thai and India case studies.

Staffing:

<u>Personnel</u>	<u>Affiliation</u>	<u>Specialization</u>
Dean F. Peterson	Consultant	Irrig. Engineering
Wynn Walker	USU	Irrig. Engineering
Jack Keller	USU	Irrig. Engineering
Gaylord Skogerboe	USU	Irrig. Engineering
Sam Johnson	U of Illinois	Civil Engineering
Bryant Smith	USU	Law/Institutions
Allen LeBaron	USU	Ag. Economics
Richard McConnen	Montana State	Ag. Economics
David Manz	U of Calgary	Ag. Economics
James Loftis	CSU	Systems Operations

Significant Findings and Results: The workshop participants played the devil's advocate to access the potential weaknesses of the models. The participants concluded that there were no major blind spots or flaws in the models, as far as they could tell. There was considerable discussion with regard to economic and some technical factors of the UCA model and based on suggestions some modifications were made. The engineering aspects of the models held up quite well and the hydraulic model was presented with little criticism. The allocation model was discussed in greater detail and some refinements were suggested to improve it. The case studies were considered to be somewhat confusing to several participants at first, but as they became familiar with the intent of the case studies and the graphic orientation of the computer modeling they felt the case studies were basically useful. There was considerable discussion with regard to the applicability of the models to real situations and questions were asked about the data requirements in order to adequately run the models. In general the Main System group heard suggestions with regard to factors they had already planned on making themselves.

The social aspects of the model were not explored in any detail. The participants considered this as the next important step in their evaluation.

Reports/Documents - None

VI. COMMITTEES

Project management has identified various issues to be addressed via the committee system. The following information refers to the \_\_\_\_\_, chaired by \_\_\_\_\_ and the \_\_\_\_\_ chaired by \_\_\_\_\_.

NONE REPORTED THIS QUARTER

## VII. ROSTER UPDATE

One contract required WMS II activity is the establishment of a human resource file or a professional roster of persons interested in water management work. The activity is part of the overall management unit of the WMS II Project.

In order to initiate the activity, a standard roster form was developed which would acquire relevant information in the areas of professional competence, education, work experience, availability for overseas assignments, language competence, geographic preferences, and other information. Approximately 400 forms were then sent through AID and the CID systems, as well as Colorado State University, Cornell University and Utah State University. In addition, approximately 100 forms were subsequently sent to persons who made inquiries about the project.

The acquired data were stored on the microcomputer data base system for general usage by the project. Thus, the data were recorded, filed, retrievable, and can be summarized. The computerized roster of water management specialists facilitates the identification and selection of professionals in agronomy, economics, engineering, sociology, Women in Development (WID), and other disciplines for WMS II assignments.

The roster has been used by DA coordinators for Bangladesh (1983), Sri Lanka (1982 and 1983), and India (1984) DA Workshops. In addition, the roster has been used to identify suitable professionals for short-term technical assistance activities overseas.

As of December 31, 1985 approximately 221 persons were listed on the roster. A total entry of 39 in agronomy, 38 in economics, 83 in engineering, and 61 in sociology and other disciplines.

VIII. FINANCIAL REPORT

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)QUARTERLY REPORT  
FOR THE PERIOD ENDING MARCH 31, 1986FISCAL YEAR 1986 WORK PLAN ACTIVITIES  
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ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH DEC. 31, 85	CURRENT QUARTER	THROUGH MAR. 31, 86	
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ADMINISTRATION:								
-----								
WORLDWIDE								
EPD ADMINISTRATION	0-01-995-86	CID	APPR	63,157	0	0	0	63,157
EPD ADMINISTRATION	0-01-999-86	CID	FORM	191,810	32,568	102,549	135,117	56,693
CU ADMINISTRATION	0-02-996-86	CU	FORM	208,124	34,669	41,283	75,952	132,172
USU ADMINISTRATION	0-02-997-86	USU	FORM	233,089	55,907	34,570	90,477	142,612
CSU ADMINISTRATION	0-02-998-86	CSU	INIT	246,600	62,960	51,964	114,924	131,676
CLOSED OUT CU ADMIN	0-99-996-84	CU	TERM	0	-14,326	0	-14,326	14,326
CLOSED OUT USU ADMIN	0-99-997-84	USU	TERM	0	-3,804	0	-3,804	3,804
CLOSED OUT CSU ADMIN	0-99-998-84	CSU	TERM	0	-1,328	0	-1,328	1,328
				-----				
TOTAL ADMINISTRATION \$				942,780	166,646	230,366	397,012	545,768
-----								
TECHNICAL ASSISTANCE:								
-----								
AFRICA:								
African Irrigation Overvi	1-02-108-84	USU	INIT	169,651	162,112	8,230	170,342	( 691)
CHAD:								
Irrigated Agric. Assessme	1-02-073-85	USU	INIT	116,022	84,253	19,735	103,988	12,034
EGYPT:								
Irrigation Sector Assessm	1-02-052-86	USU	FORM	128,383	52,432	41,778	94,210	34,173
IMS Evaluation Team	1-02-072-85	CSU	COMP	56,009	46,610	7,959	54,569	1,440
EL SALVADOR:								
PP Development	1-02-077-85	USU	FINI	164,814	163,856	-9,166	154,690	10,124
HAITI:								
Cayes Plain-Distrib. Bene	1-02-084-85	CU	FINI	10,197	969	9,040	10,009	188
INDIA:								
TA/Flid Stu/TR-Maha Irr T&	1-01-021-84	USU	FINI	415,096	412,741	2,167	414,908	188
Socio-Technical Feas. Stu	1-04-059-86	CSU	FINI	3,183	0	1,320	1,320	1,863
INDONESIA:								
Small-scale irr. workshop	1-02-009-85	CU	INIT	200,658	56,935	568	57,503	143,155
JORDAN:								
Jordan Advisory Services	1-02-028-85	USU	APPR	10,338	0	0	0	10,338
KENYA:								
Small Scale Irrig. Analy.	1-02-042-86	CU	INIT	105,516	34,634	44,262	78,896	26,620

FISCAL YEAR 1986 WORK PLAN ACTIVITIES

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH DEC. 31, 85	CURRENT QUARTER	THROUGH MAR. 31, 86	
MOROCCO:								
PID Development	1-02-002-85	USU	FINI	47,629	48,663	39	48,702 (	1,073)
NEPAL:								
Nepal Rapid Appraisal	1-02-087-85	CSU	FINI	125,690	50,325	47,745	98,070	27,620
PAKISTAN:								
Irrigation Consultation	1-02-060-86	USU	APPR	37,986	0	23,595	23,595	14,391
PARAGUAY:								
Technical Assessment	1-02-067-86	USU	FORM	9,721	0	0	0	9,721
PERU:								
Plan MERIS	1-01-112-84	USU	INIT	579,000	513,665	34,620	548,285	30,715
Finishing Plan MERIS	1-02-061-86	USU	APPR	60,000	0	18,830	18,830	41,170
RWANDA:								
Water Management & Drainage	1-02-062-86	USU	APPR	9,051	0	197	197	8,854
SRI LANKA:								
Long Term Wtr Mgmt Speci	1-01-109-84	CSU	INIT	216,137	158,266	21,688	179,954	36,183
Socioeconomic studies - r	1-02-004-85	CU	INIT	82,673	25,954	53	26,007	56,666
Model Calibration	1-02-005-85	USU	INIT	37,600	44,380	-547	43,833 (	6,233)
ARTI-Continuing Support	1-02-045-86	CU	FORM	72,440	0	0	0	72,440
Ext. of LT Water Mgt Spec	1-02-047-86	CSU	FORM	56,725	0	0	0	56,725
FY 86 Central Support	1-02-048-86	CSU	INIT	66,782	0	25,172	25,172	41,610
WORLDWIDE:								
Meeting recurrent costs	1-02-062-85	CU	FINI	51,345	40,941	90	41,031	10,314
Peace Corps Support	1-02-078-85	CID	COMP	15,331	15,331	0	15,331	0
Thunder & Assoc.	1-03-066-86	CID	APPR	5,462	5,462	0	5,462	0
Zimbabwe:								
Small Scale Irrigation	1-02-050-86	CSU	APPR	58,000	0	14,324	14,324	43,676
TOTAL TECHNICAL ASSIST. \$				2,911,439	1,917,529	311,699	2,229,228	682,211
TRAINING AND TECHNOLOGY TRANSFER:								
BOLIVIA:								
Course - On-Farm Water Mn	2-01-011-85	USU	FINI	4,383	4,384	0	4,384 (	1)
DOMINICAN REPUBLIC:								
On-Farm Water Mngment Cou	2-14-030-85	USU	APPR	9,909	0	0	0	9,909
ECUADOR:								
Finish Original Training	2-03-054-84	USU	FINI	167,676	159,095	664	159,759	7,917
GUATEMALA:								
Evaluation of Guatemala M	2-02-064-86	USU	APPR	28,252	0	10,349	10,349	17,903
INDIA:								
Denn. Workshop	2-02-051-86	USU	INIT	90,147	70	133	203	89,944
Video Modules	2-03-075-85	USU	INIT	74,001	65,219	839	66,058	7,943
Senior Officer's Workshop	2-04-053-84	USU	INIT	74,337	36,653	13,563	50,216	24,121
MOROCCO:								
Internat'l Irrigation Cen	2-04-027-86	USU	FORM	58,997	0	53	53	58,944

FISCAL YEAR 1986 WORK PLAN ACTIVITIES

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH DEC. 31, 85	CURRENT QUARTER	THROUGH MAR. 31, 86	
<b>PAKISTAN:</b>								
Mngmnt Officials Trngng -	2-01-065-85	CSU	INIT	28,628	0	19,593	19,593	9,035
Daluchistan DA	2-02-065-86	CSU	APPR	164,235	0	47,320	47,320	116,915
Sr Officer's Workshop/Sem	2-04-019-84	CSU	INIT	85,281	33,068	-572	32,496	52,785
Management Tr. Key Offici	2-04-080-85	CSU	COMP	14,583	13,026	1,404	14,430	153
Baseline Survey	2-04-083-85	CSU	COMP	41,554	40,968	240	41,208	346
Micro Computer Workshop	2-14-032-85	CSU	INIT	44,821	41,743	-725	49,468	( 4,647)
Command Water Management	2-14-114-84	CSU	INIT	932,410	589,149	200,317	789,466	142,944
<b>THAILAND:</b>								
Maintenance Workshop	2-14-088-85	USU	FORM	17,129	10,835	-69	10,766	6,363
<b>WORLDWIDE:</b>								
Expert Cons. on Water Cha	2-02-063-86	USU	APPR	18,475	0	551	551	17,924
Rev&Development of Videot	2-03-004-86	CSU	INIT	50,215	15,246	5,085	20,331	29,884
Seminar Irrig. System Reh	2-05-006-86	CSU	INIT	105,818	255	15,703	15,958	89,860
Seminar on Irrig System R	2-05-033-85	CSU	FINI	53,030	48,451	5,687	54,138	( 1,108)
Conference on Lessons Lea	2-07-019-86	CU	INIT	65,251	0	0	0	65,251
Irrig. Experience Transfe	2-07-026-86	USU	APPR	101,276	0	0	0	101,276
Strategy for Training	2-09-049-84	CSU	FINI	27,378	21,845	2,487	24,332	3,046
Professional Visitors	2-11-016-86	CU	INIT	14,280	0	0	0	14,280
Professional Visitors & N	2-11-039-84	CSU	INIT	10,284	8,616	582	9,198	1,086
French Language Training	2-11-041-85	USU	INIT	10,650	1,660	287	1,947	8,703
Brochures, Newsletters, P	2-12-044-84	CSU	FINI	39,976	40,494	306	40,800	( 824)
Revision of Training Manu	2-13-003-86	CSU	INIT	44,775	4,596	6,859	11,455	33,320
Rehabilitation Gene Revis	2-13-018-86	CU	INIT	66,840	5,741	8,544	14,285	52,555
Triad Synthesis Phase I	2-14-035-86	CSU	INIT	9,998	0	0	0	9,998
Triad Synthesis Phase I	2-14-036-86	USU	FORM	10,000	0	39	39	9,961
Triad Synthesis Phase I	2-14-037-86	CU	INIT	10,000	0	5,356	5,356	4,644
Lessons Learned: Irr Sys	2-14-039-85	USU	INIT	103,209	16,123	27,144	43,267	59,942
Syn-Local Resource Mob. I	2-14-053-86	CU	FORM	82,810	0	0	0	82,810
WKSP Anal. Irrig. Bureaucra	2-14-054-86	CU	FORM	63,703	0	0	0	63,703
Irr Sys Mgmt Task Force	2-14-060-84	USU	INIT	44,284	9,504	7,444	16,948	27,336
<b>TOTAL TRAINING AND TECHNOLOGY TRANSFER \$</b>				<b>2,768,595</b>	<b>1,166,741</b>	<b>387,633</b>	<b>1,554,374</b>	<b>1,214,221</b>
<b>SPECIAL STUDIES:</b>								
<b>AFRICA:</b>								
JFS-Rehab-Country A	3-04-500-86	CSU	FORM	120,654	0	0	0	120,654
JFS Workshop in Zimbabwe	3-04-500A86	CSU	APPR	21,192	0	0	0	21,192
JFS-REHAB-COUNTRY B	3-04-501-86	USU	FORM	124,700	0	0	0	124,700
JFS-Comm Mgn'd Cuntrey C	3-04-502-86	CU	APPR	149,474	0	0	0	149,474
JFS-Comm Mgn'd Country D	3-04-503-86	CIO	FORM	312,572	0	0	0	312,572
Africa Plann Act	3-04-505-86	CU	FORM	0	13	0	13	( 13)

FISCAL YEAR 1986 WORK PLAN ACTIVITIES

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH DEC. 31, 85	CURRENT QUARTER	THROUGH MAR. 31, 86	
MOROCCO:								
Moroccan Case Studies	3-04-043C85	USU	APPR	29,433	16,515	8,980	25,495	3,938
NIGER:								
Small Scale Irrigation St	3-04-023-86	CU	INIT	109,577	6,406	25,438	31,844	77,733
Trad & Devel Small-Scale	3-04-052-85	CU	INIT	108,081	35,586	7,918	43,504	64,577
SRI LANKA:								
Interfacing OF Water Mana	3-04-009-86	CSU	INIT	165,361	12,718	36,356	49,074	116,287
Landsat 86 - Remote Sensi	3-04-011-86	CSU	INIT	45,001	8,512	8,680	17,192	27,809
Phys & Oper Rehab Impact	3-04-097-84	CU	FINI	26,492	19,244	-18,965	279	26,213
THAILAND:								
Overseas '86	3-04-009-86	CSU	INIT	50,027	12,540	15,416	27,956	22,071
Thailand Case Study	3-04-043B85	USU	INIT	44,067	38,254	4,076	42,330	1,737
WORLDWIDE:								
Irrig Proj Analysis and M	3-04-005-86	USU	FORM	155,012	0	21,189	21,189	133,823
Interfacing O.F. Water Mg	3-04-010-86	CSU	INIT	103,561	7,604	19,533	27,137	76,424
Rapid Irr. Project Apprai	3-04-042-85	USU	INIT	73,710	64,262	8,772	73,034	676
Irrigation System Model D	3-04-043A85	USU	INIT	87,623	88,964	-2,951	86,013	1,610
Interdisciplinary Mn Sys	3-04-043E85	USU	INIT	27,848	17,224	6,519	23,743	4,105
Comp Anal of Frmr Partcip	3-04-046-83	CU	INIT	17,535	23,061	0	23,061	( 5,526)
Comp Anal of Ind Invest St	3-04-054-85	CU	INIT	97,099	3,693	7,384	11,077	86,022
Rural Employment & Sys Pe	3-04-055-85	CU	INIT	16,150	16,734	0	16,734	( 584)
Indirect Invest Strat. 86	3-04-055-86	CU	INIT	171,290	0	0	0	171,290
Irr Sys Prfrance-Mgmnt In	3-04-056-85	CU	INIT	69,615	59,100	285	59,385	10,230
Sml-Scl Irr Sys Spcl Stdy	3-04-069-84	CU	INIT	57,059	51,828	6,025	57,853	( 794)
TOTAL SPECIAL STUDIES \$				2,183,133	482,258	154,655	636,913	1,546,220
TOTAL FY 86 ACTIVITIES \$				8,805,947	3,733,174	1,084,353	4,817,527	3,988,420

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986CID / EPD OFFICE  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
EPD ADMINISTRATION 0-01-995-86	0	0	0	0	0	0	0	0	63,157
EPD ADMINISTRATION 0-01-999-86	65,742	15,111	20,743	12,448	10,367	124,411	10,706	135,117	191,810
TOTAL UNIVERSITY SUPPORT \$	65,742	15,111	20,743	12,448	10,367	124,411	10,706	135,117	254,967
TECHNICAL ASSISTANCE:									
INDIA:									
TA/Fid Stu/TR-Maha Irr T&M Proj 1-01-021-84	0	1,488	0	0	0	1,488	147	1,635	USU
KENYA:									
Small Scale Irrig. Analy. 1-02-042-86	6,575	2,986	0	0	1,801	11,538	1,140	12,502	CU
NEPAL:									
Nepal Rapid Appraisal 1-02-087-85	0	0	327	0	0	327	32	359	CSU
WORLDWIDE:									
Meeting recurrent costs of irr 1-02-062-85	21,462	171	959	0	5,129	27,722	2,237	29,959	CU
Peace Corps Support 1-02-078-85	0	0	13,950	0	0	13,950	1,381	15,331	15,331
Thunder & Assoc. 1-03-066-86	0	0	4,970	0	0	4,970	492	5,462	5,462
TOTAL TECHNICAL ASSIST. \$	28,037	4,645	20,206	0	6,930	59,819	16,135	65,248	20,793
TRAINING AND TECHNOLOGY TRANSFER:									

CID / EPD OFFICE  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
INDIA:									
Senior Officer's Workshop 2-04-053-84	0	10,747	19,268	0	0	30,015	2,971	32,986	USU
PAKISTAN:									
Mngmt Officials Trngng - Pinng 2-01-065-85	7,520	1,869	2,740	0	0	12,289	1,377	13,506	CSU
Command Water Management Prog 2-14-114-84	0	0	106	0	0	106	11	117	CSU
WORLDWIDE:									
Strategy for Training 2-09-049-84	0	156	780	0	0	936	93	1,029	CSU
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$									
	7,520	12,772	22,894	0	0	43,186	20,597	47,638	0
SPECIAL STUDIES:									
AFRICA:									
JFS-Comm Mgn'd Country D 3-04-503-86	0	0	0	0	0	0	0	0	312,572
THAILAND:									
Overseas '86 3-04-008-86	0	966	5,905	0	0	6,871	680	7,551	CSU
Thailand Case Study 3-04-043885	0	416	1,176	0	0	1,592	157	1,749	USU
TOTAL SPECIAL STUDIES \$									
	0	1,382	7,081	0	0	8,463	21,424	9,300	312,572
TOTAL FY 86 ACTIVITIES \$									
	101,299	33,910	70,924	12,448	17,297	235,879	21,424	257,303	588,332

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986COLORADO STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
EPD ADMINISTRATION									
0-01-999-86	0	0	0	0	0	0	0	0	CID
COLORADO STATE UNIV.									
0-02-998-86	54,024	4,495	18,588	0	30,183	107,290	7,634	114,924	246,600
CLOSED OUT CSU ADMIN									
0-99-998-84	-577	0	-333	0	-328	-1,238	-90	-1,328	0
TOTAL UNIVERSITY SUPPORT \$	53,447	4,495	18,255	0	29,855	106,052	7,544	113,596	246,600
TECHNICAL ASSISTANCE:									
AFRICA:									
African Irrigation Overview									
1-02-108-84	9,297	868	3,363	0	4,870	18,398	1,339	19,737	USU
EGYPT:									
IMS Evaluation Team									
1-02-072-85	24,528	11,445	1,077	0	13,338	50,855	4,181	54,569	56,009
INDIA:									
Socio-Technical Feas. Study									
1-04-059-86	861	5	0	0	346	1,232	108	1,320	3,183
INDONESIA:									
Small-scale irr. workshop, etc									
1-02-009-85	13,536	9,676	104	0	5,130	28,725	2,615	31,061	CU
KENYA:									
Small Scale Irrig. Analy.									
1-02-042-86	6,700	3,860	214	0	4,299	15,227	1,236	16,309	CU
NEPAL:									
Nepal Rapid Appraisal									
1-02-087-85	37,647	19,909	15,128	0	17,191	90,458	7,836	97,711	125,690
SRI LANKA:									
Long Term Wtr Mgmt Specialist									
1-01-109-84	103,575	4,049	20,421	7,590	29,614	167,095	14,705	179,954	216,137



COLORADO STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	604,803	90,402	125,659	7,078	250,513	1,069,232	128,074	1,153,962	1,652,986
SPECIAL STUDIES:									
AFRICA:									
JFS-Rehab-Country A 3-04-500-86	0	0	0	0	0	0	0	0	120,654
JFS Workshop in Zimbabwe 3-04-500AB6	0	0	0	0	0	0	0	0	21,192
SRI LANKA:									
Interfacing OF Water Managmt. 3-04-009-86	16,661	6,048	11,679	0	10,838	45,630	3,848	49,074	165,361
Landsat 86 - Remote Sensing 3-04-011-86	3,900	362	7,907	0	3,818	15,997	1,205	17,192	45,001
THAILAND:									
Overseas '86 3-04-008-86	8,555	2,529	2,393	0	5,377	19,051	1,551	20,405	50,027
WORLDWIDE:									
Interfacing O.F. Water Mgmt. 3-04-010-86	14,703	1,332	2,456	0	6,764	25,302	1,882	27,137	103,561
TOTAL SPECIAL STUDIES \$	43,819	10,271	24,435	0	26,797	105,322	136,560	113,808	505,796
TOTAL FY 86 ACTIVITIES \$	916,015	152,578	209,341	14,668	392,361	1,685,740	136,560	1,821,523	2,987,988

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986CORNELL UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	UNIVERSITY & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CIU G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
CORNELL UNIVERSITY									
0-02-996-86	33,407	4,822	6,764	0	26,505	71,498	4,454	75,952	208,124
CLOSED OUT CU ADMIN									
0-99-996-84	-7,553	-830	-190	0	-4,904	-13,477	-849	-14,326	0
TOTAL UNIVERSITY SUPPORT \$	25,854	3,992	6,574	0	21,601	58,021	3,605	61,626	208,124
TECHNICAL ASSISTANCE:									
CHAD:									
Irrigated Agric. Assessment									
1-02-073-85	7,102	303	4,556	0	7,324	19,285	1,184	20,469	USU
HAITI:									
Cayes Plain-Distrib. Benefits									
1-02-084-85	0	5,781	724	0	2,860	9,365	644	10,009	10,197
INDONESIA:									
Small-scale irr. workshop, etc									
1-02-009-85	1,626	0	10,113	0	2,924	14,663	1,162	15,825	200,658
KENYA:									
Small Scale Irrig. Analy.									
1-02-042-86	6,232	10,754	7,703	0	12,504	37,193	2,444	39,637	105,516
PERU:									
Plan MERIS									
1-01-112-84	10,094	4,346	851	0	9,108	24,399	1,514	25,913	USU
SRI LANKA:									
Socioeconomic studies - rehab.									
1-02-004-85	4,646	9,732	357	0	9,813	24,548	1,459	26,007	82,673
ARTI-Continuing Support									
1-02-045-86	0	0	0	0	0	0	0	0	72,440
WORLDWIDE:									
Meeting recurrent costs of irr									
1-02-062-85	3,156	2,773	504	0	4,002	10,435	637	11,072	51,345

CORNELL UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
TOTAL TECHNICAL ASSIST. \$	32,856	33,689	24,808	0	48,535	139,888	12,649	148,932	522,829
TRAINING AND TECHNOLOGY TRANSFER:									
Seminar on Irrig System Rehab 2-05-033-85	0	885	0	0	591	1,476	88	1,564	CSU
Professional Visitors 2-11-016-86	0	0	0	0	0	0	0	0	14,280
Brochures, Newsletters, Publ. 2-12-044-84	0	0	8	0	6	14	1	15	CSU
Rehabilitation Game Revision 2-13-018-86	6,864	0	2,160	0	4,368	13,392	893	14,285	66,840
Triad Synthesis Phase I 2-14-037-86	645	2,406	0	0	2,003	5,054	302	5,356	10,000
Syn-Local Resource Mob. Irrig. 2-14-053-86	0	0	0	0	0	0	0	0	82,810
WKSP Anal. Irrig. Bureaucracies 2-14-054-86	0	0	0	0	0	0	0	0	63,703
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	7,509	3,291	2,168	0	6,968	19,936	13,933	21,220	237,633
SPECIAL STUDIES:									
AFRICA:									
JFS-Comm Mgn'd Cuntrey C 3-04-502-86	0	0	0	0	0	0	0	0	149,474
Africa Plann Act 3-04-505-86	0	0	7	0	5	12	1	13	0
NIGER:									
Small Scale Irrigation Study 3-04-023-86	9,434	4,455	7,228	0	8,636	29,753	2,091	31,844	109,577
Trad & Devel Small-Scale Irr 3-04-052-85	11,696	6,951	13,996	0	7,629	40,272	3,232	43,504	108,081
SRI LANKA:									
Phys & Oper Rehab Impact 3-04-097-84	0	0	156	0	108	264	15	279	26,492
WORLDWIDE:									
Comp Anal of Fmr Partcptn Exp 3-04-046-83	12,216	0	3,043	0	6,291	21,550	1,511	23,061	17,535
Comp Anal of Ind Invst Stratgy 3-04-054-85	2,281	3,971	0	0	4,206	10,458	619	11,077	97,099

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CORNELL UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

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D E S C R I P T I O N	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Rural Employment & Sys Perform									
3-04-055-85	7,908	0	2,833	0	4,930	15,671	1,063	16,734	16,150
Indirect Invest Strat. 86									
3-04-055-86	0	0	0	0	0	0	0	0	171,290
Irr Sys Prfrance-Mgmt Intnsts									
3-04-056-85	34,365	90	1,533	0	19,835	55,823	3,563	59,385	69,615
Sml-Sci Irr Sys Spcl Stdy Comp									
3-04-069-84	32,071	0	4,427	1,176	16,566	54,240	3,613	57,853	57,059
<b>TOTAL SPECIAL STUDIES \$</b>	<b>109,971</b>	<b>15,467</b>	<b>33,223</b>	<b>1,176</b>	<b>68,206</b>	<b>228,043</b>	<b>29,641</b>	<b>243,750</b>	<b>822,372</b>
<b>TOTAL FY 86 ACTIVITIES \$</b>	<b>176,190</b>	<b>56,439</b>	<b>66,773</b>	<b>1,176</b>	<b>145,310</b>	<b>445,888</b>	<b>29,641</b>	<b>475,528</b>	<b>1,790,958</b>

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986UTAH STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	STIPENDS & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CIU G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
UTAH STATE UNIV.									
0-02-997-86	55,314	2,554	4,573	0	21,854	84,295	6,182	90,477	233,089
CLOSED OUT USU ADMIN									
0-99-997-84	-2,682	0	1	0	-858	-3,539	-265	-3,804	0
TOTAL UNIVERSITY SUPPORT \$	52,632	2,554	4,574	0	20,996	80,756	5,917	86,673	233,089
TECHNICAL ASSISTANCE:									
AFRICA:									
African Irrigation Overview									
1-02-108-84	50,556	14,044	41,953	0	33,354	140,043	10,698	150,605	169,651
CHAD:									
Irrigated Agric. Assessment									
1-02-073-85	0	8,198	49,573	0	19,644	77,617	6,104	83,519	116,022
EGYPT:									
Irrigation Sector Assessment									
1-02-052-86	15,927	8,079	40,767	0	22,670	87,766	6,767	94,210	128,383
EL SALVADOR:									
PP Development									
1-02-077-85	8,700	3,230	124,176	0	13,347	149,607	5,237	154,690	164,814
INDIA:									
TA/Flid Stu/TR-Maha Irr T&M Prj									
1-01-021-84	208,320	33,594	49,472	8,707	82,701	384,279	30,479	413,273	415,096
INDONESIA:									
Small-scale irr. workshop, etc									
1-02-009-85	1,640	5,756	60	0	2,386	9,879	775	10,617	CU
JORDAN:									
Jordan Advisory Services									
1-02-028-85	0	0	0	0	0	0	0	0	10,338
KENYA:									
Small Scale Irrig. Analy.									
1-02-042-86	1,624	5,227	327	0	2,512	9,733	758	10,448	CU

UTAH STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
MOROCCO:									
PID Development									
1-02-002-85	18,910	13,603	797	0	11,659	45,365	3,733	48,702	47,629
PAKISTAN:									
Irrigation Consultation									
1-02-060-86	35	0	16,249	0	5,699	21,983	1,612	23,595	37,986
PARAGUAY:									
Technical Assessment									
1-02-067-86	0	0	0	0	0	0	0	0	9,721
PERU:									
Plan MERIS									
1-01-112-84	61,422	53,131	234,437	21,927	114,976	487,648	36,479	522,372	579,000
Finishing Plan MERIS									
1-02-061-86	3,176	9,658	111	0	4,531	17,542	1,354	18,830	60,000
RWANDA:									
Water Management & Drainage									
1-02-062-86	0	85	51	0	48	184	13	197	9,051
SRI LANKA:									
Model Calibration									
1-02-005-85	16,258	13,587	333	0	10,333	40,770	3,322	43,833	37,600
TOTAL TECHNICAL ASSIST. \$	386,568	168,192	558,306	30,634	323,860	1,466,439	113,248	1,574,891	1,785,291
TRAINING AND TECHNOLOGY TRANSFER:									
BOLIVIA:									
Course - On-Farm Water Mngmnt									
2-01-011-85	666	0	2,360	0	1,059	4,085	299	4,384	4,383
DOMINICAN REPUBLIC:									
On-Farm Water Mngment Course									
2-14-030-85	0	0	0	0	0	0	0	0	9,909
ECUADOR:									
Finish Original Training Mduls									
2-03-054-84	105,567	1,665	7,179	0	34,445	148,856	10,903	159,759	167,676
GUATEMALA:									
Evaluation of Guatemala Model									
2-02-064-86	2,445	1,615	3,060	0	2,492	9,641	737	10,349	28,252
INDIA:									
Demo. Workshop									
2-02-051-86	0	0	140	0	49	189	14	203	90,147
Video Modules									
2-03-075-85	26,799	0	17,825	1,397	15,619	61,640	4,418	66,058	74,001
Senior Officer's Workshop									
2-04-053-84	0	2,186	9,882	0	3,862	16,091	1,300	17,230	74,337

UTAH STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
MOROCCO:									
Internat'l Irrigation Center 2-04-027-86	0	0	36	0	13	49	4	53	58,997
THAILAND:									
Maintenance Workshop 2-14-088-85	5,369	1,976	0	0	2,571	10,028	850	10,766	17,129
WORLDWIDE:									
Expert Cons. on Water Charges 2-02-063-86	0	380	0	0	133	513	38	551	18,475
Conference on Lessons Learned 2-07-019-86	0	0	0	0	0	0	0	0	CU
Irrig. Experience Transfer 2-07-026-86	0	0	0	0	0	0	0	0	101,276
French Language Training 2-11-041-85	1,314	0	44	0	455	1,813	134	1,947	10,650
Triad Synthesis Phase I 2-14-036-86	0	0	27	0	9	36	3	39	10,000
Lessons Learned: Irr Sys Mngmt 2-14-039-85	24,482	3,440	1,971	0	10,415	40,308	2,959	43,267	103,209
Irr Sys Mngmt Task Force 2-14-060-84	10,325	1,492	18	0	3,941	15,776	1,172	16,948	44,284
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	176,967	12,754	42,542	1,397	75,063	308,723	136,079	331,554	812,725
SPECIAL STUDIES:									
-----									
AFRICA:									
JFS-REHAB-COUNTRY B 3-04-501-86	0	0	0	0	0	0	0	0	124,700
MOROCCO:									
Moroccan Case Studies 3-04-043CB5	8,655	9,073	14	0	5,968	23,736	1,785	25,495	29,433
THAILAND:									
Thailand Case Study 3-04-043BB5	9,302	2,364	18,687	0	7,203	37,574	3,025	40,581	44,067
WORLDWIDE:									
Irrig Proj Analysis and Mgmt 3-04-005-86	3,980	2,430	3,169	7,309	3,353	20,241	948	21,189	155,012
Rapid Irr. Project Appraisal 3-04-042-85	3,855	533	49,169	0	15,083	68,640	4,394	73,034	73,710
Irrigation System Model Devel. 3-04-043AB5	55,809	2,157	1,769	0	20,364	80,099	5,914	86,013	87,623

UTAH STATE UNIVERSITY  
FISCAL YEAR 1986 WORK PLAN ACTIVITIES

D E S C R I P T I O N	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND OBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Interdisciplinary Mn Sys Wkshp 3-34-043E85	11,211	0	5,175	0	5,735	22,121	1,622	23,743	27,848
TOTAL SPECIAL STUDIES \$	92,812	16,557	77,983	7,309	57,706	252,367	153,767	270,055	542,393
TOTAL FY 86 ACTIVITIES \$	708,979	200,057	683,405	39,340	477,625	2,108,285	153,767	2,263,173	3,373,498

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2084-00)QUARTERLY REPORT  
FOR THE PERIOD ENDING MARCH 31, 1986

PRIOR YEARS WORK PLAN ACTIVITIES NOT CLOSED OUT

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	- - E X P E N D I T U R E S - -			BUDGET BALANCE
					THROUGH DEC. 31, 85	CURRENT QUARTER	THROUGH MAR. 31, 86	
ADMINISTRATION:								
WORLDWIDE								
EPD ADMINISTRATION	0-01-999-83	CID	COMP	145,937	145,772	0	145,772	165
EPD ADMINISTRATION	0-01-999-85	CIC	FINI	191,810	240,140	954	241,094 (	49,284)
CU ADMINISTRATION	0-02-996-85	CU	FINI	206,932	116,194	68,205	184,399	22,533
USU ADMINISTRATION	0-02-997-85	USU	FINI	233,126	218,338	213	218,551	14,575
CSU ADMINISTRATION	0-02-998-83	CSU	COMP	281,382	281,317	0	281,317	65
CSU ADMINISTRATION	0-02-998-85	CSU	COMP	231,641	230,017	1,971	231,988 (	347)
TOTAL ADMINISTRATION \$				1,290,828	1,231,778	71,343	1,303,121 (	12,293)
TECHNICAL ASSISTANCE:								
BANGLADESH:								
Water Mgmt Sys Proj Paper	1-02-072-84	CU	COMP	20,719	30,343	0	30,343 (	9,624)
DOMINICAN REPUBLIC:								
Weed Control Specialist	1-02-091-84	USU	COMP	3,354	3,118	-16	3,102	252
EGYPT:								
Egypt Water Use & Mngmnt	1-02-066-85	USU	COMP	41,268	25,269	559	25,828	15,440
EL SALVADOR:								
PID Preparation	1-02-059-85	CSU	COMP	22,580	22,987	-496	22,491	9
Evaluation Team	1-02-107A84	CID	COMP	107,449	107,090	0	107,090	359
HAITI:								
Irrigation Sector Survey	1-04-017-84	USU	COMP	50,658	50,332	36	50,368	290
HONDURAS:								
Irrigation Development Pr	1-02-060-85	USU	COMP	12,309	7,924	5	7,929	4,380
INDIA:								
TA/Field Stu/TR-Madhya Pr	1-01-025-84	USU	TERM	9,000	3,975	0	3,975	5,025
University Curricula	1-02-013-85	USU	COMP	26,472	19,848	-12	19,836	6,636
Maharashtra Minor Irrig	1-02-018-84	USU	FINI	171,970	161,088	-206	160,882	11,088
Mdya Pr Mnr Irr:Socio-Tch	1-02-023-84	USU	TERM	174,989	18	0	18	174,971
Institutional Analysis	1-02-047-83	CID	COMP	32,647	21,498	0	21,498	11,149
Hill Irrig Proj Prep II	1-02-074-84	CU	COMP	61,218	111,773	65	111,838 (	50,620)
Curriculum Development	1-02-094-84	CSU	COMP	10,682	11,008	0	11,008 (	326)

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PRIOR YEARS WORK PLAN ACTIVITIES NOT CLOSED OUT

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH DEC. 31, 85	CURRENT QUARTER	THROUGH MAR. 31, 86	
Short Course	1-02-100-84	USU	COMP	84,388	76,127	-142	75,985	8,403
Irr Sector Eval & Strtgy	1-02-103-84	USU	FINI	227,461	208,987	7,376	216,363	11,098
INDONESIA:								
Small Scale Irrig & Mgmt	1-02-011-84	CU	COMP	54,468	151,770	13	151,783	( 97,315)
Cost Recovery	1-02-074-85	CSU	COMP	12,611	11,952	5	11,957	654
JAMAICA:								
Planning Activities	1-02-007-85	USU	APPR	11,970	0	0	0	11,970
Systems Study	1-02-008-85	USU	APPR	24,822	0	0	0	24,822
JORDAN:								
SR. On Farm WM Advisor	1-02-014-84	USU	COMP	4,767	5,844	0	5,844	( 1,077)
Irrigation Sector Study	1-04-013-84	USU	COMP	31,429	19,175	11	19,186	12,243
MAURITANIA:								
River Valley - Plan of Ac	1-02-076-85	USU	FINI	45,915	20,123	16	20,139	25,776
NEPAL:								
Sm/Med Scale Irrigation	1-02-067-85	USU	COMP	89,481	62,921	31	62,952	26,529
PAKISTAN:								
Curriculum Development	1-02-071-85	CSU	COMP	74,443	58,664	0	58,664	15,779
Long-Term Strategies	1-02-101-84	USU	COMP	9,369	1,856	0	1,856	7,513
Command Area Management	1-02-106-84	USU	COMP	16,068	14,053	13	14,066	2,002
PERU:								
Expansion of Irrig. Syste	1-02-035-84	USU	COMP	53,681	60,031	42	60,073	( 6,392)
Special Study	1-04-027-82	USU	COMP	93,755	71,407	1,047	72,454	21,301
SRI LANKA:								
Water Mgmt Central Suppor	1-01-022-84	CSU	FINI	58,984	66,565	642	67,207	( 8,223)
Central Support	1-02-003-85	CSU	COMP	73,695	47,789	322	48,111	25,584
Farmer Organization Progr	1-02-007-84	CU	COMP	64,466	63,647	0	63,647	819
Irr Sys Mgmt Proj Design	1-02-102-84	CSU	COMP	172,000	123,865	37	123,902	48,098
SWAZILAND:								
Irrigation Priorities	1-02-069-85	CSU	COMP	25,843	23,144	870	24,014	1,829
TANZANIA:								
Tanzania Irrig Study	1-02-082-84	USU	COMP	12,567	11,747	5	11,752	815
WORLDWIDE:								
Shortcourse Staff Assista	1-02-070-85	CID	COMP	14,590	10,990	0	10,990	3,600
TOTAL TECHNICAL ASSIST. \$				2,002,008	1,686,928	10,223	1,697,151	304,857
TRAINING AND TECHNOLOGY TRANSFER:								
AFRICA:								
Africa Workshop	2-14-113-84	CSU	COMP	14,333	14,256	367	14,623	( 290)
BOLIVIA:								
Tarija Short Course	2-01-095-84	CU	COMP	64,995	5,226	2	5,228	59,767
Course - Small-Scale Irr	2-14-010-85	USU	COMP	41,333	16,555	21	16,576	24,757
ECUADOR:								
Equivar Video	2-03-054-83	USU	COMP	204,837	204,695	42	204,737	100

PRIOR YEARS WORK PLAN ACTIVITIES NOT CLOSED OUT

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/- - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH DEC. 31, 85	CURRENT QUARTER	THROUGH MAR. 31, 86	
<b>INDIA:</b>								
DA Workshop Madhya Prades	2-02-031-84	CSU	COMP	135,470	140,595	3,303	143,898 (	8,428)
DA Workshop - WID	2-02-090-84	CID	FINI	21,980	5,531	0	5,531	16,449
Senior Officials	2-04-007-83	USU	COMP	1,054	1,055	0	1,055 (	1)
Development of Handbooks	2-13-027-85	CSU	TERM	79,956	29,729	0	29,729	50,227
Farmer Organization Works	2-14-017-85	CU	FINI	81,141	2	0	2	81,139
<b>NEPAL:</b>								
DA Workshop Planning	2-02-003-84	CSU	COMP	21,842	21,448	-1	21,447	395
Diagnostic Anal. of Irr.	2-02-031-85	CSU	COMP	126,479	125,820	0	125,820	659
<b>WORLDWIDE:</b>								
Videotape Modules	2-03-021-83	CSU	COMP	90,755	91,091	-292	90,799 (	44)
ICID Conference	2-04-048-84	CSU	COMP	20,678	20,239	0	20,239	439
Main System Mgmt Task For	2-06-077-84	CU	COMP	7,557	1,087	0	1,087	6,470
DA Trainers Workshop	2-08-040-84	CSU	FINI	29,736	30,823	6,264	37,087 (	7,351)
Survey & Strategy for Tra	2-09-019-83	CSU	COMP	34,267	33,441	0	33,441	826
Computer Applications	2-10-022-83	CSU	COMP	70,020	69,734	0	69,734	286
Micro Applications for DA	2-10-051-84	CSU	COMP	62,615	62,452	0	62,452	163
Increasing WM Capabilitie	2-11-020-83	CID	INIT	57,569	50,210	-278	49,932	7,637
French Language Training	2-11-059-84	USU	COMP	10,650	6,004	-58	5,946	4,704
Professional Visitors	2-11-068-84	CU	INIT	9,673	4,365	805	5,170	4,503
Increasing WM Capabilitie	2-11-081-84	CID	INIT	20,847	16,244	0	16,244	4,603
Instructors Guide for DA	2-13-042-84	CSU	INIT	24,881	24,778	0	24,778	103
"Rehab.", A Game Simulati	2-13-048-85	CU	FINI	33,445	16,898	0	16,898	16,547
Lessons Learned Wkshop: A	2-14-049-85	CU	APPR	41,790	0	3,216	3,216	38,574
Jt Seminar on Current Res	2-14-050-85	CU	FINI	94,372	60,127	-14	60,113	34,259
Small Scale Irrigation Wo	2-14-064-84	CU	FINI	47,163	32,756	0	32,756	14,407
Tsk Frc Sml-Scl Comm:Mgd	2-14-065-84	CU	COMP	20,741	7,686	0	7,686	13,055
Farmer Participation Wksp	2-14-066-84	CU	COMP	36,193	24,583	0	24,583	11,610
AID/FAO Expert Consul WM	2-14-067-84	CU	COMP	9,288	12,779	0	12,779 (	3,491)
Planning for Seminar	2-14-075-84	CU	COMP	9,889	6,737	0	6,737	3,152
FAO Workshop Participants	2-14-078-84	CID	INIT	26,000	12,000	140	12,140	13,860

**TOTAL TRAINING AND**

**TECHNOLOGY TRANSFER \$**

1,551,549    1,148,946    13,517    1,162,463    389,086

**SPECIAL STUDIES:**

**AFRICA:**

Dev. Of Social Parameters    3-04-057-83    USU    COMP    67,039    57,291    -606    58,685    8,354

**NIGER:**

Sml-Scl Irr & Wtr Mgmt, P    3-04-098-84    CU    COMP    5,508    5,986    0    5,986 (    478)

Traditional & Dev. SSI    3-04-111-84    CU    INIT    14,825    17,844    0    17,844 (    3,019)

**SRI LANKA:**

Interfacing On-Farm Wtr M    3-04-036A85    CSU    COMP    86,390    65,648    1,080    66,728    19,662

PRIOR YEARS WORK PLAN ACTIVITIES NOT CLOSED OUT

ACTIVITY	CODE	UNIV.	STATUS	APPROVED BUDGET	/ - - E X P E N D I T U R E S - - \			BUDGET BALANCE
					THROUGH DEC. 31, 85	CURRENT QUARTER	THROUGH MAR. 31, 86	
Sri Lanka Interfacing On-	3-04-036885	CSU	COMP	130,907	65,731	3,387	69,118	61,789
Landsat85-Remote Sensing	3-04-038-85	CSU	COMP	34,442	38,448	-4,211	34,237	205
WORLDWIDE:								
Communication of Tech Tra	3-04-024-83	CSU	COMP	52,783	52,761	0	52,761	22
Irrigation Systems Manage	3-04-025-83	CSU	COMP	156,507	156,463	0	156,463	44
Small Scale Irrigation	3-04-045-83	CU	INIT	160,697	104,179	0	104,179	56,518
Interfacing Farm & Manage	3-04-045-84	CSU	INIT	223,239	107,190	-1	107,189	116,050
Small scale irrigation	3-04-045883	CU	INIT	3,416	3,416	0	3,416	0
Comp Anal of Ind Invest St	3-04-053-85	CU	FINI	15,031	32,385	298	32,683	( 17,652)
On-Farm Irrigation System	3-04-059-83	USU	COMP	47,146	18,361	163	18,524	28,622
Main System Management	3-04-059-83	USU	COMP	146,905	108,818	58	108,876	38,029
Main System Management	3-04-059883	CSU	COMP	14,716	42	0	42	14,674
Monitoring Projects	3-04-061-83	USU	POST	18,350	0	0	0	18,350
Main Sys Design, Mgmt Reh	3-04-061-84	USU	COMP	221,424	167,844	0	167,844	53,580
Interdisp. Irrig. Sys. Se	3-04-062-84	USU	COMP	62,430	34,561	0	34,561	27,869
DA Evaluation	3-04-063-83	CID	COMP	7,163	0	0	0	7,163
Management Intensity	3-04-096-84	CU	INIT	77,238	63,724	0	63,724	13,514
TOTAL SPECIAL STUDIES \$				1,546,156	1,102,692	168	1,102,860	443,296
TOTAL PRIOR YEARS ACTIVITIES \$				6,390,541	5,170,344	95,251	5,265,595	1,124,946

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYNTHESIS II PROJECT  
(AID/DAN 4127-C-00-2006-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986CID / EPD OFFICE  
PRIOR YEARS WORK PLAN ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
-----									
ADMINISTRATION:									
EPD ADMINISTRATION									
0-01-979-85	85,909	26,358	42,289	518	19,347	174,421	15,163	189,584	191,810
-----									
TOTAL UNIVERSITY SUPPORT \$	85,909	26,358	42,289	518	19,347	174,421	15,163	189,584	191,810
-----									
TECHNICAL ASSISTANCE:									
-----									
BANGLADESH:									
Water Mgmt Sys Proj Paper									
1-02-072-84	0	0	9,011	0	0	9,011	892	9,903	CU
EL SALVADOR:									
Evaluation Team									
1-02-107A84	0	0	89,888	0	0	90,816	9,827	99,715	107,449
INDIA:									
University Curricula									
1-02-013-85	0	459	0	0	0	459	45	504	USU
Maharashtra Minor Irrig									
1-02-018-84	0	21,467	23,330	0	3,309	48,106	4,735	52,841	USU
Institutional Analysis									
1-02-047-83	0	3,354	12,608	0	3,706	19,668	1,830	21,498	32,647
Hill Irrig Proj Prep II									
1-02-074-84	0	6,943	0	0	0	6,943	687	7,630	CU
Short Course									
1-02-100-84	0	7,161	0	0	0	7,161	709	7,870	USU
JORDAN:									
Irrigation Sector Study									
1-04-013-84	0	0	7,500	0	0	7,500	742	8,242	USU
PAKISTAN:									
Curriculum Development									
1-02-071-85	0	4,857	31	0	0	4,888	484	5,372	CSU
Long-Term Strategies									
1-02-101-84	0	749	0	0	0	749	74	823	USU

CID / EPD OFFICE  
PRIOR YEARS WORK PLAN ACTIVITIES

D E S C R I P T I O N	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
-----									
Command Area Management									
1-02-106-84	0	2,609	0	0	0	2,609	253	2,867	USU
PERU:									
Expansion of Irrig. Systems									
1-02-035-84	0	0	8,148	0	0	8,148	807	8,955	USU
Special Study									
1-04-027-82	0	0	7,500	0	0	7,500	742	8,242	USU
SRI LANKA:									
Water Mgmt Central Support									
1-01-022-84	0	3,540	0	0	0	3,540	350	3,890	CSU
Irr Sys Mgmt Proj Design Team									
1-02-102-84	8,142	5,566	0	0	3,770	17,478	1,534	19,012	CSU
WORLDWIDE:									
Shortcourse Staff Assistance									
1-02-070-85	10,000	0	0	0	0	10,000	990	10,990	14,590
-----									
TOTAL TECHNICAL ASSIST. \$	18,142	56,705	158,016	0	10,785	243,098	39,869	268,354	154,686
-----									
TRAINING AND TECHNOLOGY TRANSFER:									
-----									
INDIA:									
DA Workshop Madhya Pradesh									
2-02-031-84	0	15,097	0	0	0	15,097	1,505	16,602	CSU
DA Workshop - WID									
2-02-090-84	0	2,006	0	0	0	2,006	199	2,205	21,980
NEPAL:									
Diagnostic Anal. of Irr. Sys.									
2-02-031-85	0	0	0	0	0	0	0	0	CSU
WORLDWIDE:									
DA Trainers Workshop									
2-08-040-84	0	3,079	6,210	0	0	9,289	919	10,208	CSU
Increasing WM Capabilities									
2-11-081-84	0	2,011	0	0	0	2,011	199	2,210	20,847
FAO Workshop Participants									
2-14-078-84	0	11,046	0	0	0	11,046	1,094	12,140	26,000
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	0	33,239	6,210	0	0	39,439	43,785	43,365	68,827
-----									
SPECIAL STUDIES:									
-----									
NIGER:									
Traditional & Dev. SSI									
3-04-111-84	0	0	0	5,797	0	5,797	0	5,797	CU

CID / EPD OFFICE  
PRIOR YEARS WORK PLAN ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND OBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
SRI LANKA:									
Interfacing On-Farm Wtr Mngmnt 3-04-036A85	0	0	2,197	0	0	2,197	217	2,414	CSU
WORLDWIDE:									
Main Sys Design, Mgmt Rehab 3-04-061-94	0	0	1,043	0	0	1,043	103	1,146	USU
DA Evaluation 3-04-063-93	0	0	0	0	0	0	0	0	7,163
TOTAL SPECIAL STUDIES \$	0	0	3,240	5,797	0	9,037	44,105	9,357	7,163
TOTAL PRIOR YEARS ACTIV. \$	104,051	116,302	209,755	6,315	30,132	465,995	44,105	510,660	422,486

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986COLORADO STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
EPD ADMINISTRATION 0-01-999-83	78,404	6,173	13,267	2,964	35,224	136,081	9,740	145,772	CID
EPD ADMINISTRATION 0-01-999-85	31,912	181	3,212	0	12,710	48,015	3,495	51,510	CID
COLORADO STATE UNIV. 0-02-998-83	124,503	2,895	52,710	19,204	64,174	263,486	17,831	281,317	281,382
COLORADO STATE UNIV. 0-02-998-85	118,983	7,618	32,365	0	57,284	215,836	15,738	231,988	231,641
TOTAL UNIVERSITY SUPPORT \$	353,802	16,867	101,554	22,168	169,392	663,369	46,804	710,587	513,023
TECHNICAL ASSISTANCE:									
EL SALVADOR:									
PID Preparation 1-02-059-85	5,990	3,630	5,773	0	5,534	20,999	1,564	22,491	22,500
Evaluation Team 1-02-107A84	4,558	187	310	0	1,820	6,875	500	7,375	CID
INDIA:									
Curriculum Development 1-02-094-84	7,114	0	312	0	2,673	10,257	909	11,008	10,682
INDONESIA:									
Small Scale Irrig & Mgmt 1-02-011-84	13,698	15,737	482	0	10,036	40,207	3,241	43,194	CU
Cost Recovery 1-02-074-85	4,620	3,470	50	0	2,930	11,144	887	11,957	12,611
NEPAL:									
Sm/Med Scale Irrigation 1-02-067-85	11,592	6,889	25	0	4,071	22,805	2,083	24,660	USU
PAKISTAN:									
Curriculum Development 1-02-071-85	18,313	8,289	524	0	9,765	37,210	3,036	39,927	74,443

COLORADO STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
<b>SRI LANKA:</b>									
Water Mgmt Central Support									
1-01-022-84	24,169	21,203	1,751	148	10,915	58,610	5,131	63,317	58,984
Central Support									
1-02-003-85	28,743	6,389	69	0	9,088	44,596	3,822	48,111	73,695
Irr Sys Mgmt Proj Design Team									
1-02-102-84	27,519	12,283	4,531	0	11,409	56,183	4,874	60,616	172,000
<b>SWAZILAND:</b>									
Irrigation Priorities									
1-02-067-85	10,740	5,310	249	0	5,868	22,379	1,847	24,014	25,843
<b>TOTAL TECHNICAL ASSIST. \$</b>	<b>157,056</b>	<b>83,387</b>	<b>14,076</b>	<b>148</b>	<b>74,109</b>	<b>328,812</b>	<b>74,698</b>	<b>356,670</b>	<b>450,758</b>
<b>TRAINING AND TECHNOLOGY TRANSFER:</b>									
<b>AFRICA:</b>									
Africa Workshop									
2-14-113-84	5,177	4,683	89	0	3,582	13,628	1,092	14,623	14,333
<b>INDIA:</b>									
DA Workshop Madhya Pradesh									
2-02-031-84	61,871	23,774	7,280	0	24,355	118,023	10,016	127,296	135,470
DA Workshop - WID									
2-02-090-84	0	783	1,572	0	738	3,093	233	3,326	CID
Development of Handbooks									
2-13-027-85	18,030	2,468	96	0	7,096	27,690	2,039	29,729	79,956
<b>NEPAL:</b>									
DA Workshop Planning									
2-02-003-84	7,041	6,355	1,566	0	4,970	19,963	1,515	21,447	21,842
Diagnostic Anal. of Irr. Sys.									
2-02-031-85	55,747	21,389	15,542	0	23,134	116,570	10,008	125,820	126,479
<b>WORLDWIDE:</b>									
Videotape Modules									
2-03-021-83	33,483	17,850	13,525	0	19,230	84,352	6,711	90,799	90,755
ICID Conference									
2-04-048-84	13,416	0	456	0	4,994	18,866	1,373	20,239	20,678
DA Trainers Workshop									
2-08-040-84	14,624	1,469	2,330	0	6,632	25,055	1,824	26,879	29,736
Survey & Strategy for Training									
2-09-019-83	21,377	749	1,031	0	7,991	31,148	2,293	33,441	34,267
Computer Applications									
2-10-022-83	33,736	455	7,589	9,475	14,343	65,598	4,136	69,734	70,020
Micro Applications for DA Trng									
2-10-051-84	31,056	129	10,747	2,312	14,057	58,301	4,151	62,452	62,615

COLORADO STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

D E S C R I P T I O N	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND OBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
-----									
Increasing WM Capabilities									
2-11-020-83	4,211	8,102	2,867	0	4,878	20,108	1,558	21,616	CID
Increasing WM Capabilities									
2-11-081-84	1,301	0	0	0	468	1,769	129	1,898	CID
Instructors Guide for OA Wkshp									
2-13-042-84	16,813	0	950	0	6,107	23,096	1,708	24,778	24,891
Jt Seminar on Current Research									
2-14-050-85	1,220	1,552	0	0	610	3,405	300	3,682	CU
Tsk Frc Sml-Scl Comm-Mgd System									
2-14-065-84	0	496	0	0	179	675	49	724	CU
Farmer Participation Wksp									
2-14-066-84	0	1,944	0	0	700	2,644	192	2,836	CU
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	318,303	92,198	65,640	11,787	144,064	631,992	124,025	681,319	711,032
-----									
SPECIAL STUDIES:									
-----									
SRI LANKA:									
Interfacing On-Farm Wtr Mngmnt									
3-04-036A85	39,554	0	5,656	0	14,628	59,838	4,476	64,314	86,390
Sri Lanka Interfacing On-Farm									
3-04-036B85	26,306	17,105	7,764	0	12,513	64,019	5,430	69,118	130,907
Landsat85-Remote Sensing Recon									
3-04-038-85	13,604	6,553	4,607	0	6,959	31,780	2,514	34,237	34,442
WORLDWIDE:									
Communication of Tech Trans									
3-04-024-83	34,813	595	755	0	13,018	49,181	3,580	52,761	52,783
Irrigation Systems Management									
3-04-025-83	99,136	7,208	1,019	0	38,393	145,827	10,707	156,463	156,507
Small Scale Irrigation									
3-04-045-83	0	2,341	0	0	843	3,184	232	3,416	CU
Interfacing Farm & Management									
3-04-045-84	60,556	10,090	3,166	0	25,846	99,861	7,531	107,189	223,239
Small scale irrigation									
3-04-045B83	0	2,341	0	0	843	3,184	232	3,416	CU
Main System Management									
3-04-059-83	10,006	0	0	0	3,602	13,819	1,222	14,830	USU
Main System Management									
3-04-059B83	0	0	0	0	0	0	42	42	14,716
Main Sys Design, Mgmt Rehab									
3-04-061-84	18,524	0	82	0	6,698	25,396	1,943	27,247	USU
-----									
TOTAL SPECIAL STUDIES \$	302,499	46,233	23,049	0	123,343	495,124	161,934	533,033	698,984
-----									

TOTAL PRIOR YEARS ACTIV. \$ 1,131,660 238,685 204,319 34,103 510,908 2,119,297 161,934 2,281,609 2,373,797

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CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)

EXPENDITURE REPORT  
AS OF MARCH 31, 1986

CORNELL UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
CORNELL UNIVERSITY									
0-02-996-85	83,693	9,718	16,531	0	63,573	173,515	10,884	184,399	206,932
TOTAL UNIVERSITY SUPPORT \$	83,693	9,718	16,531	0	63,573	173,515	10,884	184,399	206,932
TECHNICAL ASSISTANCE:									
BANGLADESH:									
Water Mgmt Sys Proj Paper									
1-02-072-84	11,966	0	1,364	545	5,245	19,120	1,320	20,440	20,719
INDIA:									
Hill Irrig Proj Prep II									
1-02-074-84	12,347	7,649	287	0	8,809	29,092	2,008	31,100	61,218
Irr Sector Eval & Strtgy Revw									
1-02-103-84	6,161	4,346	10	0	6,369	16,886	1,041	17,927	USU
INDONESIA:									
Small Scale Irrig & Mgmt									
1-02-011-84	17,223	22,019	4,944	0	25,898	70,084	4,374	74,458	54,468
PAKISTAN:									
Curriculum Development									
1-02-071-85	4,937	3,515	327	0	3,717	12,496	869	13,365	CSU
PERU:									
Expansion of Irrig. Systems									
1-02-035-84	1,260	1,239	1,583	0	1,904	5,986	404	6,390	USU
SRI LANKA:									
Farmer Organization Program									
1-02-007-84	18,260	20,014	884	0	20,612	59,770	3,877	63,647	64,466
TOTAL TECHNICAL ASSIST. \$	72,154	58,782	9,399	545	72,554	213,434	24,777	227,327	200,871

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CORNELL UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
TRAINING AND TECHNOLOGY TRANSFER:									
BOLIVIA:									
Tarija Short Course 2-01-095-84	0	0	66	0	45	111	7	117	64,995
INDIA:									
Farmer Organization Workshop 2-14-017-85	0	0	2	0	0	2	0	2	81,141
WORLDWIDE:									
Main System Mgmt Task Force 2-06-077-84	0	609	0	0	418	1,027	60	1,087	7,557
Increasing WM Capabilities 2-11-020-83	3,744	4,258	0	0	1,600	9,602	792	10,394	CID
Professional Visitors 2-11-068-84	0	0	2,885	0	1,999	4,884	286	5,170	9,673
Increasing WM Capabilities 2-11-081-84	3,072	0	0	0	733	3,805	304	4,109	CID
"Rehab.", A Game Simulation 2-13-040-85	5,084	0	5,793	0	4,944	15,821	1,077	16,898	33,445
Lessons Learned Wkshop: Activ. 2-14-049-85	1,504	0	405	0	1,118	3,027	189	3,216	41,790
Jt Seminar on Current Research 2-14-050-85	4,400	4,806	18,980	0	9,844	38,030	2,790	40,820	94,372
Small Scale Irrigation Works 2-14-064-84	9,497	716	10,985	0	9,547	30,665	2,091	32,756	47,163
Tsk Frc SmI-Scl Comm-Mgd System 2-14-065-84	2,240	591	820	0	1,761	5,412	361	5,773	20,741
Farmer Participation Wksp 2-14-066-84	4,030	40	7,772	0	6,933	18,775	1,172	19,947	36,193
AID/FAO Expert Consul WM 2-14-067-84	1,811	6,169	27	0	3,979	11,986	793	12,779	9,288
Planning for Seminar 2-14-075-84	4,080	0	3	0	2,250	6,333	404	6,737	9,889
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	39,462	17,189	47,658	0	45,171	149,480	35,103	159,805	456,247
SPECIAL STUDIES:									
NIGER:									
SmI-Scl Irr & Wtr Mgmt, Prelim 3-04-098-84	4,237	0	2	0	1,327	5,566	420	5,986	5,508

CORNELL UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CIG G & A AND OBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Traditional & Dev. SSI									
3-04-111-84	3,548	3,134	2,528	0	1,925	11,135	912	12,047	14,825
WORLDWIDE:									
Small Scale Irrigation									
3-04-045-83	45,919	15,662	4,347	0	28,308	94,236	6,527	100,763	160,697
Comp Anal of Ind Invst Stratgy									
3-04-053-85	16,987	0	3,242	0	10,452	30,681	2,803	32,683	15,031
Management Intensity									
3-04-096-84	38,517	415	752	0	20,111	59,795	3,929	63,724	77,238
TOTAL SPECIAL STUDIES \$	109,208	19,211	10,871	0	62,123	201,413	48,894	215,203	273,299
TOTAL PRIOR YEARS ACTIV. \$	304,517	104,900	84,459	545	243,421	737,842	48,894	786,734	1,137,349

CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)

EXPENDITURE REPORT  
AS OF MARCH 31, 1986

UTAH STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND O&A	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
<b>UNIVERSITY SUPPORT ACTIVITIES:</b>									
<b>ADMINISTRATION:</b>									
UTAH STATE UNIV. 0-02-997-85	117,706	9,511	23,469	3,354	49,593	203,633	14,918	218,551	233,126
<b>TOTAL UNIVERSITY SUPPORT \$</b>	<b>117,706</b>	<b>9,511</b>	<b>23,469</b>	<b>3,354</b>	<b>49,593</b>	<b>203,633</b>	<b>14,918</b>	<b>218,551</b>	<b>233,126</b>
<b>TECHNICAL ASSISTANCE:</b>									
<b>DOMINICAN REPUBLIC:</b>									
Weed Control Specialist 1-02-091-84	674	1,511	1	0	700	2,886	216	3,102	3,354
<b>EGYPT:</b>									
Egypt Water Use & Mngmt Eval 1-02-066-85	0	97	17,506	0	5,633	24,009	2,592	25,828	41,268
<b>HAITI:</b>									
Irrigation Sector Survey 1-04-017-84	26,062	8,242	892	0	11,296	46,492	3,876	50,368	50,658
<b>HONDURAS:</b>									
Irrigation Development Project 1-02-060-85	3,280	2,211	52	0	1,774	7,375	612	7,929	12,309
<b>INDIA:</b>									
TA/Field Stu/TR-Madhya Pr Minr 1-01-025-84	0	3,617	0	0	0	3,617	358	3,975	9,000
University Curricula 1-02-013-85	10,484	2,938	59	0	4,313	17,979	1,538	19,332	26,472
Maharashtra Minor Irrig 1-02-018-84	16,846	25,222	33,793	0	24,275	100,495	7,935	108,041	171,970
Mdya Pr Mnr Irr:Socio-Tch Feas 1-02-023-84	0	0	13	0	4	17	1	19	174,989
Hill Irrig Proj Prep II 1-02-074-84	5,315	14,751	30,945	0	16,324	67,993	5,773	73,198	CU
Short Course 1-02-100-84	14,303	10,060	23,414	0	15,289	63,356	5,049	68,115	84,388

UTAH STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
Irr Sector Eval & Strtgy Revw 1-02-103-84	48,380	9,915	92,570	0	35,013	187,235	12,538	198,436	227,461
INDONESIA:									
Small Scale Irrig & Mgmt 1-02-011-84	7,487	15,635	828	0	7,664	31,747	2,517	34,131	CU
JAMAICA:									
Planning Activities 1-02-007-85	0	0	0	0	0	0	0	0	11,970
Systems Study 1-02-009-85	0	0	0	0	0	0	0	0	24,822
JORDAN:									
SR. On Farm WM Advisor 1-02-014-84	1,440	360	2,318	0	1,318	5,436	408	5,844	4,767
Irrigation Sector Study 1-04-013-84	6,345	982	300	0	2,440	10,178	877	10,944	31,429
MAURITANIA:									
River Valley - Plan of Action 1-02-076-85	9,175	4,583	19	0	4,820	18,759	1,542	20,139	45,915
NEPAL:									
Sm/Med Scale Irrigation 1-02-067-85	10,730	6,297	9,717	0	8,558	35,613	2,990	38,292	89,481
PAKISTAN:									
Long-Term Strategies 1-02-101-84	0	0	728	0	233	961	72	1,033	9,369
Command Area Management 1-02-106-84	0	1,724	6,063	0	2,492	10,551	920	11,199	16,068
PERU:									
Expansion of Irrig. Systems 1-02-035-84	0	10,586	20,603	0	9,980	41,598	3,559	44,728	53,681
Special Study 1-04-027-82	31,541	6,291	6,273	0	15,060	59,784	5,047	64,212	93,755
SRI LANKA:									
Irr Sys Mgmt Proj Design Team 1-02-102-84	21,128	8,529	1,262	0	9,894	41,177	3,461	44,274	CSU
TANZANIA:									
Tanzania Irrig Study 1-02 082-84	2,880	280	5,083	0	2,637	10,931	872	11,752	12,567
TOTAL TECHNICAL ASSIST. \$	216,070	133,831	252,459	0	179,717	781,857	77,641	844,800	1,195,693
RAINING AND TECHNOLOGY TRANSFER:									
BOLIVIA:									
Tarija Short Course 2-01-095-84	1,488	2,047	47	0	1,146	4,754	383	5,111	CU

UTAH STATE UNIVERSITY  
PRIOR YEARS WORK PLAN ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
-----									
Course - Small-Scale Irr Design 2-14-010-85	5,988	348	5,180	0	3,685	15,415	1,375	16,576	41,333
ECUADOR:									
Equivar Video 2-03-054-83	97,023	9,519	34,432	0	49,341	190,739	14,422	204,737	204,837
INDIA:									
Senior Officials 2-04-007-83	0	0	728	0	255	983	72	1,055	1,054
WORLDWIDE:									
Increasing WM Capabilities 2-11-020-83	6,683	5,706	86	0	4,075	16,675	1,372	17,922	C10
French Language Training 2-11-059-84	3,211	0	1,020	0	1,296	5,527	419	5,946	10,650
Increasing WM Capabilities 2-11-081-84	0	5,573	84	0	1,810	7,467	560	8,027	C10
Jt Seminar on Currant Research 2-14-050-85	4,783	6,051	105	0	3,501	14,520	1,171	15,611	CU
Tsk Frc Sml-Scl Comm-Mgd System 2-14-065-84	0	820	18	0	268	1,106	83	1,189	CU
Farmer Participation Wksp 2-14-066-84	0	1,268	0	0	406	1,674	126	1,800	CU
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	119,176	31,332	41,700	0	65,783	257,991	97,624	277,974	257,874
SPECIAL STUDIES:									
-----									
AFRICA:									
Dev. Of Social Parameters 3-04-057-83	24,650	13,578	2,736	0	13,440	54,609	4,281	58,685	67,039
WORLDWIDE:									
On-Farm Irrigation Systems Sel 3-04-058-83	12,476	373	91	0	4,303	17,243	1,281	18,524	47,146
Main System Management 3-04-059-83	34,237	22,354	8,186	0	22,672	87,616	6,597	94,046	146,905
Monitoring Projects 3-04-061-83	0	0	0	0	0	0	0	0	18,350-
Main Sys Design, Mgmt Rehab 3-04-061-84	70,871	5,001	22,291	131	31,439	129,733	9,718	139,451	221,424
Interdisp. Irrig. Sys. Sel. 3-04-062-84	22,739	873	744	0	7,794	32,150	2,411	34,561	62,430
-----									
TOTAL SPECIAL STUDIES \$	164,973	42,179	34,048	131	79,648	320,979	121,912	345,267	563,294
-----									
TOTAL PRIOR YEARS ACTIV. \$	617,925	216,853	351,676	3,485	374,741	1,564,460	121,912	1,686,592	2,249,987

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-88-2086-00)QUARTERLY REPORT  
FOR THE PERIOD ENDING MARCH 31, 1986CLOSED OUT ACTIVITIES  
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DESCRIPTION	CODE	UNIV.	DATE CLOSED	APPROVED AMOUNT
<b>ADMINISTRATION:</b>				
EPD OFFICE	0-01-999-84	CID	Mar. 31, 1985	151,815
CORNELL UNIVERSITY	0-02-996-83	CU	Mar. 31, 1985	191,967
CORNELL UNIVERSITY	0-02-996-84	CU	Mar. 31, 1985	201,970
UTAH STATE UNIVERSITY	0-02-997-83	USU	Mar. 31, 1985	212,734
UTAH STATE UNIVERSITY	0-02-997-84	USU	Mar. 31, 1985	228,956
COLORADO STATE UNIVERSITY	0-02-998-84	CSU	Mar. 31, 1985	238,395
<b>TOTAL ADMINISTRATION</b>				\$ 1,225,837
<b>TECHNICAL ASSISTANCE:</b>				
<b>BANGLADESH:</b>				
Scope of Work	1-02-006-82	CSU	Mar. 31, 1985	16,221
Water Management Systems	1-02-015-82	CU	Dec. 31, 1985	106,858
Consultant, Legal	1-03-029-82	CSU	Mar. 31, 1985	14,671
BAU Collaboration Team	1-03-030-82	CSU	Dec. 31, 1985	66,986
<b>BURMA:</b>				
Wakema Pump Scheme Study	1-02-036-84	CU	Dec. 31, 1985	4,359
<b>CHINA:</b>				
Gell's Study Tour	1-02-038-83	CID	Mar. 31, 1985	2,617
<b>DOMINICAN REPUBLIC:</b>				
Project Paper (OFUM)	1-02-009-83	USU	Mar. 31, 1985	92,538
Project PID	1-02-010-82	USU	Mar. 31, 1985	20,564
Water Management Spec.	1-02-110-84	CSU	Dec. 31, 1985	19,102
<b>HAITI:</b>				
Irrigation Project Evalua	1-02-039-83	USU	Mar. 31, 1985	25,083
<b>INDIA:</b>				
Hill Area Land & Water De	1-02-013-83	CU	Dec. 31, 1985	43,004
WM & Training	1-02-014-83	CID	Mar. 31, 1985	23,710
Water Management & Traini	1-02-020A82	CSU	Mar. 31, 1985	16,901
Water Management & Traini	1-02-020B82	USU	Dec. 31, 1985	24,026
Development of Solutions	1-02-024-82	CSU	Dec. 31, 1985	61,190
Evans Project Preparation	1-02-033-83	CSU	Mar. 31, 1985	12,581
Clyma's TOY	1-02-035-83	CSU	Mar. 31, 1985	2,888

CLOSED OUT ACTIVITIES  
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DESCRIPTION	CODE	UNIV.	DATE CLOSED	APPROVED AMOUNT
Olsen's TOY	1-02-037-83	USU	Mar. 31, 1985	12,448
DA Workshop Planning	1-02-044-83	CSU	Dec. 31, 1985	31,736
INDONESIA:				
OAO'S TOY	1-02-030-83	CSU	Dec. 31, 1985	16,200
JORDAN:				
Review of Curriculum	1-02-041-82	USU	Mar. 31, 1985	9,911
MALI:				
OFWM Specialist	1-02-006-83	USU	Mar. 31, 1985	16,421
PAKISTAN:				
WM (CWM) Meeting	1-02-029883	CSU	Dec. 31, 1985	3,164
CLYMA'S TOY	1-02-031-83	CSU	Mar. 31, 1985	8,165
Mayfield's TOY	1-02-040-83	USU	Dec. 31, 1985	15,505
SRI LANKA:				
Various TOY's	1-02-008-82	CU	Mar. 31, 1985	67,471
THAILAND:				
Equipment Engineer	1-02-005-82	CID	Mar. 31, 1985	32,012
WORLDWIDE:				
Water Resource Econ	1-02-042-83	CSU	Dec. 31, 1985	19,597
ITAL TECHNICAL ASSISTANCE				\$ 785,929
TRAINING AND TECHNOLOGY TRANSFER:				
-----				
BANGLADESH:				
DA Workshop	2-02-007-82	CSU	Dec. 31, 1985	234,110
INDIA:				
Measurement for System Mg	2-07-026-82	CSU	Mar. 31, 1985	17,324
Watercourse Handbooks	2-13-025-82	CSU	Dec. 31, 1985	20,254
INDONESIA:				
DA Workshop	2-02-010-84	CSU	Dec. 31, 1985	8,257
NEPAL:				
Small Scale Systems	2-14-050-83	CU	Mar. 31, 1985	41,554
SRI LANKA:				
DA Workshop	2-02-028-83	CSU	Dec. 31, 1985	120,519
DA Workshop - WID	2-02-034-83	CSU	Mar. 31, 1985	16,386
THAILAND:				
Improving Allocations	2-14-062-83	CID	Dec. 31, 1985	44,221
WORLDWIDE:				
DA Review	2-02-080-84	CID	Dec. 31, 1985	13,448
Workshop (Tech. & Soc. AS	2-04-023-83	CSU	Mar. 31, 1985	63,241
Workshop (Tech & Soc ASP)	2-04-050-84	CSU	Mar. 31, 1985	44,999
Short Term Non-Degree	2-08-056-83	USU	Dec. 31, 1985	27,795
Increasing WM Cap. Intern	2-11-037-84	CID	Mar. 31, 1985	6,367
Brochures; Newsletters; P	2-12-018-83	CSU	Mar. 31, 1985	8,421
Start-Up Workshop	2-14-051-83	CU	Mar. 31, 1985	11,832

CLOSED OUT ACTIVITIES  
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DESCRIPTION	CODE	UNIV.	DATE CLOSED	APPROVED AMOUNT
Start-Up Workshop	2-14-055-83	USU	Mar. 31, 1985	15,161
Conference	2-14-058-84	USU	Mar. 31, 1985	5,489
FAC/AID Workshop Planning	2-14-064-83	CU	Mar. 31, 1985	2,141
				-----
TOTAL TRAINING AND TECHNOLOGY TRANSFER				\$ 701,439
SPECIAL STUDIES:				
-----				
Development of Handbook	3-00-000-83	USU	Dec. 31, 1985	4,616
				-----
TOTAL SPECIAL STUDIES				\$ 4,616
				-----
TOTAL CLOSED OUT ACTIVITIES				\$ 2,717,821
				-----

CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYNTHESIS II PROJECT  
(AID/DAN 4127-C-00-2096-00)

EXPENDITURE REPORT  
AS OF MARCH 31, 1986

CID / EPD OFFICE  
CLOSED OUT ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
ADMINISTRATION:									
EPD ADMINISTRATION 3-01-999-84	0	703	29	0	0	732	72	804	0
TOTAL UNIVERSITY SUPPORT \$	0	703	29	0	0	732	72	804	0
TECHNICAL ASSISTANCE:									
BANGLADESH:									
Water Management Systems 1-02-015-82	0	0	9,641	0	0	9,641	954	10,595	154,287
CHINA:									
Bell's Study Tour 1-02-038-83	0	0	2,381	0	0	2,381	236	2,617	0
INDIA:									
Hill Area Land & Water Dev 1-02-013-83	0	0	1,574	0	0	1,574	156	1,730	140,949
WM & Training 1-02-014-83	0	0	21,574	0	0	21,574	2,136	23,710	24,398
Development of Solutions 1-02-024-82	0	0	3,826	0	0	3,826	379	4,205	63,936
Olsen's TOY 1-02-037-83	0	0	98	0	0	98	10	108	0
THAILAND:									
Equipment Engineer 1-02-005-82	0	0	29,128	0	0	29,128	2,884	32,012	0
TOTAL TECHNICAL ASSIST. \$	0	0	68,222	0	0	68,222	6,827	74,977	383,570

TRAINING AND TECHNOLOGY TRANSFER:

CID / EPD OFFICE  
CLOSED OUT ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
<hr style="border-top: 1px dashed black;"/>									
BANGLADESH:									
DA Workshop 2-02-007-82	0	0	29,436	0	0	29,436	2,914	32,350	219,174
INDIA:									
Measurement for System Mgmt 2-07-026-82	0	0	3,987	0	0	3,987	395	4,382	0
Watercourse Handbooks 2-13-025-82	0	2,530	0	0	0	2,530	250	2,780	15,188
THAILAND:									
Improving Allocations 2-14-362-83	0	34,909	553	0	5,248	40,710	3,511	44,221	44,250
<hr style="border-top: 1px dashed black;"/>									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	0	37,439	33,976	0	5,248	76,663	13,897	83,733	278,612
<hr style="border-top: 1px dashed black;"/>									
TOTAL CLOSED OUT ACTIV. \$	0	38,142	102,227	0	5,248	145,617	13,897	159,514	662,182
<hr style="border-top: 1px dashed black;"/>									

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986COLORADO STATE UNIVERSITY  
CLOSED OUT ACTIVITIES  
-----

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
-----									
ADMINISTRATION:									
EPD ADMINISTRATION									
3-01-999-84	88,237	1,904	13,362	0	37,261	140,764	10,247	151,011	0
COLORADO STATE UNIV.									
3-02-998-84	126,946	5,889	30,638	0	58,738	222,211	16,184	238,395	0
-----									
TOTAL UNIVERSITY SUPPORT \$	215,183	7,793	44,000	0	95,999	362,975	26,431	389,406	0
TECHNICAL ASSISTANCE:									
-----									
BANGLADESH:									
Scope of Work									
1-02-006-82	5,212	5,750	75	0	3,974	15,128	1,210	16,221	0
Consultant, Legal									
1-03-029-82	5,868	4,135	0	0	3,601	13,604	1,067	14,671	0
BAU Collaboration Team									
1-03-030-82	20,928	10,208	9,208	0	12,600	53,138	4,218	57,162	84,243
DOMINICAN REPUBLIC:									
Water Management Spec.									
1-02-110-84	7,530	2,142	3,339	0	4,684	17,911	1,407	19,102	26,813
INDIA:									
Water Management & Training									
1-02-020A82	5,415	6,073	0	0	4,136	15,764	1,277	16,901	27,991
Development of Solutions									
1-02-024-82	27,582	12,226	1,835	0	10,625	52,891	4,717	56,985	63,936
Evans Project Preparations									
1-02-033-83	4,034	4,545	0	0	3,089	11,732	913	12,581	0
Clyma's TDY									
1-02-035-83	1,224	739	0	0	707	2,694	218	2,888	0
DA Workshop Planning									
1-02-044-83	17,523	4,002	158	0	7,806	29,571	2,247	31,736	28,149
INDONESIA:									
OAD'S TDY									
1-02-030-83	4,527	7,360	84	0	2,951	15,019	1,278	16,200	14,408

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COLORADO STATE UNIVERSITY  
CLOSED OUT ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
-----									
PAKISTAN:									
WM (CWM) Meeting									
1-02-029883	2,143	0	0	0	772	2,956	249	3,164	9,931
CLYMA'S TOY									
1-02-031-83	2,449	3,116	0	0	2,803	7,614	597	8,165	0
WORLDWIDE:									
Water Resource Econ									
1-02-042-83	12,490	700	252	0	4,824	19,266	1,331	19,597	19,703
-----									
TOTAL TECHNICAL ASSIST. \$	116,925	60,996	14,951	0	61,772	254,675	47,160	275,373	275,174
-----									
TRAINING AND TECHNOLOGY TRANSFER:									
-----									
BANGLADESH:									
DA Workshop									
2-02-007-82	91,121	38,551	13,343	790	43,310	187,740	14,645	201,760	219,174
INDIA:									
Measurement for System Mgmt									
2-07-026-82	4,856	4,805	39	0	2,134	11,982	1,108	12,942	0
Watercourse Handbooks									
2-13-025-82	9,254	2,525	57	0	4,261	16,265	1,377	17,474	15,188
INDONESIA:									
DA Workshop									
2-02-010-84	2,849	890	1,955	0	1,999	7,693	564	8,257	8,736
SRI LANKA:									
DA Workshop									
2-02-028-83	41,877	32,539	11,453	0	25,739	111,953	8,911	120,519	121,475
DA Workshop - WID									
2-02-034-83	6,290	5,692	20	0	3,133	15,261	1,251	16,386	0
WORLDWIDE:									
Workshop (Tech. & Soc. ASP)									
2-04-023-83	27,852	403	16,748	0	13,783	58,786	4,455	63,241	0
Workshop (Tech & Soc ASP)									
2-04-050-84	26,914	3,149	994	0	10,867	41,924	3,075	44,999	0
Increasing WM Cap. Intern 1									
2-11-037-84	4,827	0	0	0	1,062	5,889	478	6,367	6,367
Brochures; Newsletters; Pub.									
2-12-018-83	4,921	0	851	0	2,078	7,850	571	8,421	0
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	220,761	88,554	45,460	790	108,366	463,994	93,595	500,366	370,940
-----									
TOTAL CLOSED OUT ACTIV. \$	552,869	157,343	104,411	790	266,137	1,081,644	83,595	1,165,145	646,114
-----									

## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-00-2086-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986CORNELL UNIVERSITY  
CLOSED OUT ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
-----									
ADMINISTRATION:									
CORNELL UNIVERSITY									
0-02-996-83	92,116	6,625	26,376	0	54,463	179,580	12,387	191,967	0
CORNELL UNIVERSITY									
0-02-996-84	97,801	7,197	20,835	3,359	61,200	189,592	12,378	201,970	0
TOTAL UNIVERSITY SUPPORT \$	189,917	13,822	46,411	3,359	115,663	369,172	24,765	393,937	0
TECHNICAL ASSISTANCE:									
-----									
BANGLADESH:									
Water Management Systems									
1-02-015-82	27,521	22,515	12,156	1,695	26,219	90,106	6,157	96,263	154,287
BAU Collaboration Team									
1-03-030-82	2,779	3,561	0	0	2,856	9,196	628	9,824	84,243
BURMA:									
Wakema Pump Scheme Study									
1-02-036-84	2,914	0	1	0	1,155	4,070	289	4,359	4,759
INDIA:									
Hill Area Land & Water Dev									
1-02-013-83	7,991	3,004	7,896	0	8,099	26,990	1,870	28,860	140,949
SRI LANKA:									
Various TOY's									
1-02-008-82	18,858	16,876	6,866	0	20,654	63,254	4,217	67,471	0
TOTAL TECHNICAL ASSIST. \$	60,063	45,956	26,919	1,695	58,983	193,616	37,926	206,777	384,238
TRAINING AND TECHNOLOGY TRANSFER:									
-----									
EPAL:									
Small Scale Systems									
2-14-050-83	19,760	7,058	133	0	11,935	38,886	2,668	41,554	0

CORNELL UNIVERSITY  
CLOSED OUT ACTIVITIES

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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
-----									
WORLDWIDE:									
Start-Up Workshop 2-14-051-83	3,598	3,604	403	0	3,474	11,079	753	11,832	11,833
FAO/AID Workshop Planning 2-14-064-83	771	615	6	0	611	2,003	138	2,141	0
-----									
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	24,129	11,277	542	0	16,020	51,968	41,485	55,527	11,833
-----									
TOTAL CLOSED OUT ACTIV. \$	274,109	71,055	73,872	5,054	190,666	614,756	41,485	656,241	396,071
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## CONSORTIUM FOR INTERNATIONAL DEVELOPMENT

WATER MANAGEMENT SYSTHESIS II PROJECT  
(AID/DAN 4127-C-80-2086-00)EXPENDITURE REPORT  
AS OF MARCH 31, 1986UTAH STATE UNIVERSITY  
CLOSED OUT ACTIVITIES  
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DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
UNIVERSITY SUPPORT ACTIVITIES:									
-----									
ADMINISTRATION:									
UTAH STATE UNIV.									
0-02-997-83	100,395	11,305	11,018	34,916	42,951	200,585	12,149	212,734	0
UTAH STATE UNIV.									
0-02-997-84	121,252	7,294	32,805	0	51,632	212,983	15,973	228,956	0
-----									
TOTAL UNIVERSITY SUPPORT \$	221,647	18,599	43,823	34,916	94,583	413,568	28,122	441,690	0
TECHNICAL ASSISTANCE:									
-----									
DOMINICAN REPUBLIC:									
Project Paper (OFWM)									
1-02-009-83	7,287	23,221	33,236	0	22,310	86,227	6,484	92,538	0
Project PIC									
1-02-010-82	4,496	4,514	5,108	0	4,941	19,059	1,505	20,564	0
HAITI:									
Irrigation Project Evaluation									
1-02-039-83	5,512	5,077	6,631	0	6,027	23,378	1,836	25,083	0
INDIA:									
Hill Area Land & Water Dev									
1-02-013-83	0	841	7,726	0	2,999	11,566	848	12,414	140,949
Water Management & Training									
1-02-020882	0	4,121	12,460	0	5,803	22,384	1,642	24,026	22,802
Olsen's TDY									
1-02-037-83	7,964	247	174	0	2,935	11,510	1,020	12,340	0
JORDAN:									
Review of Curriculum									
1-02-041-82	2,390	4,334	77	0	2,380	9,238	730	9,911	0
MALI:									
OFWM Specialist									
1-02-006-83	6,086	4,846	323	0	3,939	15,194	1,227	16,421	0
PAKISTAN:									
Mayfield's TDY									
1-02-040-83	0	4,987	5,606	0	3,708	14,456	1,204	15,505	15,666

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UTAH STATE UNIVERSITY  
CLOSED OUT ACTIVITIES

DESCRIPTION	SALARIES & BENEFITS	TRAVEL & PER DIEM	OTHER DIRECT COSTS	EQUIPMENT	INDIRECT COSTS	TOTAL UNIVERSITY COSTS	CID G & A AND DBA	TOTAL ACTIVITY EXPENSE	APPROVED ACTIVITY BUDGET
TOTAL TECHNICAL ASSIST. \$	33,735	52,188	71,341	0	55,042	212,086	44,618	228,802	179,417
TRAINING AND TECHNOLOGY TRANSFER:									
WORLDWIDE:									
JA Review									
2-02-080-84	4,961	4,420	34	0	3,013	12,516	1,020	13,448	0
Short Term Non-Degree									
2-08-056-83	11,522	1,533	6,533	0	6,268	25,856	1,939	27,795	37,909
Start-Up Workshop									
2-14-055-83	5,971	4,491	1	0	3,662	14,125	1,036	15,161	0
Conference									
2-14-058-84	1,955	1,824	2	0	1,210	5,035	418	5,409	0
TOTAL TRAINING AND TECHNOLOGY TRANSFER \$	24,409	12,268	6,570	0	14,153	57,400	49,031	61,813	37,909
SPECIAL STUDIES:									
Development of Handbook									
3-00-000-83	3,201	0	52	0	1,041	4,294	322	4,616	4,615
TOTAL SPECIAL STUDIES \$	3,201	0	52	0	1,041	4,294	49,353	4,616	4,615
TOTAL CLOSED OUT ACTIV. \$	282,992	83,055	121,786	34,916	164,819	687,348	49,353	736,921	221,941

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Consortium For International Development  
 Water Management Synthesis II  
 Summary Financial Report With Budget Comparison  
 For The Period January 1, 1986 Through March 31, 1986

Fiscal Year 1986 Work Plan Activities

	Total FY 1986 Work Plan Budget	Current Qtr. Period Expenditures	Cumulative Expenditures Inception To Date	Unexpended Balance	Percent Of Budget Unexpended
<u>DIRECT COSTS:</u>					
Salaries & Benefits	2,646,808	458,733	1,902,483	744,325	28 %
Travel & Per Diem	633,936	110,125	442,984	190,952	30 %
Other Direct Costs	1,289,491	194,385	1,030,443	259,948	20 %
Equipment	338,934	19,273	67,632	271,302	80 %
CID - DBA	37,651	2,727	15,798	21,853	58 %
	-----	-----	-----	-----	-----
Total Direct Costs \$	4,946,820	785,243	3,459,340	1,487,480	30 %
	-----	-----	-----	-----	-----
<u>INDIRECT COSTS:</u>					
University	1,824,852	235,679	1,032,593	792,259	43 %
CID - G&A	591,154	63,431	325,594	265,560	44 %
	-----	-----	-----	-----	-----
Total Indirect Costs \$	2,416,006	299,110	1,358,187	1,057,819	43 %
	-----	-----	-----	-----	-----
<u>TOTAL PROJECT COSTS \$</u>	7,362,826	1,084,353	4,817,527	2,545,299	34 %
	=====	=====	=====	=====	=====

Consortium For International Development

Water Management Synthesis II

Project Expenditure by University

Cumulative to Date As Of March 31, 1986

Fiscal Year 1986 Work Plan Activities

	Colorado State University	Utah State University	Cornell University	Consortium For International Development	Total Costs
<u>DIRECT COSTS:</u>					
Salaries & Benefits	916,015	708,979	176,190	101,299	1,902,483
Travel & Per Diem	152,578	200,057	56,439	33,910	442,984
Other Direct Costs	209,341	693,405	66,773	70,924	1,030,443
Equipment	14,668	39,340	1,176	12,448	67,632
CID - DBA	9,139	6,323	0	336	15,798
	-----	-----	-----	-----	-----
Total Direct Costs \$	1,301,741	1,638,104	300,577	218,918	3,459,340
	-----	-----	-----	-----	-----
<u>INDIRECT COSTS:</u>					
University	392,361	477,625	145,310	17,297	1,032,593
CID - G&A	127,421	147,444	29,641	21,088	325,594
	-----	-----	-----	-----	-----
Total Indirect Costs \$	519,782	625,069	174,951	38,385	1,358,187
	-----	-----	-----	-----	-----
<u>TOTAL PROJECT COSTS \$</u>	1,821,523	2,263,173	475,528	257,303	4,817,527
	=====	=====	=====	=====	=====

Consortium For International Development

Water Management Synthesis II

Project Expenditure by University

Cumulative to Date As Of March 31, 1986

Prior Years Work Plan Activities

	Colorado State University	Utah State University	Cornell University	Consortium For International Development	Total Costs
<u>DIRECT COSTS:</u>					
Salaries & Benefits	1,131,660	617,925	304,517	104,051	2,158,153
Travel & Per Diem	238,685	216,853	104,900	116,302	676,740
Other Direct Costs	204,319	351,676	84,459	209,755	850,209
Equipment	34,103	3,485	545	6,315	44,448
CID - D&A	5,459	7,573	0	1,488	14,520
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Total Direct Costs \$	1,614,226	1,197,512	494,419	437,911	3,744,068
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<u>INDIRECT COSTS:</u>					
University	510,908	374,741	243,421	30,132	1,159,202
CID - G&A	156,475	114,339	48,894	42,617	362,325
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Total Indirect Costs \$	667,383	489,080	292,315	72,749	1,521,527
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<u>TOTAL PROJECT COSTS \$</u>	2,281,609	1,686,592	786,734	510,660	5,265,595
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Consortium For International Development  
 Water Management Synthesis II  
 Summary Financial Report With Budget Comparison  
 For The Period January 1, 1986 Through March 31, 1986

Prior Years Work Plan Activities

	Prior Years Work Plan Budget	Current Qtr. Period Expenditures	Cumulative Expenditures Inception To Date	Unexpended Balance	Percent Of Budget Unexpended
<u>DIRECT COSTS:</u>					
Salaries & Benefits	981,765	29,512	2,158,153	( 1,176,388)	( 119) %
Travel & Per Diem	318,533	11,045	676,740	( 358,207)	( 112) %
Other Direct Costs	1,289,491	18,879	850,209	439,282	34 %
Equipment	5,000	0	44,448	( 39,448)	( 788) %
CID - DBA	12,188	299	14,520	( 2,332)	( 19) %
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Total Direct Costs \$	2,606,977	59,735	3,744,068	( 1,137,093)	( 43) %
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<u>INDIRECT COSTS:</u>					
University	595,717	32,653	1,159,202	( 563,485)	( 94) %
CID - G&A	198,149	2,863	362,325	( 164,176)	( 82) %
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Total Indirect Costs \$	793,866	35,516	1,521,527	( 727,661)	( 91) %
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<u>TOTAL PROJECT COSTS \$</u>	3,400,843	95,251	5,265,595	( 1,864,754)	( 54) %
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