

PD-AAB-135-B1

CARE PROJECT PROPOSAL
OPERATIONAL PROGRAM GRANT
TO FINANCE AN IRRIGATION PROJECT
AT THE AGRARIAN REFORM COLONY
OF ANGELICA DE SCHICK

Compiled by: Richard Steelman
Representative
CARE/Nicaragua

Approved by: Glenn Porter
Director
CARE/Nicaragua

Submitted to: James Philpott
Program Officer
USAID - Nicaragua

Date: April 24, 1975.

CARE PROJECT PROPOSAL
OPERATIONAL PROGRAM GRANT
TO FINANCE AN IRRIGATION PROJECT
AT THE AGRARIAN REFORM COLONY
OF ANGELICA DE SCHICK

ERRATA SHEET

Page 5 -- "End of Project Status" - Paragraph 3 should read as follows:

"3. Increase the annual income per family from an average of C\$6,075 to an average of C\$15,280."

Page 10 -- First full sentence should read:

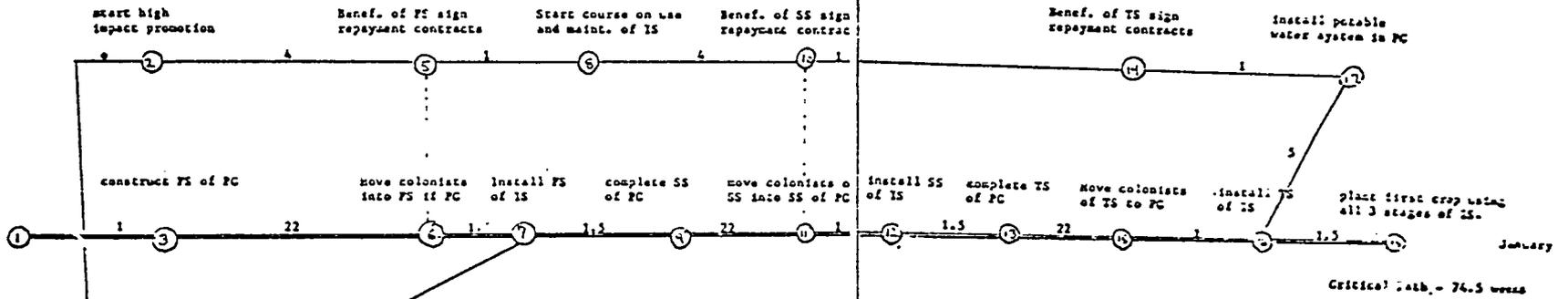
"Current family incomes averaging about \$868 per year (\$124 per capita) are expected to increase to an average of \$2,183 (31.2 per capita)."

Pages 11 and 12 -- "Implementation Plan", substitute the attached PERT chart (Annex IV).

Page 14 -- Substitute the attached revised page 14.

Pages 19 and 20 -- Substitute the revised page 19 attached hereto.

receive AID approval
May 1975



- IS - Irrigation System
- PC - Population Center
- FS - First Stage
- SS - Second Stage
- TS - Third Stage

———— Critical Path
 Dummy Constraint

Note: All times (typed numbers) given in weeks.
 Line length is not related to time.

ANNEX II: AGRO-ECONOMIC ANALYSIS

In order to develop the "Angélica de Schick" Irrigation System, a three-phase plan is being considered, the first of which would encompass 95 "manzanas" (a manzana is equivalent to 1.74 acres). These 95 manzanas will be planted three times during the year. The crops will be: rice, beans and sorghum. It is estimated that this harvest distribution will reap a net income of C\$412,629 (equivalent to US\$58,947). Therefore, each family's income will, on the average, increase by some 150%; from the equivalent of \$868 per year to more than \$2,180 per year. This income is distributed by crop as follows:

<u>Crop</u>	<u>Net Income</u>
Rice	C\$ 296,524.00
Beans	75,221.00
Sorghum	<u>40,884.00</u>
TOTAL	C\$ 412,629.00

The first phase will benefit twenty-seven (27) families; therefore, the net gain per family will amount to C\$15,280 (equivalent to US\$2,182.86).

The following considerations should be noted:

1) The above income comes from: two crops under irrigation during the dry season, and

2) One crop during the rainy season (May through December). Colonists will have their usual harvest using the irrigation system as a complement in the event rainfall does not reach normal levels.

3) It is estimated that the irrigation systems for the two (2) subsequent phases, each of approximately 100 mzas., can be installed in

A) BENEFITS:

300 mzs. of rice, yield: 45 qq/mz with supplementary irrigation at C\$149/qq	C\$2,011,500.00
300 mzs. of sorghum, yield: 50 qq/mz. with irrigation at C\$43.00/qq	645,000.00
300 mzs. of beans, yield: 15 qq/mz. with irrigation at C\$42.20/qq.	<u>639,900.00</u>

TOTAL

C\$3,296,400.00

B) COSTS:

B.1 Fixed Costs:

Depreciation of irrigation equip. (10 yrs.)	117,006.00
IAN's annual costs	75,733.00

Annual Production Costs:

Rice	649,428.00
Sorghum	475,848.00
Beans	372,837.00
Annual Administrative Costs	50,250.00
Unforeseen expenses	<u>87,055.00</u>

Total annual costs

C\$1,828,157.00

Gross income from production	3,296,400.00
Less annual operating cost and depreciation	<u>1,828,157.00</u>

Net annual return for colony

C\$1,468,243.00

Less net annual income for 100 families of colony prior to project	<u>607,500.00</u>
--	-------------------

Increase in return attributable to project

860,743.00
x ten years

Total net projected profit over life of system

8,607,430.00

C\$8,607,430.00 divided by AID and IAN's total investment of C\$2,219,063.00 yields a benefit cost ratio of 3.9. *

* NOTE: This includes the cost of the population centers infrastructure. In fact the Benefit/Cost ratio for the irrigation system itself would be somewhat higher than the 3.9 figure indicated.

TABLE OF CONTENTS

	<u>Page</u>
Background Information Regarding IAN	1
Background Information Regarding the IAN/CARE Program	2
Project Goals	4
Project Purposes	4
End of Project Status	5
Project Outputs	6
Inputs/Sources	6
CARE	6
IAN	6
Israeli Mission	7
AID	8
Project Analysis and Design	9
Implementation Plan	11
Annex I - Map of IAN Colonies	13
Annex II - Agro-Economic Analysis	14
Annex III - Project Budget - AID Financing	21

INTRODUCTION

BACKGROUND INFORMATION REGARDING THE AGRARIAN REFORM INSTITUTE OF NICARAGUA (IAN):

Nicaragua is suffering from the all too-common problem of unequal and inefficient land usage.

The Pacific Coast, an area of 18,219 km², constitutes only 15.4% of Nicaragua's total land area, but has a population density of 47.5 people per km², while the central area consists of 33,597 km² and has a density of 16.7 and the Atlantic Coast has the bulk of the land (56.2%) 66,542 km², with a population density of only 1.1.

The government was aware of and sensitive to these problems. In 1964, the Agrarian Institute of Nicaragua (IAN) was formed. Its goals were to:

1. Colonize national lands, thereby making a more equitable distribution, giving lower-income farmers a chance to greatly better their way of life and putting heretofore fallow lands into production.
2. To provide clear and legal title to individuals who are squatters or have an otherwise nebulous or tenuous claim to land. This is done primarily by IAN's negotiating with the legal owners and has proved quite successful.
3. Give technical and material assistance to families falling under its program, thereby assuring optimum usage of the land, with a

concomitant increase in the lower-income farmer's production and, therefore, income. To date, 42,000 families have had their titles cleared by IAN, and over 6,000 additional families have been given land in one of IAN's colonies, which are spread throughout the country (see Map of Nicaragua/IAN's Colonies).

Of the latter group, 1/3 live on the Pacific Coast, a region of good soil but low rainfall. There is, at best, just enough rain for one crop a year. In times of drought, which of late have been frequent (2 out of the last 5 years), lower-income farmers, who could not afford irrigation systems, experienced a very sharp, if not total loss, of income.

With irrigation, 2 and even 3 crops a year are possible with a corresponding increase in income and production. Only in this manner will the present and future colonists of IAN be able to derive maximum benefit from their newly-gained lands.

BACKGROUND INFORMATION REGARDING THE IAN/CARE PROGRAM:

CARE's first contact with IAN was in 1968, when we were approached for donations of agricultural tools and settler's kits. The informal relationship continued until April, 1970, when we signed our first agreement. Under this and subsequent agreements and supplementary agreements, a joint fund was formed which was used for the construction of basic services (i.e., schools, clinics, community centers, bridges, drainage systems, etc.) As our program developed, we looked for means of making an even more direct contribution to the economic and agricultural spheres of the colonists' lives. Consequently, in 1972, IAN

and CARE started projects in the area of irrigation. Our first systems were small (7-8 acres) and consisted of a pump and feeder line giving water to a series of hoses with which the crops were irrigated by hand. This later evolved to hoses with sprinklers on the ends.

7 - 8 ACRE SYSTEMS

<u>Colony Name</u>	<u>Income from Corps per Fam. Before Irrigation (In Córdoba)</u>	<u>Additional Family Income from Irrigated Crops grown during dry season (In Córdoba)</u>	<u>Total annual Income With Irrigation (In Córdoba)</u>
Sta. Marta del Carao	1,795	2,000	3,795
Tonala	2,610	3,375	5,985
San Ignacio	2,940	3,000	5,940

We then graduated to larger systems. In the colony "La Esperanza", we built a 44-acre gravity flow irrigation system benefiting 20 families (comprised of 147 individuals). Here the increase in harvest income was:

LA ESPERANZA

<u>CROP</u>	<u>Before Irrigation</u>		<u>After Irrigation</u>	
	<u>Amount Harvested</u>	<u>Income Per Family</u>	<u>Amount Harvested</u>	<u>Income Per Family</u>
Corn	20 mzas.	C\$1,103	20 mzas. in	C\$2,670**

** = C\$1,103 from rain season crops, plus C\$1,567 from dry season vegetables grown under irrigation (1974).

In April of 1974, IAN and CARE signed our first agreement under which the funds would only be used for irrigation projects. We have, under this agreement, dug wells in Presidente Schick and Santa Isabel.

These two systems, totalling more than 100 acres and benefiting 45 lower-income farmers and their families, will be in operation by the end of this year. The beneficiaries of these systems will repay their cost, at no interest, to a special IAN/CARE productive project revolving fund. The repayments will be used to construct other irrigation systems.

PROJECT GOALS:

Our goal is to improve the quality of life of the small farmer by helping him increase his production and income and by providing improved community services (water, electricity, educational and health services).

Nutrition will be improved as well, as a concomitant of the increased production of basic grains.

IMPORTANT ASSUMPTIONS:

GON will continue in its stated policy to develop and implement programs to benefit the small farmer.

The international assistance agencies will provide the external resources required by the GON to finance such programs.

The GON and international agencies will utilize the results of this project in developing similar efforts for future implementation at other locations.

PROJECT PURPOSES:

1. To increase by means of irrigation systems and technical assistance both the number of harvests and the amount harvested by lower-income farmers comprising the colony of Angelica de Schick.

2. To increase, as a concomitant of the above, the annual income per family for the lower-income farmers who will benefit from the proposed irrigation system.

3. To set up a IAN/CARE revolving account. This fund would be financed by the repayments made by the beneficiaries of the irrigation system. The money would be used to fund other irrigation systems and similar projects agreed to by IAN and CARE.

END OF PROJECT STATUS:

1. The irrigation system will be used the entire year. It will be used during the dry season to make possible 2 crops when none were grown before and used during the rainy season to augment, when necessary, the natural rainfall to insure a good crop.

2. Increase in harvest from 21 qq. for sorghum per mza. per year, to 50 qq. and introduce rice and beans as new crops.

3. Increase the annual income per family from an average of C\$6,075 to an average of C\$9,965.

4. Repayments of C\$140,000 per year to the IAN/CARE fund after the 2-year grace period. These payments would continue for 10 years.

5. The agricultural engineer will be permanently assigned to the site.

6. The system will be farmed by 100 families comprising 700 individuals.

7. After the grace period, a system of collection for the repayment will be set up.

BASIC ASSUMPTIONS:

1. Market prices will be sufficiently high to allow farmers to repay the special fund as well as cover expenses and leave a profit.

2. There will be no major mechanical failure of the system itself or any of the supporting equipment (tractors) at a critical period.

PROJECT OUTPUTS:

(a) Kind of Outputs	(b) Magnitude of Outputs (Indicators)	(c) Target Completion Date
U.S.	- 0 -	
Cooperating Country	15 qq for beans per mza. 45 qq for rice per mza. 50 qq for sorghum per mza. C\$9,965 per family 3 crops per year*	See Annex II " " " " " "
Other Donor	- 0 -	

* = One by rain and partially with irrigation; two by irrigation.

INPUTS/SOURCES:

CARE

Personnel (for US\$ value, see attached Grant Proposal Breakdown).

1 Field Representative	20% of time
1 Country Director	10% of time

IAN

1 Project Planner	1½ months	\$ 857.14
1 Community Planner	4 months	2,285.71
1 Economist	1½ months	857.14
Topographers and Draftsmen	As needed	714.29
1 Permanent Agricultural Engineer	100%	6,857.14

1 Civil Engineer	4 months	2,285.71
1 Social Worker	30%	1,337.14
1 Promoter	30%	1,337.14
Administrative Personnel	10%	<u>2,742.86</u>
PERSONNEL SUB-TOTAL		\$ 19,274.27

Transportation

Transport of equipment to site	\$ 2,142.86	
Jeep for full-time Agricultural Engineer	3,428.57	
Misc. Transport of Personnel	<u>428.57</u>	
SUB-TOTAL		\$ 6,000.00

Infrastructure

110 wooden CEPAD houses for new population center at \$714 each	\$78,571.43	
SUB-TOTAL		<u>78,571.43</u>
TOTAL		\$103,845.70*

* = This is the equivalent of 49.6% of the USAID Grant requested.

ISRAELI MISSION

Personnel

1 Expert in Irrigation Design	3 months	\$ 8,000.00
1 Agricultural Engineer	100% of time	<u>15,600.00</u>
		\$ 23,600.00

AGENCY FOR INTERNATIONAL DEVELOPMENT (AID)

I. Personnel and Operations (CARE direct costs financed by AID):

A. Salaries, Location allowance and

Benefits - U.S. Personnel:

Project Supervision Costs (1/4 man-year) \$ 5,818.00

B. Salaries - Nicaraguan Personnel

1. Bilingual Secretary (20%)	984.00	
2. Accountant (20%)	566.00	
3. Clerk (15%)	309.00	
4. Office Messenger (10%)	105.00	\$1,964.00
		<hr/>

C. Welfare Benefits and Insurance (INSS) - Nicaraguan Personnel

1. 7.5% of salaries 147.00

D. Other Project-Related Direct Costs

1. Office supplies	100.00	
2. Postage, telephone, cables	100.00	
3. Freight and cartage	250.00	
4. Vehicle Maintenance and repair	500.00	
5. Utilities	100.00	
6. Professional Services	150.00	
7. Travel and Lodging	250.00	
8. Project Promotion	150.00	\$1,600.00
		<hr/>

Total CARE direct costs

7, 782
\$9,529.00

II. Materials, Equipment and Related Services:

A. Drilling, lining and enclosing six wells 140 to 180 feet in depth (estimated) installation of six pumps (Jacuzzi 7 stage model 10 HCA-7 or similar) with 50-75 HP motors (type NEMA-Frame 3/60/460, 1800 RPM) depending on well depth \$ 90,775.00

B. Six irrigation systems consisting of PVC and aluminum pipes, connections, valves, and sprinkler heads sufficient to cover a total area of approximately 300 "man-zanas" (522 acres) 76,377.00

C. Electrical installation at Project Site (including 5,050 meters of transmission line and ENALUF charge for connection	\$ 13,848.00
D. Community Electrical System	8,000.00
E. Community Potable Water System	<u>11,000.00</u>
Total Materials, Equipment and Related Services	\$200,000.00
III. Provisional PVO Overhead Rate -- 8.11% of Project costs	<u>16,993.00</u> —
TOTAL AID FINANCING REQUESTED	<u>\$226,522.00</u>

BASIC ASSUMPTIONS FOR PROJECT INPUTS:

1. Necessary irrigation equipment (especially pumps and motors) will be available when needed.
2. Government of Israel will continue to finance a full-time agricultural engineer for this project.
3. Government of Nicaragua will allocate enough money to cover all of IAN's projected inputs.

PROJECT ANALYSIS AND DESIGN

This project has been developed to demonstrate that, properly utilized and managed, modern irrigation systems can materially increase production on small, contiguous agricultural holdings and thereby increase the incomes and standard of living of poor campesinos. Analysis indicates that irrigation will permit one hundred families (about seven hundred individuals) living on an agrarian reform colony located in a fertile area west of León to increase their annual per capita income by a minimum of 64% as a direct result of

this project. Current family incomes averaging about \$868 per year (\$124 per capita) are expected to increase to an average of \$1,424 (\$203 per capita). It is expected that, if successful, the project will become a model for other similar GON efforts to improve the lives of the poorest majority of the rural population, some of which may receive financial support through the proposed AID agriculture sector loan.

The project will engage the services of IAN, the Israeli Mission and CARE in a coordinated effort aimed not only at increasing agricultural production, but at improving the overall quality of life of the beneficiaries. The inhabitants are now living on the same plots of land that they are farming. This means a loss of cultivatable land. For this reason they will be moved to the population center. The population center presently has a school, clinic, warehouse and administration building. IAN will construct housing for the colonists. Electricity will be brought in from the installation being provided for the irrigation system and a potable water system will be installed for the community.

The beneficiaries will keep their assigned parcels of land but farm cooperatively, i.e. they will all grow the same crop, deciding cooperatively what it will be each planting, and they will be responsible for fertilizing, fumigating, etc. their land. The crop will be sold by IAN, with full participation by the cooperative in decision making, and the profits will be divided among the colonists on an

equitable basis. Adequate grain storage facilities, operated by the GON price stabilization agency, INCEI, are located within two kilometers of the colony.

Financially, after a two-year grace period the beneficiaries will begin to repay the cost of the system. Their repayment will take place over a 10-year period and be made into a joint IAN/CARE revolving fund that will be used to initiate additional irrigation projects at other IAN colonies. To insure that the fund doesn't lose its purchasing power, the colonists will pay 6 - 8% interest (the precise rate has not yet been determined). The funds given to IAN/CARE to repay the system will be kept in a joint account in the names of those two organizations.

In case of crop loss during a year, that year's payment would be postponed. This is the only condition under which postponement will be allowed. The colonists themselves will be responsible for payment of the costs of electricity for the irrigation system. The payments will be made through the cooperative. See Annex II for the agro-economic analysis.

IMPLEMENTATION PLAN:

1. Receive assurance of USAID funding.
2. IAN starts building houses in population center.
3. Commence program to transfer colonists to the population center within the colony.
4. Start construction of irrigation systems per technical studies. Work to be contracted out.

5. IAN assigns agricultural engineer to work permanently in Angelica de Schick.

6. Israel assigns an expert in agriculture with experience in irrigation.

7. At the end of the two-year grace period, repayment to IAN/CARE revolving fund is initiated.

ANNEX II: AGRO-ECONOMIC ANALYSIS

In order to develop the "Angélica de Schick" Irrigation System, a three-phase plan is being considered, the first of which would encompass 95 "manzanas" (a manzana is equivalent to 1.74 acres). These 95 manzanas will be planted three times during the year. The crops will be: rice, beans and sorghum. It is estimated that this harvest distribution will reap a net income of C\$269,049 (equivalent to US\$38,435.00), distributed by crop as follows:

<u>Crop</u>	<u>Net Income</u>
Rice	C\$ 296,524.00
Beans	75,221.00
Sorghum	<u>40,884.00</u>
TOTAL	C\$ 412,629.00

The first phase will benefit twenty-seven (27) families; therefore, the net gain per family will amount to C\$9,964.78 (equivalent to US\$1,423.54).

The following considerations should be noted:

1) The above income comes from two crops under irrigation during the dry season, and

2) One crop during the rainy season (May through December).

Colonists will have their usual harvest using the irrigation system as a complement in the event rainfall does not reach normal levels.

3) It is estimated that the irrigation systems for the two (2) subsequent phases, each of approximately 100 mzas., can be installed in

the course of the year 1976 so that their operation can be initiated in January, 1977. (The final well and irrigation system connections being financed with FY 1977 funds in October 1976).

The first stage of this irrigation system will cost about \$55,000 (see Annex IV), plus an estimated \$13,848 to bring electricity from the municipal lines to the well site. The total system is, as detailed above, estimated to cost in the vicinity of \$200,000.

The infrastructure for the town (electrical system and potable water system) will also be constructed using funds from this grant but these installations will receive lower priority than the irrigation system. The beneficiaries will be responsible for their own electric bills, as well as that of the irrigation system itself.

The electrical installation will entail running a cable from the line feeding the irrigation pumps to the population center, a distance of about $\frac{1}{2}$ km., then running feeder lines into the individual houses. The potable water system would be a 15,000 gallon tank supplied by its own well. The electrical system would cost an estimated \$8,000; the cost of the potable water system is estimated at \$11,000.

Analyses of production costs for the proposed crops together with cost benefit calculations are shown on the following pages.

CROP: RICE

CULTIVATED AREA: 95 mzs.

NAME: Angélica de Schick Colony

Date of Sowing: June - October

	<u>Unit Cost</u>	<u>Cost Per Manzana</u>
1) <u>Preparation of the Land:</u>		
1 Plowing	C\$ 90.00	C\$ 90.00
3 Harrowings	30.00	90.00
1 Sowing and Fertilizing	30.00	30.00
2) <u>Labor:</u>		
1 Herbicide Application	20.00	20.00
2 Fertilizer Applications	20.00	40.00
4 Insecticide Applications	20.00	80.00
Irrigation 5 x 12.50	12.50	62.50
3) <u>Supplies:</u>		
1 qq. of seed	150.00	150.00
2 qq. of Fertilizer 10-40-10	200.00	400.00
1 qq. of Amonium Sulfate	70.00	70.00
2 qq. of Urea	140.00	280.00
1 Gln. of Herbicide (Stam-Iv-10)	140.00	140.00
<u>Insecticides:</u>		
2.0 lts. of Lannate	35.00	70.00
2.0 lts. of Azodrin	45.00	90.00
4) Harvesting: C\$8.00 x qq. x 40	8.00	320.00
Transportation: C\$1.00 x qq. 40	1.00	40.00
5) Unforseen Expenses: 10%	197.25	197.25
Interests: 9 + 1 x 6 months	108.95	108.95
Cost per manzana		<u>C\$2,278.70</u>
TOTAL COST OF THE 95 MANZANAS:	<u>C\$216,476.50</u>	<u>US\$30,925.00</u>

CROP: SORGHUM

CULTIVATED AREA: 95 mzs.

NAME: Angelica de Schick Colony

DATE OF SOWING: November - January

	<u>Unit Cost</u>	<u>Cost Per Manzana</u>
1) <u>Preparation of the Land:</u>		
1 Plowing	C\$ 90.00	C\$ 90.00
3 Harrowings	30.00	90.00
1 Sowing and Fertilizing	30.00	30.00
2) <u>Labor:</u>		
1 Herbicide Application	20.00	20.00
2 Fertilizer Applications	20.00	40.00
2 Insecticide Applications	20.00	40.00
Irrigation 20 x 12.50	12.50	250.00
3) <u>Supplies:</u>		
15 lbs. of seed	1.80	27.00
1 qq. of Fertilizer 10-40-10	200.00	200.00
1 qq. of Ammonium Sulfate	70.00	70.00
1 qq. of Urea	140.00	140.00
$\frac{1}{2}$ kg. of Herbicide (Atrazina)	30.00	30.00
<u>Insecticides:</u>		
10 lbs. of Granulated Dipterex	2.00	20.00
$\frac{1}{2}$ lt. of Lannate	17.50	17.50
4) Harvesting: C\$8.00 x qq. x 50 qqs.	8.00	400.00
Transportation: C\$1.00 x qq. x 50 qqs.	1.00	50.00
5) Unforeseen Expenses: 5%		75.70
Interests: 9 + 1 x 6 months		79.45
Total Cost per Manzana		<u>C\$1,660.65</u>
TOTAL COST OF THE 95 MANZANAS:	<u>C\$158,616.75</u>	<u>US\$77,610.00</u>

CROP: BEANS

CULTIVATED AREA: 95 mzs.

NAME: Angélica de Schick Colony

DATE OF SOWING: February - May

	<u>Unit Cost</u>	<u>Cost Per Manzana</u>
1) <u>Preparation of the Land:</u>		
1 Plowing	C\$ 90.00	C\$ 90.00
2 Harrowings	30.00	60.00
1 Sowing and Fertilizing	30.00	30.00
2) <u>Labor:</u>		
1 Herbicide Application	20.00	20.00
3 Insecticide Applications	20.00	60.00
Irrigation 20 x 12.50		
3) <u>Supplies:</u>		
80 lbs. of seed	176.00	176.00
2 qq. of Fertilizer 18-46-0	100.00	200.00
1 kg. of Herbicide (Planarin)	70.00	70.00
<u>Insecticides:</u>		
30 lbs. of DDT	3.00	90.00
0.5 lts. of Lannate	17.50	17.50
3/4 lts. of Azodrin	40.00	40.00
4) <u>Harvesting:</u> C\$12.00 x day = 4 days/ mz. with 1 man	12.00	48.00
<u>Cleaning:</u> C\$8.00 x day = 2.6/man/day	8.00	20.00
<u>Transportation:</u> C\$1.00 x qq = 15/mzs.	1.00	15.00
5) <u>Unforeseen Expenses:</u> 5%		59.30
Interests: 9 +1x 6 months		62.40
Cost per manzana		<u>C\$1,308.20</u>
TOTAL COST OF THE 95 MANZANAS:	<u>C\$124,279.00</u>	<u>US\$18,689.00</u>

A) BENEFITS:

300 mzs. of rice, yield: 45 qq/mz with supplementary irrigation at C\$149/qq	C\$2,011,500.00
300 mzs. of sorghum, yield: 50 qq/mz. with irrigation at C\$43.00/qq	645,000.00
300 mzs. of beans, yield: 15 qq/mz. with irrigation at C\$142.20/qq.	<u>639,900.00</u>
TOTAL.	C\$3,296,400.00
	US\$ 470,914.00

B) COSTS:

B.1 Fixed Costs:

	Annual Amortization
Value of irrigation equipment C\$300,000.00 10 yrs. of useful life	C\$ 90,000.00
B.1.1 Projected on-sight personnel C \$20,000.00 10 years	6,000.00
B.1.2 Transportation of irrigation equipment C\$2,500.00	<u>750.00</u>
Total Annual Fixed Costs	C\$ 96,750.00

B.2 Annual Operation Costs:

B.2.1 Production cost of rice with supplementary irrigation 5"	649,428.00
B.2.2 Production cost of sorghum with irrigation 20"	475,848.00
B.2.3 Production cost of beans with irrigation 20"	372,837.00
B.2.4 <u>Administrative Costs:</u>	
1 Administrator C\$24,000.00	
1/6 zone equipment including per diem and transportation	10,000.00
Israel Mission 25%	26,250.00
Unforeseen Expenses: 5%	<u>77,918.00</u>
Total Operation Costs	C\$1,636,281.00
TOTAL ANNUAL FIXED COSTS:	<u>C\$1,733,031.00</u>

B/C = 1.90*

* NOTE: This includes the cost of the population centers infrastructure. In fact the Benefit/Cost ratio for the irrigation system itself would be somewhat higher than the 1.9 figure indicated.

ANNEX III

PROJECT BUDGET - AID FINANCING

	<u>FY 1975</u>	<u>FY 1976</u>	<u>FY 1977</u>
<u>CARE Personnel and Operations:</u>			
U.S. Personnel (1/4 time)	\$ 2,909	\$ 2,909	\$
Nicaraguan Personnel (10-20%)	982	982	
Benefits for Nicaraguan Personnel	74	74	
Other Direct Costs	800	799	
Sub-Total	<u>4,765</u>	<u>4,764</u>	
<u>Materials Equipment and Related Services:</u>			
Well Drilling, pumps, motors and related equipment	30,257	46,403	14,115
Irrigation systems (pipe, connections, valves and sprinkler heads)	24,628	41,332	10,417
Electrical Installation at Project site	13,848		
Community Electrical System	8,000		
Community Potable Water System	<u>11,000</u>		
Sub-Total	87,733	87,735	24,532
FVO Overhead (provisional rate 8.11% of Project Costs)	<u>7,502</u>	<u>7,502</u>	<u>1,990</u>
Total Costs	<u>\$100,000</u>	<u>\$100,000</u>	<u>\$ 26,522</u>