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PD-~~AAK~~-288-81 6080138 (2)

CATHOLIC RELIEF SERVICES - U.S.C.C.

PROPOSAL

RURAL DEVELOPMENT - FIGUIG PPOVINCE
MOROCCO

1977

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project: _____
 From FY _____ to FY _____
 Total U.S. Funding \$ 102,000
 Date Prepared: November 1970

Project Title & Number: RURAL DEVELOPMENT GRANT/CRS (CRS) 604-0138

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p>Improvement of land use in Morocco.</p>	<p>Measures of Goal Achievement:</p> <p>Replication of similar land reclamation and soil erosion reduction projects in provinces afflicted by flash floods.</p>	<p>1) Visual observation</p> <p>2) Progress reports (oral) of provincial agricultural technicians</p>	<p>Assumptions for achieving goal targets:</p> <p>That the GOM continue to carry out its five-year plan regarding improvement of land use in the Province of Figuig</p>
<p>Project Purpose:</p> <p>Check soil erosion in a vital oasis; and reclaim land available to poor rural people in remote backward area by diverting annual flood waters.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <p>1) Increased arboriculture.</p> <p>2) Reduced erosion enabling increased cropping seasons.</p>	<p>1) Comparison of arboriculture/agricultural documentation.</p> <p>2) Technical studies measuring amount of soil erosion.</p>	<p>Assumptions for achieving purpose:</p> <p>1) Peaceful conditions exist in the area.</p> <p>2) Continuing support of the GOM.</p>
<p>Outputs:</p> <p>Construction of a retaining (protective) wall, dike and drainage canal on three streams bordering the city of Figuig.</p>	<p>Magnitude of Outputs:</p> <p>One dike will measure 4m high, 8m wide and 100m long, made of a compact earth embankment reinforced by gabion and cut rock. One canal will be 20m wide and 255 m long with embankment protected from erosion by cut rock. One wall will be 1,000m long, 2m high, with a foundation of 1.7m and top of 1m. one stream bed will be enlarged by straightening out two bends.</p>	<p>1) CRS records in Rabat.</p> <p>2) Project supervisor reports w/ pictorial documentation.</p>	<p>Assumptions for achieving outputs:</p> <p>1) That the hydraulic studies for technical plans for dike/canal and wall construction are adequate.</p> <p>2) That the people in the oasis and surrounding area show their interest by working on the project.</p>
<p>Inputs:</p> <p>USAID Funds</p> <p>CRS Funds</p> <p>Peace Corps Funds</p> <p>GOM Funds</p> <p>Provincial Funds</p> <p>Value Title II Commodities</p>	<p>Implementation Target (Type and Quantity)</p> <p>\$ 102,000</p> <p>\$ 13,200</p> <p>\$ 2,400</p> <p>\$ 474,700</p> <p>\$ 4,500</p> <p>\$ 62,779</p>	<p>Financial records CRS/NY</p> <p>Financial records CRS/Morocco (Rabat)</p>	<p>Assumptions for providing inputs:</p> <p>1) That sufficient quantities of PL490 Title II commodities will be on hand at the EN provincial warehouse for food-for-work projects.</p> <p>2) That the necessary labor and materials are available.</p> <p>3) That the conditions for excavating and construction are favorable.</p> <p>4) GOM will assign qualified engineer for construction supervision.</p>

Climate: The climate is irregular: little rain and sudden alternation of temperature. The registered temperatures have shown an irregularity going from -10°C in Bouarfa to $+50^{\circ}\text{C}$ in Figuig. The annual quantity of rains, between 200 to 240 mm, falls very irregularly between October and April. As a result, the Province consists of semi-arid and arid areas. It is a transition between the Sahara and the north of the country. Most of the time, "oueds" (rivers) are dry, except for the Oued Guir in the southwest.

Hydrogeology: The most important body of water is in Figuig. It is exploited by 35 wells and 35 sources giving an average flow of 500 litres/second. The sources come from a system of underground drain-pipes called "Foggara." This kind of exploitation by "Foggara" has existed for several centuries. The source of Ain Chaer irrigates a 200 hectares palm-grove. In the Tamlet plain, the sinkings which are rather deep have a flow going from 5 to 25 litres/second. The water is used by the nomads and the cattle.

Population: The census of 1971 gave an estimation for Figuig Province of 88,252 inhabitants, 19,431 of them living in towns or villages. The city of Figuig is the principal urban center with 13,660 inhabitants. For distribution of the population and other statistical indicators specific to the project area, see Annex III.

While the population of the country as a whole shows a growth rate of 3.2% and the project region 2.8% (since 1960), in some areas of the Province the population has a much lower birth rate, as indicated in the Annex.

The total birth rate of the Province results in 30,000 new inhabitants every 10 years, one of the lowest provincial increases registered in the country. The distribution per age is not precisely known but one can say that 65% is less than 25 years old.

The principal areas of sedentarization are Figuig, Bouarfa, Tandrara and other towns indicated on map of area (Annex IV).

The way of life of the population is sedentary in the palm-groves and along oueds, semi-nomadic near the "ksour" (fortified villages) and nomadic in the high plains. The sedentary population lives in one-room dwellings built of sun-baked clay, with roofs of clay tiles or clay-covered straw.

The inhabitants are organized into tribes. But tribal organization has a tendency to disappear to the extent that sedentarization prevails over nomadism.

The traditional nomads breeding sheep and goats go through the high plateaux from the south to the north where they tent in the spring, but in summer they go on the mountains near Figuig and in winter to the plains north at Tafрата. But these mass movements are diminishing as nomads begin to settle permanently in the area of Berguernt, now an important sheep market.

Agriculture

Cereals: Because of the climate and the insufficient rain, the agricultural areas are limited. In the Province and mostly in the palm-groves, culture is limited to cereals (wheat, barley and corn) and to leguminous plants requiring small surfaces.

For most inhabitants agriculture is at the subsistence level and the population depends on external supplies. The production of cereals is very low. In 1974, it was estimated as follows:

3,079 quintal of winter wheat	(781,000 in all region)
9,050 quintal of spring wheat	(134,000 in all region)
3,787 quintal of barley	(100,000 in all region)

Arboriculture: Dry culture areas called "bour", situated in alluvial depressions and around the "ksour", are getting water from "oueds". Because of altitude and cold winters, intensive cultures are rare and not very varied. Most trees grow in the Figuig oasis, near the city situated at the door of the desert. The principal trees are date, olive almond and fig trees.

date trees	112,000
olive trees	8,781
various	2,633

Forests: Forests are almost non-existent in the province. Plains and mountains are bare because of insufficient rain, severe climate and over-grazing. Alfa covers most of the high plains, an estimated 2,000,000 hectares. Production: 20 to 30,000 tons.

Breeding: It is one of the principal resources of the province and the only source of income for the population of the high plains. Sheep breeding is the most important.

	<u>Province</u>	<u>Region</u>
Sheep	1,018,617	1,500,000
Livestock	3,613	64,000
Goats	406,520	495,000
Camels	7,434	8,500

C. Project Analysis

This project will improve the lot of poor rural people in remote, backward area. The beneficiaries of this project, an estimated 13,000 people, are the marginal population living in about 2,500 cultivable hectares in the project area.

The attached diagram of project plan (Annex II) clearly indicates how vital and important this proposal is to the future resourcefulness of Figuiq Ville. Of the three main oueds (Tlet, Bouichalikane, Kebir) that run through this area, Oued Tlet is considered the most dangerous.

During the rains O. Tlet runs directly into the southeastern section of Figuiq, actually a commune called Hamam Foukane, spilling down into the central oasis. The proposed dike will divert the flood waters into the canal for drainage down a slope onto an unused, very level plain of nearly 1,000 hectares suitable for tree planting. Nearly half of this plain can be utilized within 2 years once the irrigation ditches are dug and canal dug from Oued Zonsfaur, which has a yearly supply of water, enabling a steady source of water supply.

This land is communal (collective) and all the villagers will benefit. Practically the only private ownership of land in the area is located in the oasis; all the surrounding land is communal. There are seven communes in the Cercle of Figuiq. After the construction of dike and canal, the new land to be developed will increase the surface of the existing palm-grove and consequently increase the income of the farmers. (See attached letter from the Governor of Figuiq Province concerning land distribution - Annex IIIA)

The plain has a natural slope to the mountains and border which will be good for irrigation purposes. After completion of wall construction, the 200 laborers will commence digging irrigation ditches and holes in the plain of 1,000 hectares. This phase will require 7 months. From past experience with self-help plantation projects at Bouarfa, each worker is capable of digging 7 holes daily. The planification of this plantation will be executed by the Subdivision of the Water and Forest Department at Figuiq and Bouarfa.

Equally important the diversion of O. Tlet waters will protect the present oasis of 600 hectares from further erosion, especially the precious topsoil used for cultivation of wheat, maize and a variety of market vegetables. This small, yet important, agricultural activity of the oasis is naturally disrupted during floodings, creating discouragement and hardship for the people to restore land with hard to obtain topsoil.

Concerning Oued Bouichalikane, the proposed reinforcing and reconstruction of sections (total of 1,000 meters) of the existing protective wall will divert waters from flooding the southwestern part of the city and the western part of the oasis.

While the dike/canal phase will require no self-help labor, the work proposed for this oued is ideal for the full utilization of self-help labor. In addition to wall construction, two sections of the oued have to be widened to take the force of water off the bends in the river to permit a steady flow into the oued Kebir, at which point water can be diverted more easily. The sections to be widened are rock formations (but useful for wall construction once broken down). The oued at these points will have to be cleared of compacted sand down to rock bottom, about 2 to 4 meters before the wall can be reconstructed. Once the oued is straightened out the waters will fall into a natural catch basin at the entry of the waters into O. Kebir.

This project meets the conditions specified in the 1973 Foreign Assistance Act. The beneficiaries are definitely among the country's poorest, living at a subsistence level and earning the equivalent of less than \$100 annually. They are small farmers and semi-nomadic herders of sheep, goats and camels, unable to tend their small plots of cereals and legumes in palm-groves or near "oueds" and other water sources. Since this a newly created Province (January 1974) lacking many of the economic advantages of the older, established ones, The project will be a stimulus to the area. It has good potential for application in the other areas of the province and other provinces in the eastern section of the country. Moreover, this project ties in excellently with the province's five-year development programs.

Some related areas are:

Agriculture: In order to increase cereal production, important efforts will be made to:

- create or extend small irrigated surfaces;
- improve the irrigation system;
- extend the surface of selected palm-groves; and
- utilize selected seeds.

Arboriculture: At present, date production is limited to the needs of the local population. An effort will be made to commercialize on part of these dates as soon as the processing factory at Ksar-Es-Souk becomes operational. Meanwhile, the Agronomic Research Institute has initiated several actions within the plan:

- introduction of new date varieties in the palm-groves of Figuig and Ain Chouater;
- selected shoots will be planted in new irrigated surfaces to improve the quality of the dates (Mghoul-Fegous, etc.)

Forests: Forests have completely disappeared in all the province because of erosion, climate and over-grazing. The Waters and Forests Service is being improved and given the necessary possibilities to:

- protect the newly planted forests and control harvest of alfa;
- reforest the areas around the villages and the sources;
- protect the cynegetic fauna; and
- plant a nursery of 200,000 plants.

Because Figuig is a new province, sparsely populated, remote from the hub of Ministries and related agencies, the last to receive priority attention, CRS finds this type project in perfect accord with its own development policy.

CRS has collaborated successfully with the Governor throughout the province on village and rural self-help programs and is anxious to help spearhead this project. A successful reforestation self-help project of 200 hectares at Bouarfa is currently being supported by CRS with PL 480 Title II commodities. The tree-nursery of 200,000 plants has been realized at Bouarfa by provincial authorities.

Due to the unforeseen reduction in phosphate prices in the 1975/76 period and a drought in the same period nearly crippling the grain output the GOM had spent an enormous amount of foreign exchange reserves for the purchase of soft wheat while continuing to make high payments for petrol, lubricants and other products. Consequently, these three factors have affected the GOM's five-year development plan, especially for the newly created provinces.

Provincial authorities have received verbal assurances from the central government that additional funds would be earmarked in the provincial budget during the course of the next Five-Year Development Plan 1978-82, were this CRS-assisted effort to be successful. The Central Government is interested in replicating this effort not only in other areas of the Figuig Province but also in other southern provinces affected by flash floods. To this end it is supporting the present project to the extent of its current financial availabilities.

With the reclamation of 405 hectares of land from this project the local community, with expertise from GOM provincial-level agricultural and forestry technicians, can make full use of this extra land. Benefitting from meaningful local participation in the process of development to improve their economic situation, the short term results will be a source of cash income through sale of vegetables, especially to the new capital of Bouarfa. Vegetables have to be imported as far as Oujda, a distance of 268 kilometers. Long term results will be the important addition of healthy date-groves planted from selected shoots, expansion of almond, olive and eucalyptus trees plantation and the protection of the oasis.

D. Project design and Implementation

1. Implementation Plan

- a) The dike and drainage canal will be constructed on Oued Tlet, considered as the most dangerous of the three rivers running through the Figuig area. Annex V outlines the details and measurements of the dike and canal prepared by the Office of Equipment Services, Department of Provincial Agriculture (Oujda-Figuig).

The Oued Tlet flood waters will be diverted by a dike measuring 4 meters high, 8 meters wide and 100 meters long. The dike will be made of a compact embankment and the upstream part will be reinforced by steel mesh (gabion) of 3.5 meters and rocks of 25 cm thickness.

The canal will be 20 meters wide (embankment slope 3/2) and 255 meters long. The embankment will be protected from erosion by rocks of 25 cm thickness.

The protective wall for Oued Bouichalikane will be 1,000 meters long, 2 meters high, with a foundation of 1.7 meters tapering to a top of 1 meter.

The wall will be constructed with local materials: rock, sand, cement and gabion. The wall plan has been executed by a civil engineer assigned to the Governor's office at Bouarfa.

Annex VI contains the project technical construction plans for the dike canal executed by the Office of Equipment Services, Department of Provincial Agriculture (Oujda-Figuig) and protective wall plan executed by the provincial engineering department, at Bouarfa.

b) This type of embankment will not cause any environmental problems according to the provincial health and agricultural engineer personnel at Bouarfa and Oujda. (See statement by the Governor of Figuig Province - Annex IIIA). The Figuig area is not an area where schistosomiasis is endemic due to great periods of drought of up to eight months at a time.

c) Labor : Under the organization of the Caid of Figuig, a volunteer village work force of 200 persons from the seven different communes of the Cercle of Figuig will gather and split rocks from the dry stream beds to form the walls; widen Cued Bouichalikane at the critical bends; and, construct the protective wall. At wall construction completion, the self-help workers will move to the 1,000 hectare plain to dig irrigation ditches and holes for tree seedling planting. The last phase of the self-help chantier will be the construction of a canal for a permanent source of water to the plantation. The community volunteers will receive PL 480 Title II food on a self-help basis during construction as outlined on the attached self-help chantier breakdown (Annex VII).

The approved rations for self-help for the CRS/Morocco program are 100 lbs bread flour and 7.7 lbs vegetable oil (one gallon tin) per worker plus 4 dependents per month. The food is in stock reserved for the project. Food distribution and storage will be the responsibility of the Entraide Nationale Delegate of Figuig Province. Monthly distribution reports will be submitted through GOM channels to the CRS office at Rabat.

d) GOM Input: With central government funds, the provincial government will finance the excavations and part of the compact embankment required for the dike and drainage canal. It provided the professional services of a civil engineer, agricultural engineer and surveying team for the technical plans for the dike and canal. It will also provide a full time engineer to supervise construction, bulldozers and other necessary equipment.

The Department of Waters and Forests will cultivate 279,000 tree seedlings for the proposed plantation at their subdivision "pépinière" (tree nursery) created at Bouarfa. Their technicians will also do the plantation plan, seedling planting and watering.

The local government of Figuig will provide the necessary hand tools and minor equipment, transportation to gather sand from the nearby dunes and supervisory personnel.

e) AID Input: Grant funds are to help finance the procurement (all local) of the cement, steel mesh (gabion) to cover and fortify rock wall; and to help pay part of the embankment costs of the dike and canal.

f) CRS Input

The U.S. Peace Corps Mission in Morocco is assigning a full-time Volunteer expert in land-use planning, with sixteen months in-country experience, to be project supervisor, coordinating purchases and ensuring quality control of the retaining wall construction.

The project supervisor's base of operations will be at the provincial capital at Bouarfa. He will also gather information in other areas of the province and adjacent dry-land provinces where this type project can be replicated. This Volunteer will be under the direct supervision of a CRS Program Assistant at the CRS Rabat main office. The Program Assistant will be responsible for overall control of the project and will make periodic visits to the project site.

CRS will provide travel expenses for the Program Assistant from Rabat to the project site; will purchase locally a small vehicle for the Peace Corps Volunteer and provide for its maintenance; will secure two water-tank trucks from the Property Disposal Office at the Kenitra Naval Base located about 20 kilometers from Rabat. These trucks will be used to irrigate the plantations called for in project. The trucks will be maintained by the Subdivision of Water and Forests at Bouarfa.

It is to be noted that CRS is the only foreign agency known to have travelled to this remote Sahelian area, first to visit a successful ongoing MCH nutrition education program at centers supported with PL 480 Title II food, and subsequently to discuss development needs at the request of local GCM officials.

2. Measurement and Evaluation of Project Accomplishment

a) Administrative and Technical Capability to Implement Project

The project incorporates an adequate number of GCM and CRS/EN technical and supervisory personnel to implement activities at the outset to completion. The GCM will have a full time engineer from the Agricultural Regional Department at Oujda at the project site to supervise the construction of the dike and drainage canal. The provincial engineer will be responsible for the construction of the retaining wall. CRS will coordinate local purchase of materials with the Entraide Nationale (EN) Delegate at Bouarfa; will submit periodic financial and progress reports with pictorial documentation; will participate with the regional agricultural technicians to ensure that technical studies of soil erosion are measured and that comparisons of arboriculture/agricultural documentation are recorded.

The EN Delegate will be responsible to submit a Self-Help Chantier Title II Food Request through normal GCM channels. He will also be responsible for the distribution of food to the 200 self-help workers and their dependents.

b) Work Plan

Work on the dike/drainage canal and retaining wall can start at the same time at the end of the rainy period usually at the end of February or early part of March, at which time there will still be sufficient water to ensure and facilitate a good compactment for the embankments.

Work on the dike and drainage canal will be completed in two months.

Work on the retaining wall will be completed in eight months. The catch basin at the entry of waters from Oued Bouichalikane into Oued Kebir will require little work since it is a natural basin created over centuries. A minimum of cement and gabion will be needed to channel the waters onto the 50 hectare plain due south of the basin. This material will come out of the wall construction stocks.

Upon completion of the retaining wall the self-help workers will proceed to the plain to start digging irrigation troughs and holes for the seedlings. This phase will be completed in seven or eight months. From past experience with a self-help 200 hectare eucalyptus plantation at Bouarfa each worker is capable to dig 7 holes with trough per day. The Subdivision of the Water and Forest Department will use its personnel to plant and care for the seedlings during the first three years. Afterwards the villagers will care for their own assigned plots under the direction of the Cad of Figuig.

c) Work Timetable

- | | |
|---------------|--|
| March 1977 | - Start dike/drainage canal construction
Completion: June 1977 |
| | - Start retaining wall construction
Completion: October 1977 |
| November 1977 | - Start irrigation troughs and holes for plantations
Completion: June 1978; commence planting seedlings |
| July 1978 | - Start of canal from Oued Zousfanr to Oued Tlet
Completion: February 1979 |

d) Quantifiable Results

The GQM tree nursery at Bouarfa under the direction of the Subdivision of the Water and Forest Department has more than 200,000 seedlings under cultivation of various pine and eucalyptus trees. Of seven varieties of eucalyptus under cultivation, varieties E. Brockwayii and E. Torquata will be selected for the Figuig project.

Proposed Eucalyptus Plantations (255 hectares)

Planting: One seedling per 2 metric square at 1 meter intervals
One hectare: 800 trees x 255 h = 204,000 trees

Required Water: 200 litres per tree yearly

June, July, Aug, Sept

30 litres x 4 months	120 l
10 litres x 8 months	80 l
	<u>200 litres</u>

204,000 trees x 200 litres = 40,800,000 litres

Yield: Seedlings must be watered for 3 years or until 2 to 3 meters high; full growth in 20 years (10 years in other areas of Morocco); three cuttings.

Full growth tree weighs 1 to 2 thousand kilos

Average 0.25 cents x 1,500 kilos = \$375 per tree

204,000 trees x \$375 = \$76,500,000.00

Proposed Protective Plantation at Dikes

one-quarter hectare: 1,250 trees

Proposed Date Palm Plantation (50 hectares)

Planting: 500 trees x 50 hectares = 25,000 trees

Required Water: 25,000 trees x 200 litres = 5,000,000 litres

Yield: After 8 to 10 years growth 1 quintal (100 kilos) dates

Average \$1.50 per kilo x 100 kilos = \$150 per tree

25,000 trees x \$150 = \$3,750,000-yearly

Proposed Almond Plantation (50 hectares)

Planting: 500 trees x 50 hectares = 25,000 trees

Required Water: 25,000 trees x 200 litres = 5,000,000 litres

Yield: After 7 to 8 years growth 50 kilos nuts

Average \$1.75 per kilo x 50 kilos = \$87.50 yearly per tree

25,000 trees x \$87.50 = \$2,187,500

Proposed Olive Plantation (50 hectares)

Planting: 500 trees x 50 hectares = 25,000 trees

Required Water: 25,000 trees x 200 litres = 5,000,000 litres

Yield: After 5 years growth 1 quintal (100 kilos)

Average 0.30 cents x 100 kilos = \$30 yearly per tree

25,000 trees x \$30 = \$7,500

Existing Plantations

Date Trees	112,000
Olive Trees	8,781
Various	2,633
	<u>123,414 trees</u>

Proposed Plantations

Date Trees	25,000
Olive Trees	25,000
Almond Trees	25,000
Eucalyptus	204,000
	<u>279,000 trees</u>

Existing Oasis

Date, almond, olive or vegetable and cereal grain tonnages are not available at this time. However, with the topsoil erosion under control it is expected that the villagers will more than double their input into this important cultivation of vegetables and cereals.

E. Financial Plan

Details of construction costs breakdown are outlined on Annex VIII A and details of cost inputs are outlined on Annex VIII B.

F. Conditions

a) GCM Approval

The project proposal has been thoroughly reviewed at all levels of provincial and central government bureaus. Annex IX is a translation of an agreement with the Minister of Entraide Nationale, CRS' counterpart agency in Morocco, for CRS Morocco to participate in the project at Figuig.

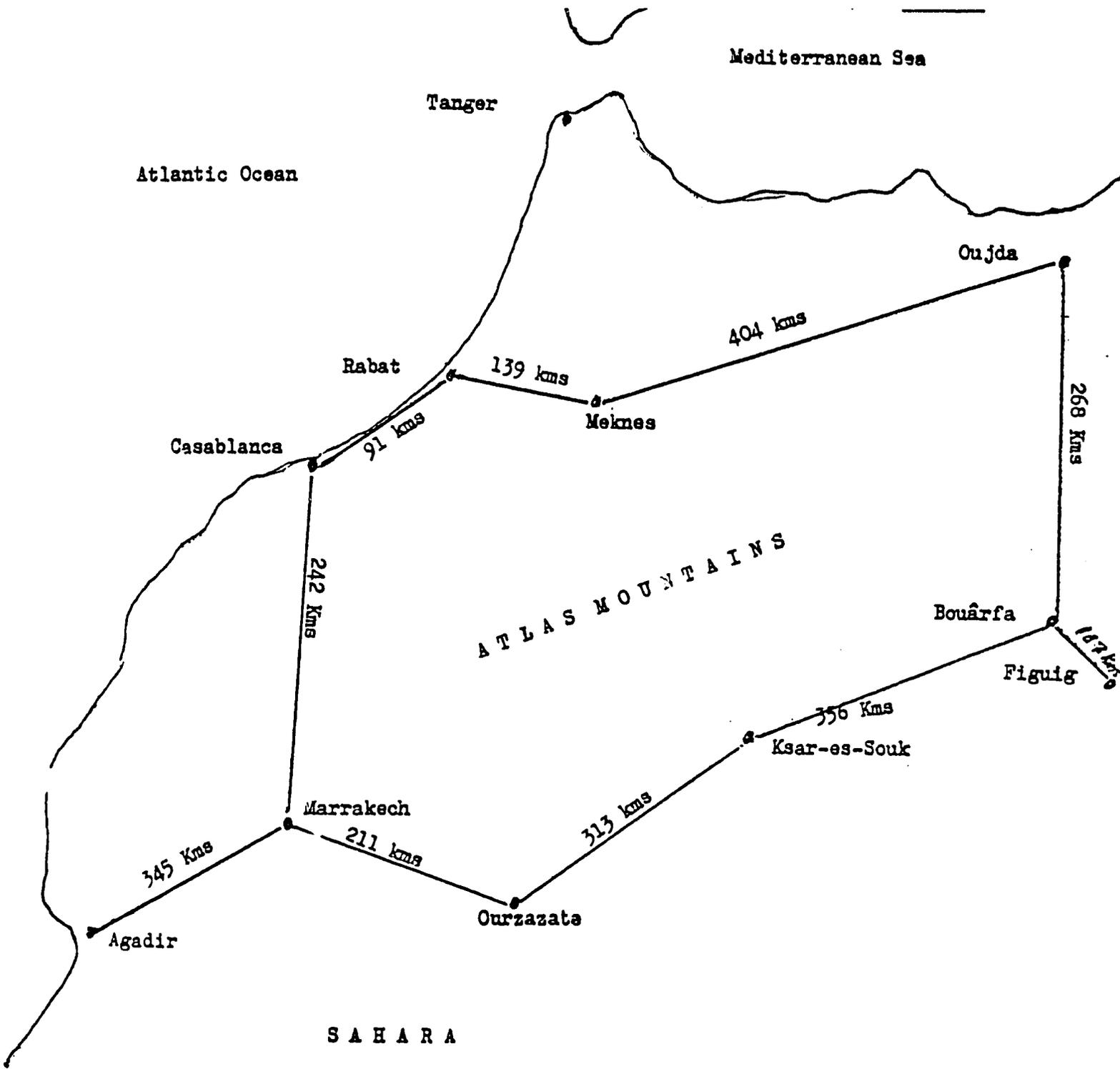
b) Justification for OPG

The proposed OPG grant is an essential element in this plan because without it the provincial government would be unable to undertake the project and CRS would not have an opportunity to extend its proposed technical assistance.

Rural Development Grant Proposal - Figuig

LIST OF APPENDICES

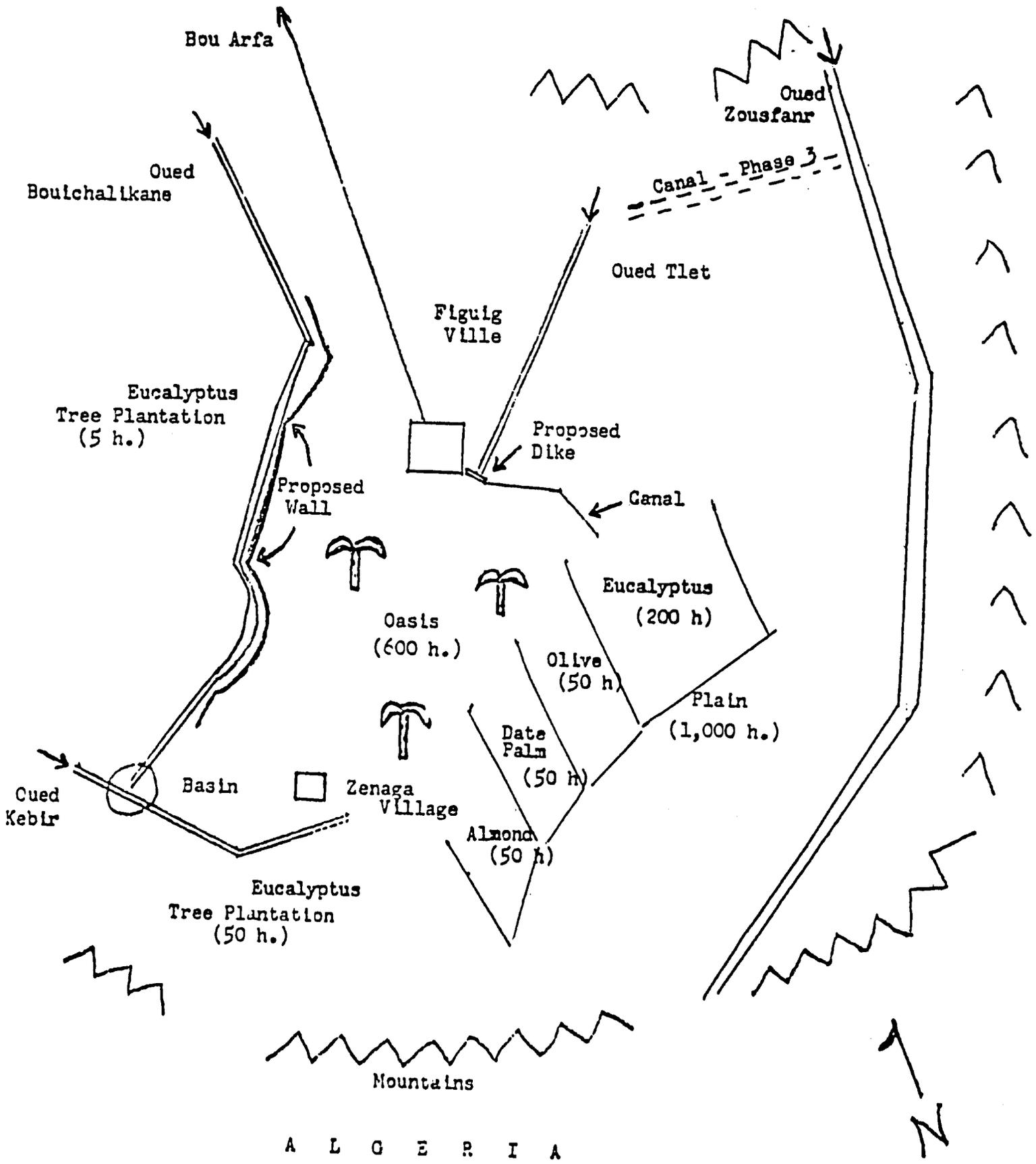
- Annex I Map of Morocco indicating project site
- Annex II Project Plan
- Annex III Population Distribution - Figuig Province
- Annex IIIA Letter from Governor, Figuig Province
- Annex IV Diagram of Figuig Province
- Annex V Details of Dike/Canal Consturction
- Annex VI Technical Plans (7 series) of Dike/Canal
- Annex VII PL 480 Title II Food Details
- Annex VIII A Details of Cost Estimate for Dikes/Canal Construction and retaining wall
- Annex VIII B Overall Project Cost Breakdown
- Annex IX Letter of Approval from Ministry of Entraide Nationale



Morocco Map Sketch
Rural Development Grant - Figuig

Rural Development Project - Figuig

Project Plan



A L G E R I A

FIGUIG PROVINCEDistribution of the Population (1960 to 1971)

DISTRICT	1960 Census			1971 Census		
	Urban	Rural	Total	Urban	Rural	Total
Figuig	12,108	1,133	13,241	13,660	823	14,483
Bou Arfa	8,775	8,892	17,667	6,181	9,743	15,924
Tandrara		14,517	14,517		16,232	16,232
Ain Couater		6,540	6,540		1,449	1,449
Bouanana		10,126	10,126		9,211	9,211
Beni Tadjit		7,087	7,087		9,363	9,363
Talsint		17,939	17,939		21,590	21,590
TOTAL	20,883	66,234	87,117	19,841	68,411	88,252

Basic Statistics

Area Surface: About 45,000 square kilometers

Annual Rainfall: 7 to 9 inches

Estimated Income: Less than \$100 yearly per family

Project Area Surface: About 2,500 cultivable hectares

Estimated Project Land Reclamation Surfaces: 405 hectares

TRANSLATION

3219/FF/D.E.N.

The Minister of Interior
Secretariat General
D.L.A.

RABAT

Project of Catholic Relief Services

Re: Your letter N° 5109 DLA/1 of 9/3/76

Following your above mentioned letter, I have the honor to give you the following informations as a reply to the questions of USAID:

1°) Are there any problems of environment which can result from this kind of embankment?

Answer: No problems of environment after the implementation of such an embankment.

2°) What will be the plan of distribution of 600 hectares of recovered land? How they will be used? In which way such a recovering of land can improve the economy of the region?

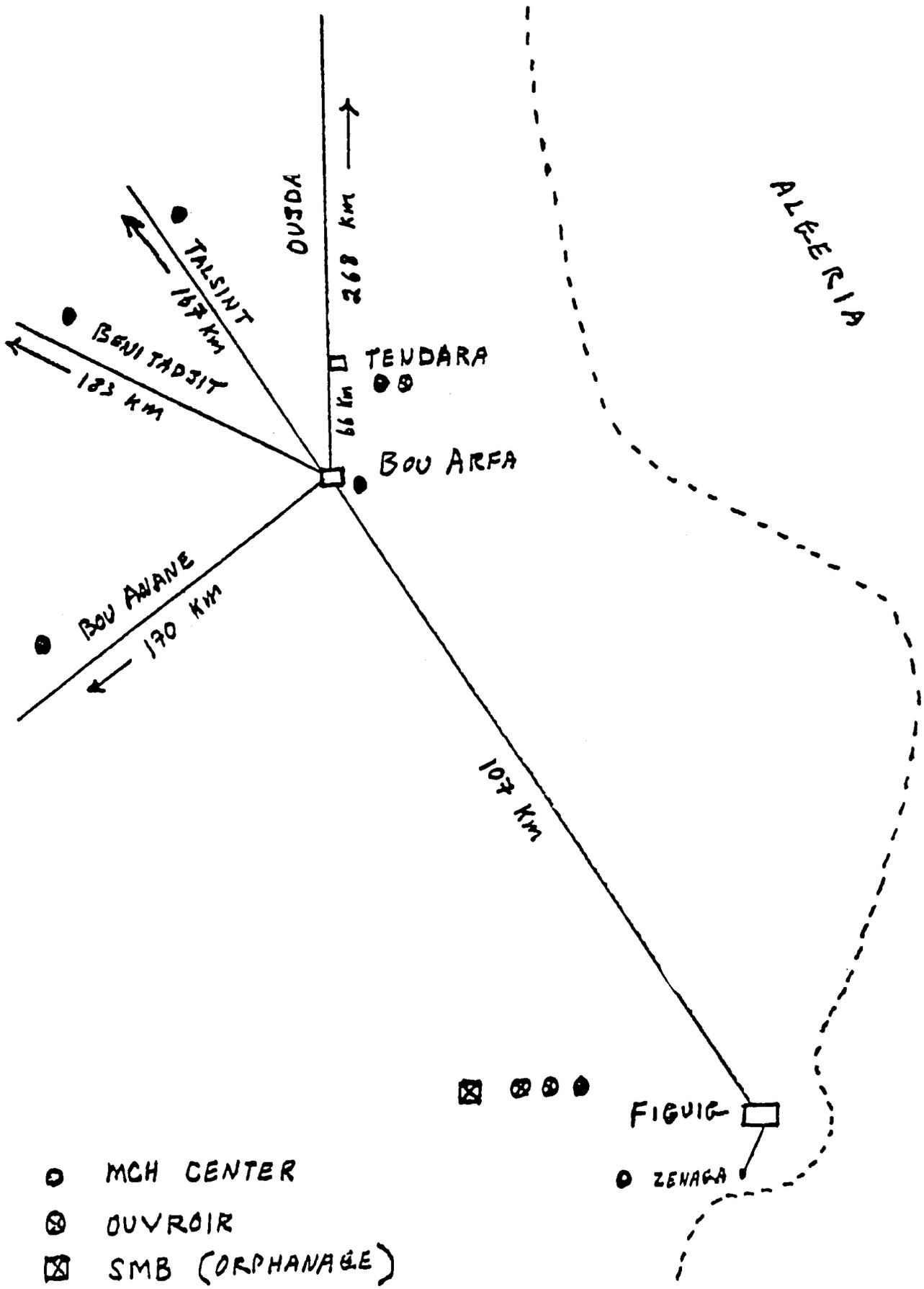
Answer: After the construction of the dike and canal, a surface of land of 600 hectares to be cultivated will be developed. It is a collective land and the beneficiaries are already known inside the collectivity. The new land to be developed will increase the income of the farmers.

3°) Who will be responsible for the supervision of purchase of materials in Bouarfa? Of the PL 420 Self-help food?

Answer: The materials will be the object of a market to be prepared by the Province (Division of material) under the responsibility of the Extraide Nationale Delegate. He will also be in charge of receipt and utilization of commodities to be the salaries of the workers.

The Governor - Province of Figuig

/s/ Mohamed Boufous



TRANSLATIONPROTECTION OF THE OASIS OF FIGUIGDiversion of Water Floods of Oued TletI. Description

A. The area to be protected is situated near to the center of Figuig. Three Oueds (Tlet, El Kebir and Bouichellitane) run through this area. During the rainy season they cause very large floods. Several local measures have been taken by the farmers to protect their lands. But because of insufficient studies, there was no good result. The aim of the actual study is to divert the water flood of Oued considered as the most dangerous.

B. Proposed Settlement

The Oued Tlet waters will be diverted by a dike constructed in the bed of the river and water will be diverted outside the area by a channel.

Description of the dike

Height: 4.00 m

Width : 8.00 m

Slope : 2/1 downstream and 3/2 upstream

Length: 100 m

The dike will be made of a compact embankment and the upstream part will be reinforced by gabion of 3.50 m and rocks of 25 cm thickness in order to decrease the kinetic energy of the water.

Description of the bed of the river

Width : 20 m

Slope : about 8%

Height: 2 to 6 m

Description of the drainage channel: With 255 m length, this channel will have a variable height according to the natural slope, other dimensions will be:

Width : 20 m

Embankment slope: 3/2

The embankment will be protected from erosion by rocks of 25 cm thickness.

II. HYDRAULIC MINING ESTIMATION

Since there is no measure of the flow during water floods, the hydraulic studies were difficult. Even the farmers' observations cannot allow an estimation of the maximum flow to be drained by the channel. But the description of the actual channel seems to be right:

- slope : 8%
- width : 20 m
- height : variable

The projected channel will drain a flow "Q" given by the formula of Maning - Strickler:

$$Q = KSR \frac{2/3}{I} \frac{1/2}$$

$I = 8\%$
 $K = 40$ for earth canal
 $S = 104$
 $P = 34.40$
 $R = S/P = 3.04$
 $R^{2/3} = 2.1$

$$Q = 40 \times 104 \times 2.1 \frac{8}{1.000}$$

$$Q = 782 \text{ m}^3$$

III. Detailed Estimation Costs of Dike and Canal

Description of Works	Units	Quant.	\$ Price	\$ Total
Excavations	m3	18.693	0.80	127,452.00
Compact Embankments	m3	6.300	6.80	42,955.00
Gabions (wire mesh)	m3	1.084	27.27	29,564.00
Cut rocks of 25 cm	m2	900	7.95	7,159.00
			Total	207,130.00
			Various(10%)	20,825.00
				<u>227,955.00</u>

PROJECT TECHNICAL PLANS

DEVIATION OF FLOOD WATERS - FIGUIG

Oued Tlat

- | | |
|--------|-----------------------------|
| Plan 1 | Design of Dike and Canal |
| 2 | Dike profile (side view) |
| 3 | Dike profile (frontal view) |
| 4 | Dike Plan |
| 5 | Canal profile |
| 6 | River bed blockage plan |
| 7 | Chute plans |

Oued Bouichalikane

Plan - Protective Wall

(To be forwarded by FPO Mail)

"SELF-HELP" CHANTIER PROPOSAL FOR
RURAL DEVELOPMENT PROJECT - FIGUIG

Workers

Number Workers	200
Dependents	<u>800</u>
Total Recipients	1,000

Work Days

20 per month x 24 months	=	480 days
480 x 200 workers	=	96,000 work days

TABLE II PL 480 Food Rations per Family per Month

Bread Flour	2 bags (100 lbs)
Vegetable Oil	1 gallon (7.7 lbs)

Total Food For Project (Three Phases)

Bread Flour	200 x 24 = 4,800 x 100 lbs = 480,000 lbs
Vegetable Oil	200 x 24 = 4,800 x 7.7 lbs = 36,960 lbs

CCC Value

Bread Flour	480,000 lbs x 0.11 = \$ 52,800
Vegetable Oil	36,960 lbs x 0.27 = \$ 9,979
	<hr/>
Total	\$ 62,779

DETAILED ESTIMATION OF PROJECT
CONSTRUCTION COSTS

I) Dike/Canal - O. Tlet

	Units	Quant.	Price	Total
Excavations	m3	18.693	30	560.790
Compact Embankments	m3	6.300	30	189.000
Gabions	m3	1.084	120	130.080
Cut rocks	m2	900	35	31.500
				911.370
			Various (10%)	91.137
			Total DH	1.002.507
			(Rounded)DH	1.003.000

II) Protective Wall/Basin - O. Bouichalikane

Gabions		600	35	21.000
Cement		300 t	250	75.000
				96.000
			Various (10%)	9.600
			DH	105.600

Province of Fizaig Inout

I) Excavations				560.790
Compact Embankments (in part)				32.338
				593.128
			Various (10%)	59.312
			Total DH	652.440
			Rounded DH	653.000

.../...

USAID Inout

I) Compact embankment (in part)		DH	140.996
Gabions			130.080
Cut Rocks			31.500
II) Gabions			21.000
Cement			75.000
			<hr/>
			398.576
	Various (10%)		39.857
			<hr/>
	Total	DH	438.433
	(Rounded)	DH	440.000

TOTAL PROJECT COSTS

Province of Figuig	DH	653.000	=	\$	148.410
		440.000	=	\$	100.000
		<hr/>			
	DH	1,093.000	=	\$	248.410

Rate of Exchange: The above is based on 31.00 = DH 4.40
The current rate has been fluctuating from
4.48 to 4.50 per dollar.

PROJECT COST BREAKDOWNI. USAID Input

A. Local purchase construction materials		\$ 100,000
- cement		
- gablon		
- cut rock		
- compactment for embankment		
B. PL 480 Title II Commodities		
- Bread Flour	480,000 lbs	\$ 52,800
- Vegetable Oil	36,960 lbs	9,979
		<hr/>
		\$ 62,779
C. Office supplies		
- paper, printing, cables, telexes, phone		\$ 1,500
D. Photographic Equipment		
- camera (instamatic), film, developing		\$ 500
		<hr/>
	Total	\$ 164,799
	(Rounded)	<hr/>
		\$ 165,000

II. CRS Input

A. Transportation		
- Vehicle - Renault R4 (2 door)		\$ 3,500
Local Insurance per year		111
Gasoline per year		1,575
Maintenance (30,000 kilometers)		500
Spare parts		1,500
		<hr/>
		\$ 6,716

CRS Input (Cont'd)

B. Travel Expenses from Rabat to project site

- CRS Program Assistant	\$ 5,000
- Peace Corps Volunteer	1,000
	<hr/>
	\$ 6,000

C. Living Expenses for project supervisor
(Peace Corps Volunteer)

- Installation housing allowance	\$ 400
	<hr/>
Total	\$ 13,116
(Rounded)	<hr/>
	\$ 13,200

III. Peace Corps Input

A. Salary

Monthly \$217 x 12 months	\$ 2,604
Fringe benefits	750
	<hr/>
Total	\$ 2,354
(Rounded)	<hr/>
	\$ 2,400

IV. GOM Input

A. Dike/Canal construction

- Excavations	\$ 127,452
- compactment for embankment	7,349
	<hr/>
	\$ 134,801
Various 10%	13,480
	<hr/>
Total	\$ 148,281
(Rounded)	<hr/>
	\$ 148,300

GOM Input (Cont'd)

B. Labor

20 man days per month x 24 = 480 days
480 x 200 workers = 96,000 work days

96,000 x \$3.40 = \$ 326,400

Total \$ 474,700

IV. Provincial Input

A. Hand tools \$ 1,500

B. Transportation 3,000

Total \$ 4,500

V. Recapitulation of Inputs

USAID \$ 165,000 { 100,000 cash
65,000 from

CRS 13,200

PEACE CORPS 2,400

GOM 474,700

PROVINCIAL 4,500

Total Project Cost \$ 659,800

Notes: Cost inputs do not include professional services of GOM regional engineering team who made dike/canal studies and technical plans; studies and plans for wall; plantation studies and cost of seedlings.

KINGDOM OF MOROCCO
PRIME MINISTER
SECRETARIAT OF STATE IN CHARGE
OF ENTRAIDE NATIONALE AND
ARTISANAT

ANNEX IX

N° 001329/CAS

7 July 1976

FROM: The Secretary of State of the Prime
Minister in charge of Entraide National
and Artisanat

TO: The Director of the Catholic Relief
Services - USCC

- RABAT -

Subj: Project for the Province of Figuig

Ref: Your letter of 1st July 1976

Mr. Director:

According to your above mentioned letter, I have the honor to give you agreement for the implementation of your program of assistance to the Province of Figuig.

Nevertheless, I think some conditions should be fulfilled according to the spirit of the contract between Catholic Relief Services and Entraide Nationale.

I think the project should be elaborated in compliance with the Self-Help projects and submitted to the approval of Entraide Nationale which will transmit it to Catholic Relief Services and USAID after visa. The commodities must go through Entraide Nationale and the reports of the project should be transmitted to Entraide Nationale after its implementation.

Please accept the assurance of my high consideration.

The Secretary of State to the
Prime Minister in charge of
Entraide Nationale and Artisanat

/s/ Abdallah Gharnit