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518-0046/42

UNCLASSIFIED

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

ECUADOR

PROJECT PAPER

EMERGENCY REHABILITATION

AID/LAC/P-166

Project Number: 518-0046
Loan Number: 518-T-043

UNCLASSIFIED

PDAAN 804

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

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

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Ecuador

3. PROJECT NUMBER: 518-0046

4. BUREAU/OFFICE: LAC — 05

5. PROJECT TITLE (maximum 40 characters): Emergency Rehabilitation

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 03 DD 31 YY 85

7. ESTIMATED DATE OF OBLIGATION (Under 'B.' below, enter 1, 2, 3, or 4)
A. Initial FY 83 B. Quarter 4 C. Final FY 84

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

A. FUNDING SOURCE	FIRST FY 84 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	7,600	5,400	13,000	7,600	5,400	13,000
(Grant)	(1,600)	(5,400)	( )	(1,600)	(5,400)	(7,000)
(Loan)	(6,000)	( )	(6,000)	(6,000)	( )	(6,000)
Other U.S. 1.						
Other U.S. 2.						
Host Country		14,900	14,900		14,900	14,900
Other Donor(s)						
TOTALS	7,600	20,300	27,900	7,600	20,300	27,900

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	C. 2. Loan	D. OBLIGATIONS TO DATE 1. Grant	D. 2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	E. 2. Loan	F. LIFE OF PROJECT 1. Grant	F. 2. Loan
(1)	900	940	940			7,000	6,000	7,000	6,000
(2)									
(3)									
(4)									
TOTALS						7,000	6,000	7,000	6,000

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 251 | 545 | 851 | 863 | 690 | 825

11. SECONDARY PURPOSE CODE: 930

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)
A. Code
B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

The Project purpose is to assist the government of Ecuador to implement critical relief, rehabilitation, reconstruction and mitigation activities related to the "El Niño" disaster.

14. SCHEDULED EVALUATIONS
Interim MM YY MM YY
Final MM 04 YY 85

15. SOURCE/ORIGIN OF GOODS AND SERVICES
[X] 000 [ ] 941 [X] Local [ ] Other (Specify) _____

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

17. APPROVED BY
Signature: [signature]
Title: Director USAID/ECUADOR
Date Signed: MM 09 DD 24 YY 83

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION
MM DD YY

AID 1330-4 (8-79)

PROJECT AUTHORIZATION

Name of Country: Ecuador

Name of Project: Emergency Rehabilitation

Number of Project: 518-0046

Number of Loan: 518-F-043

1. Pursuant to Section 492 (b) of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Emergency Rehabilitation Project for Ecuador involving planned obligations of not to exceed Six Million United Sates Dollars ($6,000,000) in loan funds ("Loan") and Seven Million United States Dollars ($7,000,000) in grant funds ("Grant") over a three (3) year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project. USAID/Ecuador may obligate up to One Million United States Dollars (US$1,000,000) of Grant funds outside of the Project Agreements to finance long and short term technical assistance, training and logistic support for implementation of project activities. The planned life of the project is eighteen (18) months from the date of initial obligation.

2. The project ("Project") consists of assistance to Ecuador to implement emergency relief, rehabilitation and reconstruction activities in response to excessive rains and flooding associated with the "El Niño" phenomenon.

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

a. Interest Rate and Terms of Repayment

Ecuador shall repay the Loan to A.I.D. in U.S. Dollars within twenty-five (25) years from the date of first disbursement of the Loan, including a grace period of not to exceed ten (10) years. Ecuador shall pay to A.I.D. in U.S. Dollars interest from the date of first disbursement of the Loan at the rate of (i) two percent (2%) per annum during the first ten (10) years, and (ii) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Commodities, Nationality of Services (Loan)

Commodities financed by A.I.D. under the Loan shall have their source in the United States and their origin in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services financed under the Loan shall have Ecuador, or countries included in A.I.D. Geographic Code 941 as their place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Loan shall be financed only on flag vessels of Ecuador or countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing.

c. Source and Origin of Commodities, Nationality of Services (Grant)

Commodities financed by A.I.D. under the Grant shall have their source and origin in Ecuador or in the United States, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services financed under the Grant shall have Ecuador or the United States as their place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Grant shall be financed only on flag vessels of the United States, except as A.I.D. may otherwise agree in writing.

d. Condition Precedent to Disbursement for Imported Agricultural Inputs (Loan)

Prior to any disbursement, or to the issuance of any commitment documents under the Project Loan Agreement to finance the purchase of any imported agricultural input, Ecuador shall, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D., a list of the eligible agricultural inputs to be financed under the Project, and a list of the criteria and requirements for determining importer eligibility.

e. Condition Precedent to Disbursement for Emergency Rehabilitation Subprojects (Grant)

Prior to any disbursement or to the issuance of any commitment documents under the Project Grant Agreement to finance any emergency rehabilitation subproject activity, Ecuador shall, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D. a signed agreement between the Ecuadorean Development Bank and the institution implementing the subproject, which defines the rights and responsibilities of the signatories, including a description of the activities to be included in the subproject, a budget for the Grant funds, a definition of the financial and operational support to be provided by the implementing institution involved in the subproject, a schedule of the subproject activities, and a description of the reports that the implementing institution will submit to the Ecuadorean Development Bank and A.I.D.

f. Covenants (Loan and Grant)

Ecuador shall covenant that, unless A.I.D. otherwise agrees in writing:

(1) It shall make available to the National Development Bank the resources provided pursuant to the Project for purposes of providing credit to small and medium farmers who have been affected by the consequences of the natural disaster which ocurred in 1983.

(2) The credit activities to be financed pursuant to the Project shall be mutually agreed to by the National Development Bank (NDB) and A.I.D., and that the NDB will furnish to A.I.D., in form and substance satisfactory to A.I.D., a plan which identifies the beneficiaries of the credit activities and crops that will be financed.

(3) The reflows from credit made available pursuant to the Project shall continue being made available by the NDB to small and medium farmers during a period of at least five years.

(4) The resources made available pursuant to the Project shall not be used to refinance existing debts, to finance land purchases, or to finance agricultural credit to large producers with capital which exceeds five million sucres.

(5) It will implement the Project in a priority manner and, when applicable, will use the authorities established in Presidential Decree 1411 dated December 28, 1982 which declared the state of emergency, and will give general priority to the importation of agricultural inputs needed to promote agricultural rehabilitation.

(6) It will cause the institutions participating in emergency rehabilitation subprojects to implement them in a priority manner, and that the Ecuadorean Development Bank shall be responsible for the coordination, control and supervision of such subprojects.

(7) It will make reasonable efforts to assure that pesticides acquired through the agricultural credit program financed pursuant to the Project are properly handled and utilized by the beneficiary agricultural producers.

(8) It will use its best efforts to assure that accurate arrival and clearance records are maintained by customs autorities; commodity imports are promptly processed through customs at ports of entry; such commodities are removed from customs and/or bonded warehouses within fifteen (15) working days from the date the commodities are unloaded from the vessel at port of entry, unless the importer is hindered by force majeure; and commodities financed under the Project will not be reexported.

f. Waiver

A.I.D. nationality requirements are hereby waived to permit contracting up to US$300,000 for grant-financed technical assistance for Project coordination, supervision and monitoring with contractors whose nationalities are in countries included in A.I.D. Geographic Code 941.

Mission Director

9/26/83
Date

CLEARANCES:

RLA/C/DR:POrr
O/DR:RJordan
O/DP:PMaldonado
O/CONT:WRoss
D/DIR:PFritz
RDO: JGoodwin

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ECUADOR EMERGENCY REHABILIATION PROJECT

PROJECT PAPER

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ECUADOR EMERGENCY REHABILITATION PROJECT

PROJECT PAPER ANNEXES

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I. BACKGROUND AND JUSTIFICATION

A. Problem Statement

During a nine month period between October 1982 and July 1983 Ecuador experienced its worst rains and consequent flooding in at least ninety years. Weather modifications caused by abnormal variations in the "El Niño" Pacific ocean current produced rains of more than four meters in much of coastal Ecuador which led to severe flooding in December 1982. In a large area floodwaters have remained through June 1983. Elsewhere, they have receded, leaving behind significant crop losses and damage to agricultural and transport infrastructure. Very conservative estimates of damage caused by this disaster exceed $250 million (at the free market exchange rate), primarily in agriculture and transport infrastructure. Particularly affected were staple food crops such as rice, other short cycle crops (corn and soybeans) which are used in chicken and animal feeds, as well as commercial export crops (bananas, coffee, and cacao). These production losses exceed $100 million alone. Agricultural infrastructure has also been significantly damaged with the consequent negative impact on future agricultural production. More than 1,400 km. of roads and 25 bridges have been damaged or destroyed. This situation has been thoroughly reported in a number of state and AID cables which have been sent to Washington during the past six months as well as in briefing materials provided to the AID administrator during his inspection tour of the disaster area in May 1983 (See Annex II). In addition to the quantifiable economic damage the human suffering has been significant. More than 13,000 families had their homes damaged or destroyed. Hundreds of schools were damaged by the floods. Hundreds of thousands of residents in coastal towns are suffering from the consequences of flood damaged potable water and sewage systems. Although the major impact of the abnormal rainfall in 1983 has been in coastal Ecuador, highland Ecuador also received many times the normal rainfall. Because the water drained quickly to the coastal region and to the Amazon river basin its impacts were less noticed. The primary impacts were landslides on major roads and in urban areas which took several hundred lives and, more recently, the loss of a substanial percentage of the potato crop in the central highlands due to a fungus disease which was greatly stimulated by excessive soil moisture in this region.

Throughout this period AID provided timely, cost effective disaster relief assistance. Most notable among these efforts were the Guasmo drainage program in a populous suburb of Guayaquil and the provision of portable water purification units in the flooded coastal cities of Babahoyo and Baba. AID also provided technical assistance Ecuadorean agencies to assess infrastructure damage caused by the heavy rains and floods. This assistance included an extended TDY by AID engineers with expertise in bridge and railroad construction, two consultations by a world reknown expert in landslides, and a TDY by a team from the U.S. army corps of engineers which assessed the drainage problems in the Guayas river basin. The focus of these consultations was

rehabilitation, reconstruction, and mitigation of future damage. While considerable food relief efforts have been required, they have received adequate support from PVOs and other international donors.

Although the rains have not yet completely ended, the GOE is necessarily turning its attention to rehabilitation and reconstruction of damaged infrastructure which has to be repaired quickly in order to permit economic recovery and to avoid disasterous consequences from normal rainfall next year. It must also now focus more attention on prevention of recurring floods and landslides in the future.

B. Ecuadorean Recovery Efforts to Date

Both the Government of Ecuador and the Ecuadorean private sector have energetically responded to the disaster. The government has designated the Minister of Social Welfare to generally coordinate disaster relief and rehabilitation efforts. In turn three specific inter-institutional coordinating commissions have been set up to channel assistance in the areas of agricultural recovery and food distribution, infrastructure rehabilitation, and employment generation. These inter-institutional commissions are coordinated by the Minister of Agriculture, the Minister of Public Works and the Secretary of Rural Development, respectively. Also, the Minister of Foreign Relations serves as a liason with regard to foreign assistance efforts from the U.N. and bi-lateral donors. Although some small scale relief (i.e. food distribution) efforts continue to be required, the GOE has turned its efforts to recovery and rehabilitation. Because the GOE's resources are so limited, it is focussing its efforts almost entirely in agricultural recovery and necessary repairs of its transportation network. Resources are being channelled to these activities through the National Development Bank, which provides agricultural credit, and the Ministry of Public Works. While much of the road repair has financing available agricultural credit for producers affected by floods is still under-financed. The Ecuadorean Development Bank, a government bank which lends funds to governmental authorities, is also providing substantial funding for disaster rehabilitation and reconstruction. There are a number of other activities which the GOE considers to be of critical importance that are not being addressed because of severe resource constraints and for which it has requested assistance from A.I.D. These very important include such as repair of agricultural infrastucture, potable water and sewage, and housing.

In addition, the Ecuadorean private sector has made a very significant contribution to relief and rehabilitation efforts. An organization led by some of Ecuador's most prominent citizens called "Unidos Somos Más" was formed to raise money and channel private relief efforts. While this effort has been separate from GOE efforts, there has been adequate coordination between the two. To date the organization has channelled about $2 million to relief and rehabilitation.

C. Other Donor Activities

1. International Donors

The major international effort to date has been the signature of a loan agreement between the Inter-American Development Bank and the GOE to finance an Emergency Program for the Rehabilitation of the Coastal Region. The IDB financial contribution will amount to $40 million, while the Andean Development Corporation is providing co-financing in the amount of $15 million and the GOE is providing $7 million in counterpart. The resources made available through this loan will be utilized for agricultural recovery (including agricultural production credit and loans to repair on-farm agricultural infrastructure) as well as for transport infrastructure repair. While IDB resources will cover a significant portion of the repair cost for transport infrastructure, it will finance only about 30 percent of the cost of agricultural recovery, estimated to have total funding requirements of $185 million.

Other international donors, the United Nations system and the European Economic Community are extremely concerned about the situation in Ecuador but are serving primarily as intermediaries for channelling resources from member countries to Ecuador. The United Nations system has severe financial constraints, but some on-going projects in Ecuador have been reprogrammed for immediate relief and rehabilitation efforts.

A number of countries other than the U.S. have contributed assistance. These primarily have been the memeber countries of the European Econcomic Community such as Great Britain, Italy, France, etc. At least sixteen countries have made bi-lateral contributions to Ecuador for disaster relief and reconstruction.

2. Private Voluntary Organizations

Catholic Relief Services, with A.I.D. concurrence, reprogrammed certain P.L. 480 resources into Food For Work activities in areas most directly impacted by the floods. Also, it has just received a $177,000 grant through A.I.D.'s Office of Foreign Disaster Assistance to carry out several programs related to the rehabilitation of areas affected by the devasting floods. These activities include agricultural recovery through a revolving credit fund and the repair of community roads. Foster Parents Plan is implementing an emergency Food for Work/Small Animal Husbandry Program in Bolivar Province.

II. DETAILED PROJECT DESCRIPTION

A. Project Goal, Purpose and Strategy

The goal of the Project is to assist the areas and population in Ecuador affected by the natural disaster to recover and to be better prepared for similar disasters in the future.

The Project purpose is to assist the government of Ecuador to implement critical relief, rehabilitation, reconstruction and mitigation activities related to the "El Niño" disaster.

The Project strategy is to channel A.I.D. and counterpart resources into high priority activities which can be carried out quickly and effectively; that is, activities which are clearly identified, for which operational plans and arrangements can be readily developed, and which can be implemented by responsible organizations. The project, reflecting the GOE's general disaster recovery strategy, will not focus on creating new institutional mechanisms to carry out recovery efforts. Rather, existing mechanisms and organizations will be used in order to move as rapidly as possible into the implementation of recovery activities. With few exceptions A.I.D. financed activities will be completed with twelve to eighteen months from the date of signature of the Project Agreement. Sufficient flexibility will be provided in the Project Agreement to permit reprogramming of resources where it is apparent that rapid disbursement of funds is not possible or when a reordering of priorities may be warrented. Also, A.I.D. resources will be used to fill gaps or shortfalls in other donor efforts and will not "compete" with such efforts.

B. General Description of Project Outputs and Activities

The project will finance agricultural recovery and economic/social infrastructure rehabilitation activities in areas, primarily in Ecuador's coastal and southern provinces, which have been affected by the abnormally adverse climatic conditions caused by the "El Niño" marine current. The loan-financed agricultural recovery program consists of the importation of essential agricultural inputs which are necessary to reactivitate agricultural production and the utilization of local currency generated from the sale of these inputs to finance an agricultural credit program for small and medium producers of short cycle crops which will assist the expansion of Ecuador's food supply, who are located in areas which have been affected by the adverse climatic conditions. The grant-financed infrastructure rehabilitation program consists of six distinct activities: agricultural infrastructure rehabilitation; Pichincha Mountain slope protection; housing reconstruction; water and sanitation rehabilitation; school reconstruction; and electricity systems repairs and protection. In addition grant funds will be used for technical assistance, training and logistical support activities.

The emergency nature of the project activities to be financed by A.I.D. precludes, in some cases, precise quantification of the outputs of the project and the exact delineation of all project activities. The activities identified below represent the expected range of activities based on USAID's analysis of the GOE's manifested priorities. While it is almost certain that A.I.D. resources will be used to finance all of the activities identified below, the levels of outputs are illustrative.

The project outputs are:

1. Agricultural Recovery

Reactivation of agricultural production on 41,000 hectares of prime agricultural land which produce 90,000 metric tons of rice, 24,000 metric tons of corn, and 16,000 metric tons of soybeans per year.

2. Infrastructure Rehabilitation

a. Agricultural Infrastructure. Restoration of the River Chimbo to its original channel and the repair of dikes and levees, permitting the cultivation of more than 3,800 hectares of land, .

b. Pichincha Slope Protection. A completed prefeasibility study; construction of 15 small protective works.

c. Housing Reconstruction. At least 440 houses repaired, reconstructed or relocated.

d. Potable Water and Sewage Systems. Potable water and/or sewage systems repaired or rehabilitated in 27 localities..

e. School Reconstruction and Repair. Fifty-two schools reconstructed and 519 schools repaired.

f. Electricity Systems Repairs. Repair of Babahoyo-Milagro transmission lines; repair of 100 Km. of distribution lines; 3 generators repaired.

A summary budget for the project is:

	Loan	Grant	Counterpart	Total
		(U.S. $1,000's)		
1. Agricultural recovery	6,000	--	12,300	18,300
2. Infrastructure Rehabilitation	--	6,000	2,600	8.600
3. Technical Assistance, Training and Logistical Support	--	1,000	--	1,000
	6,000	7,000	14,900	27,900

C. Agricultural Recovery Sub-Project Activities (LOAN)

1. Importation of Agricultural Inputs

a. Activity description

Abnormal climatic conditions caused the destruction or reduction in yields of agricultural crops during 1983 amounting to more than $100 million. (See Annex IV.A.1 for a detailled analysis prepared by the Ministry of Agriculture.) These severe losses combined with the current adverse economic circumstances which have required restrictions be placed on commodity imports have caused a shortfall in the availability of those agricultural inputs which must be imported and which are vitally necessary for agricultural recovery. In order to help overcome this very serious constraint on agricultural recovery the Government of Ecuador will facilitate the import of $6 million of agricultural inputs through this Project. Emphasis will be placed on those inputs required for the production of short cycle crops which are essential to help meet Ecuador's food needs. The inputs which may be financed are the fertilizers, pesticides, and certified seeds which are required for rice, hard corn, and soybean production. The major portion of the available financing will be used for the importation of pesticides, although small amounts of fertilizer and certified seeds will also be required. Annex IV.A.2 demonstrates estimated demand for agricultural inputs during the 1983-84 agricultural year for rice, hard corn and soybeans.

By focusing the initial utilization of A.I.D. resources to the importation of agricultural inputs A.I.D. is addressing a key bottleneck to reactivating agricultural production and is partially responding to Ecuador's Minister of Agriculture's request to Secretary of Agriculture Block that the United States finance the importation of $60 million of agricultural inputs.

The importation of these inputs will be carried out through normal commercial channels. Private sector and mixed enterprise importers of the required commodities will be able to open letters of credit with U.S. suppliers under a Bank Letter of Commitment. Government of Ecuador, through the Ministry of Finance, shall request A.I.D. to open a Letter of Commitment with a U.S. Banking institution which is a correspondent bank of the Central Bank of Ecuador to finance the import of agricultural inputs in the amount of Six Million United States Dollars. Upon issuance of the Letter of Commitment A.I.D. will immediately send a copy to the Ministry of Finance and the Central Bank. This Letter of Commitment shall serve as the basis for disbursement of loan funds under the Project. Specific disbursements of loan funds shall be made on the basis of letters of credit issued under the letter of commitment. Disbursements made available under the said Letter of Commitment will be made for the following categories of agricultural inputs: fertilizers, pesticides (insecticides, fungicides, and herbicides), and agricultural seeds. Priority will be given to those inputs most urgently needed to reactivate the production of short cycle food crops in coastal Ecuador.

The Ministry of Finance through a financial and fiscal agency contract shall authorize the Central Bank to open letters of credit under the said letter of commitment and through the correspondent bank to eligible suppliers on the behalf of eligible Ecuadorean importers of the commodities listed in the letter of commitment. An Eligible importer, who may be interested in financing the importation of commodities under this mechanism will be provided with a document which clearly states the terms, conditions, and requirements applicable to such importations. These inputs will be channelled through normal private sector importation and distribution channels rather than requiring that the GOE establish a special mechanism to carry out their importation. The Ecuadorean importers will make deposits in sucres for the full value of the commodities to be financed under the letters of credit which will be deposited in an account in the Central Bank for the National Development Bank. When any such deposit is made the Central Bank shall, given the emergency nature of these importations, immediately open a letter of credit which specifies the commodities to be imported, the quantitities and the dollar costs of each commodity as well as the cost of shipping and insurance. Copies of each letter of credit issued under the letter of commitment shall be immediately forwarded to the Ministry of Finance, the National Development Bank and A.I.D. Banking charges related to the Letter of Commitment and the Letters of Credit will be financed under the Letter of Commitment.

b. Technical Analysis

The agricultural inputs eligible for importation are identified in Annex IV.A.3. These inputs have been identified as those required to cultivate rice, corn and soybeans using medium technologies. The identification of eligible inputs is based on three factors: current use in Ecuador; appropriateness of the input for the indicated crops, and compliance with A.I.D. regulations, particularly with respect to environmental concerns. A list of pesticides approved for use in the pesticide environmental assessment is contained in Annex VI. This list was reviewed and approved by the GOE's Ministry of Agriculture and will serve as the basis for the GOE's request for pesticides upon signature of the Project Agreement. Fertilizer imports will be limited to urea which is the major fertilizer consumed in coastal agriculture while certified corn and soybean seeds, and possibly rice seed, will be imported. A.I.D. regulations will be followed with regard to packaging and labelling of inputs. Only these which meet standards established in HB15 will be eligible for A.I.D. financing.

c. Institutional Analysis

The utilization of the normal (private) commercialization system for the importation and distribution of agricultural imputs is deemed

to be the most efficient means of carrying out this activity. The GOE does not have an import mechanism in place and is not interested in creating one because a well developed commercial system is already in place. By obtaining evidence from the Central Bank that import licences have been issued and that foreign exchange has been provided through letters of credit for needed agricultural imputs A.I.D. will assure that the objective of providing foreign exchange for agricultural imputs has been achieved. Subject to compliance with A.I.D. regulations with regard to source and origin, ocean shipping, etc. importers will be able to handle the procurements in the manner that is most efficient and convenient. Certain eligibility requirements will be placed on potential importers in order to assure that they have the capacity to import and rapidly distribute the agricultural inputs. Specifically, they will have to demonstrate: prior experience during the last three years in the importation of the type of commodity which they want to import and that they have a distribution system in place. Only normal commercial importers will be authorized to import. This measure will minimize delays and other problem associated with importing and distributing these types of commodities.

The Central Bank is capable of carrying out the GOE's implementation responsibilities under the project. The Central Bank is an organization with a well qualified, competent staff which has been involved in development banking activities for more than ten years. Among its normal functions is that of acting as the fiscal and financial agent for the government. It is actively involved in international and domestic banking transactions through its rediscounting activities with the commercial banking sector. The major portion of Ecuador's foreign exchange transactions are handled by the Central Bank. It has correspondent banks and is able to process letters of credit. Therefore, it should be able to serve as the chief implementing agency for the loan.

2. Agricultural Production Credit

a. Activity Description

A.I.D. resources will be indirectly employed to reactivate agricultural production in affected areas of coastal Ecuador through the provision of agricultural credit. The local currency generated by the importation of agricultural inputs will be departed in the Central Bank. The sucre equivalent of the cost of the inputs, i.e. the loan-funded contribution, will be then be immediately transferred by the Central Bank to the to the National Development Bank (Banco Nacional de Fomento - BNF) as additional capital to be used for agricultural production credit for small and medium producers of short cycle crops in the areas affected by the floods, primarily in Guayas and Los Rios provinces, who have lost crops because of flooding.

Approximately 2,000 small producers (average holding thirteen hectares) and 600 medium producers (average holding 23 hectares) will benefit from the program. The estimated sucre equivalent of A.I.D.'s financial contribution of $ 6 million is 300 million sucres while the GOE will provide counterpart funds in the amount of 614 million sucres, or 67 percent

of the total agricultural production credit program cost, through its financial funds discounting mechanism. The A.I.D. contribution thus will be approximately equivalent to the cost of the imported inputs. In this way approximately 22,500 hectares of rice, 10,000 hectares of soybeans, and 9,500 hectares of maize will be reactivated. The net increase in production of these commodities as a result of the credit program is estimated to be 90,000 metric tons of rice, 24,000 metric tons of hard corn, and 16,000 metric tons of soybeans with a total production value of 914 million sucres. (See Annexes IV.A.4 and 5).

The A.I.D. loan funds combined with the counterpart funds will be lent to farmers at rates established by the BNF in response to the emergency situation. Currently, these funds are being lent at 13-15 percent. This rate has been established to respond to the emergency situation and to respond to difficult situations of farmers affected by the floods, many of whom planted two or three times only to have thier crops destroyed before they could be harvested. The reflows from these loans will be lent at the BNF's normal rates which range from 13 to 19 percent and are determined by interest rate policies established by the GOE's Monetary Board.

b. Technical Analysis

The resources provided through the credit mechanism will be directed toward small and medium producers which already have experience in cultivation of the crops identified for inclusion in the credit program. These producers utilize an intermediate level of technology often based on technological "packages" recommended by the Ministry of Agriculture's Rice, Soy and Cotton, and Maize Programs and are accustomed to using certified seed, fertilizer and pesticides. By and large the technologies used in these programs are relatively labor intensive, although soybeans are generally cultivated by medium sized producers using more mechanized technologies. (See Annexes IV.A.6-8). These programs have technicans resident in the target areas to work with the producers. The BNF also has agronomists who advise their loan recipients. The areas to be cultivated are among the richest soils in Ecuador and are appropriate for the cultivation of these crops. The Ministry of Agriculture's Rice, Maize, and Soy/Cotton Programs will also participate in the project by providing technical assistance/extension services.

c. Institutional Analysis and Administrative Feasibility

The administration of agricultural credit by the National Development Bank should not pose any problem for that institution. Between 1978 and 1981 the BNF made an average of 51,000 loans per year with an annual average value of $280 million. Because the agricultural credit component will generally correspond to the BNF's standard lending procedures and will also basically incorporate specific implementation arrangements which are similar to those established under the IDB's emergency loan implementation should be quite rapid. The BNF's administrative capacity was thoroughly analyzed by the IDB prior to approval of that loan because of the BNF's poor performance on

IDB loans during the mid-1970's. (See the IDB's appraisal report for the subject loan). It concluded that the BNF's performance and administrative capacity has greatly improved since 1980 because of reorganization and a significant amount of technical assistance provided through FAO. Also, the BNF has sufficient field offices and personnel to permit satisfactory implementation of the proposed credit program. The BNF has 30 branch offices and 2 agencies within the general geographic area in which the program will be implemented.

3. Economic Analysis

a. Impact of the Floods on Ecuador's Agricultural Sector

During the past year Ecuador has suffered large crop losses due to heavy and unseasonal rains and flooding that started in late September 1982 in the coastal area of Ecuador. The effect of the flooding has been especially devastating due to the fact that the major agricultural export crops as well as the major food and industrial crops are produced in the coastal area of Ecuador. As a result, Ecuador will suffer decreased exports and increased imports of agricultural products in 1983/84. Annex IV.A.9 shows that the estimated loss in agricultural exports will be over US$167 million in 1982-1983 due to losses suffered by the banana, cacao and coffee crops.

At the same time that agricultural export proceeds are falling due to the floods, the GOE must significantly increase its imports of rice, corn, soybeans and cotton to replace the domestic crop losses suffered during the flooding. Annex IV.A.10 shows the estimated import requirements for 1982/83 and 1983/84 in comparison to 1981/82. The value of imports for the four crops increased from US$4 million in 1981/82 to US$14,510,000 in 1982/83 and US$87,1000,000 in 1983/84. If the climate returns to normal, imports for 1984/85 should then return to normal levels, assuming Ecuador can provide the necessary inputs for rehabilitating the coastal agricultural sector. This will be difficult as the value of most of Ecuador's exports are stagnating or falling and the effect of the flooding will require a major reallocation of foreign exchange to the agricultural sector to establish it. These foreign exchange costs come at a time when Ecuador is facing severe foreign exchange shortages and is in the process of renegotiating it foreign debt.

b. Agricultural Inputs

(1) The Role of Inputs in Restoration of Agricutural Production

If the weather returns to normal, the planted area of the major crops will return to normal but for production to be restored to its 1981 or 1982 level, yields of the major crops must return to their pre-flood levels. The restoration of crop yields will require the use of purchased inputs, particularly fertilizer and pesticides, which are in very limited supply due to foreign exchange limitations which currently exist in Ecuador.

The Coastal Region is the major user of purchased inputs particularly fertilizer. Annex IV. A.11 shows that for hard corn and soybeans the planted area that is fertilizer varies from 46% for hard corn to 95% for soybeans. In addition to fertilizer the coastal region is also the predominant user of insecticides, pesticides, and fungicides, all of which are imported.

The use of these inputs has been a major reason for the significant increase in the yield of the above mentioned crops. Between 1970-72 and 1979-81 average yields rice increased from 2.04 m.t./hectare to 3.55 m.t. hectare, of corn from 1.11 m.t./hectare to 1.6. m.t. hectare, and of soybeans from 1.10 m.t./hectare to 1.17 m.t.

As a result of the floods in 1982/83 yields of the above crops fell. Assuming a return to normal weather the yields of the above crops should return to at least the average yields of 1979/81. However, as stated earlier, this is dependent upon the availability of sufficient quantities of inputs. Budget data from the technical packages developed by the Banco Nacional de Fomento (See Annex IV.A. 12) shows the importance on input levels (and management practices) on crop yields. This budget data shows very high yield response rates (of 200-300 percent) from incremental applications of fertilizers. Net financial returns also increase appreciably from $128 per hectare using low technology to $466 per hectare using high technology for rice and from $28 per hectare using low technology to $148 per hectare using high technology for hard corn. (See Table IV.A. 13)

The above data indicate the importance of input use in the restoration of Coastal Region crop yields and production. Unfortunately, the combination of the present debt crisis, the loss of export revenues and the need to replace coastal flood and agricultural production with imports has left few resources for imports of agricultural inputs. Discussion with agricultural input companies and their representatives indicate that agricultural input stocks are in general depleted and few orders are presently being accepted because of delays of up to six months experience by importers in obtaining dollars to pay for the imported commodities. FERTISA the major fertilizer sipplier, apparently has only minimum stock and only 6,000 tons of fertilizer presently on order. Compared with a national consumption of 110,000 - 120,000 tons in recent years, this quantity will not even begin to meet demand and given that only 3.5 - 4.0 months remain until the next cropping season, it is urgent that agricultural inputs be rapidly imported.

The estimated imported input requirements for rice, hard corn and soybeans in the coastal region are presented in Annex IV.A. 2). From the data presented approximately 60,000 tons of fertilizer will be needed for the three crops in addition to imports of 1,500 tons of seeds and 3,700 tons of agricultural pesticides. Based upon current prices the cost of importation of the above inputs would be US$ 16,600,000 consisting of US$ 15,000,000 for fertilizer, US$ 300,000 for seeds and US$ 1,300,000 for agricultural pesticides. If these imported inputs are not available, producers will be forced

to use low or even minimal technology rather than intermediate or high technology with the consequent result that national production would be 1/3 to 1/2 of the level otherwise attainable.

c. Agricultural Credit

(1) The Role of Agricultural Credit in the Restoration of Agricultural Production

Because the Coastal Region is a large user of agricultural inputs, agricultural credit is extremely important. The Banco Nacional de Fomento has been the major source of agricultural credit in the Region. Table I shows for 1981 (the last normal year) the total area planted for the major coastal crops and the area that received production credit from the BNF. As can be seen from Table I BNF credit was extended for 60.3% of the area of rice, 28.0% of hard corn, and 45.0% of soybeans.

In 1981, BNF lending for coastal agriculture was 1,697.1 million sucres of which 1,274.5 million sucres financed rice, corn and soybeans. For the 1983-84 agricultural year, the BNF has developed an expanded lending program for the Coastal Region. Table II presents the proposed lending program. amounts to 2,508.9 million sucres of which 1,919.3 million sucres will be lent for rice, corn, and soybean production.

Comparing the 1981 and 1984 programs reveals that the 1.984 program proposes an increase in agricultural credit of S/.811.8 millions in the Coastal Region of which 644.8 million sucres will be allocated to rice, corn and soybeans.

Table I

Area Planted and Area Financed by BNF for Major Short Cycle Crops in the Coastal Region in 1981

(000's Ha.)

Crop	Area Planted	Area Financed	Area Financed as a % of Area Planted
Rice	131,300	79,200	60.3
Corn (Hard)	179,200	50,200	28.0
Soybeans	21,100	9,500	45.0

The S/.300 millions (sucres) generated by the $6 million A.I.D. loan will thus cover 46.5 percent of the projected increase in the BNF agricultural lending for these crops.

While the amount of credit to the three crops provided by BNF from 1981 to 1984 has increased by 50 percent most of the increase is due to increased costs of production for the crops due to inflation. The cost of imported inputs has increased significantly in the last two years and, because imported inputs make up a high component of total cost for the coastal crops, this cost increase has directly affected the production cost and credit needs of coastal farmers. The area planned for production credit in approximately the same planned for 1984.

Table II

1981 BNF production credit and proposed 1984 production credit for major crops in the area affected by the floods

CROP	1.981	1.984 1/
	(in million sucres)	
Rice	856.6	1,329.0
Hard Corn	328.9	472.0
Soybeans	89.0	118.3
Cotton	143.1	189.5
Sugar cane	11.9	16.7
Cocoa	87.6	120.7
Coffee	152.3	221.5
Bananas	27.7	36.2
	1,697.1	2,508.9

1/ Figures do not include credit for infrastructure damaged by the floods.

4. Environmental Concerns

The only major environmental concern of this project component is related to financing of pesticides. A pesticide environmental assessment (see Annex VI) was conducted during Project design. This assessment identified those pesticides which would be eligible for A.I.D. financing. The pesticides (herbicides, insecticides, and fungicides) are all general use, low toxicity (Level II) pesticides which are appropriate for rice, corn, and soybeans and which are currently being used in Ecuador. The assessment also identified a generalized weakness in on-farm pesticide management in Ecuador and identified short and medium term action programs to help overcome this

problems. Although a large-scale effort to improve pesticide handling in Ecuador is beyond the scope of this project, A.I.D. will finance a number of technical assistance and training activities intended to improve the handling of pesticides. (See Section II.E.) This major environmental concern will, consequently, provide an opportunity to begin to address a major environmental problem in Ecuador which transcends the scope of this project.

D. Infrastructure Rehabilitation and Protection (GRANT)

1. General Description of Grant Financed Activities

The Ecuadorean Development Bank (BEDE) will serve as the over-all coordinating agency for grant-financed sub-project activities. BEDE will be responible for general programming of project resources. It will sign sub-project implementation agreements with the implementing agencies and A.I.D. These implementation agreements, delineate the activity(ies) to be financed, the amounts and sources of funding allocated (loan, grant, and counterpart), and the implementation arrangements for the activitiy, including such aspects as how the activity will be implemented (contract, force account), the procurement of commodities that may be required, and the time needed to implement the activity, as well as any other terms or conditions that may be agreed to by the Parties. Upon signature of the implementation agreements A.I.D. will work directly with the implementing agencies. BEDE will not play an active role in day to day project implementation but rather will delegate full responsibility to the implementing agencies. It will, however, receive periodic progress reports and will be make decisions about the programming and reprogramming of funds. This redelegation of responsibility is intended to facilitate implementation while maintaining flexiblity in overall project administration.

2. Detailed Description of Activities

a. Agricultural Infrastructure Rehabilitation

(1) Activity Description

The lower Guayas river basin is comprised of over 400,000 hectares of which more than 60% is (or was) under cultivation. Most of Ecuador's rice crop is produced in this area but citrus, corn, beans, cocoa, bananas, melons, tomatoes, yuca, and other miscellaneous fruits and vegetables are also grown. The lower Guayas river basin is one of the most productive agricultural regions in Ecuador.

A significant amount of agricultural infrastructure (irrigation and drainage systems as well as bank protection, eg. levees and dikes) was destroyed or damaged by the floods. In certain situations rivers have opened new channels, leaving thousands of formerly irrigated land without water. The IDB loan provides resources for the rehabilitation of on-farm

infrastructure. It does not cover the damage to off farm works. Channel restoration and repairs to much of this infrastructure must be made extremely rapidly, prior to the next rainy season, in order to prevent a repetition of this year's flooding even with normal rainfall. Repairs to primary irrigation canals must be made quickly in order to reestablish surface water irrigation programs and to avoid further major production losses in major food crops, e.g. rice, as well as in export crops such as bananas. Much of the damage to these works occurred in the lower Guayas River basin and in El Oro Province which are extremely fertile and productive agricultural areas. In order to assure the rehabilitation of these areas and incorporate them into agricultural production in 1984 an emergency repair program must be initiated this year, prior to the initiation of the rainy season.

Heavy flooding during the winter of 1982-1983 severely damaged agricultural flood control levees and irrigation systems on the coastal flood plains in the lower Guayas river basin. Flow rates in the river systems exceeded carrying capacities, agricultural levees were over-topped or breeched river courses were changed. Nine months after heavy flooding some sections are still inundated while some principal rice growing areas have been left without water. At the height of the disaster 40% of the area was flooded and more than 60% of the agricultural production has been affected.

The Ecuadorean Hydraulic Resources Institute (INERHI) is charged with construction (as well as repair and rehabilitation of public domain agricultural hydraulic infrastructure). In August 1983 INERHI completed a revised damage assessment and identified a program of priority emergency repair and rehabilitation works including levee repair, restoration of rice channels, and irrigation canal rehabilitation amounting to 300 million sucres.

On the basis of this proposal and subsequent site evaluations by an A.I.D. hydraulic engineer, an agricultural infrastructure rehabilitation project has been developed. This subproject proposes to (1) repair gaps in existing levees caused by the 1982-83 floods, and where necessary, put levees back from the river; (2) repair primary structures which have suffered scouring and undercutting; (3) allow for return of water in the overland flows by repairing drainage channels, removing debris and incorporating flood gates into levees and river systems; (4) restore the channel of the Río Chimbo. The latter is the single largest activity included in this sub-project. A major problem was created where the Río Chimbo breeched its banks, changed its course, and now flows into another river, the Río Bulubulu. The change in Río Chimbo course left 1,800 formerly irrigated hectares without water and put another 2,000 hectares into a continual flooding status. To restore the Río Chimbo its original course, a combination dike/overflow will be built, and sufficient upstream protection placed to guarantee long lasting benefits. (See Annex IV.B.1.(b) for a map showing the change in course of the Río Chimbo).

A summary of activities to be performed under the project is as follows. Detailed descriptions by province in Annex IV.B.1.(c). All works are in the public domain and will benefit large numbers of farmers.

DESCRIPTION	ESTIMATED COST ($)
1. Prioritized rehabilitation of breeched levee system	1,000,000
2. Rehabilitation of diversion works and infrastructure	420,000
3. Control works on the Río Chimbo	330,000
4. Protective works upstream of control structure on the Río Chimbo	110,000
5. Rehabilitation of emergency drainage channels and installation of flood control gates.	140,000
ESTIMATED TOTAL AMOUNT	$ 2,000,000

(2) Technical Analysis

This sub-project will address only highest priority works contained in INERHI's proposal. Criteria for establishing priority works include: (1) number of beneficiaries, (2) immediacy of requirements, e.g. to protect against future flooding in years of normal rainfall, and (3) feasibility of rapid implementation.

Detailed programming of the design of many works has yet to be completed. Up to 260/person months of engineering will be required for the detailed design of some structures. Consequently design and construction activities will be undertaken simultaneously. Global programming has been undertaken, the problems have been identified, solutions developed and sound cost estimates prepared but design such as the carrying capacity of stream segments will have to be rapidly analyzed to locate primary "bottlenecks" and additional study and design will be required to determine where it is necessary to move dike sections further from stream banks.

The major design problem will be the rechanneling of the Río Chimbo. The change in the course of the Río Chimbo requires both immediate action to effect a temporary solution and more detailed design work to effect a permanent solution on the Río Chimbo. A combination dike/overflow will be built, it will serve dual functions: as diversion structure and as a

spillway utilizing Reno mattress gabions with heavy rock revetments. The design will have to take into account the carrying capacity of the lower channel and spill excesses into the course cut by the 1982-83 floods. Rock revetments will be constructed along various critical upstream segments.

In many areas, repair of drainage channels and incorporation of drainage gates will decrease over-all flooding. At the present time, too few of these structures exist in the systems and those in existence are in very poor repair. The major flooded areas occurred behind existing levees. At low stages, this entrapped water (both over-land flow, and excesses from breeched dike sections) has no route to the natural drainage channels. An immediate improvement would be a system of spigot backed drainage gates. A 30" gate would relieve 20 CFS at a velocity of 4.07 FPS on a slope of 0.0024. While this is a solution for some locations, other sectors have poorly operating drainage systems. These systems will be immediately repaired and put back into service.

The sub-project offers immediate solutions to emergency problems in the coastal area of Ecuador affecting the provinces of Loja, de El Oro, Los Ríos and Guayas. All works are designed to provide immediate relief to the deteriorating agricultural sector. Although these solutions do not provide the complete solution to the ongoing flood problems, they do provide substantial support to maintain and repair the agricultural infrasturcture in place.

INERHI plans to contract the Ecuadorean Army Corps of Engineers for a significant portion of the work. Private contractors will carry out the other activities except for minor emergency repairs which will be carried out by force account. The Army Corps has the ability to mobilize faster and implement more directly due its military structure. It can undertake a wide range of works and can work in emergency situations better than any contracting entity in Ecuador. Additionally, the Army Corps should, as a matter of policy, be incorporated to a much greater extent in disaster reconstruction. The Corps is still developing its capability and the experience that it gains here under appropriate supervison permit it to act appropriately in future disaster programs.

INERHI has developed a model contract document incorporating A.I.D.'s standard clauses. It maintains running cost analyses of unit prices, transportation costs, skilled and unskilled labor costs and materials costs for each region. (See Annex IV.B.1.(d) for samples of unit pricing).

No major work is programmed for the rainy season of January through April, although S/.7.5 million has been budgeted for emergency work. If another severe winter develops in 1983-84, the project could be delayed beyond the 14-month implementation schedule.

(3) Institutional Analysis of the Ecuadorean Institute of Water Resources

INERHI was created in 1966 as an autonomous agency attached to the Ministry of Agriculture and Livestock. It has a staff of over 1600 people and is empowered by law to administer and supervise all activities for agricultural irrigation and drainage and may enter into agreements with other agencies in project execution.

Under the Water Law of 1972, INERHI was granted power for the development and management of water resources, including the creation of irrigation districts. INERHI's general policies are defined by its Board of Directors, chaired by the Minister of Agriculture and Livestock and comprising one representative each from the National Planning Council (CONADE), Ecuadorean Institute for Agrarian Reform (IERAC,) and the National Development Bank (BNF.) The Executive Director is appointed by the Minister of Agriculture and Livestock. (Annex IV.B.1.(e) depicts the internal structure of the institution.)

During the last 17 years INERHI has developed the capacity to design and supervise the construction of civil works. Based on this track record in the construction of civil works, INERHI is sufficiently qualified to carry out this proposed project. INERHI's professional staff consists of 8 auditors, 16 administrative officers, 17 lawyers, 8 economists, 28 geologists, 157 civil engineers, 73 agronomists, 1 sociologist, and 2 biochemists. The agency is basically structured to conduct studies, design, implement and supervise construction activities. District offices maintain a wide variety of construction equipment. This equipment serves to provide support services for construction activities: maintenance of access roads, emergency work, agricultural extension, etc. The institution also has various soil laboratories (mechanical, physical, and chemical,) plus sedimentology and complete water laboratories. All of these facilities will be vital in the implementation of this project.

To date, some 45,000 hectares have been brought under irrigation and drainage by the institution. Additionally, projects currently underway exceed 13,000 hectares. Under the 1972 legislation, INERHI is responsible for assuring the GOE that the control and use of water resources is rational and conforms to national priorities.

Although the agency has developed a substantial capability in civil works design and construction, it has had difficulty in past years implementing projects rapidly. This has been primarily the result of a failing Ecuadorean economy, lack of experienced staff, and extremely adverse winter conditions. Utilization of the Ecuadorean Army Corps of Engineers (EACE) under INERHI's supervision will facilitate implementation and alleviated some of these problems. EACE will be used as one of the primary contractors for this project.

The Institute is fully aware of the magnitude of its flood control and drainage responsibilities on the coast and of the shortcomings in its past performance, both those originating within the agency and externally. With this in mind, INERHI has mounted a massive effort toward resolution of the coastal problems. This current effort will assist INERHI in bringing the overall program and institutional development goals closer to realization.

USAID/Ecuador has worked with INERHI in irrigation project implementation, and has found INERHI's financial accounting procedures to be acceptable. A standard contract approved by USAID/E has been developed and will be used in this project. Standard progress payment forms used by the institution appears in Annex IV.B.1.(f).

b. Pichincha Slope Protection

(1) Activity Description

While the major impact of the El Niño phenomenon was felt on the Ecuadorean coast prolonged and heavy rains in the sierra (mountains) were also experienced. Many landslides and mudflows occurred throughout the sierra as a result. Quito, which is located at the foot of Pichincha mountain, had several slides but also experienced flash flooding with concommitant mudflows. This was the result of inappropriate human interventions on the slopes of Pichincha and an entirely inadequate sewer system in the city. On one occasion Quito's airport was closed for more than a day because flash-flooding had swept more than a foot of mud into the terminal building.

As an initial response to the sierra landslide problem A.I.D. provided the services of a highly qualified expert in landslides, Dr. Eugene Kojan. An engineering-geologic evaluation of landslide, mudflow and flood disasters in Ecuador conducted by Dr. Eugene Kojan identified the threat of landslides and flash floods in Quito as a significant and ever-present threat to human life and property. This expert pointed out that most slide problems were caused by inapproriate landuse reflecting the non-utlization of proper engineering criteria. He also identified as an acute and potentially very dangerous problem the lack of proper land use controls on the eastern slope of Pichincha mountain over-looking the city of Quito. Inappropriate human interventions on the mountain's slope (road and housing construction, as well as grazing and mining activities) have so degraded the natural capacity of the surface to retain or slow down water flow that any heavy rainfall on the mountain's upper slopes could cause massive flooding and mudslides which in turn could cause hundreds or thousands of deaths. (This years rains, although heavy, fell on the lower slopes of the mountain.) To mitigate this possibility, three distinct but related activities are recommended to be undertaken immediately. These include the application of more effective land use controls and reforestation activities on the upper slopes of Pichincha, construction of small protective works and repair or replacement of damaged or inadequate drainage structures on the mountain's lower slope, and the implementation of a pre-feasibility related to Quito drainage improvement. Recommendations for further action would be based on the conclusions of the study.

Responsibility for implementation of these activities corresponds to two different entities. The Ministry of Agriculture's National Forestry Program is reponsible for implementing activities on the upper slope which has been legally declared a Protective Forest Zone. The National Forestry Program is in the process of precisely delimiting this zone and is drawing up a tentative management plan for the area. Technical assistance for this activity is being financed through the Forestry Sector Development Project (518-0023) and no funds from this project are required. Responsibility for implementing activities on the lower slope and for carrying out studies corresponds the the Municipality of Quito and, specifically, to the Municipal sewer company. The latter institution has identified a number of emergency actions to repair or improve existing drainage structures and has developed the preliminary terms of reference for a pre-feasibility study which is required to develop longer term solutions to the drainage problem. (See Annex IV.B.2)

(2) Technical Analysis

With regard to the emergency works on the lower slopes, A.I.D. engineers have suggested modifications in the nature of the works to be implemented. Proper siting of the emergency works is also an important consideration. Although general locations have been identified, technical assistance will be provided to the municipality to assure that proper design and siting requirements are followed. With regard to the technical studies, A.I.D. has concluded that the preliminary terms of reference are adequate to determine the general scope and budget of the study to be carried out but that the assistance of an expert consultant will be required on a short term basis to develop the final terms of reference for the study.

(3) Administrative Arrangements and Institutional Analysis

Execution of the lower slope emergency works and contracting of the studies will be carried out by the Municipality of Quito. The emergency works (small flow diversion structures and replacement of culverts on the Via Occidental would be contracted out and supervised by the Municipality.) The relatively large amount of on-going road construction under the supervision of the Municipality demonstrates a fairly high degree of supervisory capacity. Short term technical assistance will, however, be provided to the municipality to assure proper design of the structures. With regard to the implementation of the study, the Municipality has requested specialized short-term technical assistance to develop the final terms of reference and has indicated the need to contract with a U.S. firm to carry out the studies. The Municipality' planning department does, however, have sufficient techncial and administrative capacity to supervise the studies.

c. Housing Reconstruction and Repair

(1) Activity Description

The purpose of the sub-project is to restore the quality of shelter of families whose homes were damaged or destroyed by the intense rains and flooding in coastal Ecuador which destroyed approximately 2,500 houses and damaged more than 12,000 others. The National Housing Board and Ecuadorean Housing Bank (Junta Nacional de la Vivienda/Banco Ecuatoriano de la Vivienda) have established a "National Housing Reconstruction Plan" which will provide funds for home improvement loans to damaged housing in flooded areas.

The Plan provides financial and technical assistance to repair damaged homes, rebuild destroyed homes, and relocate families whose homes were situated on unsuitable sites. The GOE has assigned S/118 million to the Junta Nacional de la Vivienda and the Banco Ecuatoriano de la Vivienda (JNV/BEV) as counterpart funding which is expected to provide shelter reconstruction credit for a total of approximately 2,400 families. Assuming a maximum loan amount of U.S. $500 each, A.I.D. Grant funds will finance approximately 440 individual repair and reconstruction loans to sub-project beneficiaries.

The program will be implemented through the three coastal regional offices (Regions I, II and IV) of the JNV/BEV, which has completed damage surveys in selected communities, designed the program's operational terms and procedures, prepared the corresponding forms and model documents, and has already begun to evaluate individual loan requests.

Loans will be received by beneficiaries in cash, in construction materials, in pre-fabricated building components, or in any combination of these three forms. As an adjunct to the program, the JNV/BEV will establish regional materials warehouses and small plants to locally fabricate wood and bamboo building components.

In response to the nature of the problem, the JNV/BEV has substantially softened its normal loan conditions and elegibility requirements for borrowers and simplified its loan processing procedure. Interest rate terms will be 12 percent for ten years. Co-signed signature loans will be accepted in lieu of mortgage-guarantees.

Families needing home repair have registered for assistance with the local representatives of the JNV and/or with the local office of the Ministry of Social Welfare. Social workers of the JNV will hold community meetings in the areas selected for repairs or reconstruction. Heads of households will be invited to attend for an explanation of loan procedures. JNV social workers, engineers, architects and other technicians will be present to assist in answering questions and completing the various data sheets required for loan applications.

Formulas to be completed by the heads of households include:

(1) Request for credit.

(2) Statement, under oath, that the family lives and has lived in the house to be repaired or reconstructed.

(3) Statement of annual income during past year.

(4) Later, assisted by a skilled workman or technician, a description of the work and material requirements for the home repair will be prepared.

(5) Upon approval of these documents, a contract will be signed between the home owner and the Banco de la Vivienda, for cash, coupons for materials, or a line of credit for contracting, the purchase of pre-fabricated house components, or any combination of these four. (See Annex IV.B.3.(a) for sample copies of proposed formats.)

The method for repair or reconstruction will be selected by the family self-help, per/day employment of skilled labor or contractors may be used. Regardless of the method selected, JNV technical staff will monitor the repair or reconstruction.

Disbursements will be made on the basis of eligible credits. The JNV/BEV will be provided with a $44,000 advance with which to initiate A.I.D. funded reconstruction loan activities. Subsequent reimbursements will be processed upon the JNV/BEV's presentation to the Ecuadorean Development Bank (BEDE) of the list of eligible individual loans utilizing A.I.D. funds which have been formalized with program beneficiaries.

Within three months after the last disbursement, the JNV/BEV will submit a final accounting to BEDE demonstrating that total loan disbursements to the program beneficiaries are equal to or exceed the amount of A.I.D. funds disbursed to the JNV/BEV.

(2) Technical Analysis

JNV policy supports the use of traditional building materials and self-help as well as small scale industrialized building components as the principal means of building more and better dwellings in less time and at less cost. It is recognized by JNV that the majority of houses in Ecuador are built by their owners using local materials readily available. The reconstruction/repair of housing in this sub-project follows this established pattern.

Traditional building materials for the coastal region are primarily bamboo and wood for walls and corrugated metal for roofing. The JNV is interested in improving and utilizing traditional building materials, promoting self-help, and supporting local developers and building materials suppliers. It has already produced a manual on building with adobe for application in mountainous areas, another on building systems and designs traditionally used in rural Ecuador, and published the synopsis of the second Latin American Symposium on use of bamboo for housing material. Housing repair will use these traditional materials, and at the same time improve their usage through the technical assistance provided by JNV.

In the coastal area houses are frequently built on stilts of wood with bamboo walls raised about 8 feet above swampy lagoons. Entrances are by ladders or walkways suspended above the water level. (See Annex IV.B.3. (b) for sketches of typical stilt and ground level homes.)

Other homes are of "barenque", bamboo poles stuck into the ground, forming the structural members, and subsequently plastered with adobe. Whether of bamboo on stilts or ground level, the majority of houses use corrugated zinc roofing, purchased windows, doors and hardware. Basic services for sites frequently include oil drums for storage of water delivered by tank trucks and the disposal of solid waste through septic tanks and latrines.

The majority of houses damaged by the floods were those built at ground level near rivers. Since the flooding, families have constructed or repaired their homes with cardboard and materials found in the receding waters, or moved into already overcrowded homes of parents, children, or other relatives. This sub-project proposes to help these families restore or upgrade their flood damaged homes through the use of regional building materials, labor intensive construction and credit systems appropriate to the economic status of the beneficiaries.

The average loan for repair is expected to be U.S.$445 or less. JNV/BEV uses 25% as maximum portion of the family income for repayment. For wage earners the minimum wage is S/.5,600 per month. Under the maximum of 25% of income for home repair, a payment schedule would be:

10 year Loan at 12%

Loan Value	Monthly payment	Minimum Income Requirement/month
S/.40,000 (U.S.$445)	S/.574 (U.S.$6.38)	S/.2,296 (U.S.$25.50)
S/.30,000 (U.S.$333)	S/.430 (U.S.$4.78)	S/.1,722 (U.S.$19.13)
S/.20,000 (U.S.$222)	S/.287 (U.S.$3.18)	S/.1,148 (U.S.$12.75)

5 year Loan at 12%

S/.40,000 (U.S.$445)	S/.890 (U.S.$9.89)	S/.3,559 (U.S.$39.54)
S/.30,000 (U.S.$333)	S/.667 (U.S.$7.41)	S/.2,669 (U.S.$29.66)
S/.20,000 (U.S.$222)	S/.445 (U.S.$4.94)	S/.1,780 (U.S.$19.78)

For wage earners the minimum income is more than adequate to meet the requirements for securing loan credits. However, persons with cyclical incomes may have more difficulty in getting loan approvals.

Both industrial and traditional building materials in common use are readily available in sufficient quantities such that no significant distortion of markets will result from the execution of this project. Because construction will be geographically dispersed, labor scarcities are not anticipated, and a six month implementation schedule as programmed appears reasonable.

(3) Institutional Analysis

a. The National Housing Board (JNV)

The National Housing Board (JNV) was created by Supreme Decree No. 162 on February 23, 1973. It has been endowed with a broad range of powers necessary to carry out the mandate presented in the National Development Plan: to establish and program national housing policy; coordinate public and private entities operating in the sector; coordinate with municipalities on urban development through rational land acquisition and housing programs; and construct projects it has programmed and approved. The JNV Board of Directors includes a cabinet level officer who functions as the President of both JNV and the Banco de la Vivienda (BEV) and representatives of the Ministers of Finance and Health, the Social Security Institute, the National Planning Board, the Municipal Government Association, and the savings and loan associations.

The JNV has shifted its earlier project specific and production/construction orientation to an increasingly more participatory and decentralized one through institutional objectives developed by the JNV Planning Directorate. These objectives affect four principal areas: administrative, financial, legal, and technological.

JNV's current institutional objectives include, among others, administratively, decentralization through the addition of Regional Offices and training technical staff to improve their present capabilities and to keep abreast of new developments in their respective fields; financially, to increase lines of credit for the implementation of programs directed to the low income sectors of the country and adjust the finance systems to the levels of the intended beneficiaries; legally, to formulate its policy to be able to

establish new urban land policy and analyze and modify the relationship and controls that exist between JNV/BEV and the savings and loan system; and, technologically, to increase the types of shelters through the use of appropriate technologies, new construction systems based on small scale prefabrication and self-help construction efforts that conform to the National Development Plan.

In addition to the structural reorganization of JNV that modified its functional capacity JNV has expanded its national coverage to carry out its annual operational plan. The Regional Offices cover all twenty provinces of the country as follows:

Provinces Covered by JNV Regional Offices

Guayaquil	Portoviejo	Loja	Cuenca	Quito	Riobamba
Los Ríos Guayas El Oro Galápagos	Manabí	Loja Zamora-Chinchipe	Cañar Azuay Morona Santiago	Carchi Imbabura Pichincha Cotopaxi Esmeraldas Napo	Bolívar Tungurahua Chimborazo Pastaza

JNV now has a staff of 394, with 263 professionals, mostly architects and engineers, (see Annex IV.B.3 (c) for detailed staffing pattern) that reflects its past production/construction orientation. Most of these professionals (121) are located in Quito, with the remaining 142 located in the Regional Offices with the smallest number (9) in Loja, Cuenca (10), Portoviejo (10) and Guayaquil (78).

The JNV decentralization now in effect has obliged the JNV headquarters to review its staffing patterns and skills and train its Regional Office personnel to include a stronger social work/community participation capacity. Regional Offices include at least one social worker/community development person, architect/engineer, technical support staff such as project inspectors, a lawyer, and a financial analyst.

While the quality and quantity of the JNV Regional Office Staff is considered adequate to manage its activities, the institutional decentralization is increasing the responsibilities at the field level. The expanding responsibilities include project promotion, design and implementation, social organization and community development, project contracting, inspection, management, and legal matters. This Emergency Rehabilitation project component is fairly insignificant in terms of funding, but should aid the JNV in its continuing institutional development.

(b) The Ecuadorean Housing Bank (BEV)

The GOE established the Ecuadorean Housing Bank (BEV) as an autonomous public housing institution in March, 1961, as the institution public sector agency providing mortgage loans. The original mandate was to provide houses for low income families which included planning, financing, and construction of housing projects as well as the development of a savings and loan system and support of cooperatives. It has been since granted broader powers to determine housing credit policy, issue bonds, collect savings, and other banking activities.

A.I.D. directly promoted the establishment of BEV by providing technical assistance and a $5 million seed capital loan. Later, support was provided through an A.I.D. guaranteed loan of $6 million to stimulate the savings and loan system. By 1973, the year in which JNV was created, BEV had sold approximately S/.360 million in bonds. Support for the savings and loan system reached more than S/.444 million in 1976 and S/.476 million in 1980.

BEV has four main branch offices in Guayaquil, Cuenca, Loja, and Portoviejo and 14 agencies outside of Quito, the Central Office. BEV's Central Office has recently been restructured with the idea of reducing its dependence on dwindling GOE resources and carrying out its policy of full cost recovery. To support this, three new departments have been established to manage and eventually divest BEV's building materials factories to the private sector, to monitor BEV's local offices, and to improve operating procedures.

The quality of BEV's staff (919) is generally high since BEV, as an autonomous bank, is not bound by civil service salary levels. At present, the professional operating staff of BEV is concentrated in the Quito headquarters (62) and the Guayaquil branch (42). Secondary city offices typically have 12 to 18 employees each including a lawyer and accountants who handle accounting, collections, and savings deposits. In each of BEV's branches and agencies JNV has located technical and social staff to complement BEV personnel. (See Annex IV.B.3 (d) for staffing patterns and organization charts).

Project accounting is performed by each local office, and consolidated monthly through reporting to the Quito headquarters. IBRD missions have recently reviewed BEV's accounting systems and internal audits and found them to be highly satisfactory. With the exception of the need for improved financial planning, accounting was found to be adequate at both the national and local levels.

d. Potable Water and Sanitation System Repair

(1) Activity Description

The extensive flooding severely damaged potable water and sanitation systems in a number of cities and towns in Guayas, Los Rios, El Oro

Manabi and Esmeraldas provinces. Consequently, there are many cities and town which are still without potable water or satisifactory sewage disposal. In many cases relatively small investments are required to repair or flood-proof potable water wells or to rehabilitate pumps, however new wells will have to be dug in a number of towns. In other cases such as in Babahoyo and Esmeraldas city sewage systems must be rehabilitated and protected against future flooding through the installation of flaps, valves and pumps to permit evacuation of sewage during floods. A.I.D. resources will be used to finance repair and rehabilitation of potable water and sanitation systems in approximately 30 coastal cities and towns. Both civil works and equipment will be financed. The activity will be implemented through the Ecuadorean Sanitary Works Institute (Instituto Ecuatoriano de Obras Sanitarias, IEOS), the institution responsible for the technical supervision of potable water and sanitation programs for municipalities. A.I.D. funds will finance approximately seventy five percent of the cost of rehabilitating these systems as well as essential equipment such as two cable tool drilling rigs and one jet-type vacuum truck. The A.I.D. contribution will amount to 40 million sucres ($500,000) for local currency costs and $200,000 for imported equipment. The GOE counterpart will amount to twenty million sucres. A detailled list of systems to be repaired together with the types of repairs required estimated cost and disbursement schedule is presented in Annex IV.B.4.

(2) Technical Analysis

The types of repairs required for potable water and sewage systems are simple and within the technical competence of IEOS to design and implement. The use of cable tool drilling rigs rather than rotary drills is based on the their ease of operation, lower initial cost, and reduced spare part requirements compared to rotary drilling rigs.

(3) Administrative Arrangements and Institutional Analysis

This activity will be implemented through the Ecuadorean Institute for Sanitary Works (IEOS) in collaboration with the municipal governments of the towns and cities where the works will be carried out. Normally, maintenance of these facilities is the responsiblity of the the municipal governments and IEOS would provide technical assistance, including supervision of contractors. However, the widespread nature of the activity precludes the possibility of channelling resources through the municipalities. Therefore, IEOS will be administratively, financially, and technically responsible for the implementation of this activity. Because IEOS has a significant amount of experience obtained through the implementation of the rural water and sanitation component of the A.I.D. Rural Health Delivery Systems project in which it is responsible for all these functions, the administration of this activity should be relatively straight forward, especially since three of the five provincial IEOS offices which will be involved in implementing this activity already have experience with the on-going project. Generally, IEOS will contract the works to be carried out but may use force account for some very small activities.

A complete institutional analysis is made of IEOS in the Health Loan Project Paper (Loan 518-U-040, Project 518-0015.) The analysis identified a number of institutional weaknesses and constraints which are being addressed in that project. In less than two years IEOS has shown significant improvement, since the implementation of that project in January 1982. These were addressed as needed improvements in the PP and include increased use of paraprofessional personnel, use of low cost design, simplification of procurement procedures, and the creation of a rural water and sanitation unit. Furthermore, IEOS implementation record for rural water and sanitation projects is much superior to that to be expected from its previous history. This improved implementation is due in great part to the effective assistance provided by an A.I.D. PASA sanitary engineer. The major conclusion which can be reached with regard to IEOS institutional capacity is that, while it remains fairly weak, it can be further strengthened. The key element in the strengthening process and in the rapid implementation of the Emergency rehabilitation project is the effective utilization of AID's PSC sanitary engineer to assist IEOS overcome institutional bottlenecks.

e. School Reconstruction and repair

(1) Activity Description.

The Directorate of School Construction (DINACE) through its ten Zone Offices and coordinated with offices of civil defense, made a school-by-school survey of flood damages in June and July, 1983. The survey was country-wide including the highlands, where rain damage and some flooding also occurred. For the purposes of this project reconstruction and repair activities have been limited to the six provinces of the Coastal Region: Loja, Esmeraldas, Manabí, Guayas, Los Ríos, and El Oro.

The school survey identified 519 schools damaged and 52 destroyed in these provinces. Many rural schools had been built near rivers in riverside villages, and as the initial floods swept water and mud through the buildings, floors were destroyed, windows and doors disappeared, furnishings lost, walls buckled, roof trusses twisted and roofs fell. The continuing heavy rains further undercut foundations, walls collapsed and sanitary services, piping and latrines destroyed. Of the 519 schools, the costs for repairs vary from as little as U.S. $200 to $200,000 in the case of large schools. The survey notes that damages to some schools could not be appraised since they were still under water.

Annex IV.B.5.(a) lists candidate schools, location, type of damages and estimated repair costs. A summary of these schools by province is as follows:

Identified Schools for Repair or Reconstruction in the Coastal Region

Province	Number of Damaged Schools	Number of School Destroyed	Estimated Cost for Repair or Reconstruction (U.S. $)
Loja	188	15	318,000
Esmeraldas	32	23	247,020
Manabí	72	3	263,700
Guayas	85	6	333,833
Los Ríos	54	0	471,500
El Oro	88	5	334,166
TOTALS	519	52	1,968,219
Equipment and Furnishings (6 provinces)			33,333
GRAND TOTAL			2,001,552

For lack of detailed inventories of lost school furnishings, DINACE assigned a global figure of U.S.$33,333 to repair or replace desks, chairs, blackboards, bookshelves, etc. School furnishings will be entirely counterpart funded, although a large portion of the school equipment has been already replaced. During May 1983 20,000 student desks were delivered to schools in the affected areas of which 9,000 were financed by a private relief organization -- Unidos Somos Más. (See Annex IV.B.5.(b) for equipment fabricated and delivered during nine month period, 1982-83).

Overall planning for the sub-project will take place primarily in the National Office in Quito, and implementation in the appropriate zonal offices. To permit a rapid response to the disaster, the GOE passed a decree delegating authority to the heads of Zonal Offices of DINACE in the provinces of Guayas, Los Ríos, Manabí and El Oro to sign contracts for school repairs up to sucres S/.1,000,000. (REGISTRO OFICIAL, May 24, 1983, Acuerdo No. 3290)

The 52 schools to be reconstructed will be contracted to private pre-qualified construction firms. DINACE standard plans for rural primary schools will be used. (Annex IV.B.5.(c) demonstrates a portion of one set of plans). Of the schools to be reconstructed, the largest are a nine classroom structure in Tosagua, Manabí, seven classroom schools in El Oro, and

a six-room school in Arenillas, El Oro. Also, two schools of 4 classrooms and four of 2 rooms will be built; the remaining 42 schools will be one room rural schools.

Of the 519 schools to be repaired the great majority are small rural structures with a variety of requirements. Nearly all schools need new latrines or, in the case of more sophisticated communities, repair of septic tanks and sanitary services. The repairs of schools will be accomplished: (1) by contracting repairs for groups of schools located in the same geographic region (see Implementation Schedule); (2) by community participation supervised by DINACE Regional engineers, and (3) by force account using the technicians in the Zone Offices of DINACE using locally hired hand laborers and purchasing materials through the Zone Offices, or in some cases, shelf purchases from local suppliers. Four additional engineers or architects will be required by DINACE in addition to the professionals already assigned to the disaster area.

DINACE uses a system of quality and fiscal controls that is more than adequate. The Standard "Technical Specifications" and "Construction Supervision Manuals" for all construction and repairs are comprehensive, clear and concise. Some of the rural schools will have to be rebuilt in new locations. Customarily, the municipality donates lands for schools. On a case-by-case basis, caution will have to be exercised in reconstruction to prevent schools being built in flood prone areas.

The Project will be implemented over a period of twelve months. The major portion of repair work need not be done in the dry season; however, the foundations of school being reconstructed should be poured under relatively dry conditions which could delay sub-project completion.

(2) Technical Analysis

For the purposes of this project, "reconstruction" will mean the complete rebuilding of a school structure, including foundations, and in some cases relocating the school. These standard designs were developed approximately four years ago with technical assistance from the Mexican Ministry of Education. Standard, modular plans to be the plans used under the project are well designed and will result in cost effective construction. The Directorate of School Constructions manufactures a pre-fabricated metal school building structure at the rate of 1,200 to 1,500 classrooms per year. (See Annex IV.B.5.(d) The pre-fabricated structure is delivered by truck to the site where land preparation, foundations, sub-floor and floors are constructed on site. Using this method the classroom cost, country wide, in July 1983 averaged $3,400 per classroom, exclusive of land costs. Contractors have been pre-qualified and are familiar with the prefabricated structural members. With the governmental decree authorizing the Zone Chief engineer/administrator to sign contracts for school rehabilitation up to sucres S/.1,000,000, the reconstruction component should be implemented without difficulty by contracting groups of 3 or 4 schools in the same geographic area.

"Repair" will cover a wide variety of repairs such as replacing floors, sub-floors, trusses, roofing materials, walls, interior partitions, doors, windows, sidewalks, foundation fill, latrines, etc. Repairs will be on a school-by-school basis with a detailed material, work requirement and cost analysis made by a zonal engineer for each school. Labor will be contracted to local skilled and unskilled laborers, materials purchased in the area (to the greatest extent possible), and all work and procurement assigned to one of the engineers or architects in the Zonal Office.

To meet the maximum 12-month scheduled goal of 51 new schools and 519 schools repaired, the Zones will need complementary engineering and accounting assistance to manage the project in addition to use of all personnel assigned to the Zone. (See Annex IV.B.5.(e) for existing personnel by Zones).

Assuming one field engineer or architect for each 3 schools under repair per month, and reserving the engineer/administration for monitoring of contractors, the minimum additional personnel requirements by zones will be:

Zone	Name	Scheduled Work	Existing Personnel	Additional Personnel Required	No. of Schools
"D"	Loja	Build 1 school/ mon. Repair 12 schools/mon.	3 Arq./Ing. 1 Topo	2 Arq./Ing. 1 Accountant	15 118
"H"	Esmeraldas	Build 2 schools/ mon. Repair 2 schools/mon.	2 Arq./Ing.	1 Arq./Ing. 1 Accountant	23 32
"I"	Manabí	Build 1 School/ 5 mon. Repair 5 schools/ mon.	2 Arq./Ing.	1 Arq./Ing. 1 Accountant	3 72
"B"	Guayas Los Ríos	Build 1 school/ 2 1/2 mon. Repair 9 schools/ mon.	4 Arq./Ing. 3 Accountants	1 Accountant	6 139

"J"	El Oro	Build 0 schools Repair 3 1/2 schools/mon.	3 Arq./Ing. 1 Accountant	0 54

The use of the word "accountant" to describe the required technician is too limiting in its normal sense, since the project views this person as the purchaser of materials, implementing deliveries, receiving and accounting for all receipts, and handling paper work required by field personnel in school reparation. The project contemplates approximately 400 person months of professional support on the part of DINACE.

DINACE has standard formats in its "Supervision Manual" which includes formats for indirect costs, analysis of unit prices, progress of work by line item, change orders, cost control, and supporting documents. (See Annex IV.B.5.(f) for sample formats). These standard formats will be used by both field and office personnel in carrying out required work.

DINACE also maintains computerized materials, labor and equipment cost handbooks for each province, up-dated quarterly. These cost data are collected in the field, fed into the National Office computer as a control check for construction costs and issued to the Regional Zone Offices. In this manner, transportation costs are included in unit prices. For example, a concrete block (40x20x10) has a unit price in Guayas of Sucres S/.10.50, while the same block in El Oro Province costs Sucres S/.7.60; 3" door hinges are priced the same in all provinces; skilled labor in Guayas is Sucres S/.31.38/hour, in El Oro, Sucres S/.28.63. See Annex IV.B.5.(g) for examples of comparative reports on materials and analyses of unit prices for foundation excavation. The cost handbook forms the basis for unit costing in contracting and payment for change orders.

The classroom construction goal for 1983 under the National Development Plan was 2,769. Approximately 50% of this goal has been reached. In the major disaster areas new work has been halted for surveys and inventories. However, materials for school construction had already been ordered so that some materials for this sub-project will be diverted from the programmed National Development Plan to Emergency School Reconstruction and Repair. All products or raw materials are presumed to be in-country and no external procurement is anticipated.

(3) National Directorate for School Construction (DINACE)

The DINACE, a department within the Ministry of Education, (MOE), is responsible for physical facilities, furnishings and equipment of all public primary, secondary, vocational and teacher training schools. Selection of sites, spatial requirements and equipment are determined by MOE educators and passed to DINACE for execution of the "bricks and mortar". In

the 1983 facility census are listed 11,451 primary schools, 1,472 secondary and vocational schools, and 27 teacher training institutes.

The National Office of DINACE in Quito is divided into administrative and technical sections. The administrative personnel, numbering 49, do all planning and programming, coordinate with other institutions and agencies; prepare bidding, contracting and legal documents; purchase commodities and make all payments for goods and services through the accounting offices.

The Technical Offices have a 60-person staff for architectural designing, structural calculations, cost analyses, construction monitoring, review of progress payments to contractors, and the selection and warehousing of school equipment and furnishings. Twenty-seven staff members are either architects or engineers. Also, two educators are assigned to the "Equipment Unit". The Technical Office also administers the manufacture of pre-fabricated structural units for modular school designs in a manufacturing plant which has 500 employees.

DINACE's field operations area administered through offices in 10 geographic zones. Each Zonal Office is headed by an engineer or architect and staffed in accordance with the number of schools per zone. For example Zone "B" (Guayas - Los Ríos) has 22 persons while Zone "J" (El Oro) only has an architect, 2 civil engineers and one chauffer/messenger. (See Annex IV.B.5.(h) for organizational diagram.)

The Zonal Offices are primarily responsible for construction monitoring and maintenance under their jurisdiction. In June and July, 1983 personnel from these offices surveyed all schools in the country, reporting on disaster damages and estimating costs for repairs or reconstruction.

The classroom deficit before the floods was 23,000. The 1983 budget for primary school construction at S/.529,312,000 plus S/.20,000,000 for furnishings and S/.110,000,000 for laboratory, workshop, and vocational equipment. One indicator of the development of DINACE's institutional capacity is that during the petroleum boom years of 1974-78, 2,984 classrooms were built, yet during the recession and economic crises years of 1979-83, some 5,282 classrooms were delivered to the school system.

A portion of an IDB Loan, signed in May, 1983, will provide financing for 275 new schools throughout the country at a cost of U.S. $2.2 million. These new schools are not disaster-related, rather, an effort to help close the 23,000 classroom deficit gap. Even though this IDB loan will be implemented simultaneously with A.I.D. Disaster Assistance, the use of private sector contractors and supervisory firms for the IDB construction should not place an unmanageable hardship on DINACE in the implementation of this project.

DINACE was created in 1966 under A.I.D. Loan 518-L-027, U.S. $5.3 million, as part of a project that constructed 275 primary and secondary schools. There have been no other A.I.D. financed loans in the Ecuadorean education sector.

The DINACE system of reporting and controls appear to be particularly well organized. A resume, published monthly, includes all works under construction or maintenance with Contractor's name, amount, progress payments, financing agency, etc. Support data for the resumé is computerized and provides detailed information so that Zonal Offices and the national office have the capacity to call up required information on any project. (See Annex IV.B.5.(i) for data formats).

With DINACE's decentralized operation for field maintenance and supervision, the organizational pieces are in place and this project can reasonably expect a successful conclusion in the reconstruction and rehabilitation of schools in the provinces of greatest flood damage.

f. Electricity System Repairs and Protection

(1) Project Description

Another sector of public services damaged by the severe flooding was electrical transmission systems. The highest priority for immediate repair is a 40 kilometer 138 KV transmission line currently under construction between the cities of Milagro and Babahoyo and the associated substation in Babahoyo. The contractor had to halt all work when the foundations of 30 transmission towers and the substation site were washed out. The Empresa Eléctrica Los Ríos serving this area did not have sufficient funds to adjust new contract costs to permit continuation of the work. Under subproject, the contract with Compañía Nativa de Brasil will be renegotiated to complete the required work at an estimated added cost of $282,000. (See Annex IV.B.6. (a) for the contracted and additional work to be performed.)

Repairs to the electrical distribution system within the city of Babahoyo will be done by the Instituto Ecuatoriano de Electrificación (INECEL) and spare parts and pumps will be purchased for system repair at an estimated cost of $150,000.

Restoration of the electrical systems under this component by community, requirements, and estimated costs are:

Location	Requirements	Method	Estimated Cost	Totals
		MILAGRO/BABAHOYO		$ 432,000
MACHALA	Spare parts for diesel generators	commodity purchases	$ 144,000	
	Pumps for prevention of flood damages	purchase	22,000	
	Distribution lines repair (20 Km)	force account	77,777	
		MACHALA		$ 244,000
ESMERALDAS	Distribution lines repair (10 Km)	force account	16,660	
ATACAMES SUA, LIMONES, LA TOLA BORBON	Distribution lines repair (20 Km)	force account	44,440	
TACHINA, CAMARONES Agricult. Cooperatives	Distribution lines repair (25 Km)	force account	97,220	
		ESMERALDAS PROVINCE		$ 158,320
MILAGRO	Protective walls for transformer(s)	force account	33,330	
	Pumps for flood prevention	commodity purchases	22,220	
Rural Milagro	Distribution lines repair (25 Km)	force account	100,000	
		MILAGRO		$ 155,550

SANTA ELENA	Spare parts for diesel generators	commodity purchases	44,440	
	Distribution line repairs	force account	33,330	
		SANTA ELENA		77,770
MANTA and rural area	Distribution system repairs	force account	22,220	
		MANTA		22,220
LOJA	Spare parts for diesel generators	commodity purchases	33,330	
		LOJA		33,330
QUININDE	Construction of protective walls, generator site	force account	16,000	
		QUININDE TOTAL		16,000
		TOTAL		1,139,190

Of the total estimated cost of $1,139,190 for purchases, increase in construction contract and distribution lines repair, $900,000 will be grant funded and the remainder counterpart contribution.

The majority of generators requiring spare parts are General Motors. Specifications for spare parts and pumps will be developed by INECEL engineers and purchased by USAID/E through Direct Letters of Commitment to the U.S. suppliers.

(2) Technical Analysis

The National interconnected electrical net is currently served by three hydroelectric plants and boosted by a number of thermal plants. The largest of the hydroelectric plants is Paute producing 500 MW with a 230 KV, 182 kilometer transmission line to Guayaquil; 70 kilometers of 138 KV to Cuenca; and 230 KV connections from Guayaquil to Quito. (See Annex IV.B.6 (b) These primary transmission lines start in the Andes mountains at an altitude of more than 3,000 meters and drop to sea level. The 1982-83

floods, fortunately, did not damage the high voltage lines, and the only damage to the Interconnected net was the paralyzing of the Milagro-Babahoyo construction, and the Esmeraldas generator which forms part of the net.

The 1983 primary centers of the national interconnected system are:

Hydroelectric	-	Pisayambo	-	70 MW
Diesel Generators	-	Quito	-	33 MW
Steam Generators	-	Guayaquil	-	140 MW
Gas Generators	-	Santa Rosa	-	52 MW
Steam Generators	-	Esmeraldas	-	125 MW
Hydroelectric	-	Paute	-	500 MW

All transmission lines are supported by steel towers with foundations designed for soil types - reinforced concrete for normal soils, foundations supported by pilings in swampy areas, and foundations of metal grillwork under the towers in the high mountains where the transportation of massive quantities of concrete was impractical.

Seven sub-stations regulate the flow of energy with a double system of manual and automatic controls for voltage regulation. The sub-stations are provided with water treatment plants, air conditioning to protect the control systems, and automatic fire extinguishing equipment. Radio and telecommunications feed data to and from each substation to maintain constant intercommunication.

The generators providing power to Machala, Santa Elena, Manta, Loja and Quinindé are isolated systems destined to be part of the interconnected network in the future.

All of the distribution systems were in use before the flooding and, with repairs, will be in working condition again.

The eight month implementation schedule is possible provided the spare parts are available as shelf items. The contract for the Milagro-Babahoyo could be delayed by heavy 1983-84 winter rains due to the fill required for the sub-station and transmission towers.

(3) Institutional Analysis

The Instituto Ecuatoriano de Electrificación (INECEL) is part of the Ministry of Natural Resources and Energy and as such responsible for contracting, execution and operation of all projects for generation, transmission and distribution of electric energy. To facilitate the distribution of electric power under a master plan, 17 small independent electric companies and 9 regional systems fall under the umbrella of INECEL. These independent companies are corporations with 80% - 90% of the stock held by

INECEL. The parent agency does all engineering design, contracting and supervises construction for the interconnected net and acts as advisors in the same functions directly or indirectly for the small corporations. A single wholesale tariff is applied for the entire country regardless of the energy source.

INECEL is administered by a Board of Directors made up representatives from the Ministries of Natural Resources, Finance, Industry, the National Development Advisor, Chief of the joint command of Armed Forces, representatives of the independent companies, Electric Workers Union and Electrical engineers association.

Basic administrative offices include planning, finance, industrial relations, legal department, engineering and construction, and a department of commerce and distribution. Under a separate unit is a program for rural electrification which is directly administered by the Regional Electric Corporations. (See Annex IV.B.6.(c) for Organization Chart).

With a total staff of 2,512, 32% professional/technical personnel are engineers, economists, and attorneys, 27% are administrators; and the remainder skilled workers. (See Annex IV.B.6.(d) for breakdown of human resources).

Currently serving 40.5% of the total Ecuadorean population, the goal by the end of 1985 is to service 55% of the population through completion of programmed extensions of the distribution systems. The installed capacity of the country's electrical energy operated directly by INECEL is 30%, 61% by regional systems under INECEL's direction, and 9% are wholly independent electric companies.

USAID/Ecuador has worked with INECEL through three loans in the past: Loan 518-023 and Loan 518-025, 1964-1971 for a total of U.S. $1.3 million for electrical systems in Santa Elena and Santo Domingo; and 1972-75 Loan 518-033 in the amount of U.S. $3.5 million for assistance in establishing Rural Electrification Cooperatives. These three projects were successfully concluded.

Generally conceded to be the best administered of all the Ecuadorean government agencies, INECEL's long range plans include the gradual substitution of hydroelectric energy for thermal generation. In 1979 33% of power production was hydroelectric and in the period 1985-1990, 80% should be hydro-power effecting significant savings in bunker and diesel fuel.

2. Financial Analysis

The A.I.D. Grant will finance rehabilitation activities with a wide variety of institutions and with a great range of counterpart funding requirements. The following table summarizes the uses of A.I.D. and counterpart funding by activity.

Grant Financial Expenditures by Activity
(US$000's)

	Grant	HG
1. Agricultural Rehabilitation	2,000	200
2. Pichincha Slope Protection	500	70
3. Housing Reconstruction	200	1,400
4. Water and Sanitation Rehabilitation	900	240
5. School Reconstruction and Repair	1,500	600
6. Electricity Systems Repair and Protection	900	90
TOTAL	6,000	2,600

Because of the nature of the emergency rehabilitation activities which are being financed, there will be no recurring expenditures over these which would otherwise be incurred for the operation and maintenance of the infrastructure being repaired or rehabilitated.

3. Overall Administrative Feasibility and Institutional Analysis of BEDE

The administrative capacity of GOE institutions to efficiently and rapidly execute the proposed activities is a major feasibility issue. The proposed administrative arrangements and the types of activities selected for financing are generally conducive to rapid implementation. (Section IV., Implementation Arrangements, describes the way in which the project will be implemented.) This section analyzes the feasibility of proposed general administrative structure for the project as well as of the administrative arrangements, including operational capabilities of the major coordinating institution, the Ecuadorean Development Bank (BEDE). The operational capacity of each implementing agency has been assessed in the preceding section.

Because day to day implementation responsibilities will be assigned to a number of different GOE agencies one criterion for selection of activities to be financed has been a positive evaluation by USAID of their administrative capacities. The activities included in the grant project will be carried out in large part by institutions with which USAID has existing working relationships (INERHI, IEOS, the JNV/BEV, and the Municipality of Quito). General coordination of implementation will be conducted by BEDE. USAID has very good working relationships with all of the above institutions. This prior experience will considerably reduce the time required to initiate the different sub-project activities because USAID and these institutions are familiar with each other's operational procedures and because a high degree of

personal trust has already been established at the working level. In other instances (INECEL) the institution has a record as a better than average public sector agency that is capable of and experienced in implementing international loans. The normal implementation capacity of the executing institutions will be improved because of the provision, contained in the Presidential decree which declared a state of emergency (still in effect), that permits exemptions from normal contracting proceedures for emergency works. This exemption permits direct contracting of emergency works and reduces the time required for legal review substantially.

The Grant funds provided for rehabilitation of physical infrastructure will be administered by the Ecuadorean Development Bank (BEDE). BEDE will act as an intermediary, channeling funds to implementing agencies and ensuring proper execution of the various subprojects. Given the urgent needs to restore basic infrastructure, particularly on the coast, it is important that BEDE function in an efficient manner. This section analyzes the appropriateness of BEDE as the lead counterpart agency and examines key issues relating to the capability of BEDE to perform its role as intermediary.

a. Institutional fit

Two basic schemes for providing Grant funds to the subproject activities were considered: (1) direct reimbursement by USAID of the various implementing agencies and (2) channeling the funds through an intermediary institution. The former option was rejected because it implied a significant additional administrative burden on USAID staff to the detriment of regular project implementation and because it would limit flexibility to reprogram funds among agencies. The viability of the second option depended on the availability of a suitable Ecuadorean intermediary agency. BEDE was selected for the following reasons.

(1) Functional compatibility. The functions required of the intermediary agency coincide closely with BEDE's normal program and operating procedures. BEDE was created in 1979 with the mandate to provide financing to public sector agencies for priority development projects. BEDE obtains resources from a percentage of petroleum export revenues and from public sales of stock; the IDB and IBRD are also considering major loans to BEDE. In approving and supervising loans for public sector agencies (Ministries, autonomous technical agencies, provincial and municipal governments), BEDE performs the following functions:

- technical, financial, and legal review of loan applications;
- evaluation of proposed projects in light of national development priorities;
- preparation of loan project document;

- negotiation and approval of loan;
- coordination of review and concurrence by other GOE agencies (Ministry of Finance, Attorney General, CONADE);
- provision of advances:
- field inspection of projects;
- technical and financial review of reimbursement documentation and approval of payments.

These are the same functions that will be required for carrying out the disaster rehabilitation project.

BEDE also has substantial lending experience in the sectors targeted for assistance under the A.I.D. financed project. From its creation through 1982, BEDE approved 98 loans with a total value of 18,076,459,000 sucres. Over a third of the total lending was for sectors included in this project, as shown below:

Sector	Amount (sucres)	Pct. of Total Lending
Water and sanitation	2,488,680,500	13.8
Low income housing	1,400,000,000	.7
Electrification	1,301,446,100	7.2
Schools	863,000,000	4.8
Irrigation	566,047,200	3.1

(2) Experience with disaster rehabilitation. BEDE has been an active participant in GOE efforts to rehabilitate the flood affected areas. In addition to its Normal Operations Fund, BEDE maintains an Emergency Fund for the reconstruction of infrastructure destroyed by natural disasters in declared emergency zones. With the onset of the flooding, BEDE shifted funds from other sources to increase the Emergency Fund by 20 percent to three billion sucres. BEDE has approved or is currently processing several loans which will fully utilize the the Emergency Fund. These projects involve primarily the reconstruction of coastal highway systems. In addition, BEDE has stepped up efforts to identify projects for funding under the Normal Operations Fund which would complement the emergency rehabilitation works.

(3) Lack of alternative agencies. BEDE is the only GOE agency which provides financing to the public sector for projects across a wide range of sectors. The Ministry of Social Welfare (MSW) was considered as a possible coordinating agency because the Minister of Social Welfare was designated as the overall coordinator for the GOE's disaster relief and rehabilitation efforts. However, this alternative was excluded because the MSW

itself has no functional role or capacity to serve as a coordinating institution. The designation of the MSW as a coordinating agency would be in name only. Similarly, the GOE's Civil Defense Board was considered as a possible alternative. Civil Defense has important positive attributes-it has an organization in every province in Ecuador and its mission is closely related to the activities financed by the Project. Nevertheless, Civil Defense is currently a weak institution. A.I.D. is providing significant resources to strengthen Civil Defense's capacity, primarily through training, but it was determined that this project is not an appropriate vehicle to carry out the institutional strengthening of Civil Defense and that quick execution of activities could be hindered by using Civil Defense as the coordinating mechanism.

b. Capability issues

The capability of BEDE to administer the project Grant funds efficiently will depend on its performance in three basic areas: project evaluation and approval; monitoring; and disbursements. BEDE intends to establish a branch office in Guayaquil which will permit the decentralization of certain functions and closer coordination with the A.I.D. financed contractor team.

(1) Project evaluation and approval.

Since its inception, BEDE has approved an average of 2.5 loans per month. The average processing time from receipt of application to approval of funding is six months. Compared to similar development banks in other Latin American countries, BEDE's performance in this regard is high and indicative of the excellent management and organization of the institution. Nevertheless, it is recognized by BEDE that much faster turn-around time will be required for the A.I.D. Grant funded subprojects. An analysis of previous loan processing indicates two main sources of delay both of which are external to BEDE's own evaluation and approval procedures. One problem is incomplete or faulty technical and financial studies submitted by the applicant. This has been most common with municipal and provincial government applicants who have depended on their own inadequate resources to prepare the studies. This problem should be largely avoided in the A.I.D. financed subprojects which will be developed by well established and technically qualified national agencies. In addition, BEDE's normal loans involve new construction which requires thorough feasibility studies. The A.I.D. Grant will finance the reconstruction of existing infrastrucutre, which entails less detailed studies as well as more rapid internal review by BEDE. The second major source of delay has been the required review of loans by external agencies, particularly the Ministry of Finance. This outside review will be minimized under the project. With regard to its internal processing procedures, BEDE utilizes special streamlined procedures for emergency projects. BEDE's recent experience with the use of these procedures indicates that internal processing can be accomplished in about two weeks. BEDE intends to issue a special set of procedures taking into account the special consditions of the Grant Agreement

to ensure expeditious treatment of the A.I.D. financed subprojects. In all, it is estimated that the initial set of six subprojects can be processed and approved within 60 days of A.I.D. obligation.

(2) Monitoring.

BEDE's capacity to monitor projects in the past has been limited by the size of its technical staff and by BEDE's centralized organization in Quito. The principal purpose of the newly created BEDE Guayaquil office will be strengthen the monitoring of BEDE's substantial portfolio of projects in the coastal provinces. The office will have a full-time staff of six including three engineers. BEDE will assign one engineer exclusively to oversee the A.I.D. financed subprojects, and additional support from the other staff will be provided as necessary. The BEDE engineers will coordinate their work schedules with the A.I.D. financed PSC engineers based in Guayaquil to ensure an adequate level of site inspection.

(3) Disbursement.

A key factor in the timely execution of the subprojects will be the provision of liquidity to the work units. BEDE's normal disbursement procedures appear adequate. BEDE normally places various conditions on initial disbursement. The condition which has been the most common cause of delay is the signing of the contract between the borrower and the firm or agency doing the work. This should not present a problem for the A.I.D. financed subprojects since the implementing agencies will use emergency contracting procedures or will undertake the work by direct administration. BEDE typically makes advances of up to 30 percent of the loan amount to expedite mobilization. BEDE reimburses on the basis of summary expenditures and physical progress reports submitted through the implementing agency. The internal review and approval of reimbursement usually takes no longer than five days. Transfer of funds from the BEDE account in the Central Bank to the account of the implementing agency takes another one or two days. Given the efficiency of the reimbursement operation, there is no need for major redelegations to the Guayaquil office. Nevertheless, the quality and speed of the reimbursement process will be increased by allowing the BEDE engineers based in Guayaquil to perform the technical review and send a summary report and recommendation to the Quito headquarters. Also, BEDE will authorize transfer of funds to implementing agency accounts in the Guayaquil branch of the Central Bank, thus making the funds more readily available to the work sites.

In summary, BEDE's internal operations should pose no significant constraints on project implementation. However, as an intermediary institution, BEDE's control over the full implementation process is limited. The critical factor will be the capacity of the implementing agencies to provide adequate on-site supervision of the works and to expedite the flow of payments documentation and funds between the work sites and BEDE. (See Sec. III.A.1. for further discussion of implementation arrangements.)

4. Environmental Concerns

The Initial Environmental Examination for the project is attached as Annex VI. The grant financed infrastructure repair and rehabilitation activities are intended to restore damaged or destroyed facilities to operational conditions. They will improve the existing environmental conditions on the coast. No significant adverse impacts on the environment are foreseen. Therefore a negative environmental determination has been recommended for the grant financed activities.

E. Technical Assistance, Training, and Logistical Support

Grant funds in the amount of $1 million have been reserved for technical assistance, training and logistical support activities. These funds will be obligated by contracts and limited scope grant agreement outside of the major loan and grant agreements. In order to implement the activities described in the prior sections quickly and effectively, A.I.D. will obtain the services of several long term engineering advisors. These advisors will carry two basic functions -- project monitoring and the provision of technical assistance. This modality, which is already being extensively used in USAID/ECUADOR programs (eg. IRD irrigation, IRHDS potable water and sanitation, forestry and housing), is an effective and an efficient use of specialized resources. A number of specialists, to be obtained through PSCs or PASAs, will participate in the project on a long term basis. A chief of party, a sanitary engineer, a hydraulic engineer, and two structural engineers or architects, as well as an accounting specialist will be financed with project funds. These individuals will work closely with Ecuadorean counterpart staff to assure that implementation of grant funded sub-projects is adequate. Specifically, the hydraulic engineer will work with INERHI on the agricultural infrastructure rehabilitation activity, the sanitary engineer with IEOS on the water and sanitation rehabilitation and the two structural engineers with DINACE on the school repair and reconstruction component are adequate. In addition a housing specialist, contracted through the Secondary Cities housing grant will be available to work on the housing rehabilitation component. Short-term specialized technical assistance will also be financed in areas such as sedimentology, geophysics, and pesticide management. (A list of technical assistance requirements is contained in Annex V.B.). This technical assistance will work with the Government agencies on specific implementation problems but will at the same time will strengthen the technical capacity of institutions such as INERHI, IEOS, and the Municipality of Quito by providing training to their personnel. A.I.D. resources will fund fifty-four months of long term U.S. technical assistance, 24 months of long-term Ecuadorean technical assistance, and ten months of short term technical assistance.

Specialized short term training will be provided to GOE engineers to improve their engineering design capabilities and to Ministry of Agriculture and National Development Bank personnel in pesticide management and handling.

These activities will be carried out by highly qualified U.S. individuals and/or organizations. They will be planned and executed in coordination with interested GOE institutions. In addition, the cost of logistical support will be required for A.I.D. project monitoring as well as support staff costs. Grant funds amounting to $600,000 for technical assistance, $200,000 for training, and $150,000 for logistical support will be provided for these activities. In addition $50,000 has been set aside for contingencies. These funds may be allocated to emergency rehabilitation programs if not required for technical assistance, training or logistical support. In the event that they are utilized for programs, they may be obligated either by amendment to the Project Grant Agreement or through separate limited scope and/or operational program grant agreements. In either case they would be used for disaster relief, rehabilitation, and/or recovery activities.

III. IMPLEMENTATION ARRANGEMENTS

The general implementation arrangements for the project are that two separate agreements will be executed. One agreement will be a loan agreement to implement the agricultural inputs/credit component of the project. The other agreement will be a grant agreement to finance the economic/social infrastructure activities included in the project. The loan agreement will be executed in the first instance by the Ministry of Finance which will redelegate responsibility to the Banco Central (for the importation of agricultural inputs) and to the Banco Nacional de Fomento (for agricultural credit). The grant agreement will be signed with the Banco Ecuatoriano del Desarrollo (BEDE) which will serve as the project coordinating agency. One million dollars of grant funds will be obligated by USAID outside the project agreements for technical assistance, training, logistical support and other related activities which are not appropriate for inclusion in a bi-lateral agreement.

A. Implementation Planning

1. Project Timetable

The project will be implemented over a period of approximately one and one-half years from the date of signature of the Project Agreement. The rationale for the short time provided for implementation of the project activities is that they are emergency works which respond to urgent priorities and which are fesible to execute within a short time period. Most activities are expected to be disbursed well before the PACD, however activities to be implemented by IEOS and INERHI will require close to 18 months to implement. Also, should the abnormal weather again return to Ecuador during 1984, the execution of many of the activities may be severely affected by heavy rains and floods. In this event the activities would be reprogrammed where possible, but USAID will be forthcoming in considering a PACD extension. Annex V contains a general time-phased implementation schedule for the project. With a September 1983 authorization, the schedule for key project start up and implementation events will be:

Activity	Date
Project Agreement Signed	September, 1983
Initial C.P.'s Met	October, 1983
Loan Financed Sub-Agreements Negotiated and Signed	October, 1983
Letter of Commitment and Initial Letters of Commitment Issued	October, 1983

USAID Guayaquil Office Opened and PSC Advisors on Board	November, 1983
Grant-Funded Sub-Agreements Negotiated and Signed	November, 1983
Initial Infrastructure Rehabilitation Underway	November, 1983
Initial Shipments of Agricultural Inputs Arrive In-Country	November, 1983
Letters of Credit Issued Against Entire Amount of Loan	December, 1983
PACD	March, 1985

2. A.I.D. Monitoring Arrangements

Little direct monitoring will be required for loan-financed activities but significant monitoring of grant financed activities will be required.

Loan funds will be disbursed through letters of credit issued under an A.I.D. letter of commitment. Eligible commodities will be clearly identified in the letter of commitment and letters of credit will be accepted for payment only if they are identified as eligible under the letter of commitment by the U.S. bank holding the letter of commitment. Because disbursements of loan funds will generate local currency proceeds that will be applied to a program of agricultural credit, USAID will require that the National Development Bank submit to USAID (a) a document which identifies the numbers and types of loans to be made on an a priori basis and (2) a list of the loans actually made which corresponds to the amount of local currency generated. USAID will survey a sample of credit recipients to verify that the credit has been used for the designated purpose. Monitoring of the loan funded activities will be the responsibility of USAID's Agricultural and Rural Development Office. An Ecuadorean with prior experience in agricultural credit will be contracted temporarily to assist in the survey of the sample of credit recipients.

The large volume of engineering design and construction work to be financed with grant funds is clearly beyond USAID's existing monitoring capacity. Therefore, the following major steps will be taken in order to assure that monitoring is sufficient: (1) an A.I.D. direct hire engineering position will be created (and a position in USAID's health office will be abolished) and (2) a project office will be established in Guayaquil. The

project office will be staffed with three American and two Ecuadorean contractors, who will be involved in project monitoring, including a chief of party, a hydraulic engineer, a sanitary engineer and two Ecuadorean structural engineers or architects. In addition, the project will fund a part-time accountant and support staff (secretaries and drivers) for the Guayaquil office.

The decision to establish a Guayaquil office was based on a careful analysis of monitoring requirements. With the exception of the Pichincha Slope Protection activity in Quito and School Repair and Water and Sanitation activities in Esmeraldas Province all field monitoring can be much more readily carried out from Guayaquil.

Most of the activities can be monitored by day trips from Guayaquil. Activities which require overnight trips (e.g., those in Loja) would require that people traveling from Quito would pass through Guayaquil. Also the implementing institutions have regional offices in Guayaquil and other coastal provincial capitals which are readily reached from Guayaquil.

To facilitate project coordination, BEDE will open a regional office in Guayaquil. Consequently, reimbursment requests from the implementing agencies can be readily reviewed and informally approved by USAID's Guayaquil staff. The direct hire engineer will be stationed in Quito but will travel extensively to Guayaquil and the coastal provinces. He will carry out monitoring and liaison functions for activities in Quito and Esmeraldas, will technically supervise the A.I.D. monitoring efforts in Guayaquil and will deal, as necessary, with BEDE and implementing agency head offices located in Quito.

B. Evaluation Plan

Because of the short term nature of the project, it will be formally evaluated only upon project completion. The loan and grant portions of the project will be evaluated separately.

The evaluation of the loan will focus on of the mechanism used to import the agricultural inputs. The primary objective will be to evaluate the efficacy of the process of importing the inputs. The findings of this evaluation would be useful in the design of any future commodity import type programs. The Ministry of Finance, the Central Bank and A.I.D. will jointly conduct the evaluation. An evaluation of the agricultural credit program financed through the sucres generated from the import of agricultural inputs is not contemplated; however, such an evaluation might be undertaken if it would contribute to the design of future A.I.D. financed agricultural credit programs.

The evaluation of the Grant will be jointly carried out by BEDE and A.I.D. with the cooperation of the implementing institutions. It will analyze the impact on the project beneficiaries of the works financed under the project.

C. Conditions and Covenants

1. Conditions Precedent

The emergency nature of this project dictates that conditions precedent to disbursement be minimized to the extent possible.

For the loan, in addition to the standard conditions precedent, the following conditions will be required in order to assure that imported agricultural inputs are approved by A.I.D:

"Prior to any disbursement under the loan, or to the issuance by A.I.D. of documentation pursuant to which disbursements will be made to finance the purchase of any imported agricultural input, the Borrower will, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to the Parties, a list of the eligible agricultural inputs to be financed under the Project, and a list of the criteria and requirements for determining importer eligibility."

For the Grant, the following condition precedent will be required in addition to the standard conditions precedent:

"Prior to any disbursement, or to the issuance of any commitment document pursuant to which disbursement will be made for any subproject activity, BEDE will, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D., an agreement signed by BEDE and the institution responsible for implementing the subproject which will define the rights and responsibilities of the signatories. Each agreement will include, among other things, a description of the activities to be included in the subproject, a budget for the Grant funds, a definition of the financial and operational support to be provided by the implementing institution involved in the subproject, a schedule of the subproject activities, and a description of the reports that the implementing institution will submit to BEDE and A.I.D."

2. Covenants

Three covenants are recommended for the loan. These relates to the allocation of credit and reflows; the priority nature of agricultural rehabilitation, the proper utilization of pesticides, and the utilization of commodities.

These are intended to assure that A.I.D. financed commodities are expeditiously placed on the market, that they meet eligibility requirements and that the inputs and the resources generated by their sale will be used effectively and efficiently in accordance with project objectives.

a. "The Borrower covenants that, unless the Parties may otherwise agree in writing:

(1) It shall make available to the National Development Bank the resources provided pursuant to this Agreement for purpose of providing credit to small and medium farmers who have been affected by the consequences of the natural disaster which occurred in 1983;

(2) The credit activities to be financed pursuant to the Project shall be mutually agreed by the National Development Bank and A.I.D. The National Development Bank will, furnish to A.I.D., in form and substance satisfactory to A.I.D., a plan which identifies beneficiaries of the credit activities, and crops that will be financed;

(3) The reflows from credit made available pursuant to the Project shall continue being made available by the National Development Bank to small and medium farmers during a period of at least five years; and

(4) The resources made available pursuant to this Agreement shall not be used to refinance existing debts, to finance land purchases, or to finance agricultural credit to large producers with capital which exceeds five million sucres."

b. "The Borrower covenants that, unless the Parties may otherwise agree in writing, due to the emergency character of Project activities, it shall implement the Project in a prioritary manner and, where applicable, will use the authorities established in Presidential Decree 1411 of December 28, 1982 which declared the state of emergency in the country's coastal and southern regions affected by the winter. Likewise, the Borrower covenants to give general priority to the import of agricultural inputs which are necessary to encourage agricultural rehabilitation."

c. "The Borrower covenants that, except as the Parties may otherwise agree in writing, it will make reasonable efforts to assure that pesticides acquired through the agricultural credit program financed by the Loan are properly handled and utilized by the beneficiary agricultural producers."

d. "The Borrower shall covenant that, unless the Parties may otherwise agree in writing, (a) it will use its best efforts to assure that accurate arrival and clearance records are maintained by customs authorities; it will use its best efforts to assure that commodity imports are promptly processed through customs at ports of entry and that such commodities are

removed from customs and/or bonded warehouses within fifteen (15) working days from the date the commodities are unloaded from the vessel at port of entry, unless the importer is hindered by force majeure or the Parties otherwise agrees in writing; and (b) commodities financed under this Agreement will not be reexported."

For the grant, the only covenant required will be that Ecuador will implement the project in a priority fashion.

"The State covenants that, in view of the emergency character of the activities, it shall cause the institutions participating in the Project to implement the work in a priority manner, making BEDE responsible for the coordination, control and supervision of the Project."

REPUBLICA DEL ECUADOR
MINISTERIO DE RELACIONES EXTERIORES

N° 77 SE/DCT

El Ministerio de Relaciones Exteriores saluda atentamente a la Honorable Embajada de los Estados Unidos de América y como alcance a las conversaciones mantenidas el día de ayer entre los señores Subsecretario Económico de esta Cancillería, Encargado de Negocios a.i. de los Estados Unidos y Representante de la Agencia Internacional para el Desarrollo, tiene a honra confirmar el interés del Gobierno ecuatoriano de utilizar el crédito de 13 millones de dólares, con sus componentes reembolsable y no reembolsable, ofrecido por el Gobierno de los Estados Unidos, para el financiamiento por parte de la Agencia Internacional para el Desarrollo de determinados proyectos de rehabilitación de emergencia en el Ecuador.

El Ministerio de Relaciones Exteriores hace propicia la oportunidad para reiterar a la Honorable Embajada de los Estados Unidos de América las seguridades de su más distinguida consideración.

Quito, a 13 de septiembre de 1983

A la Honorable
Embajada de los Estados Unidos de América,
P r e s e n t e .-

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AMEMBASSY QUITO

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REPLY DUE
NO REPLY NEEDED
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ON 9/6/83
Date

AIDAC: PANAMA FOR RHUDO

E.O. 12356 N/A
TAGS:
SUBJECT: ECUADOR "EL NINO" DISASTER PROJECT PROPOSAL

REF: (A) QUITO 6159 (B) TELCON FRITZ/ORR DTD 8/12/83

1. REF A, AS SUPPLEMENTED BY INFORMATION PROVIDED IN REF B, WAS REVIEWED BY THE DAEC ON AUGUST 15, 1983. MISSION IS AUTHORIZED TO PROCEED TO DEVELOP THE PP FOR AID/W REVIEW AND APPROVAL. THE FUNDING LEVEL AVAILABLE FOR THIS PROJECT IS PRESENTLY ESTIMATED TO BE TEN TO FIFTEEN MILLION DOLLARS. BECAUSE MOST OF THE DEOBLIGATED FUNDS WHICH WILL BE REOBLIGATED FOR THE ANDEAN DISASTER ARE LOAN FUNDS AND MUST REMAIN LOAN FUNDS, MISSION SHOULD NOT PLAN ON HAVING A SIGNIFICANT AMOUNT OF GRANT FUNDING FOR THE PROJECT. MISSION WILL BE ADVISED WHEN MORE PRECISE FIGURES ARE AVAILABLE.

2. MISSION IS REQUESTED TO REEXAMINE PLAN TO SIGN SEPERATE PROJECT AGREEMENTS WITH SEPERATE IMPLEMENTING INSTITUTIONS. THE FACT THAT THE MAJORITY OF FUNDS ARE LOAN FUNDS, MAY, IN ANY CASE, REQUIRE AN UMBRELLA AGREEMENT WITH THE GOE. ONE OVERALL AGREEMENT (WITH POSSIBLE SUBAGREEMENTS) WOULD FACILITATE REPROGRAMMING BETWEEN ACTIVITIES, IF THAT SHOULD BE NECESSARY. ONE

ACTION	C/A
DIR	
A/DIR	
EXO	
O/CONT	
O/DP	
O/DR	
GDO	
RDO	
U/H	
OPE	
CHD	
RF	2
MAR	1
FMM	
WASH	

OVERALL AGREEMENT DOES NOT NECESSARILY IMPLY THAT THE GOE INSTITUTION SIGNING THE AGREEMENT BE ACTIVELY INVOLVED IN PROJECT ADMINISTRATION OR COORDINATION, BUT THE MISSION SHOULD PRESENT IN THE PP THE PROS AND CONS OF HAVING A SINGLE GOE INSTITUTION PERFORM THAT ROLE.

3. A.I.D. PROJECT OFFICE - MISSION SHOULD EXAMINE THE MANAGEMENT AND COST ADVANTAGES OF LOCATING THE A.I.D. PROJECT OFFICE IN GUAYAQUIL, TAKING INTO CONSIDERATION THE EXTENT OF CONTACT NECESSARY WITH THE CENTRAL AUTHORITIES IN QUITO, MONITORSHIP OF THE PICHINCHA SLOPE PROTECTION ACTIVITY, LOGISTICAL SUPPORT AVAILABLE FROM THE MISSION IN QUITO AND INVOLVEMENT OF OTHER A.I.D. PERSONNEL. THE PERSONAL SERVICES CONTRACTORS OF THE PROJECT OFFICE SHOULD BE FUNDED FROM PROJECT GRANT FUNDS.

4. AG INPUTS/CREDIT - AS A.I.D. FUNDING PRESUMABLY CANNOT COVER ALL THE INPUT NEEDS OF SMALL FARMERS AFFECTED BY THE DISASTER, THE PP MUST DEMONSTRATE THAT THE GOE WILL ENSURE THAT VITAL AG INPUTS RECEIVE PREFERENTIAL TREATMENT IN FOREIGN EXCHANGE ALLOCATIONS AND THAT AFFECTED FARMERS RECEIVE PREFERENTIAL TREATMENT IN THE SUPPLY OF CREDIT. WITH REGARD TO A.I.D. FUNDS, WE WOULD EXPECT THAT COMMERCIAL INTEREST RATES BE CHARGED ON CREDIT, AND THAT THE DELIVERY MECHANISM ENSURE PROPER TARGETTING OF ASSISTANCE.

5. HOUSING - THE MISSION SHOULD DETERMINE TO WHAT EXTENT THE SECONDARY CITIES HG CAN BE USED TO ADDRESS DISASTER-RELATED HOUSING NEEDS, AND DESIGN THE HOUSING REHABILITATION COMPONENT OF THIS PROJECT TO DEAL WITH HOUSING NEEDS THAT CANNOT BE ADDRESSED BY THE HG. POSSIBLY THE HG COULD BE USED WHERE THE HOUSING NEEDS ARE CONCENTRATED OR WHERE MAJOR NEW CONSTRUCTION IS REQUIRED WHILE A PVO-IMPLEMENTED PROGRAM COULD HANDLE MORE

Best Available Document

DISPERSED POPULATIONS BY PROVIDING BUILDING MATERIALS.

6. PICHINCHA SLOPE PROTECTION - WE UNDERSTAND FROM MR. KOJAN THAT FEASIBILITY AND DESIGN STUDIES WOULD BE REQUIRED TO DEVELOP A COST ESTIMATE FOR THE CHANNELING OF RUNOFF FROM PICHINCHA. AS THESE STUDIES COULD TAKE SIX MONTHS OR MORE TO COMPLETE, IT MAY BE NECESSARY TO DEFER OBLIGATION OF FUNDS FOR CONSTRUCTION.

7. PRIORITY OF SELECTED ACTIVITIES - THE EXPECTATION FOR ALL THREE ANDEAN DISASTER RECOVERY PROJECT PROPOSALS IS THAT EACH PROJECT FOCUS ON THE TOP PRIORITY RECOVERY ACTIVITIES. IN THE CASE OF BOTH PERU AND BOLIVIA, THE REOPENING OF ROADS AND REPAIR OR REPLACEMENT OF BRIDGES WERE IDENTIFIED AS TOP PRIORITIES. REPORTS OF THE SITUATION IN ECUADOR HAD LED US TO EXPECT THAT RESTORATION OF THE TRANSPORTATION INFRASTRUCTURE WOULD ALSO BE A PRIORITY IN ECUADOR. IS THE GOE OR ANOTHER DONOR ADEQUATELY ADDRESSING THIS NEED? IF NOT, AND IF THE MISSION DOES NOT INTEND TO INCLUDE SUCH AN ACTIVITY IN THE PROJECT, THE PP SHOULD ADDRESS THE QUESTION OF HOW AG INPUTS CAN BE DISTRIBUTED AND PRODUCE MARKETTED WHERE ROAD TRANSPORTATION REMAINS DISRUPTED BY FLOOD DAMAGE. ACTIVITIES INCLUDED IN THE FINAL PP SHOULD CLEARLY BE JUSTIFIED IN TERMS OF THEIR PRIORITY FOR DISASTER RECOVERY OR PREVENTION. THE PRIORITY OF REHABILITATION GRANTS FOR SCHOOLS AND CREDITS FOR BUSINESSES IS NOT EVIDENT FROM THE INFORMATION AVAILABLE TO US.

8. ACCOUNTABILITY - WHILE SOME PROJECT ACTIVITIES, BY THEIR NATURE, ARE NOT RAPID IMPACT ACTIVITIES, IN GENERAL IT IS EXPECTED THAT THE PROJECT WILL DISBURSE RAPIDLY FOR MAXIMUM RECOVERY EFFECT. IT IS IMPORTANT, THEREFORE, THAT THE PP DEMONSTRATE THAT ADEQUATE MECHANISMS OF ACCOUNTABILITY WILL BE ESTABLISHED.

9. UNDERSTAND MISSION WILL SEEK TDY ASSISTANCE FROM THE REGIONAL ENVIRONMENTAL ADVISER REGARDING THE ENVIRONMENTAL ANALYSIS. WITH REGARD TO HERBICIDE AND PESTICIDE PROCUREMENT THE APPROPRIATE SOURCE OF ASSISTANCE IS CICP WHICH HAS A COOPERATIVE AGREEMENT WITH A.I.D. MISSION SHOULD CONTACT JAMES HESTER FOR DETAILS. DAM
BT
#2975

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COUNTRY CHECKLIST

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

1. FAA Sec. 481. Has it been determined that the Government of the recipient country has failed to take adequate steps to prevent narcotic drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?	It has not been so determined. The GOE has an active narcotics program with USG support.
2. FAA Sec. 620(c). If assistance is to a government, is the government liable as debtor or unconditional guarantor or any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) the debt is not denied or contested by such government?	No such case is known.
3. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?	No.

4.	FAA Sec. 532(c), 620(a), 620(f), 620D; FY 1982 Appropriation Act Secs. 512 and 513. Is recipient country a communist country? Will assistance be provided to Angola, Cambodia, Cuba, Laos, Vietnam, Syria, Libya, Iraq, or South Yemen? Will assistance be provided to Afghanistan or Mozambique without a waiver?	No.
5.	ISDCA of 1981 Secs. 724, 727, 728 and 730. For specific restrictions on assistance to Nicaragua, see Sec. 724 of the ISDCA of 1981. For specific restrictions on assistance to El Salvador, see Secs. 727, 728 and 730 of the ISDCA of 1981.	N/A
6.	FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property?	No.
7.	FAA Sec. 620(l). Has the country failed to enter into an agreement with OPIC?	Yes.
8.	FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. (a) Has the country seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters?	In accordance with the Administrator's taking into consideration memo dated January 31, 1983 there have been no such seizures by Ecuador.
	(b) If so, has any deduction required by the Fishermen's Protective Act been made?	No.

9. FAA Sec. 620(q); FY 1982 Appropriation Act Sec. 517. (a) Has the government of the recipient country been in default for more than six months on interest or principal of any AID loan to the country?	No.
(b) Has the country been in default for more than one year on interest or principal on any U.S. loan under a program for which the appropriation bill appropriates funds?	No.
10. FAA Sec. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the amount of foreign exchange or other resources which the country has spent on military equipment? (Reference may be made to the annual "Taking into Consideration" memo: "Yes, taken into account by the Administrator at time of approval of Agency OYB." This approval by the Administrator of the Operational Year Budget can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstances occur.)	Yes. In accordance with the Administrator's taking into consideration memo dated January 31, 1983, these factors have been taken into account.
11. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?	No.

12. FAA Sec. 620(u). What is the payment status of the country's obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget? (Reference may be made to the Taking into Consideration memo.)	Payment status is current.
13. FAA Sec. 620A; FY 1982 Appropriation Act Sec 520. Has the country aided or abetted, by granting sanctuary from prosecution to, any individual or group which has committed an act of international terrorism? Has the country aided or abetted, by granting sanctuary from prosecution to, any individual or group which has committed a war crime?	No.
14. FAA Sec. 666. Does the country object, on the basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. who is present in such country to carry out economic development programs under the FAA?	No.
15. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it transferred a nuclear explosive device to a non-nuclear weapon state, or if such a state, either received or detonated a nuclear explosive device, after August 3, 1977? (FAA Sec. 620E permits a special waiver of Sec. 669 for Pakistan.)	No.

16. ISDCA of 1981 Sec. 720. Was the country represented at the Meeting of Ministers of Foreign Affairs and Heads of Delegations of the Non-Aligned Countries to the 36th General Session of the U.N. of Sept. 25 and 28, 1981, and failed to disassociate itself from the communique issued? If so, has the President taken it into account? (Reference may be made to the Taking into Consideration memo.)	Yes. Yes. In accordance with the Administrator's taking into consideration memo dated January 31, 1983 these factors have been taken into account.
17. ISDCA of 1981 Sec. 721. See special requirements for assistance to Haiti.	N/A.
18. Further Continuing Appropriations Act, 1983, Sec. 133. Notwithstanding any other provision of this joint resolution, none of the funds appropriated under Section 101(B) of this joint resolution may be available for any country during any 3 month period beginning the certification of the President of the Congress that such country is not taking adequate steps to cooperate with the United States to prevent narcotic drugs and other controlled substances (as listed in the schedules in Section 202 of the Comprehensive Drug Abuse and Prevention Control Act of 1971, 21 U.S.C. (812) which are produced, processed, or transported in such country from entering the United States unlawfully.	The President has not issued such a certification for Ecuador.

B. FUNDING SOURCE CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria.

a. FAA Sec. 116. Has the Department of State determined that his government has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, can it be demonstrated that contemplated assistance will directly benefit the needy?	The Department of State has not determined that Ecuador is a violator of human rights.

2. Economic Support Fund Country Criteria.

a. FAA Sec. 502B. Has it been determined that the country has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, has the country made such significant improvements in its human rights record that furnishing such assistance is in the national interest?	N/A.
b. ISDCA of 1981, Sec. 725(b). If ESF is to be furnished to Argentina, has the President certified that (1) the Govt. of Argentina has made significant progress in human rights; and (2) that the provision of such assistance is in the national interests of the U.S.?	N/A.

c. ISDCA of 1981, Sec. 726(b). If ESF assistance is to be furnished to Chile, has the President certified that (1) the Govt. of Chile has made significant progress in human rights; (b) it is in the national interest of the U.S.; and (3) the Govt. of Chile is not aiding international terrorism and has taken steps to bring to justice those indicted in connection with the murder of Orlando Letelier?	N/A.

PROJECT CHECKLIST

A. GENERAL CRITERIA FOR PROJECT

1. FY 1982 Appropriation Act Sec. 523; FAA Sec. 634A; Sec. 653(b).

   (a) Describe how authorizing and appropriations committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that amount)?

   The Project was described in a notification submitted to Congress on September 12, 1983; obligation of funding is contingent upon Congressional concurrence.

   b. No.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial or other plans necessary to carry out the assistance and (b) a reasonable firm estimate of the cost to the U.S. of the assistance?

   a. Financial and Engineering plans are included in the Project Paper.

   b. Yes.

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

   No such action is required.

4. FAA Sec. 611(b); FY 1982 Appropriation Act Sec. 501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?

   Project has a component for the emergency rehabilitation of levees, dikes and irrigation canals as well as channel restoration which meets standards and criteria set forth in Principles and Standards.

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	Yes.
6. FAA Sec. 209. Is project susceptible to execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.	No.
7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	The project purpose is an emergency rehabilitation project. It will foster private enterprise and increase the flow of international trade by providing foreign exchange to private importers for the importation of U.S. source fertilizers, pesticides, and/or certified seeds.
8. FAA Sec. 601(b). Information and conclusions on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	Project will encourage U.S. trade abroad by providing foreign exchange for the importation of U.S. source commodities.

9. FAA Sec. 612(b), 636(h); FY 1982 Appropriation Act Sec. 507. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.	Host country counterpart contributions, including in-kind support, are estimated at 41 percent of total project costs.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?	No.
11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes; however exceptions contained in applicable procurement rules will be involved because of the emergency nature of the project.
12. FY 1982 Appropriation Act. Sec. 521. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?	N/A.
13. FAA 118(c) and (d). Does the project comply with the environmental procedures set forth in AID Regulation 16? Does the project or program take into consideration the problem of the destruction of tropical forests?	Yes. An IEE and a pesticide environmental assessment were carried out. N/A.

14. FAA 121(d). If a Sahel project, has a determination been made that the host government has an adequate system for accounting for and controlling receipt and expenditure of project funds (dollars or local currency generated therefrom)?	N/A.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?	The project is an emergency rehabilitation project. It will involve the poor in development by providing production credit to small farmers and through employment in rehabilitation activities. The beneficiaries reside in small towns and rural areas, primarily.

b. FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used?	The project is an emergency project that is funded in accordance with the authority contained in Section 492(b) of the FAA.
c. FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)?	Because of the emergency nature of the project, technologies which permit the most rapid completion of rehabilitation works will be used.
d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the cost of the program, project, or activity with respect to which the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed" country)?	Yes.
e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? (M.O. 1232.1 defined a capital project as "the construction", expansion, equipping or alteration of a physical facility or facilities financed by AID dollar assistance of not less than $100,000, including related advisory, managerial and training services, and not undertaken as part of a project of a predominantly technical assistance character.	No.

f. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?	Yes. The project will help reactivate agricultural production and rehabilitate economic infrastructure damaged by rains and floods and will thus contribute to increase of productive capacities.
g. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intelectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government.	The project seeks to overcome the extremely adverse effects of inclement wheather by rehabilitating of physical infrastructure which will permit Ecuadoreans to realize their productive potential.
2. Development Assistance Project Criteria (Loans Only)	
a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.	The PP analyzes the ability of the country to reply and concludes that it can do so.
b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?	N/A.
c. ISDCA of 1981, Sec. 724(c) and (d). If for Nicaragua, does the loan agreement require that the funds be used to the maximum extent possible for the private sector? Does the project provide for monitoring under FAA Sec. 624(g)?	N/A.

3. Project Criteria Solely for Economic Support Fund

a. FAA Sec. 531(a). Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102?	N/A.
b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities?	N/A.
c. FAA Sec. 534. Will ESF funds be used to finance the construction of the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such use of funds is indispensable to nonproliferation objectives?	N/A.
d. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?	N/A.

STANDARD ITEM LIST

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed?	The commodities to be procured under the project generally cannot be obtained from small businesses. Technical services will be obtained from individuals.
2. FAA Sec. 604(a). Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him?	Yes.
3. FAA Sec. 604(d). If the cooperating country discriminates against marine insurance companies authorized to do business in the U.S., will commodities be insured in the United States against marine risk with such a company?	Ecuador does not discriminate against U.S. marine insurance companies.
4. FAA Sec. 604(e); ISDCA of 1980 Sec. 705(a). If off-shore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not resonably be procured in U.S.)	N/A.
5. FAA Sec. 604(g). Will construction or engineering services be procured from firms of countries otherwise eligible under Code 941, but which have attained a competitive capability in international markets in one of these areas?	No.

6. FAA Sec. 603. Is the shipping excluded from compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at lest 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.?	No.
7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished by private enterprise on a contract basis to the fullest extent practicable? If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?	Yes.
8. International Air Transport. Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will U.S. carriers be used to the extent such service is available?	Yes.
9. FY 1982 Appropriation Act Sec. 504. If the U.S. Government is a party to a contract for procurement, does the contract contain a provision authorizing termination of such contract for the convenience of the United States?	Yes.

B. Construction

1. FAA Sec. 601(d). If capital (e.g., construction) project, will U.S. engineering and professional services to be used?	Yes, when local firms cannot supply such services.
2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?	Yes; exceptions permitted by applicable A.I.D. regulations will be invoked because of the emergency nature of the project.
3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million?	N/A.

C. Other Restrictions

1. FAA Sec. 122(b). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?	Yes.
2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an intenational organization, does Comptroller General have audit rights?	N/A.
3. FAA Sec. 620(h). Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-bloc countries?	Yes.
4. Will arrangements preclude use of financing:	Yes, for all items.

a. FAA Sec. 104(f); FY 1982 Appropriation Act. Sec. 525: (1) To pay for performance of abortions as a method of family planning or to motivate or coerce persons to practice abortions; (2) to pay for performance of involuntary sterilization as method of family planning, or to coerce or provide financial incentive to any person to undergo sterilization; (3) to pay for any biomedical research which relates, in whole or part, to methods or the performance of abortions or involuntary sterilizations as a means of family planning; (4) to lobby for abortion?

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

c. FAA Sec. 660. To provide training or advice or provide any financial support for police, prisons, or other law enforcement forces, except for narcotics programs?

d. FAA Sec. 662. For CIA activities?

e. FAA Sec. 636(i). For purchase, sale, long-term lease, exchange or guaranty of the sale of motor vehicles manufactured outside U.S., unless a waiver is obtained?

f. FY 1982 Appropriation Act, Sec. 503. To pay pensions, annuities, retirement pay, or adjusted service compensation for military personnel?

g. FY 1982 Appropriation Act, Sec. 505. To pay U.N. assessments arrearages or dues?

h. FY 1982 Appropriation Act, Sec. 506. To carry out provisions of FAA section 209(d) (Transfer of FAA funds to multilateral organizations for lending)?

i. FY 1982 Appropriation Act, Sec. 510. To finance the export of nuclear equipment, fuel, or technology or to train foreign nationals in nuclear fields?

j. FY 1982 Appropriation Act, Sec. 511. Will assistance be provided for the purpose of aiding the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights.?

k. FY 1982 Appropriation Act, Sec. 515. To be used for publicity or propaganda purposes within U.S. not authorized by Congress?

PROJECT AUTHORIZATION

Name of Country: Ecuador

Name of Project: Emergency Rehabilitation

Number of Project: 518-0046

Number of Loan: 518-F-043

1. Pursuant to Section 492 (b) of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Emergency Rehabilitation Project for Ecuador involving planned obligations of not to exceed Six Million United Sates Dollars ($6,000,000) in loan funds ("Loan") and Seven Million United States Dollars ($7,000,000) in grant funds ("Grant") over a three (3) year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project. USAID/Ecuador may obligate up to One Million United States Dollars (US$1,000,000) of Grant funds outside of the Project Agreements to finance long and short term technical assistance, training and logistic support for implementation of project activities. The planned life of the project is eighteen (18) months from the date of initial obligation.

2. The project ("Project") consists of assistance to Ecuador to implement emergency relief, rehabilitation and reconstruction activities in response to excessive rains and flooding associated with the "El Niño" phenomenon.

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

a. Interest Rate and Terms of Repayment

Ecuador shall repay the Loan to A.I.D. in U.S. Dollars within twenty-five (25) years from the date of first disbursement of the Loan, including a grace period of not to exceed ten (10) years. Ecuador shall pay to A.I.D. in U.S. Dollars interest from the date of first disbursement of the Loan at the rate of (i) two percent (2%) per annum during the first ten (10) years, and (ii) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Commodities, Nationality of Services (Loan)

Commodities financed by A.I.D. under the Loan shall have their source in the United States and their origin in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services financed under the Loan shall have Ecuador, or countries included in A.I.D. Geographic Code 941 as their place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Loan shall be financed only on flag vessels of Ecuador or countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing.

c. Source and Origin of Commodities, Nationality of Services (Grant)

Commodities financed by A.I.D. under the Grant shall have their source and origin in Ecuador or in the United States, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services financed under the Grant shall have Ecuador or the United States as their place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Grant shall be financed only on flag vessels of the United States, except as A.I.D. may otherwise agree in writing.

d. Condition Precedent to Disbursement for Imported Agricultural Inputs (Loan)

Prior to any disbursement, or to the issuance of any commitment documents under the Project Loan Agreement to finance the purchase of any imported agricultural input, Ecuador shall, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D., a list of the eligible agricultural inputs to be financed under the Project, and a list of the criteria and requirements for determining importer eligibility.

e. Condition Precedent to Disbursement for Emergency Rehabilitation Subprojects (Grant)

Prior to any disbursement or to the issuance of any commitment documents under the Project Grant Agreement to finance any emergency rehabilitation subproject activity, Ecuador shall, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D. a signed agreement between the Ecuadorean Development Bank and the institution implementing the subproject, which defines the rights and responsibilities of the signatories, including a description of the activities to be included in the subproject, a budget for the Grant funds, a definition of the financial and operational support to be provided by the implementing institution involved in the subproject, a schedule of the subproject activities, and a description of the reports that the implementing institution will submit to the Ecuadorean Development Bank and A.I.D.

f. Covenants (Loan and Grant)

Ecuador shall covenant that, unless A.I.D. otherwise agrees in writing:

(1) It shall make available to the National Development Bank the resources provided pursuant to the Project for purposes of providing credit to small and medium farmers who have been affected by the consequences of the natural disaster which ocurred in 1983.

(2) The credit activities to be financed pursuant to the Project shall be mutually agreed to by the National Development Bank (NDB) and A.I.D., and that the NDB will furnish to A.I.D., in form and substance satisfactory to A.I.D., a plan which identifies the beneficiaries of the credit activities and crops that will be financed.

(3) The reflows from credit made available pursuant to the Project shall continue being made available by the NDB to small and medium farmers during a period of at least five years.

(4) The resources made available pursuant to the Project shall not be used to refinance existing debts, to finance land purchases, or to finance agricultural credit to large producers with capital which exceeds five million sucres.

(5) It will implement the Project in a priority manner and, when applicable, will use the authorities established in Presidential Decree 1411 dated December 28, 1982 which declared the state of emergency, and will give general priority to the importation of agricultural inputs needed to promote agricultural rehabilitation.

(6) It will cause the institutions participating in emergency rehabilitation subprojects to implement them in a priority manner, and that the Ecuadorean Development Bank shall be responsible for the coordination, control and supervision of such subprojects.

(7) It will make reasonable efforts to assure that pesticides acquired through the agricultural credit program financed pursuant to the Project are properly handled and utilized by the beneficiary agricultural producers.

(8) It will use its best efforts to assure that accurate arrival and clearance records are maintained by customs autorities; commodity imports are promptly processed through customs at ports of entry; such commodities are removed from customs and/or bonded warehouses within fifteen (15) working days from the date the commodities are unloaded from the vessel at port of entry, unless the importer is hindered by force majeure; and commodities financed under the Project will not be reexported.

f. Waiver

A.I.D. nationality requirements are hereby waived to permit contracting up to US$300,000 for grant-financed technical assistance for Project coordination, supervision and monitoring with contractors whose nationalities are in countries included in A.I.D. Geographic Code 941.

Mission Director

9/26/83
Date

CLEARANCES:

LAC/DR:POrr
O/DR:RJordan
O/DP:PMaldonado
O/CONT:WRoss
D/DIR:PFritz
RDO: JGoodwin

DRAFTED BY:A.Adams

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

I, Orlando Llenza, the principal officer of the Agency for International Development in Ecuador, having taken into consideration among other factors, the maintenance and utilization of projects in Ecuador previously financed or assisted by the United States, do hereby certify that in my judgment Ecuador has the technical capability and the physical, financial, and human resources to utilize and maintain effectively the proposed loan of six million United States Dollars (US$6,000,000) and grant of seven million United States dollars (US$7,000,000) from the Government of the United States of America to the Government of Ecuador for the development of an Emergency Rehabilitation Project.

This judgment is based on: (a) the fact that the project design, as described in the Project Paper, takes into account existing GOE institutional capacities to utilize and maintain project resources; and (b) the USAID's previous experience with the maintenance and utilization of other projects in Ecuador previously financed or assisted by the United States.

Orlando Llenza
Director, USAID/Ecuador

September 23, 1983

TELEGRAM

INDICATE
☐ COLLECT
☐ CHARGE TO

FROM: AMEMBASSY QUITO
CLASSIFICATION: UNCLASSIFIED

12356
E.O. XGDS2:
TAGS: ID, EAGR, ECON, EC
SUBJECT: ECONOMIC IMPLICATIONS OF EL NINO

ACTION: SECSTATE WASHDC 8588

INFO: AMCONSUL GUAYAQUIL 7564
AMEMBASSY LIMA 6481 RUEHLP
AMEMBASSY LA PAZ 2214
AMEMBASSY BOGOTA 5726
AMEMBASSY SANTIAGO 2740

ECON
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USIS
AID
AGRIT
RF
CH

UNCLASSIFIED QUITO 3474

REF: (A) STATE 105557, (B) QUITO 0568 (NOTAL)

1. SUMMARY: There is no doubt that the Nino-induced rains and flooding have had serious economic and social implications for Ecuador. The rain, which has fallen in extraordinary amounts, began in November; as late as April 27, more than 100 persons were killed in a mud slide on the Pan American Highway near Chunchi (between Riobamba and Cuenca). Our original January estimate ~~is~~ placed a damage at dols 120 million plus (ref B). An ECLA report published on March 1 estimates the ~~[illegible]~~ total economic loss due to winter weather at dols 165 million. Since then the rains have continued. Damage may well now have reached dols 200 million. END SUMMARY.

DRAFTED BY: ECON:PTrivelli:ms
DRAFTING DATE: 5/2/83
TEL. EXT.: 311
CONTENTS AND CLASSIFICATION APPROVED BY: ECON:JJYoule

CLEARANCES:
AMB:LaFeber
ECON:GOlson
AID:PFritz (substance)
AGRIT:WMerson
Guayaquil:GGrover

UNCLASSIFIED
CLASSIFICATION

OPTIONAL FORM 160
(Formerly FS-1)
January 1977
Dept. of State

60162-101

TELEGRAPH WORK COPY

2. As a response to the Department's request for an analysis of the economic implications of El Nino, we would first refer to Quito 0568 transmitted on January 21. At that time the Embassy estimated agricultural damage at dols 70 millionx, infrastructure damage as high as dols 50 million. Since then the flooding has continued. On March 1 ECLA published an extensive report on the effects of the weather on the Ecuadorean economy. The results of that study provide an excellent basis for present estimates. The report concludes that damage as of mid-February totaled dols 165 million. A summary of the study follows.

3. "Social" damage totaled dols 13.14 million. This figure includes damage to homes (2,750 destroyed; 11,000 damaged); to drainage systems and sewers (at least dols 1.45 million); to health (dols 1.38 million worth of destruction to health facilities; dols 2.56 million to conduct health campaigns); and education (dols 2.85 million loss including physical damage to 223 schools). The study in addition estimates lost wages at a minimum of dols 6.9 million.

4. Damage to the transport sector totaled dols 75.73 million. This figure includes some estimate of increased transportation costs due to the need to circumvent washouts and economic losses due to inability to travel and/or ship goods. Loss can be broken down as follows (in millions of dollars):

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January 1
Dept. of S

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Bridges	-	19.5
Primary roads	-	23.6
Secondary roads	-	9.6
Dirt roads	-	6.63
City streets	-	9.70
Railroad	-	7.40

5. The report estimates the following crop losses (in millions of dollars):

Soybeans (12,000 hectares)	7.3
Rice (3,900 hectares net loss)	2.5
Bananas (5,200 hectares)	4.3
Sugar (9,600 hectares)	6.3

To obtain a total figure for the agricultural sector, the following damage must be added:

Loss in meat production	3.8
Loss of grazing land	2.1
Fishing losses	3.6
Shrimp farming damage	12.0
Total agricultural sector loss	41.9

6. The manufacturing sector suffered direct physical damage of dols 2.5 million and production losses (particularly in the food processing industry) of dols 22.8 million.

7. DCLA estimates additional losses at dols 8.8 million, including dols 5.1 million for direct flood relief (provision of medicines and food to victims). According to the report

the
~~the~~/grand total of all economic damage as of mid-February stood at dols 165 million.

8. Since mid-February, the rains have continued, although serious flooding has abated. We estimate that at least 10 pct should be added to ECLA's damage figures in the social, transport, manufacturing and miscellaneous sectors in order to arrive at a current loss estimate. That places total non-agricultural sector loss at dols 135 million.

9. The Embassy believes, however, that crop losses have, in fact, been significantly higher than ECLA figures cited in paragraph 5. We would estimate the following:

Soybeans (12,000 hectares)	7.3
Rice (3,900 hectares)	2.5
Bananas (5,000 hectares)	25.0
Sugar (12,000 hectares)	9.0
Corn (12,000 hectares)	2.5
Total crop loss	46.3

In addition, as much as 40 pct of the coffee crop may be lost - due to the growers' inability to bring the beans to market. (This loss, however, will be made up by stock drawdowns.) Adding the dols 46.3 million in direct crop losses to livestock and fisheries/shrimp sector losses estimated at dols 21.5 million in mid-February, at least by ECLA, total agricultural sector losses amount to dols 67.8 million. Total loss (67.8 million agricultural plus 135

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million in all other sectors) due to El Nino ~~[illegible]~~ can then be estimated at dols 203 million.

-HART

OPTIONAL FORM [illegible]
(Formerly [illegible])
January [illegible]
Dept. of State

60152-201

TELEGRAPH WORK COPY

QUITO 5062

TELEGRAM

202110Z JUN 83

INDICATE
☐ COLLECT
☒ CHARGE TO USAID/E

FROM	CLASSIFICATION
AMEMBASSY QUITO	UNCLASSIFIED

12356
E.O. XXXXX
TAGS:
SUBJECT: Reporting on El Niño Disasters

ACTION: SECSTATE WASHDC IMMEDIATE

INFO: CONGEN GUAYAQUIL

UNCLASSIFIED QUITO 5062

AID

AIDAC

AMB
A DCM
CHRON
RF

REF: (A) State 169471; (B) Quito 3474, (C) QUITO 4013

ECON
AGATT

This cable repeats interim response to reftel which was handcarried to AID/W by Jerry Oweis, BIFAD, on 6/25/83. AID/W is requesting data in form which will require certain computations that can be more easily done by LAC economists than by USAID staff (e.g., conversion from km to miles or vice-versa). We, therefore, ask that such computations to be made in AID/W.

1. Flood Reporting Data

2. Rainfall Data

(A) Millimeters of rainfall per month

ACTION:		
DIR	✓	
A/DIR		
EXO	✓	
O/CONT		
O/DP	✓	
O/DR	✓	
GDO		
RDO	✓	
O/H		
OPE		
FHO		
HF	2 ✓	
MAR	3 ✓	
EMO		
WARN		
DCM	✓	

DRAFTED BY:	DRAFTING DATE	TEL. EXT.	CONTENTS AND CLASSIFICATION APPROVED BY:
RDO: Bruce Kernan: mecm/me	6/29/83	521-100	Robert Jordan, Acting Dire

CLEARANCES: AOCM:
ECON: OOlson
ConGen: CGrove (phone)

UNCLASSIFIED
CLASSIFICATION

OPTIONAL FORM 1
(Formerly F
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1981-82	Avg. Rainfall (mm)	
Month	Coastal Region	Andean Region
November	23	68
December	89	75
January	247	37
February	222	60
March	138	68
April	135	110
May	74	124
June	NA	NA
1982-83		
November	319	98
December	469	167
January	688	78
February	481	68
March	504	154
April	479	128
May	438	103
June (Guayaquil only to 6/22)	328	NA

Source: National Meteorological Institue Data are from measurements taken at from 15-18 representative stations. Data are considered reliable.

(B) Average number cubic meters of rainfall per

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(Formerly FS 413) of
January 1
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85

hectare: To be computed by LAC.

2. and 3. Population and Affected Geographic Area.

(A) Mission population projections for 1983 based on 1982 Census figures. Area figures from Estrategia de Desarrollo. Junta Nacional de Planificación y Coordinación Económica, Quito, 1979.

(1) Severely Affected Provinces

Province	Population	Area (Km2)	Area Affected (Km2)
Manabi	901,047	20,669	20,699
Esmeraldas	255,306	17,807	8,500
Guayas	2,077,322	18,711	18,711
Los Ríos	464,595	6,668	6,668
El Oro	345,698	6,522	6,522
Loja (coastal)	358,558	12,192	4,064
TOTAL	4,043,968	82,569	65,134

(2) Less severely affected provinces (where deaths and infrastructure damage have occured due primarily to landslides.)

Province	Population	Area (Km2)	Area Affected (Km2)
Carchi	128,113	4,411	-
Imbabura	244,421	5,669	-
Pichincha	1,369,059	17,090	-
Cotopaxi	279,622	5,834	-

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Province	Population	Area Km2	Area Affected Km2
Tungurahua	328,070	3,493	-
Chimborazo	329,922	6,414	-
Bolivar	148,161	3,983	-
Cañar	180,285	4,514	-
Azuay	440,571	9,323	-
Loja (sierra)	358,558	12,192	-
TOTAL	3,806,782	72,923	-

NOTE: Approximately one third of Loja Province is in the Coast and two thirds in the Sierra.

(B) National Population:

1982 Census: 8,053,280

1983 Projection: 8,294,900 (by AID/Mission) XXXXXXXXXXXX XXXXXX XXXXXXXXX

(C) Number of individuals severely affected: Minimum of 1,000,000 including a large proportion of the residents of the following areas and cities with the indicated total populations: Guasmo (300,000); Mapasingue (100,000); and other suburbios (400,000); Manta (100,000); Salinas (40,000); Portoviejo (100,000); Babahoyo (100,000). Estimate by ConGen/Guayaquil.

(D) AREA COMPARISON WITH U.S. STATE: FOR AID/W.

4. AGRICULTURAL IMPACT

Agricultural impact includes losses due to: area

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(Formerly FS-413(H))
January 1975
Dept. of State

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taken out of production or not planted because of flooding; and reduced yields because of excessive rain when crops were harvested.

For all crops the figures for planned cultivated area compiled by MinAg (based on the National Development Plan) have been adjusted by USAID. Actual cultivated area estimates are derived from National DEVELOPMENT BANK (BNF) figures for credit demand and loan applications.

(A) Number of hectares under cultivation in entire country (Exclude Pasture/Forest): 1,207,300 (Report on Agricultural Situation in Ecuador, USAID, 1980).

(B) Number of hectares severely affected by flood (Excludes Pasture/Forest): 140,842 (Based on information from MinAg, National Development Bank, adjusted by USAID).

(C) Agricultural losses 1983. (Based on information from MinAg, National Development Bank, adjusted by USAID).

1) Average yield (metric tons per hectare)

Winter rice:	3.2
Summer Rice:	3.0
Corn:	1.25
Soybean:	1.6
Cotton:	1.0
Sugar Cane:	75
Bananas:	33

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Cocoa:	0.35
Coffee:	0.33

2). Planned cultivated area (hectares, per National Development Plan)

Winter Rice:	72,730
Summer Rice:	43,800
Corn:	166,700
Soybean:	22,000
Cotton:	18,700
Sugar Cane:	40,400
Bananas:	70,494
Cocoa:	269,878
Coffee:	320,000

3) Expected production (Metric tons) based on average productivity:

Winter Rice:	232,736
Summer Rice:	131,400
Corn:	208,375
Soybean:	35,200
Cotton:	28,260
Sugar Cane:	3,030,000
Bananas:	2,326,302
Cocoa:	94,457
Coffee:	104,000

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(Formerly FS-413 Rev)
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4) Actual Cultivated Area (Hectares)

Winter Rice: 45,560

Summer Rice: 36,000

Corn: 120,000

Soybean: ~~100,000~~ 12,000

Cotton: 10,500

Sugar Cane: 36,400

Bananas: 58,300

Cocoa: 257,000

Coffee: ~~200,000~~ 320,000

5) Estimated Yields in Area Affected (Metric tons/ hectare)

Winter Rice: 2.68

Summer Rice: 2.85

Corn: 1.25

Soybean: 1.4

Cotton: 1.6

Sugar Cane: 72

Bananas: 25.9

Cocoa: 0.24

Coffee: ~~0.24~~ 0.26

6) Estimated Actual Production (Metric tons)

Winter Rice: 122,100

Summer Rice: 102,600

Corn: 150,000

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(Formerly FS-413 (11-6))
January 1975
Dept. of State

80152-201

Cocoa:	0.35
Coffee:	~~0.28~~ 0.33

2). Planned cultivated area (hectares, per National Development Plan)

Winter Rice:	72,730
Summer Rice:	43,800
Corn:	166,700
Soybean:	22,000
Cotton:	18,700
Sugar Cane:	40,400
Bananas:	70,494
Cocoa:	269,878
Coffee:	320,000

3) Expected production (Metric tons) based on average productivity:

Winter Rice:	232,736
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Soybean:	35,200
Cotton:	28,260
Sugar Cane:	3,030,000
Bananas:	2,326,302
Cocoa:	94,457
Coffee:	104,000

4) Actual Cultivated Area (Hectares)

Winter Rice: 45,560

Summer Rice: 36,000

Corn: 120,000

Soybean: ~~100,000~~ 12,000

Cotton: 10,500

Sugar Cane: 36,400

Bananas: 58,300

Cocoa: 257,000

Coffee: ~~200,000~~ 320,000

5) Estimated Yields in Area Affected (Metric tons/ hectare)

Winter Rice: 2.68

Summer Rice: 2.85

Corn: 1.25

Soybean: 1.4

Cotton: 1.6

Sugar Cane: 72

Bananas: 25.9

Cocoa: 0.24

Coffee: ~~0.20~~ 0.26

6) Estimated Actual Production (Metric tons)

Winter Rice: 122,100

Summer Rice: 102,600

Corn: 150,000

Soybean: 14,000

Cotton: 16,800

Sugar Cane: 2,620,800

Bananas: 1,509,970

Cocoa: 61,680

Coffee: ~~XXXXXX~~ 82,860

7) Projected and Observed Losses

- Non cultivated area (Has)

Winter Rice: 24,200

Summer Rice: 3,600

- Crop Losses (Has)

Winter Rice: 3,510

Summer Rice: 7,800

Corn: 46,700

Soybean: 12,000

Cotton: 8,200

Sugar Cane: 4,000

Bananas: 12,194

Cocoa: 12,878

- Total Affected Area (Has)

Winter Rice: 27,710

Summer Rice: 11,400

Corn: 46,700

Soybean: 12,000

Cotton: 8,200

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(Formerly FS 413 [illegible])
January 1975
Dept. of State

80162-301

Sugar Cane:	4,000
Bananas:	12,194
Cocoa:	12,878
XXXXXXX COFFEE:	XXXXX 0
Total:	XXXXXXX 135,082

8) Percent of Total Cultivated Area

Winter Rice:	38.1
Summer Rice:	26.03
Corn:	28.01
Soybean:	54.5
Cotton:	43.8
Sugar Cane:	9.9
Bananas:	17.3
Cocoa:	4.77
Coffee:	XXX 0

9) Projected and observed losses (Metric tons-includes decreases due to reduction in area planted and reduction in yields/ha)

Winter Rice:	74,263
Summer Rice:	34,200
Corn:	58,375
Soybean:	19,200
Cotton:	14,760
Sugar Cane:	288,000
Bananas:	816,332

Cocoa: 30,907

Coffee: ~~XXXX~~ 21,140

10) Percent of projected production lost (Metric tons)

Winter Rice: 31.9

Summer Rice: 26.04

Corn: 28.01

Soybean: 54.6

Cotton: 52.2

Sugar Cane: 9.51

Bananas: 35.09

Cocoa: 33

Coffee: ~~9x53~~ 20.33

11) Price per metric ton (sucres)

(For domestic consumption crops-official government prices at farm gate. For export crops - F.O.B. Guayaquil).

Winter Rice: 10,340

Summer Rice: 10,340

Corn: 8,580

Soybean: 15,400

Cotton: 21,384

Sugar Cane: 213

Bananas: 4,318

Cocoa: 87,890

Coffee: 71,640

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(Formerly FS 413(H)a)
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12) Total losses in million sucres

Winter Rice:	766.9
Summer Rice:	353.6
Corn:	500.9
Soybean:	295.7
Cotton:	315.6
Sugar Cane:	61.3
Bananas:	3,524.9
Cocoa:	2,716.0
Coffee:	XXXXX 1,514.5
Total:	XXXXXX 10,049.4

13) Total losses in million dollars 1 US Dols. = 45 sucres (official rate)

Winter Rice:	17.26
Summer Rice:	7.86
Corn:	11.13
Soybean:	6.57
Cotton:	7.01
Sugar Cane:	1.36
Bananas:	78.30
Cocoa:	60.36
Coffee:	XXXXX 33.65
Total:	XXXXX 223.48

14) Total losses in million dollars 1 US Dols.= 90 sucres (free market rate)

OPTIONAL FORM 152a(H)
(Formerly FS 413(H))
January 1975
Dept. of State

50152-201

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TELEGRAM

INDICATE
☐ COLLECT
☒ CHARGE TO USAID/

FROM: AMEMBASSY QUITO

CLASSIFICATION: UNCLASSIFIED

12356
E.O. ~~XX652~~
TAGS: N/A
SUBJECT: Report on El Niño Disaster

ACTION: SECSTATE WASHDC IMMEDIATE

AID/ UNCLASSIFIED QUITO 5563

AMB
DCM
CHRON
RF

AIDAC

REF: (A) Gersony-Jordan telcon; (B) Quito 5062

--1. Rainfall data (mm)

Reporting Station (Coast)	June 82	June 83
La Concordia	36	772
Portoviejo	3	339
Pichilingue	1	512
Puerto Ila	17	384
Isabel María	0	617
Sabahoyo	8	434
Milagro	1	504
Guayaquil	0	630
Pto. Bolívar	2	459

ACTION:
DIR
AI DIR
EXO
O/CONT
O/DP
O/DR
GDO
RDO
U/H
OPE
FHD
RF
M&R
EMB
WASH

DRAFTED BY: O/DR:RJordan:[illegible]
DRAFTING DATE: 7.15.83
TEL. EXT.
COORDINATING CLASSIFICATION APPROVED: Orlando L[illegible], Director
CLEARANCES: D/DIR:PFritz

UNCLASSIFIED
CLASSIFICATION

OPTIONAL FORM (Formerly [illegible])

Average 6 517

--2. MOP has provided USAID with study entitled "Investments in Emergency Works related to road transport in Ecuador". The summary table is reported for your information:

A. Works completed and underway	Investment
1. Road Maintenance. MOP resources	410,793,300 sucres
2. Seven Bailey Bridges	35,946,326
3. Direct Allotments for specific Emergency Works (Zarumilla and Macará Rivers)	10,000,000
4. Maintenance and Repair of Bridges in flooded areas (Civil Defense)	40,000,000
5. Civil Defense Allotment	80,700,000
B. Programmed Works	
6. BEDE loan for road repair and reconstruction	1,420,482,834
7. BID loan (Road component)	1,166,175,000
8. Repairs of Main Road Networks	2,100,000,000
TOTAL	5,264,097,460

--3. Agricultural Statistics. EMB/Quito Agricultural Attache Report EC 3031 dated 7/12/83 supports ref. B figures on corn and rice losses. FAS data is as follows:

A. Expected Results Area Yield Production (M.T.)

OPTIONAL FORM 1-2-80
(Formerly FS-41)
January 19
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60152-201

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Winter Rice	87,722	2.88	252,869
Summer Rice	41,304	3.03	125,217
Corn	141,100	1.89	266,600
B. Actual Situation			
Winter Rice	65,600	1.42	93,200
Summer Rice	28,000	1.45	40,500
Corn	125,000	1.15	144,000
C. Losses (Hect.)	Not planted	Crop Loss	Total
Winter Rice	22,122	8,200	30,322
Summer Rice	13,304	--	13,304
Corn	16,100	--	16,100
D. Total Loss (M.T)			
Winter Rice	159,669		
Summer Rice	84,717		
Corn	122,600		

--4. MOP report and FAS report have been sent to Bob Lindsay, LAC/SA by DHL Messenger Service.

HART

OPTIONAL FORM 10-30H
(Formerly FS-413)
January 197
Dept. of Stat

50152-201

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D C 20523

JUL 21 1983

Orlando Llenza
Mission Director
USAID/Ecuador
c/o American Embassy
Quito, Ecuador

Dear Orlando:

I am sending you a copy of Peter McPherson's trip report. We had hoped to bring it to the attention of Judge Clark personally, but Peter decided simply to send it to the NSC as a routine trip report, and it probably did not come to Judge Clark's attention.

Although the report is not classified, because of its rather sensitive contents, I suggest you treat it as confidential and restrict its distribution.

We haven't given up completely on the supplemental yet. We'll keep you informed.

Sincerely yours,

Carl H. Leonard (for)

Marshall D. Brown
Acting Assistant Administrator
Bureau for Latin America and
the Caribbean

Attachment: a/s

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Report for the National Security Advisor

From: M. Peter McPherson, Special Coordinator for International Disaster Assistance

Subject: Assessment of the Natural Disasters in the Andean Countries

I have just returned from a short but intensive survey of disaster conditions in the three Andean democracies of Peru, Bolivia and Ecuador.

These countries, already facing serious economic and financial problems, now have been buffeted by an unprecedented series of natural disasters that have further damaged their economies and caused widespread human suffering. What is particularly unusual about these disasters is their recurring, virtually non-stop nature. I saw what could be the beginning of a Sahel-like drought problem in the highlands of Peru and Bolivia.

All three countries have been hit by torrential rains and flooding -- and this has continued over the past six months. At the same time, this inversion of the weather pattern has caused a large portion of the altiplano region of Southern Peru and Bolivia to experience a prolonged drought which has brought this already poor area to the brink of famine.

During my trip, I visited the areas hardest hit by these disasters, and I talked to campesino drought victims in Bolivia and to flood victims in Northern Peru and in Guayaquil, Ecuador. These people, who have suffered for the past six months, expressed feelings of anguish and despair at what was happening to them, and to their families, homes and sources of income.

In each country, I also talked to the democratically-elected President about the difficult set of problems he was facing. In Peru, for example, burdened by more than $11 billion in foreign debt, President Belaunde is struggling to overcome a serious economic crisis and to regain economic and financial stability with the assistance of the IMF. At the same time, the austerity measures required by the IMF mean that he does not have the budget resources to address the problems brought about by flooding in the North and drought in the southern highlands. In the disaster areas there is a growing sense of disaffection with the government for what it hasn't been able to do. At the national level, the economic contraction, the high rate of inflation and high unemployment are also creating discontent and disaffection. Successful terrorist acts by the Shining Path guerilla organization further undermine confidence in his government. A similar situation exists in Bolivia,

where President Siles is attempting to gain the economic and political momentum necessary to fulfill his four year term of office--and to avoid the coup d'etat which has been the fate of so many former Bolivian Presidents. In Ecuador, President Hurtado is trying to overcome the economic crisis through tough austerity policy measures while also trying to respond to the needs of the various interests groups important to his Presidency. At the same time, he must also address the reconstruction needs of the people in the disaster area.

While political crises in Central America seem to dominate the coverage of Latin American news, the three Andean democracies I visited are also under siege - not from Marxist guerillas, but rather from the forces of nature which continue to punish the people and erode support for the elected governments.

Aggregate Damage Estimates and U.S. Assistance

The damages to date are estimated conservatively at about $300 million in Ecuador, $350 million in Bolivia and $750 million in Peru. A total of nearly 5 million people have been severely affected through loss of jobs, crops, homes and lives. A large portion of the agriculture areas of the countries has been devastated. Coming on top of the economic and financial crisis these countries are experiencing, the effects of these continuing natural disasters threaten the stability of democracy in the Andean sub-region.

U.S. disaster assistance to date totals less than $55 million, the bulk of which is in PL 480 food assistance. I believe our interest in the economc and political stability of this sub-region is considerably greater than the modest level of our assistance would suggest. Indeed, I have concluded that a special Andean Disaster Assistance supplemental of $90-100 million is the type of U.S. response which is needed to address the reconstruction needs of the countries while also demonstrating clearly our strong suport for these democratically-elected governments.

Under Secretary of State Schneider and I have made a joint request to OMB for an Andean disaster assistance supplemental. This request is still under review. I am concerned, however, that OMB is not taking into account the political consequences of our not providing additional assistance to these increasingly fragile democracies.

Attached to this report is a brief description of how we would propose to utilize the additional funds if the Supplemental were approved.

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Effects of the Drought

In the drought area, farmers were forced to slaughter their livestock due to lack of pasture. The price of meat in Puno, Peru, has fallen to $.25/pound - one quarter of the Lima market price. Vegetables are in short supply and expensive. The potato crop, the staple for the altiplano areas of Bolivia and Peru, came up the size of marbles--one-third of which were worm-infested due to lack of resources to buy insecticides. A large proportion of the potato crop did not even come up. To survive, families have been forced to eat their seed potatoes.

Significant out-migration from the drought areas has taken place in both Peru and Bolivia. Others have sent their children to live in other parts of the country. Daily trains down to Arequipa, Peru from Puno are so crowded by migrating campesinos that an extra train had to be added to the schedule.

In Bolivia, more than 1.6 million people have gone without rain for almost eight months. That represents one-fourth of this country's total population. That would be the equivalent of 55-60 million in this country. The area affected is larger than the state of Texas. The people hardest hit have incomes as low as in Bangladesh.

The mining town of Potosi, with 100,000 people living at 14,000 feet above sea level, has exhausted its water supplies, and must haul water 40 km by railroad tank cars daily to survive.

The people of Potosi and the outlying rural areas expressed feelings of anguish, frustration and anger - anger at the Bolivian Government which they unfairly blame for not providing them relief from their suffering. On the Peruvian side of Lake Titicaca, the local campesino associations and workers in the Department of Puno staged a two-day general strike to dramatize their situation to the Peruvian Government. In a special report in the Peruvian press, drought conditions around Puno were characterized as "the horror of the slow death."

In Bolivia, crop projection for 1983 indicate that the country faces an immediate and serious food shortage due to major crop losses caused by the drought conditions in the altiplano and valley regions, and floods in the Santa Cruz agricultural zone. Losses of 70 percent of the potato and wheat crop have occured in the Bolivian highlands. The deficit in the harvest of major food crops in both the altiplano and Santa Cruz is estimated to be over one million tons. This will require an additional $170 million in food imports at a time when the country is experiencing a very severe balance of payments shortfall. The economic impact of the loss of the 82-83

harvests in terms of lost income to the Bolivian farmers is equivalent to more than $200 million. Industries that depend on agricultural products are being forced to close, pushing unemployment in Bolivia to alarming proportions.

Health conditions in drought areas have worsened due to consumption of contaminated water. Gastro-enteric diseases have increased dramatically.

Effects of the Floods

In the flooded low land areas of Peru and Ecuador, the damage has been extensive and devastating. In the North of Peru, flooding mud flows and landslides have damaged many roads, isolating cities and towns for over four months. Piura, Peru's largest and most productive farm region, has been devastated. Unemployment in this department of 1.1 million people is estimated at 70 percent. Food is in short supply, crops have been destroyed and commerce brought to a standstill. Damage to the vital irrigation canals in this department has been extensive. The adjacent department of Tumbes has suffered similar destruction. The city of Piura, a commercial and agricultural town of more than 300,000, has been cut off from land transport and must be supplied by air. The city is partially covered with stagnant water, black or green with raw sewage. Forty thousand familes in Piura have lost their homes--most by simply having the adobe walls "melt" away as a result of the flooding. Forty thousand more houses have been damaged. The 12 feet of rain that has hit Northern Peru has fallen in an arid region which normally gets no rain whatsoever. Water is normally drawn from the rivers that run down from the Andes through this desert to the sea.

Health problems are very serious, particularly in urban areas, due to stagnant water mixed with raw sewage. Gastro-enteric and respiratory diseases have increased sharply. The child mortality rate has increased threefold. Skin diseases and insect bites plague the residents. In Chulucanas, Peru, an agricultural center of 60,000 people, an American priest living there reported that the number of funerals per day have tripled. In one of the community health posts in that same town, 21 of 40 persons seen by the local doctor were treated for typhoid fever. Water one meter deep has repeatedly hit this community, taking with it all the adobe structures and leaving behind little more than mounds of earth.

Perhaps the most psychologically distressing aspect of the rains and floods is their recurrence. No sooner have people rebuilt or repaired damage than the floods return and cause new damage. This has gone on for over six months. Some have

developed a sense of despair and helplessness; others have reacted with anger and frustration, blaming the government for not having warned them or protected them from the flooding.

In Peru, 27 major bridges have been lost. The Pan American Highway has extensive damage and disappears into a newly formed lake in the desert for several miles. In both Northern Peru and in the Guayas River Basin of Ecuador, almost 12 feet (141 inches) of rain has fallen in a six month period.

In Ecuador, record rainfall and heavy flooding from October 1982 to date have caused large scale economic losses in the coastal area, particularly in the Guayas River basin (which contains Ecuador's most productive agricultural area and its largest city, Guayaquil) and the Provinces of El Oro and Manabi. About 860,000 hectares are or have been flooded. Normally flooding is over by March; this year's extraordinary rainfall began in October, and is continuing. Major economic losses are conservatively estimated to amount to $300 million. Continued rains and flooding mean that the value of economic losses will continue to increase.

In the Guayas Basin, 20 major bridges have been lost. More than a 600 miles of primary and secondary roads have been damaged. There has also been extensive damage to the railroad between Guayquil on the coast and the highlands area. By February of this year more than 13,750 houses and 223 schools had been damaged or destroyed. The current numbers are even higher. In Santa Cruz in the Bolivian lowlands, flooding destroyed a large amount of unharvested and newly harvested crops, a large portion of the poultry industry and more than 16,000 homes. The floods washed out several sections of the Cochabamba-Santa Cruz highway, the main supply route to the eastern part of the country. Infrastructure damage is estimated at approximately $50 million.

DAA/LAC:MBrown:JM:632-9108:6/9/83:LEC(0127H)

Damage Assessment by Country

Peru:	Millions
A. Petroleum production lost	$250
B. Damage to petroleum pipeline and facilities	60
C. Agricultural production	170
D. Other infrastructure:	
(1) Roads and telecommunications	115
(2) Housing and urban services	105
(3) Agriculture infrastructure	28
(4) Other	10
Total	$738

Bolivia:	
A. Agricultural production	$170
B. Livestock	30
C. Agricultural infrastructure	70
D. Transportation sector	50
E. Losses to industries dependent on agricultural production	40
Total	$360

Ecuador:	
A. Agriculture and livestock	$207
B. Transportation system	83
C. Housing and schools destroyed	15
D. Manufacturing (physical infrastructure damage)	18
Total	$323

Grand Total	$1,421,000

Proposed Additional U.S. Response

Peru: ($60 million)

Emergency relief, rehabilitation and reconstruction needs outlined below total more than $360 million. These projects are those which have been preliminarily identified as most urgent. Final decisions on which projects will be funded from the $60 million will be worked out with the Government of Peru.

- Emergency relief supplies for flood victims (roofing materials, fuel and water storage tanks) imported water purification units, medical supplies, trucks, etc.
- Costs to reopen (not repair) key access roads in flooded areas so that relief supplies can get to flood victims.
- Procurement of road building and sewage equipment to meet flood relief and rehabilitation needs.
- Open clogged sewer systems in over ten urban areas in flood zones (importation of sewer cleaning trucks, operational expenses, repair parts).
- Cleaning out damaged irrigation systems and making them minimally operational.
- Foreign technical and managerial advisors to help in planning and implementing relief and rehabilitation activities.
- Emergency repairs to health facilities, schools and other public buildings in flooded areas.
- Irrigation equipment and other agricultural equipment lost in flooded areas. Well-drilling equipment and pumps for drought area.
- Housing repairs and reconstruction.
- Emergency assistance to key GOP ministries to meet reconstruction and relief activities (includes expanding technical staff of GOP ministries as needed).
- Emergency credit programs for agriculture, small business, etc.

Ecuador ($15 million)

Flood Control: ($4 million) Primary emphasis would be given to emergency flood control measures such as selected dredging, drainage improvement, and protection of economically important physical facilities.

Road Repair: ($5 million) Damage to the trunk and feeder road network in the agriculturally rich coastal provinces has been substantial and continues.

Other Engineering Works: ($4 million) Agricultural irrigation and drainage facilities in the coast have also been damaged and must be rehabilitated. Small town water supply systems would be protected against future contamination from flooding by raising well-heads, protecting treatment plants, etc.

Watershed Management: ($2 million) Mitigation of future flooding can best be achieved through enlightened watershed management practices. Selected soil conservation, reforestation, construction of rudimentary checkdams and holding ponds, and repair and protection of existing small dams in critical watersheds would be carried out through local PVO's, communities, and regional organizations as well as national government entities.

Bolivia ($15 million)

The total amount of rehabilitation and reconstruction costs resulting from the floods and drought far exceeds the additional disaster assistance AID is proposing. However, AID has identified certain critical projects totalling $15 million which are highest priority.

Infrastructure ($10 million): The assistance contemplates three distinct infrastructure projects: (a) the repair of the trunk road between the cities of Santa Cruz and Cochabamba, (b) reconstruction of five bridges in the Departments of Santa Cruz and Cochabama, which are key components of the main supply line to the eastern part of the country, and (c) construction of an aquaduct to service the city of Potosi whose source of water has dried up as a result of the drought.

Agricultural Inputs ($5 million): (a) Procurement of 2,620 metric tons of potatoes which will be distributed among rural families in the altiplano to replace the remaining local potatoes that will be collected and saved as seed material for the next planting. (b) Purchase and importation of 6,400 metric tons of chemical fertilizer to be used in conjunction with planting the next potato crop. (c) Construction of storage facilities for the fertilizer and potatoes that will be imported.

JUL 28 1983

Orlando Llenza
Mission Director
USAID/Ecuador
c/o American Embassy
Quito, Ecuador

Dear Orlando:

As you know, we have just completed a rather complex data gathering exercise in connection with the flood and drought disasters in the Andean region. The product — of which I attach a few copies — will be the data upon which our further efforts on a possible supplemental will be based. I think it will also be useful for general analysis of the disaster's impact in the region. You and your staff may find the comparative data with the other two countries reported to be of some interest. I think the format will be useful to us as a model for future disaster reporting. Feel free to share this report with others.

I know that Bob Jordan was the key officer in the Mission responsible for pulling all of this together and wanted to let you know how much we appreciate the Mission's prompt, thorough and considered work in supporting our efforts on this. Bob should be commended for a job well done.

With best regards.

Yours sincerely,

/s/ Marshall D. Brown

Marshall D. Brown
Acting Assistant Administrator
Bureau for Latin America and
the Caribbean

Attachment: a/s

LAC/SA;JHulehan;tf;7/27/83

Cumulative to: June 30, 1983

SUMMARY FACT SHEET: EL NINO FLOOD AND DROUGHT DISASTER - PERU, BOLIVIA, ECUADOR*

	PERU	BOLIVIA	ECUADOR	TOTAL
National Population	18,700,000	6,100,000	8,300,000	33,100,000
Population of Affected Departments and Percent of National Population	6,800,000 (37%)	5,800,000 (95%)	4,000,000 (48%)	16,600,000 (51
Population Severely Affected and Percent of National Population (Lost Homes and/or Livelihood)	1,320,000 (7%)	1,600,000 (27%)	700,000 (8%)	3,620,000 (11
Economic Losses in Disasters (millions US$)	$1,140 million	$466 million**	$232 million	$1,838 million
Gross National Product	$19.5 billion	$7.5 billion	$13 billion	$40 billion
Economic Losses as Percent of GNP	6%	6%	2%	5%
Incremental Foreign Exchange Requirements Due to Disaster.	$540 million	$235 million	$194 million	$969 million

COMPARISON WITH UNITED STATES

Geographical Area Severely Affected (Destroyed) Among Three Countries	Equal to all of New England and most of New York, New Jersey and Pennsylvar
Population Severely Affected (Lost Homes and/or Livelihood)	Equal to population of Nebraska, North and South Dakota, and Montana
Percent of GNP Destroyed in Peru	More than the GNP of all six New England states

* Source of Information: USAID Missions in Peru, Bolivia and Ecuador, based on best available data to date. Additional losses will be reported as damage assessments are completed.

** Based on a conversion rate from local currency to U. S. Dollars of 400:1. If the official rate of exchange (about) (200:1) were used, reported damage would be about double the above.

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REV7/21

ALL IN US$.**

EXECUTIVE SUMMARY SHEET: EL NINO FLOOD AND DROUGHT DISASTER IMPACT

June 30, 1983

Category	Peru Flood	Peru Drought	Peru Total	Bolivia Flood	Bolivia Drought	Bolivia Total	Ecuador Flood	Total
POPULATION								
Nat'l Population	-	-	18,661,443	-	-	6,100,000	8,294,900	33,056,343
Aff. Departments	3,870,740 (21%)	2,966,176 (16%)	6,836,916 (37%)	1,201,749 (20%)*	5,812,910 (95%)*	5,812,910 (95%)*	4,043,968 (49%)	16,693,794 (51%)
Severely Affected	700,000 (4%)	620,000 (3%)	1,320,000 (7%)	50,000 (1%)	1,583,049 (26%)	1,633,049 (27%)	700,000 (8%)	3,653,049 (11%)
Comparison with U. S. State	North Dakota	South Dakota	-	-	Nebraska	-	Montana	
GEOGRAPHICAL AREA (square miles)								
Entire Country	-	-	496,222	-	-	424,000	106,000	1,026,222
Severely Affected	18,000 (3.6%)	29,650 (6%)	47,650 (3.7%)	250 (-%)	70,000(16.5%)	70,250 (16.5%)	21,064 (19.8%)	138,964 (13.6%)
Comparison with U. S. State(s)	Vermont and New Hampshire	South Carolina	-	District of Columbia+	Missouri	-	NJ+DL+MD+RI	-
IMPACT DATA								
Agricultural Losses + Livestock	$145.7 million	$151.8 million	$297.5 million	$13.2 million	$417.2 million	$430.4 million	$111.5 million	$839.4 million
Infrastructure Losses	398.9 million	-	398.9 million	35.2 million	-	35.2 million	60.0 million	494.1 million
Industrial Losses	404.2 million	-	404.2 million	-	-	-	50.6 million	464.8 million
Other	40.0	-	40.0 million	-	-	-	-	166.5 million
Total	$988.8 million	$151.8 million	$1,140.6 million	48.4 million	$417.2 million	$465.6 million	$232.1 million	$1,838.3 million
FOREIGN EXCHANGE IMPACT								
Loss of Export Revenues in US$ and Unanticipated US$ Outflow	$460 million	$ 80.0 million	$540 million	$34.5 million	$200.0 million	$234.5 million	$193.5 million	$968.0 million
Gross Domestic Product (GDP)	-	-	$19.5 billion	-	-	$7.5 billion	$13 billion	$40 billion
Impact as % of GDP	5.07%	.8%	5.87%	0.64%	5.6%	6.2%	1.5%	4.6%
Deaths Directly Attributable (exclude increase in infant mortality)	364	-	364	250	-	250	307	921
Comparative Proportionate Impact on U.S. GDP (nom. $3.659 trillion)	-	-	$180 billion Greater than the six New England states	-	-	$189 billion Greater than the six New England states	$55 billion About the same as Georgia	-

* Bolivia population data: departments affected by both flood and drought were counted under both categories, accounting for the overlap. See note on following sheets for conversion data.

ALL COSTS US$ *

EL NINO FLOOD DISASTER: ECONOMIC, AGRICULTURAL, INFRASTRUCTURE IMPACTS

June 10, 1983

Category	Peru	Bolivia	Ecuador	TOTAL
RAINFALL (inches)				
Registry Location:	Tumbes	Santa Cruz	Coastal Average	
November 1981 thru June 1982	0 inches	43	37	
November 1982 thru June 1983	153	73	156	
Cubic meters rainfall per hectare, November 1982 to June 1983	38,942	18,650	39,750	
POPULATION				
National Population	18,661,463	6,100,000	8,394,900	33,056,363
Affected Departments	3,870,740 (21%)	1,201,749 (20%)	4,043,968 (49%)	9,116,457 (29%)
Severely Affected Population	700,000 (4%)	50,000 (1%)	700,000 (8%)	1,450,000 (4.4%)
Comparison with U. S. State	North Dakota	-	South Dakota	North Dakota + South Dakota
GEOGRAPHICAL AREA (square miles)				
Entire Country/	496,222	424,000	106,000	1,026,222
Severely Affected	18,000 (3.6%)	250 (-)	21,964 (19.8%)	39,314 (3.8%)
Comparison with U. S. state(s)	Combined Vt + NH, or Combined NJ/MA/DL	District of Columbia*	NJ, MD, DL, RI	Virginia
AGRICULTURAL IMPACT				
No. of acres under cultivation	3,993,990	2,239,990	2,983,238	9,217,218
No. acres severely affected	249,500 (6.3%)	34,891 (1.6%)	348,020 (11.7%)	632,411 (6.9%)

Crop Losses (millions US$)	Peru MT	Peru US$	Peru % Natl Prod	Bolivia MT	Bolivia US$	Bolivia % Natl Prod	Ecuador MT	Ecuador US$	Ecuador % Natl Prod	TOTAL MT	TOTAL US$	TOTAL % Natl Prod
Rice	155,000+	$45.0	20%	7,000	$1.8	8%	108,463	$12.6	32%	270,463	$59.4	-
Corn	67,500	12.4	17%	10,955	1.9	2%	58,375	5.6	28%	136,830	19.9	-
Cotton	78,500	46.1	31%	679	NA	17%	14,760	3.5	52%	93,939	49.6	-
Sugar	42,000	10.0	4%	52,295	NA	19%	288,000	.7	10%	382,295	10.7	-
Bananas	42,000	10.1	4%	5,131	0.4	2%	816,332	39.0	35%	863,463	49.5	-
Soybeans	NA	3.5	100%	-	-	-	19,200	3.3	55%	19,200	6.8	-
Sorghum	1,900	.2	99%	3,890	NA	30%	-	-	-	5,790	0.2	-
Beans	700	.2	NA	-	-	-	-	-	-	700	0.2	-
Cocoa	-	-	-	-	-	-	30,907	30.0	33%	30,907	30.0	-
Coffee	-	-	-	-	-	-	21,140	16.8	28%	21,140	16.8	-
Other	NA	2.5	NA	47,610	59.1	-	-	-	-	47,610	11.6	-
TOTAL	387,600	130.0	NA	127,560	$13.2	-	1,357,177	$ 111.5	NA	1,872,337	$254.4	-
Peru only: + 31%		15.7										
Lost plantings opp'n		$ 145.7										
Next Reasonable Date Planting Can Begin	October/November 1983. Minimal planting could begin August 1983			November/December 1983			December 1983/January 1984					

INFRASTRUCTURE	Peru	Bolivia	Ecuador	TOTAL
HOUSING				
Units Damaged	28,000	5,175	11,000	44,175
Units Destroyed	12,500	5,000	2,750	20,250
Repair/Replacement Cost	$60.0 million	$11.8 million	$2.45 million	$74.3 million
BRIDGES				
Damaged/Destroyed	50	4	25	
Repair/Replacement Cost	$24.6 million	$2.4 million	$9.75 million	$36.8 million
HEALTH CENTERS/POSTS				
Units Destroyed or Damaged	75	0	NA	75+
Repair/Replacement Cost	$600,000	0	$1.4 million	$2.0 million
SCHOOLS				
Units Damaged or Destroyed	730 schoolrooms	10 schools	223 schools	963 schools/rooms
Repair/Replacement Cost	$3.5 million	$62,500	$1.4 million	$5 million
PORT FACILITIES				
Number of Affected Ports	5	0	0	5
Repair Cost	$2.0 million	0	0	$2.0 million
ROADS				
No. Kilometers Dam/Destroyed	618 kilometers	340 kilometers	1,400 kilometers	2,358 kilometers
Repair/Replacement Cost	590.6 million	$20.5 million	$40.7 million	$151.8 million
Access Roads to Oil Sites:	3,200 kilometers	-	-	3,200 kilometers
Repair/Replacement Cost	$55.0 million	-	-	$55.0 million
IRRIGATION SYSTEMS				
Affected Canals	682 kilometers	0	NA	682 kilometers +
Repair/Replacement Cost	$35.7 million	0	$600,000	$36.3 million
URBAN WATER/SEWERAGE				
Affected lines damaged	44 kilometers	0	0	44 kilometers
Repair/Replacement Cost	$10.4 million	0	0	$10.4 million
OIL FACILITIES				
Affected Pipelines	18.5 kilometers	0	0	18.5 kilometers
Pipelines & Facilities Repair & Replacement Cost	$76.5 million	0	0	$76.5 million
OTHER	$40 million	$400,000 (RR)	$3.7 million (RR)	$44.1 million
TOTAL INFRASTRUCTURE	$398.9 million	$25.2 million	$60.0 million	$484.1 million

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OTHER ECONOMIC LOSSES				
OIL [illegible]				
[illegible] production	9.5 million barrels	-	-	9.5 million barrels
Other production [illegible]				
[illegible]	$251.5 million	-	-	$251.5 million
[illegible]	-	-	$25.9 million	$25.9 million
[illegible]				
Lost [illegible] Production	$140 million (200,000 M/T)		$22.5 million	$162.5 million
Lost [illegible] Production	$12.7 million (100,000 M/T)		$ 2.2 million	$ 14.9 million
[illegible] losses	-	-	$19.0 million	$ 19.0 million
[illegible] Shrimp Production	-	-	-($9.0 million)	-($ 9.0 million)
PET [illegible] Losses	$152.7 million		$34.7 million	$187.4 million
GOODS [illegible] IN TRANSPORT				
Value of All Reported Goods	$20.0 million	-	-	$ 20.0 million
LOST PERSONAL PROPERTY & LOST [illegible] REPORTED	$20.0 million	-	-	$ 20.0 million
TOTAL DAMAGES	$988.8 million	$48.4 million	$232.1 million	$1,269.3 million
RECAPITULATION				
Agriculture	$145.7 million	$13.2 million	$111.9 million	$270.4 million
Infrastructure	398.9 million	35.2 million	$ 60.0 million	494.1 million
Industrial	404.5 million	-	$ 60.6 million	464.9 million
Other	40.0 million	-	-	40.0 million
	$989.1 million	$48.4 million	$232.1 million	$1,269.3 million
UNANTICIPATED NUCLEAR LOSSES				
Lost Future Earnings & Unanticipated Outflow to Replace Losses	$460 million	$34.5 million	$193.5 million	$688 million
Gross Domestic Product	$19.5 billion	$7.4 billion	$13 billion	$4[illegible] billion
Total Damage as Percentage of GDP	5.07%	0.64%	1.[illegible]%	3.2%
Revenue Data from [illegible]				
[illegible]	$/1300	$/400	$:1	

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ALL COSTS US$ *

EL NINO DROUGHT DISASTER: ECONOMIC, AGRICULTURAL, INFRASTRUCTURE IMPACTS

June 30, 1983

Category	Peru	Bolivia	TOTAL
RAINFALL (inches)			
Registry Location:	Cuzco	Chinoli, Potosi	-
November 1981 - May 1982	23	26	-
November 1982 - May 1983	7	11	-
Cubic meters rainfall per hectare, November 1982 - May 1983	1770	2700	-
POPULATION			
National Population	18,661,443	6,100,000	24,761,443
Affected Departments	2,966,176 (16%)	5,812,910 (95%)	8,779,086 (35%)
Severely Affected Population	620,000 (3%)	1,583,049 (26%)	2,203,049 (9%)
Comparison with U. S. State	Vermont	Nebraska	Vermont + Nebraska
GEOGRAPHICAL AREA (square miles)			
Entire Country	496,222	424,000	920,222
Severely Affected	29,650 (6%)	70,000 (16.5%)	99,650 (10.8%)
Comparison with U. S. State(s)	Maine or South Carolina	Missouri	Missouri + (Maine or South Carolina)
AGRICULTURAL IMPACT			
No. Acres Under Cultivation**	3,993,990	2,239,990	6,233,980
No. Acres Severely Affected	297,924 (7.5%)	768,969 (34.3%)	1,066,893 (17.2%)

Crop Losses (millions US$)	M/T	$ Value	% Natl Prod	M/T	$ Value	% Natl Prod	M/T	$ Value	% Natl Prod
Potatoes	491,000	$94.3	27%	597,378	$180.5	66%	1,088,378	$274.8	-
Corn	24,000	5.5	6%	112,476	19.4	25%	136,476	24.9	-
Olluco	16,500	3.8	48%	-	-	-	16,500	3.8	-
Quinua	7,800	3.0	68%	1,065	.4	7%	8,865	3.4	-
Barley	34,000	4.7	26%	33,286	6.3	54%	67,286	11.0	-
Wheat	5,500	1.0	NA	28,706	11.1	44%	34,206	12.1	-
Rice	-	-	-	25,095	6.3	29%	25,095	6.3	-
Cassava	-	-	-	91,932	17.0	34%	91,932	17.0	-
Vegetables and Fruits	-	-	-	147,918	28.7	40%	147,918	28.7	-
Other	NA	8.5	NA	78,368	8.0	NA	78,368	16.5	-
Total	$78,800	$120.8	-	1,116,224	277.7	-	1,695,024	$398.5	-

Livestock Losses	$31.0 million	$139.5 million	$170.5 million
Next Reasonable Date Planting Can Begin	October But potato crop at max. 40% norm	November	
TOTAL LOSSES	$151.8 million	$417.2 million	$569.0 million
RECAPITULATION			
Agriculture	$120.8 million	$277.7 million	$398.5 million
Livestock	31.0 million	139.5 million	170.5 million
	$151.8 million	$417.2 million	$569.0 million
UNANTICIPATED DOLLAR LOSSES			
Food Imports Directly Attributable	$ 65.0 million	$153.0 million	$218 million
Potato Seed & Water Equip. Imports	10.0 million	19.0 million +	29 million
Export Losses	5.0 million	28.0 million	33 million
Total	$ 80.0 million	$200 million	$280 million
GDP Estimate	$19.5 billion	$7.5 billion	$27 billion
Total Loss as % of GDP	.8%	5.6%	2.1%

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PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project: From FY 1983 to FY 1985
Total U.S. Funding: 13,000,000
Date Prepared: 9/24/83

Project Title & Number: EMERGENCY REHABILITATION, No. 518-0046

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: (A-1)	Measures of Goal Achievement: (A-2)	(A-3)	Assumptions for achieving goal targets: (A-4)
To assist the areas and population in Ecuador to recover and to be better prepared for similar disasters in the future	Agricultural production restored and basic services Functional in areas affected by disaster	Post-project impact evaluation	Resources are adequate to have significant impact.

AID 1020-28 (11-78)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 83 to FY 85
Total U.S. Funding 13,000,000
Date Prepared: 9/24/83

Project Title & Number: EMERGENCY REHABILITATION No. 518-0046

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: (B-1)	Conditions that will indicate purpose has been achieved: End-of-Project status. (B-2)	(B-3)	Assumptions for achieving purpose: (B-4)
To assist the government of Ecuador to implement critical relief rehabilitation, reconstruction and mitigation activities related to the "El Niño" disaster	1. At least 3,800 of land restored to agricultural production.	1. Post project evaluation.	1. Repairs and rehabilitation are only constraint on restoration of services.
	2. Municipo of Quito has a plan which details measures required for Pichincha slope protection.	2. USAID records	
	3. At least 440 families have adequate housing	3. Implementing Agency records	
	4. Potable Water and Sanitation Systems functional in 27 cities	4. Field Inspections	
	5. 571 Schools Fully Functional		
	6. Babahoyo-Milagro transmission line and 100 km. of distribution lines operational		
	7. Short-cycle crop production restored on 41,000 hectares of prime agricultural land.		

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AID 1020-25 (11-71)
SUPPLEMENT 1

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project: From FY 83 to FY 85
Total U.S. Funding 13,000,000
Date Prepared: 9/24/83

Project Title & Number: EMERGENCY REHABILITATION No. 518-0046

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Outputs: (C-1)	Magnitude of Outputs: (C-2)	(C-3)	Assumptions for achieving outputs: (C-4)
1. Agricultural Recovery	90,000 M.T. rice 24,000 M.T. corn 16,000 soybeans	1. National Development Bank records	1. Implementing Agencies have organizational capacity to implement program in addition to regular program of work.
2. Ditches and Levees repaired Río Chimbo channel restored.	3,800 hectares	2. Implementing Agency Records	2. Imported Agricultural inputs can be distributed in time for 1983-1984 agricultural season.
3. Pichincha slope study small protection works.	15	3. USAID Records	
4. Houses repaired, reconstructed or relocated.	440		
5. Potable Water and Sewer Systems Repaired	27		
6. Schools			
reconstruction	59		
repair	519		
7. Electrical Systems Repairs			
Repair of Babahoyo-Milagro Transmission Line	1		
Repair of distribution lines	100 Km.		
Three generators repaired	3		

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 1983 to FY 1985
Total U.S. Funding 13,000,000
Date Prepared: 9/24/83

Project Title & Number: EMERGENCY REHABILITATION No. 518-0046

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Inputs: (D-1)	Implementation Target (Type and Quantity) (D-2)	(D-3)	Assumptions for providing inputs: (D-4)
Agricultural Recovery			
Fertilizer	$4,200,000	GOE and USAID Records	
Pesticide	$1,500,000		
Seed	$300,000		
Agricultural Infrastructure Rehabilitation			
a. Construction Services.	$2,000,000		
Pichincha Slope			
a. Construction Services	$250,000		
b. Engineering Services	$230,000		
Water and Sanitation System Repair			
a. Construction Services	$500,000		
b. Equipment	$200,000		
Housing Reconstruction			
a. Credit	$220,000		
School Repair and Reconstruction			
a. Construction Services	$1,500,000		
Electrical System Repair			
a. Construction Services	$700,000		
b. Equipment (Spare Parts)	$200,000		

" EVALUACION DE DAÑOS EN LOS CULTIVOS DEL LITORAL ECUATORIANO: ENTRE ENERO Y MAYO DEL PRESENTE AÑO. PROYECCION DE COMPORTAMIENTO PARA 1983 Y SINTESIS DE DAÑOS OCURRIDOS EN EL PERIODO INVERNAL, OCTU - BRE 1982 - MAYO 1983".

. MINISTERIO DE AGRICULTURA Y GANADERIA

Junio 15 de 1983

INTRODUCCION

En enero de 1983, el MAG conjuntamente con otros organismos nacionales e internacionales vinculados al sector agropecuario, elaboró una evaluación de los efectos de las inundaciones en el Litoral correspondiente al último trimestre de 1982. En dicho informe se consignaba el siguiente resumen de pérdidas:

RESUMEN DE PERDIDAS DEL SECTOR AGROPECUARIO EN EL LITORAL ECUATORIANO POR INUNDACIONES Y OTROS FACTORES CLIMATICOS
(enero 25/1983)
(Millones de sucres)

	PRODUCCION T.M. (Miles)	S/.	INFRAES-TRUCTURA	OTROS	TOTAL	EN MILES DE DOLARES*
CULTIVOS		1.381'3	496'2	836'0	2.713'5	81'486
Arroz	69	478'0	355'2	--	833'2	25'021
Soya	19	241'5	--	--	241'5	7'252
Caña de Azúcar	960	230'4	48'0	300'0	578'4	17'369
Algodón	17'6	334'8	--	--	334'8	10'054
Banano	35	96'6	93'0	536'0	725'6	21'790
GANADERIA		406'8	85'0	113'0	604'8	18'162
Bovinos		406'8	85'0	43'0	534'8	16'060
Pastizales		--	--	70'0	70'0	2'102
TOTAL AGROPECUA. Millones S/.		1.788'1	581'2	949'0	3.318'3	--
TOTAL AGROPECUA. Miles US$ *		54'185	17'612	28'757	--	99'648

(*) Tipo de cambio oficial Banco Central: 1 dólar -33.3 sucres (venta)
1 dolar -33.0 sucres (compra)

La situación descrita en enero, y que se resume en las cifras anteriormente

expuestas se vió fuertemente agravada en el primer semestre del presente año, debido a la prolongación e intensificación de los fenómenos climáticos.

En razón de este agravamiento, el Ministerio ha estimado oportuno realizar una nueva evaluación correspondiente al período enero-mayo, de los daños en el subsector agrícola. Con estos antecedentes se ha estimado una proyección de comportamiento para el resto del año al nivel de los principales cultivos afectados.

Los resultados de esta evaluación y proyección son los que se presentan a continuación:

1. El clima en el período enero-abril de 1983

En el informe anterior, correspondiente al período octubre-diciembre de 1982, se consignaron aumentos de precipitaciones sobre los promedios históricos registrados que iban entre 220 y 914%. Para el período enero-abril del presente año, se obteienen los siguientes registros:

PRECIPITACIONES ENERO-ABRIL 1983 EN MILIMETROS

Estación Pluviómetrica	Antecedente Enero-Abril 1965-79	Observado Enero-Abril 1983	% Aumento
Portoviejo	373	938	151
Machala	410	2.273	454
Guayaquil	750	2.577	244
Esmeraldas	610	1.503	146

FUENTE: Boletínes meteorológicos N°- 88 al 94 del Instituto Nacional Meteorología e Hidrología.

Si a los valores indicados en el Cuadro, que corresponden a las precipitaciones de los 4 primeros meses del año, se agregan las precipitaciones de octubre a diciembre de 1982, se obtienen las siguientes cifras en mi-

límetros de agua caída, que revelan por si solas la magnitud del fenómeno que ha afectado a la región de la Costa:

	Precipitaciones en m.m. octubre-82 Abril-1983	Precipitaciones medias normales en m.m. para el período octubre-abril (1)
Portoviejo	1.054.4	390.0
Machala	2.498.5	453.0
Guayaquil	2.959.6	788.0
Esmeraldas	1.691.4	669.0

(1) Estimaciones en base a diferentes fuentes.

Estas intensas precipitaciones ocurridas en un lapso relativamente corto, han provocado efectos devastadores tanto en el sector agropecuario como en la infraestructura de servicios y productiva del litoral ecuatoriano.

2. Afectaciones y proyecciones por cultivos

2.1. Metodología

En las estimaciones y cálculos que siguen se ha utilizado la siguiente metodología:

a) Capturar la información de terreno, a través de los programas nacionales, del comportamiento real de cada cultivo en cuanto a superficie sembrada, superficie cosechada, rendimiento y producciones correspondientes al período enero-mayo de 1983.

b) Suponer y calcular para cada cultivo un comportamiento en condiciones climatológicas normales, teniendo especialmente en cuenta sus tendencias históricas mas recientes.

c) Estimar el comportamiento para cada cultivo correspondiente al II semestre de 1983, tomando en cuenta las condiciones actuales de los cultivos y la natural atenuación de las precipitaciones que se espera con motivo del aparecimiento de la época de verano.

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d) Sobre la base de lo anterior se procedió a calcular las pérdidas que se habrían producido en el período enero-mayo, y a estimar las pérdidas que ocurrirían en el resto del año en función de los indicadores establecidos para un año normal, calculado de acuerdo al punto b).

La metodología anterior se ha aplicado a los siguientes dos grandes grupos de cultivo, considerando en cada caso las características de los mismos:

a) Cultivos de ciclo corto, que comprenden arroz, maíz duro, soya, algodón, a los cuales se agrega la caña de azúcar.

b) Cultivos de exportación: banano, cacao y café.

2.2. Resultados

2.2.1. Cultivos de ciclo corto

Para estos cultivos los resultados obtenidos se detallan en el Cuadro N°- 1, de la página siguiente, cuyo análisis pone de manifiesto que para el conjunto del año 1983, las disminuciones en superficie cosechada, rendimiento y producción son del siguiente orden:

DISMINUCIONES EN 1983 RESPECTO A UN AÑO NORMAL

Cultivos	Superf. Cosechada	Rendimiento	Producción
	%	%	%
Arroz	30.26	11.25	37.98
Maíz duro	7.6	12.0	18.26
Soya	70.6	12.5	74.26
Algodón	56.25	7.8	59.67
Caña de azúcar	4.2	1.4	5.52

2.2.2. Cultivos de exportación

Los resultados obtenidos para estos cultivos se exponen en el Cuadro N°- 2 de la página siguiente, del cual se infieren las siguientes tasas de reducción para el año 1983:

CUADRO N° 1. "ANALISIS DEL COMPORTAMIENTO PRODUCTIVO EN 1983 DEL ARROZ, MAIZ DURO, SOYA, ALGODON Y CAÑA DE AZUCAR".

	ARROZ			MAIZ DURO			SOYA	ALGODON	CAÑA AZUCAR (Costa)
	Ene/Mayo	Jun./Dcbre.	Total Anual	Ene/Jun.	Jul/Dcbre.	Total Anual	Total Anual	TOTAL ANUAL	TOTAL ANUAL
1. Comportamiento del cultivo en condiciones normales									
- Superficie cosechada; Ha.	71.500	58.500	130.000	73.600	110.400	184.000	34.000	24.000	38.000
- Rendimientos; T.M./Ha.	3.2	3.0	3.11	1.25	1.25	1.25	1.6	1,746	73,0
- Producciones; T.M.	228.800	175.500	404.300	92.000	138.000	230.000	54.400	41.900	2.774.000
2. Comportamiento observado y previsto para 1983		(Val.Est)			(Val.Est)		(Val.Est)	(Val.Est)	(Val.Est.)
- Superficie sembrada; Ha.	53.800	52.000	105.800	120.000(1)	100.000	220.000	12.000	12.000	40.400
- Superficie no cosechada; Ha.	8.150	7.000	15.150	40.000(1)	10.000	50.000	2.000	1.500	4.000
- Superficie cosechada; Ha.	45.650	45.000	90.650	80.000	90.000	170.000	10.000	10.500	36.400
- Rendimientos; T.M./Ha.	2.68	2.85	2.76	1.0	1.20	1.10	1,4	1,61	72,0
- Producciones; T.M.	122.500	128.250	250.750	80.000	108.000	188.000	14.000	16.900	2.620.800
3. Pérdidas observadas y previstas para 1983		(Val.Est)			(Val.Est)		(Val.Est)	(Val.Est.)	(Val.Est.)
- En la superficie de los cultivos									
- Por no sembrar; Ha.	17.700	6.500	24.200	-	-	-	22.000	12.000	-.-
- Por pérdidas de lo sembrado; Ha.	8.150	7.000	15.150	40.000	10.000	50.000	2.000	1.500	4.000
- Totales; Ha.	25.850.	13.500	39.350	40.000	10.000	50.000	24.000	13.500	4.000
- En las producciones (T.M.) (Se incluyen las pérdidas por disminución de superf. y caídas de rendimiento)	106.300.	47.250	153.550	12.000	30.000	42.000	40.400	25.000	153.200

(1) Las siembras de maíz en el período han sido muy buenas pero desgraciadamente las condiciones climáticas, los problemas de acceso han determinado que un alto % se pierdan.

ANNEX IV
Exhibit A
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CUADRO N° 2. "ANALISIS DEL COMPORTAMIENTO PRODUCTIVO EN 1983 DEL BANANO, CACAO Y CAFE"

	BANANO Ene/Abril	BANANO Mayo/Dcbre.	BANANO Total Anual	CACAO Ene/Abril	CACAO Mayo/Dcbre.	CACAO Total Anual	CAFE Total Anual
1. Comportamiento del cultivo en condiciones normales							
- Superficie cosechada; Ha.	22.150	36.150	58.300	97.000	180.000	277.000	300.000
- Rendimientos; T.M./Ha.	34,6	32,0	33,0	0,35	0,35	0,35	0,26
- Producciones; T.M.	767.000	1.157.000	1.924.000	33.950	63.050	97.000	86.000
2. Comportamiento observado y previsto para 1983							
- Superficie cosechada; Ha.	16.000	29.000	45.000	90.000	160.000	250.000	338.500
- Rendimientos; T.M./Ha.	25,5	26,0	25,9	0,23	0,24	0,236	0,24
- Producciones; T.M.	408.000	756.000	1.164.000	20.700	38.400	59.100	81.200
3. Pérdidas observadas y previstas para 1983							
- En la superficie de los cultivos							
- Por pérdida total o no cosechada; Ha.	6.000	se mantiene	6.000	7.000	20.000	27.000	-
- Por afectación parcial; Ha.	18.000	disminuye	16.700	30.000	45.000	75.000	34.600
Total; Ha.			22.700			92.000	34.600
% sobre superf. total			39%			33%	10.5%
- En las producciones; T.M.	359.000	401.000	760.000	13.250	24.650	37.900	4.800
(Se incluyen los efectos de caída de la producción por disminución del área cosechada y caída de los rendimientos)							

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Cultivo	Superf. Cosechada %	Rendimiento %	Producción %
Banano	22.81	21.51	39.5
Cacao	9.75	32.57	39.07
Café	(+ 12.83) a/	7.69	5.52

a/ (+) significa incremento

3. Valoración de afectaciones y pérdidas

3.1. Valoración de producciones no obtenidas

Esta cálculo se ha realizado tomando las producciones no obtenidas en relación a un año normal y considerando los precios oficiales de cada bien a nivel de productor. Los resultados de dicho cálculo se presentan en el Cuadro N°- 3, de la página siguiente, en el cual se puede apreciar que el valor de las pérdidas por producciones no obtenidas alcanza a una suma cercana a los 10.100 millones de sucres lo cual, comparado con el valor actual de la producción de un año normal para estos cultivos, significaría una pérdida en 1983 de un 32 %.

3.2. Valoración de producción no exportada

A los efectos de este cálculo se ha procedido a:

a) Tomar de referencia para cada producto las cifras de permisos de exportación del Banco Central correspondientes a 1982 y al período enero-abril de 1983, tanto en cantidad como en valor exportado;

b) Estimar el comportamiento que para cada producto podría tener el volúmen físico de las exportaciones en el período mayo - diciembre de 1983, teniendo como base las proyecciones de producción del Cuadro N°- 2 y las tendencias observadas en el primer cuatrimestre del presente año en cuanto a las exportaciones realizadas.

c) Para valorizar las exportaciones de mayo-diciembre, se supuso, que los precios unitarios observados entre enero-abril de 1983, se mantuviesen más o menos sin variación en el resto del año.

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CUADRO N° 3. "VALORACION DE PERDIDAS POR PRODUCCIONES NO OBTENIDAS A PRECIOS OFICIALES A NIVEL PRODUCTOR"

CULTIVOS	Primer Período Año según producto			Proyección Anual		
	T.M.	Precios Unit. S/. T.M.	Millones Sucres	T.M.	Precios Unit. S/. T.M.	Millones Sucres
I DE CICLO CORTO						
1. Arroz (Enero-Mayo)	106.300	10.340	1.099	153.500	10.340	1.587
2. Maíz duro (Enero-Jun.)	12.000	8.580	103	42.000	8.580	360
3. Soya	-	-	-	40.400	15.400	622
4. Algodón	-	-	-	25.000	21.384	535
5. Caña Azúcar	-	-	-	153.200	213	33
Subtotal	-	-	-	-	-	3.137
II DE EXPORTACION						
1. Banano (Enero-Abril)	35.900	4.317,8	1.550	760.000	4.317,8	3.282
2. Cacao (Enero-Abril)	13.250	87.890	1.164	37.900	87.890	3.331
3. Café	-	-	-	4.800	71.640	344
Subtotal						6.957
TOTAL GENERAL						10.094

Los resultados detallados de este cálculo se exponen en el cuadro N°- 4 de la página que sigue, del cual se desprende que ya en el período enero-abril se habrían perdido 60 millones de dólares - por exportaciones no realizadas, de banano, café y cacao , y que dicha suma podría superar los 150 millones de dólares para el conjunto del año. Una visión resumida de las variaciones de las exportaciones de estos tres rubros en 1983 con relación a 1982 es - la siguiente:

VARIACION EXPORTACIONES DEL BANANO, CACAO Y CAFE EN 1983 CON RELACION A 1982

EXPORTACIONES	ENERO-ABRIL 1983		TOTAL 1983	
	Miles T.M.	Millones dólares	Miles T.M.	Millones dólares
Banano	- 127.8	- 23.0	- 323.8	- 58.6
Cacao en grano	- 14.0	- 25.5	- 32.0	- 47.2
Cacao elaborad.	-	- 10.6	- 3.9	- 12.7
Subtotal cacao	-	- 36.1	-	- 59.9
Café en grano	+ 6.7	- 0.9	+ 5.6	- 14.5
Café elaborad.	- 0.1	+ 0.2	- 0.2	+ 2.4
Subtotal Café	-	- 0.7	-	- 12.1
TOTAL: Café, Cacao, Banano..		- 59.8	-	-150.6

FUENTE: Permisos de exportación Banco Central.
Proyecciones MAG.

4. Síntesis de pérdidas por producciones no obtenidas octubre 1982-diciembre 1983

Una visión de conjunto del valor de las pérdidas por producciones no obtenidas entre octubre de 1982, fecha de iniciación del período de lluvias, y diciembre de 1983, se presenta en el Cuadro N°- 5 de la - página siguiente, las cuales totalizan 11.475 millones de sucres, que se desglosan de la siguiente manera:

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CUADRO N° 4. "ANALISIS DEL COMPORTAMIENTO DE LAS EXPORTACIONES DE BANANO CAFE Y CACAO EN 1983"

	CACAO GRANO			CACAO ELABORADO			BANANO			CAFE GRANO			CAFE ELABORAD		
	Ene/Abr.	May/Dic.	T.Anual	Ene/Abr.	May/Dic.	T.Anual	Ene/Abr.	May/Dic.	T.Anual	Ene/Dic.	May/Dic.	T.Anual	Ene/Dic.	May/Dic.	T.Anu
1. Exportaciones en 1982															
- Cantidad; T.M.	18.397	24.061	42.458	14.002	33.844	47.846	465.000	796.000	1.261.000	22.801	51.095	73.896	1.8[illegible]	3.5[illegible]	5.373
- Valor; US miles	31.962	31.104	63.066	23.814	32.125	55.939	78.705	134.592	213.297	46.882	91.876	138.758	6.489	11.35[illegible]	17.873
2. Exportaciones en 1983		Valores Estimad.			Valores Estimad.			Valores Estimados			Valores Estimad.			Valores Estim.	
- Cantidad; T.M.	4.447	6.000	10.447	13.974	30.000	43.974	337.233	600.000	937.233	29.459	50.000	79.459	1.705	3.500	5.205
- Valor; US miles	6.471	9.375	15.846	13.249	30.000	43.249	55.687	99.000	154.687	46.022	78.200	124.222	6.656	13.660	20.316
3. Variación de las Exportaciones en 1983 en relación 1982															
- Cantidad; T.M.	-13.950	-18.061	-32.011	-28	-3.844	-3.872	-127.767	-196.000	-323.767	+ 6.658	-1.095	+ 5.563	- 144	- 24	- 168
- Valor; US miles	-25.491	-21.729	-47.220	-10.565	-2.125	-12.690	- 23.018	- 35.592	- 58.610	- 860	-13.676	-14.536	+ 167	+2.276	+2,443

Cuadro N°-5

PERDIDAS POR PRODUCCIONES NO OBTENIDAS OCTUBRE-1982 DICIEMBRE-1983

(en millones de sucres)

CULTIVOS	PERDIDAS NETAS OBSERVADAS			PERDIDAS ESTIMADAS		TOTAL
	OCTUBRE-DIC.-82 (1)	Primer Período 1983 (2)	SUBTOTAL	Segundo Período 1983 (2)	Para cultivos con comportamiento anual 1983 (2)	OCTUBRE-DICIEMBRE 1983
Arroz	478.0	1.099.0 a/	1.577.0	488.0 d/	--	2.065.0
Maíz Duro	--	1.031.0 b/	103.0	257.0 e/	--	360.0
Soja	241.5	--	241.5	--	622.0	863.5
Algodón	334.8	--	334.8	--	535.0	869.8
Caña de azúcar	230.4	--	230.4	--	33.0	263.4
Banano	96.6	1.550.0 c/	1.646.6	1.732.0 f/	--	3.378.6
Cacao	--	1.164.0 c/	1.164.0	2.167.0 f/	--	3.331.0
Café	--	--	--	--	344.0	344.0
TOTAL:	1.381.3	3.916.0	5.297.3	4.644.0	1.534.0	11.475.3
PORCIENTO DEL TOTAL:	12.0	34.1	46.1	40.5	13.4	100.0

(1) Valoradas a precios de diciembre 1982
(2) Valoradas a precios de mayo 1983

a/ Entre enero y mayo
b/ Entre enero y junio
c/ Entre enero y abril
d/ Entre junio y diciembre
e/ Entre julio y diciembre
f/ Entre mayo y diciembre

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PERIODOS	MILLONES DE SUCRES	DISTRIBUCION PORCENTUAL
Octubre -diciembre 1982	1.381.3	12.0
Primer período 1983	3.916.0	34.1
TOTAL PERDIDAS NETAS OBSERVADAS:	5.297.3	46.1
Segundo período 1983	4.644.0	40.5
Cultivos con comportamiento anual 1983.	1.534.0	13.4
TOTAL GENERAL:	11.475.3	100.0

Las cifras anteriores sólo comprenden las pérdidas por producciones no obtenidas, correspondientes a los principales cultivos del litoral. No comprende pérdidas en ganadería, infraestructura intrapredial ni otras pérdidas o daños que ha sufrido por diversos conceptos el sector agropecuario. La evaluación de estas pérdidas aún está en proceso.

5. Algunos efectos generales

Desde el punto de vista macroeconómico, las pérdidas en producción y en exportación, de los cultivos analizados necesariamente se traducen en afectaciones para el conjunto de la económia, las cuales se pueden resumir en lo siguiente:

a) Disminución de la producción bruta de banano, café y cacao, valorada a precios de productor, la cual podría caer en 1983, en no menos de 25-30 % respecto a un año normal.

b) Disminución de la producción bruta de arroz, maíz duro, soya, algodón y caña de azúcar, valorada a precios de productor, en una proporción de más o menos 30-35%.

c) La combinación de los dos efectos anteriores conjuntamente con los problemas detectados en la producción agrícola de la Sierra, provocarán una significativa contracción del PIB sectorial en 1983.

d) Un impacto directo en el valor de las exportaciones de banano, café y cacao, las que podrían verse reducidas en 1983 en unos 130 millones de dólares lo que reduciría las proyecciones del superavit de balanza comercial, incrementando, a su vez, el déficit en cuenta corriente.

e) En el campo de empleo, los efectos pueden estimarse en la perdida de 6,5 millones de jornadas lo que significa afectar a unos 25.000 trabajadores durante 1983.

f) La intensa caída de la producción y la consecuente contracción de la oferta nacional de los productos analizados están, por un lado, afectando los precios internos a nivel de productor, y coadyuvando, por otro, al desarrollo de tendencias especulativas. Para ejemplificar lo anteriormente expresado, basta con señalar el comportamiento de los precios de un producto de exportación y otro de consumo interno.

-Cacao: precio oficial al productor: 3.961 sucres por quintal, en circunstancia que el precio de mercado se está situando de hecho en los 6 mil sucres.

-Arroz: precio oficial máximo al consumidor fijado entre 9.06 y 9.61 sucres por libra: alcanzando sin embargo, en los mercados de 12 a 13 sucres por libra.

FERTILIZER, SEED, HERBICIDE, INSECTICIDE AND FUNGICIDE DEMAND
IN ECUADOR's COASTAL REGION FOR

RICE, MAIZE, AND SOYBEANS
1983-1984 Planting Season

CROP	Fertilizer Types (TM) Urea	Complete	Potash	Total	Seeds MT	Herbicides MT	Insecticides TM	Fungicides TM
1. Rice	22,160	-----	-----	22,160	-----	925	1,950	-----
2. Maize	16,852	15,320	-----	32,172	532	242	242	-----
3. Soybean	-----	7,296	-----	7,296	924	92	152	73
TOTAL	39,012	22,616	-----	61,628	1,456	1,259	2,344	73

IMPORTED INPUTS ELIGIBLE FOR A.I.D. FINANCING

Code	Input	EPA Registration	Rice	Hard Corn	Soybeans
126-0120/ 126-3660	Certified Seeds		X	X	X
480-2500/ 480-3000	Fertilizers	Urea/10-30-10/ Others for re-formulation	X	X	X
480/9500		Other formulas completes			
Para todos los pesticides 404-0510/408-8500					
	Fungicides				
	Mancozeb	General	X	-	X
	Maneb	General	-	X	X
	Herbicides				
	Alachlor	General	-	-	X
	Atrazine	General		X	-
	Dalapon	General	X	-	-
	Propanil	General	X	-	-
	2,4 D	General	X	-	-
	Insecticides				
	Carbahyl	General	X	X	X
	Chlorpyrifos	General	X	X	-
	Diazinon	General	-	X	X
	Dimethoate	General	-	-	X
	Malathion	General	X	-	-

AGRICULTURAL REHABILITATION

PROGRAM AID-GOE

Crop	Number of Producers	Average Has.	Total Has.	Value Ha.	Total Value (millons) (sucres)	% of total of country
Rice	1,500	15	22,500	25,000	562.0	17.1%
Hard Corn	900	12	9,500	16,000	152.0	10.8%
Soybeans	200	50	10,000	20,000	200.0	47.4%
TOTALS	2,600		42,000		914.0	

A.I.D.	S/.300.0 millons	32.8%	(US$ 6.0 millons)
BNF-BCE	S/.614.0 millons	67.2%	(US$12.3 millons)
TOTAL	S/.914.0 millons	100.0%	(US$18.3 millons)

PRODUCERS	No.	Average Has.	Total Has.	FUNDS (US$ millons) GOE	AID	Total
Small	2,000	14	28,000	7.4	4.2	11.6
Medium	600	23	14,000	4.9	1.8	6.7
TOTALS	2,600		42,000	12.3	6.0	18.3

LOAN PROGRAMING

1984 - AID/BNF

RICE

BNF	Guayaquil	6,000 Has.
BNF	Daule	6,000 Has.
BNF	Babahoyo	10,500 Has.
TOTAL		22,500 Has.

HARD CORN

BNF	Portoviejo	5,000 Has.
BNF	El Empalme	2,000 Has.
BNF	Balzar	2,500 Has.
TOTAL		9,500 Has.

SOYBEANS

BNF	Quevedo	4,000 Has.
BNF	Vinces	4,000 Has.
BNF	Ventanas	2,000 Has.
TOTAL		10,000 Has.

COSTS OF PRODUCTION

CROP: Rice

YIELD: 4,000 kg/Ha.

SEASON: Winter

ITEM	QUANTITY	UNIT	UNIT COST S/.	TOTAL COST S/.
Seeding	13	Man/day	250.00	3,250
Weeding	11	"	250.00	2,750
Fertilizing	2	"	250.00	500
Sanitary Control	7	"	250.00	1,750
Others	4	"	200.00	1,000
Subtotal	37			9,250
INPUTS				
Fertilizers				
Urea	250.0	kg.	15.0	3,750
Seeds	54.5	kg.	20.0	1,090
Nematicides	4.86	kg.	350.0	1,700
Herbicides	4.40	kg.	550.0	2,420
Subtotal				8,960
MACHINERY AND EQUIPMENT OPERATION				
Land preparation	6	hours	500	3,000
Sanitary control	6	"	50	300
Irrigation pump	6	"	80	480
Harvester (combine)	8	"	600	4,800
Subtotal				8,580
Total				26,070
Contingencies (10%)				2,630
TOTAL				28,700

COSTS OF PRODUCTION

CROP: Hard Corn YIELD: 2,500 kg/Ha.

SEASON: Winter and Summer

ITEM	QUANTITY	UNIT	UNIT COST S/.	TOTAL COST S/.
LABOR				
Seeding	6	Man/day	250.00	1,500
Weeding	2	"	250.00	500
Fertilizing	2	"	250.00	500
Sanitary Control	6	"	250.00	1,500
Others	3	"	250.00	750
Subtotal	27			6,750
INPUTS				
Seeds	16	kg.	25	400
Fertilizers				
1) Urea	135	kg.	20	2,700
2) Other	1	kg.	160	160
Insecticides	2	kg.	700	1,400
Herbicides	4.5	kg.	550	2,475
Subtotal				7,135
MACHINERY AND EQUIPMENT OPERATION				
Land preparation	5	hours	500	2,500
Sanitary control equip.	6	hours	50	300
Sheller	5	hours	250	1,250
Subtotal				4,050
Total				17,935
Contingencies (10%)				1,732
TOTAL				19,700

COSTS OF PRODUCTION

CROP: Soybeans YIELD: 1,600 kg/Ha.

SEASON: Summer

ITEM	QUANTITY	UNIT	UNIT COST S/.	TOTAL COST S/.
LABOR				
Irrigation	9	Man/day	250.00	2,250
Manual Weeding	8	"	250.00	2,000
Subtotal	17			4,250
INPUTS				
Fertilizers				
Seeds	68	kg.	30	2,040
Fertilizers (10-30-10)	135	kg.	18	2,430
Insecticides	2.7	kg.	800	2,776
Herbicides	4.7	kg.	550	2,585
Inoculants	0.5	kg.	350	175
Subtotal				9,606
MACHINERY AND EQUIPMENT OPERATION				
Land preparation	6	hours	500	3,000
Seeding and Fertilizing	2	"	500	1,000
Herbicide application	0.5	"	500	250
Harvest (combine)	1.5	"	1,500	2,250
Subtotal				6,500
Total				20,356
Contingencies (10%)				2,344
TOTAL				22,700

Value of Crop Losses
estimated in Ecuador as of June 1, 1983

Crop	Actual Losses 1982 1/	Actual Losses 1983 2/	Actual Losses Subtotal	Estimated Losses May-Dec. 1983 3/	Total
	Million Dollars				
Rice	10.6	24.4	35.0	10.8	45.8
Corn		22.9	22.9	5.7	28.6
Soybeans	5.4		5.4	13.8	19.2
Cotton	7.4		7.4	11.9	19.3
Bananas	2.1	34.4	36.5	38.5	75.0
Cocoa		25.9	25.9	48.2	74.1
Coffee				7.6	7.6
TOTAL	25.5	107.6	133.1	136.5	269.6

NOTE: Offical rate of exchange is 45 sucres per dollar.
1/ October to December 1982 with December 1982 prices.
2/ January to May 1983 with May 1983 prices.
3/ May 1983 prices.

SOURCE: MAG - Ministry of Agriculture

A Comparison of 1981/82 Imports of
Rice, Corn, Soybeans and Cotton
with projected 1982/83 and 1983/84 Import Levels

	1981/82	1982/83	1983/84
Rice			
a) Quantity (T.M.)		15,000	80,000
b) Value (US$)		6,000,000	32,000,000
Feed Grains			
a) Quantity (T.M.)		25,000	60,000
b) Value (US$)		2,750,000	8,100,000
Soybeans			
a) Quantity	17,000	24,000	70,000
b) Value (US$)	4,080,000	5,760,000	28,000,000
Cotton			
a) Quantity (T.M.)			11,000
b) Value (US$)			18,700,000
TOTAL			
a) Quantity (T.M.)	17,000	64,000	221,000
b) Value (US$)	4,080,000	14,510,000	86,800,000

A Comparison of Area Fertilized to Area Planted for Rice, Hard Corn and Soybeans in the Coastal Region

Crop	Area Planted (Ha.)	Area Fertilized (Ha.)	% Area Fertilized
Rice	130,000	97,500	75
Hard Corn	166,000	76.600	46
Soybeans	32,000	30,400	95

A Comparison of Expected Yields Associated with Various Technological Packages for Rice, Hard Corn, and Soybeans

	Fertilizer Rate Associated with Technology (Kg/Ha)	Expected Yield (Kg/Ha)
Rice		
High Technology	400	4,000
Intermediate Tech.	300	3,200
Low Technology	100	1,500
Minimum Technology	45	900
Hard Corn		
High Technology	350	2,800
Intermediate Technology	250	2,100
Low Technology	150	1,100
Minimum Technology	45	700
Soybeans 1/		
High Technology	240	1,700
Minimum Technology	90	900

1/ In general in the coastal area farmer follow the recommended or high technology package so that is not a wide variation in farm level fertilizer use.

Source: MAG - Departamento de Estadísticas e Informática (production)
INIAP - Tecnologías recomendadas para cada cultivo (boletins)

AGRICULTURAL REHABILITATION PROJECT

COST OF PRODUCTION/HA.
(US$)*

Crops / Inputs	Rice HT	Rice MT	Rice LT	Hard Corn HT	Hard Corn MT	Hard Corn LT	Soybeans
1. Hand Labor							
No. Working days	15	35	61	6	16	37	12
US$	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Total US$	67.50	157	274	27	72	167	54
2. Inputs Seeds I 1/							
Quantity (Kg)	90	45	45	17	16	13	54
Precio US$							
Total	45	22.5	15	58	10	7	29
3. Fertilizers							
Quantity (Kgs)	400	300	100	350	250	150	240
Price US$							
Total	100	83	27	102	105	47	81
4. Chemical Inputs							
Quantity lts/kgs							
Price US$							
Total	174	121	14	53	53	10	91
5. Mechanized services US$	336	216		156	100		129
6. Other costs US$	221	194	72	128	100	8	17
TOTAL	954	794	412	524	440	236	400

HT = High Technology
MT = Intermediate Technology
LT = Low Technology

Crops Inputs	Rice HT	Rice MT	Rice LT	Hard Corn HT	Hard Corn MT	Hard Corn LT	Soybeans
Yield/Ha. (TM)	4.0	3.2	1.5	2.8	2.1	1.1	1.7
Value US$ (TM)	360	360	360	240	240	240	500
Value production 2/	1,440	1,152	540	672	480	264	850
Profit US$/Ha.	466	358	128	148	64	28	350
Profit on Investment (%)	48.8	45.1	31.1	28.2	14.6	11.9	87.5

*Exchange rate 1US$ = 50 sucres
I = Imported
1/ = Only seeds for corn and soybeans
2/ = Product's value at producer level
Rice S/.900/qq
Corn S/.600/qq
Soybeans S/.1,250/qq

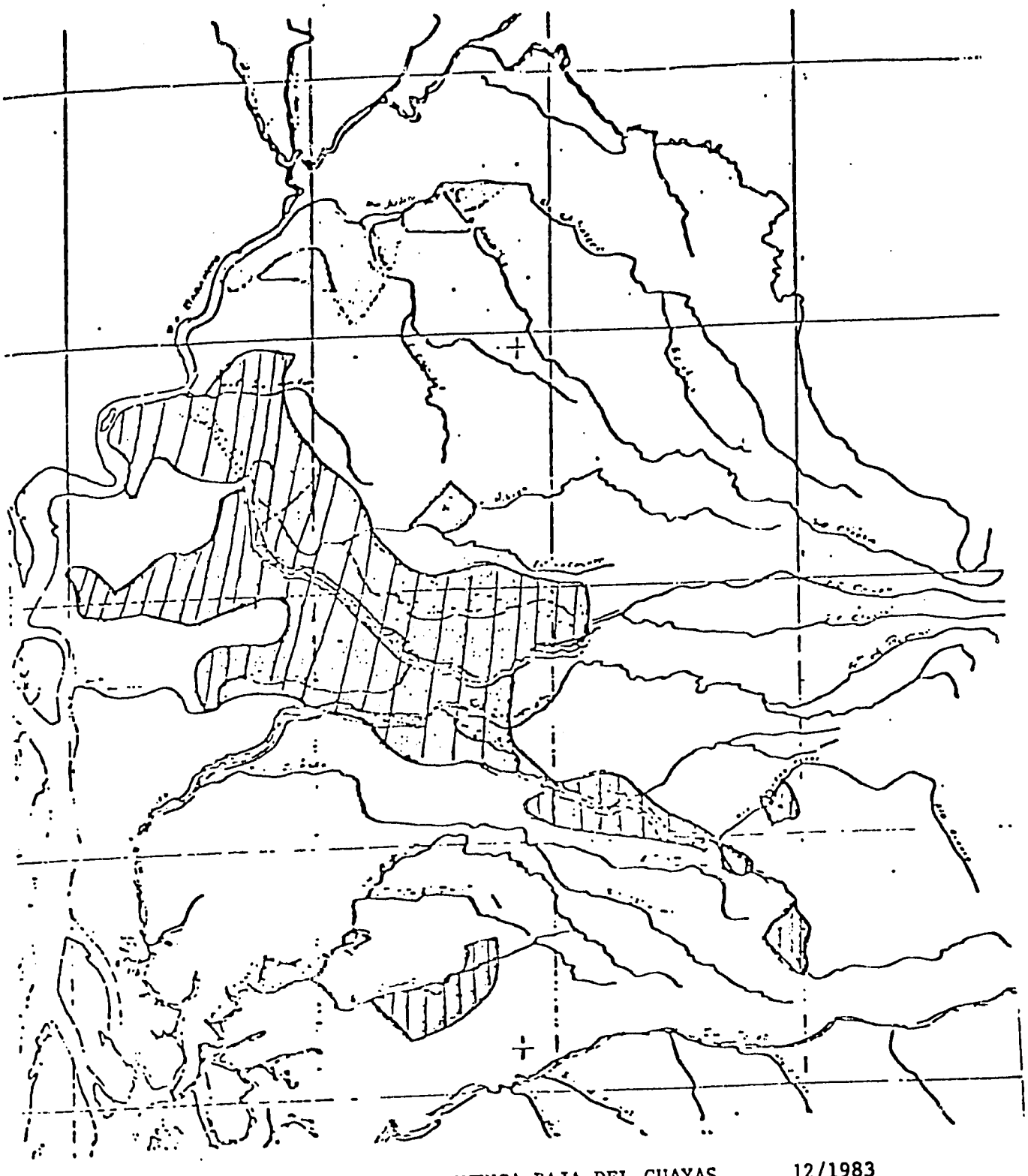
QUANTITY OF IMPORTED INPUTS REQUIRED FOR THE AGRICULTURAL REHABILITATION PROJECT
(000 tons)

	Rice	Hard Corn	Soybeans	TOTAL
Has.	22,500	9,500	10,000	42,000
1. Fertilizers				
UREA	10,114	2,090	1,600	13,804
10-30-10	--	1,900	2,400	4,900
(0-0-60)	--	--	--	--
2. Seeds				
1	--	66	400	466
3. Insecticides	450	30	50	585
4. Fungicides	--	--	24	48
5. Herbicides	225	30	40	540

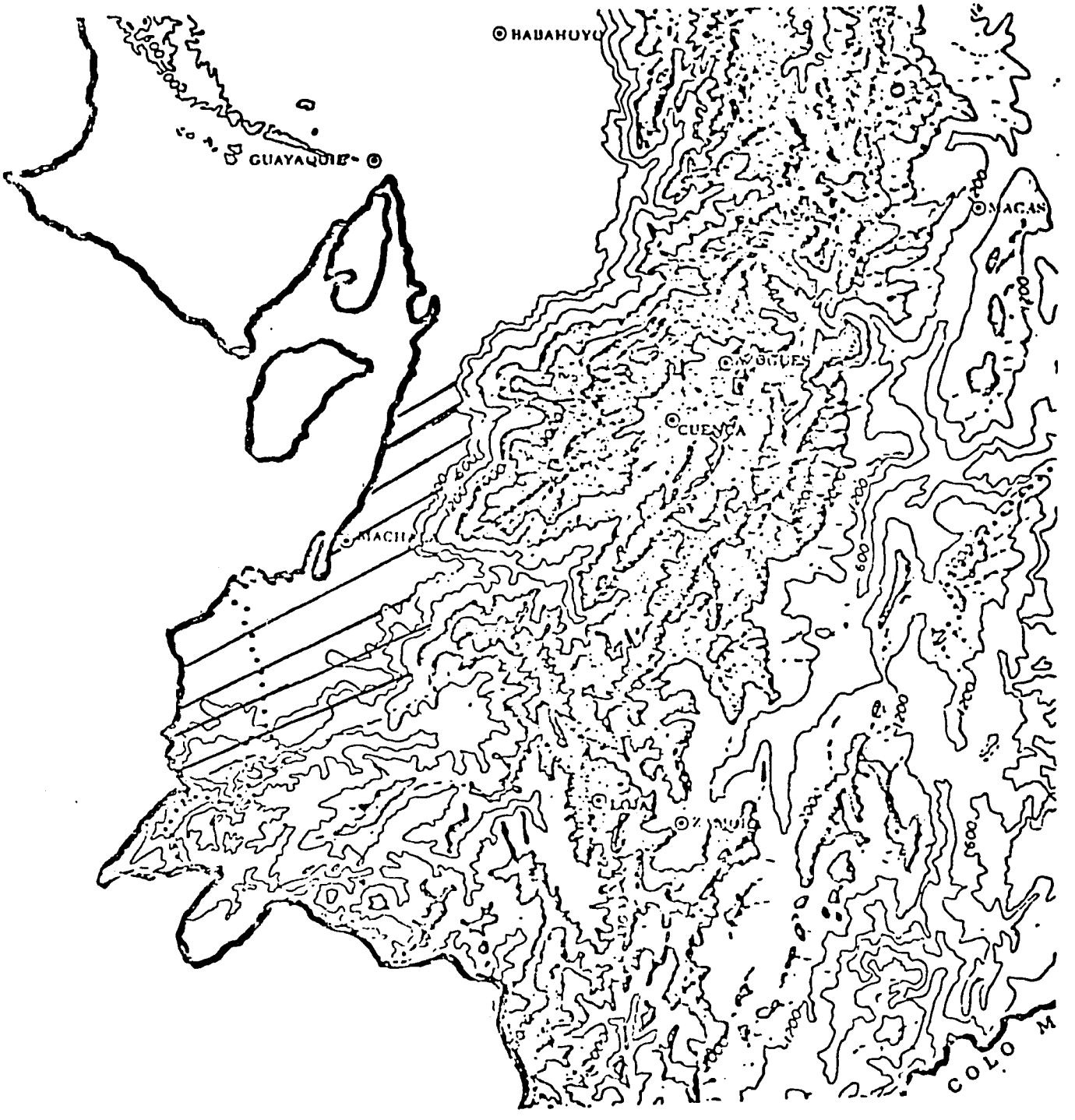
SUMMARY	TOTAL PRODUCT (TM)	UNIT COST (TM)	TOTAL COST ($ MILLION)
UREA	13,804	290	4.00
10-30-10	4,900	363	1.33
Potash	1,700	150	0.26
Seeds	466	180	0.14
Insecticides	585	300	0.02
Fungicides	48	450	0.02
Herbicides	540	350	0.19
			6.00

Sources: FERTISA - Fertilizers
EMSEMILLAS - Seeds
FITOSAN - Commercial Firm
Rice National Program - MAG
Cereals' Program - MAG
Oil Seeds' Program - MAG

AGRICULTURAL INFRASTRUCTURE



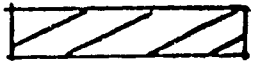
FLOODING IN THE CUENCA BAJA DEL GUAYAS 12/1983



COASTAL AREA OF ECUADOR

PROVINCE OF DE EL ORO AFFECTED

BY FLOODING



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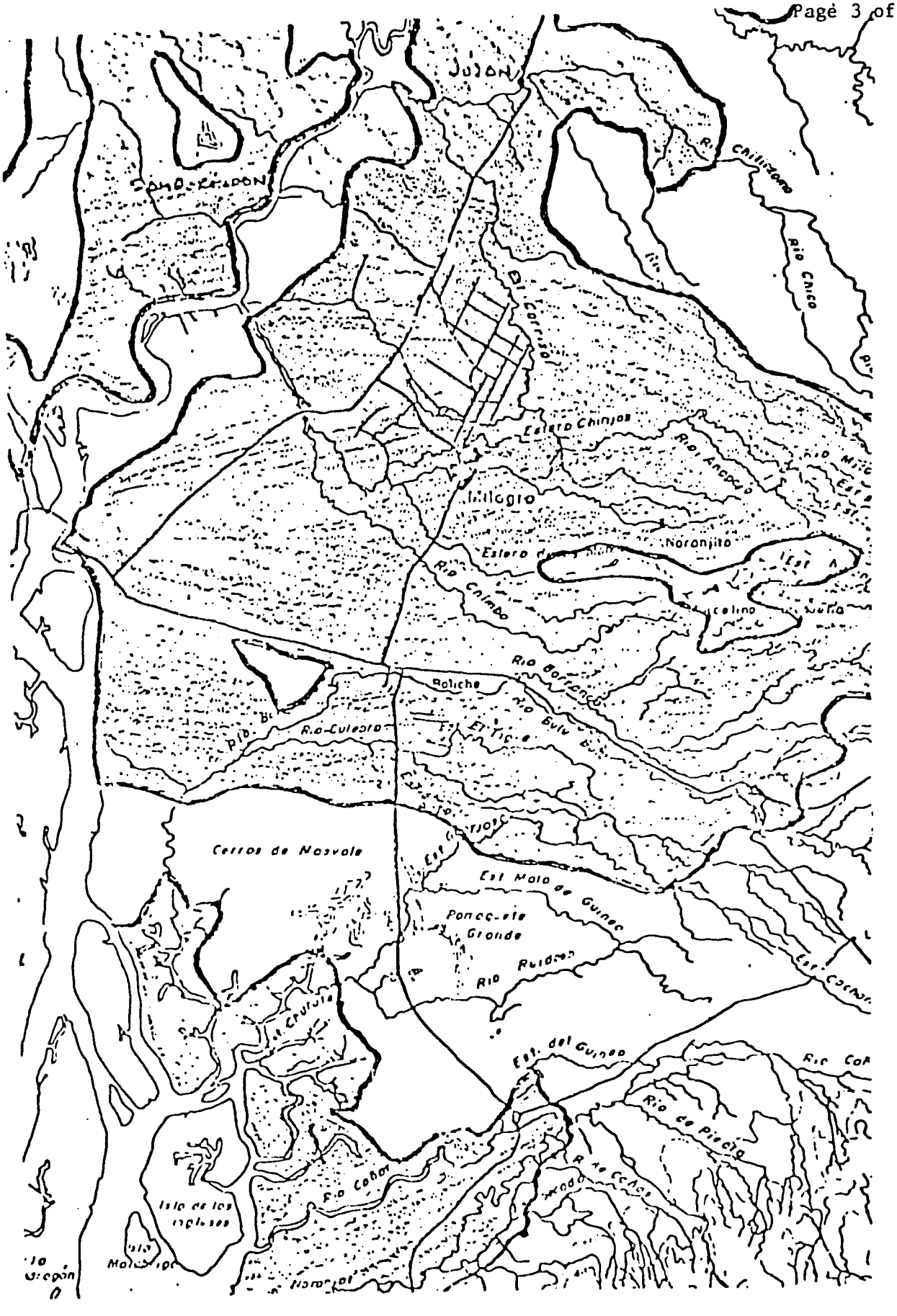
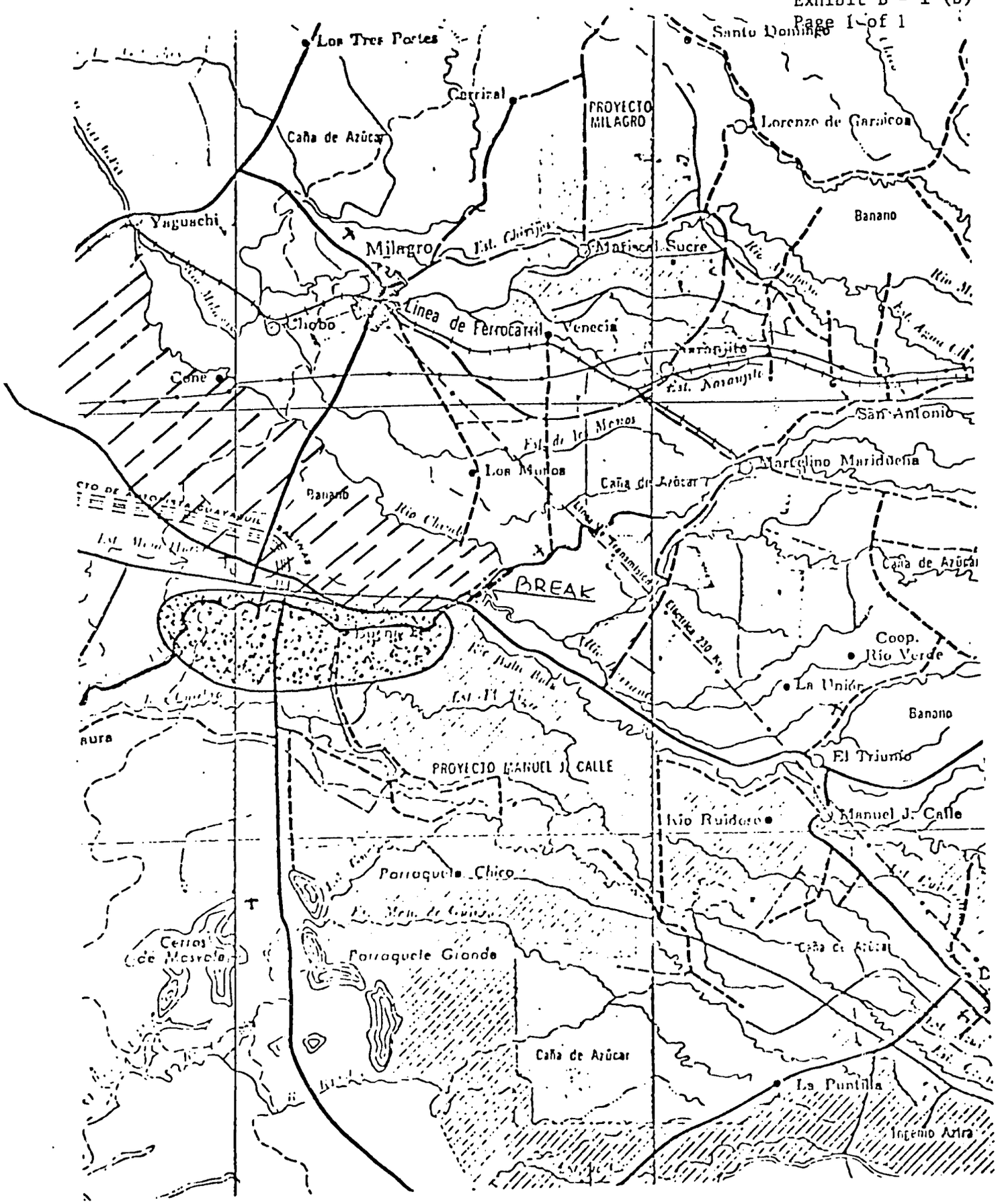


FLOODING IN THE CUENCA BAJA DEL GUAYAS 1/1983



CHANGE IN COURSE OF THE RIO CHIMBO TO THE RIO BULU BULU

Area without water as a result of change in river course--

Area in danger of prolonged flooding - - - (increase in stage)--

New river course--

AGRICULTURAL INFRASTRUCTURE REPAIRS

SISTEMA DE RIEGO: MANUEL J. CALLE (Provincia Cañar-Guayas)

DENOMINACION OBRA	UNIDAD	CANTIDAD	PRECIO UNT. SUCRES	COSTO TOTAL SUCRES
CANAL BULU-BULU HUAQUILLAS				
- Reparación revestimiento del canal	M3	76	2.800	212.800
CANAL VAINILLO				
- Reparación paredes (H.S.)	M3	5	2.800	14.000
- Reconstrucción, desfogue	M3	210	2.885	605.850
NUEVA DERIVACION D-1				
- Reparación revestimiento	M3	15	2.800	42.000
ESTERO RUIDOSO				
- Reparación caminos y relleno	M3	400	200	80.000
- Reconstrucción muros (H.S.)	M3	18	2.885	51.930
ESTERO CULEBRAS				
- Reparación caminos y relleno	M3	900	200	180.000
CANAL DERIVACION DERECHA RANCHO NEGRO				
- Reparación tubería y muros	ML	30	4.000	120.000
CANAL RANCHO GRANDE				
- Reconstrucción muro (H.S.)	M3	15	2.885	43.275
DERIVACION 3				
- Reparación sifón	Ml	30	10.000	300.000
- Reparación estructuras de medición	Ml	32	6.000	142.000
- Reparación pantallas de protección (H.S.)	Ml	24	3.800	91.200
- Reparación bocatoma	Ml	1	-	300.000
- Reparación caminos y lastrado	Km.	64	132.000	8'448.000
DRENAJES				
- Reparación drenajes principales y secundarios	Km.	82	30.000	2'460.000
TOTAL				13'091.055

DENOMINACION OBRA	UNIDAD	CANTIDAD	PRECIO UNT. SUCRES	COSTO TOTAL SUCRES
SISTEMA DE RIEGO "MILAGRO"				
- Reparación bocatoma	U.	1	-	2'000.000
- Reparación canales principal y de distribución	Km.	116	30.000	3'480.000
- Reparación caminos	Km.	40	132.000	5'280.000
TOTAL				10'760.000
SISTEMA DE RIEGO "CHILINTOMO"				
- Reparación bocatoma	U.	1	-	750.000
- Reparación canal principal y de distribución	Km.	34	30.000	1'020.000
- Reparación Red drenaje	Km.	39	50.000	1'950.000
TOTAL				3'720.000
SISTEMA DE RIEGO: TABLON DE PORTOVELO (Prov. del Oro)				
- Reparación obra de toma	m^3	17.85	2.800	500.000
- Construcción alcantarilla Puente	U.	1	120.000	120.000
- Arreglo túneles 6-8	M3	-	-	500.000
- Reconformación plataforma	M3	70	4.285	300.000
- Limpieza derrumbes desasolve canal	M3	90	3.100	279.000
TOTAL				1'699.000
Reparación de Obras de Pequeña Irrigación:				10'729.945

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FLOOD CONTROL PROGRAM IN MANUEL DE J. CALLE AND MILAGRO

RIOS	TRABAJOS	UBICACION	PRECIO UNIT. S/.	LONG m.	VOLUMEN CORTE m3	VOLUMEN RELLENO m3	COSTO TOTAL S/.
Bulubulu	Muro gaviones 4 lugares	Sector Cochancay parroquia Manuel J. Calle	1.200	2.000		20.000	24.000.000
Bulubulu	Limpieza ensanchamiento y rectificación varios sectores	Sector Cochancay parroquia Manuel J. Calle	50	10.000	250.000		12.500.000
Bulubulu	Construcción muros, préstamo lateral	Sector Cochancay parroquia Manuel J. Calle	72	8.000		47.220	3.400.000
Chimbo	Muros de gaviones	Puente Chimbo carretero Milagro Km. 26	1.500	100		140	2.100.000
Chimbo	Construcción y reforzamiento muros, rellenos, préstamos laterales	Lindero de San Carlos hasta Yaguachi, varios sectores	72	5.000		200.000	14.400.000
Milagro	Construcción muros, préstamo lateral	Desde ciudad Milagro hasta Coop. Cóndor, varios sectores	72	5.000		50.000	3.600.000

RIOS	TRABAJOS	UBICACION	PRECIO UNIT. S/.	LONG m.	VOLUMEN CORTE m3	VOLUMEN RELLENO m3	COSTO TOTAL S/.
Bulubulu Taura	Construcción muros, material transportado	Sector parroquia M. J. Calle hasta Km.3, aguas abajo de Taura	400	4.500		90.000	36.000.000
Bulubulu Taura	Limpieza, ensanchamiento y rectificación.	Parr. M. J. Calle aguas abajo	50	5.000	130.000		6.500.000
Chimbo Yaguachi	Construcción y reforzamiento muros relleno transportado	Linderso San Carlos hasta Yaguachi, varios sectores	400	400		60.000	24.000.000
Chimbo	Limpieza, ensanchamiento y rectificación cauce varios sectores	Linderos San Carlos a Yaguachi	50	2.500		100.000	5.000.000
Cañar	Limpieza, encauzamiento y rectificación	Desde El Patul hasta Villanueva varios sectores	50	2.500	100.000		5.000.000

RIOS	TRABAJOS	UBICACION	PRECIO UNIT. S/.	LONG m.	VOLUMEN CORTE m3	VOLUMEN RELLENO m3	COSTO TOTAL S/.
Cañar	Construcción y reforzamiento muros, préstamo lateral	Desde el Patul hasta Villanueva varios sectores	72	7.500		75.000	5.400.000
Cañar	Construcción y reforzamiento muros, material transportado	Desde el Patul hasta Villanueva varios sectores	200	2.535		25.000	5.070.000
Tenguel	Limpieza ensanchamiento y rectificación	Desde la Esperanza hasta desembocadura varios sectores	50	5.000	100.000		5.000.000
Balao	Limpieza ensanchamiento y rectificación	4 Km., aguas arriba carretera a Machala hasta desembocadura varios sectores	50	10.000	150.000		7.500.000
Balao	Construcción muros, préstamo lateral, sitios críticos	Desde puente carretero, aguas abajo pobl.	72	2.500		25.000	1.800.000

RIOS	TRABAJOS	UBICACION	PRECIO UNIT. S/.	LONG m.	VOLUMEN CORTE m3	VOLUMEN RELLENO m3	COSTO TOTAL S/.
La Matilde	Limpieza, ensanchamiento y rectificación	Salitre	50	5.000		50.000	2.500.000
Cristal Montalvo	Muro gaviones	Montalvo	1.100	400		4.000	4.400.000
Drenaje Guabo-Naranjos	Desbroce Excavación, cajón desalojo material, terraplen, compact. lastrado transp. material petreo, obras de arte.	Guabo-Machala	1.180	18.500			21.830.000

PRECIOS UNITARIOS EN SUCRES PARA REVESTIMIENTO DE CANALES Y TUNELES

RUBRO. Nº	CONCEPTO	UNID.	DE CANALES		DE TUNELES	
			Valor de mano de - obra.	Valor total con material equipo y cemento.	Valor de mano de-obra.	Valor total con material equipo y cem
200	H.C. 126 kg. cemento/m3 40% de piedra	m3	616	2.180	882	2.633
201	H.S. 350 Kg. cemento/m3 Clase A	m3	997	4.184	1.153	4.514
202	H.S. 300 Kg cemento /m3 Clase B	m3	997	3.866	1.153	4.196
203	H.S. 260 kg cemento /m3 Clase C	m3	882	3.455	1.018	3.757
204	H.S. 210 kg cemento /m3 Clase D	m3	882	3.144	1.018	3.446

NOTA.- El H.A. se calculará como H.S. y se sumará el costo del hierro por m3 más:
S/. 11,00 c/kg. por concepto de cortada, doblada y armada de hierro a cielo abierto
S/. 12,00 c/kg. por concepto de cortada, doblada y armada de hierro para túneles.

Para el H.A. a cielo abierto o en túnel su pago deberá desglosarse en la planilla de la siguiente forma:

Rubro H.S.
Rubro de cortada, doblada y armada
Rubro de Provisión de hierro

NOTA.- Para diferenciar el rubro de revestimiento en canales con el rubro de revestimiento en túneles se complementará el número con la Letra C para canales y con la Letra T para túneles.
EJEMPLO: 200 C - HC 126 kg cemento/m3 40% de Piedra = Canales.
200 T - HC 126 kg cemento/m3 40% de piedra = Túneles.

LISTA DE PRECIOS REFERENCIALES DE MATERIALES EN LOS SITIOS DE ADQUISICION

Para el cálculo de los precios unitarios se ha considerado los siguientes valores referenciales:

RUBRO Nº	MATERIAL	VALOR S/.	UNIDAD
1	Piedra Bola	120	m3
2	Ripio Triturado	207	m3
3	Ripio Tamizado	148	m3
4	Arena de mina	132	m3
5	Hierro estructural	19.69	kg.
6	Dinamita	70	kg.
7	Fulminantes	15	U
8	Mecha	12	m
9	Tablón (0,3 x 0,04 x 2,40 m)	141	U
10	Duela preparada (0,12 x 2,40 m)	47	U
11	Tabla de encofrado (0,30 x 2,40 m)	47	U
12	Duela de eucalipto (0,15 x 2.40 m)	49	U
13	Alafajías (0,05 x 0,05 x 2,40 m)	31	U
14	Pingos de eucalipto (0.10-0,15 m)	16	m
15	Clavos	38.72	kg
16	Alambre de amarre Nº 18	51.48	kg
17	Focos de 100 W.	31	U
18	Cemento	4.80	kg.
19	Detonadores NONEL G.T.	55	U

PRECIOS UNITARIOS DE TRANSPORTE

L = Longitud media de transporte.

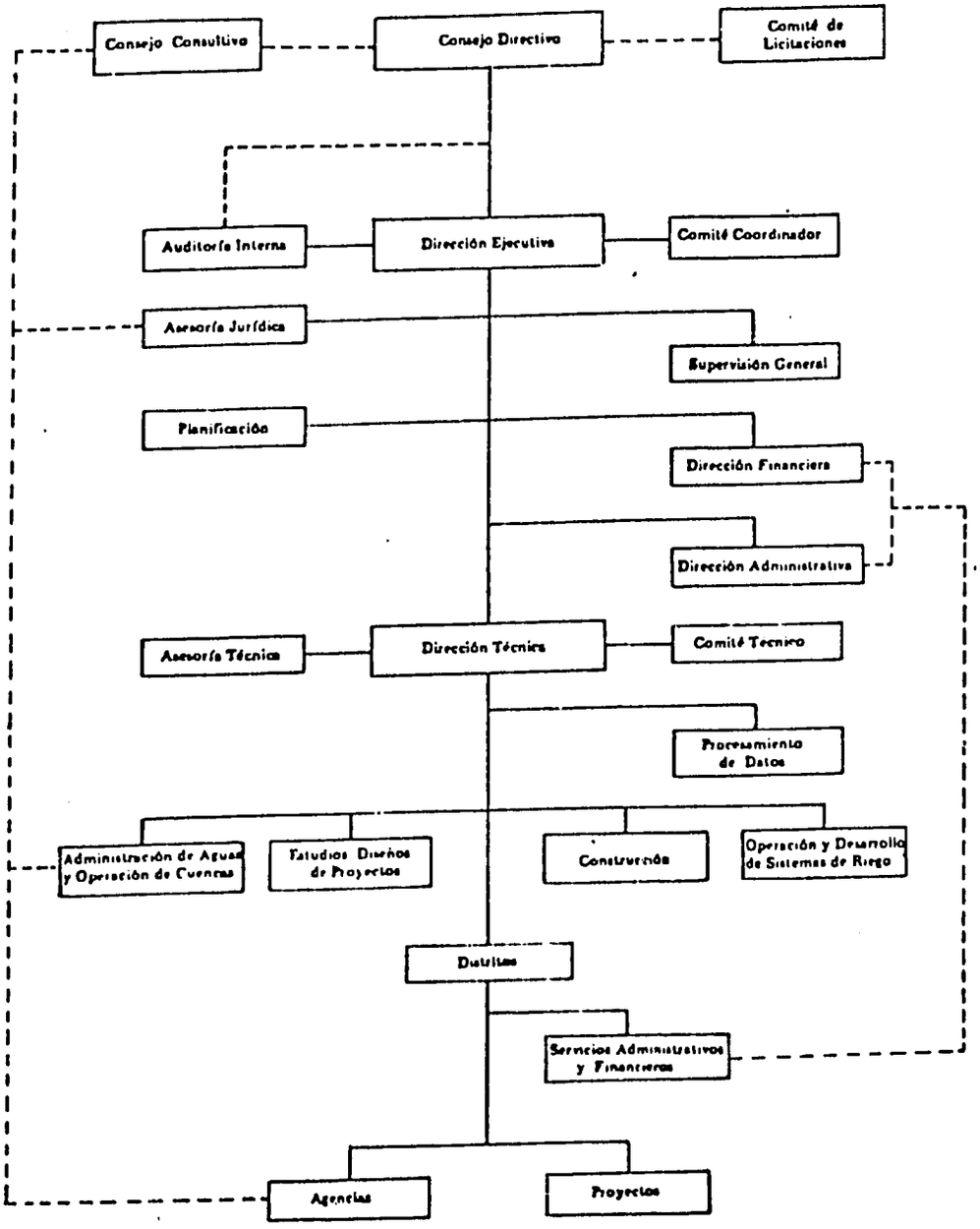
RUBRO Nº	CONCEPTO	UNID	COSTO (S/ .)
422	A cielo abierto mater. de excav. mayor a 10 m, incluso cargada en carretilla.	m3/ml	1.68
423	De material en túnel mayor de 1,50 m de ancho incluído cargada en dumper.	m3	C=19.14 + 0.237237 L
424	De hormigón medido en obra en túneles mayores a 1,50 m de ancho	m3	C=(19.14 + 0.237237 L) 1.5
425	De agregado en túneles mayores de 1.5 de ancho	m3	C=19.14 + 0.237237 L
426	De cemento y hierro bodega sitio de trabajo (tonelada métrica 1000 kg.)	t/km	10
427	De materiales : mina sitio de trabajo o entrada túneles de 0 a 10 Km incluído cargada.	m3	100
428	De materiales mayores a 10 km, incluído cargada	m3/km	10
429	De agua incluído la cargada con bomba de 0 a 10 km.	m3	100
430	De material de excavación o relleno entre distancia libre 10 km (incluído cargada)	m3	100
431	De agua en acémila incluído cargada.	m3/ml	1.12
432	En túnel en carreta	m3	1.25 L
433	De tubería de asbesto cemento (ver página 20 tabla de valores K y R)	Total	C=.7200 (.-R+25) 1,7375 K + 0,0695 KTN
434	En túnel de hormigón con carreta	m3	1.88 L

Los precios constantes de transporte son para caminos de tercer orden, vecinales, plataformas y guardarrayas, en situación de trabajo normal.
Para transporte en sitios de difícil acceso se analizará para cada caso, previo informe.

ECUADOREAN WATER RESOURCES INSTITUTE (INERHI)

(INTERNAL STRUCTURE)

ORGANIGRAMA



JUNTA NACIONAL DE LA VIVIENDA
APARTADO: 3244-CABLES TELEX: 2399-"BEV-ED"
QUITO - ECUADOR

Ubicación de la Vivienda:

Provincia _____ Cantón _____ Parroquia _____ Sitio _____

Objeto del préstamo:

I.- RECONSTRUCCION DE VIVIENDA:

a) Para adquisición de vivienda de madera : - Tipo a m^2 s/.
- Tipo b m^2 s/.
- Tipo c m^2 s/.

b) Préstamos en materiales de construcción (De bodegas del BEV)

c) Préstamos en efectivo.

II.- MEJORAMIENTO HABITACIONAL:

a) Materiales de construcción
b) En efectivo

Rubros a Mejorarse:

Techos
Instalaciones sanitarias
Paredes
Pisos
Otros

Datos del Garante:

Garante No. 1 : NOMBRE:

Edad _____ Estado Civil _____ Profesión u ocupación _____

No. de Céd. Id. _____ Ingresos percibidos _____

Lugar de Trabajo: _____ Empresa u otro sitio _____ Prov. _____ Cantón

JUNTA NACIONAL DE LA VIVIENDA
APARTADO: 3244-CABLES TELEX: 2399-"BEV-ED"
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Lugar de Trabajo: _____ Empresa u otro sitio _____ Prov. _____ Cantón _____

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APARTADO: 3244-CABLES TELEX: 2399-"BEV-ED"
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Ubicación de la Vivienda:

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I.- RECONSTRUCCION DE VIVIENDA:

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Techos
Instalaciones sanitarias
Paredes
Pisos
Otros

Datos del Garante:

Garante No. 1 : NOMBRE:

Edad _____ Estado Civil _____ Profesión u ocupación _____

No. de Céd. Id. _____ Ingresos percibidos _____

Lugar de Trabajo: _____ Empresa u otro sitio _____ Prov. _____ Cantón _____

JUNTA NACIONAL DE LA VIVIENDA
APARTADO: 3744-CABLES TELEX: 2399-"BEV-ED"
QUITO - ECUADOR

Ubicación de la Vivienda:

Provincia _____ Cantón _____ Parroquia _____ Sitio _____

Objeto del préstamo:

I.- RECONSTRUCCION DE VIVIENDA:

a) Para adquisición de vivienda de madera : - Tipo a m^2 s/.
- Tipo b m^2 s/.
- Tipo c m^2 s/.

b) Préstamos en materiales de construcción (De bodegas del BEV)

c) Préstamos en efectivo.

II.- MEJORAMIENTO HABITACIONAL:

a) Materiales de construcción
b) En efectivo

Rubros a Mejorarse:

Techos
Instalaciones sanitarias
Paredes
Pisos
Otros

Datos del Garante:

Garante No. 1 : NOMBRE:

Edad _____ Estado Civil _____ Profesión u ocupación _____

No. de Céd. Id. _____ Ingresos percibidos _____

Lugar de Trabajo: _____ Empresa u otro sitio _____ Prov. _____ Cantón _____

JUNTA NACIONAL DE LA VIVIENDA
APARTADO: 3244-CABLES TELEX: 2399-"BEV-ED"
QUITO - ECUADOR

Ubicación de la Vivienda:

Provincia _____ Cantón _____ Parroquia _____ Sitio _____

Objeto del préstamo:

I.- RECONSTRUCCION DE VIVIENDA:

a) Para adquisición de vivienda de madera : - Tipo a m^2 s/.
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Techos
Instalaciones sanitarias
Paredes
Pisos
Otros

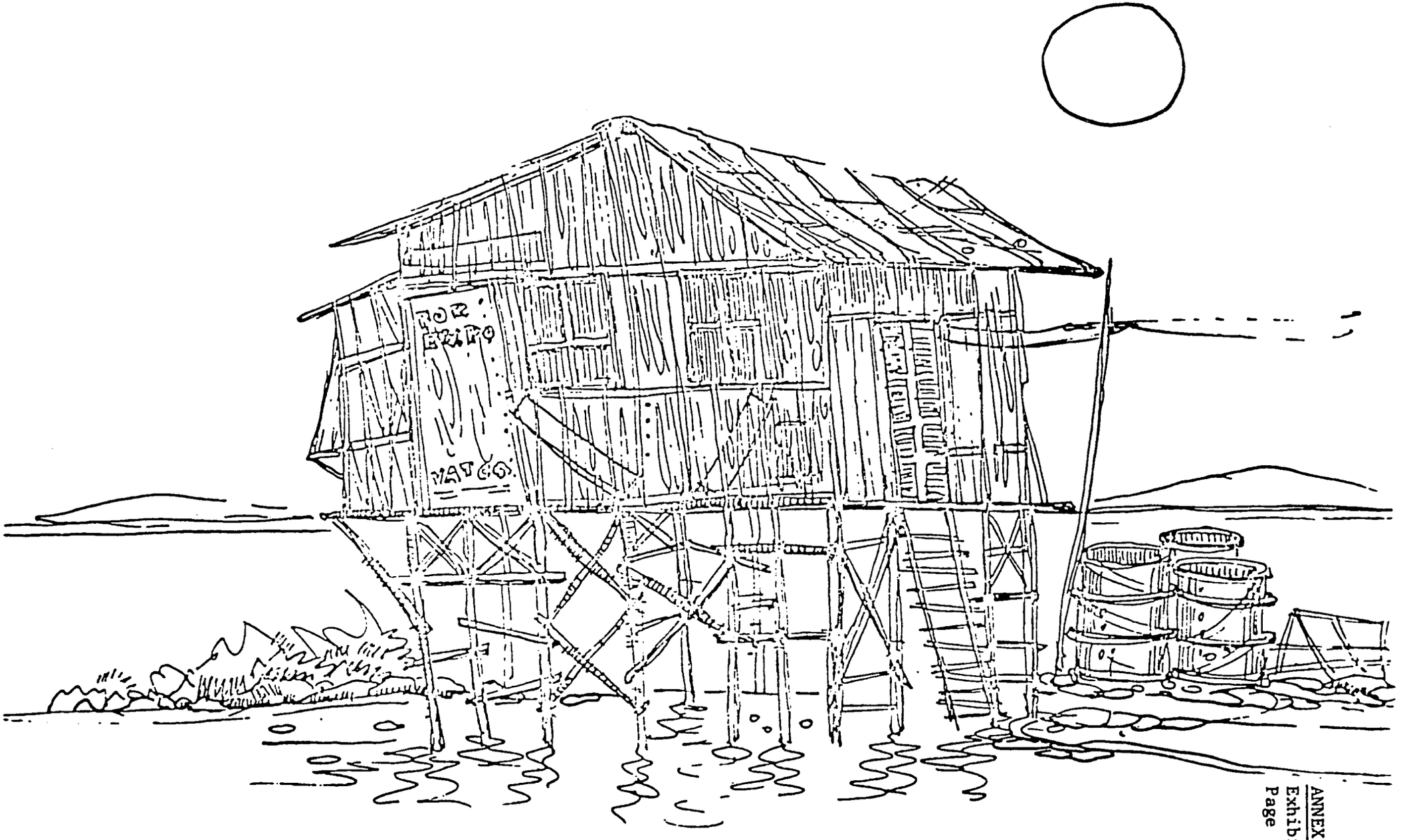
Datos del Garante:

Garante No. 1 : NOMBRE:

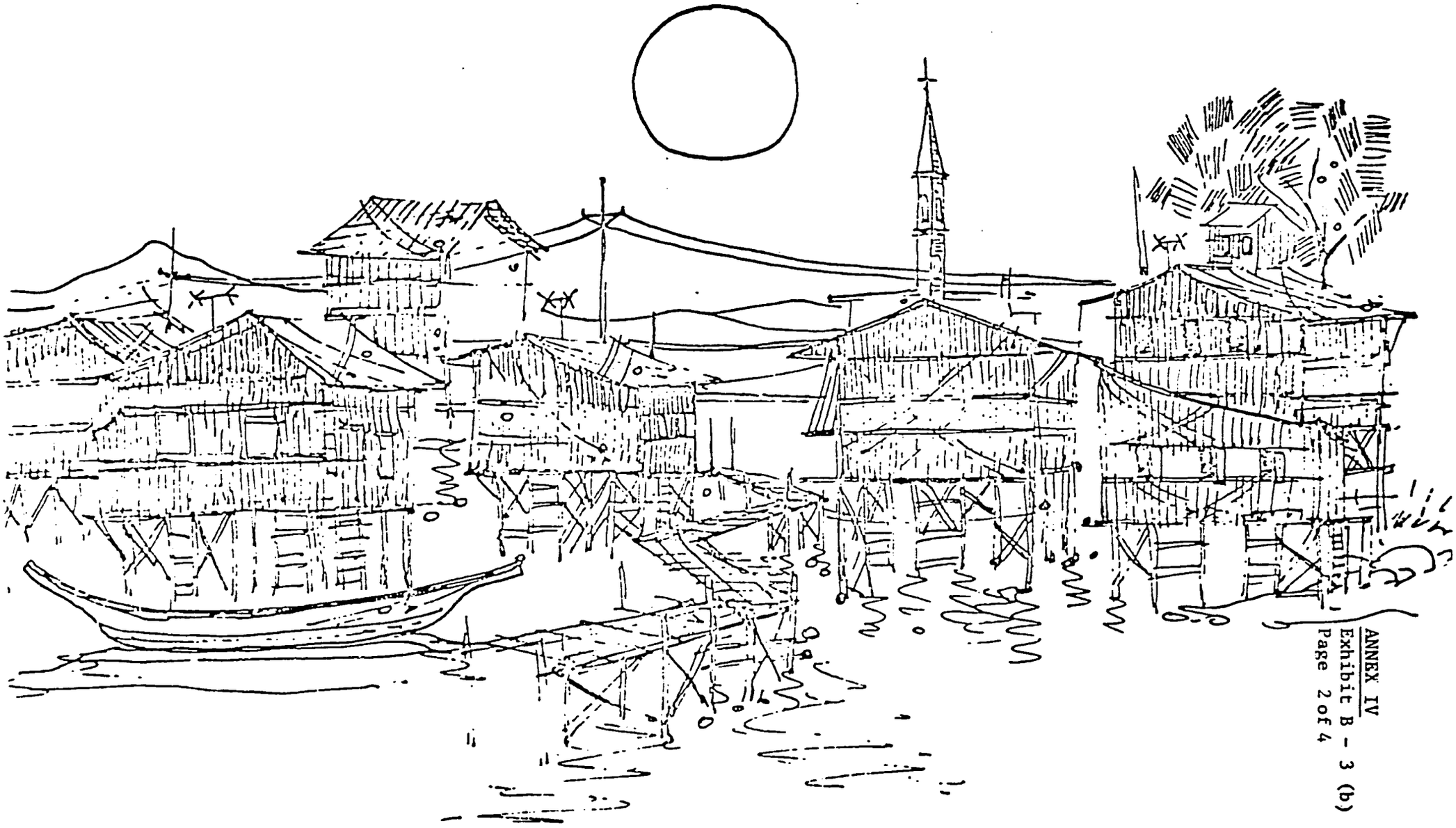
Edad _____ Estado Civil _____ Profesión u ocupación _____

No. de Céd.Id. _____ Ingresos percibidos _____

Lugar de Trabajo: _____ Empresa u otro sitio _____ Prov. _____ Cantón _____



TYPICAL STILT HOUSE - BARRELS FOR WATER, LATRINE ON LEFT SIDE



TYPICAL URBAN STILT HOUSES, BARRIO

PLANTA

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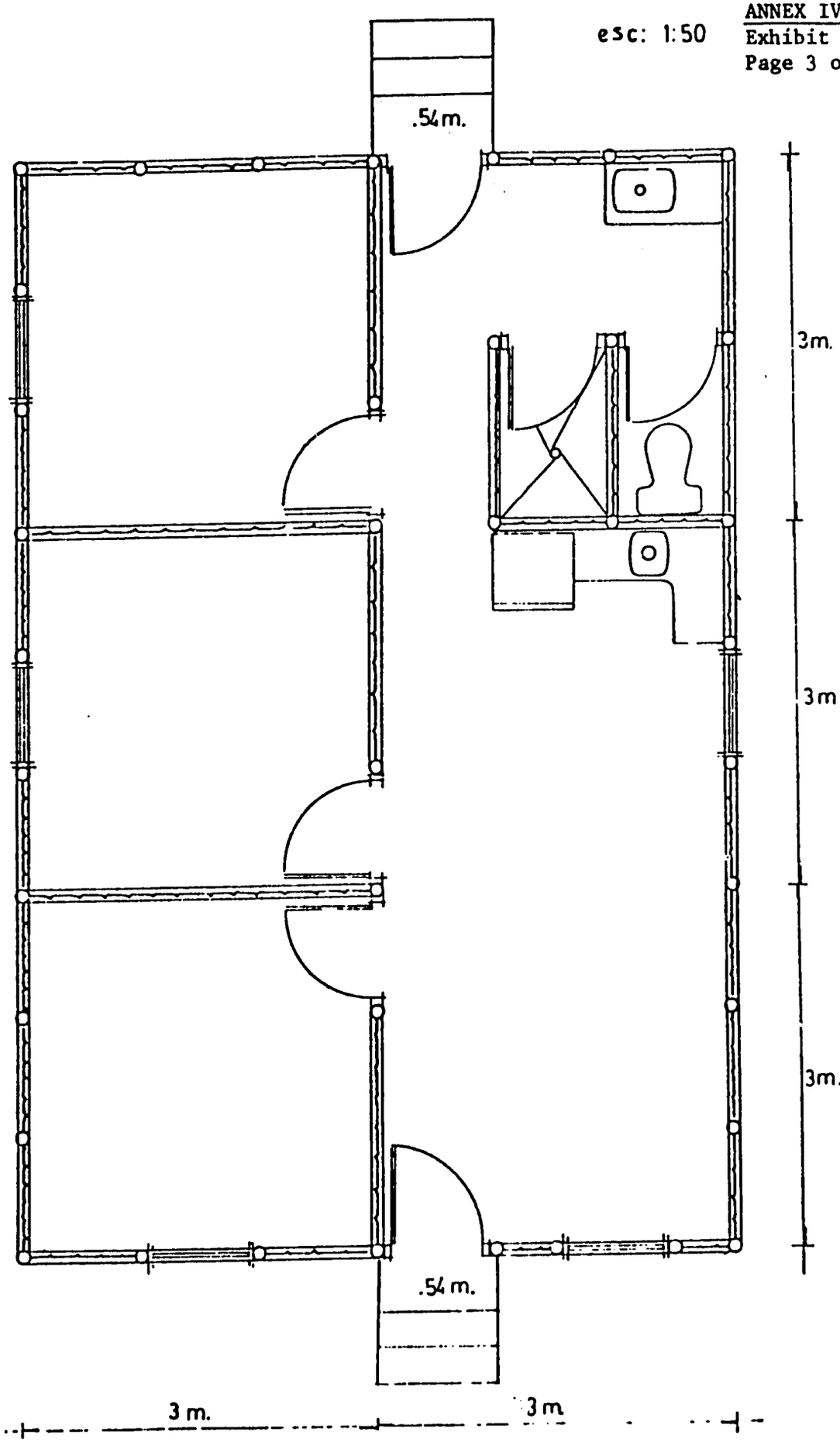
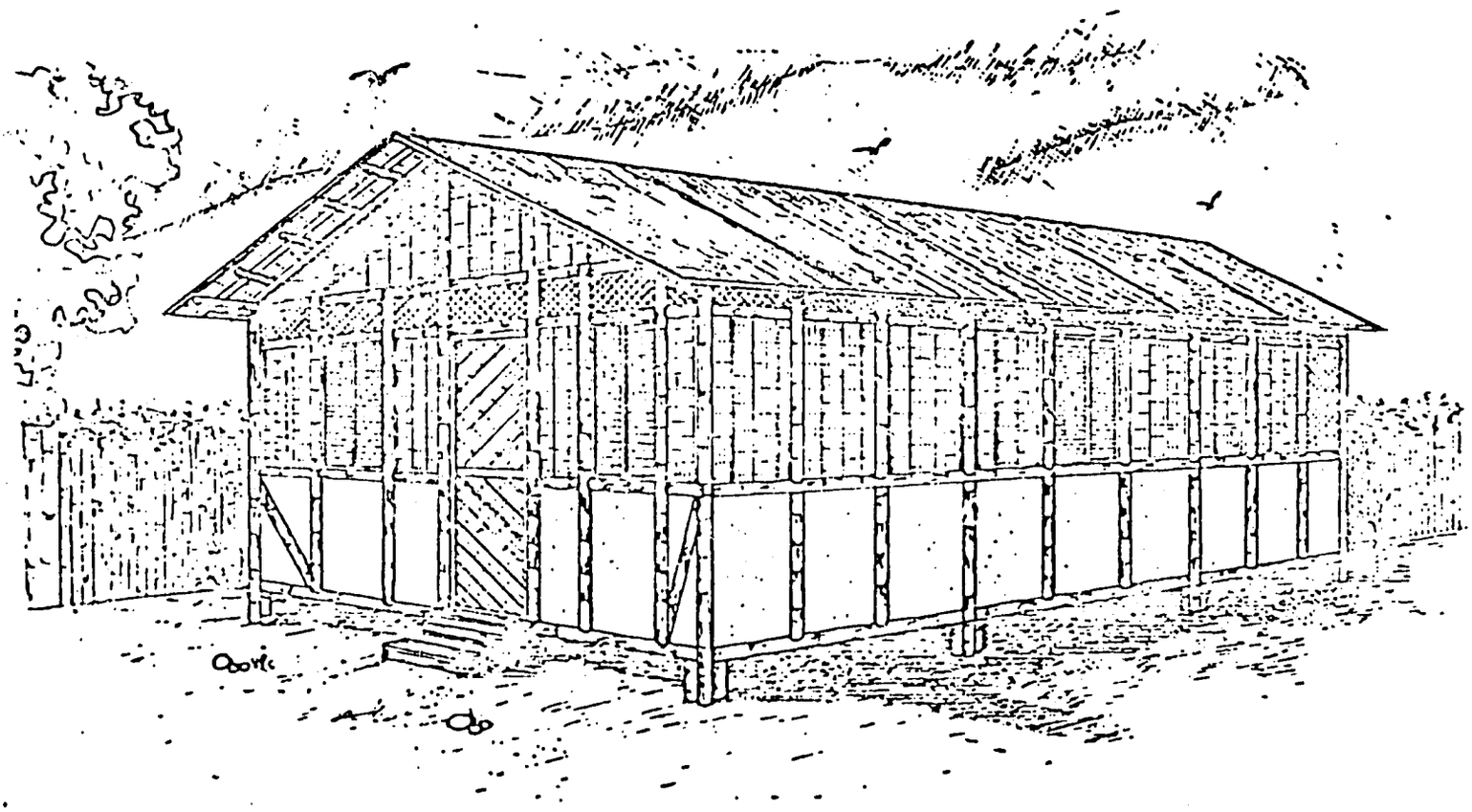


TYPICAL URBAN HOUSE FLOOR PLAN



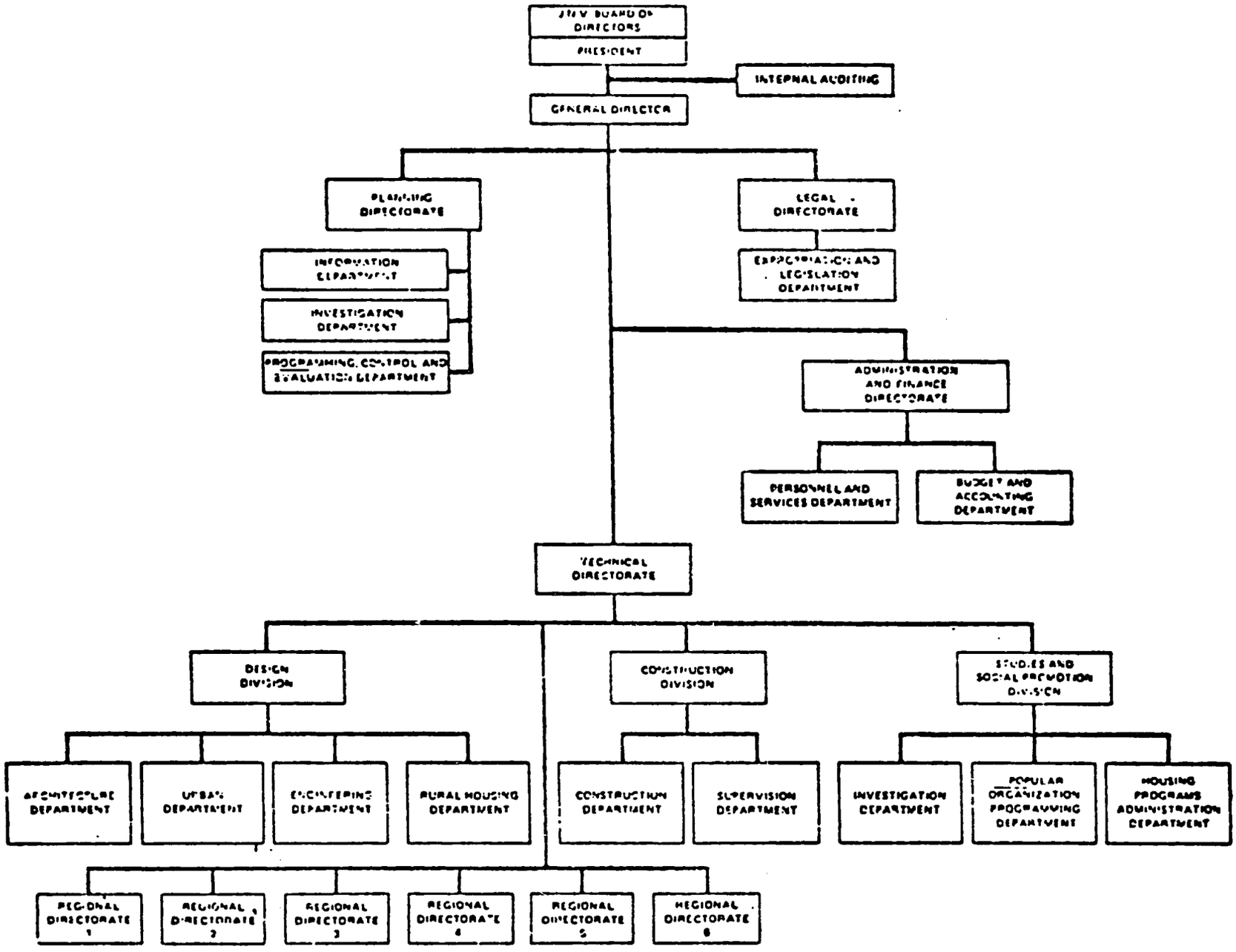
TYPICAL GROUND LEVEL BAMBOO HOUSE

STAFFING PATTERN OF THE NATIONAL HOUSING BOARD

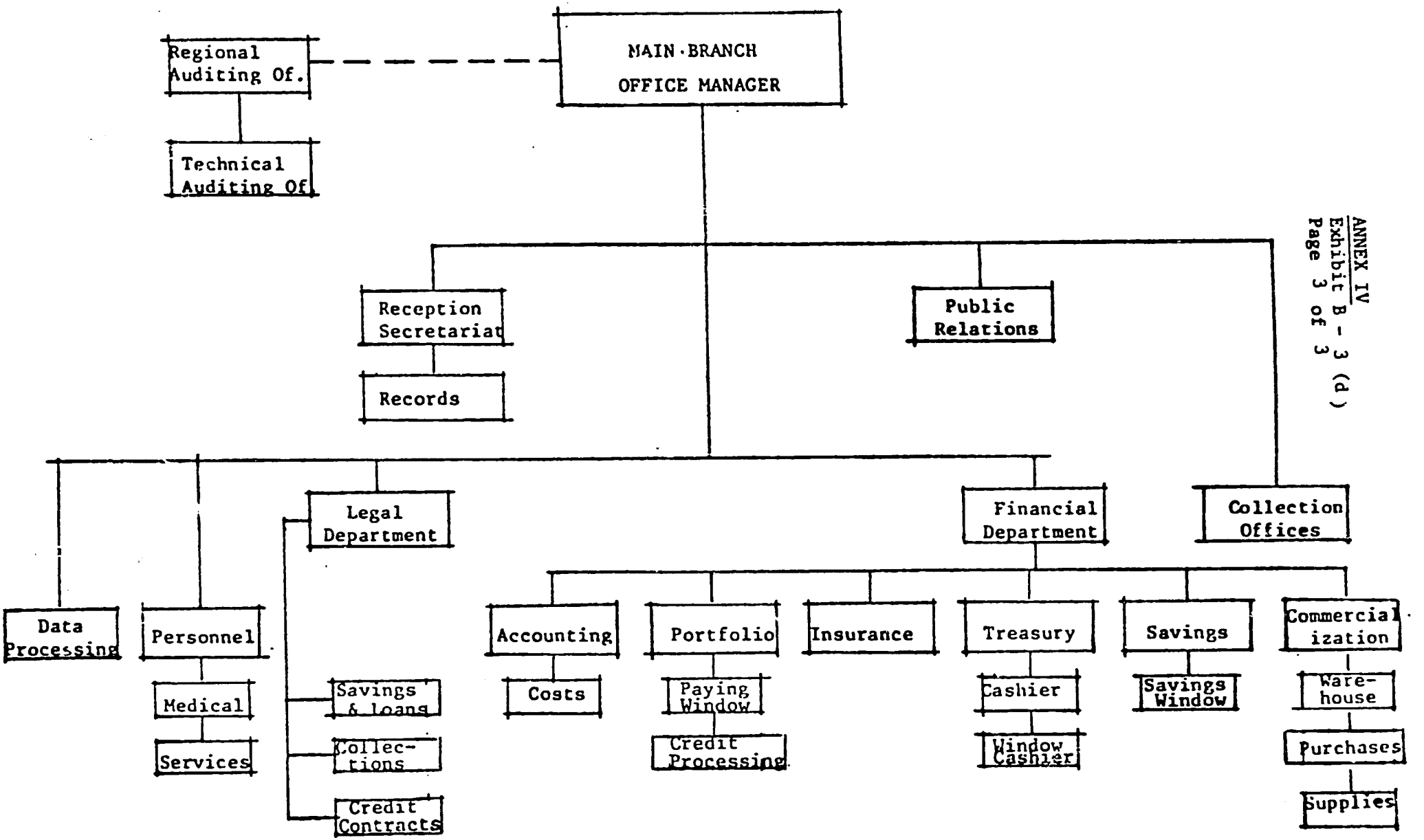
(JUNTA NACIONAL DE LA VIVIENDA - JNV)

Office	Directors	Professionals (lawyers, economists)	Technicians (architects, engineers)	Administrative	Service	Total
QUITO	6	27	94	32	14	169
GUAYAQUIL	1	18	60	28	11	122
CUENCA	1	3	7	4	2	17
LOJA	1	3	6	4	2	16
PORTOVIEJO	1	4	6	4	2	17
RIOBAMBA	1	2	3	4		10
TULCAN		1	2	1		4
STO. DOMINGO		1	1	1		3
AMBATO		1	2	1		4
GUARANDA		1	1	1		3
ESMERALDAS		1	1	1		3
QUEVEDO		1	1	1		3
MACHALA		1	2	1		4
EL PUYO		1	1	1		3
LATACUNGA		1	1	1		3
MANTA		1	1	1		3
IBARRA		1	2	1		4
BABAHOYO		1	1	1		3
CHONE		1	1	1		3
TOTAL	11	70	193	89	31	394

J.N.V. ORGANIZATION CHART



B.E.V. BRANCH OFFICE: GUAYAQUIL



IMPLEMENTATION SCHEDULE

HOUSING RECONSTRUCTION

Number of Loans Processed

	DEC.1983	JAN.1984	FEBRUARY	MARCH	APRIL	MAY	TOTAL
REGION I Esmeraldas	10	12	13	15	18	21	89
REGION II Guayas, El Oro, Los Ríos	14	16	18	21	23	28	120
REGION IV Manabí, Loja	26	30	35	40	46	54	231
					TOTAL LOANS		440

DISBURSEMENT SCHEDULE

HOUSING RECONSTRUCTION

Loan Amounts

	DEC.1983	JAN.1984	FEBRUARY	MARCH	APRIL	MAY	TOTAL
REGION I Esmeraldas	$5,000	$6,000	$6,500	$7,500	$9,000	$10,500	$44,500
REGION II Guayas, El Oro, Los Ríos	7,000	8,000	9,000	10,500	11,500	14,000	60,000
REGION IV Manabí, Loja	13,000	15,000	17,500	20,000	23,000	27,000	115,500
					TOTAL DISBURSEMENT		$220,000

PROGRAMA DE TRABAJO

3º AÑO

I N E R H I — DIRECCION DE CONSTRUCCION

UNIDAD EJECUTORA: DISTRITO CHIMBORAZO ..... PROYECTO: QUIMIAG ..... Hoja 2 de 2

R U B R O	A B S C I S A S DESDE	HASTA	LONGITUD (m)	UNIDAD	CANTIDAD	C O S T O UNITARIO	C O S T O TOTAL EN MILES	P R O G R A M A C I O N D E O B R A S E	F	M	A	M	J	J	A	S	O	N	D
CONSTRUCCION SISTEMAS DE DISTRIBUCION (MODULOS)																			
Excavación cajón				m3	200	79,oo	15,8	1162	1162	1162	1162	1162	1162	1162	1162	1162	1162		
Adquisición tubería (Ø 150 m)				m.1	1.100	350,o	385,o	15025	15025										
Colchón grava-arena				m3	90	230,o	20,7			8023	8023	8023	8023	8023	8023	8023	8023	8023	8023
Transp. y coloc. tubería				m.1.	1.100	100,o	110,o			4290	4290	4290	4290	4290	4290	4290	4290	4290	4290
Relleno zanja semi-comp.				m3	250	46,o	11,5			4185	4185	4185	4185	4185	4185	4185	4185	4185	4185
Excavación canal abierto				m3	300	79,o	23,7	2243	2243	2243	2243	2243	2243	2243	2243	2243	2243		
Revest. canal H.S Clase D				m3	180	2.167,o	390,1	10182	10182	10182	10182	10182	10182	10182	10182	10182	10182	10182	10182
				SUMAN:			956,8												
Como son 39 modulos : 39x956,8=				SUB-TOTAL:			37.315,2	1976.45	1976.45	1976.45	1976.45	1976.45	1976.45	1976.45	1976.45	1976.45	1976.45	1827.81	1827.81
TERCER AÑO:				I N V E R S I O N		T O T A L	57.545,4	2429.37	2429.37	2183.46	2450.07	2667.26	2667.26	2460.27	2460.28	2686.30	2685.30	2243.85	2080.42

Ing. Julio C. Chávez — ELABORADO POR

Quito, abril 12, 1.982 — FECHA

VISTO BUENO

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APPENDIX III

HASTA PLANILLA No. 1

RESUMEN DE PLANILLAS DE TRABAJOS REALIZADOS

(NO VALIDO PARA PAGO)

:CTO Desarrollo Rural Integral SECTOR [illegible] PERIODO 1º 31 marzo/93

IATISTA Cristóbal Gonzalez CONTRATO No. [illegible] FECHA 31 marzo/93

ESPECIFICACION	UNIDAD	PRECIO UNITARIO	ACUMULADO ANTERIOR 18 enero 23 febrero/93 CANTIDAD	ACUMULADO ANTERIOR VALOR ($)	RECEPCION ACTUAL 1º 31 marzo CANTIDAD	RECEPCION ACTUAL VALOR ($)	ACUMULADO ACTUAL 18 enero-31 marzo de 199[illegible] CANTIDAD	ACUMULADO ACTUAL VALOR ($)
EXCAVACION tierra dura	m3	82.00	137.00	11.[illegible]	63.[illegible]	5.[illegible]	201.23	16.[illegible]
[illegible] M.3. clase B.	"	[illegible].100.00	183.53	203.530.22	103.91	120.781.19	292.19	[illegible]
M.3. clase B.	"	[illegible].250.00	47.57	59.462.50	27.63	34.537.50	75.20	94.000.0
relleno sin compactar	"	41.00	78.06	3.434.64	37.00	1.628.00	115.06	5.062.6
Hierro, incluye doblado y armado	kg	1.564.63	16.00	25.014.08			16.00	25.034.0
Hierro, incluye doblado y armado	"	[illegible].433.38	35.17	50.[illegible].97	30.33	43.560.42	65.56	93.972.3
concreto Hierro y cemento	m3	5.00	917.30	6.3[illegible].90	32.52	3.772.32	949.82	10.101.3
arena y desarrollo cemento	saco	3.00	1.052.00	3.156.00	620.00	1.860.00	1.672.00	5.016.0
apoyo del contratista	"	161.00	1.002.00	161.322.12	420.00	68.905.20	1.422.00	233.233.3
apoyo del INERNI	"	127.00	50.00	(6.350.00)			50.00	(6.35
apoyo del INERNI	"	138.00			200.00	(27.600.00)	200.00	(27.600.00
			SUMAN $.	527.166.12	SUMAN $.	280.249.99	SUMAN $.	807.416.11

VALOR DEL CONTRATO $. 1[illegible].000.000.00

SALDO POR REALIZAR $. 592.583.89

ELABORADO POR

ING. JEFE DE OBRA

VTO. BNO.

ING. JEFE DE DISTRITO O PROYECTO

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ANNEX IV
Exhibit B - 1 (f)
Page 2 of 2

IMPLEMENTATION SCHEDULE

	1.983			1.984											
REPAIRS	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
Río Bulubulu and Cañar	—	—	—					—	—	—	—	—	—	—	
Río Chimbo	—	—	—					—	—	—	—	—			
Río Buenavista	—	—	—												
Civil works, Milagro and Chilintomo	—	—	—												
Gabion Sector	—	—	—					—	—	—	—	—			
Rancho Grande															
Río Naranjal area	—	—	—					—	—	—	—	—	—	—	
El Oro Drainage System	—	—	—												
Río Boliche	—	—	—					—	—	—	—				
Río Tenguel-Balao	—	—	—					—	—	—	—				
Río Milagro-Yaguachi	—	—	—												
Río Cochancay-Cañar	—	—	—					—	—	—	—				
Small emergency works				—	—	—	—								
Dikes	—	—													

DISBURSEMENT SCHEDULE
(S/.millions)

	1.983			1.984												
REPAIRS	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	S/.Mil TOTAL
Río Bulubulu and Cañar	5.0	5.0	6.0					6.0	4.0	4.0	4.0	4.0	4.0	4.0		46.0
Río Chimbo	4.5	5.0	5.0					5.0	5.0	5.0	5.0	5.0				39.5
Río Buenavista	3.0	4.0	4.0													11.0
Civil works, Milagro and Chilintomo	1.0	1.5	1.0													3.5
Gabion Sector Rancho Grande	1.0	1.0	1.0					1.5	1.5	1.5	1.5	1.0				10.0
Río Naranjal area	1.0	1.0	1.0					1.0	1.0	1.0	1.0	1.0	1.0	1.0		10.0
El Oro Drainage System	3.0	4.0	3.0													10.0
Río Boliche	1.0	1.0	1.0					2.0	2.0	2.0	1.0					10.0
Río Tenguel-Balao	1.0	2.0	1.0					2.0	2.0	2.0	2.0					12.0
Río Milagro-Yaguachi	2.0	2.0	2.0													6.0
Río Cochancay-Cañar	1.5	1.5	1.5					1.5	2.0	2.0	2.0					12.0
Small emergency works				1.5	2.5	2.0	1.5									7.5
Dikes	1.0	1.5														2.5
TOTALS	26.5	32.5	28.5	1.5	2.5	2.0	1.5	21.0	17.5	17.5	16.5	11.0	5.0	5.0		180

TABLE I - AVERAGE PRODUCTION W/WITHOUT IRRIGATION OF THE PRINCIPAL CROPS IN THE CUENCA BAJA DEL GUAYAS, ECU

CULTIVAR	AVERAGE PRODUCTION TON/HECTARE		PRICE AT FARM		AVERAGE PRODUCTION ($)/HECTARE		
	With Irrigation	Without Irrigation	$/Kg.**	S/./Kg.	With Irrigation	Without Irrigation	Difference
RICE*	6,855	2,738	0.12	6.00	822.60	328.56	494.04
COTTON	2,286	1,697	0.289	14.43	660.65	490.43	170.22
BANANA	68,503	46,969	0.03	1.47	2,055.09	1,409.07	646.02
SUGAR CANE	80,225	50,265	0.003	0.14	240.68	150.80	89.88
COCOA	947	733	0.694	34.70	657.22	508.702	148.52
COFFEE	1,836	1,273	0.836	41.80	1,534.90	1,064.23	470.67
BEANS	2,273	708	0.33	16.49	750.09	233.64	515.45
CORN	3,914	1,824	0.10	5.02	391.40	182.40	209.00
MELONS	22,052	12,058	0.058	2.65	1,168.76	639.07	529.68
PINEAPPLE	32,724	24,243	0.069	3.43	2,257.96	1,672.77	585.19
SOY	2,514	1,375	0.175	8.74	439.95	240.63	199.33
TABACCO	2,012	--	0.420	21.00	845.04	0	845.04
TOMATOE	15,181	10,008	0.058	2.92	880.44	580.46	299.976

*91 Kgrs. of paddy rice yield 59.09 Kgrs. of milled rice

**Exchange Rate = 50.00

TABLE II - PROJECT AREA FLOODED - YAGUACHI - TAURA Through January 31/83

CONEPTO	FLOODED HECTARES	LOST PRODUCTION ESTIMATES	HECTARES WITH IRREVERSABLE LOSSES	
Rice	14,905	61,468.698	1,213	8.14
Banana	1,229	115,307,238	769	62.57
Sugar Cane	8,404	147,464,988	1,756	20.89
Corn	1,010	9,898,000	432	42.77
Tabacco	321	14,532,633	147	45.79
Vegetables	815	14,172,850	182.5	22.39
Pastures	19,175	189,161,375	____	____
ORCHARDS				
MIXED				
Orchard, Banana	9,844	118,443,008	____	____
Pasture				
Pineapple-yuca-plantain	260	7,109,741	118,5	45.58
Misc. Production	8,089	____	____	____
TOTAL	74,309	885,519,198	4,618	____

EMPRESA MUNICIPAL DE ALCANTARILLADO

Calle García Moreno Nº 887
QUITO - ECUADOR

OFICIO Nº_____

QUITO, A _____ DE _____ DE 198_____

ASUNTO:

SEGUNDA ALTERNATIVA

a) Programa de Obras	S/ 18'600.000,oo	US $ 232.500,oo
b) Estudios de factibilidad y definitivos para el control de la erosión y Plan Maestro de Interceptores.	20'000.000,oo	250.000,oo
		482.500,oo

PROGRAMA TENTATIVO DE OBRAS DE ALCANTARILLADO A REALIZARSE CON LOS FONDOS NO REEMBOLSABLES DE LA A.I.D. CORRESPONDIENTE AL PLAN EMERGENTE

1. Revestimiento de hormigón simple a la cuneta sobre el barrio La Colmena.....	S/ 1'800.000,oo
2. Revestimiento con hormigón simple de la cuneta La Libertad.....	S/ 1'500.000,oo
3. Revestimiento con hormigón simple de la cuneta La Concepción.....	S/ 1'500.000,oo
4. Construcción de canal abierto en la Qda. Rumihurco en reemplazo del colector existente destruído en el último aluvión.....	S/ 4'000.000,oo
5. Solución de drenaje para las inundaciones que se producen en la Av. 10 de Agosto entre Buenos Aires y Caracas.....	S/ 800.000,oo
6. Tanque de regulación de crecimiento junto a la Qda. Yacupugro.....	S/ 4'500.000,oo
7. Tanque de regulación de crecimiento junto a la Qda. La Tulida.....	S/ 1'600.000,oo
8. Captación y azudes en la Qda. Navarro.....	S/ 1'300.000,oo
9. Desvío de las aguas del barrio Cochapamba Alto, mediante cuneta, hacia las Qdas. adyacentes.....	S/ 500.000,oo

Best Available Document

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EMPRESA MUNICIPAL DE ALCANTARILLADO

Calle García Moreno Nº 887
QUITO - ECUADOR

OFICIO Nº_____

QUITO, A ____ DE _____ DE 198____

ASUNTO:

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10. Estructuras de captación en las Qdas. Jauja, El Calvario, Los Chochos y La Raya..... $ 1'100.000,00

18'600.000,00

EMPRESA MUNICIPAL DE ALCANTARILLADO

Calle García Moreno Nº 887
QUITO - ECUADOR

OFICIO Nº_____

QUITO, A ____ DE _____ DE 198____

ASUNTO:

DESCRIPCION DE LAS OBRAS

1. REVESTIMIENTO DE HORMIGON SIMPLE A LA CUNETA SOBRE EL BARRIO LA COLMENA.

Para recoger el drenaje superficial de aguas lluvias, provenientes de las faldas del Pichincha, en el sector del Monumento a la Libertad, e impedir que se viertan sobre las residencias del barrio La Colmena, asentadas en los flancos inferiores se ha construído una cuneta de coronación que desde hace más de 15 años viene funcionando en tierra. Debido al crecimiento del área poblada y al mal uso que le dan los moradores, no presta el servicio correctamente, siendo necesario que se le revista de hormigón simple y se rectifique tanto en el trazado planimétrico, como en el altimétrico. La longitud aproximada es de 1.000 metros. La dirección del curso es de norte a sur.

2. REVESTIMIENTO CON HORMIGON SIMPLE DE LA CUNETA LA LIBERTAD.

Por razones topográficas, fue necesario prolongar la cuneta anterior, pero con la circulación de sur a norte, a descargar en la Qda. La Cantera. Su ubicación está sobre el barrio La Libertad. La longitud es de aproximadamente 800 metros.

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EMPRESA MUNICIPAL DE ALCANTARILLADO

I. García Moreno Nº 887
QUITO - ECUADOR

OFICIO Nº_____

QUITO, A ____ DE _____ DE 198____

ASUNTO:

3. REVESTIMIENTO CON HORMIGON SIMPLE DE LA CUNETA LA CONCEPCION

Esta cuneta fue construída hace 19 años en el límite urbano de la ciudad, determinado en la cota 2.860 m. Su funcionamiento se hizo anormal cuando, junto a ella, se asentaron barrios con carácter clandestino, que en ciertos tramos lo cubren totálmente. En estas condiciones la cuneta no cumple su función y constituye un serio problema para la Empresa de Alcantarillado, por esta razón y con carácter emergente, se hace necesario el recubrirle con hormigón simple para mejorar su pendiente y su circulación. El tramo previsto es de 800 m. Sirve a los barrios La Concepción, El Pinar, San Fernando y San Vicente.

4. PROLONGACION DEL COLECTOR EN LA QDA. SAN JOSE

Este colector es uno de los que mayor problemas dá a la Empresa de Alcantarillado, en vista de que en una longitud de 800 m. las casas están edificadas en el borde mismo de la Qda. a donde arrojan toda clase de desperdicios, humanos e industriales obstruyendole al colector. Por tratarse de parcelaciones clandestinas carece de los servicios básicos y de infraestructura vial, razón por la cual utilizan el cauce como cuerpo receptor de los desperdicios y basuras. El costo de la desobstrucción a una profundidad de 18 y 20 m. es sumamente elevado. La solución es prolongar el colector en la longitud indicada, de 800 m. hasta la calle Luciano Coral.

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EMPRESA MUNICIPAL DE ALCANTARILLADO

Calle García Moreno Nº 887
QUITO - ECUADOR

OFICIO Nº_____

QUITO, A ____ DE _____ DE 198____

ASUNTO:

En la temporada invernal causa inundaciones y destrozos a las residencias de las ciudadelas Los Libertadores y Chilibulo.

5. CONSTRUCCION DE CANAL ABIERTO EN LA QDA. RUMIHURCO

Esta Qda. fue la que originó el mayor desastre de la temporada invernal pasada debido al aluvión que en su cuenca se desarrolló. En vista de la frecuencia con que se repite este fenómeno y habiendose detectado que constituye un cono de deyección la solución a adoptarse es la propuesta por el Ingeniero Geólogo E.Kojanque se abra nuevamente el cauce que permita todo el escurrimiento y los aluviones de la montaña, aprovechando que existe un pequeño tramo, unicamente, servido por un colector que se halla en mal estado.

6. SOLUCION DE DRENAJE PARA LAS INUNDACIONES DEL SECTOR AV. 10 DE AGOSTO, BUENOS AIRES Y CARAQUEZ.

El sistema de alcantarillado en esta zona trabaja a presión, por haberse extendido el área de drenaje sobre el límite previsto, produciéndose la salida de las aguas a través de los pozos y sumideros e inundando los edificios vecinos, especialmente la Caja del Seguro. La solución es evacuar las aguas, mediante un sistema independiente hacia una laguna artificial que se construirá en el Parque de El Ejido.

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EMPRESA MUNICIPAL DE ALCANTARILLADO

Calle García Moreno Nº 887
QUITO - ECUADOR

OFICIO Nº.....

QUITO, A ..... DE ..... DE 198.....

ASUNTO:

7. TANQUE DE REGULACION DE CRECIENTES EN LA QDA. YACUPUGRA

La qda. Yacupugra y toda su cuenca tiene un caudal de 1.306 lts/sg. en condiciones normales para una curva de frecuencia de 10 años, sin embargo en los últimos aluviones se estimaron caudales instantáneos de hasta 50.000 lts/sg. producidos por los derrumbes que represaban las aguas. Como medida correctiva, debe construirse un tanque de regulación de crecientes que recoja todos los exedentes tanto pluvial como de materiales sedimentarios, con capacidad para embalzar el volúmen de agua correspondiente a 30 minutos de lluvia.

8. TANQUE DE REGULACION DE LA QDA. LA PULIDA

Con las mismas consideraciones técnicas anteriores se ha proyectado la construcción de este tanque que estará ubicado sobre el barrio La Pulida.

9. CAPTACION Y AZUDES EN LA QDA. NAVARRO

Se trata de estructuras especiales que permitan el ingreso de las aguas al colector sin materiales pesados que puedan obstruirlo. La regulación de la pendiente del cauce para evitar su erosión, se hace mediante la construcción de azudes.

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EMPRESA MUNICIPAL DE ALCANTARILLADO

Calle García Moreno Nº 887
QUITO - ECUADOR

OFICIO Nº .....

QUITO, A ..... DE ..... DE 198.

ASUNTO:

10. DESVIO DE LAS AGUAS DEL BARRIO COCHAPAMBA.

Para evitar el acumulamiento del agua lodo en la depresión existente en la Av. Occidental intersección calle Marcos - Jofre, provenientes del barrio Cochapamba Alta, que tiene carácter clandestino, se precisa de una cuneta que desvíe las aguas y el drenaje de toda la ladera nor-occidental.

11. ESTRUCTURAS DE CAPTACION EN DIFERENTES QUEBRADAS

Se trata de la construcción de: defensas con rieles, muros de ala y pozos de captación, en las bocas de los colectores, implementandolas con otros tipos de obras de sedimentación, según las características del cauce.

12. PROLONGACION DEL COLECTOR EN LA QDA. LA CANTERA.

Se estima en 200 m., para evitar el ingreso de los materiales producido por la explotación de las canteras y que destruyen el canal. A su vez reemplazará a los puentes de madera que en forma provisoria han sido instalados por los moradores aledaños al lugar.

ESQUEMA PRELIMINAR DE LOS TERMINOS DE REFERENCIA PARA LA REALIZACION DE LOS ESTUDIOS DE FACTIBILIDAD Y DEFINITIVOS SOBRE EL CONTROL DE LA EROSION Y ESCORRENTIAS DE LAS QUEBRADAS QUE ATRAVIESAN LA CIUDAD DE QUITO Y PLAN MAESTRO DE LOS INTERCEPTORES PRINCIPALES PARA LA CIUDAD DE QUITO.

INTRODUCCION.-

En los últimos tiempos, la ciudad de Quito ha sufrido en forma frecuente los embates de la naturaleza, causados principalmente por la alta pluviosidad atmosférica que ocasionan la formación de aluviones que se encauzan en las quebradas del Pichincha, arrastrando consigo gran cantidad de material producto de la erosión, y causando serios problemas a los interceptores principales del alcantarillado existente de la ciudad, y aún más, ocasionando pérdida de vidas humanas y bienes materiales.

La continua ocurrencia y la cantidad de materiales que arrastran dichos aluviones, constituyen un peligro potencial para la ciudad, y si consideramos además la conformación geológica de esta zona, combinadas con la constante presencia de agua debido a las precipitaciones, se verá que el problema realmente es complejo, pero que hay que estudiarlo para plantear soluciones definitivas que preserven la seguridad de los moradores de la ciudad.

Por otro lado el crecimiento desmesurado del área de expansión urbana, ha provocado una sobrecarga en los diferentes interceptores del sistema de alcantarillado, que se expresan en las continuas inundaciones a que se ven sometidos los barrios de la ciudad, con una secuela de daños materiales y la creación de un ambiente de inseguridad entre los ciudadanos.
La cota 2.860 que fue el límite del crecimiento urbano, ha sido

superado con el asentamiento de ciudadelas que tienen el carácter de expontáneo, o clandestino, destruyendo la reserva ecológica natural y permitiendo la acción erosiva de las aguas lluvias, todo lo cual determina un incremento considerable del problema, que es preciso analizarlo y estudiarlo para alcanzar una solución definitiva que evite incrementar los riesgos, cuya situación aumenta cada día de no tomarse las medidas del caso.

En vista de estos antecedentes, FONAPRE conjuntamente con la Empresa de Alcantarillado de Quito, por intermedio de sus delegados, han realizado las inspecciones a los sitios de estudio y luego de varias sesiones de trabajo presentan el siguiente esquema - preliminar de referencia que podría abarcar el estudio:

1. ANTECEDENTES

- Localización geográfica del área del estudio y datos meteorológicos generales;
- Problemática actual y justificaciones del estudio;
- Estudios anteriores;
- Marco legal y acciones;
- Delimitación preliminar del área de estudio.

2. OBJETIVOS DEL PROYECTO

- Preservar los recursos humano y material de las zonas urbanas de la ciudad de Quito;
- Garantizar el correcto funcionamiento hidráulico de los interceptores principales del alcantarillado existente;
- Fortalecer los planes Mestros y Plan Quito;
- Preservar el Sistema Ecológico de la ciudad.

3. OBJETIVOS DEL ESTUDIO

- Identificar las soluciones más aconsejables para la protección de los interceptores principales del alcantarillado existente;

- Controlar la erosión y mantenimiento del equilibrio ecológico de las laderas del Pichincha;

- Controlar el desarrollo de los asentamientos humanos clandestinos que se encuentran ubicados en la zona de estudio, así como el desarrollo del área de expansión urbana de la ciudad.

- Relacionar las medidas de control de las escorrentías de las quebradas del Pichincha y la incidencia que tendría sobre el acuifero subterráneo de la ciudad de Quito.

4. DELIMITACION DEL AREA DE ESTUDIO

El límite del área que abarca los objetivos del estudio comprende el actual perímetro urbano de Quito, que se encuentra servido con infraestructura sanitaria y las áreas de aporte del caudal de aguas lluvias que son encauzadas por las quebradas del Pichincha.

5. FASES PARA EL DESARROLLO DEL ESTUDIO Y ALCANCE DE LOS TRABAJOS A REALIZARSE.

5.1 Diagnóstico de la situación actual

5.1.1 Recopilación de información

- Recopilación y análisis de información básica disponible: (Planes Mestros, Plan Quito, etc.);

- Investigación INSITU para la obtención de datos complementarios;

- Recopilación y evaluación sobre las medidas y ordenanzas que se han dictado sobre los límites urbanísticos de la ciudad, su aplicación y sus resultados;

- Encuesta socio-económica y sanitaria de las urbanizaciones clandestinas asentadas en la zona del estudio y determinación del área ocupada;

- Seguimiento histórico del fenómeno en las dos últimas décadas;

- Evaluación del impacto actual y futuro de la Av. Occidental como agente desestabilizador de la zona y su incidencia en la evacuación de las aguas lluvias del Pichincha.

5.1.2 Diagnóstico

- Evaluación de obras existentes para el control de las escorrentías de las quebradas y para la protección del alcantarillado;
- Evaluación de los caudales concurrentes a los principales interceptores y alcantarillas, con determinación de la capacidad hidráulica máxima-permisible en éstos;
- Principales problemas detectados en el funcionamiento y capacidad de los interceptores principales de aguas lluvias, con una evaluación del material de arrastre depositado en los mismos;
- Evaluación sobre el cinturón verde actual, determinación del tipo de vegetación predominante y la extensión de su cobertura;
- Riesgos geológicos probables en base a la información disponible en esta etapa;
- Análisis meteorológico e hidrológico complementario, con definición del período de retorno óptimo y cuantificación de eventos externos para ese período, en base a la información disponible;
- Estudio geotécnico de la zona y análisis litológico-morfológico de las áreas de aporte de las quebradas;
- Inventario y clasificación de las quebradas de acuerdo a los escurrimientos contribuyentes y caudales transportados;

5.2 Estudio de Factibilidad (Alternativas técnico-económicas)

- Elaboración de un Plan Maestro que presente soluciones alternas de control y protección para el correcto funcionamiento hidráulico de alcantarillas e interceptores principa

les existentes;

- Soluciones alternas para el control de probables deslizamientos y fallas geológicas;
- Alternativas para lograr un equilibrio ecológico sobre el cinturón verde de la ciudad;
- Factibilidad de límites urbanísticos futuros, en correlación con las medidas del control ecológico, dotación de servicios básicos y aspectos geotécnicos y definición de estandares para la edificación en el área de expansión urbana.
- Identificación de mecanismos que permitan el reacentamiento de los barrios expontáneos o su consolidación;
- Variaciones que sufriría el acuífero subterráneo de Quito con relación a las obras alternas de control y evacuación de las escorrentías de las quebradas del Pichincha;
- Comparación técnico-económica y social de soluciones con sus respectivas conclusiones;
- Recomendaciones sobre la mejor alternativa.

5.3 Estudio Definitivo

- Características específicas de la zona;
- Area de aporte;
- Parámetros del diseño y criterios adoptados;
- Estudios completos de los servicios básicos a implantarse en la zona;
- Diseño de obras de protección y control;
- Presupuestos estimativos;
- Especificaciones técnicas de construcción
- Recomendaciones geotécnicas;
- Medidas para el control urbanístico;
- Cronograma valorado de ejecución de obras.

CRONOGRAMA DE REEMBOLSOS - OBRAS EMERGENTES
FONDOS A.I.D.

(SEGUNDA ALTERNATIVA

Denominación	Año	1.983		1.984												1.985	
	Mes	Nov.	Dic.	Ene.	Feb.	Mar.	Abr.	May.	Jun.	Jul.	Ago.	Sep.	Oct.	Nov.	Dic.	Ene.	Feb.
NOMBRE																	
REVESTIMIENTO DE H. S. CUNETA SOBRE BARRIO LA COLMENA		900	900														
REVESTIMIENTO DE H. S. CUNETA LA LIBERTAD		750	750														
REVESTIMIENTO DE H.S. CUNETA LA CONCEPCION		750	750														
CONSTRUCCION DEL CANAL ABIERTO QDA. RUMIHURCO				1000	1000	1000	1000										
DRENAJE DE INUNDACIONES EN AV. 10 DE AGOSTO ENTRE BUENOS AIRES Y CARACAS		266	266	268													
TANQUE DE REGULACION DE CRECIENTES JUNTO A QDA. YACUPUGRA				1125	1125	1125	1125										
TANQUE DE REGULACION DE CRECIENTES JUNTO A QDA. LA PULIDA				800	800												
AZUDES DE CAPTACION EN LA QDA NAVARRO		433	433	434													
CUNETA DE DESVIO DE LAS AGUAS DEL BARRIO COCHAPAMBA ALTO		250	250														
ESTRUCTURAS DE CAPTACION EN LAS QDAS. JAUJA, EL CALVARIO, LOS CHOCHOS Y LA RAYA		366	366	368													
ESTUDIOS, CONTROL, EROSION, ESCORRENTIA, QDAS. Y PLAN MAESTRO DE INTERCEPTORES					1538	1538	1538	1538	1538	1538	1538	1538	1538	1538	1538	1538	1542
SUMAN		3715	3715	3995	4463	3663	3663	1538	1538	1538	1538	1538	1538	1538	1538	1538	1542

MINISTERIO DE SALUD PUBLICA
INSTITUTO ECUATORIANO DE OBRAS SANITARIAS.

PROGRAMA DE REHABILITACION PARA OBRAS DE SANEAMIENTO BASICO EN ZONAS INUNDADAS

(EJECUCION A CARGO DEL I.E.O.S.)

SEPTIEMBRE DE 1983

MINISTERIO DE SALUD PUBLICA
INSTITUTO ECUATORIANO DE OBRAS SANITARIAS

RESUMEN

1.	Provincia de Esmeraldas	$ 9'500.000,oo
2.	Provincia de Manabí	11'300.000,oo
3.	Provincia de Guayas	2'350.000,oo
4.	Provincia de Los Ríos	12'350.000,oo
5.	Provincia de El Oro	11'250.000,oo
6.	Asignaciones globales para aproximadamente 30 localidades rurales	7'500.000,oo
	SUBTOTAL	54'250.000,oo
	Dirección técnica, administración e imprevistos (~ 10%)	5'250.000,oo
	TOTAL	$. 59'500.000,oo
		₡. 700.000,oo
7.	Asignaciones globales para equipos o materiales	₡. 200.000,oo
	TOTAL	₡. 900.000,oo

NOTA : Se ha considerado el tipo de cambio de 1 ₡ = $. 85.00

MINISTERIO DE SALUD PUBLICA
INSTITUTO ECUATORIANO DE OBRAS SANITARIAS

PROVINCIA DE ESMERALDAS

ESMERALDAS	
- Limpieza y rehabilitación de 7 pozos profundos del sistema de agua potable	700.000,00
- Protección de base de estructura de sustentación de paso elevado sobre río Esmeraldas	1'000.000,00
- Reparaciones en estación de bombeo en sistema del alcantarillado sanitario y limpieza de red	1'000.000,00
TACHINA	
- Construcción y equipamiento de un pozo profundo	2'000.000,00
LIMONES	
- Instalación de tubería de PVC para la conducción del sistema de agua potable ø = 150 mm, L = 500.00 m. Incluye materiales	750.000,00
- Reparación del generador, revisión de tableros y conexiones eléctricas	300.000,00
- Reposición del tanque de cebado	50.000,00
SAN LORENZO	
- Acometida a energía eléctrica de INECEL, incluye transformador	500.000,00
- Bomba sumergible para pozo profundo con capacidad de Q = 30 lt/seg.	400.000,00
- Reparación de generador de emergencia, revisión de tableros y conexiones eléctricas	500.000,00
MUISNE	
- 2 bombas para descarga del alcantarillado sanitario y generador (incluyendo tableros e instalaciones)	2'000.000,00

MINISTERIO DE SALUD PUBLICA
INSTITUTO ECUATORIANO DE OBRAS SANITARIAS

RIO VERDE

- Reparación del generador	300.000,oo
SUBTOTAL	9'500.000,oo

MINISTERIO DE SALUD PUBLICA
INSTITUTO ECUATORIANO DE OBRAS SANITARIAS

PROVINCIA DE MANABI

BAHIA DE CARAQUEZ

- Reconstrucción red de alcantarillado sanitario y pluvial de Leonidas Plaza	$ 800.000,oo
- Reparación de conducción y estación de bombeo de Leonidas Plaza - Bahía	550.000,oo
- Protección bombeo del astillero (incluye drenajes y aguas lluvias)	500.000,oo
- Reparación y protección red alcantarillado sanitario y pluvial	300.000,oo
- Limpieza de las redes de los alcantarillados	200.000,oo
- Limpieza, habilitación y protección de laguna de estabilización	2'500.000,oo
- Limpieza de pozos, reparación de estructuras de protección y reparaciones varias en el sistema de agua potable	1'000.000,oo

CHONE

- Reparación de bomba e instalaciones eléctricas del alcantarillado sanitario	150.000,oo
- Reparaciones varias en estación de bombeo	100.000,oo
- Revisión y limpieza en las redes de alcantarillados	200.000,oo
- Limpieza de laguna de estabilización	300.000,oo

ANDRES DE VERA

- Limpieza de la red de alcantarillado sanitario	200.000,oo
- Reparación de pozos de revisión	100.000,oo
- Reparación del sistema eléctrico de la estación de bombeo	100.000,oo
- Reparación del cerramiento y del medidor de caudales	200.000,oo
- Reparación de cuatro (4) compuertas con tol en estación de bombeo	200.000,oo
- Reposición de dos (2) compuertas en pozo de repartición	400.000,oo
- Limpieza, reparación de taludes y de las compuertas de la cámara de repartición a la entrada de las lagunas	300.000,oo

CALCETA

- Reparación de bombas y sistema eléctrico	300.000,oo

- Limpieza de laguna de estabilización	100.000,oo
- Reparación y limpieza de las redes de alcantarillados sanitario y pluvial	400.000,oo
- Rehabilitación de descarga de emergencia y control de inundación de la estación de bombeo por río Carrizal	600.000,oo
HIGUERON	
- Reparaciones en red de distribución	200.000,oo
- Revisión y reparación de accesorios de bombeo	100.000,oo
- Reposición de equipo de bombeo, eje horizontal Q = 5 lts/seg. Incluye instalación eléctrica	200.000,oo
CAÑITAS	
- Reparación sistema eléctrico	100.000,oo
- Reparaciones en red de distribución	200.000,oo
- Revisión y reparación de accesorios de bombeo	100.000,oo
- Equipo de bombeo de eje horizontal Q = 5 Lts/seg	200.000,oo
PROGRESO	
- Reposición equipo de bombeo y accesorios	200.000,oo
- Reparación sistema eléctrico	100.000,oo
CHARAPOTO	
- Reparación de bombas	100.000,oo
- Reparación sistema eléctrico	100.000,oo
- Reparaciones en red de distribución	100.000,oo
- Protección de reserva	100.000,oo
SUBTOTAL	11'300.000,oo

PROVINCIA DE GUAYAS

TENGUEL	
- Revisión de equipo eléctrico de bombeo y conexiones eléctricas en sistema de agua potable	100.000,oo
- Reparaciones en red de distribución	100.000,oo
- Limpieza de la red de alcantarillado sanitario	100.000,oo
- Trabajos varios de saneamiento y control ambiental	200.000,oo
NARANJAL	
- Muro de gaviones para protección de la captación	1'500.000,oo
- Limpieza de la red del alcantarillado sanitario	200.000,oo
EL TRIUNFO	
- Equipo para cloración con gas	150.000,oo
SUBTOTAL	2'350.000,oo

200

PROVINCIA LOS RIOS

BABAHOYO	
- Limpieza y rehabilitación de tres (3) pozos profundos	300.000,oo
- Equipamiento para cloración con gas en tres (3) pozos	450.000,oo
- Instalación de tubería de PVC en Barreiro Ø = 50 mm, L = 1000 m. Incluye materiales	500.000,oo
- Instalación de dispositivos de protección para los alcantarillados sanitario y pluvial	7'500.000,oo
CATARAMA	
- Limpieza y revisión de los sistemas de alcantarillado sanitario y pluvial	300.000,oo
- Equipo para cloración con gas	150.000,oo
RICAURTE	
- Limpieza y revisión de los alcantarillados sanitario y pluvial	300.000,oo
PUEBLOVIEJO	
- Reparación y limpieza de red del alcantarillado sanitario	300.000,oo
- Limpieza de dos pozos profundos del sistema de agua potable	200.000,oo
- Reparación de bombas y sistema eléctrico	100.000,oo
VINCES	
- Reparación de equipo de cloración y químicos para tratamiento de agua	250.000,oo
- Reparación y limpieza de red del alcantarillado sanitario	200.000,oo
- Rehabilitación de red de distribución y conexiones domiciliarias	1'500.000,oo
- Reparaciones varias en planta de tratamiento	300.000,oo
SUBTOTAL	12'350.000,oo

PROVINCIA DE EL ORO

SANTA ROSA

- Arreglos varios en captación y reposición de la compuerta del azud	500.000,oo
- Protección y reparaciones en conducción del sistema de agua potable	1'000.000,oo
- Acometida a sistema eléctrico y revisión de conexiones eléctricas, en sistemas de agua potable y alcantarillado	400.000,oo
- Limpieza de taludes en lagunas de estabilización	100.000,oo
- Reparación y rehabilitación de la red del alcantarillado sanitario	3'000.000,oo
- Instalación de bombas en el sistema de alcantarillado sanitario	300.000,oo

MACHALA

- Limpieza de tres (3) pozos profundos del sistema de agua potable	300.000,oo
- Equipamiento para cloración con gas en 3 pozos y de planta de tratamiento	600.000,oo

ARENILLAS

- Protección de taludes en caseta de bombeo en la captación	100.000,oo
- Equipamiento para cloración con gas	150.000,oo
- Reparaciones en red de distribución	300.000,oo
- Reparaciones en la red de alcantarillado sanitario	700.000,oo
- Reparación y limpieza de taludes en laguna de estabilización	100.000,oo
- Habilitación del emisario y descarga del sistema de alcantarillado sanitario	1'100.000,oo

HUAQUILLAS

- Perforación e instalación de equipos para un (1) pozo profundo	1'500.000,oo
- Equipamiento para cloración con gas	150.000,oo

- Habilitación del tanque elevado	100.000,oo
- Reparación de la red de distribución y protección de la conducción para Hualtaco	500.000,oo
- Limpieza de la red del alcantarillado sanitario y reparación de pozos de revisión	200.000,oo
PASAJE	
- Equipamiento para cloración con gas	150.000,oo
SUBTOTAL	11'250.000,oo

MINISTERIO DE SALUD PUBLICA
INSTITUTO ECUATORIANO DE OBRAS SANITARIAS

ASIGNACIONES GLOBALES

1. TRABAJOS

- Mejoramiento de pozos, instalaciones de cloración y obras varias de saneamiento en aproximadamente treinta (30) localidades rurales — 7'500.000,oo

SUBTOTAL 7'500.000,oo

2. EQUIPOS O MATERIALES

- Adquisición de diez (10) bombas de achique de Ø = 100 mm
- Adquisición de diez (10) bombas de achique de Ø = 150 mm
- Adquisición de cinco (5) bombas sumergibles
- Adquisición de cinco (5) bombas de emergencia
- Adquisición de un (1) carro para limpieza de alcantarillados, por presión de agua
- Adquisición de un (1) equipo de perforación portátil, hasta 30 m. de profundidad, Ø=200mm. incluído 50 m. en barras
- Adquisición de un (1) trasvasador de cloro

SUBTOTAL S/. 200.000,oo

Ecuatoriana de Obras Sanitarias
ión Nacional de Planificación
ión de Programación y Evaluación

SUBPROGRAMA: SANEAMIENTO AMBIENTAL

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Ejecución del Contrato	1983 Nov	1983 Dciem	1984 Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
ESMERALDAS																	
ESMERALDAS	ESMERALDAS	A.P	700	A							16 / 112	17 / 119	17 / 119	17 / 119	17 / 119	16 / 112	LIMPIEZA DE POZOS
	ESMERALDAS	A.P	1000	C	33 / 330	33 / 330	34 / 340										PROTECCION ESTRUCTURA PASO ELEVADO SOBRE EL RIO ESMERALDAS.
	ESMERALDAS	A.S	1000	A		25 / 250	25 / 250	25 / 250	25 / 250								REPARACION ESTACION DE BOMBEO Y LIMPIEZA DE LA RED
	TACHINA	A.P	2.000	C	20 / 400	20 / 400	20 / 400	20 / 400	20 / 400								CONSTRUCCION Y EQUIPAMIENTO DE POZO PROFUNDO
	RIO VERDE	A.P	300	A	60 / 150	30 / 150											REPARACION DE GENERADOR
LOY ALFARO	LIMONES	A.P	750	A	33 / 250	33 / 250	34 / 250										VARIANTE DE CONDUCCION
	LIMONES	A.P	300	A			50 / 150	60 / 150									REPARACION DE GENERADOR Y SISTEMA ELECTRICO
	LIMONES	A.P	50	A						100 / 50							REPOSICION DE TANQUE DE CEBADO
SAN LORENZO	SAN LORENZO	A.P	500	A			25 / 125	25 / 125	25 / 125	25 / 125							REPARACION DE GENERADOR Y SISTEMA ELECTRICO

NOTAS:
A.P = AGUA POTABLE
A.S = ALCANTARILLADO SANITARIO
A.P = ALCANTARILLADO PLUVIAL
S.A = SANEAMIENTO AMBIENTAL

A = ADMINISTRACION
C = CONTRATO

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IEOS
Instituto Ecuatoriano de Obras Sanitarias
Dirección Nacional de Planificación
División de Programación y Evaluación

PROGRAMA EMERGENTE

SUBPROGRAMA: SANEAMIENTO AMBIENTAL.

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Ejecución del Compromiso	1983 Nov	1983 Diciem	1984 Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
ESMERALDAS																	
SAN. LORENZO	SAN LORENZO	A.P	500	A						60 250	50 250						ACOMETIDA DE ENERGIA ELECTRICA DE I.N.E.C.E.L
	SAN. LORENZO	A.P	400	A							50 200	50 200					BOMBA SUMERGIBLE POZO PROFUNDO.
MUISNE	MUISNE	A.S	2.000	A							20 400	20 400	20 400	20 400	20 400		BOMBAS Y GENERADOR INC. VE I. ELECTRICAS
			100% 9.500		1.130	1.320	1515	925	775	425	962	719	519	519	519	112	

NOTAS: A.P = AGUA POTABLE
A S = ALCANTARILLADO SANITARIO
A = ADMINISTRACION
C = CONTRATO

...o Ecuatoriano de Obras Sanitarias
...ión Nacional de Planificación
...sión de Programación y Evaluación

SUBPROGRAMA: SANEAMIENTO AMBIENTAL

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Ejecución del Convenio	1983 Nov	1983 Dicem	1984 Enero	1984 Febrer	1984 Marzo	1984 Abril	1984 Mayo	1984 Junio	1984 Julio	1984 Agosto	1984 Setiem	1984 Octubre	OBSERVACIONES
MANABI																	
SUCRE	LEONIDAS PLAZA	A.S y A.PL	800	C	25 / 200	25 / 200	25 / 200	25 / 200									REPARACION RED DE ALCANTARILLADO SANITARIO Y PLUVIAL.
	BAHIA	A.S	650	A	50 / 215	50 / 215											REPARACION IMPULSION BAHIA. - L. PLAZA.
	BAHIA	A.S	500	C	32 / 160	32 / 160	36 / 180										PROTECCION Y DRENAJE EST. DE BOMBEO ASTILLERO
	BAHIA	A.S y APL	300	A		60 / 150	50 / 150										REPARACION Y PROTECCION REDES ALCANTARILLADO
	BAHIA	A.S y APL	200	A			50 / 100	60 / 100									LIMPIEZA REDES ALCANTARILLADO
	BAHIA	A.S	2.500	C							20 / 500	20 / 500	20 / 600	20 / 500	20 / 600		DESAZOLVE Y PROTECCION LAGUNA DE ESTABILIZACION
	BAHIA	A.P	1000	A			26 / 250	25 / 260	25 / 250	25 / 250							LIMPIEZA DE POZOS Y REPARACIONES VARIAS
	CAÑITAS	A.P	100	A		100 / 100											REPARACION DEL SISTEMA ELECTRICO
	CAÑITAS	A.P	200	A	50 / 100	60 / 100											REPARACION RED DE DISTRIBUCION.

NOTAS:

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...ión Nacional de Planificación
...ción de Programación y Evaluación

SUBPROGRAMA: SANEAMIENTO AMBIENTAL

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Ejecución del Convenio	1983 Nov	1983 Diciem	1984 Enero	Febrer.	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem.	Octubre	OBSERVACIONES
MANABI																	
SUCRE	CAÑITAS	A.P	300	A			60 / 150	30 / 150									EQUIPO DE BOMBEO Y REPARACION ACCESORIOS
	CHARAPOTO	A.P	100	A		50 / 50	50 / 50										REPARACION BOMBAS
	CHARAPOTO	A.P	100	A			100 / 100										REPARACION SISTEMA ELECTRICO
	CHARAPOTO	A.P	100	A	50 / 50	50 / 50											REPARACION RED DE DISTRIBUCION
	CHARAPOTO	A.P	100	A	50 / 50	50 / 50											PROTECCION RESERVA
CHONE	CHONE	A.S	150	A			60 / 75	30 / 75									REPARACION BOMBAS Y SISTEMA ELECTRICO
	CHONE	A.S	100	A					50 / 50	50 / 50							REPARACIONES VARIAS EN ESTACION DE BOMBEO
	CHONE	A.S y A.PL	200	A					50 / 100	50 / 100							LIMPIEZA DE REDES DE ALCANTARILLADOS.
	CHONE	A.S	300	C								33 / 100	33 / 100	34 / 100			LIMPIEZA LAGUNA DE ESTABILIZACION
PORTOVIEJO	ADRES DE VERA	A.S	200	A.							50 / 100	50 / 100					LIMPIEZA RED

NOTAS:

...Saneamiento de Obras Sanitarias
...ción Nacional de Planificación
...sión de Programación y Evaluación

SUBPROGRAMA: SANEAMIENTO AMBIENTAL.

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Ejecución del Contrato	1983 Nov.	1983 Diciem.	1984 Enero	Febrer.	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem.	Octubre	OBSERVACIONES
MANABI																	
PORTOVIEJO	ANDRES DE VERA	A.S	100	A	100/100												REPARACION POZOS DE REVISION
	ANDRES DE VERA	A.S	100	A			100/100										REPARACION SISTEMA ELECTRICO.
	ANDRES DE VERA	A.S	200	A			60/100	50/100									REPARACION COMPUERTAS ESTACION DE BOMBEO
	ANDRES DE VERA	A.S	400	C	50/200	60/200											REPOSICION COMPUERTAS EN POZO REPARTICION
	ANDRES DE VERA	A.S	200	A					60/100	50/100							REPARACION CERRAMIENTO Y MEDIDOR DE CAUDALES
	ANDRES DE VERA	A.S	300	A							50/150	50/150					REPARACION TALUDES Y COMPUERTAS LAGUNA DE ESTABILIZACION
	HIGUERON	A.P	200	A		60/160	60/100										REPARACION RED DE DISTRIBUCION
	HIGUERON	A.P	300	A					60/150	60/150							REPOSICION EQUIPO DE BOMBEO Y REPARACION DE ACCESORIOS
	PROGRESO	A.P	200	A			50/100	50/100									REPOSICION EQUIPO DE BOMBEO Y ACCESORIOS
	PROGRESO	A.P	100	A					100/100								REPARACION SISTEMA ELECTRICO

NOTAS:

IEOS
Instituto Ecuatoriano de Obras Sanitarias
Dirección Nacional de Planificación
División de Programación y Evaluación

PROGRAMA EMERGENTE

SUBPROGRAMA: SANEAMIENTO AMBIENTAL

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Fuente del Compromiso	1983 Nov	1983 Dciem	1984 Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
MANABI																	
BOLIVAR	CALCETA	A.S	300	A			60 / 150	60 / 180									REPARACION BOMBAS Y SISTEMA ELECTRICO
	CALCETA	A.S	100	A					100 / 100								LIMPIEZA LAGUNA DE ESTABILIZACION
	CALCETA	A.S y A.Pl	400	A	30 / 200	30 / 200											REPARACION Y LIMPIEZA DE REDES
	CALCETA	A.P	600	C	33 / 200	33 / 200	34 / 200										REHABILITACION DESCARGA EMERGENCIA Y CONTROL DE INUNDACIONES A. ESTACION EF. GOMEZ
			11.300		1.535	1.835	2.005	1.125	850	650	750	850	600	600	500		

NOTAS:
A.P = Agua Potable
A.S = Alcantarillado Sanitario
A.Pl = Alcantarillado Pluvial
A = Administracion
C = Contrato

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Ministerio de Obras Públicas
Consejo Nacional de Planificación
Sistema de Programación y Evaluación

PROGRAMA DE EMERGENCIA

SUBPROGRAMA: SANEAMIENTO AMBIENTAL.

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Situación del Campo	1983 Nov	Dicem	1984 Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
LOS RIOS																	
BABAHOYO	BABAHOYO	A.P	300	C	33 / 100	33 / 100	34 / 100										LIMPIEZA TRES POZOS PRO FUNDOS
	BABAHOYO	A.P	450	A				50 / 225	50 / 225								INSTALACION EQUIPOS CLORACION EN POZOS
	BABAHOYO	A.S y A.P.	7500	C	12 / 940	12 / 940					13 / 940	13 / 940	13 / 940	13 / 940	13 / 940	12 / 920	INSTALACION DISPOSITIVOS DE CONTROL DE INUNDACIONES
	BARREIRO	A.P	500	C	50 / 250	50 / 250											INSTALACION TUBERIA EN RED DE DISTRIBUCION
URDANETA	CATARAMA	A.S y A.P.	300	A			50 / 150	50 / 150									LIMPIEZA DE ALCANTARILLADOS
	CATARAMA	A.P	150	A			100 / 150										INSTALACION EQUIPO DE CLORACION
	RICAURTE	A.S y A.P.	300	A					50 / 150	50 / 150							LIMPIEZA DE ALCANTARILLADOS
PUEBLOVIEJO	PUEBLOVIEJO	A.S	200	A	50 / 150	50 / 150											REPARACION Y LIMPIEZA DE ALCANTARILLADO
	PUEBLOVIEJO	A.P	200	C				50 / 100	50 / 100								LIMPIEZA DE 2 POZOS PRO FUNDOS
	PUEBLOVIEJO	A.S	100	A		50 / 50	50 / 50										REPARACION BOMBAS Y SISTEMA ELECTRICO

NOTAS:

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Instituto Ecuatoriano de Obras Sanitarias
Dirección Nacional de Planificación
División de Programación y Evaluación

PROGRAMA EMERGENTE

SUBPROGRAMA: SANEAMIENTO AMBIENTAL

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Situación del Componente	1983 Nov	1983 Diciem	1984 Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
Los Rios																	
Vinces	Vinces	A.P	250	A							50 125	50 125					Reparacion clorador y adquisicion quimicos
	Vinces	A.S	200	A		50 100	50 100										Reparacion y limpieza red de alcantarillado
	Vinces	A.S	1500	C	25 375	25 375	25 375	25 375									Rehabilitacion red y conexiones domiciliarias
	Vinces	A.P	300	A		50 150	50 150										Reparacion planta de tratamiento
			12.350		1.815	2.115	1.075	150	475	150	1065	1065	940	940	940	920	

NOTAS:
A.P = Agua Potable
A.S = Alcantarillado Sanitario
A.R = Alcantarillado Pluvial
A = Administracion
C = Contrato

IEOS
Instituto Ecuatoriano de Obras Sanitarias
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División de Programación y Evaluación

PROGRAMA EMERGENTE

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SUBPROGRAMA: SANEAMIENTO AMBIENTAL

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Ejecución del Contrato	1983 Nov	1983 Dciem	1984 Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
GUAYAS																	— — —
GUAYAQUIL	TENGUEL	A.P	100	A				100 / 100									REPARACION BOMBEO Y SISTEMA ELECTRICO
	TENGUEL	A.P	100	A	60 / 50	50 / 50											REPARACION RED DE DISTRIBUCION
	TENGUEL	A.S	100	A		50 / 50	50 / 50										LIMPIEZA RED
	TENGUEL	S.A	200	A	50 / 100	50 / 100											SANEAMIENTO Y CONTROL AMBIENTAL
NARANJAL	NARANJAL	A.P	1500	C	33 / 600	33 / 500	34 / 500										CONSTRUCCION MURO DE GAVIONES CAPTACION
	NARANJAL	A.S	200	A			50 / 100	50 / 100									LIMPIEZA RED
YAGUACHI	EL TRIUNFO	A.P	150	A			50 / 75	60 / 75									INSTALACION CLORACION A GAS
			2.350		650	700	725	275									

NOTAS: A.P = AGUA POTABLE
A.S = ALCANTARILLADO SANITARIO
S.A = SANEAMIENTO AMBIENTAL
A = ADMINISTRACION
C = CONTRATO

PROGRAMA EMERGENTE

Ecuatoriana de Obras Sanitarias
Nacional de Planificación
de Programación y Evaluación

SUBPROGRAMA: SANEAMIENTO AMBIENTAL

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Fracción en Contrato	1993 Nov	1993 Diciem	Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
EL ORO																	
STA. ROSA	STA. ROSA	A.P	300	A	32 / 160	32 / 160	36 / 180										ARREGLOS CAPTACION Y REPOSICION COMPUERTA AEUD
	STA. ROSA	A.P.	1000	A	25 / 250	25 / 250	25 / 250	25 / 250									PROTECCION Y REPARACION CONDUCCION
	STA. ROSA	A.P	400	A					50 / 200	50 / 200							RECONEXION A SISTEMA ELECTRICO I.N.E.C.E.L.
	STA. ROSA	A.S	100	A				100 / 100									LIMPIEZA LAGUNA DE ESTABILIZACION.
	STA. ROSA	A.S	3000	A	20 / 600	20 / 600					20 / 600	20 / 600	20 / 600				REPARACION RED ALCANTARILLADO SANITARIO
	STA. ROSA	A.S	300	A				50 / 150	50 / 150								INSTALACION BOMBAS
MACHALA	MACHALA	A.P	300	C		33 / 100	33 / 100	34 / 100									LIMPIEZA 3 POZOS PROFUNDOS
	MACHALA	A.P	600	A				34 / 200	33 / 200	33 / 200							EQUIPAMIENTO DE 4 CLORADORES A GAS.
ARENILLAS	ARENILLAS	A.P	100	A	100 / 100												PROTECCION DE TALUDES EN CAPTACION
	ARENILLAS	A.P	150	A				100 / 150									EQUIPAMIENTO DE CLORACION A GAS.

NOTAS:

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IEOS
Instituto Ecuatoriano de Obras Sanitarias
Dirección Nacional de Planificación
División de Programación y Evaluación

PROGRAMA EMERGENTE

SUBPROGRAMA: Saneamiento Ambiental

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Ejecución del Componente	1983 Nov	1983 Dicem	1984 Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
EL ORO																	
ARENILLAS	ARENILLAS	A.P	300	A		50 150	60 150										REPARACION RED DE DISTRIBUCION
	ARENILLAS	A.S	700	A	33 230	33 230	34 240										REPARACION RED
	ARENILLAS	A.S	100	A		50 50	50 50										REPARACION Y LIMPIEZA LAGUNA DE ESTABILIZACION
	ARENILLAS	A.S	1.100	C							25 275	25 275	25 275	25 275			HABILITACION DEL EMISARIO Y DESCARGA
HUAQUILLAS	HUAQUILLAS	A.P	1.500	C					33 500	33 600	34 600						PERFORACION Y EQUIPAMIENTO DE POZO
	HUAQUILLAS	A.P	150	A	100 150												EQUIPAMIENTO PARA CLORACION A GAS
	HUAQUILLAS	AP	100	A								100 100					HABILITACION TANQUE ELEVADO
	HUAQUILLAS	A.P	500	A	50 250	50 250											REPARACION RED DE DISTRIBUCION Y CONDUCCION A HUAQUILLAS
	HUAQUILLAS	A.S	200	A		50 100	50 100										REPARACION Y LIMPIEZA DE LA RED.
PASAJE	PASAJE	A.P	150	A	100 150												EQUIPAMIENTO PARA CLORACION A GAS.
			11.250		1.890	1.890	1.010	950	1.050	900	1.315	975	875	275			

NOTAS: A.P: Agua Potable
A.S: Alcantarillado Sanitario
A: Administración
C: Contrato

IEOS
Instituto Ecuatoriano de Obras Sanitarias
Dirección Nacional de Planificación
División de Programación y Evaluación

PROGRAMA EMERGENTE

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SUBPROGRAMA: SANEAMIENTO AMBIENTAL.

PROVINCIA / CANTON	LOCALIDAD	Sistema	Presupuesto (miles S/)	Ejecución del Convenio	1983 Nov	1983 Dicem	1984 Enero	Febrer	Marzo	Abril	Mayo	Junio	Julio	Agosto	Septiem	Octubre	OBSERVACIONES
TODAS LAS PROVINCIAS																	OBRAS VARIAS EN SANEAMIENTO AMBIENTAL.
VARIOS CANTONES	VARIAS	SA	7500	A	9	9	8	8	8	8	8	8	8	8	9	9	
					675	675	600	600	600	600	600	600	600	600	675	675	
			54.250		7.695	8.595	6.560	4.725	3.750	2.725	4.752	4.209	3.534	2.934	2.634	1.707	
			100%		14.1	15.8	12.5	8.7	6.9	5.0	8.8	7.8	6.5	5.4	4.9	3.2	

NOTAS: S.A = SANEAMIENTO AMBIENTAL
A = ADMINISTRACION

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MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOJA

HOJA # 1

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
PUYANGO		SOLEDAD	Esc. PABLO NERUDA	Cubierta y Patio	300.000,o	
PUYANGO		STA.ANA	Esc. JULIO ZALDUMBIDO	Cubierta y aulas	300.000,o	
PUYANGO		MATALANGA	Esc. JOHN ESTUARA	Cambio de cubierta	300.000,o	
PUYANGO		GUARARA	ESC. DANIEL VELEZ	Cubierta	500.000,o	
PUYANGO		GUAMBONA	Esc. SIN NOMBRE	Cubierta	300.000,o	
PUYANGO		CHITOQUE	Esc. MODESTO FRANCO	Cubierta y muro	300.000,o	
PUYANGO		SAN FCO.	Esc. VICTOR YUMBO C.	1 aula	300.000,o	
PUYANGO		MASACONSA	Esc. SIN NOMBRE	Cubierta	300.000,o	
PALTAS		EL JARDIN	Esc. MARIA LALNGUI	Reconstrucción	200.000,o	
PALTAS		LA CRIA	Esc. CHAGUARPAMBA	Reconstrucción	200.000,o	
PALTAS		IGUERONES	Esc. SIN NOMBRE	REconstrucción	400.000,o	
PALTAS		YAGUACHI	Esc. QUISQUI	Reparación	200.000,o	
PALTAS		LA VICTORIA	Esc. WILSON CHURCHIL	Cambio de Cubierta	200.000,o	
PALTAS		HCDA. NUEVA	Esc. JORGE CASTILLO	Cubierta	200.000,o	
PALTAS		TAMBARA	Esc. BASCO NUÑEZ DE B	Reconstrucción	400.000,o	
PALTAS		LA CORDILLERA	Esc. MIGUEL DE SERVANTEZ	Reconstrucción	400.000,o	
PALTAS		GUIÑEZ GRANDE	Esc. SEGUNDO A. MORENO	REconstrucción	400.000,o	
PALTAS		LA ZOTA	Esc. MAXIMILIANO VARVAS	Cambio de cubierta y pisos	300.000,o	
PALTAS		MACANDAMINE	Esc. JORGE ARMIJOS	Cubierta, pisos	400.000,o	
PALTAS		ASHIMINGO	Esc. GONZALO R. ORDE	Cubiertas y SS.HH.	300.000,o	
PALTAS		HILILDRA	Esc. ROBERTO RUILOBA	Cubierta, pisos	300.000,o	
PALTAS		SAN ANTONIO	Esc. SORIA VERA	Cubierta y pisos	200.000,o	
PALTAS		CASANDRA	Esc. JUAN JIMENEZ	Reparación	300.000,o	
GONZANAMA		Gonzanamá	Esc. LAUTARO LAYZA	Reparación	300.000,o	
GONZANAMA		GONZANAMA	Esc. 12 DE OCTUBRE	Reparación de muros	150.000,o	
Gonzanama		PALOTINE	Esc. CARLOS O. PALACIOS	Repración muros	150.000,o	
GONZANAMA		QUILANGA	Esc. MANUEL C. PINTANO	Reparación muros	200.000,o	
GONZANAMA		QUILANGA	Esc. FRANCIA	Reparación cubierta	150.000,o	
GONZANAMA		STA. BARBARA	Esc. FCO. RIOFRIO	Reconstrucción paredes	150.000,o	
GONZANAMA		SACAFALTA	Esc. JUAN DE SALINAS	Reconstrucción	150.000,o	
GONZANAMA		NAMBACOLA	Esc. ABELARDO FLORES	REconstrucción de muro	150.000,o	
CELICA		STA. ANA	Esc. SIN NOMBRE	Cubierta	200.000,o	
CELICA		TAILI	Esc. ECUADOR	Pisos	200.000,o	

CANDIDATE SCHOOLS

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOJA

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CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
LICA		CELICA	Esc. SIMON BOLIVAR	Reconstrucción	500.000,oo	
ELICA		GUARIJAS	Esc. DIEGO VACA DE V.	Cubierta piso	200.000,oo	
ELICA		CARISO	Esc. SIN NOMBRE	Muros	200.000,oo	
ELICA		CANGOCHARA	Esc. COTOPAXI	Cambio de cubierta	200.000,oo	
APITLLO			Colg. ZAPOTILLO	Reconstrucción	400.000,oo	
APOTILLO		GARZAGUACHANA	Esc. ZAMORA	Reconstrucción de SS.HH.	300.000,oo	
APOTILLO		LAS CHACRAS	Esc. GNRL. CORDOVA	Reconstrucción de la Esc.	300.000,oo	
APOTILLO		EL TAMAYO	Esc. SIN NOMBRE	Reconstrucción Escuela	300.000,oo	
ACARA		MACARA	Esc. 10 DE AGOSTO	Cambio cubierta	650.000,oo	
ACARA			Esc. MENUEL REGEL	Cambio de cubierta	650.000,oo	
ACARA			Esc. 22 DE SEPTIEMBRE	Reconstrucción patios	180.000,oo	
ACARA			Esc. JOHN F. QUENNEDY	Reparación	300.000,oo	
OJA			Esc. CUARTO CENTENARIO	Reconstrucción de cerramiento	300.000,oo	
OJA			Esc. MODELO	Reconstrucción de cerramiento.	350.000,oo	
ZORANCA		ZOZORANGA	Esc. DOLORES CELI	Muro de contención	350.000,oo	
OZORANCA			Esc. ZOILO RODRIGUEZ	Cambio de cubierta	300.000,oo	
ARAGURO		URDANETA	ESC. MARISCAL SUCRE		75.000,o	LOS DAÑOS SUFRIDOS
ARAGURO	SAN ANTONIO		Esc. LUIS MONTESINOS		47.000,oo	LOS LOCALES ESCOLA
ARAGURO		LIAXO	Esc. MANUEL B. CARRIO		90.000,oo	DE LA PROVINCIA DE
ARAGURO		SELEN	Esc. PEDRO V. MALDONADO		115.000,oo	JA SE IDENTIFICAN
ARAGURO	YUNIPAMBA		Esc. MARIANO CUEVA		70.000,oo	MANERA GENERAL, CO
ARAGURO		CAÑARO	Esc. SIN NOMBRE		40.000,o	DIFERENCIA CUALITA
ARAGURO	CANACAI		Esc. CORIDA		30.000,oo	VA. NATURALMENTE CC
ARAGURO		YULUX	Esc. MACHALA		75.000,oo	LOS SIGUIENTES:
ARAGURO		BELLAVISTA	Esc. ELOY ALFARO		78.000,oo	DESTRUCCION TOTAL
ARAGURO		SABADEL	Esc. SANTA MARIANA DE LEIVA			PARCIAL DE TECHOS.
OJA		SANTIAGO	ESC. LUIS PATEUR		30.000,oo	TRUCTURAS DE CUBII
OJA	MANUPE		Esc. MARIETA DE VEINTIMILLA		90.000,oo	TA, PAREDES, PISOS VENTANAS, SOGAVAC:
OJA	RUMIZHITANA		Esc. SEVILLA DE ORO		100.000,oo	DE CIMIENTOS, DESI
OJA		SAN ISIDRO	Esc. FERNANDO VELASTEGUI		90.000,oo	VES, EROCIONES DI TERRENO ESCOLAR;
OJA		LA ELVIRA	Esc. SIN NOMBRE		95.000,oo	DA DE PAREDES, MU
OJA		EL BELEN	Esc. 25 DE DICIEMBRE		80.000,oo	CERRAMIENTO OBSTR
					97.000,oo	CION Y/O DESTRUCC DE CANALIZACION'S.

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MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOJA

HOJA # 3

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
LOJA		HUAYCO ALTO	Esc. SIN NOMBRE		70.000,00	VER HOJA # 2
LOJA		CERRA	Esc. SIN NOMBRE		120.000,00	EN LO QUE RESPECTA
LOJA		PICOTAS	Esc. MANUEL GOMEZ		93.000,00	LOS DAÑOS GENERALES
LOJA		P. NUEVO	Esc. LINDERBERG		84.000,00	
LOJA		YAMBOHARA	Esc. JULIAN DE LA RUA PIZARRO		80.000,00	
LOJA		TRES LEGUAS	Esc. ALFONSO AULESTIA		97.000,00	
LOJA		ARGENTINA	Esc. ANDRES TINOCO		95.000,00	
LOJA		ADAMARA	Esc. CARLOS BURNEO		10.000,00	
LOJA		PALLANDRIL	Esc. REP. CUBA		65.000,00	
LOJA		SAN JOSE	Esc. SIN NOMBRE		65.000,00	
LOJA		EL VALLE	Esc. TNT. HUGO ORTIZ		125.000,00	
LOJA		LAS PITAS	Esc. JOSE INGENIERO		140.000,00	
LOJA		CHIRINOYOS	Esc. FCO. RODAS B.		90.000,00	
LOJA		JIMBILLA	Esc. GONZALO PIZARRO		120.000,00	
LOJA		LA CHONTA	Esc. GALO PLAZA		68,000,00	
LOJA		MONTECRISTI	Esc. AZUAY		65.000,00	
LOJA	LOJA		Esc. ADOLFO JURADO G.		118.000,00	
LOJA	LOJA		Esc. LAURO DAMERVAL A		120.000,00	
LOJA		LANDANDI	Esc. LUIS E. RODRIGUEZ		106.000,00	
LOJA		SAN SEBASTIAN	Esc. DOROTEA CARRION		75.000,00	
LOJA	LOJA		ESC. ZOILA PACIFICA		150,000.00	
CALVAS		SAN JOSE	Esc. PENINSULA IBERICA		75.000,00	
CALVAS		CHILE	Esc. TELMO OLIVA OJEDAS		78.000,00	
CALVAS		QUINUA	Esc. CIUDAD DE TOQUIO		59.000,00	
CALVAS		BELLAMARIA	Esc. RODRIGUEZ DE CORONEL		48.000,00	
CALVAS		SANTA TERESA	Esc. ALEJANDRO CARRION		80.000,00	
CALVAS		EL ARTON	Esc. JUAN DE DIOS MALDONADO		44.000,00	
CALVAS		NARANJO	Esc. NUMA POMPILLO LL.		60.000,00	
CALVAS		CACHACO	Esc. REMIGIO ROMEROY C.		75.000,00	
CALVAS		SAMANAMANCA	Esc. DR. NEPTALI CARRASCO		65.000,00	
CALVAS		MELVA MARIA	Esc. GONZALO ZALDUMBI-		77.000,00	

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MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

. PROVINCIA : LOJA

NTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Celica		Haigeronis	Esc. Sabulón Bustamante		70.000,oo	Los daños ocacionados
Celica		Potrerillo	Esc. José Jabier E.		90.000,oo	en los locales escolare
Celica		La tuna	Esc. Simón Rojas		50.000,oo	de la Provincia de Loja
Celica		El Pajonal	Esc. Sin Nombre		60.000,oo	se identifican de maner
Celica		Colay	Esc. Enrique Pestaloss		170.000,oo	general con diferencia
Celica	Celica		Esc. Sin Nombre		60.000,oo	cualitativa naturalment
Celica		Cardo	Esc. Rio Canchis		50.000,oo	con lo siguiente:
Celica		El Faique	Esc. Balladolid		73.000,oo	destrucción parcial o t
Celica		Hygerones	Esc. Segundo Cueva Cel		70.000,oo	tal de techos, estructu
Celica		Capuri	Esc. Cacha		45.000,oo	ras de cubierta, parede
Celica		El Ají	Colg. Tungurahua		35.000,oo	pisos, ventanas, socava
Celica		Chaguarguaicco	Esc. Alfredo Binet		60.000,oo	ción de simientos, desl
Espíndola		Yamanchí	Esc. Bernaldo Valdivieso		120.000,oo	ves, erosiones del terr
Espíndola		San Carlos	Esc. Puerto Baquerizo		75.000,oo	no escolar, caída de pa
Espíndola		Tundurama	Esc. Espíndola		85.000,oo	des, muros, cerramiento
Espíndola		El Sango	Esc. Dr. José Carrión		90.000,oo	obstrucciones, y/o desi
Espíndola		Lanze	Esc. Renato Descartes		78.000,oo	ciones de la canalizaci
Espíndola		Cofradías	Esc. Mainas		90.000,oo	sanitaria.
Espíndola		La Florida	Esc. Zamora de los Alcaldes		75.000,oo	
Gonzanamá		San Vicente	Esc. Sin Nombre		73.000,oo	
Gonzanamá		Santa Rita	Esc. José María Riofrio		54.000,oo	
Gonzanamá		Santa Barbara	Esc. José María Palacios		50.000,oo	
Gonzanamá		Sta. Barbara	Esc. Fco. Javier Carrión		70.000,oo	
Gonzanamá		Salado	Esc. Agustín Mendieta		80.000,oo	
Gonzanamá		Las Aradas	Esc. Ignacio Godoy		70.000,oo	
Gonzanamá	Gonzanamá		Esc. Pedro Carbo		60.000,oo	
Macará		Nunviaranga	Esc. Bartolomé de las Casas		85.000,oo	
Macará		El Guarapo	Esc. Carlos Cueva Tamaris		64.000,oo	
Macará		Mangora	Esc. Dario C. Eguiguren		55.000,oo	
Macará		El Vitallo	Esc. Celia V. Ortoga		57.000,oo	
Macará		Santa Rosa	Esc. Rolando Vélez		48.000,oo	

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOJA

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Macará		Curichanga	Esc. Nicolas García		69.000,00	Los daños sufridos en l locales escolares de la Provincia de Loja, se i dentifican de manera ge ral, con diferencia cua tativa naturalmente en los siguientes: destrucción total de tu chos, estructuras de cu biertas, paredes, pisos ventanas, socavación s: mientos, deslaves eros: ciones de terrenos esca res, caidas de paresde muros, cerramientos, o trucciones y/o destruc ciones de la canalizac sanitarias
Macará		Curichanga-algodonal	Esc. Clementi Yerovi I		70.000,00	
Macará		Pindal de Jujal	Esc. Maximiliano Rodriguez		67.000,00	
Macará		La Victoria	Esc. Toribio Mora		67.000,00	
Macará		Corrupe	Esc. Sin dNombre		45.000,00	
Macará		La Guatana	Esc. ANtonio ANte		51.000,00	
Macará		Machanguilla	Esc. Sin NOmbre		62.000,00	
Macará		El Coco	Esc. Guillermo Rodriguez		42.000.00	
Macará		Angosturas	Esc. Rafael Arrobo		44.000,00	
Macará		El Corral	Esc. Maximiliano Román		20.000,00	
Macará		Tajopamba	Esc. Juvenal jaramillo		35.000,00	
Macará		El Pindo	Esc. Manuel B Cueva		40.000,00	
Macará		Los 1Inderos	Esc. Jubentino Carrera		53.000,00	
Macará		Almendro Sur	Esc. Ramon Zúñiga		30.000,00	
Macará		Almendro Norte	Esc. ALfredo Bustamant		27.000,00	
Macará		Condolanza	Esc. República Argentina		39.000,00	
Macará		Casa Vieja	Esc. José María Espinosa		48.000,00	
Macará		Tangula	Esc. ANgel B. Carrión		47.000,00	
Macará		Macará	Esc. Sta, Mariana de Jesús		123.000,00	
Macará		Pasaje de Jujal	Esc. Carlos J. Arosemena		69.000,00	
Paltas		Ogoluca	Esc. Azuay		88.000.00	
Paltas		Puente Playas	Esc. República de Curazao		95.000,00	
Paltas		Pelimón	Esc. Parcialidad de los Paltas		80.000,00	
Paltas		Hualguillan	Esc. Ciudad de Catacocha		65.000,00	
Paltas		Sta Rufina	Esc. Condorazo		96.000,00	
Paltas		El Rosario	Esc. Loja		70.000,00	
Paltas		Orianga	Esc. Bogotá		140.000,00	
Paltas		Gangonamá	Esc. Victor Reyes		90.000,00	

MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOJA

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Zozoranga		Los POzos	Esc. República del Ecuador		105.000,00	Los daños sufridos en los locales escolares d la Prov. de Loja se ide tifican de manera gener condiferencia cualitati naturalmente con los si guientes: destrucción total o par cial de techos, estruc ra de cubierta, paredes pisos, ventanas; socavac ción de cimentos; dela rosiones del terreno . lar caidas de paredes, ros, cerramientos; obs ciones y/o destruccion de la canalización san rias.
Zozoranga		Izana	Esc, Sin Nombre		60.000,00	
Zozoranga		Los Llanitos	Esc. Rafael Rodriguez P.		235.200,00	
Zozoranga		Gualtaco	Esc. Sin Nombre		90.000,00	
Zozoranga		Perpetuo S.	Esc. Sin Nombre		95.000,00	
Zapotillo		El Sauce	Esc. Sgto. Angel Dávila		95.000,00	
Zapotillo		Bolaspamba	Esc. Gregorio Marañon		114.000,00	
Loja						
Loja		Chuquiribamba	Esc. Antonio Jimenez	reparación paredes ventanas puertas	85.000,00	
Loja	Loja		Esc. José A. Palacios	batería de SS.HH.	520.000,00	
Loja	Loja		Esc. Miraflores	35 metros de muro de sostenimiento	90.000,00	
Loja	Bolonia		Esc. Filomena Rojas	c ubierta, tumbado y piso	100.000,00	
Loja		Vinuyacu G.	Esc. Victoria o Palacios	Techo y pisos	120.000,00	
Loja	Loja		Esc. Eliseo Alvarez	ventanas baterías mamparas paredes	120.000,00	
Loja		Limón Taquil	Esc. Sin Nombre	techo, paredes y pisos	95.000,00	
Loja	El Sauce		Esc. Sin NOmbre	pisos tumbados y paredes	90.000,00	
Celica		Naranja Pam	Esc. León de Febres C.	cubierta, tumbado y paredes	200.000,00	
Celica	Celica		Esc. Manuela Cañizares	techo eternit piso y paredes	150.000,00	
Celica		El Faical	Esc. Manuel Eliseo Flo	techo tumbados pisos paredes de aulas .	384.000,00	

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOJA

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Gonzanamá		Trigopamba	Esc. Río Saraguro	letrinas, cancha deportiva	87.000,00	
Gonzanamá	Quilanga		Colg. Quilanga	destrucción 2 aulas	360.000,00	
Espíndola		Triopamba	Esc. Ciudad de Amaluza	techo, tumbados y paredes	150.000,00	
Espíndola	Cozapamba		Esc. José Harris Morales	reparación de cubierta, pisos ventanas, puertas y enlucidos	108.000,00	
Calvas	Carango		Esc. Sin Nombre	destruido totalmente por deslave	150.000,00	
Calvas	Batán		Esc. Sin Nombre	" " " "	150.000,00	
Calvas		Ahuaca	Esc. Arada Jumbo	destruido el local	90.000,00	
Saraguro		San Vicente	Esc. Sin Nombre	paredes, pisos y cimentación	200.000,00	
Catamayo		Capilla Alta	Esc. Sin Nombre	tumbado pisos y ventanas	94.000,00	
Catamayo		San Pedro de la bendita	Esc. Mariana Gutiérrez	arreglo de pisos y paredes	90.000,00	
Macará		Sabiango	Esc. Simón Rodríguez	tumbados paredes y baterías	95.000,00	
Loja	Loja		Esc. Folimena Mora deC	cambio de cubierta pisos 2 aulas	90.000,00	
Loja		Gualel	Esc. Alvarez Sanchez	arreglo de pisos y paredes vidrio	25.000,00	
Loja		Jimbilla	Esc. Gustavo Adolfo B	arreglo de techos, tumbados y pisos	20.000,00	
Loja		Masaca	Esc. Emiliano Mora	talud y reconst 2 metros de muro	60.000,00	
Paltas		La Supa	Esc. Pisaca	techo paredes vidrios y puertas	110.000,00	
Celica		dos Quebrad	Esc. John Look # 59	cubierta pisos y paredes	96.000,00	
Espíndola		El Salado	Esc. 26 de Septiembre	pisos canchas y vidrios destruidos	75.000,00	
Loja		Challipaccha	Esc, Mercedes Palacios	techo tumbados y reposición tumbado	70.000,00	
Paltas		Orianga	Esc. Sin Nombre	arreglo de techo y paredes	35.000,00	
Puyango	Alamor		Esc. Eloy Alfaro # 57	canalización SS.HH. y batería	300.000,00	

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOJA

HOJA # 8

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
ALVAS		USAIME	Esc. JORGE ICAZA		85.000,oo	VER LA PAGINA # 2 EN LO QUE RESPECTA A LOS DAÑOS GENERALES
ALVAS		RIO PINDO	Esc. SIN NOMBRE		70.000,oo	
ALVAS		UTUANA	Esc. MOISES OLIVA		120.000,oo	
ATAMAYO		CHIUGUANDO	Esc. FULTON		95.000,oo	
TAMAYO		ZAMBI	Esc. ENRIQUE VACA O.		102.000,oo	
ATAMAYO		LA VEGA	Esc. AUGUSTO WITT		95.000,oo	
ATAMAYO		PATA CORRAL	Esc. REP. VENEZUELA		120.000,oo	
ATAMAYO		TRAPICHILLO	Esc. ALFONSO CORONEL		88.000,oo	
OJA		LOJA	Esc. JOSE A. CAMPOS		180.000,oo	
			VARIAS ESCUELAS	Mobiliario	500.000,oo	
				TOTAL GENERAL	S/. 29'120.000,oo	

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : ESMERALDAS -1-

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
ESMERALDAS		ESTERO SECO	ESC. RAMON CHIRIBOGA	Destrucción total	300.000,oo	
ESMERALDAS		BELLAVISTA	ESC. MAGDALENA DAVILA	Semidestruída	300.000,oo	
ESMERALDAS		BARRANQUILLA	ESC. LEOPOLDO N. CHAVEZ	Semidestruída	300.000,oo	
ESMERALDAS		ISLA VERDE	ESC. CAPITAN NAGERA	Destruída	900.000,oo	
ESMERALDAS		LAS PIEDRAS	ESC. TEODORO MORAN	Destruída	300.000,oo	
ESMERALDAS		QUININDE	ESC. PATRIA NUEVA	Destruída	900.000,oo	
SAN LORENZO	SAN LORENZO		ESC. DE EL CAUCHAL	Destruída 1 aulas	300.000,oo	
SAN LORENZO	SAN LORENZO		ESC. DE CHANGURAY	Destruída 1 aula	300.000,oo	
SAN LORENZO	SAN LORENZO		ESC. DE PAMPANAL	Semidestruída	150.000,oo	
SAN LORENZO	SAN LORENZO		ESC. DE PINCHAGAL	Semidestruída reparación	150.000,oo	
SAN LORENZO	SAN LORENZO		ESC. DE TAMBILLO	Semidestruída	150.000,oo	
SAN LORENZO	SAN LORENZO		ESC. DE CONCEPCION	Semidestruída	150.000,oo	
ESMERALDAS			ESC. FRAY VICENTE SOLANO	Reparación	750.000,oo	
ELOY ALFARO			J.I. LIMONES	Reparación	400.000,oo	
ELOY ALFARO			ESC. DE SANTA ROSA	Reparación	100.000,oo	
ELOY ALFARO			ESC. DE MALDONADO	Reparación	100.000,oo	
ELOY ALFARO			ESC. DE CANCHIMALERO	Reparación	100.000,oo	
ELOY ALFARO			ESC. DE CUERVAL	Reparación	150.000,oo	
ELOY ALFARO			ESC. DEL RANCHITO	Reparación	150.000,oo	
MUISNE			ESC. SAN GREGORIO	Reparación	150.000,oo	
MUISNE			ESC. BOCA DEL SUCIO	Reparación	100.000,oo	
ESMERALDAS			ESC. DEL CHINCHA	Reparación	100.000,oo	
ESMERALDAS			ESC. RAMON ESTUPIÑAN	Reparación	500.000,oo	
ESMERALDAS			ESC. COMP. L. DROUT	Reparación	1'500.000,oo	
ESMERALDAS			ESC. BATALLON MONTUFAR	Reparación	800.000,oo	
ESMERALDAS			ESC. ESTADOS UNIDOS	Reparación	600.000,oo	
ESMERALDAS			ESC. GRAN BRETAÑA	Reparación	800.000,oo	
ESMERALDAS			J. I. MARIA MONT	Reparación	700.000,oo	
ESMERALDAS			ESC. GONZALO ABAD G.	Reparación	500.000,oo	
MUISNE			J.I. MUISNE	Accesos e instalaciones	300.000,oo	
ESMERALDAS			ESC. AUTORIDAD PORTUARIA	Pisos y desagues	750.000,oo	
ESMERALDAS			ESC. SAN MARTIN	Pisos y desagues	700.000,oo	
QUININDE			J.I. QUININDE	Pintura e instalaciones	400.000,oo	

MINISTERIO DE EDUCACION Y CULTURA

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PROVINCIA : ESMERALDAS - 2 -

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
ESMERALDAS			COLG. LUIS TELLO	Reparación de cubierta	203.140,oo	
ESMERALDAS			SUPER VIS. ESC. ESMER.	Reparación	79.030,oo	
ESMERALDAS			ESC. FCO. CAMPOS	REparación	500.000,oo	
ESMERALDAS			ESC. CEPE	Reparación	1.000.000,oo	
ESMERALDAS			ESC. PEDRO DRUNET	Reparación	700.000,oo	
ESMERALDAS			ESC. VUELTA LARGA	Reparación cubierta	500.000,oo	
ESMERALDAS			COLG. ELOY ALFARO	Cerramiento	1'000.000.oo	
SAN LORENZO			J.I. SAN LORENZO	Adecuación	300.000,oo	
ESMERALDAS		MIRAMUCHIN	ESC. 3 DE NOVIEMBRE	Reparación	300.000,oo	
ESMERALDAS		VENADO	ESC. JULIO UZCATEGUI	Reparación		
ESMERALDAS		MACHI	ESC. ESPAÑA	Terminación	300.000,oo	
ESMERALDAS		B. de ARENAN	ESC. ROSITA PAREDES	Reparación	300.000,oo	
ESMERALDAS		PAMBULA	ESC. NICOLAS PEÑA	Reconstrucción	300.000,oo	
ESMERALDAS		LA COLORADA	ESC. JOSE RIOFRIO	Reconstrucción	300.000,oo	
ESMERALDAS		EL COLORADO	ESC. EDUARDO A. SILVA	Reconstrucción	300.000,oo	
ESMERALDAS		B. de CANUTO	ESC. MISAEL ACOSTA S.	Reconstrucción	300.000,oo	
ESMERALDAS		B GUIAS	ESC. ELOY ALFARO	Reconstrucción	300.000,oo	
ESMERALDAS		CANALON	ESC. REPUBLICA DEL SALVADOR	Reconstrucción	300.000,oo	
ESMERALDAS		EL MANGO	ESC? CIUD. PORTOVIEJO	Reconstrucción	300.000,oo	
ESMERALDAS		PORTUGAL	ESC. PUERTO ESMERALDAS	Reconstrucción	300.000,oo	
ESMERALDAS		SAN SALVADO	ESC. ATAHUALPA	Reconstrucción	300.000,oo	
ESMERALDAS		CONEJO	ESC. SAN SALVADOR	Reconstrucción	300,000,oo	
---------			VARIAS ESCUELAS	Mobiliario	300.000,00	
					500.000,oo	
				TOTAL GENERAL	S/. 44 732,170,00	

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PROVINCIA : MANABI

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Portoviejo		Andres Vera	Esc Mariana Cobos	Reparaciones	400.000,00	
Chone			J.I. Gonzalo Abad	Reparaciones	100.000,00	
Sucre		Leonidas pla	Esc. Manuel Mero López	Reparaciones	300.000,00	
Sucre		Bahía	Esc. 3 de Noviembre	Reparaciones	500.000,00	
Sucre		Km. 20	Esc. Julia Larrea	Reparaciones	300.000,00	
Rocafuerte		Casical	Esc. Sin Nombre	Reparaciones	200.000,00	
Tosagua			Esc. Eugenio Espejo	Reparaciones	500.000,00	
Sucre		Charapotó	Esc. Sucre	Reparaciones	220.000,00	
Rocafuerte		El Higueron	Esc. Luis Urdaneta	Reparaciones	200.000,00	
Junín			Acadm. Martha Bucaran	Reparaciones	400.000,00	
Sucre		El Pueblito	Esc. Alajuela	Reparaciones	350.000,00	
Jipijapa		Jipijapa	Esc. Eleodoro Gonzales	Reparaciones	500.000,00	
Sucre		24 de Mayo	Esc. Blanca Idrovo	Reparaciones	300.000,00	
Paján			Esc. Lorenzo Nieto	Reparaciones	500.000,00	
Montecristi		El Pueblito	Esc. Aníbal San Andres	Reparaciones	300.000,00	
Paján		La Trinidad	Esc. Rumiñahui	Reparaciones	200.000,00	
Paján		San Pablo	Esc. Sin Nombre	Reparaciones	150.000,00	
Jipijapa			Esc. Jose María Santa	Reparaciones	250.000,00	
Rocafuerte			Esc. Andres Bello	Reparaciones	200.000,00	
Paján		Gamolotal	Esc. Sin Nombre	Reparaciones	200.000,00	
Chone		El Bejuco	Esc. Jeremias Velásq.	Reparaciones	250.000,00	
Sucre		Canoa	Esc. Willian Paraguay	Reparaciones	200.000,00	
24 de Mayo		las Palmas	Esc. Sin Nombre	Reparaciones	200.000,00	
Junín		Balsa Tumbad	Esc. La Libertad	Reparaciones	300.000,00	
Junín		La pita	Esc. Sin Nombre	Reparaciones	200,000,00	
Portoviejo			Esc. Hermogenes Barsin	Reparaciones	150.000,00	
Jipijapa		Los Andes	Esc. Ismael P. Pasmiño	Reparaciones	200.000,00	
Jipijapa		El Carmen	Esc. Rosita Paredes	Reparaciones	100.000,00	
Portoviejo		Andres de V.	Esc. 12 de Marzo	Reparaciones	500.000,00	
Portoviejo		Pocoiche	Esc. 10 de Agosto	Reparaciones	300.000,00	
Portoviejo		Pueblo viejo	Esc. Augusto Mendoza	Reparaciones	500.000,00	
Portoviejo		Crusita	Esc. Rodolfo Chavez	Reparaciones	200.000,00	
Sucre		Bahía	Esc. Fanny de Bair	Reparaciones	300.000,00	

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : MANABI

- 2 -

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APROX. S/.	OBSERVACIONES
Pocafuerte		Higueron	Colg. Aquiles Valencia	Muro de contención	1'500.000,00	
24 de Mayo		Sucre	Esc. 15 de Febrero	destrucción aulas y SS.HH.	300.000,00	
Jipijapa		Cayo	Esc. Sin Nombre	reparación aulas	60.000,00	
Portoviejo		Colón	Esc. Colón Manabí	Reparación aulas y retiro SSHH	300.000,00	
Portoviejo		Rio chico	Esc. Carlos Montufar	reparación aulas y SS.HH.	500.000,00	
Jipijapa		Jipijapa	Esc. Elagora Pincay	reparación aulas	300.000,00	
Santa Ana		Santa Ana	Esc. 9 de Octubre	reparación aulas y SS.HH-	300.000,00	
Portoviejo		Calderón	Esc. Azuay	reparación aulas	400.000,00	
Sucre		Salinas	Esc. Telmo Vitery S.	cubiertas aulas	200.000,00	
Sucre		Bahía	Esc. Ciudad de Bahía	reparación y SS.HH.	500.000,00	
Rocafuerte		Tosagua	Esc. Eugenio Espejo	reparación y cambio cubierta	500.000,00	
Santa Ana		Santa Ana	Esc. José V. Almeida	Reparación y SS.HH.	60.000,00	
Santa Ana		Monstooscuro	Esc. Francisco Moreira	reparación y aulas	200.000,00	
Portoviejo		La Majahua	Esc. Sin Nombre	reparación de aulas	150.000,00	
Portoviejo		Alajuela	Esc. Sin Nombre	reparación de aulas	200.000,00	
Sucre		San Isidro	Esc. Ecuador Amozónico	reparación de aulas	250.000,00	
Chone		Chone	Esc. Manabí	reparación de aulas y SS.HH.	300.000,00	
Portoviejo		Las Piedras	Esc. Manuel Rivadeneira	reparación aulas	200.000,00	
Jipijapa		Puerto López	Esc. Isidro Barriga	reparación de aulas	300.000,00	
Bolivar		Calceta	Colg. 13 de Octubre	reparación batería y SS.HH.	150.000,00	
Montecristi		Colorado	Esc. Juan León Mera	reparación aulas y SS.HH.	250.000,00	
Manta		Manta	Esc. Daniel Acosta R.	reparación aulas SSHH. y vivienda de conserje.	400.000,00	
Portoviejo		Portoviejo	Centro Esc. Francisco Pacheco.	reparación aulas y SS.HH.	350.000,00	
Portiviejo		San Cristoba	Esc. Ena Alí Guillen	reparación aulas y SS.HH.	150.000,00	
24 de Mayo		Sucre	Esc. Loja	reparación aulas y SS.HH.	500.000,00	
Junín		Riofrío	Esc. 26 de Septiembre	reparación aulas	300.000,00	
Rocafuerte		Bachillero	Esc. Miguel Letamendy	reparación cerramiento	180.000,00	

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : MANABI -3-

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
SUCRE	SAN ISIDRO		COLG. SAN ISIDRO	Reparación de aulas	500.000,oo	
PORTOVIEJO	SAN ANTONIO	MIGUELILLO	ESC. SIN NOMBRE	Reparación de aulas	350.000,oo	
CHONE	BAQUERO	SAN ANTONIO	ESC. NAPOLEON DAVILA	Reparación de aulas	230.000,oo	
chone	LA SABANA	SAN ANTONIO	ESC. SILVIO MORA BOWEN	Reparación de aulas	250.000,oo	
CHONE	LA SEGUA	SAN ANTONIO	ESC. EFRAIN VERA	Reparación de aulas	208.000,oo	
CHONE	COÑAQUE	STA. RITA	ESC. VICENTE POVEA	Cubierta	110.000,oo	
MANTA	TARQUI	SAN JOSE	ESC. REPUBLICA DE CHILE	Reparación aulas	210.000,oo	
CHONE	ELOY ALFARO		ESC. PANAMA	Reparación	210.000,oo	
PORTOVIEJO	PUEBLO NUEVO		ESC. LUIS A. MENDOZA	Reparación	195.000,oo	
ROCAFUERTE	ROCAFUERTE		ESC. SIN NOMBRE	Reparación aulas	250.000,oo	
CHONE			ESC. 24 DE JULIO	Reparación	150.000,oo	
PORTOVIEJO			COLG. UNE	Reparación	100.000,oo	
ROCAFUERTE	ROCAFUERTE		ESC. LEON FEBRES C.	Reconstrucción	300.000,oo	
TOSAGUA			ESC. STA. LUISA de MARILLAC	Reconstrucción	2'400.000,oo	
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					TOTAL GENERAL	S/. 24'233.000,oo

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : GUAYAS

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Guayaquil			Esc. Simón Bolivar	Cambio de planchas de Zing, en toda la escuela incluiye aula, portería y SS.HH.	300.000,00	
Guayaquil			Esc. 24 de Mayo	Reparación de baterías de SS.HH levantamiento de muro de pared, de patio destruida.	100.000,00	
Guayaquil			Esc. República de Guatemala.	cambiar planchas de canalit, arreglos de pared y contrapisos.	150.000,00	
Guayaquil			Esc. República de Argentina	picar, enlucir e impermeabilizar toda la terraza, baterías de SS.HH y cambio de piezas sanitarias. levantar pared solares aledaños instalación eléctrica.	300.000,00	
Guayaquil			Esc. Gastón Calderon	necesita otro canal de drenaje de AALL, cambiar planchas de zing.	300.000,00	
Durán			Esc. Manuel Cortéz A.	cambiar planchas de zing, arreglo de canal AALL. cambiar 6 tanques altos de SS.HH. levantar pared en urinario.	150.000,00	
Guayaquil	Durán		Esc. Manuel Donoso A.	contrapiso dañado cambiar zing, reparación batería SS.HH.	200.000,00	
Guayaquil	Durán		Esc. Romulo Viteri B.	reparación de betería de SS.HH. - limpieza de cisterna reparación y protecciónconn aleros de planta baja	150.000,00	
Guayaquil			Esc. 217 Sin Nombre	destapar alcantarillas.	50.000,00	
Guayas			Esc. Mercedes G. de Arosemena	filtraciones a través de la losa, reparaciónde 3 lababos, duchas y puertas de SS.HH.	100.000,00	
Guayaquil	Pascuales		Esc. Alfredo Porttalipi	ver colegio Psdnte Arosemena Tola	300.000,00	
Guayaquil			Colg. Adolfo H. Simons	enlucir pared de aulas resumen agua, cambiar planchas de eternit destapar alcantarillas.	300.000,00	

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : GUAYAS

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CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Urbina Jado		Picon Grande	Esc. Guillermo Chalen	Varios daños	800.000,00	
El Empalme		San Miguel	Esc. Primero de Mayo	Varios daños	600.000,00	
Daule		Laureles	Esc. # 64 SIN NOMBRE	Varios daños	300.000,00	
		Balao	Esc. Fco. Febres Cordero	Varios daños	400.000,00	
Santa Elena		San Pablo	Esc. Carlos J. Arosemena	Varios daños	200.000,00	
Guayaquil			Esc. Ejercito Nacional	Varios daños	1'000.000,00	
Naranjito			Esc. Eugenio Espejo	Varios daños	122.500,00	
Guayaquil			Esc. # 138 Matilde Marquez	Varios daños	300.000,00	
Guayaquil			Esc. # 239 SIN NOMBRE	Varios daños	700.000,00	
Guayaquil	El Morro		Esc. SIN NOMBRE	Varios daños	400.000,00	
Guayaquil			Esc. Gabriela Mistral	Varios daños	300.000,00	
Guayaquil	Febres Cordero		Colg. Arizaga Luque	Cambio de Eternit, canalit, arreglo de baterías de SS.HH. y cisterna	200.000,00	
Guayaquil			Colg. 28 de Mayo	Varios Daños	200.000,00	
Guayaquil			Colg. Guayaquil	Varios daños	500.000,00	
Guayaquil	Febres Cordero		Esc. Aida León de R.	Cambio de planchas de eternit, arreglo de batería de SS.HH. y cisternas	300.000,00	
Guayaquil	Febres Cordero		Colg. Prov. de Bolívar	Cambio de planchas rotas de eternit y areglo de batería de SS.HH.	100.000,00	
Guayaquil	F. Cordero		Esc. Jorge Auz L.	Arreglo de batería de SS.HH., cambio de planchas rotas de eternit	150.000,00	
Guayaquil	F. Cordero		Esc. Guillermina Mestanza	Arreglo de batería de SS.HH. y cisterna	150.000,00	

EX IV
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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : GUAYAS

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CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Guayaquil	F. Cordero		Esc. Abel Guevara deV.	Arreglo de batería de SS.HH., cisterna, instalación eléctica, cambio de canal, cambio de planchas, pared de bloques Ornamentales	300,000,00	
Guayaquil	F. Cordero		Esc. Tomas Jefferson		200.000,00	
Guayaquil	F. Cordero		Esc. Alberto Perdomo	Cambio de planchas de eternit arreglo de baterías de SS.HH.	100.000,00	
Guayaquil	F. Cordero		Esc. Sociedad Libanesa Siria	Cambio de planchas, arreglo de bomba cisterna y batería de SS.HH.	50.000,00	
Guayaquil	F. Cordero		Esc. Armando Romero R	Arreglo de baterías de SS.HH., pared de bloques ornamentales, cambios de planchas	100.000,00	
Guayaquil	F. Cordero		Colg. Otto Arosemena	Impermebilización de aulas y talleres, reparación de SS.HH. canalización de pozo séptico	600.000,00	
Guayaquil	F. Cordero		Esc.. Vicente A. Aguirre	Cambio de planchas, reparación de batería de SS.HH.	100.000,00	
Guayaquil	F. Cordero		Esc. Abel Romeo C.	Reparación de cubierta, batería de SS.HH., canalización, relleno y pavimento de aulas	1'700.000,00	
Daule		Naupe	Esc. # 10 SIN NOMBRE	Reparación de SS.HH., cubierta y paredes	300.000,00	
Guayaquil	Guasmo Sur		Esc. # 206 SIN NOMBRE	Camiones de caña y Zing, y relleno	2'000.000,00	
Guayaquil	Guasmo Sur		Esc. # 220 SIN NOMBRE	Canchón de caña y Zing, SS.HH. agua potable, relleno	2'000.000,00	
Guayaquil	Km.20 Autop.	Durán Tambo	Esc. Rita Locumberry	Se encuentra totalmente inundada	300.000,00	
Milagro			Esc Roberto Astudillo	reparaciones	300.000,00	

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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : GUAYAS -4-

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
GUAYAQUIL			ESC. # 8 REP. FRANCIA	Reparación	600.000,oo	
GUAYAQUIL	GUASMO SUR		ESC. GUAYAS Y QUIL	Instalación eléctrica	50.000,oo	
DAULE			ESC. # 2 ELOY ALFARO	Reparación	200.000,oo	
GUAYAQUIL			ESC. 123 TEODORO ALVARADO	Reparación	500.000,oo	
GUAYAQUIL			ESC. ANTONIO J. SUCRE	Reparación	300.000,oo	
GUAYAQUIL			ESC. PEDRO. J. ARIAS	Reparación muro de contención	600.000,oo	
GUAYAQUIL			ESC. JUAN TANGA MAR.	Reparación	700.000,oo	
GUAYAQUIL			ESC. HUMBERTO MOREIRA	Reparación	150.000,oo	
GUAYAQUIL			ESC. BENJAMIN CARRION	Reparación	70.000,oo	
GUAYAQUIL			ESC. 577 HUMBERTO SALVADOR GUERRA	Reparación	100.000,oo	
GUAYAQUIL			ESC. REPUBLICA BOLIVIA	Reparación	200.000,oo	
GUAYAQUIL	GUASMO SUR		ESC. 124 FAE	Reparación	60.000,oo	
GUAYAQUIL			ESC. ANTOLINA FRANCOS	Reparación	70.000,oo	
GUAYAQUIL	FCO. CORDERO	CALLE 16 y X	ESC. 122 SHIRY CACHA	Reparación	150.000,oo	
GUAYAQUIL		S ACACIAS	ESC. # 17. ESPERANZA CAPUTI	Instalación sanitaria	40.000,oo	
GUAYAQUIL	Fco. CORDERO		ESC. 106 TEODORO FLORES	Arreglo puertas	18.000,oo	
GUAYAQUIL			ESC. # 17 REPUBLICA DE URUGUAY.	Arreglo piso y baterías	95.000,oo	
GUAYAQUIL	FCO. CORDERO		ESC. ROSA VALLEJO	Reconstrucción	220.000,oo	
GUAYAQUIL	FCO. CORDERO		ESC. 26 CARLOS CUEVA	Instalación eléctrica	180.000,oo	
SALINAS	LA LIBERTAD		COLG. LUIS CELLERI	Arreglo baterías	490.000,oo	
DAULE	NOBOLT		ESC. ADRIAN FUENTES	Estructura baterías e inst. eléc.	545.000,oo	
GUAYAQUIL			COLG. VICENTE ROCAFUERTE	Canalización aguas lluvias, patios y cubierta	500.000,oo	
MILAGRO			COLG. TEC. MILAGRO	Relleno, paredes y cubierta	500.000,oo	
MILAGRO			ESC. 17 MIGUEL VALVERDE	Repar. pozo séptico, inst. sanitaria	250.000,oo	
DAULE	STA. LUCIA	LAS PIÑAS	ESC. 23 PICHINCHA	Bomba de agua y paviemtnación	195.000,oo	
GUAYAQUIL	FCO. CORDERO		ESC. 170 BLANCA FALQUEZ	Pisos y rellenos	210.000,oo	
GUAYAQUIL	TARQUI		ESC. 72 BETZABET CASTILLO	Arreglo de puertas	25.000,oo	
GUAYAQUIL	EL GUABO		ESC. 239 10 DE AGOSTO	Arreglo pisos y aulas	160.000,oo	
GUAYAQUIL			ESC. 14 COSTA RICA	Arreglo sanitarios y cubierta	290.000,oo	
GUAYAQUIL	FCO. CORDERO		COLG. MORAN VALVERDE	Arreglo pisos	650.000,oo	

MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : GUAYAS -5-

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
GUAYAQUIL	GUASMO CENT.		ESC. 103 HEROS PAQUISHA	Arreglo pozo séptico	55.000,oo	
GUAYAQUIL			ESC. 119 TEODORO WOLF	Reparación baterías y cubierta	200.000,oo	
GUAYAQUIL	FCO. CORDERO		ESC. DELIA IBARRA DE V.	Cubierta, aguas servidas, pavimentación y enlucidos	200.000,oo	
BALZAR			ESC. VICTOR M. RENDON	Letrinas, paredes, cubierta	400.000,oo	
GUAYAQUIL	EL MORO	POCITOS	ESC. AURORA CAMACHO C.	Paredes, tumbados	400.000,oo	
GUAYAQUIL			COLG. AUGUSTIN VERA F	Cubierta, pisos y paredes	300.000,oo	
GUAYAQUIL			ESC. ESPAÑA	Arreglo baterías	300.000,oo	
GUAYAQUIL			ESC. ORIENTE ECUATORIANO	Cubierta	100.000,oo	
GUAYAQUIL	DURAN		COLG. DURAN	Canales AA.LL. fosa séptica, cul.	300.000,oo	
SANTA ELENA			COLG. GUILLERMO ORDONEZ	Reparación cubierta	500.000,oo	
GUAYAQUIL	PALESTINA		ESC. 16 DE JULIO	Pavimentación Patio	300.000,oo	
GUAYAQUIL	F. CORDERO		ESC. ENRIQUE GILBERTH	Reconstrucción	300.000,oo	
GUAYAQUIL	SUCRE		ESC. REP. FED. ALEMAN	Reconstrucción	5. .000,oo	
GUAYAQUIL	XIMENA		ESC. FISC. NOC. N°60.	Alumbrado	100.000,oo	
GUAYAQUIL	F. CORDERO		ESC. MOISES CEDEÑO	Reconstrucción	100.000,oo	
GUAYAQUIL	SUCRE		ESC. ANTONIO RICAURTE	Reconstrucción	100.000,oo	
GUAYAS	DAULE	LOMAS	ESC. SIN NOMBRE	Reparación	300.000,oo	
GUAYAQUIL			ESC. AROSEMENA	Reconstrucción	300.000,oo	
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				TOTAL GENERAL	S/. 30'545.500,oo	

MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : ORO -1-

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
STA. ROSA	STA ROSA		ESC. ERMINA GRUNAWER	Reparación	24.600.oo	
STA. ROSA	STA. ROSA		ESC. EUGENIO ESPEJO	Reparación	29.400,oo	
STA. ROSA	STA. ROSA		ESC. MARTA BUCARAN DE R.	Reparación	38.400,oo	
EL GUABO	EL GUABO		ESC. ZOILA UGARTE DE I.	Reparación	24.600,oo	
ARENILLAS	ARENILLAS		ESC. PIEDAD CASTILLO.	Reparación	12.000,oo	
ARENILLAS			ESC. JUAN MONTALVO	Reparación	13.800,oo	
PIÑAS	EL MOROMORO		ESC. JACOBO ROSEAU	Reparación	23.200,oo	
MACHALA	MACHALA		ESC. GALO PLAZA	Reparación	32.900,oo	
MACHALA	MACHALA		ESC. MARTA BUCARAM	Reparación	10.500,oo	
MACHALA	PTO. BOLIVAR		ESC. HECTOR ENCALADA	Reparación	40.000,oo	
MACHALA	MACHALA		ESC. JORGE MURILLO	Reparación	45.800,oo	
MACHALA	MACHALA		ESC. LUZ DE AMERICA	Reparación	22.400,oo	
MACHALA	PTO. BOLIVAR		ESC. 24 DE JULIO	Reparación	55.200,oo	
PASAJE	PASAJE		ESC. CIUDAD DE PASAJE	Reparación	23.800,oo	
PASAJE	PASAJE		J.I. Y ESC. ALEJANDRO CAMPOVERDE	Reparación	68.820,oo	
PASAJE	PASAJE		ESC. RODRIGO UGARTE	Reparación	29.300,oo	
STA. ROSA	STA. ROSA		ESC. ALCIDES PESANTEZ	Reparación	16.600,oo	
HUAQUILLAS	HUAQUILLAS		ESC. VICENTE A. AGUIRRE	Reparación	51.000,oo	
HUAQUILLAS	HUAQUILLAS		ESC. EDMUNDO CHIRIBOGA	Reparación	12.4000,oo	
HUAQUILLAS	HUAQUILLAS		ESC. MATILDE HIDALGO	Reparación	28.600,oo	
ZARUMA	ZARUMA		ESC. GABRIELA MISTRAL	Reparación	23.100,oo	
ZARUMA	GUANAZAN	LA CRUZ	ESC. JUAN LEON MERA	Reparación cubierta	16.650,oo	
ZARUMA	ABAÑIN	TAMACADO	ESC. PROV. DEL AZUAY	Cubiertas y puertas	50.840,oo	
ZARUMA	GUANAZAN	PASALOMA	ESC. ELOY ALFARO	Cubierta	18.500,oo	
ZARUMA	ABAÑIN	LACAY	ESC. LUIS. A CRESPO	Paredes y enlucidos	26.610,oo	
ZARUMA	ABAÑIN	ZHUQUIN	ESC. BONIFACIO REYES	Paredes y enlucidos	17.520,oo	
ZARUMA	GUANAZAN	LA COCHA	ESC. 10 DE AGOSTO	Piso, contrapiso, paredes y puertas	28.940,oo	
MACHALA	PTO. BOLIVAR		ESC. DANIEL CORDOVA	Reparación	22.400,oo	
MACHALA			ESC. DIEGO MINUCHE	Reparación	480.248,oo	
MACHALA			ESC. DAVID RODAS C.	Inodoros y accesorios	32.000,oo	
PASAJE	PASAJE		COLG. EDUARDO PAZMIÑO	Cubierta, pisos, inst. eléct.	416.423,oo	
PORTOVELO			ESC. JOHN DEWEY	Reparación	150.000,oo	

MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : EL ORO - 2 -

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
PORTOVELO			ESC. FEDERICO PROEBEL	Reparación	9.600,oo	
PORTOVELO			ESC. 24 de MAYO	Reparación	100.000,oo	
MACHALA			ESC. ALBERTO CRUZ MURILLO	Pavimentación, cerr. y cubierta	2'329.077,oo	
ZARUMA		CUARTINGUDO	ESC. 29 DE NOVIEMBRE	Reparación cubierta	153.300,oo	
Portovelo		LOURDES	ESC. MARGARITA COMAS	Reparación	100.000,oo	
PORTOVELO		CURTINCAPAC	ESC. SANTIAGO ZAMORA	Reparación	100.000,oo	
PORTOVELO		LOS LLANOS	ESC. CIUIDAD ZARUMA 2	Reparación	50.000,oo	
PORTOVELO		CULTUPARO	ESC. SIN NOMBRE	Reparación	100.000,oo	
PORTOVELO		LOMA LARGA	ESC. MANUELA CAÑIZARES	Reparación	80.000,oo	
PORTOVELO		SALATI	ESC. LEOPOLDO CHAVEZ	Reparación	100,000,oo	
PORTOVELO		AMARILLO	ESC. EDUARDO ESPINOZA	Reparación	50.000,oo	
PORTOVELO		AMBOCAS	ESC. DARIO MALDONADO	Reparación	50.000,oo	
PORTOVELO		SALATI	ESC. LUIS DILLON	Reparación	80.000,oo	
MACHALA			ESC. CIUDAD DE MACHALA	Techos, pisos y patios	250.000,oo	
MACHALA			ESC. AUGUSTA MORA DE F.	Accesos y baterías	44.700,oo	
MACHALA			ESC. HEROES DE PAQUISHA	Batería de SS.HH.	73.785,oo	
MACHALA			COLG. KLEBER FRANCO	Pavimentación y relleno	400.000,oo	
MACHALA		PTO. BOLIVAR	ESC. MANUEL ENCALADA	Cerramiento y batería de SS.HH	26.000,oo	
MACHALA			ESC. ENRIQUE CASTRO	Batería de SS.HH.	250.000,oo	
PASAJE		EL CAMBIO	ESC. MANUELA CAÑIZARES	Techo, piso y batería SS.HH.	788.810,oo	
STA. ROSA			ESC. ALFREDO P. GUERRERO	Techo	107.600,oo	
STA. ROSA			ESC. FELIX VEGA DAVILA	Batería de SS.HH.	19.500,oo	
STA. ROSA			ESC. AMADA SEGARRA	Techo y piso	150.000,oo	
STA. ROSA		CATAMAYO	ESC. S/N	Techo y piso	150.000,oo	
STA ROSA			ESC. CRUZ CAJAMARCA	Techo y cerramiento	500.000,oo	
ARENILLAS		MERCEDES	ESC. PALMALES	Letrinas y aulas	250.000,oo	
ARENILLAS			ESC. PIEDAD CASTILLO	Batería de SS.HH.	100.000,oo	
PIÑAS		MARCABELI	ESC. JORGE ZAVALA	Techo, pisos y letrinas	250.000,oo	
PIÑAS			ESC. GONZALO ABAD	Piso, muro, Bat. SSHH, canaliz.	600.000,oo	
PIÑAS			COLG. LEOVIGILDO LOAYZA	Techo y piso	882.702,50	
MACHALA		MACHALA	ESC. ROMERO MURILLO	Reparación y mantenimiento	603.614,oo	
MACHALA		MACHALA	ESC. SIMON BOLIVAR	Cerramiento, aulas y patio	575.224,oo	
MACHALA		Machala	ESC. PABLO ANIBAL VELA	Inst. eléct. pintura, reparación bloque aulas	1'203.942,oo	

MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : EL ORO - - 3-

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
STA. ROSA		LA VICTORIA	ESC. JUAN MONTALVO	Reparación de aula y fosa séptica	99.738,00	
MACHALA		MACHALA	ESC. JUAN E. COELLO	Relleno, pavimentación y bordillos	219.900,00	
MACHALA		MACHALA	ESC. EULOGIO SERRANO	Reparación	907.838,00	
ZARUMA		ZARUMA	ESC. CIUDAD DE ZARUMA	Daños	247.019,45	
HUAQUILLAS		HUAQUILLAS	ESC. ECUADOR	Reparación	745.622;00	
STA. ROSA		EL QUEMADO	ESC. SIN NOMBRE	Reparación	41.775,00	
EL GUABO		EL GUABO	ESC. PROVINCIA RIOS	Reparación	25.364,00	
ZARUMA		PACCHA	COLG. ANGEL TINOCO R.	Reparación	37.200,00	
MACHALA		MACHALA	ESC. OLIVIA ECHEVERRIA	Reparación	46.600,00	
MACHALA			ESC. ISABELA CATOLICA	Reparación y mantenimiento	93.300,00	
ZARUMA	ABAÑIN	TAMACANDO	ESC. PROV. DEL AZUAY	Reparación y mantenimiento	139.433;80	
PIÑAS	BOCANA	STA. TERESITA	ESC. JOSE UGARTE MOLINA	Reparación y mantenimiento	162.648,00	
MACHALA	MACHALA		ESC. FRANSISCO TRUJILLO	Reparación y Pintura	3'000.000,00	
PASAJE	EL GUABO		ESC. LUIS A. MENDOZA	Reparación	900.000,00	
MACHALA	EL RETIRO		ESC. 9 DE MAYO	Reparación	600.000,00	
PASAJE	BARAQUENADA		ESC. REP. DE BRASIL	Reparación	1'000.000,00	
PIÑAS	BELLAMARIA		ESC. GRAL. RUMIÑAHUI	Reconstrucción	300.000,00	
EL GUABO	BARBONES		ESC. LUIS F. BORJA	Reparación	600.000,00	
EL GUABO	CABALLOCAL		ESC. OVIDIO DECROLY	Reparación	600:000,00	
EL GUABO	EL GUABO		ESC. OSCAR EFREN REYES	Reconstrucción	1'800.000,00	
ARENILLAS	ARENILLAS		ESC. JOSE MEJIA	Reconstrucción	1'500.000,00	
ARENILLAS	EL JOBO		ESC. BATALLON CAYAMBE	Reconstrucción	1'800.000,00	
PIÑAS	PIEDRA		ESC. 8 DE NOVIEMBRE	Reparación	600.000,00	
PIÑAS	PIÑAS GRAN.		ESC. LUIS CORDERO	Reconstrucción	600.000,00	
PIÑAS	CASERA GRAN.		ESC. 1 DE MAYO	Reparación	600.000,00	
PIÑAS	LA CHUVA		ESC. 13 DE ABRIL	Reparación	600.000,00	
PIÑAS	NUEVA G.		ESC. EDUARDO TORRES	Reparación	600.000,00	
PIÑAS	AGUAS NEGRAS		ESC. VICENTE ROCAFUERT	Reparación	200.000,00	
----------	----------	----------	VARIAS ESCUELAS	Mobiliario	500.000,00	
				TOTAL GENERAL	S/.: 30'975.358,7	

ANNEX IV
Exhibit B - 5 (a)
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MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOS RIOS

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Quevedo		San Camilo	Unidad Popular	Reparaciones		
Ventanas			Esc. Ejercito Nacional	Reparaciones		
Quevedo			Esc. 10 de Noviembre	Reparaciones		
Babahoyo			Colg. San Carlos	Reparación de 5 aulas.		
Babahoyo		Baquerizo	Colg. Eugenio Espejo	Cambio de instalación a tpio AR		
Babahoyo		Baquerizo	Colg. Marcos Benetazzo			
Babahoyo		Baquerizo	Colg. Emigdio Esparza			
Babahoyo		Pimocha	Colg. Vicente Maldonado			
Babahoyo		Pueblo Nuevo	Colg. Vicente Maldonado			
Babahoyo		C. Ponce	Colg. Sin Nombre			
Babahoyo			Normal Superior # 19			
Baba		Baba	Colg. 23 de Junio			
Baba		Isla Bejucal	Colg. Isla de Bejucal			
Quevedo			Colg. Nicolas Infantes			
Catarama		Urdaneta	Colg. 11 de Octubre			
Catarama		Urdaneta	Colg. Ricaurte			
Ventas		Zapotal	Colg. Zapotal			
Babahoyo		Ponce	J.I. María Montesori			
Babahoyo		C. Ponce	J.I. Santiago Roldos			
Babahoyo		C. Ponce	J.I. Otto Arosemena G.			
Babahoyo		Baquerizo	J.I. Sin Nombre			
Babahoyo		Barreiro	J.I. Sin Nombre			
Babahoyo		Montalvo	J.I. Juan Leon Mera			
Vinces			J.I. Angélica Idrovo			
Catarama		Urdaneta	J.I. Club de Leones			
Babahoyo		C. Baquerizo	Esc. Isabel La Cotólica			
Babahoyo		Baquirizo	Esc. Aurora Estrada			
Babahoyo		Baquerizo	Esc. José García Moren.			
Babahoyo		Baquirizo	Esc. 18 de Mayo			
Babahoyo		Baquerizo	Esc. Francisco H Rendon			
Babahoyo		Baquerizo	Esc. San José			
Babahoyo		Baquerizo	Esc. Babahoyo			
Babahoyo		Baquerizo	Esc. Francisco Aguirre			

MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

PROVINCIA : LOS RIOS

CANTON	PARROQUIA	RECINTO	LOCAL	TIPO DE DAÑO	MONTO APRX. S/.	OBSERVACIONES
Babahoyo		Baquerizo	Esc. José Enrique Z.			
Babahoyo		Baquerizo	Esc. 4 de Mayo			
Babahoyo		C. Ponce	Esc. Cristobal Colón			
Babahoyo		C. Ponce	Esc. 27 de Mayo			
Babahoyo		C. Ponce	Esc. Adolfo Astudillo			
Babahoyo		C. Ponce	Esc. Juan Verdesoto			
Babahoyo		C. Ponce	Esc. Ruperto G. Ayala			
Babahoyo		C. Ponce	Esc. Pedro Posligua P.			
Babahoyo		C. Ponce	Esc. Humberto M. Marquez			
Babahoyo		Caracol	Esc. Alfredo Baquerizo			
Babahoyo		Caracol	Esc. Chimborazo			
Babahoyo		F. Cordero	Esc. Armando Pareja C.			
Babahoyo		F. Cordero	Esc. Fausto Molina			
Babahoyo		Galtadero	Esc. Rubén Darío			
Babahoyo		Pueblo Nuevo	Esc. Chile			
Babahoyo		San Pablo	Esc. Felipe Borja			
Babahoyo		Montalvo	Esc. Juan Leon Mera			
Babahoyo		Montalvo	Esc. La Inmaculada			
Babahoyo		Palmar	Esc. Dolores Tobar			
Babahoyo		Pimocha.	Esc. Simon Bolivar			
Urdaneta	Catarama		Esc. Gabriela Mistral	SS.HH. totalmente dañados, la erosión del suelo ha levantado del contrapiso.	42'935.800,oo	Ofc. 207-JDCLR 83-

MINISTERIO DE EDUCACION Y CULTURA

FABRICA DE ESTRUCTURAS Y MOBILIARIO ESCOLAR "DINACE"

ENTREGA DE MOBILIARIO ESCOLAR REALIZADO POR PARTE DE LA FABRICA A LAS DIFERENTES ESCUELAS Y COLEGIOS DEL PAIS -- CARGO "DINACE"

A PARTIR DEL 10 DE AGOSTO DE 1.982 HASTA EL 30 DE ABRIL DE 1.983

PROVINCIA _____

FECHA	COMP. No.	BENEFICIARIO	PUPIT. 7	MESA 8	SILLA 8	MESA 5	BANCA 5	MESA 3	SILLA 3	ESCRT. CHICO	PIZA-RRON	[illegible]	[illegible]	VALOR
		CARCHI	200		102	190	150	55	110	14				325.544.
		IMBABURA	535		215	1105	1105	230	460	4		120	120	608.302.
		PICHINCHA	3720	7	614	2520	2520	746	1493	30	26	450	450	4'778.755,
		COTOPAXI	1350		10	815	615	95	190	27		240	240	1'496.038.
		TUNGURAHUA	2100		450	518	515	100	200	12	4	125	125	1'724.797,
		CHIMBORAZO	670		3	475	475			9				729.457,
		BOLIVAR	780			500	500	420	840	6		60	60	1'090.836.
		CAÑAR	610		150	750	750			4				885.884,
		AZUAY	1260		150	450	450							1'035.660.
		LOJA	300			700	700	30	60					650.898,
		ESMERALDAS	130					110	220	17				196.444,
		MANABI	830	12	12	535	535			40	3			975.196,
		LOS RIOS	550			535	535	50	100		2	100	100	749.115.
		GUAYAS	1270		10	860	660			10				1'241.157.
		EL ORO	420		22	420	420			36				624.927,
		ORIENTE	1210		350	1140	1140	90	190	20		50	50	1'657.693
		GALAPAGOS	100											50.100,
			16035	19	2088	11513	11510	1924	3853	229	35	1145	1145	10'850.609,

Quito, 27 de Mayo de 1.983

CONSUELO ALMEIDA
CONTADORA FEM DINACE

JEFE

ING. GASTON PAREDES
DE LA FABRICA DINACE
ENCARGADO

jz.

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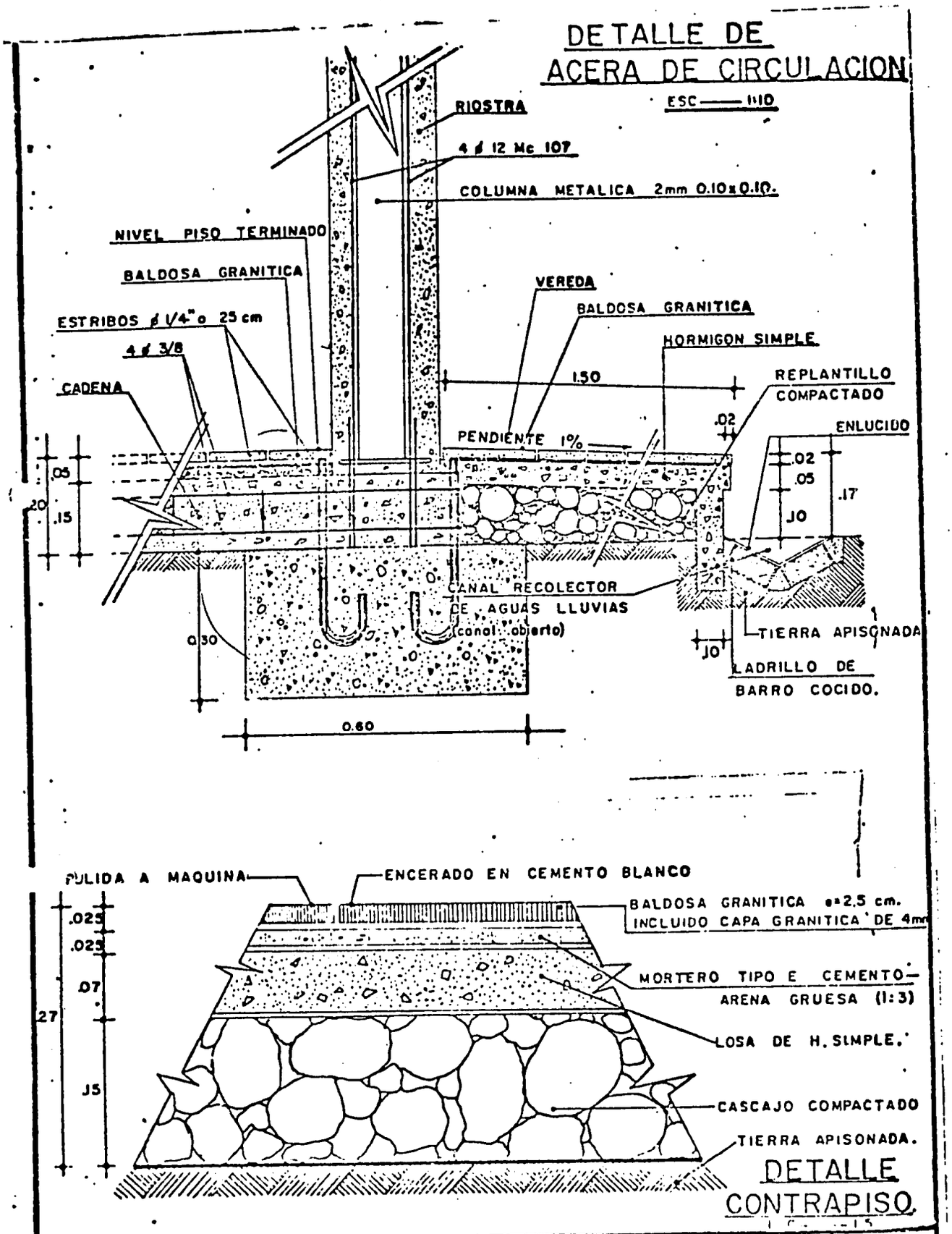
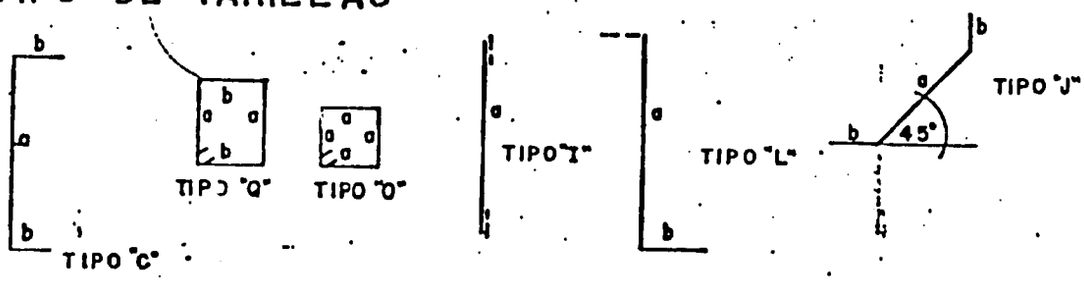
PARTIAL SET OF PLANS



PLANILLA DE ACERO

MC	Ø	TIPO	N	DIMENSIONES a	b	c	d	e	GANCH.	LONG CORTE	LONG.T. DE NO VARIAS	VARILL COMER	N NO por V.C	N VARILL	OBSEVACIONES
101	12	C	8	8.10	1.45				-	9.00		9	1	8	
102	12	C	4	3.90	1.50				-	9.00		9	1	4	
103	8	Q	180	0.15	0.10				0.05	0.60		6	10	18	
104	12	I	8	9.00					-	9.00		9	1	8	
105	12	L	24	0.90	0.20				-	1.20		6	3	3	
106	8	O	98	0.15					0.05	0.70		9	12	8	
107	12	I	48	0.88						0.88		9	16	3	
108	8	I	390	0.10					0.05	0.20		6	30	19	
109	8	J	30	0.07	0.08				-	0.13		6	46	1	SOBRA 1.2.10m
110	8	I	72	0.10						0.10		-	-	-	DE MC 109
111	19	J	6	2.20						2.80		9	4	1	+1V.6m-SOBRA 1.6m

TIPO DE VARILLAS



RESUMEN DE VARILL

VARILL. C. \ Ø EN mm	8	10	12	18	
6	38		8	1	
9	8		23	1	
12					

ESPECIFICACIONES TECNICAS

fy = 2800 kg/cm² acero corrugado dureza natural

f'c = 210 kg/cm²

δs = 100 kg/cm²

OBSERVACIONES:

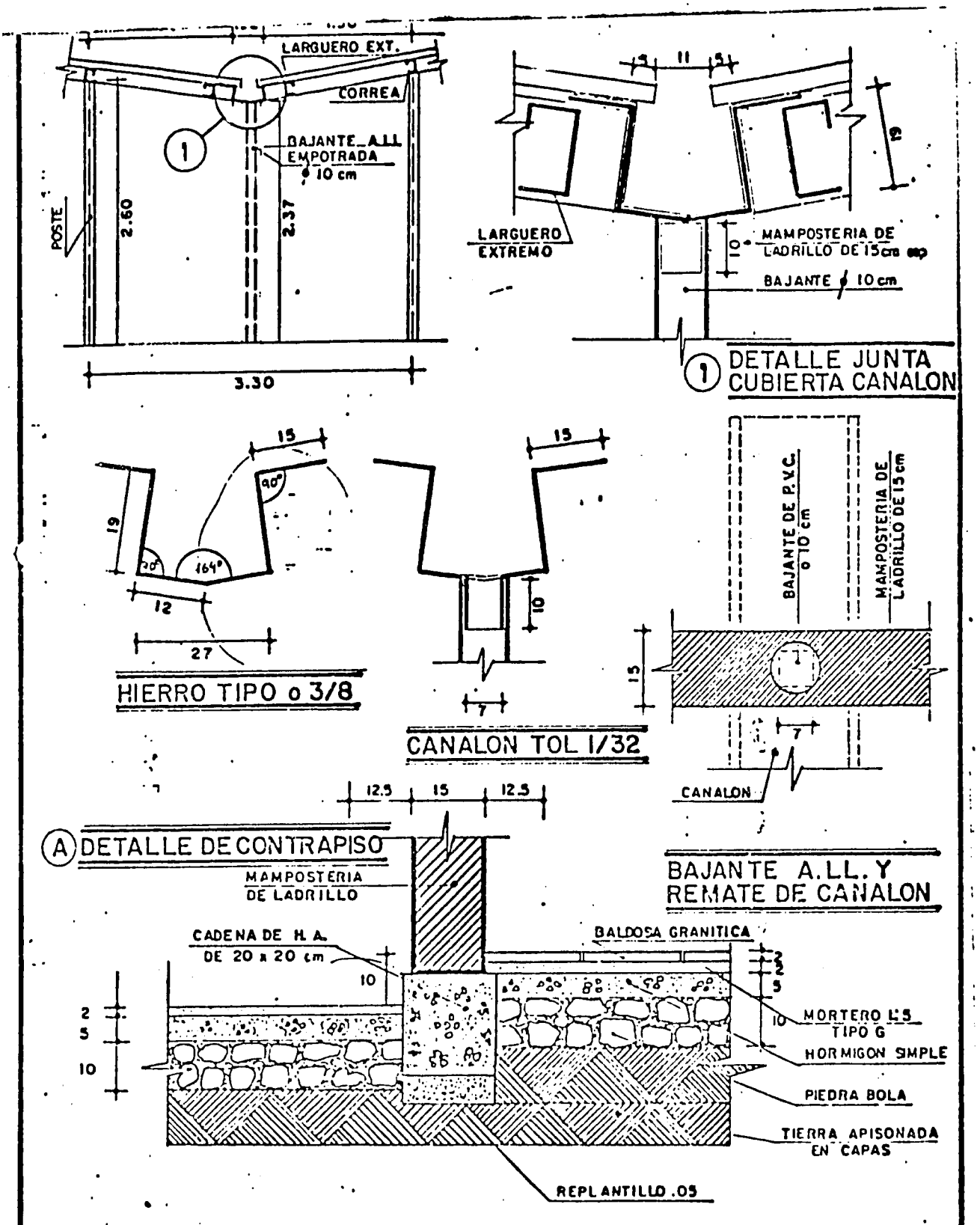
MINISTERIO DE EDUCACION PUBLICA
DEPARTAMENTO ECUATORIANO DE CONSTRUCCIONES ESCOLARES
SECCION PROYETOS

AULA METALICA PREFABRICADA
ESTANDAR PM-A

LAMINA 10

DISEÑO: DINACE
CALCULO: ING. H. NOVILLO
CONTIENE: CALCULO
REVISO:
VTO BUENO:
ESCALA:
DIBUJO:
FECHA:

242



OBSERVACIONES	MINISTERIO DE EDUCACION Y CULTURA DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES SECCION PROYECTOS	AULA METALICA PREFABRICADA ESTANDAR PM-A	LAMINA
	DISEÑO / CALCULO	CONTIENE DETALLE DE CANALON,	9

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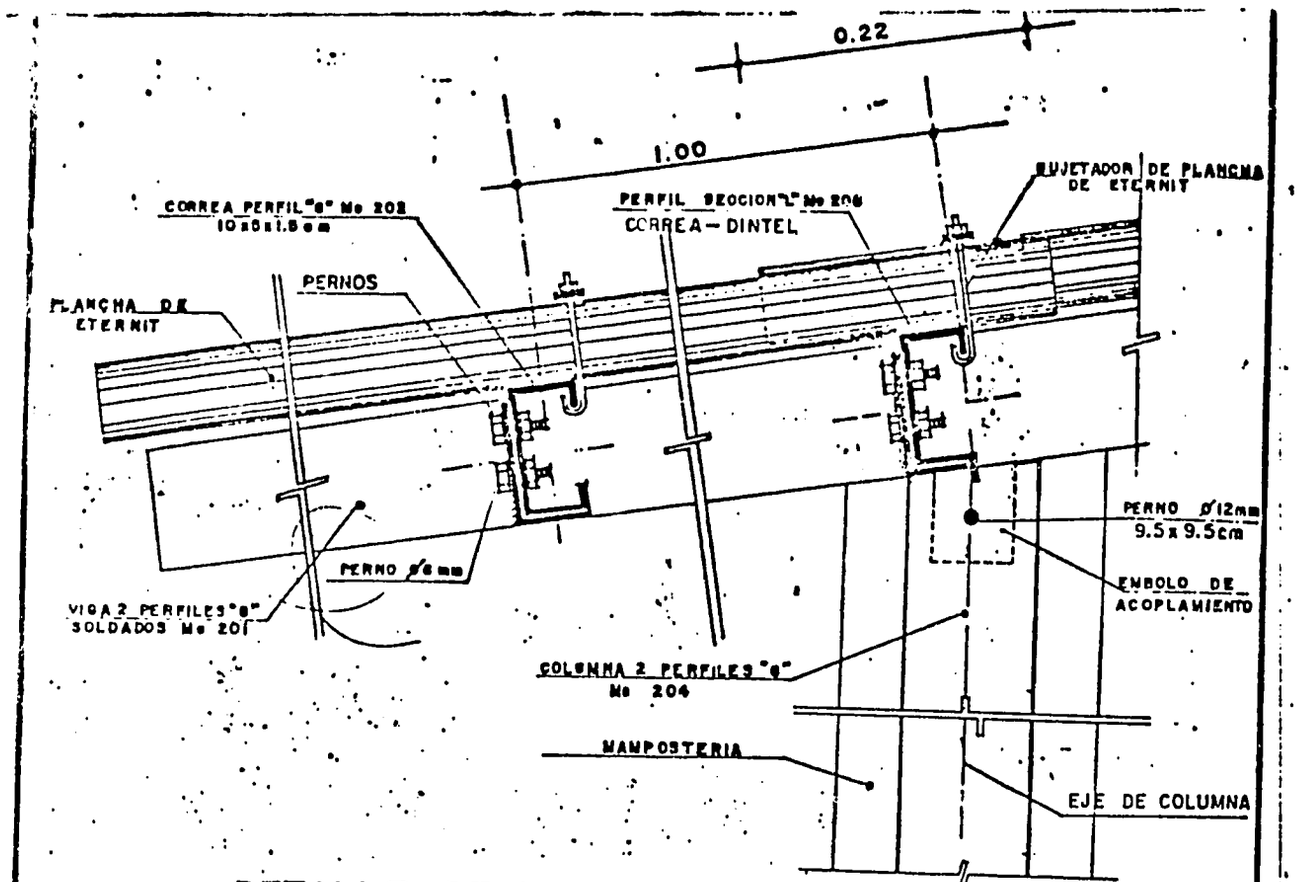
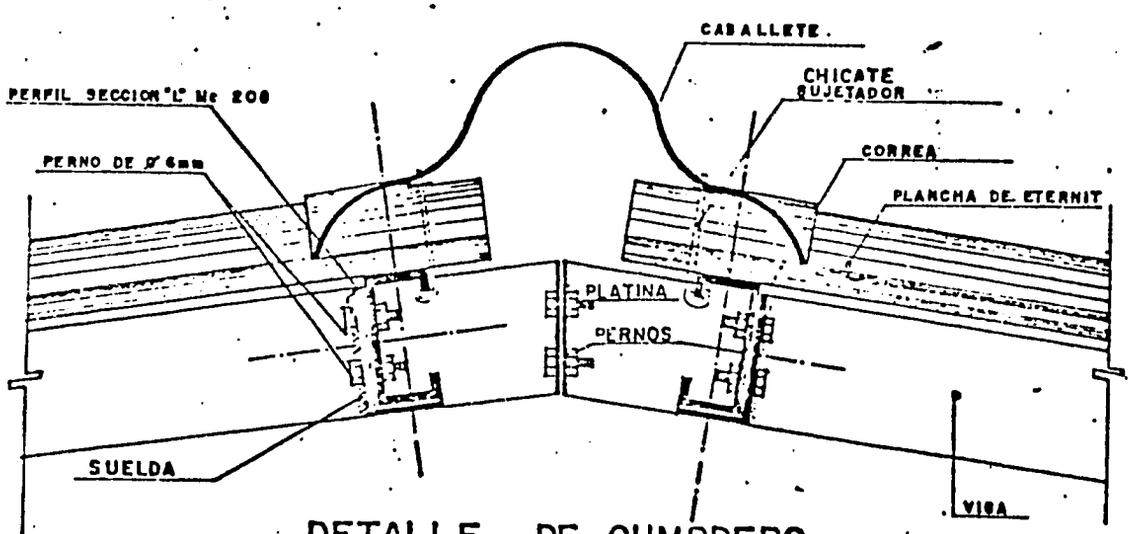


DETALLE DE UNION DE VIGA Y COLUMNA

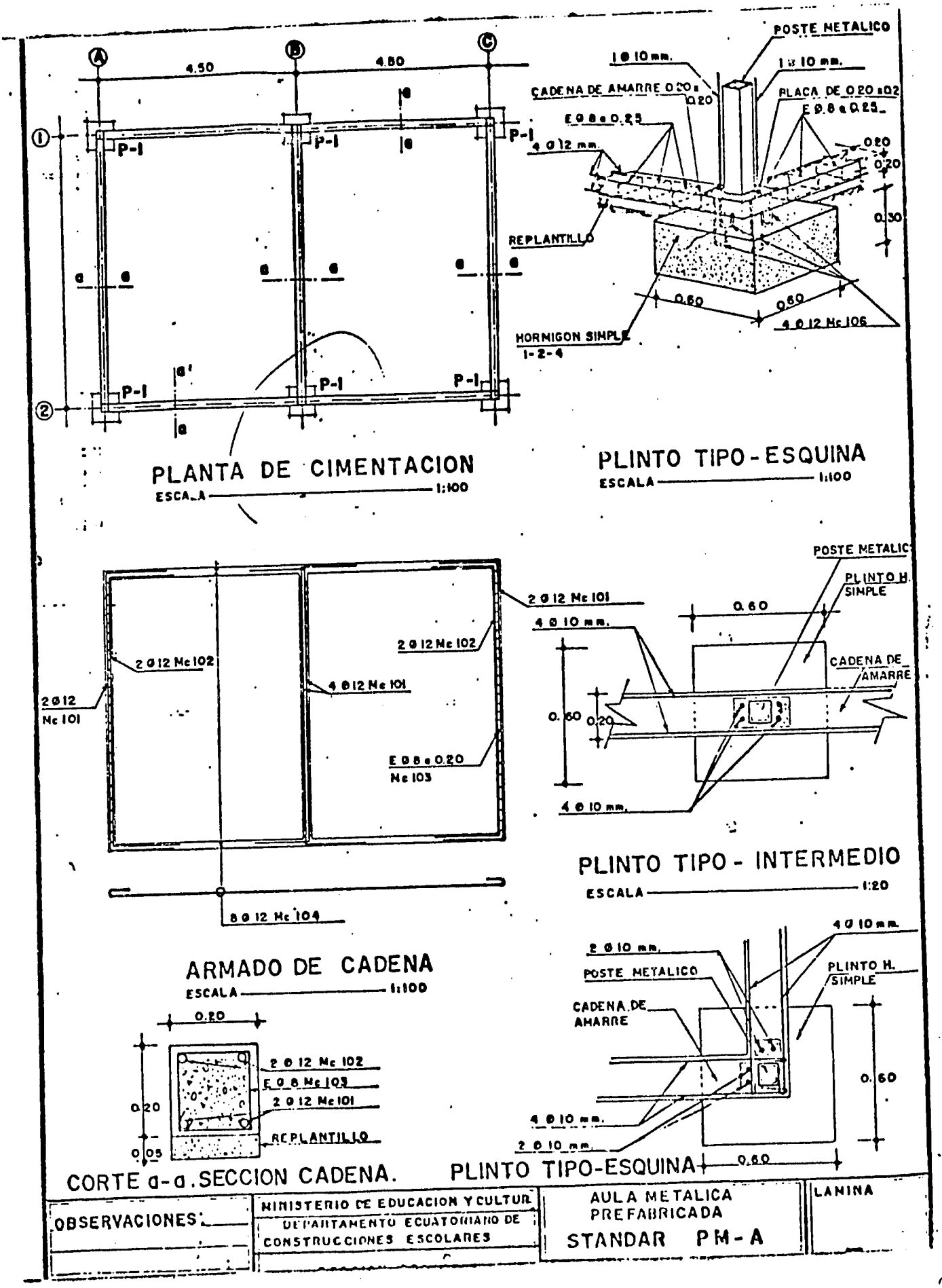
ESC: 1 ——— 8

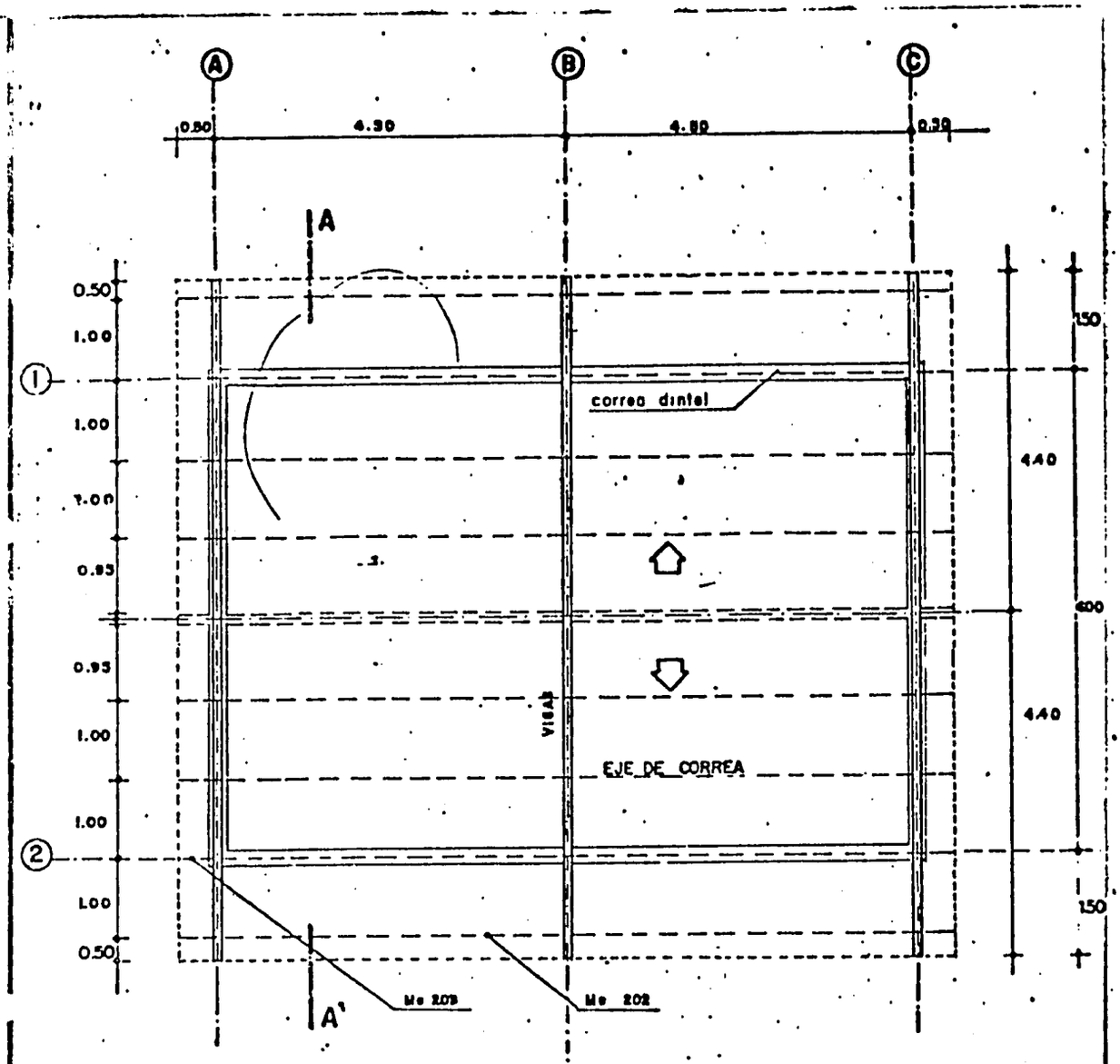


DETALLE DE CUMBRERO

ESC: 1 ——— 8

OBSERVACIONES:	MINISTERIO DE EDUCACION PUBLICA DEPARTAMENTO ECUATORIANO DE CONSTRUCCIONES ESCOLARES SECCION PROYECTOS	AULA METALICA PREFABRICADA ESTANDAR PM-A	LAMINA: 8
	DISEÑO: DINACE CALCULO: ING. H. NOVILLO	CONTIENE: DETALLE DE CUMBRERO UNION DE VIGA Y COLMNA	
	REVISO: VTO. BUENO:	ESCALA: 1 HOJA:	


A
B
C
4.50
4.50
1
2
P-1
a
POSTE METALICO
1 Ø 10 mm.
CADENA DE AMARRE 0.20 x 0.20
PLACA DE 0.20 x 0.2
E Ø 8 a 0.25
4 Ø 12 mm.
0.20
0.30
REPLANTILLO
0.60
4 Ø 12 Mc 106
HORNIGON SIMPLE
1-2-4
PLANTA DE CIMENTACION
ESCALA 1:100
PLINTO TIPO-ESQUINA
ESCALA 1:100
2 Ø 12 Mc 101
2 Ø 12 Mc 102
4 Ø 12 Mc 101
E Ø 8 a 0.20
Mc 103
8 Ø 12 Mc 104
ARMADO DE CADENA
ESCALA 1:100
POSTE METALICO
PLINTO H. SIMPLE
4 Ø 10 mm.
CADENA DE AMARRE
0.60
PLINTO TIPO - INTERMEDIO
ESCALA 1:20
2 Ø 10 mm.
POSTE METALICO
CADENA DE AMARRE
PLINTO H. SIMPLE
0.20
0.05
REPLANTILLO
CORTE a-a. SECCION CADENA.
PLINTO TIPO-ESQUINA
OBSERVACIONES
MINISTERIO DE EDUCACION Y CULTURA
DEPARTAMENTO ECUATORIANO DE CONSTRUCCIONES ESCOLARES
AULA METALICA PREFABRICADA
STANDAR PM-A
LAMINA



PLANTA DE ESTRUCTURA DE CUBIERTA

ESC: 1 ——— 75

OBSERVACIONES:	MINISTERIO DE EDUCACION PUBLICA DEPARTAMENTO ECUATORIANO DE CONSTRUCCIONES ESCOLARES SECCION PROYECTOS	AULA METALICA PREFABRICADA ESTANDAR PM-A	LAMINA: 4
	DISEÑO: DINACE	CALCULO: ING. H. NOVILLO	CONTIENE: ESTRUCTURA DE CUBIERTA
	REVISO: ARQ. H. AGUILAR	VTO. BUENO:	ESCALA: / DIBUJO: DINA UDDILLAS / FECHA: FEBR/81

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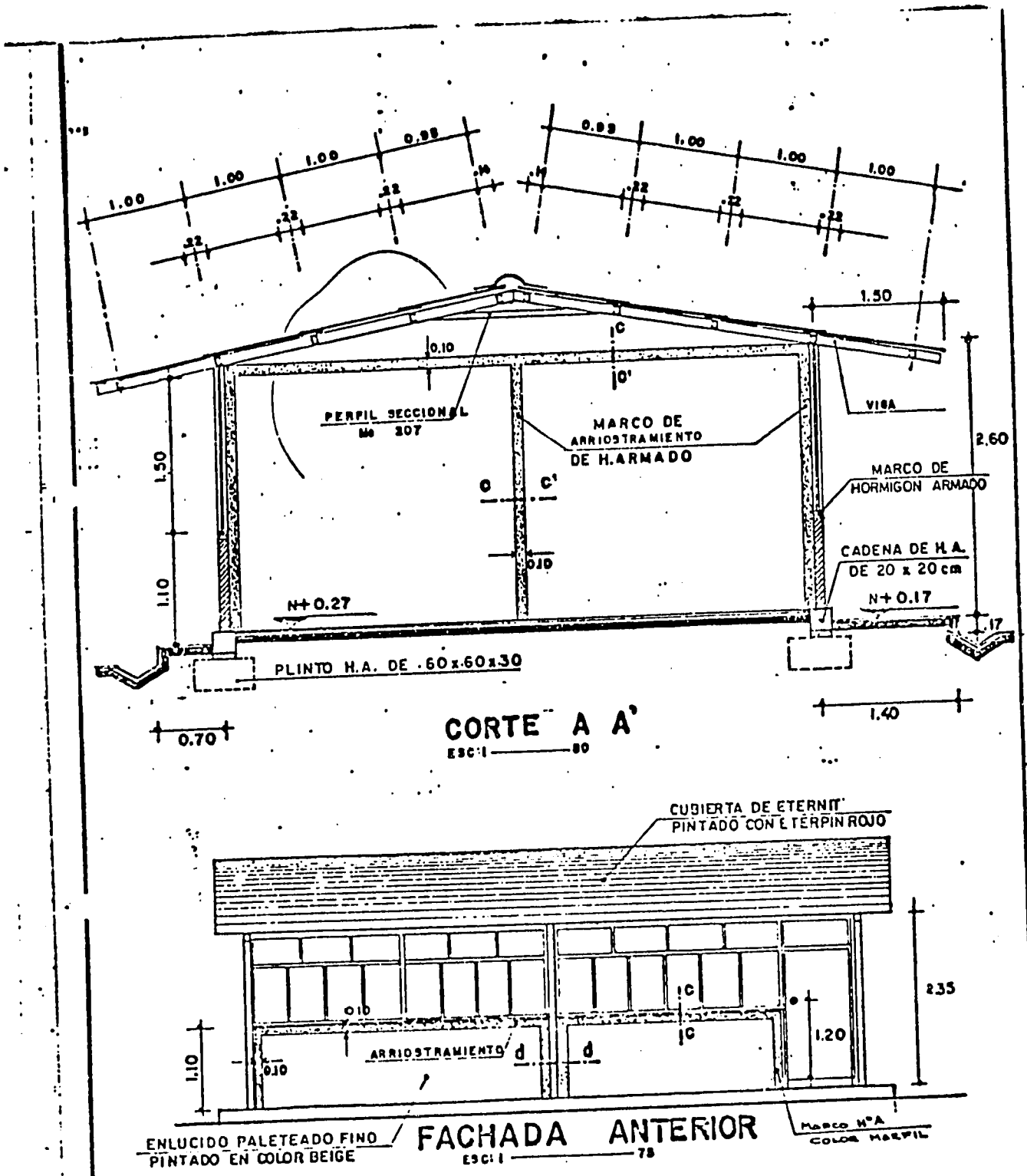

OBSERVACIONES:	MINISTERIO DE EDUCACION PUBLICA DEPARTAMENTO ECUATORIANO DE CONSTRUCCIONES ESCOLARES SECCION PROYECTOS	AULA METALICA PREFABRICADA ESTANDAR PM-A	LAMINA: 3
	DISEÑO: DINACE	CALCULO: ING H. NOVILLO	CONTIENE: CORTE Y FACHADA
	REVISO:	VTO BUENO:	ESCALA: / DIBUJO: DINA NOVILLAS / FECHA: FEBR/81

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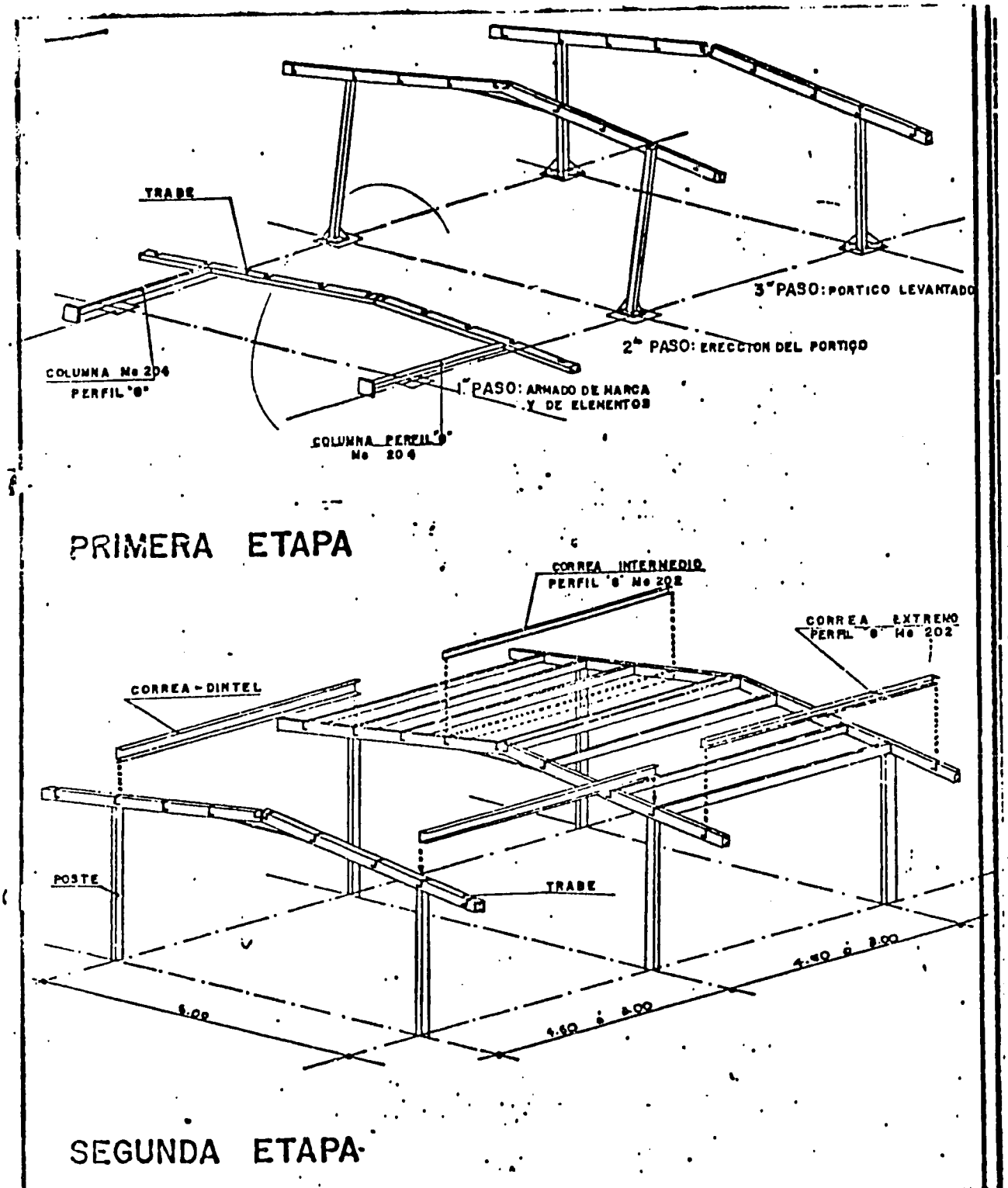

OBSERVACIONES	MINISTERIO DE EDUCACION PUBLICA DEPARTAMENTO ECUATORIANO DE CONSTRUCCIONES ESCOLARES SECCION PROYECTOS	AULA METALICA PREFABRICADA ESTANDAR PM-A	LAMINA: 1
	DISEÑO: DINACE	CONTIENE: SECUENCIA DE ARMADO	
	CALCULO: ING H. MOVILLO		
	REVISO: VTO DULHO	ESCALA:	DIBUJO: SINA UQUILLAS
			FECHA: FEBR/91

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MINISTERIO DE EDUCACION Y CULTURA

FABRICA DE ESTRUCTURAS Y MOBILIARIO ESCOLAR "DINACE"

NTREGAS DE ESTRUCTURAS ESCOLARES REALIZADAS POR PARTE DE LA FABRICA A LAS DIFERENTES ESCUELAS Y COLEGIOS DEL PAIS-CARGO DINACE

OVINCIA: ..... A PARTIR DEL 10 DE AGOSTO DE 1.982 HASTA EL 30 DE ABRIL DE 1.983

FIMP No.	B E N E F I C I A R I O	AULAS	1/2 AULA	1/3 AULA	2/3 AULA	CANCHOS5	CANCHOS7	V A L O R
	CARCHI	131	8		22			3'975.097,4
	IMBABURA	21			2			1'357.258,9
	PICHINCHA	69	6		2			2'481.851,2
	COTOPAXI	37			3			1'108.353,9
	TUNGURAHUA	85	2		10			2'002.237,3
	CHIMBORAZO	92	4		5			2'620.125,2
	BOLIVAR	36	2		1			1'068.972,5
	CAÑAR	25	4		5			825.482,7
	AZUAY	121	3	8	1			3'407.724,7
	LOJA	17	4					526.725,2
	ESMERALDAS	64	1					2'046.494,2
	MANABI	71			8			1'841.922,2
	LOS RIOS	95			4			2'766.320,2
	GUAYAS	98	9		9			5'021.213,5
	EL ORO	29	2		2			1'159.742,4
	ORIENTE	62	10		1			2'246.152,3
		1.073	55	8	75			35'463.723,2

Quito, 27 de Mayo de 1.983

ING. GASTON PAREJA
JEFE DE LA FABRICA DINACE
ENCARGADO

jz.

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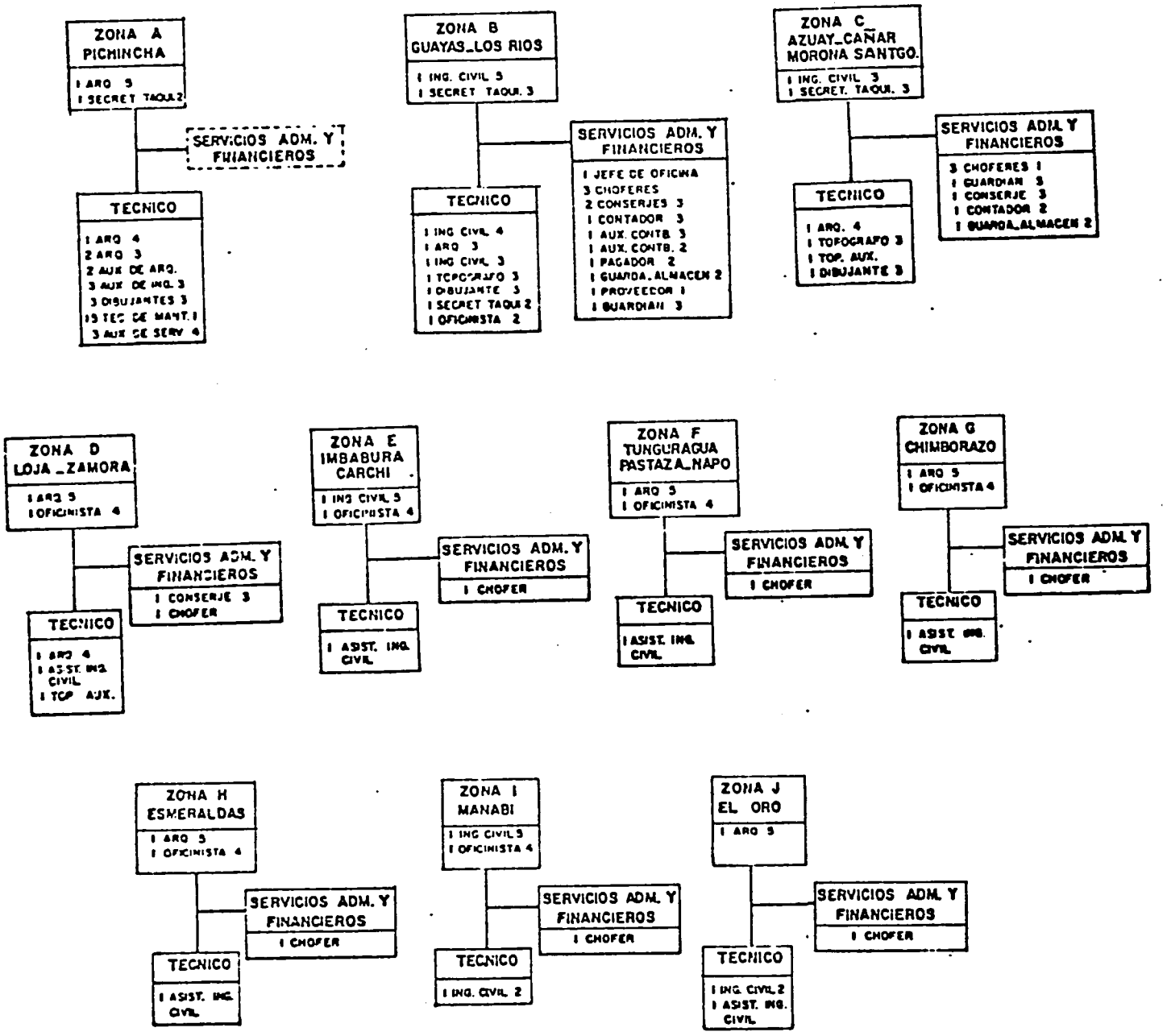
EXISTING PERSONNEL BY ZONES

DINACE - ORGANIGRAMA DE LAS ZONAS REGIONALES



DINACE

DINACE

CONTROL DE OBRAS
CONTROL ECONOMICO

OBRA _____

UBICACION _____

CONTRATISTA	REFERENCIA	FECHA INICIO	HOJA DE
CTTO Nº	MONTO S/.	ADICIONAL S/.	PLAZO DE A

Nº	CONCEPTO	UND.	PRECIO UNITARIO	VOLUMEN PRESUPUE.	VOLUMEN PLANILLADO 1	2	3	SALDO	MONTO TOTAL	VALOR PAGADO 1	2	3	SALDO

OBSERVACIONES _____

DINACE

DINACE
COSTOS BASICOS DE RESPALDO

COSTOS Y METODOS

HOJA :

OBRA :

PROV :

MANO DE OBRA

TRABAJADORES	SALARIO DIARIO	TRABAJADORES	SALARIO DIARIO
MAESTRO MAYOR		ALBAÑIL DE PRIMERA	
MAESTRO FIERRERO		ALBAÑIL DE SEGUNDA	
MAESTRO CARPINTERO		OFICIAL O PEON	

NOTA : LOS SALARIOS A PAGARSE A LOS TRABAJADORES NO PODRAN SER INFERIORES A LOS MINIMOS ESTABLECIDOS POR LA LEY .

MATERIALES DE CONSTRUCCION

DESCRIPCION	UNID.	COSTO	DESCRIPCION	UNID.	COSTO
HIERRO	qq		BLOQUE DE CEMENTO	und.	
CEMENTO	und.		LADRILLO MAMBRON	und.	
CEMENTINA	Kgr.		JABONCILLO PREN.	und.	
RIPIO	m3		TABLA DE MONTE	und.	
ARENA	m3		PLANCHA ETERNIT 8'	und.	
LASTRE	m3		PINTURA DE CAUCHO	gal.	
PIEDRA BOLA	m3		PINTURA ANTICORROSIVA	gal.	
AZULEJO	m2				
VIDRIO CLARO 3m.m	m2				
TUBERIA H.S REFORZ.	ml				

DINACE

DINACE

CUADRO DE LIQUIDACION DE OBRAS

OBRA _____

UBICACION _____

CONTRATISTA | REFERENCIA | FECHA INICIO | HOJA DE

CONTRATO Nº | MONTO S/. | ADICIONAL S/. | PLAZO DE A

CCO.	CONCEPTO	UNID.	VOLUMEN CONTRAT.	VOLUMEN REALIZA.	DIFERENCIA VOLUMEN +	DIFERENCIA VOLUMEN −	VALOR	VALOR DIFER. A LIQUIDAR +	VALOR DIFER. A LIQUIDAR −		

OBSERV.

FISCALIZ. NACIONAL | FISCALIZ. ZONAL | CONTRATISTA

DINACE

ANALISIS DE PRECIOS UNITARIOS

COSTOS Y METODOS

HOJA :

OBRA :

PROV :

RUBRO : UNIDAD

REFERENCIA : FECHA :

A	MATERIALES	CANT.	PRECIO UNITARIO	PRECIO TOTAL

B	MANO DE OBRA	JORNAL REAL POR HORA	RENDIM.	TOTAL

C	EQUIPO Y MAQUINARIA			

	RESUMEN	%	COSTOS
A	MATERIALES		
B	MANO DE OBRA		
C	MAQ. Y EQUIPO		
	SUB TOTAL		
	COSTOS INDIRECTOS		
	TOTAL		

RUBRO : UNIDAD

REFERENCIA : FECHA :

A	MATERIALES	CANT.	PRECIO UNITARIO	PRECIO TOTAL

B	MANO DE OBRA	JORNAL REAL POR HORA	RENDIM.	TOTAL

C	EQUIPO Y MAQUINARIA			

	RESUMEN	%	COSTOS
A	MATERIALES		
B	MANO DE OBRA		
C	MAQ. Y EQUIPO		
	SUB TOTAL		
	COSTOS INDIRECTOS		
	TOTAL		

DINACE

DINACE

ORDEN DE CAMBIO O AJUSTE DE VOLUMENES DE OBRA

OBRA : _____

UBICACION : _____

CONTRATISTA : | CONTRATO Nº | VALOR : | INICIACION:

ORDEN DE CAMBIO Nº | FECHA : | PLAZO : | HOJA Nº DE

ITEM	CONCEPTO	UNIDAD	PRECIO UNITARIO	VOLUMENES		DIFERENCIA			
						VOLUMEN		COSTO	
				CONTRATADO	POR REALIZAR	+	−	+	−

OBSERVACIONES : _____

PRECIO UNITARIO APROBADO POR C y M:

VALOR ORIGINAL DEL CONTRATO S/ _____

VALOR DE LA PRESENTE ORDEN DE CAMBIO S/ _____

VALOR DE ANTERIORES ORDENES DE CAMBIO S/ _____

VALOR TOTAL DEL CONTRATO, INCLUYENDO LA PRESENTE ORDEN DE CAMBIO. S/ _____

% DEL CONTRATO ORIGINAL _____

AMPLIACION DE PLAZO POR LA PRESENTE ORDEN _____

PLAZO TOTAL INCLUYENDO LA PRESENTE ORDEN _____

VISTO BUENO

A/: CONTRATISTA

A/: JEFE DE LA ZONA

A/: JEFE DE FISCALIZACION NACIONAL

A/: DIRECTOR TECNICO

DINACE

DINACE

ANALISIS DE COSTOS INDIRECTOS Y MAYORACION DE MANO DE OBRA

COSTOS Y METODOS

HOJA :

OBRA :

PROV :

PORCENTAJE DE COSTOS INDIRECTOS

DESCRIPCION	%
ADMINISTRACION :	
DIRECCION TECNICA :	
IMPREVISTOS :	
UTILIDADES :	
PORCENTAJE TOTAL	

FACTOR DE MAYORACION DE MANO DE OBRA

ANALISIS :

FACTOR DE MAYORACION (%)	

MINISTERIO DE EDUCACION Y CULTURA
DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES
D I N A C E

LISTADO GENERAL DE MATERIALES

MARZO DE 1983

CODIGO	MATERIAL	UNIDAD	PRECIO
6501	ARENA NEGRA	M3	250.00
6502	ARENA AMARILLA	M3	180.00
6503	AGUA	LT	0.08
6504	ALAMBRE GALVANIZADO #18	KG	51.50
6505	AZULEJO UNICOLOR CLASE A	M2	313.00
6506	ALAMBRE SOLIDO #12	M	6.80
6507	ALAMBRE PLASTIPLOMO #12	M	28.00
6508	ALFOMBRA 1/2 SHAGGY(INS.C/ESP)	M2	782.25
6509	ALFOMBRA PELO CORTO (INST.)	M2	703.50
6510	ALFAGIAS DE EUCALIPTO 7X7	M	18.27
6511	ACRYL	LT	215.00
6512	ACCESORIOS DE BANO (6 PZ.)	JGO	800.00
6513	AZULEJO DECORADO CLASE A	M2	400.00
6514	ARCILLA PARA CANCHAS	M3	1375.00
6515	AZULEJO 15 X 15 CM.	M2	320.00
6601	BLOQUES ALIVIANADOS 40X20X10	U	10.50
6602	BLOQUES ALIVIANADOS 40X20X15	U	15.50
6603	BLOQUES ALIVIANADOS 40X20X20	U	21.50
6604	BALDOSA GRANITICA 30X30	M2	220.00
6605	BISAGRAS HIERRO TORN. 4"X1/2"	U	158.00
6606	BISAGRAS 3" (PARA PUERTAS)	U	17.50
6607	BARREDERAS BALDOSA-CEMENTO	M	30.00
6608	BARREDERAS DE LAUREL (4 CM)	M	8.00
6609	BALDOSA COMUN 20X20	M2	156.00
6610	BOQUILLA (BADUELITA)	U	18.00
6611	BLOQUE SOPORTANTE 20X20X10	U	7.77
6612	BALDOSA PIEDRA DE RIO	M2	262.50
6613	BLOQUES ORNAMENTALES	U	28.00
6614	BARREDERAS DE VINYL	M	42.00
6701	CEMENTO GRIS	KG	2.64
6702	CEMENTO BLANCO	KG	15.00
6703	CEMENTINA	KG	6.40
6704	CASCOTE	M3	100.00
6705	CLAVO NORMAL	KG	47.50
6706	CLAVOS DE ACERO	KG	80.00
6707	CABALLETES DE ETERNIT	U	297.68

MINISTERIO DE EDUCACION Y CULTURA

DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES

D I N A C E

LISTADO GENERAL DE MATERIALES

MARZO DE 1983

CODIGO	MATERIAL	UNIDAD	PRECIO
6501	ARENA NEGRA	M3	180.00
6502	ARENA AMARILLA	M3	180.00
6503	AGUA	LT	0.06
6504	ALAMBRE GALVANIZADO #18	KG	60.50
6505	AZULEJO UNICOLOR CLASE A	M2	315.40
6506	ALAMBRE SOLIDO #12	M	6.80
6507	ALAMBRE PLASTIPLOMO #12	M	28.00
6508	ALFOMBRA 1/2 SHAGGY(INS.C/ESP)	M2	782.25
6509	ALFOMBRA PELO CORTO (INST.)	M2	703.50
6510	ALFAGIAS DE EUCALIPTO 7X7	M	14.60
6511	ACRYL	LT	215.00
6512	ACCESORIOS DE BANO (6 PZ.)	JGO	800.00
6513	AZULEJO DECORADO CLASE A	M2	401.50
6514	ARCILLA PARA CANCHAS	M3	1375.00
6515	AZULEJO 15 X 15 CM.	M2	320.00
6601	BLOQUES ALIVIANADOS 40X20X10	U	7.60
6602	BLOQUES ALIVIANADOS 40X20X15	U	9.40
6603	BLOQUES ALIVIANADOS 40X20X20	U	12.00
6604	BALDOSA GRANITICA 30X30	M2	207.00
6605	BISAGRAS HIERRO TORN. 4"X1/2"	U	158.00
6606	BISAGRAS 3" (PARA PUERTAS)	U	17.50
6607	BARREDERAS BALDOSA-CEMENTO	M	85.00
6608	BARREDERAS DE LAUREL (4 CM)	M	14.60
6609	BALDOSA COMUN 20X20	M2	160.00
6610	BOQUILLA (BAQUELITA)	U	18.00
6611	BLOQUE SOPORTANTE 40X20X10	U	7.77
6612	BALDOSA PIEDRA DE RIO	M2	262.50
6613	BLOQUES ORNAMENTALES	U	30.00
6614	BARREDERAS DE VINYL	M	230.00
6701	CEMENTO GRIS	KG	2.83
6702	CEMENTO BLANCO	KG	18.00
6703	CEMENTINA	KG	4.00
6704	CASCOTE	M3	100.00
6705	CLAVO NORMAL	KG	37.80
6706	CLAVOS DE ACERO	KG	80.00
6707	CABALLETES DE ETERNIT	U	283.50

MINISTERIO DE EDUCACION Y CULTURA
DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES
D I N A C E

ANALISIS DE PRECIOS UNITARIOS

LUGAR: ZONA B / GUAYAS
FECHA: MARZO DE 1983

CODIGO : 2A
RUBRO : EXCAVACION EN CIMIENTOS
UNIDAD : M3

1.- MATERIAL

CODIGO	MATERIAL	UNIDAD	COSTO	CANTIDAD	PRECIO
			SUBTOTAL	S/	0.00

2.- MANO DE OBRA

CODIGO	TRABAJADOR	JORNAL HORA	F.S.R.	J.REAL HORA	RENDTO. H/H	PRECIO
111	MAESTRO MAYOR	31.38	2.53	79.26	0.07	5.55
1110	PEON	20.00	2.80	55.94	1.80	100.70
			SUBTOTAL	S/.		106.24

3.- EQUIPO Y MAQUINARIA

CODIGO	EQUIPO Y/O MAQUINARIA	COSTO/HORA	RENDIMIENTO	PRECIO
2	HERRAMIENTAS EN GENERAL	1.70	1.87	3.17
		SUBTOTAL	S/.	3.17

COSTO DIRECTO TOTAL	S/.	109.42
COSTO INDIRECTO (30.00 %)	S/.	32.83
PRECIO UNITARIO TOTAL	S/.	142.25
PRECIO UNITARIO FINAL	S/.	142.50

MINISTERIO DE EDUCACION Y CULTURA
DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES
D I N A C E

ANALISIS DE PRECIOS UNITARIOS

LUGAR: ZONA J / EL ORO
FECHA: MARZO DE 1983

CODIGO : 2A
RUBRO : EXCAVACION EN CIMIENTOS
UNIDAD : M3

1.- MATERIAL

CODIGO	MATERIAL	UNIDAD	COSTO	CANTIDAD	PRECIO
			SUBTOTAL S/.		0.00

2.- MANO DE OBRA

CODIGO	TRABAJADOR	JORNAL HORA	F.S.R.	J.REAL HORA	RENDTO. H/H	PRECIO
111	MAESTRO MAYOR	28.63	2.57	73.48	0.07	5.14
1110	PEON	19.63	2.81	55.08	1.80	99.14
			SUBTOTAL S/.			104.29

3.- EQUIPO Y MAQUINARIA

CODIGO	EQUIPO Y/O MAQUINARIA	COSTO/HORA	RENDIMIENTO	PRECIO
2	HERRAMIENTAS EN GENERAL	1.70	1.87	3.17
		SUBTOTAL S/.		3.17

COSTO DIRECTO TOTAL	S/.	107.46
COSTO INDIRECTO (30.00 %)	S/.	32.24
PRECIO UNITARIO TOTAL	S/.-	139.69
PRECIO UNITARIO FINAL	S/.-	139.50

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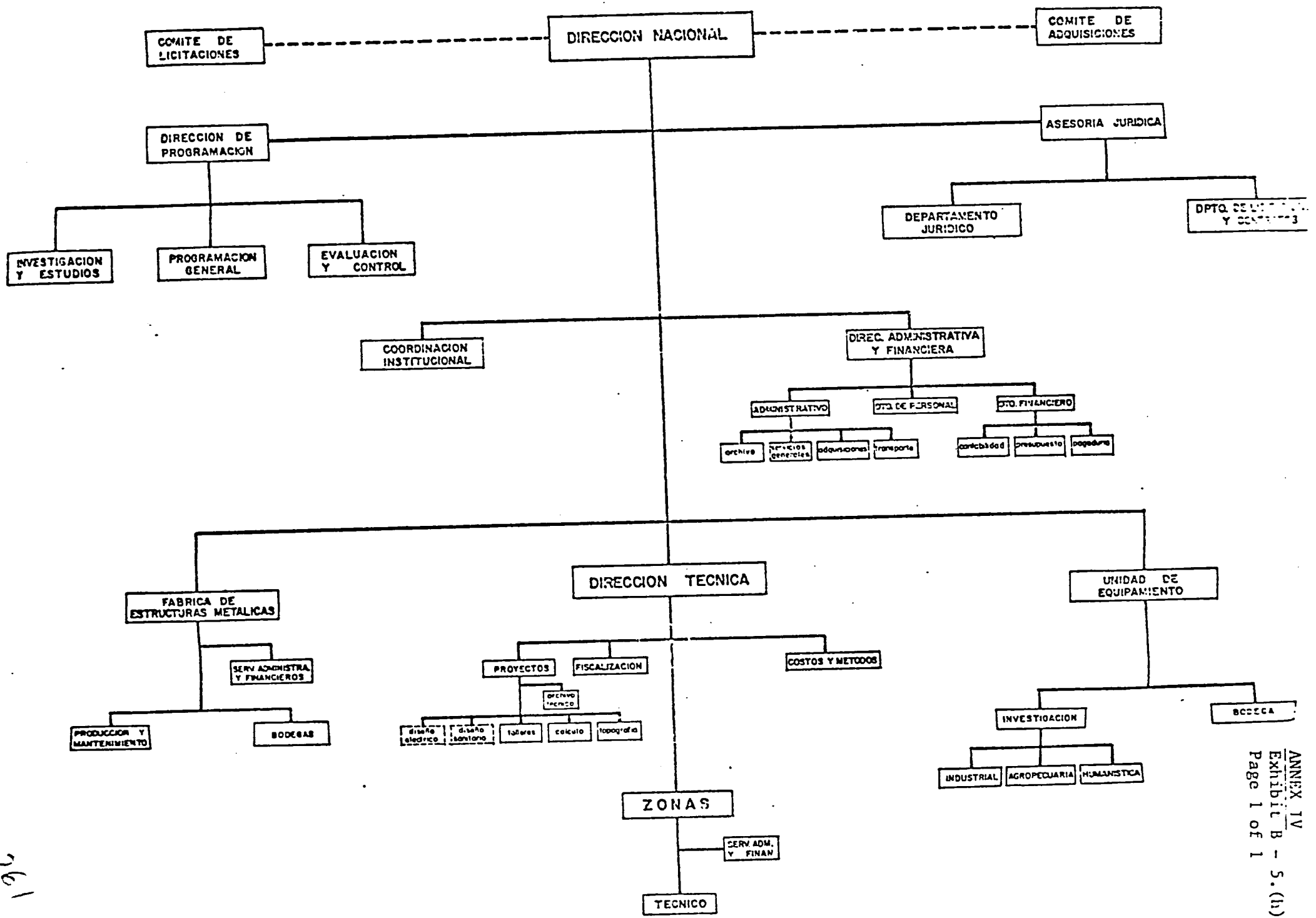
ORGANIGRAMA ESTRUCTURAL DE LA DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES



ANNEX IV
Exhibit B - 5.(b)
Page 1 of 1

DATA FORMATS

USUARIO : D. I. N. A. C. E.
SISTEMA : CONTROL DE PROYECTOS

FECHA : 83/08/15 PAGINA : 1
REPORTE : CONTRATO NO. 4383

REPORTE DE AVANCE FISICO DE OBRA

No CONTRATO : 1DINACE- 43-83
CONTRATISTA : ING LENIN VALENZUELA
CANTON : ESPEJO
FECHA FIRMA : 83/01/28
FECHA VCTO. : 83/ 5/28
GARANTE : BANCO HOLANDES UNIDO
FECHA EMIS. : 83/02/01

CLASE : PRIVADO
RAZON : CONSTRUCCION
UBICACION : SAN ISIDRO
PLAZO : 120

VALIDEZ : 120
FECHA VCTO: 83/ 6/ 1

PLANTEL : PRIMARIO
NOMBRE : ESCUELA 9 DE OCTUBRE
ZONA : RURAL
VALOR CONTRATO: $ 1,107,885.00
VALOR ANTCPO. : $ 221,577.00
NO. DOCUMENTO : 2583

COD. OBRA : PMA-2
COSTO : $ 1,107,885.00

DESCRIPCION: 2 BLOQUES 2 AULAS E. M.

CANTIDAD : 1.00

RUBRO	DESCRIPCION	UM	*****EN CONTRATO**** CANTIDAD	PRE. UNIT	***** TERMINADO ***** CANTIDAD	COSTO	% A. F.	*****POR TERMINAR***** CANTIDAD	COSTO	% A. F.
1A	ARREGLO Y LIMPIEZA TERRENO	M2	310.40	20.00	342.00	6,840.00	110.18[	-31.60] [	-632.00]	[-10.18]
1B	REPLANTEO	M2	216.00	10.00	216.00	2,160.00	100.00	0.00	0.00	0.00
2A	EXCAVACION EN CIMIENTOS	M3	6.40	70.00	6.40	448.00	100.00	0.00	0.00	0.00
2B	RELLENO EN CIMIENTOS	M3	2.80	35.00	2.80	98.00	100.00	0.00	0.00	0.00
2D	DESALOJO DE CIMIENT. (CARRE)	M3	5.00	25.00	5.00	125.00	100.00	0.00	0.00	0.00
3C	HORMIGON SIMPLE (REPLANT.)	M3	1.40	4,500.00	1.32	5,940.00	94.28	0.03	360.00	5.71
3D	HORMIGON SIMPLE	M3	1.40	4,000.00	1.40	5,600.00	100.00	0.00	0.00	0.00
3G	HIERRO INC COLUMNAS Y CAD.	KG	80.00	45.00	80.00	3,600.00	100.00	0.00	0.00	0.00
4BA	ARRIOSTRAMIENTO H. A. 10x10	ML	181.00	300.00	179.60	53,880.00	99.22	1.40	420.00	0.77
4DA	CADENA INFERIOR HOR SIMPLE	M3	4.00	4,500.00	3.94	17,730.00	98.50	0.06	270.00	1.50
4DC	COLUMNAS DE HORM. SIMPLE	M3	0.40	4,500.00	0.32	1,440.00	80.00	0.08	360.00	20.00
4H	HIERRO	KG	850.00	40.00	850.00	34,000.00	100.00	0.00	0.00	0.00
5A	MAMP LADRILLO 0.15 cm	M2	156.00	500.00	151.00	75,500.00	96.79	5.00	2,500.00	3.20
6A	CONTRAPISOS TIPO SIERRA	M2	208.00	350.00	203.58	71,253.00	97.87	4.42	1,547.00	2.12
7B	PISOS EMBALDOSADO GRANITICO	M2	208.00	600.00	204.60	122,760.00	98.36	3.40	2,040.00	1.63
8A	ENLUCIDOS LISOS	M2	312.00	180.00	351.20	63,216.00	112.56[	-39.20] [	-7,056.00]	[-12.56]
10B	REV DARRED. BALDOSAS CEMENTO	ML	116.00	100.00	112.00	11,200.00	96.55	4.00	400.00	3.44
11G	CRATELERA	UN	4.00	2,800.00	4.00	11,200.00	100.00	0.00	0.00	0.00
11H	PIZARRON	UN	4.00	4,200.00	4.00	16,800.00	100.00	0.00	0.00	0.00
12D	CANDADOS	UN	4.00	600.00	4.00	2,400.00	100.00	0.00	0.00	0.00
14A	VIDRIOS ESPESOR 3 MM	M2	102.00	600.00	99.60	59,760.00	97.64	2.40	1,440.00	2.35
16A	ENTECH C/PLANCHAS ETERNIT	M2	346.00	690.00	357.20	246,468.00	103.23[	-11.20] [	-7,728.00]	[-3.23]
18BC	REJILLA (INCLUIDA SIFON)	UN	8.00	350.00	0.00	0.00	0.00	8.00	2,800.00	100.00
18BD	CANAL RECOLECTOR (TOL)	ML	78.00	300.00	0.00	0.00	0.00	78.00	23,400.00	100.00
18BE	CANAL ABIERTO	ML	78.00	200.00	104.00	20,800.00	133.33[	-26.00] [	-5,200.00]	[-33.33]
19A	PUNTOS DE ILUMINACION	P	28.00	650.00	32.00	20,800.00	114.28[	-4.00] [	-2,600.00]	[-14.28]
19B	TOMACORRIENTES DOBLES 110 V	P	12.00	700.00	12.00	8,400.00	100.00	0.00	0.00	0.00
19F	FOCOS	UN	28.00	50.00	32.00	1,600.00	114.28[	-4.00] [	-200.00]	[-14.28]
19I	SWITCHS	UN	2.00	140.00	2.00	280.00	100.00	0.00	0.00	0.00
20D	PINTURA ANTICORROSIVA	M2	469.00	80.00	467.70	37,416.00	99.72	1.30	104.00	0.27
				P A S A N :		901,714.00	94.89		12,225.00	5.10

Best Available Document

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RESUMEN DE INVERSIONES REALIZADAS POR LA DINACE EN:

CONSTRUCCIONES, EQUIPAMIENTO, FABRICACION DE MOBILIARIO Y ESTRUCTURAS, POR PROVINCIAS (EN MILES DE SUCRES)

JULIO 1982 - MAYO 1983

PROVINCIA	OBRAS EN EJECUCION DINACE			OBRAS EN EJECUCION MEDIANTE CONVENIOS				OBRAS TERMINADAS			PLANTELES ATENDIDOS CON EQUIPAMIENTO		FABRIC. ESTRUC. Y MOBILIARIO	TOTAL	
	No. de Obras	No. de Aulas	VALOR	No. de Conv.	No. de Obras	No. de Aulas	VALOR	No. de Plant.	No. de Aulas	VALOR	No. de Plant.	VALOR	VALOR	No. de Planteles	INVERSION TOTAL
CARCHI	32	162	136.830,00	2	2	29	8.944,00	18	55	35.079,00	10	13.975,00	4.301,00	52	199.129,00
IMBABURA	11	36	25.555,00	1	5	46	14.810,00	10	28	93.097,00	8	15.066,00	2.026,00	26	150.55[illegible],00
PICHINCHA	50	194	160.821,00	11	209	507	86.977,00	202	447	149.[illegible],00	28	90.927,00	7.261,00	461	495.75[illegible],00
COTOPAXI	14	41	30.299,00	2	13	14	5.412,00	39	105	34.445,00	[illegible]	14.532,00	2.604,00	66	87.295,00
TUNGURAHUA	12	36	52.584,00	3	44	98	7.891,00	46	233	41.435,00	10	26.494,00	4.527,00	102	132.931,00
CHIMBORAZO	18	77	42.439,00	2	11	27	7.800,00	159	212	32.[illegible],00	7	18.270,00	3.556,00	188	10[illegible].835,00
BOLIVAR	15	57	28.822,00	5	40	142	17.703,00	24	53	11.630,00	8	7.510,00	2.160,00	79	67.825,00
CAÑAR	14	18	12.441,00	4	8	21	18.259,00	22	57	25.559,00	8	7.338,00	1.711,00	44	66.608,00
AZUAY	12	19	14.614,00	8	17	85	241.599,00	44	88	41.377,00	12	16.696,00	4.443,00	73	318.729,00
LOJA	19	67	40.488,00	4	40	36	7.600,00	44	174	73.243,00	8	7.988,00	1.178,00	103	130.499,00
ESMERALDAS	24	45	24.350,00	7	9	85	89.173,00	70	139	50.822,00	8	26.826,00	2.243,00	103	193.414,00
MANABI	25	116	72.666,00	9	91	294	46.969,00	48	141	58.189,00	9	30.323,00	2.817,00	184	210.95[illegible],00
LOS RIOS	13	60	38.270,00	3	75	13	25.050,00	8	50	25.065,00	7	8.745,00	3.515,00	96	100.645,00
GUAYAS	26	161	113.988,00	12	63	246	35.217,00	86	313	204.031,00	11	45.193,00	6.262,00	175	404.691,00
EL ORO	22	76	42.999,00	4	13	36	51.605,00	46	176	67.759,00	5	16.096,00	1.785,00	81	180.254,00
NAPO	5	18	7.014,00	4	10	22	9.210,00	7	22	3.819,00	4	13.790,00	977,00	22	34.810,00
PASTAZA	1	21	6.301,00	4	19	81	12.277,00	11	11[illegible]	5.759,00	6	12.790,00	976,00	53	38.103,00
MORONA SANTIAGO	2	5	2.755,00	6	90	374	33.311,00	5	10	3.013,00	3	1.290,00	977,00	97	41.3[illegible],00
ZAMORA CHINCHIPE	1	2	599,00	-	-	-	-	8	114	16.625,00	1	1.486,00	976,00	9	19.6[illegible],00
GALAPAGOS	-	-	-	2	6	6	13.662,00	5	6	4.519,00	1	1.333,00	50,00	11	19.5[illegible],00
TOTALES :	316	1.211	853.835,00	93	765	2.162	733.469,00	924	2.555	979.320,00	155	376.668,00	54.345,00	2.005	2'997.637,00

ANNEX IV
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DIRECCION NACIONAL DE CONSTRUCCIONES ESCOLARES
DIRECCION DE PROGRAMACION

PROVINCIA DE: ESMERALDAS

AVANCE FISICO Y ESTADO FINANCIERO DE OBRAS

EN EJECUCION DINACE

JUNIO DE 1983

ESTABLECIMIENTO	UBICACION		N° CONTRATO o CONVENIO CONTRATISTA	VALOR TOTAL	VALOR PAGADO	VALOR POR PAGAR	Avance Físico %	OBJETO DE LA INVERSION							OBSERVACIONES
								N° AULAS		N° Talleres		Laboratorios		ANEXOS	
	CANTON	SITIO						E.M	H.A	E.M	H.A	E.M	H.A		
EDUCACION RURAL															
ESCUELAS RURALES															
1. Boca de María	Eloy Alfaro	Boca de María	424-82 Sr. Alfonso Obando	225.071,10	186.614,99	38.456,11	90							1 aula de madera	Fondos de la Cámara
COL. CICLO BASICO RURAL															
1. Tonchigue	Esmeraldas	Tonchigue	079-82 Ing. Sergio Zambrano	2'569.444,72	2'261.637,81	307.806,91	95	3		2-1/2				Administración, vivienda y fosa séptica	BEDE 200
2. 14 de Octubre	Eloy Alfaro	Limones	263-80 Aparicio Arce	233.710,00	183.285,00	50.425,00	90							Construcción, graderías, ventanas y cerramientos	
3. Monterrey	Quinindé	Monterrey	376-82 Ing. Iván Moya	498.225,00	192.855,18	305.369,82	50	2							Fondos de la Cámara
4. San Francisco de Onzole	Eloy Alfaro	San Franc. de Onzole	423-82 Sr. Alfonso Obando	450.142,20	353.229,97	96.912,23	50	2						(aulas en madera)	Fondos de la Cámara
5. Carondelet	San Lorenzo	Carondelet	426-82 Sr. Edmundo Pachano	450.142,20	353.229,97	96.912,23	50	2						(aulas en madera)	Fondos de la Cámara
6. Telembí	Eloy Alfaro	Telembí	425-82 Sr. Edmundo Pachano	450.142,20	353.229,97	96.912,23	50	2						(aulas en madera)	Fondos de la Cámara
JARDINES DE INFANTES URBANOS															
J.I. Ciudad del Puyo Esc. Guayaquil	Esmeraldas	Esmeraldas	099-81 Ing. Carlos Olmedo	3'131.944,81	2'268.965,27	862.979,54	96		8					Grada, SS.HH., vivienda, 2 patios cívicos	Faltan obras adicionales de cerramiento
ESCUELAS URBANAS															
1. 5 de Agosto y José Vicente Trujillo	Esmeraldas	Esmeraldas	235-81 Arq. Eduardo Nina	2'866.634,09 166.634,09	2'846.659,35	19.974,74 166.634,09	95		6					Grada, vivienda, batería, SS.HH.	BEDE 200
2. Sin Nombre	Esmeraldas	Esmeraldas	099-83 Sr. Edmundo Pachano	450.142,20	225.071,10	225.071,10	50	2						(aulas de madera)	Fondos de la Cámara
COL. BASICOS URBANOS															
1. Chumundé	Esmeraldas	Esmeraldas	503-82 Sr. Edmundo Pachano	430.570,80	337.872,15	92.698,65	20								Fondos de la Cámara
2. San Francisco del Cajas	Muisne	Muisne	364-82 Ing. Osvaldo ZGÑiga	778.444,00	391.645,70	386.798,30	70	3							Se ha solicitado Rescición Contrato
COL. TECNICOS URBANOS															
1. Nocturno Esmeraldas	Esmeraldas	Esmeraldas	475-82 Arq. Nelson Martínez	2'650.000,00 578.823,10	1'393.191,71	1'256.808,29 578.823,10	15								Paralizado BEDE 200 DINACE

ANNEX IV
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IMPLEMENTATION AND DISBURSEMENT SCHEDULES

FLUJO DE INVERSION

LOJA #1

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO VOL-E3
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
ESCUELAS: PAZ Y MIRANDA - JULIO ZAL DUMOLEE - JOHN ESTRADA - DANIEL VELEZ S/N CHANGONA - PROCESO FRANCO - VICTOR HUGO - S/N MASACONISA.	INVERSION	765.0	297.0	297.0	297.0	297.0	297.0	300.0									2'550.000
	%	30	41.6	53.2	69.8	76.9	88.0	100									
ESCUELAS: MARIA ESPINOSA - CHACURRAMBA S/N IGLESIAS - ASILEVI - W. CHURCHILL JORGE CASTILLO - CARLOS NUÑEZ DE CORDOVA ESC. MIGUEL DE SEBASTIAN.	INVERSION	660.0	308.0	308.0	308.0	308.0	308.0										2'200.000
	%	30	44	58	72	86	100										
ESCUELAS: SEGUNDO A NOGUERA - BASILIDES CARERA - JORGE ALVISCO - GONZALO CRUZ - ROBERTO BALDOA - SORIA VERA - JUAN JIMENEZ.	INVERSION	660.0	308.0	308.0	308.0	308.0	308.0										2'200.000
	%	30	44	58	72	86	100										
ESCUELAS: LAZARO LASCA - 12 DE OCTUBRE CARLOS O. PALACIOS - RAFAEL PINZANO - PORTUGIA - PEDRO RIOFRIO - JUAN DE SALINAS - FRELANDO FLORES	INVERSION	420.0	245.0	245.0	245.0	245.0											1'400.000
	%	30	47.5	65.0	82.5	100											
ESCUELAS: S/N SIN ANB - ECUADOR SIMON BOLIVAR - DIEGO VACA DE U ESC. S/N CARISO - COTOPAXI	INVERSION	450.0	262.0	262.0	262.0	264.0											1'500.000
	%	30	47.5	65.0	82.5	100											
COL. CAPOTILLO - ESCUELAS: CANDRA - GENERAL CORDOVA S/N EL TAMARO	INVERSION	390.0	227.0	227.0	227.0	229.0											1'300.000
	%	30	47.5	65.0	82.5	100											
ESCUELAS: 10 DE AGOSTO - MANUEL FLORES - 22 DE SEPTIEMBRE JOSE F. ALBUNDIA - CUARTO CENTENARIO PEDRO - ANDRES CELI - ZOILO RODRIGUEZ	INVERSION	864.0	336.0	336.0	336.0	336.0	336.0	336.0									2'880.000
	%	30	41.6	53.2	69.8	76.9	88.0	100									
ESCUELAS: MARISCAL SUCRE - LUIS MONTE S. MS - R. CARRION - PEDRO V. MALDONADO - M. CARRA - S/N CANARO - COMIDA - MACHALA JOSE ALFARO - S/N MARIANO DE LEIVA	INVERSION	195.0	151.0	151.0	153.0												650.000
	%	30	53.3	76.63	100												
ESCUELAS: LUIS PASTEUR - MARILIA DE VILLAVICENCIO - SEVILLA DE ORO - FERNANDO MARTINEZ - S/N LA ALCIRA - 25 de JULIO DEL ALTO - S/N CERCA - MANUEL GOMEZ	INVERSION	250.5	199.0	199.0	199.5												861.000
	%	30	53.3	76.63	100												
ESCUELAS: LINDERERCE - JUAN DE LA CUA FERNANDO ANDRADE - ANDRES TINOCO CARLOS ORDONEZ - ALFONSO CUOA - S/N SAN JOSE FERNANDEZ MORA DANIZ - JOSE INGENIERO	INVERSION	258.0	201.0	201.0	201.0												1'6'376.000
	%	30	53.3	76.63	100												
SUBTOTAL	INVERSION	4'912.5	2'529.0	2'529.0	2'533.5	1'987.0	1'245.0	1'336.0									

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FLUJO DE INVERSION

LOTA#2

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
ESCUELAS: RIO COCAS - GENERAL DIZARBO CARLO MARX - ALVAS - ADOLFO JORADO LAURO CARNERAL - LUIS RODRIGUEZ CRISTOBAL CARRION - ZOILA PACHECO	INVERSION	273.0	213.0	213.0	213.0												912.000
	%	30	53.3	76.63	100												
ESCUELAS: REPUBLICA IBERICA - TELMO OLIVA O. - CENTRO DE TECCIO - ELEGIO LEZ DE CORONEL - MARIANO GALARZA - J. M. DIAZ MALDONADO - [illegible] - ALFREDO ROMERO - [illegible]	INVERSION	198.0	231.5	231.5													661.000
	%	30	65	100													
ESCUELAS: SAGRADO CORAZON - JOSE JAVIER C. - SIMON BOLIVAR - P. DE EL PASONEL - E. OSTALOSS - P. DE CEJILA - RIO CAUCHES - VALLADOLID - [illegible] - CUENCA - CACHA - ALFREDO DIEZ - [illegible]	INVERSION	232.0	270.5	270.5													773.000
	%	30	65	100													
ESCUELAS: OLEGARIO VALDIVIEZO - PEDRO CARBERITO - ESPINDOLA - EL JOSE CARRION - BERNARDO DESCARTES - PALMAS - COPORA DE LOS ALCALDES.	INVERSION	183.0	215.0	215.0													613.000
	%	30	65	100													
ESCUELAS: S/N SAN VICENTE - JOSE MARIA ESPINOSA - JOSE M. PALACIOS - RIO JAVIER - [illegible] - AGUSTIN MEDIDERA - LORENZO [illegible] - PEDRO CARDO.	INVERSION	137.0	320.0														457.000
	%	30	100														
ESCUELAS: CARDENAL DE LAS CASAS - CARLOS CUEVA T. - DARIO ECHEVERRIA - CEDIA O. CEDEÑO - ROLANDO PEREZ - NICOLAS GARCIA - CLEMENTE MENDOZA - M. RODRIGUEZ	INVERSION	155.0	180.0	180.0													515.000
	%	30	65	100													
ESCUELAS: TORCIO ROSA - S/N CORDOVA - ANTONIO ANTE - S/N MACHADO VILLA - CLEMENTE RODRIGUEZ - RAFAEL ARROYO - M. ROMAN - MANUEL TERRANILLO - MANUEL B. CUEVA	INVERSION	147.0	171.0	171.0													489.000
	%	30	65	100													
ESCUELAS: JUVENTINO CARRERA - A. ZUÑIGA - MARIO CASTAÑAMIL - REP. ARGENTINA - J. M. ESPINOZA - ANGEL O. CARRION - S/N PLAZA DE SESS - CARLOS J. MOSQUERA	INVERSION	130.0	153.0	153.0													436.000
	%	30	65	100													
ESC: ALVAS - REP. DE VENEZUELA - BARCINUEVE DE LOS ANDES - CIUDAD DE CATAMOCHA - CONTRALMO - LOJA - OCOTA - VICTOR RESES	INVERSION	217.0	253.5	253.5													724.000
	%	30	65	100													
ESCUELAS: REPUBLICA DEL ECUADOR - S/N JERAS - RAFAEL ROSTIVEZ - S/N CUALLANCO - S/N - [illegible] BOCANEGRA - SCID ANGEL DAVILA - [illegible] MAGAÑON.	INVERSION	238.0	278.0	278.0													794.000
	%	30	65	100													
SUB TOTAL	INVERSION	1'310.0	2'285.5	1'935.5	213.0												6'374.000

FLUJO DE INVERSION

LOJA#3

LOCAL	CRONOGRAMA DE AVANCE	ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	COSTO REAL INTERNO VPI-33
		INVERSION EN MILES DE SUCRES / MES															
ESCUELAS: ANTONIO JIMENEZ - JOSE A. PALACIOS MIRAFLORES - FILOMENA ROJAS - VICTORINO PALACIOS - ELISEO ALVAREZ - S/N UNION TRABAJO - S/N EL SAUCE	INVERSION	366.0	213.0	213.0	213.0	213.0											1'220.000
	%	30	47.5	65.0	82.5	100											
ESCUELAS: LEON DE FRONTS C - MANUELA CANTARES - MANUEL ELISEO FLORES NO SERRANO - CIUDAD DE MALAGA JOSE MARIA ROSALES - EDUC QUILANGA	INVERSION	432.0	201.4	201.4	201.4	201.4	201.4										1'439.000
	%	30	44	58	72	86	100										
ESCUELAS: S/N CACANCO - S/N MARIA ANGOA JUNCO - S/N SAN VICENTE - S/N CAPILLA ALTA SAN ROQUE - M. GUTIERREZ S/N RODRIGUEZ - FELIMENA ROSA DE C	INVERSION	288.0	223.0	223.0	223.0												959.000
	%	30	53.3	76.6	100												
ESCUELAS: ALVAREZ SANCHEZ - GUSTAVO ADOLFO D - EMILIANO ROBA - PISARCA - SOBA LOJA # 53 - 26 DE SEPTIEMBRE - MERCEDES PALACIOS - S/N CEJINCA - RIOS ALVARO	INVERSION	237.0	184.0	184.0	186.0												791.000
	%	30	53.3	76.6	100												
ESCUELAS: JORGE JEAZA - S/N RIO PINDO ROSAS GUERA - FULTON - ENRIQUE VACA ARTURO WITT - REP VENEZUELA - ALFONSO CORONEL - JOSE A CAMPOS	INVERSION	286.0	223.0	223.0	223.0												955.000
	%	30	53.3	76.6	100												
VARIAS ESCUELAS - MOBILIARIO	INVERSION	150.0	175.0	175.0													500.000
	%	30	65	100													
SUB TOTAL		1759.0	1'213.9	1'213.9	1'045.9	916.9	201.9										5'860.000
		25815	6033.9	5713.3	3799.4	2[illegible].9	1'9504	[illegible]0									25 616.[illegible]

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FLUJO DE INVERSION

EL ORO #1

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO VR.-83
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
ESC: COMUNA HUMANEJO - CONSULADO ESPAÑOL HERMANDADES - ALCIDES VELASTEZ - ALFREDO MERCADO - FELIX SAVILA - ANADA MEDINA - S/N - RAUL GALAVARRA JUAN MONTALVO - S/N -	INVERSION	353.3	206.1	206.1	206.1	206.1											1'177.673
	%	30	47	64	81	100											
ESC: COMERCIO - JOSE MEJIA - PATRIA NUEVA - 3C - PALVARIZA - DIEGO CASTILLO - MANUEL MONTALVO - VICENTE ALVIREZ - EDM. CORDOVA - NATALIO IDROVO	INVERSION	1354.0	394.9	394.9	394.9	394.9	394.9	394.9	394.9	395.3							4'513.417
	%	30	38	46	54	62	70	78	86	100							
ESC. JACINTO - GONZALO - GALO PLAZA - MARINA SUCRE - HECTOR EUGALDA - JOSE MARIA VELASCO IBARRA - 24 DE MAYO - EUGENIO PAREJA - 32 DEL CAMPO GRANDE - RODRIGO UBARTE - DAVID GARCIA - DELGOMIRONE - PAULO TODAC.	INVERSION	273.4	212.6	212.6	213.4												911.165
	%	30	53	76	100												
ESC. ALBERTO CRUZ MURILLO	INVERSION	698.7	271.7	271.7	271.7	271.7	271.7	271.8									2'549.077
	%	30	41	52	63	74	85	100									
COLEG. CIUDAD MACHALA - ALMIRANTE MORA - HEROES DE JUNIO - COL. ELEDER FRANCO - ESC. MANUEL FUGALDA - EMILIO CASTRO - MANUELA CAÑIZARES -	INVERSION	550.0	213.9	213.9	213.9	213.9	213.9	213.7									1'833.295
	%	30	41	52	63	74	85	100									
ESC. ROMERO MURILLO - SIMON BOLIVAR - PABLO AMADA VERA.	INVERSION	714.8	238.3	238.3	238.3	238.3	238.3	238.3	238.2								2'382.700
	%	30	40	50	60	70	80	90	100								
ESC. JUAN MURILLO - EULOGIO BERRAZUETA - SAN JUAN BOSCO - OLIVIA CONCHA VERGARA - JOSE VICENTE MOLINA - LUIS A. MELGOSA	INVERSION	706.7	235.6	235.6	235.6	235.6	235.6	235.6	235.3								2'355.650
	%	30	40	50	60	70	80	90	100								
ESC. FRANCISCO TRUJILLO	INVERSION	900.0	262.5	262.5	262.5	262.5	262.5	262.5	262.5	262.5							500.000
	%	30	38	46	54	62	70	78	86	100							
ESC. 9 MAYO - REP. BRASIL - GRAL. GUERRERO - LUIS F. BORJA.	INVERSION	750.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0								2'500.000
	%	30	40	50	60	70	80	90	100								
ESCS: OVIDIO DECROLY - DIEGO CERECERO NEVES	INVERSION	120.0	240.0	240.0	240.0	240.0	240.0	240.0	240.0								2'400.000
	%	20	40	50	60	70	80	90	100								
SUBTOTAL		2320.9	2525.6	2525.6	2526.4	2313.3	2106.9	2106.8	1.670.9	656.6							23'403.000

ANNEX IV
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FLUJO DE INVERSION

ELORO #2

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO V31-83
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
[illegible]	INVERSION	516.4	200.8	200.8	200.8	200.8	200.8	201.083									1'721.483
	%	30	41	52	63	74	85	100									
[illegible]																	
[illegible]	INVERSION	752.8	250.9	250.9	250.9	250.9	250.9	250.9	251.156								2'509.356
	%	30	40	50	60	70	80	90	100								
[illegible]	INVERSION	780.0	260.0	260.0	260.0	260.0	260.0	260.0	260.0								2'600.000
	%	30	40	50	60	70	80	90	100								
VARIOS LOCALES MOBILIARIO	INVERSION	150	350														500.000
	%	30	100														
SUBTOTAL		2199.2	1061.7	711.7	711.7	711.7	711.7	711.7	511.1								7'330.556
TOTAL		4220.1	3587.3	3237.3	3238.1	3025.0	2818.6	2618.5	2132.0	656.6							30'775.553

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FLUJO DE INVERSION

GUAYAS #1

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO VII-85
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
[illegible] SIMON BOLIVAR - 24 MAYO - REP. GUATEMALA - REP. ARGENTINA - GAMBOA [illegible]	INVERSION	720.0	2800	2800	2800	2800	2800	2800									2'400.000
	%	30	41	52	63	74	85	100									
[illegible]	INVERSION	690.0	269.3	269.3	269.3	269.3	269.3	269.3									2'300.000
	%	30	41	52	63	74	85	100									
[illegible] #.35 MARLOC MARQUEZ - # 239 S/N	INVERSION	636.8	244.6	244.6	244.6	244.6	244.6	244.8									2'122.600
	%	30	41	52	63	74	85	100									
[illegible] S/N - GABRIELA VISCARAL - ARTIGAS [illegible] - 28 DE MAYO - GUAYAQUIL - AIDA [illegible] - [illegible] - GUILLERMINA [illegible] - COL. [illegible] BOLIVAR.	INVERSION	690.0	269.3	269.3	269.3	269.3	269.3	269.3									2'300.000
	%	30	41	52	63	74	85	100									
[illegible] ALEX. GUEVARA - TOMAS [illegible] - SOCIEDAD [illegible] - [illegible] - [illegible] - [illegible] - [illegible] - [illegible]	INVERSION	705.0	274.2	274.2	274.2	274.2	274.2	274.2									2'350.000
	%	30	41	52	63	74	85	100									
EXP. ABEL ROMERO 2.	INVERSION	510.0	238.0	238.0	238.0	238.0	238.0										1'700.000
	%	30	44	58	72	86	100										
EXP. # 206 SIN NOMBRE	INVERSION	600.0	233.3	233.3	233.3	233.3	233.3	234.3									2'000.000
	%	30	41	52	63	74	85	100									
[illegible] # 720 SIN NOMBRE.	INVERSION	600.0	233.3	233.3	233.3	233.3	233.3	234.3									2'000.000
	%	30	41	52	63	74	85	100									
[illegible] #8 [illegible] TRANVIA - GUAYAQUIL - [illegible] ELOY ALFARO - # 123 TEODORO MUNICADO [illegible] - PEDRO J. ARIAS	INVERSION	675.0	262.5	262.5	262.5	262.5	262.5	262.5									2'250.000
	%	30	41	52	63	74	85	100									
[illegible] - [illegible] - # 573 [illegible] SALVADOR - [illegible] - [illegible] - [illegible] - [illegible] - [illegible]	INVERSION	615.9	239.5	239.5	239.5	239.5	239.5	239.6									2'053.000
	%	30	41	52	63	74	85	100									
[illegible] SUBTOTAL.	INVERSION	6'427	2'545.0	2'545.0	2'545.0	2'545.0	2'545.0	2'507.8									21'475.500

ANNEX IV
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FLUJO DE INVERSION

GUAYAS #2

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO VII-83
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
COLEGIO: LUIS CELERI - VICENTE ROCAFUERTE TECNIFICADO	INVERSION	610.5	237.4	237.4	237.4	237.4	237.4	237.5									2'038.000
	%	30	41	52	63	76	85	100									
EXS: 13 DE FEBRERO - 23 DE MAYO - 20 DE MAYO - 22 DE ABRIL - 22 DE CASTILLO - 239 - 15 DE AGOSTO - 14 CATALINA - 103 MEJIA - 11 TECNICO - 2 VELEZ.	INVERSION	610.5	237.4	237.4	237.4	237.4	237.4	237.5									2'035.000
	%	30	41	52	63	76	85	100									
EXS: CUBA - ITALIA - CAPEL - R. BELGICA - ALEMANIA - CAPADONI - ESPAÑA - ORIENTE ECUATORIANO - COLEGIO: ROBERTO UREA - OLMEDO - CUILLERO ORTEGA.	INVERSION	750.0	250.0	250.0	250.0	250.0	250.0	250.0	250.0								2'500.000
	%	30	40	50	60	70	80	90	100								
EXS: 16 DE JULIO - CARLOS GILBERTO - SEP. PEDRO ALFONSO - SIMON BOLIVAR - 60 - FRISES CEDEÑO - ANTONIO ALCIVAR - VIA DAULE - ABOSEMENA.	INVERSION	600.0	280.0	280.0	280.0	280.0	280.0										2'000.000
	%	30	44	58	72	86	100										
VARIAS ESCUELAS CUILIBRIO.	INVERSION	150.0	175.0	175.0													500.000
	%	30	65	100													
SUBTOTAL	INVERSION	2'721.0	1'179.8	1'179.8	1'009.8	1'009.8	1'009.8	725.0	250.0								9'010.000
TOTAL	INVERSION	9'163.7	3'729.8	3'729.8	3'549.8	3'549.8	3'549.8	2'742.8	250.0								30'545.500

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ESMERALDAS #1

FLUJO DE INVERSION

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO POR INTERNO
		ANTICIPO 30%	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
ESCS: ZAMORA CHINCHIPE - MACHALA - DAVILA - LEOPOLDO N. GALVEZ - CAPITAN UNCERA - TEODORO MORAN	INVERSION	630.0	294.0	294.0	294.0	294.0	294.0										2'100.000
	%	30	44	58	72	86	100										
ESCS: PATICA NUEVA - FRAY V. SOLANO - DELENIERA - RAMON ESTUPIÑAN	INVERSION	660.0	315.0	315.0	315.0	315.0	315.0										2'100.000
	%	30	44	58	72	86	100										
ESC. COMPLEJO L. DECUT	INVERSION	450.0	262.5	262.5	262.5	262.5											1'500.000
	%	30	47.5	65	82.5	100.											
ESCS: BATALLON MONTUFAR - ESTADOS UNIDOS - GRAN BRETAÑA - GONZALO ASADA -	INVERSION	720.00	336.0	336.0	336.0	336.0	336.0										2.400.000
	%	30	44	58	72	86	100										
ESC: AVENIDA FLUTUANTE - SAN MARTIN - J.I. MARIA MONTESSORI	INVERSION	645.0	336.3	336.3	336.3	336.3											2150.000
	%	30	45	65	87.5	100											
ESC: DE EL CHAUCUAL - CHANDUAY - PAMPANAL - PIEDRA SAL - TAMBILLO - DE COLEGIO.	INVERSION	360.0	280.0	280.0	280.0												1'200.000
	%	30	53	76	100												
ESC: GARCIA - MALDONADO - CHUPINAMERO - CUERVAL - RANCHO J.I.: LIMONES - QUIVILDE	INVERSION	420.0	326.7	326.7	326.7												1'400.000
	%	30	53	76	100												
ESC. SAN MIGUELITO - BOCA DEL SUCIO J.I.: MUISNE - SAN LORENZO	INVERSION	315.0	367.5	367.5													1'050.000
	%	30	65	100													
COL. LUIS TELLO - SUP. YIS. ESC. ESMERALDAS ESC: PEDRANCHOS - CCPE	INVERSION	534.7	249.5	249.5	249.5	249.5	250.7										1'782.170
	%	30	44	58	72	86	100										
ESCS: PEDRO DONET - VUELTA LARGA COL: ELOY ALFARO	INVERSION	660.0	256.7	256.7	256.7	256.7	256.7	256.7									2200.000
	%	30	41	52	63	74	85	100									
SUBTOTAL	INVERSION	5328.7	3064.2	3064.2	2576.7	2090.0	1462.4	256.7								SUBTOT.	16'832.170
	%																

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FLUJO DE INVERSION

ESMERALDAS #2

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO V-1-83
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13		
ESCS: J. DELVONCHERE - EMILIO UZCATEGUI ESPAÑA - COSTA PACHECO - NICOLAS MEJIA - JOSE RIOFRIO - EDUARDO ALVA	INVERSION	620.0	294.0	294.0	294.0	294.0	294.0										2100.000
	%	30	44	58	72	86	100										
ESCS: MIGUEL ARCOSTA - ELOY ALFARO REP. DEL SALVADOR - CIUD. PORTOVIEJO PUERTO ESMERALDAS - ATAHUALPA - SAN SALVADOR	INVERSION	620.0	294.0	294.0	294.0	294.0	294.0										2100.000
	%	30	44	58	72	86	100										
MOBILIARIO	INVERSION	150.0	350														500.000
	%	30	100														
SUBTOTAL	INVERSION	1410.0	938.0	588.0	588.0	588.0	588.0										4700.000
TOTAL	INVERSION	5794.7	4002,2	3692.2	3281,7	2679,0	2040,4	256.7									22.732.000

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FLUJO DE INVERSION

MANABI #1

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
ESC: MARIANA DE JESUS - MANUEL H. LOPEZ SEGUNDO CICLO - JUANA GARCIA - GUILLERMO ENRIQUEZ - CHONE.	INVERSION	756.0	294.0	294.0	294.0	294.0	294.0	294.0									2'520.000
	%	30	41	52	63	74	85	100									
ESC: LUIS URDANETA - ALAMEDA - ELIODORO MENDEZ - BLANCA MIERES - LORENTO VELETO - MIGUEL ALMEIDA - PEDRO MARTHA ZAMBRANO	INVERSION	765.0	297.5	297.5	297.5	297.5	297.5	297.5									2'550.000
	%	30	41	52	63	74	85	100									
ESC: EL GUAYAS - S/N - JOSE H. SANTA ANDRES SECO - S/N - 16 DE MAYO Y CLASES - BLANCA PARAGUAY - S/N - LA LIBERTAD - S/N.	INVERSION	645.0	250.8	250.8	250.8	250.8	250.8	250.8									2'150.000
	%	30	41	52	63	74	85	100									
ESC: HERMANOS DARSIA - ISMAEL PASHIUD - RUBITA FADRES - 12 DE MARZO 10 DE AGOSTO - AUGUSTO MOUDORA - ROSA DE CHAVEZ - PAUL Y DE SAIR.	INVERSION	675.0	262.5	262.5	262.5	262.5	262.5	262.5									2'250.000
	%	30	41	52	63	74	85	100									
COL: AQUILES VALDERRA ESC: 16 DE FEBRERO - S/N	INVERSION	558.0	260.4	260.4	260.4	260.4	260.4										1'860.000
	%	30	44	58	72	86	100										
ESC: COLOMBIA MAZZI - CARLOS MONTALVO - GALORA MURAY - 9 DE OCTUBRE AZUAY - TELMO VITERY	INVERSION	600.0	280.0	280.0	280.0	280.0	280.0										2'000.000
	%	30	44	58	72	86	100										
ESC: RIO BANIA - FUSCUD DE FEGO - JOSE V. ALMEIDA - ECO MARCA - S/N - S/N	INVERSION	483.0	281.8	281.8	281.8	281.8											1'610.000
	%	30	47	64	81	100											
ESC: SOLAGER ANDRUCO - MANABI MANUEL ENRIQUEZ - ISIDRO GARCIA MANUMESA - COL. 13 DE OCTUBRE.	INVERSION	435.0	253.8	253.8	253.8	253.8											1'450.000
	%	30	47	64	81	100											
ESC: DANIEL ACOSTA - ECO PANCHO - CUATRO QUILLOS - LOJA - 26 DE SEPTIEMBRE - MIGUEL LETAMENDY.	INVERSION	564.0	329.0	329.0	329.0	329.0											1'860.000
	%	30	47	64	81	100											
COL: SANISIDRO - ESC: S/N - NAPOLEON DAVILA - SILVIO MORA CUCU - BRONO VERA - VICENTE ROCA	INVERSION	494.4	288.4	288.4	288.4	288.4											1'645.000
	%	30	47	64	81	100											
SUBTOTAL	INVERSION	5'975.4	2'797.8	2'797.8	2'797.8	2'797.8	1'645.2	1'105.5									19'918.000

FLUJO DE INVERSION

MANABI #2

LOCAL	CRONOGRAMA DE AVANCE	INVERSION EN MILES DE SUCRES / MES															COSTO REAL INTERNO VBI-83
		ANTICIPO 30 %	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
ESCS: CAP. CHILE – PANAMA – LUISA NEUDORA – S/U – 24 JULIO – LEON F CARBECO COL: UVE	INVERSION	124.5	247.6	247.6	247.6	248.1											1'415.000
	%	30	46	64	81	100											
CAC. STA LUISA DE MARILLAC	INVERSION	220.0	280.0	280.0	280.0	280.0	280.0	280.0									2'400.000
	%	30	41	62	63	74	88	100									
VARIAS ESCUELAS – MOBILIARIO	INVERSION	150.0	350														600.000
	%	30	100														
SUBTOTAL	INVERSION	1294.5	877.5	527.6	527.6	527.6	280.0	280.0									4'315.000
TOTAL	INVERSION	1269.9	3675.3	3325.4	3325.4	3326.4	1925.2	1385.8									24'233.000

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INECEL

CONTRIBUCION A.I.D. POR DESASTRES

OCASIONADOS POR INUNDACIONES.

DESCRIPCION DE OBRA	CIUDAD	COSTO (SUCRES)	PRIORIDAD
L/T Milagro-Babahoyo de 138 KV, sobrecosto por incremento de fundaciones, postes de mayor altura, reparación de caminos de acceso etc.	Babahoyo	20'000.000,oo	A
Relleno para la S/E la Chorrera (8000 m^3),	Babahoyo	2'400.000,oo	A
Obras civiles para fundaciones (Pilotaje).	Babahoyo	3'000.000,oo	A
Rellenos patios de la Central.	Babahoyo	1'000.000,oo	A
Bombas contra inundaciones.	Babahoyo	2'000.000,oo	A
Repuestos grupos termoeléctricos.	Babahoyo	7'000.000,oo	A
Redes de distribución.	Babahoyo	3'500.000,oo	A
Repuestos grupos termoeléctricos.	Machala	13'000.000,oo	A
Bombas contra inundaciones.	Machala	2'000.000,oo	A
Redes de distribución.	Machala y área rural.	7'000.000,oo	A
Redes de distribución.	Esmeraldas	1'500.000,oo	A
Redes de distribución.	Atacames, Súa, Limones, La Tola, Borbón.	4'000.000,oo	A
Redes de distribución.	Tachina, Camarones, Comunas Agrícolas, Estaciones ganaderas, Universidad.	8'750.000,oo	A

INECEL

CONTRIBUCION A.I.D. POR DESASTRES

OCASIONADOS POR INUNDACIONES.

DESCRIPCION	CIUDAD	COSTO(SUCRES)	PRIORIDAD
Obras civiles para defensa de casa de máquinas.	Milagro	3'000.000,oo	A
Bombas contra inundaciones.	Milagro	2'000.000,oo	A
Redes de distribución.	Milagro (Rural)	5'000.000,oo	A
Redes de distribución.	Milagro	4'000.000,oo	B
Redes de distribución.	Santa Elena y área rural.	3'000.000,oo	A
Repuestos grupos termoeléctricos, y obras civiles para casa de máquinas.	Santa Elena	4'000.000,oo	A
Redes de distribución.	Manta y área rural.	2'000.000,oo	B
Repuestos grupos termoeléctricos.	Loja	3'000.000,oo	B
Muro de protección en estructuras de la L/T Santo Domingo-Esmeraldas, de propiedad de INECEL.	Quinindé	1'500.000,oo	A
SUBTOTAL OBRAS DE PRIORIDAD A		S/. 93'650.000,oo	
SUBTOTAL OBRAS DE PRIORIDAD B		9'000.000,oo	
TOTAL:		102.650.000,oo	

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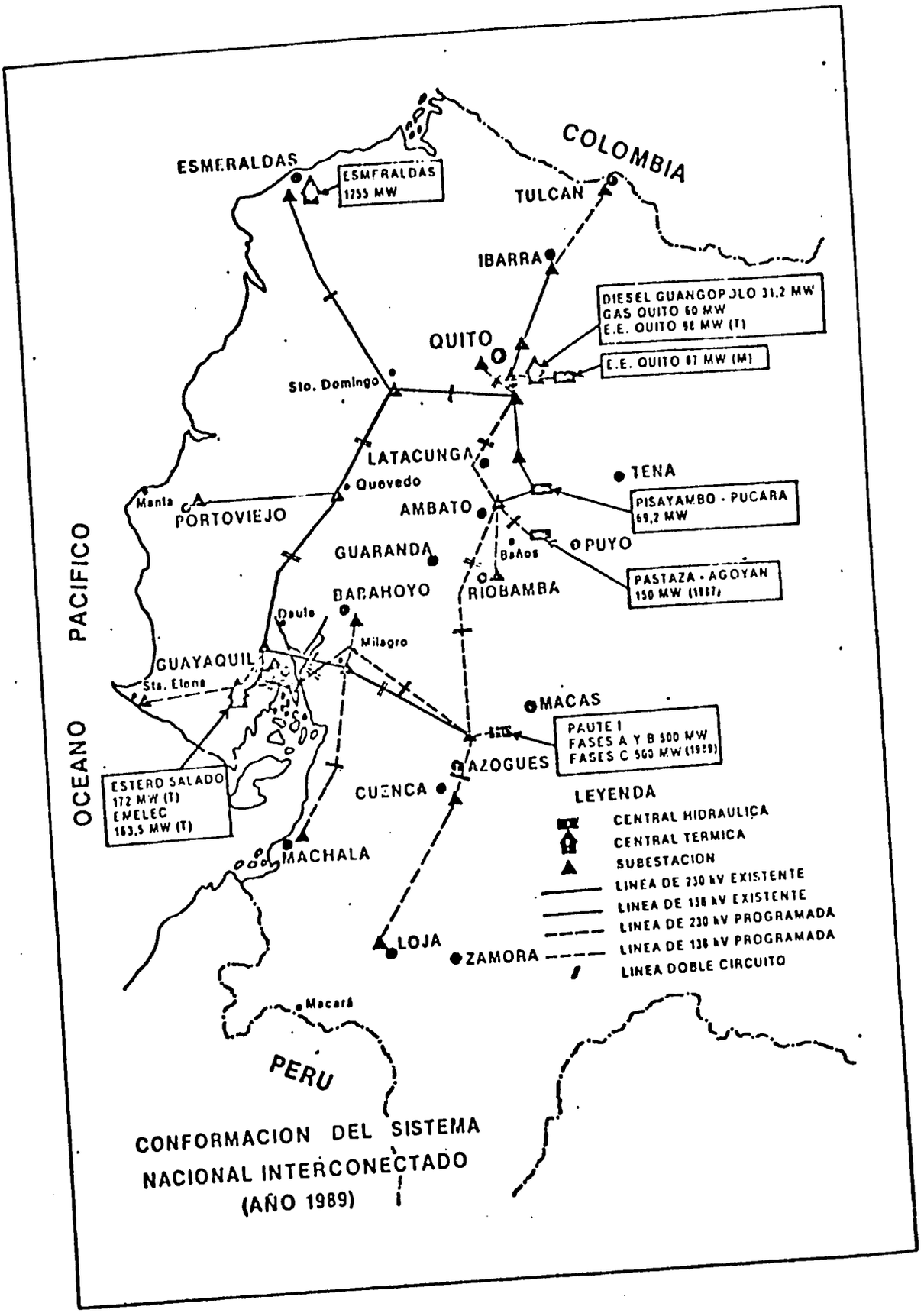
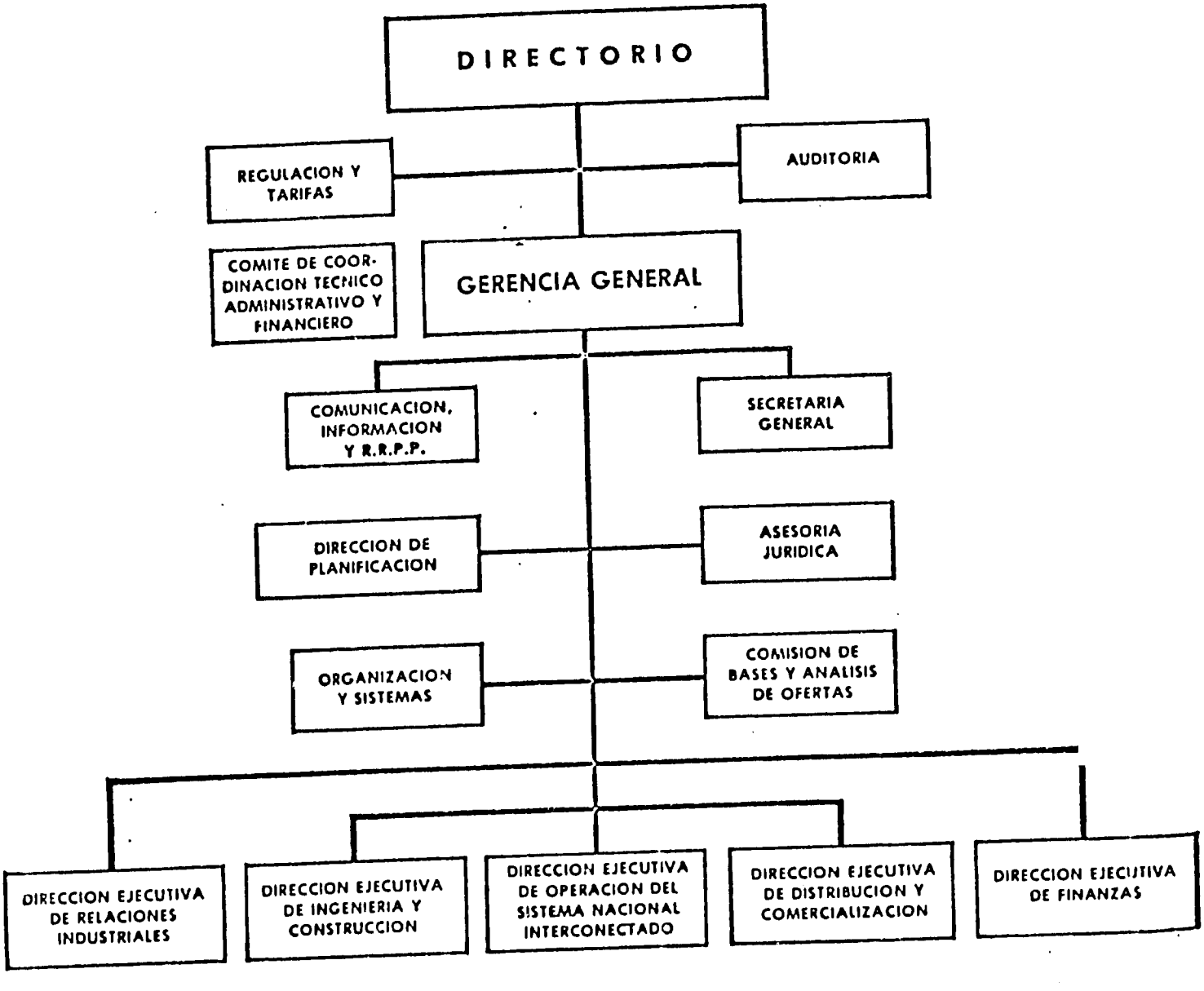
INTERCONNECTED SYSTEM



CONFORMACION DEL SISTEMA
NACIONAL INTERCONECTADO
(AÑO 1989)

ORGANIGRAMA DE INECEL



RECURSOS HUMANOS DE INECEL

Personal de Planta: Recursos Humanos, profesionales y administrativos clasificados por programas de trabajo (diciembre de 1980).

Descripción	Programa I Administración Central	Programa II Ingeniería y Construcción	Programa III Sistemas Regionales	Programa IV Operación del Sistema N. Intercomunicado	Total
Profesionales	172	349	149	124	794
Abogados	13	7	2	1	23
Administradores	51	9	20	11	91
Arquitectos	1	2	1	2	6
Economistas	42	3	17	9	71
Ingenieros	39	294	102	79	514
Médicos	3	2	0	3	8
Técnicos	10	30	5	16	61
Otros	13	2	2	3	20
B Personal Administrativo y Servicios	231	279	90	68	668
C Obreros, Jornaleros y personal a Contrato	44	563	145	298	1.050
Totales por Programas	447	1.191	384	490	2.512

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TABLA DE CANTIDADES Y PRECIOS

ITEM	DESCRIPCION	Tabla de cantidades y Precios .- Contrato	Tabla Modificado.- Según Planos	Cuantía obra civil y porcentaje
1.	Camino de acceso temporal	1'239.670,oo		
2.	Desbroce y limpieza de vía para la faja de servidumbre	1'591.540,oo		
3.1.1.	Hormigón	323.525,oo	9'318.115,29	Según Contrato 1'585.326,30 = 10,74%
3.2.1.	Acero de refuerzo	43.420,30	1'868.685,65	
4.1.	Excavación en suelo normal para 30 postes que requieren fundación	86.500,oo	1'336.589,35	
4.2.	Excavación en suelo normal para resto de postes	676.430,oo		
5.1.	Relleno con grava para 30 postes que requieren fundación	55.131,oo	718.346,12	Con Modificaciones 13'241.736,41 = 50.12 %
5.1.	Relleno mismo material excavación	400.320,oo		
6.1.	Transporte de postes desde fábrica y erección en sitio	6'162.828,oo		
6.2.	Colocación varillas puesta a tierra	64.106,oo		
6.3.	Colocación contrapesas en P.T.			
6.4.	Ensamblaje estructura suspensión	666.071,oo		

TABLA DE CANTIDADES Y PRECIOS

ITEM	DESCRIPCION	Tabla de cantidades y precios,- Contrato	Tabla Modificada.- Según Planos	Cuantía obra civil y porcentaje
6.5	Ensamblaje estructura suspensión especial	8.038,oo		
6.6.	Ensamblaje estructura angular	16.076,oo		
6.7.	Ensamblaje estructura retención	86.184,oo		
6.8.	Ensamblaje estructura terminal	8.038,oo		
6.9	Instalación de tensores	464.079,oo		
7.1.	Tendido hilo de guardia	493.727,oo		
7.2.	Tendido de conductores	1'974.908,oo		
7.3.	Instalación amortiguadores	118.031,oo		
8.1.	Ensayos de puesta a tierra	15.444,oo		
8.2.	Ensayos de aislamiento y continuidad y energización	271.445,oo		
	SUMAN:	14' 763.637,30	26'420.047,41	
	CON EL FACTOR DE REAJUSTE :	18'578.561,18	33'246.987,66	

CRONOGRAMA DE OBRAS DE EMERGENCIA - AID

DESCRIPCION DE OBRA	1983 X	1983 XI	1983 XII	1984 I	1984 II	1984 III	1984 IV	1984 V	1984 VI	1984 VII	1984 VIII	1984 IX	1984 X	1984 XI	1984 XII	1985 I	1985 II	1985 III	1985 IV	1985 V	
L/T Milagro-Babahoyo de 138 KV, sobrecosto por incremento de fundaciones, postes de mayor altura, reparación de caminos de acceso, etc.																					F.F. LOS RIOS
Relleno para la S/E la Chorrera (8.000 m^3)																					F.F. LOS RIOS
Obras civiles para fundaciones (Pilotaje)																					F.F. LOS RIOS
Rellenos patios de la Central.																					F.F. LOS RIOS
Bombas contra inundaciones.																					F.F. LOS RIOS
Repuesto grupos termoeléctricos.																					F.F. LOS RIOS
Redes de distribución.																					F.F. LOS RIOS
Repuestos grupos termoeléctricos.																					F.F. EL ORO
Bombas contra inundaciones.																					F.F. EL ORO
Redes de distribución.																					F.F. EL ORO
Redes de distribución																					ESMERALDAS
Redes de distribución.																					ESMERALDAS
Redes de distribución.																					ESMERALDAS
Obras civiles para defensa de casa de máquinas.																					F.F. MILAGRO
Bombas contra inundaciones.																					F.F. MILAGRO
Redes de distribución.																					F.F. MILAGRO
Redes de distribución.																					F.F. MILAGRO
Redes de distribución.																					SANTA ELENA
Repuestos grupos termoeléctricos, y obras civiles para casa de máquinas.																					SANTA ELENA
Redes de distribución.																					HANIBI
Repuestos grupos termoeléctricos.																					LOJA
Muro de protección en estructuras de L/T Santo Domingo-Esmeraldas, de propiedad de INECEL.																					INECEL

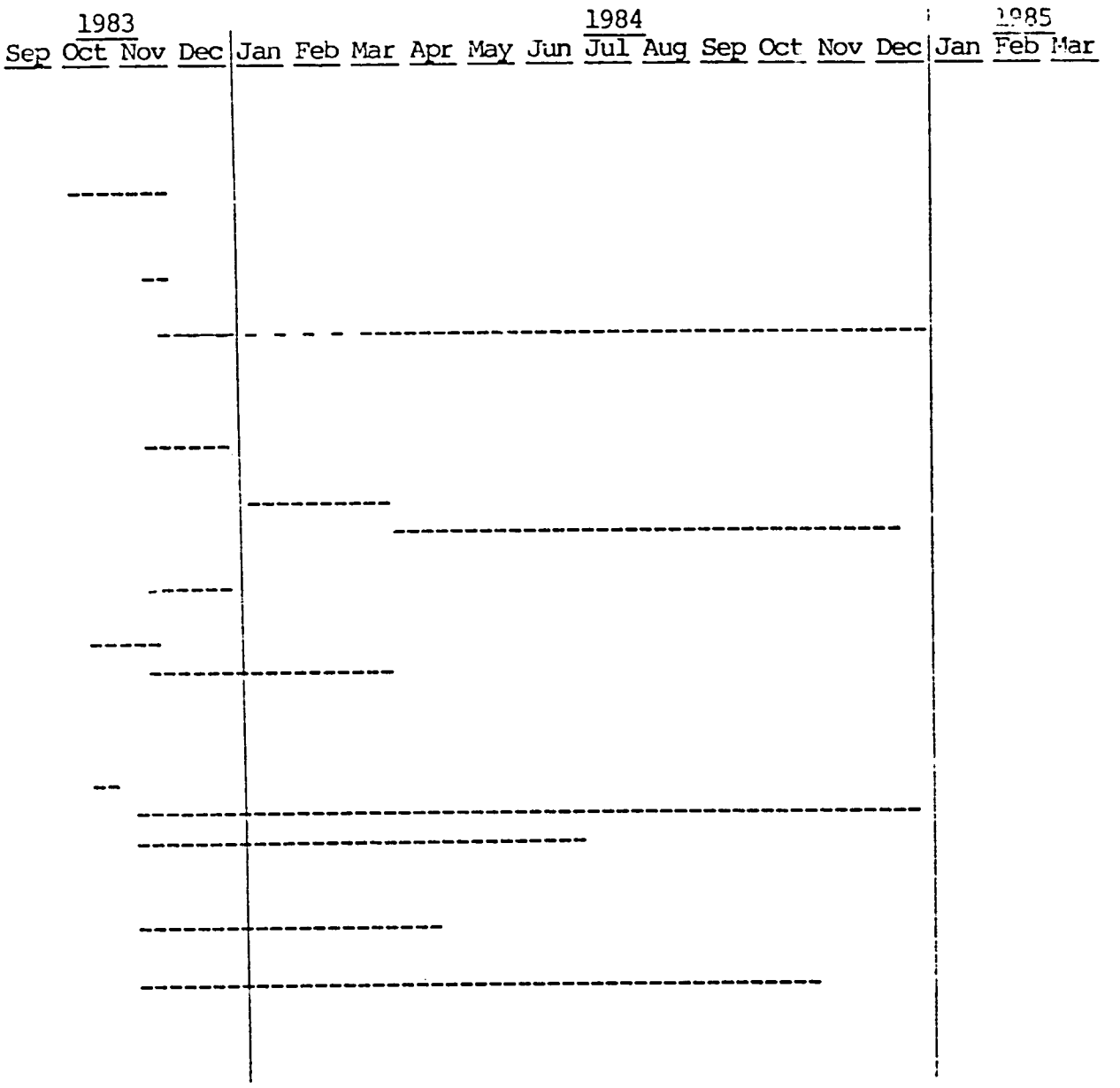
CALENDARIO DE DESEMBOLSOS (Millones de sucres)

DESCRIPCION DE OBRA	1983 X	1983 XI	1983 XII	1984 I	1984 II	1984 III	1984 IV	1984 V	1984 VI	1984 VII	1984 VIII	1984 IX	1984 X	1984 XI	1984 XII	1985 I	1985 II	1985 III	1985 IV	1985 V	
L/T Milagro-Babahoyo de 138 KV, sobrecosto por incremento de fundaciones, postes de mayor altura, reparación de caminos de acceso, etc.		2	2	3	3	3	3	2	2												E.E. LOS RIOS
Relleno para la S/E la Chorrera (8.000 m^3)		0.6	0.6	0.6	0.6																E.E. LOS RIOS
Obras civiles para fundaciones (Pilotaje)				1	1	0.5	0.5														E.E. LOS RIOS
Rellenos patios de la Central.		1																			E.E. LOS RIOS
Bombas contra inundaciones.		2																			E.E. LOS RIOS
Repuesto grupos termoeléctricos.		4	3																		E.E. LOS RIOS
Redes de distribución.		0.5	1	1	1																E.E. LOS RIOS
Repuestos grupos termoeléctricos.		8	5																		E.E. EL ORO
Bombas contra inundaciones.		2																			E.E. EL ORO
Redes de distribución.		1	1	1	1	1	1	1													E.E. EL ORO
Redes de distribución		1	0.5																		ESMERALDAS
Redes de distribución.		1	1	1	1																ESMERALDAS
Redes de distribución.		1	2	2	1.75	1	1														ESMERALDAS
Obras civiles para defensa de casa de máquinas.		2	1																		E.E. MILAGRO
Bombas contra inundaciones.		2																			E.E. MILAGRO
Redes de distribución.		1	1	1	1	1															E.E. MILAGRO
Redes de distribución.		1	1	1	1																E.E. MILAGRO
Redes de distribución.				1	1	1															SANTA ELENA
Repuestos grupos termoeléctricos, y obras civiles para casa de máquinas.		3	1																		SANTA ELENA
Redes de distribución.		1	1																		MANABI
Repuestos grupos termoeléctricos.		2	1																		LOJA
Muro de protección en estructuras de L/T Santo Domingo-Esmeraldas, de propiedad de INECEL.		1.5																			INECEL
TOTAL: S/. 102'650.00		37.6		23.1	12.6	12.35	6.5	5.5													

PROJECT TIME-PHASED IMPLEMENTATION PLAN

	1983				1984												1985		
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
General																			
1. Project Agreement, Negotiated and Signed	---																		
2. Initial C.P.'s Met		---																	
3. Guayaquil Office Opened and Advisors on Board			---																
4. PACD Final Reimbursements																	----------		
Loan																			
1. Loan-Financed Sub-Agreements Negotiated and Signed		---																	
2. Letter of Commitment Issued		--																	
3. Letters of Credit Issued			------																
4. Inputs Arrive in-Country					----------														
5. Credit Fund Established					------														
6. Credit Made Available to Farmers						------													

PROJECT TIME-PHASED IMPLEMENTATION PLAN



Grant

1. Grant-Financed Sub-Agreements Negotiated and Signed
2. Advances of Funds to Implementing Institutions
3. INERHI Agricultural Rehabilitation Activities Designed and Implemented
4. Pichincha Slope Studies:
   a. RFP Prepared and Issued
   b. Proposals Evaluated and Contract Signed
   c. Study Carried Out
   d. Emergency Works Carried Out
5. JNV Housing Rehabilitation:
   a. Mechanism established
   b. Home Improvement Loans Made
6. IEOS Potable Water and Sanitation Systems:
   a. Final Selection Made
   b. Systems Repaired
7. DINACE School Repairs
8. INECEL Electric Systems Repair:
   a. Civil Works
   b. Imported Equipment Ordered, Delivered and Installed

TECHNICAL ASSISTANCE, TRAINING AND LOGISTICAL SUPPORT BUDGET

I.	Technical Assistance	
	A. Long-term U.S.	US$ 480,000.00
	1. Chief of Party (18 p-m)	180,000.00
	2. Hydraulic Engineer (18 p-m)	150,000.00
	3. Sanitary Engineer (18 p-m)	150,000.00
	B. Long-term Ecuadorean	50,000.00
	1. Structural Engineer (12 p-m)	25,000.00
	2. Structural Engineer (12 p-m)	25,000.00
	C. Short-term U.S.	70,000.00
	1. Sedimentologist (3 p-m)	24,000.00
	2. Hydrologist (1 p-m)	8,000.00
	3. Geo-technical Eng. (2 p-m)	15,000.00
	4. Physical Planner (1 p-m)	8,000.00
	5. Pesticide Expert (2 p-m)	15,000.00
II.	Training	200,000.00
	A. Pesticide Management	115,000.00
	B. Geotechnical Engineering Design	85,000.00
III.	Logistical Support	150,000.00
	A. Vehicles	75,000.00
	B. Equipment	25,000.00
	C. Office Operation and Support (secretaries, chauffers, furnishing)	50,000.00
IV.	Contingencies	50,000.00

INITIAL ENVIRONMENTAL EXAMINATION

Project Location:	Ecuador
Project Title:	Emergency Rehabilitation Project
Funding:	$7,000,000 Grant $6,000,000 Loan
Life of Project:	Eighteen Months
IEE Prepared by:	Betty Facey, USAID/DR September 27, 1983

Recommended Threshold Decision

Grant:	Negative Determination
Loan:	Positive Determination*

Mission Director's Concurrence

Orlando Llenza
Mission Director
USAID/Ecuador

Environmental Assessment for Pesticide Procurement included with this IEE.

General Description of the Project

The purpose of the project is to help the Government of Ecuador (GOE) to implement emergency relief, rehabilitation and reconstruction activities in response to excessive rains and flooding associated with the "El Niño" phenomenon. The disaster has resulted in physical destruction, considerable economic loss, the loss of life and the deterioration of health conditions among the affected population.

The project is entirely financed with disaster assistance funds and consists of three major parts. The first part is a $6.0 million loan to reactivate agricultural production, through the importation of agricultural inputs and the capitalization of the National Development Bank (BNF) to increase agricultural credit to farmers in the affected areas.

The second part of the project consists of $6.0 million in grant funds to be channelled through the Ecuadorean Development Bank (BEDE) for relief, rehabilitation and reconstruction activities to be carried out by approximately six Ecuadorean implementing institutions. Finally, the remaining $1.0 million in grant funds will be used by USAID/Ecuador to support the implementation of both the loan and the grant components of the project.

B. Loan-funded Activities (Description and Impact)

Loan funds will be used to finance the importation, by private importers/distributors and FERTISA (a mixed private/public importer/distribution), of pesticides and possibly fertilizer to be used for the upcoming crop season. Only pesticides approved by the EPA for general use will be imported. Given the disaster nature of the project, it is not possible to set in place all the environmental safeguards that would be desirable regarding the storage, distribution and use of pesticides. Nonetheless, this project component provides a unique opportunity to begin to address these problems, which are common in Ecuador. A covenant in the loan agreement will require the GOE to make "reasonable efforts to assure that pesticides acquired through the agricultural credit program financed under the Project are properly handled and utilized by the beneficiary agricultural producers". Grant funds retained by USAID/Ecuador will be used to provide technical assistance and training to help the GOE comply with this covenant. More details are provided in the Pesticide Environmental Assessment, which is attached to this IEE.

C. Grant-funded Activities (Description and Impact)

1. Agricultural Infrastructure

Purpose: To restore irrigation and/or flood protection to farmers in the lower Guayas basin who produce a significant percentage of Ecuador's food production.

Activity: To repair public domain agricultural infrastructure, i.e., repair river dikes and other river control systems, restore some irrigation works. These works will be implemented by INERHI through a contract with the Ecuadorean Army Corps of Engineers, through private contractors, and/or by INERHI direct administration. The estimated cost is US$2,000,000 to be financed with Grant funds for the highest priority works. INERHI will be required to provide approximately 260 person/months for engineering works associated with this sub-project.

Beneficiaries: Principally small and medium producers in Los Ríos, Guayas, Cañar, Loja, and El Oro provinces, who cultivate rice, bananas, and other foodstuffs.

Environmental Discussion: Heavy flooding in the coastal area of Ecuador severely damaged agricultural flood control levees and irrigation systems on the coastal flood plains in the Guayas River Basin. Flow rates in the river systems exceeded capacities over-topping agricultural levees and changed river courses. Nine months after heavy flooding some sections are still inundated while some of the principal rice growing areas have been left without water.

The Guayas watershed is comprised of over 400,000 hectares of which more than 60% is (or was) under cultivation. Generally, the areas under cultivation produce citrus, corn, beans, cocoa, rice, bananas, melons, tomatoes, yuca, and other miscellaneous fruits and vegetables. The crops in this area are produced for both home consumption and sale.

At the height of the disaster 40% of the area was flooded and more than 60% of the agricultural production has been affected with losses exceeding $17.0 million. Greater losses can be expected in 1983-84 if immediate actions are not taken on emergency repair of damaged dikes and river systems.

This sub-project proposes to (1) repair gaps in existing levees caused by the 1982-83 floods and put levees back; 2) some irrigation structures suffered scouring and undercutting and these primary structures will be repaired; 3) to allow for return of water in the overland flows, drainage channels will be repaired, debris removed and flood gates incorporated into levees and river systems. The entrapped water will be rerouted into its natural drainage channels; 4) a major problem was created where the Río Chimbo breeched its banks, changed its course, and now flows into another river, Río Bulubulu. The change in Río Chimbo course left 1,800 hectares without water and put another 2,000 hectares into a continual flooding status. To divert the Río Chimbo into its original course, a combination dike/overflow will be built, and sufficient upstream protection placed to guarantee long lasting benefits.

The return of land to its prior usage permitting farmers to engage in former cropping patterns will benefit the disaster area inhabitants, and

draining the trapped overflow will inhibit the spread of water and mosquito-borne diseases.

Since all of the sub-project is directed towards preservation and restoration of the environment this project in judged to have a positive environmental impact.

2. Pichincha Slope Protection

Purpose: To carry out emergency works and studies which will reduce the future threats to human life and property from landslides and floods.

Activities: (1) Emergency drainage and stabilization works in major gullies (quebradas) and modification of critical cross- drainage systems along the Western Highway. The estimated cost is US$250,000 in Grant funds. The works will be executed by contract through the Municipality of Quito.

(2) Pre-feasibility studies of drainage system enhancement and environmental protection for the Pichincha slope. The estimated cost is US$230,000 to be financed under the Grant.

Benefits: Protection of Quito's population from potentially disasterous floods and landslides.

Environmental Discussion: The disordered expansion of the City of Quito over the last 400 years has created extreme slope instability and run-off hazards. Quito has been built on the eastern slopes of the Pichincha Volcano at the expense of natural drainage channels. The culmination of this period of expansion has resulted in hillside quarry mining, slope and channel de-stabilization, uncontrolled urban development and cross canyon fills.

Although municipal authorities have been aware of possible problems for several decades, the rains of 1982-83 critically demonstrated the potential catastrophe for Quito. Mudflows closed the airport, demolished homes, damaged and destroyed highways, clogged sewer lines, and killed a number people. Public health was endangered when, literally, fountains of sewage erupted from the overburdened antiguated sewer/storm drains.

In addition to the willy-nilly urban development, six years ago a Beltway was constructed along the lower slopes of Pichincha, above the major populated areas. This highway was built through a series of cuts and fills spanning the north/south base of Pichincha. Some of the fills are as much as 80 feet deep and hundreds of feet across. The cross-fill culverts for these enormous fills are dangerously inadequate for the extensive watersheds which they drain. The culverts, for the most part, are 4 ft. high by 2 ft. wide. It is a certainty that many lives and millions of dollars in property will be lost in the event of the failure of even one of these fills.

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The sub-project for Pichincha slope protection is but a small step in the direction of resolving the problems. Up to $250,000 in grant funds will assist the municipality in enlarging and adding to the culverts associated with the Beltway, and, more important, $230,000 will be provided for a pre-feasibility study of the global problem of the Pichincha watershed. The primary area of study will be the investigation of the hydrologic characteristics of the watershed, to determine drainage measures required to handle the high water flow rates through or around the city of Quito. Follow-on studies would be required for design alternatives and engineering solutions.

The immediate environmental impact will be minimal in that enlarging the cross-drainage of the Beltway is a "Bandaid". The assistance in pre-feasibility studies should produce a very positive impact in long range larger programs towards prevention of the potential destruction of large portions of Quito.

3. Housing Reconstruction

Purpose: To reconstruct or relocate houses that were destroyed by the floods.

Activity: Co-finance with the JNV/BEV the National Housing Reconstruction Plan's loan program in the amount of US$220,000 in Grant funds in addition to the 118,000,000 sucres assigned from national resources. The implementation of the program will require approximately 170 person/months of technical and professional support from the JNV.

Beneficiaries: More than 2,750 families whose homes were destroyed by the floods.

Environmental Discussion: Possibly as many as 1,000 homes at an average cost of 4,400 each will be relocated away from river banks to Housing Bank purchased or donated building sites. By province, the approximate number of homes for reconstruction or repair will be: Esmeraldas, 470; Guayas, 660; El Oro, 165; Manabí, 1,040; and Loja, 300.

Sites will be selected away from potential flood areas thus removing these families from living in environmentally unsafe locations. The Housing Bank and USAID/E will assure that the sub-project will have no detrimental environmental impact other than the small amount of land clearance required and the inevitable brief period of construction pollution.

4. Water and Sanitation Emergency Repairs and Improvements

Purpose: To restore potable water and sewage facilities and/or protect them against future flooding in the provinces of Manabí, Los Ríos, Guayas, and El Oro.

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Activities: To carry out emergency repairs, including drilling of new wells where necessary, to water and sewage systems. The estimated cost is US$700,000 in local expenditures and US$200,000 for imported equipment, to be financed under the Grant. The works will be executed by IEOS directly and through contracts with the private sector.

Beneficiaries: 300,000 residents of Esmeraldas, Bahía de Caráquez, El Triunfo, Babahoyo, Baba, Santa Rosa, Huaquillas, Machala, and 22 other communities who will receive improved water supply and/or sanitary services.

Environmental Discussion: Many cities and communities in the coastal areas subjected to floods saw their water and sewer systems severely damaged, thus endangering the health of residents. Efforts have been made to alleviate the situation such as the use of small emergency water treatment units brought into the country by A.I.D., and rehabilitation of systems to at least temporarily produce potable water and eliminate human wastes. Many of these temporary measures are still in use and health problems will increase until more permanent solutions are implemented.

Esmeraldas City, with a population of more than 60,000, has five damaged wells that will require removal and rehabilitation of pumps, cleaning of wells, and construction of adequate sanitary seals to protect wells from further contamination. In addition a pumping station for the sewer system was completely destroyed and sewer lines clogged with packed mud which will require special equipment for cleaning.

In the province of Esmeraldas the sub-projects will repair: Tachina, new well drilled; San Lorenzo, generator for treatment plant; Rocafuerte, electric control system for generator; Muisne, pumping station and all equipment for sewer system; and Río Verde, new generator and controls for water supply.

The city of Bahía de Caráquez in the Province of Manabí is still without water and four new wells will be drilled, 2,500 meters of water mains replaced, 2,300 meters of sewer lines purchased and installed, sewage lagoons completely rebuilt. Seven other communities in Manabí will receive spare parts or new pumps for water and sewer systems.

Guayas province has several rural communities with damaged water systems and one village, El Triunfo, will have its well completely rehabilitated with new pumps and chlorination equipment.

The city that suffered more than any other from the floods is Babahoyo (pop. approximately 40,000) in Los Ríos province where the water supply, sanitary sewer and storm drains were all damaged. The storm drains and sewer system were filled with rising water and mud destroying major portions of all systems.

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Nine villages in El Oro Province will be provided with a variety of repairs to water storage tanks, pumping stations, catchments from spring waters, water treatment plants, supply lines, wells, pumps and generators.

Throughout the rural areas of the five provinces thirty additional small water systems have been identified for flood damages reparation.

This water supply and sanitation component of the Grant will have a high positive direct impact on the health and well-being of some 250,000 people living in the communities and villages to be benefitted with an indirect impact on thousands more in impeding communicable diseases caused by lack of potable water and controlled sewage systems.

5. School Repair

Purpose: Provide adequate school facilities for students in coastal areas and Loja Province affected by the flooding.

Activities: Reconstruct approximately 52 schools and repair 519 schools that were damaged by the flooding in five coastal provinces and Loja Province. The estimated cost is US$1,500,000 to be financed by the Grant. Repairs will be made by direct administration by DINACE and by private contractors in the respective provinces. The works will require approximately 400 person/months of professional support in the affected areas..

Beneficiaries: Several thousand school children who attend these schools.

Environmental Discussion: Following a survey of schools damaged by the floods 571 have been identified as requiring repair or reconstruction. Many of the rural schools had been built near rivers and the flood waters swept mud and water through the buildings destroying floors, windows, doors, undercutting foundations and demolishing latrines. The repair costs are estimated from as little as $200 to $200,000 in large urban schools. Of the 571, approximately 52 will be reconstructed and 519 repaired, and of the 52 to be rebuilt, nine will probably be relocated due to total destruction of the land sites. Municipalities are responsible for providing new school sites with the approval of the Directorate of School Construction. On a case-by-case basis, caution will be exercised in relocation to prevent schools being rebuilt in flood prone areas.

Of the school reconstructions, the largest is a 9 classroom structure in province of Manabí; 2 schools of 7 classrooms each and one of 6 rooms in El Oro province; 2 schools of 4 classrooms; 4 of 2 rooms in other areas; and the remaining scattered 42 will be one room rural schools. The Directorate of School Construction operates a factory in Quito for the pre-fabrication of school modules thus eliminating much of the field construction. The prefabricated schools will require field-built foundations, flooring, latrines and assembly of shipped materials.

Repairs will include replacing floors, sub-flooring, trusses, roofing, walls, interior partitions, doors, windows, sidewalks, foundation fill, latrines, etc.

In view of the fact that some 90% of this sub-project will involve repair to existing structures and less than 2% relocation of schools, the negative environmental impact is considered to be negligible. Of a positive nature will be the reconstruction of many latrines providing a plus in the health environment.

6. Repair of Civil Engineering Works Related to Electrical Transmission Systems

Purpose: To restore the supply of electricity to affected communities.

Activity: Repair of the foundations of towers supporting 40 kilometers of transmission lines between Babahoyo and Milagro which were damaged by the flood; repair and modification of the Babahoyo substation; rehabilitation of small generators and distribution systems located near Babahoyo, Machala, Esmeraldas, Milagro, and Santa Elena that were damaged by the floods and protection of these systems against future flooding. The estimated cost is US$900,000 to be financed with Grant funds. The transmission line between Babahoyo and Milagro and the substation will be installed through the increase and extension of the existing contract, and the rehabilitation of the small systems will will be carried out by direct administration by INECEL.

Beneficiaries: Those Ecuadoreans who benefit from the electrical services provided by these systems.

Environmental Discussion: Another sector of public services damaged by severe flooding in 1982-83 was electric power. Some communities are still without power to provide water or pumps for sewer systems.

The 40 Km 138 KV transmission line between Milagro and Babahoyo and the substation was approximately 75% completed at the time of the floods. The contract had to be halted since now approximately 30 transmission towers need new foundations and the substation at Babahoyo requires fill, compacting and new concrete base.

Beyond this primary work, repairs will be made to smaller networks through resetting posts, installation of new transformers, new lines where necessary, repair of diesel generators (spare parts to be purchased by Grant funding) the purchase of pumps to prevent potential future flooding, and in two sites the construction of retaining walls to protect generators and associated equipment.

In the province of Esmeraldas, nine communities will have distribution systems repaired plus lines to a number of pumping stations for farm irrigation works; in Los Ríos province, 15 Km of 13.8 KV posts and lines will be repaired; in Guayas, three community networks and 25 Km of 69 KV lines are schedules for restoration; Santa Elena, posts and guywires reset; and in the province of Manabí approximately $25,000 has been allocated for post replacement and distribution system renovation.

Obviously, some noise and air pollution can be expected during the period of reparation, but this minor disturbance will be offset by the return of electric energy to community water and sewer systems, power for home lighting and refrigeration, street lighting, and agricultural needs.

D. Threshold Decision Recommendation

Per State 268296, LAC/GC has determined than an IEE is not required by Regulation 16 in the case of a disaster assistance funded project. Nevertheless, the referenced cable requested that an IEE be completed, given the nature of the project activities. After analyzing the various grant-funded activities for potential environmental impact, the Mission finds no adverse environmental impact for the grant. Potentially adverse environmental impacts for the loan-funded activity are examined in the attached environmental assessment. It is, therefore, recommended that you make a negative determination for the grant and a positive determination for the loan portions of the project.

IMPACT IDENTIFICATION AND EVALUATION FORM

GRANT

Impact Areas and Sub-Areas	Impact Identification and Evaluation
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population.....	N
b. Extracting Natural Resources....	N
c. Land clearing.....	L-
d. Changing soil character.....	N
2. Altering natural defenses.....	M+
3. Foreclosing important uses.....	N
4. Jeopardizing man or his works.....	N
5. Other factors	
Returning land to prior usage	H+
B. WATER QUALITY	
1. Physical state of water	H+
2. Chemical and biological states.....	M+
3. Ecological Balance.....	L
4. Other factors	
Restoring prior water quality	H+
C. ATMOSPHERIC	
1. Air additives	N
2. Air Pollution	L-
3. Noise Pollution	L-
4. Other Factors	
	N
D. NATURAL RESOURCES	
1. Diversion, altered use of water.....	N
2. Irreversible, inefficient commitments	N
3. Other Factors	
Restoration of Natural Resources	H+

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E. CULTURAL

1. Altering physical symbols.....	N
2. Dilution of cultural traditions.....	N
3. Other Factors	
	N

F. SOCIO-ECONOMIC

1. Changes in economic/employment patterns.....	N
2. Changes in population.....	N
3. Changes in cultural patterns.....	N
4. Other Factors	
Community participation	M+
Restoration of economic/employment patterns	H+

G. HEALTH

1. Changing a natural environment	N
2. Eliminating an ecosystem element ...	N
3. Other Factors	
Inhibit water and mosquito borne diseases	H+

H. GENERAL

1. International impacts.....	N
2. Controversial Impacts.....	N
3. Larger program impacts	H+
4. Other Factors	

I. OTHER POSSIBLE IMPACTS (not listed above)

Explanation of codes:

N- No environmental impact
L- Little environmental impact
M- Moderate environmental impact
H- High environmental impact
U- Unknown environmental impact
+ Positive impact on the environment
- Negative impact on the environment

ECUADOR EMERGENCY REHABILITATION PROJECT

ENVIRONMENTAL ASSESSMENT
(Loan Component)

I. INTRODUCTION

A. Summary

This Environmental Assessment examines the potentially significant adverse impacts on the human and natural environment of A.I.D. purchasing pesticides in response to a request from the GOE for assistance in coping with the existing agricultural crisis caused by flooding in 1982-83. It also sets forth measures required to mitigate the adverse effects.

Agriculture is the major economic enterprise of Ecuador. In addition to the essential subsistence farming, Ecuador produces bananas, sugar, coffee, cocoa, rice and corn for export (17% of the GNP.) It was, until this year, the world's leading producer of bananas. The unusually long rainy season of 1982-83 caused flooding in many areas which resulted in crop losses. It appears that the rainfall in 1983-84 may again be abnormally high as the rainy season has begun two months early in the Coastal region. Pests are a major constraint in crop production and pesticides use is essential for their control. Pesticides are currently widely used in Ecuador and, although accurate records are not available, they have no doubt caused some human health and environmental problems.

Initiatives in training, extension, monitoring and regulatory action to reduce the environmental impacts are set forth. Methods for initiating pest and pesticide management programs are outlined. These initiatives include the following:

Short term measures:

- Appoint a pesticide coordinator for Ecuador
- Obtain the assistance of Ecuadorean crop protection specialists in identifying the major pests of the selected crops and prepare pamphlets describing the pests, their biology and control methods.
- Select and train technicians to train the farmers in the identification and control of the crop pests.
- Implement farmer training programs in crop protection and the effective use of pesticides.

- In so far as possible use INIAP personnel to monitor the pest problems of appropriate crops and develop a system for advising the farmers when treatment is needed.

- Monitor pesticides purchases.

- Improve the distribution and storage of pesticides.

Long term measures:

- Conduct an IPM Conference/Workshop for Ecuador during 1984.

- Develop plans for an Integrated Crop Protection Program for Ecuador.

- Expand the crop protection research.

- Train additional crop protection specialists to enter the research program.

- Develop and implement a pesticide regulatory program.

- Develop a pesticide monitoring program.

- Expand the crop protection education and extension capabilities of the Nation.

- Implement an Agromedical initiative.

The Pest Control Act of 1982 provides for the control of the importation, sale, storage and use of pesticides. This Project affords an opportunity to initiate activities provided for by the Pest Control Act by focusing attention on pesticide management and improving the coordination among regulatory, research, education and extension personnel.

B. Objective and Activities

Many regions of the world experienced pronounced weather changes during 1982-83. Ecuador had excessive rainfall over an extended rainy season which caused failures of many of the basic food crops. While no accurate prediction can be made at this time, it appears that there may be an extended wet season again in 1983-84 as the rains started in the Costa region in September, when they normally begin in December. The crop losses experienced during the 1982-83 season have caused a serious food problem in the nation which will became even more disasterous if there is excessive rain again during the 1983-84 season.

In an effort to partially alleviate the situation, USAID has made $13,000,000 available for assisting the Government of Ecuador. These funds have been allocated as follows: $6,000,000 loan funds to purchase agricultural inputs, $6,000,000 grant funds to replace and upgrade buldings, vehicles, equipment, etc., and $1,000,000 in grant funds for supporting the distribution and use of the other $12,000,000. After reviewing the agricultural inputs needed with the Ministry of Agriculture of Ecuador, it was decided that the $6,000,000 of loan funds should be used for purchasing pesticides to be used on corn, rice, soybeans, and possibly bananas. They will be used primarily in the Coastal region as the majority of these crops are produced in that region. Those chemicals will increase the production of food for the entire population. In the event that the flooding prevents planting some areas in these crops in the Costa, the surplus pesticides can be used on the potatoes that are grown primarily in the Sierra region of the country.

During 1982 over $42,000,000 was spent to import pesticides for agriculture. These included a wide range of products, and were brought in by several commercial firms. It is anticipated that there will be a demand for the same or larger quantities of chemicals as well as much the same variety of materials. Thus, it is apparent that the USAID loan funds will purchase only a portion of the pesticides that are needed. In discussions with the Ministry of Agriculture it was concluded that would be best to use the established commercial channels for distribution of the chemicals. This will prevent disrupting existing commercial distribution. Also, the Government of Ecuador cannot rapidly establish an effective organization for distributing them.

C. Purpose of the Environmental Assessment

This assessment of the anticipated impacts of the purchase of these pesticides on the human and natural environmental was prepared in accordance with the USAID's Environmental Procedures (22C FR Part 216) of Regulation 16 of the Code of Federal Regulations.

Before assessing the environmental impacts of the use of these pesticides, it is necessary to describe the environmental setting where the chemicals will be used.

II. THE ENVIRONMENTAL SETTING

A. Location and Population Characteristics

Ecuador, straddling the Equator is located on the northwest coast of South America. It is bordered on the north by Colombia, on the South and East by Peru, and on the West by the Pacific Ocean. It is the fourth smallest republic in South America with an area of 283,561.59 km., about the size of Colorado.

The country has four distinct topographical regions:

The Costa (coastal plain), consisting of the western coastal lowlands from the Pacific shore to the lower slopes of the Andes. It is a rich agricultural belt where most of Ecuador's food and tropical export crops are grown and contains slightly more than 25% of the total area of the country.

The Sierra (highlands), with an inhabited plateau 2,400-3,050 meters above sea level and 640 kilometers long by 80-130 kilometers wide, covers another quarter of the country. The region lies between two Andean mountain chains.

The Oriente (eastern jungle) Consists of gentle slopes east of the Andes, covered with dense tropical forests, and the flat valleys of the upper reaches of the Amazon tributaries. The Oriente accounts for 57.4% of Ecuador's total land area.

The Archipielago de Colón (Galápagos Islands) is located in the Pacific Ocean about 1,000 kilometers off the Ecuadorean Coast. It comprises five large and nine small islands covering an area of about 7,770 kilometers. The Pacific Ocean off the Coast of Ecuador and surrounding the Galápagos is a rich tuna-fishing area.

The population (1981) is 8.5 million with 55% urban and 45% rural. The Sierra and the Costa each contain 48.5% of their total population with the remaining 3% found in the Oriente. The annual population growth rate is 3.3%. Education is compulsary from ages 7-14. The literacy rate is 84%. The work force of 2.5 million is divided into Agriculture-50%, Industry-20%, Services-15% and Government-15%.

B. Natural Resources

The temperatures in Ecuador are generally high in the lowlands and moderate in the highlands. In the Costa the mean monthly temperature varies between 24.4° and 26.6°C, with little seasonal difference. Temperatures in the Oriente are also fairly uniform but lower than in the Costa. In the Sierra the annual mean temperature is 60°F at 7,000 feet and 50°F at 10,000 feet.

The rainy season in the Costa lasts from December through May, with considerable variation in the amount of rainfall between the north and south, with the highest in the north. The rainy season in the Sierra lasts from October through May, but some rain occurs throughout the year. Rainfall in the Oriente is generally heavy and there is no dry season.

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Water Resources

All rivers in Ecuador rise in the Sierra and either flow westward into the Pacific Ocean or eastward to the Amazon River. Ecuador has 13 major rivers, of which 6 form the Guayas River System of the Costa. The Guayas River Basin is also the most productive agriculture area of the country. There are three other important rivers in the Costa.

There is little information on groundwater resources in Ecuador. People use tube wells for drinking water, and in urban areas water is piped from reservoirs. Water supply does not appear to be a problem except where reduced flow results in contamination. Only 13% of the rural population has access to safe drinking water.

Forest Resources

Approximately 52% of Ecuador is still in forest, primarily in the Oriente. The rain forest of the Oriente and the northern part of the Costa contain valuable trees and other forest products. Mangrove swamps line the Gulf of Guayaquil and the northern coastline. Along the eastern slopes of the Andes and the western slopes near the Colombia frontier there is a mountane broadleaf evergreen forest, while in the Central part of the Costa there is a semi-diceduous forest. The southern part of the Costa has dry scrub forest and grassy savannah areas, there are desert scrub forests in the southern Sierra near the Peruvian border.

The loose, porous volcanic soils of the Sierra have resulted in poor forest cover except on the outer slopes of both Andean Cordilleras. Stands of eucalyptus, which were introduced in the 19th century form Australia, provide most of the firewood and lumber used in the Sierra.

Deforestation is becoming a problem in Ecuador, especially in the watershed areas of the Sierra. The native forests at altitudes of 1,000 to 2,000 m have been completely cleared for firewood while the demand for these products is growing. Forestry laws are good, but are not often enforced. The lack of cover on critical watershed areas results in loss of fertility on agricultural lands, sedimentation in irrigation system and in sources of potable water, and reduces the life of hydroelectric reservoirs, all of which have high economic costs as well as environmental ones.

In the past 25 years, the amount of arid land increased by 3.15%

Soil Resources

Ecuador's soils are influenced by frequent tectonic activity in the Sierra, by previous glaciation, and by watering of sedimentary, metamorphic, and igneous parent rock. In general, uncultivated soils are rich in organic

matter; in 5 to 8% of the uncultivated soils the organic matter reaches a depth of one meter or greater. This organic matter serves as a reservoir of plant nutrients, but at high elevations and low temperatures these nutrients are only available slowly.

Soil Erosion

Soil erosion is a major problem in the highland areas of Ecuador where steep slopes and loose soils are combined with improper tillage practices. Presently known soil conservation methods could make a significant difference in the erosion problem in Ecuador.

Wildlife Resources

There is a wide variety of wild animals and birds. In 1970, a government decree established one of the world's most extensive regulatory systems for the protection of wildlife species.

Fish

Ecuador has many varieties of both freshwater and marine fish. It has rich marine fishery resource along its coast and up to 200 miles off shore. In recent years profitable shrimp rearing has been introduced.

Mineral and Petroleum Resources

There is relatively little mineral wealth in Ecuador. Petroleum has been pumped since 1911 and in 1967 a Texaco-Gulf consortium found several rich fields in the extreme northeast corner of the country near the Colombian border. It is estimated that the reserves are 5.6 billon barrels. Experts predict that Ecuador will become the second leading oil producer in South America after Venezuela.

C. Agriculture

Ecuador produce bananas, sugar, coffee and cocoa for the export market, and has been the world's leading producer of bananas. Crops grown for domestic consumption include fruits, vegetables, potatoes, yuca, corn, rice, wheat, barley and beans. All suitable and much unsuitable land in the Sierra between 2,000 and 3,000 m in elevation is cultivated for wheat, barley, potatoes, oats, corn and other crops. Irrigation is common for dry season farming, but is relatively poorly designed, with water directed through sodded terrace-like ditches with permanent cuts for drainage. Most fields are heavily grazed after harvest. Major weaknesses in the agricultural sector are the lack of storage facilities, appropriate equipment, and poor extension services. The area planted in rice is increasing and there is increased use

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of mechanized equipment. The production of wheat, barley, roots and tubers and pulses has decreased during the last ten years. The production of rice and cotton has increased.

While livestock production is an important aspect of farming the production is low due to inadequate nutrition, disease and lack of genetic improvement. Livestock are mainly kept as a sideline to the main occupation of farming and lands not suitable for cultivation are used for grazing livestock.

The landholding pattern shows many small farms and a few large farms. Despite attempts at cooperative farming, using farm machinery and modern farming techniques, most of the small holdings continue to be farmed primitively and inefficiently. Ecuador has no significant foreign owned farms.

Ecuador's crop production and livestock sectors are characterized by investor uncertainties over "political prices" - the government policy of controlling prices at artificially low levels designed to benefit urban consumers. Lack of credit and adequate infrastructure are also problems.

III. IMPACT OF PESTICIDE PURCHASE ON THE ENVIRONMENT AND MITIGATIVE MEASURES

Pesticide Abuses

Pesticides are being used extensively in Ecuador, and over $42,000,000 was spent in 1982 on imports. While there are a few well trained dedicated entemologists, plant pathologists and weed control scientists in the country and most of the important crop pests have been identified, the pesticides are frequently overused and misused. Mr. Peter H. Gore, State University of New York, in "Pesticides and Peasants: They Dont Mix", describes the irresponsible, hazardous manner in which pesticides are distributed and used. In October-November 1981 Carroll Collier reviewed the pesticide management problems associated with potato and vegetable production in some areas and reported on the poor practices that he found.

Accurate records of the incidence of pesticide poisoning are not available but they no doubt occur. Data concerning environmental pollution is also not available, but large quantities of pesticides are being applied in areas draining into the valuable productive estuaries of the country.

There is no effective regulation of pesticides in the country. A pesticide law was enacted in 1982.

According to the law, the Ministry of Agriculture and (MAG) revises and approves import permissions for chemical products used in agriculture like fertilizers, insecticides, fungicides, nematicides, herbicides, inoculants,

etc. In approving the import of these products the MAG registers the product, the active chemical ingredient, grade of concentration, the country of origin and the exporter firm. The products actually imported to the country are only those registered and authorized by the EPA (Environmental Protection Agency.) The MAG also controls the import of seeds and plants or other genetic materials.

Pesticide use represents potentially serious human health and environmental hazards and safeguards are urgently needed to reduce the potential for pesticide-induced problems. Minimizing these problems will require the collaborative efforts of regulatory, educational, and research personnel as well as farmers.

Mitigative Measures:

When pesticides are purchased by A.I.D., a comprehensive risk/benefit assessment of their use is normally required and all appropriate mitigative procedures must be built into the projects. Disaster assistance projects, such as the Ecuador Emergency Rehabilitation Project, are however, legally exempted from this requirement. Nevertheless, it is A.I.D. policy that mitigative actions should be included in disaster assistance projects, to the extent this is possible without jeopardizing the emergency objectives of the project. The following section, Pesticide Procedure, provides a risk/benefit assessment, and the desired mitigative measures are specified.

Pesticide Procedures

When pesticides are used in A.I.D. projects, certain actions are required to ensure that their use does not present unreasonable hazards to the human population or the environment. This section describes the use of pesticides purchased by A.I.D. and sets forth procedures that should be taken to minimize their adverse effects. Regulation 16 of the Code of Federal Regulations on Pesticide Procedures (Paragraph 216.3 (b) (I) (i) of Environmental Procedures) established the general guidelines used here.

In this document, the term "pest" includes any group of organisms --- insects, bacteria, viruses, weeds, nematodes, snails, slugs, birds, rodents, or others -- that adversely affects the production, preservation, or use of agricultural plants (including seeds and planting stocks) or harvest products. "Pesticide" is any chemical preparation used to kill, repel, or otherwise stop the action of a pest population and would include the following:

- Insecticide (to control insects)

- Acaricide (to control mites)

- Herbicide (to control weeds)

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- Fungicide (to control fungi - molds, etc.)

- Nematocide (to control nematodes-small round warms)

- Rodenticide (to control rodents)

Several factors will determine the kinds and quantities of pesticides required for producing the food crops in Ecuador; the crops in question, the severity of the pest problems, the availability of control methods other than pesticides, economic resources of the farmers, etc. However, it is certain that pesticides will be used by farmers in the commerical production of the primary crops.

In the United States of America (USA), pesticides are registered by the U.S. Environmental Protection Agency (EPA.) The EPA registers a pesticide product in one of two categories: "restricted use" or "general use". A restricted use pesticide is available for purchase and use only by pesticide applicators who have been certified under the provisions of the pesticide law, because of its very high toxicity and/or environmental hazards. A general use pesticide, by contrast, is one that has been determined not to present high toxicity and/or environmental hazards and is available for purchase and use by the general public. All the pesticides recommended for purchase by A.I.D. under the project for the 1983-84 crop season are general use pesticides.

A. The EPA Registration Status of the Pesticide to be purchased with A.I.D. Funds

The pesticides that are approved for purchase with A.I.D. funds to respond to a request from the Government of Ecuador for assistance in coping with the existing agricultural disaster are shown in Table I. All these materials have been registered by EPA in the general use category. Pesticides in the General Use Category (Use by Farmers without supervision) would not be expected to present an unreasonable hazard to humans or the environment if used according to their labels and applied to the crops indicated in Table 1.

TABLE 1: Pesticides Approved for Purchase with A.I.D. Funds to Respond to a Request from the Government of Ecuaddor for Assistance in coping with to the Existing Agricultural Disaster

Pesticides	Estimated Amount to be purchased ($000)	EPA Registration Category	Crops to be Treated 1/11111				
			Corn (Hard)	Rice	Soybeans	Bananas	Potato
Fungicides							
Mancozeb	800	General				X	
Maneb	300	General			X	X	X
Herbicides							
Alachlor	500	General			X		
Atrozine	400	General	X				
Dalapon	250	General		X		X	
Propanil	1,000	General		X		X	
2,4 D	750	General	X				
Insecticides							
Carbaryl	150	General	X	X	X		X
Chlorpyrifos	950	General	X	X			
Diazinon	200	General	X		X		
Dimethoate	200	General			X		X
Malathion	200	General		X			X
TOTAL	U.S.$ 6,000						

1. Residue tolerances have been established by EPA for all uses indicated.

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Pesticides in addition to those shown in Table 1 can be purchased by A.I.D. for research or limited field evaluation purposes. Use of pesticides for research or limited field evaluation purposes by or under the supervision of qualified personnel are exempt from A.I.D.'s persticide procedures. In such instances, however, A.I.D. will ensure that the manufacturers of the pesticides provide toxicological and environmental data necessary to safeguard the health of the users and the quality of the environemnt in which the pesticides will be used. Further, treated crops will not be used for human or livestock consumption unless appropriate tolerances have been established by EPA or recommended by the United Nations Agencies, The Food and Agricultural Organization (FAO) and World Health Organization (WHO), and the rate and frequency of application, together with the prescribed preharvest intervals, do not result in residues exceeding the tolerances. This prohibition does not apply to the feeding of treated crops to animals for research purposes.

B. The Basis for Selection of the Pesticides to be purchased with A.I.D. Funds

Availability of and experience with the materials in Ecuador, efficacy, human safety, and the acceptability of residue tolerances were the criteria used in selecting the pesticides being suggested for purchase. All of the pesticides are already being used in Ecuador.

According to GOE personnel, the small farmers and farm workers in Ecuador are often not properly prepared to handle highly toxic pesticides. The farmers and workers may be unaware of the hazards of the pesticide. Sometimes they use the materials from unlabeled containers. Often, they do not possess (or use) protective clothing or safety devices, and they carelessly handle the materials (washing out the empty containers in streams, etc.) Further, there are not adequate poison control centers, and the medical personnel are generally not qualified to diagnose and treat cases of pesticide poisoning. Because of these reasons, pesticides with high toxicity or prolonged persistence are unsafe for most of Ecuador's farmers, and are not being purchased with A.I.D. funds.

C. The Extent to which the Proposed Pesticide Use is Part of an Integrated Pest Management Program

Reliance on pesticides alone is expensive, and heavy use of pesticides rarely gives lasting control. Pests often become genetically resistant to pesticides if these materials are used extensively. The development of resistant strains of pests may have very serious consequences for the farmer. Previously effective pesticides will no longer control the pests. Thus, without suitable alternatives to combat the genetically resistant organisms the farmers may experience heavy crop losses or even complete crop failures. The onset and spread of pesticides resistance is most likely to occur in areas where pesticides are used heavily.

Experience in many parts of the world has shown that the best way to avoid pest resistence and also to increase and sustain agricultural production is to use a variety of control methods for crop protection--biological, genetic, physical, and chemical--integrated together on the basis of economic and environmental criteria. This approach is known as "integrated pest management" or IPM. The general steps to IPM are as follows:

- Use of pest control method only when there is evidence that its benefits outweight its costs.
- Do everything possible to prevent the pests from reaching damaging levels by using nonchemical methods such as:
  - o Resistant or tolerant crops
  - o biological control (natural enemies)
  - o cultural control such as crop rotation, fertilizer management, tillage, altered harvest practices, etc.
- Regularly inspect the crops and apply pesticides on the basis of real need.

In integrated pest management, pesticides are applied only when the pests have attained or exceeded what is known as the "economic threshold". The economic threshold may be expressed in different ways, for example:

- Numbers of insect larvae per plant
- Percentage of fruit damage by a given pest
- Numbers of pests per square meter, etc.

The economic threshold is essentially the "break even point" in crop protection. When a pest infestation is below the economic threshold level, the cost of applying the pesticide exceeds the losses caused by the pest. Above the level, control becomes profitable.

The economic threshold recommended to farmers must be based on research and field trials. However, experienced specialists, familiar with the characteristics of plant growth and development and pest dynamies, can often establish preliminary, crude threshold levels. The preliminary economic threshold can be tested on a small scale under actual farming conditions and refined as more information becomes available. By inspecting the farmer's fields regularly and applying pesticides around economic threshold levels, pesticide use can often be reduced significantly without a sacrifice in crop yield or quality.

Some research related to IPM has been conducted in Ecuador by the Instituto Nacional de Investigaciones Agropecuarias (INIAP), and the crop protection specialists employed by some of the larger companies. Further, many Ecuadorean farmers already use a variety of traditional pest control methods (hand picking insects, field sanitation, etc.) that can be effective in IPM programs. However, IPM strategies have not been developed for many of the pests affecting the crops to be emphasized for control (banana is a possible exception.) Their development would require a major effort in research and field evaluation followed by a concerted extension effort to train the farmers in their implementation.

At this time the crop protection practices of the small farmers of Ecuador are generally poor and they have no concept of using IPM techniques. The crop protection practices of the commercial agricultural companies are much better although some of them could also be improved.

Because of the need for pesticides for preventing crop losses only limited immediate actions can be taking to improve their use. However, long term actions should be initiated leading to effective IPM programs.

Short term measures that should be implemented:

- o Appoint a Pesticide Coordinator for Ecuador
- o Obtain the assistance of Ecuadorean crop protection specialists in identifying the major pests of the selected crops and prepare pamphlets describing the pests, their biology and control methods.
- * o Select and train technicians to train the farmers in the identification and control of the crop pests.
- o Implement farmer training programs in crop protection and the safe and effective us of pesticides.
- o In so far as possible use INIAP personnel to monitor the pest problems of appropriate crops and develop a system for advising the farmers urban treatment is needed.
- * o Monitor the pesticide purchases
- o Improve the distribution and storage of pesticides.

Approximately $115,000 of project grant funds will be allocated to support these efforts. If necessary additional PD&S funds will also be used.

- Long term measures that should be implemented:

* o Conduct an IPM Conference/Workshop for Ecuador during 1984

* o Develop plans for an Integrated Crop Protection Program for Ecuador.

* o Expand the Crop protection research

o Train additional crop protection specialists to enter the Research Program.

* o Develop and Implement a Pesticide Regulatory Program.

* o Develop a Pesticide Monitoring Program.

o Expand the crop protection education and extension capabilities of the Nation.

* o Implement an Agromedical Initiative. Adequate funds must be allocated to support these efforts:

* Assistance is available from AID/Washington pending availability of funds to finance these activities.

D. The Proposed Method or Methods of Application, Including Availability of Appropriate Application and Safety Equipment

The hand-operated hydrolic knapsack sprayer is commonly used by small farmers for applying pesticies. Granular applications are generally broadcast or dropped on specific areas by small farmers. These are frequently hazardous procedures.

Commercial operations and some cooperatives use mechanical sprayers and spray planes so the exposure of spray, loading and marking personnel can be reduced.

As reported by Peter Gore and Carrol Collier, pesticide management is generally poor. There is no system for assuring quality control; distribution is poor; storage is lax; disposal is hazardous, etc.

Actions should be implemented to improve the distribution, storage, use and disposal of the pesticides. The Mission should therefore consider follow up actions beyond the period of this project.

E. Any Acute and Long-Term Toxicological Hazards, Either Human or Environmental, Associated with the Proposed Uses of the Pesticides and Measures Available to Mitigate the Hazards

All pesticides are potentially hazardous to humans and the environment and should be treated with great caution regardless of their relative toxicities. A summary of the most relevant toxicities and special hazards of the pesticides is presented in Table 2. Additional information will be found on the label. Read the Entire Label, And Use each Product Strictly in Accordance with the Precautionary Statements and Directions.

The potential health hazard of a pesticide depends upon its toxicity and the amount swallowed, absorbed or inhaled. The relative toxicity of a pesticide can be found by examining it's:

LD50 value = the amount of pesticide toxicant necessary to kill 50% of the test animal population (usually laboratory rats.) It is expressed in weight of the pesticide per unit of body weight (milligranus/kilogram) when swallowed (Oral LD50) or absorbed through this skin (Dermal LD50.) The LD50 of fumigants (gaseous poisons) are expressed in parts per million of fumigant in a confined air space.

As a general rule, the pesticides with the lowest LD50 values are the most toxic to humans. For example, injestion of just a few drops to a toaspoonful of a pesticide with an Oral LD50 value of less than 50 might be sufficient to kill an adult person. The same person would probably have to inject 16 tablespoonfuls or a pound or more of a pesticide with an oral LD50 of 5,000 before death resulted.

The environemntal protection agency has classified pesticide products into four categories of toxicity based on the oral LD50 values:

I Extremely hazardous

II Highly hazardous

III Moderately hazardous

IV Slightly hazardous

Nearly all pesticide safety experts agree that pesticides in EPA's first categories--I-- Extremely hazardous--are too toxic for general use. They are dangerous chemicals that should only be used by specially trained people and taking full account of the precautions indicated on the label of the pesticide containers.

Table 2: Toxicity and Special Environmental Hazards of Pesticides that are to be purchased with A.I.D. Funds in Response to a Request form the Government of Ecuador for Assistance in Coping with the Existing Agricultural Disaster

Pesticide	Acute Oral LD50	EPA Toxity Category	Special Environmental Hazards
Funguicides			
Mancozeb	8,000	IV	
Maneb	6,750	IV	
Herbicides			
Alachlor	1,800	III	
Atrozine	1,780	III	
Dalapon	970	III	
Diuron	3,400	III	
Propanil	1,384	III	
2.4D	850	III	
Insecticides			
Carbaryl	500	III	Hazardous to bees: do not contaminate water
Chloryrifos	97-276	II	
Diazinon	542	III	Toxic to fish, birds, and other wildlife and hazardous to bees
Dimethoate	215	II	
Malathion	1,000	III	Hazardous to bees (as dust or ultra-low-volume formulation)

1) LD50 values shown is based on toxicity of active ingredient and not toxicity formulated product. LD50 values of diluted materials may be considerably higher.

It will be the responsibility of the Pesticide Coordinator to inform farmers, extension personnel, and others who use the pesticides purchased of these potential hazards and to ensure that all appropriate measures--specified on the labels and in Section D, above--are taken to mitigate the hazards.

F. The Effectiveness of the Pesticides to be Purchased for the Proposed Use

Pesticides suggested for purchase by A.I.D. for use in crop protection in Ecuador for the 1983-84 season have been evaluated and found to be effective in many areas. These chemicals are cost effective for the uses recommended and are only approximately 14% of the pesticides that will be available on the open market in Ecuador during the 1983-84 growing season.

G. Compatibility of the Proposed Pesticides with Target and Non-Target Ecosystems

The pesticides suggested for purchase are non-persistent and, if used correctly and according to their labels, should present no unusual hazards. Incorrect handling, such as applying higher doses and at closer intervals than recommended on the labels, careless spraying during windy conditions, careless storage, improper disposal, or washing the equipment and containers in streams, would have harmful effects.

Most of the insecticides suggested are toxic to natural enemies (beneficial predatory and parasitic insects, for example), especially when applied at high rates, and some are hazardous to bees. Their use therefore would be expected to reduce populations of natural enemies and bees that resided in the treated crop fields.

There is always a threat of build-up of genetically resistant strains of insect pests and plant disease organisms that cannot be controlled with pesticides that were previously effective.

Some of these problems are unavoidable when chemical pesticides are used. The best way to minimize the adverse effects is to use the pesticides juidiciously in combination with other control methods in IPM programs and to educate the farmers and other applicators of the pesticides of the hazards and proper use of the materials.

H. The Conditions under which the Pesticides are to be Used, Including Climate, Flora, Fauna, Geography, Hydrology, and Soils

These conditions were described in the section entitled The Environmental Setting.

I. The Availability and Effectiveness of Other Pesticides or Non-chemical Control Methods

The pesticides that are being purchased, and many other, are available through commercial channels. The commerical growers, and the plant protection specialist are well informed regarding IPM techniques. In the

large scale operations they have planted resistant varieties; practice crop rotation to same degree, monitor pest populations and have a reasonably satisfactory approach to pesticide use.

Overall the emphasis is on using pesticides for pest control. Environmentally sound cost effective crop protection methods need to be improved, especially for the small farmers.

J. Ecuador's Ability to Regulate or Control the Distribution, Storage, Use, and Disposal of the Pesticides that will be Purchased

The Pesticide Control Act of 1982 provides for the importation, sale, storage, and use of pesticides. Ecuador is in the process of implementing the Act. Therefore, the country is not presently able to regulate or control effectively the distribution, storage, use, and disposal of pesticides.

The purchase of these pesticides will stimulate the implementation of regulations and practices. A.I.D. and GOE funds will be allocating funds to support these actions, (and these specified in sections. A. through L. of the Pesticides Procedures.) The GOE is appointing a Pesticide Coordinator to coordinte the implementation of these actions.

In addition A.I.D. and the GOE will sponsor in-country training for extension workers, health officers, nurses and other medical personnel, pesticide applicators, and others on pesticide management, including pesticide safety, monitoring, disposal, etc.

It will be the responsibility of the Pesticide Coordinator to ensure correct distribution, storage, use, and disposal of the pesticides purchased with these funds.

K. The Provisions made for Training of Users and Applicators of Pesticides

The GOE has agreed to implement the short term measures using project grant funds and the long term measures as funds are available to improve crop protection and pesticide use outlined in Section C. USAID/Ecuador will provide funds from the disaster project and PD&S if necessary to fund the short term measures.

L. The Provisions Made for Monitoring the Use and Effectiveness of the Pesticides

The GOE has agreed to implement all the short and those long term measures to improve crop protection and pesticide use outlined in section C., for which funding can be made available.