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9. ABSTRACT

At the request of the Government of Tunisia and USAID/Tunis, a Family Health Care team and an architectural consultant went to Tunisia in June 1977 to assist with the development of a rural health services project. This report is an enlargement upon the information, ideas and project rationale developed and agreed on during the team's visit. It reflects many formal and informal meetings and working sessions with the Tunisian counterparts who will be responsible for coordinating and directing the proposed project in Siliana and Sidi Bou Zid. The scope of Family Health Care's work involved the following areas: functional program description for all facilities that are to be renovated or newly constructed with AID loan assistance; preliminary job definition of front line workers and supervisory workers; programmatic siting criteria for facilities referenced above and the initial specification of actual sites. The architectural consultant worked in two parallel areas: functional design and preliminary architectural renderings or schematics of facilities and realistic current and projected future construction cost estimates for facilities. The report includes the project and issues in overview, planning assumptions, a discussion of integrated preventive and curative health services by location of service, manpower and training, operating cost implications, and new recommendations for mobile seminar, staffing options, foreign donor coordination, regional facilities, operating costs, and vehicles. A detailed budget is included and the appendices include a bibliography, maps and population data, draft outlines for the project, equipment lists, socioeconomic data, and program design and project recommendations.

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THE FAMILY HEALTH CARE REPORT

Design Study II: Integrated Rural Health Services In Siliana and Sidi Bou Zid Provinces, Tunisia

Contract No. AID/afr-C-1138
Work Order No. 12

Family Health Care, Inc.
1011 Connecticut Avenue, N.W.
Washington, D.C. 20036

Submitted:
July 28, 1977 (English Edition)
August 11, 1977 (French Edition)

Agency for International Development
Washington, D.C. 20523

DESIGN STUDY II:

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ACKNOWLEDGEMENTS

This program proposal is the result of a mutual, collaborative process between the Tunisian Ministry of Public Health, the Agency for International Development, and, on behalf of both parties, Family Health Care, Inc. The report which follows is a product of this cooperation and reflects an agreement in principle on the part of AID to assist the Government of Tunisia toward the integration of rural health services, both preventive and curative, in the provinces of Siliana and Sidi Bou Zid.

More importantly, this report represents the culmination of a continuous programming process which started in February 1976 when FHC was invited by AID to prepare an assessment identifying issues and recommendations for project approaches in the Tunisian health sector. In November, 1976, representatives from the Ministry of Public Health participated in a "Mobile Seminar" conducted by FHC on critical issues in health services delivery in the United States and Canada. Immediately following their return to Tunisia, a FHC team arrived in Tunis to work with the Ministry in the first stage design of an integrated rural health services delivery system. Key members on both the FHC team and the Ministry team were colleagues during the "Mobile Seminar," and this association subsequently provided the basis for a harmonious field design effort.

When FHC returned to Tunis this past June to complete and refine the program proposal of February 1977, the team was again fortunate to have as active collaborators those representatives of the Ministry who had participated in the seminar and in the first stage design instrument.

Family Health Care would like to express its appreciation to His Excellency, Mssr. Mongi Kooli, Minister of Public Health, to Dr. Taoufik Nacef, Director of Preventive Medicine, and to Mr. Tahar Ben Youssef, Special Assistant to the Minister. The FHC team is especially pleased with the technical assistance and cooperation so generously extended in its behalf by Mr. Abderrahman El Gharbi, and Mr. Azzouz El Gharbi, Provincial Health Administrators in Siliana and Sidi Bou Zid provinces.

It is our hope that the processes of mutual collaboration and cooperation which have both preceded and made possible this final report will serve to facilitate the expeditious implementation of integrated rural health services in Siliana and Sidi Bou Zid provinces.

I. INTRODUCTION

I. INTRODUCTION

A. BACKGROUND AND APPROACH

Family Health Care, Inc. (FHC) visited Tunisia in February, 1976 at the request of USAID and the Ministry of Public Health, with the task of identifying issues and recommendations for a health sector program. The assessment resulting from this visit was entitled "A Review of Health Services Development in Tunisia" (March, 1976). Later in 1976, a program of rural health services for the provinces of Siliana and Sidi Bou Zid was proposed by the Ministry and discussed with AID. At a meeting of the Joint Commission in October, 1976, a formal proposal was presented to AID/Washington. As a result of these discussions, representatives of the Tunisian Ministry of Public Health visited the United States and Canada in November, 1976 to study certain aspects of the American and Canadian health care delivery systems. This Mobile Seminar was conducted by FHC. Shortly after its completion, a Family Health Care team went to Tunis in order to assist the Tunisians and USAID in the design of a rural health service program. The result of that visit was a report, developed in collaboration with Ministry of Public Health officials, entitled "A Program Proposal for Integrated Rural Health Services in Siliana and Sidi Bou Zid Provinces, Tunisia" (February 1977). This report was approved in

principle by AID/Washington and a Project Review Paper was subsequently developed.

FHC was then asked to assist the Government of Tunisia and USAID/Tunis with the further development of a rural health services project. Certain key design issues required final resolution before a Project Paper could be completed.

Specifically, FHC's scope of work required that the following areas be developed in some detail:

I. Functional program description for all facilities that are to be renovated or newly constructed with AID loan assistance;

II. Preliminary job definition of front line workers and supervisory workers in, or programmatically associated with, the facilities referenced in (I) above; and

III. Programmatic siting criteria for facilities referenced in (I) above and the initial specification of actual sites.

Concurrent with the FHC field description of future programs, staffing, training requirements, and siting criteria, an architectural consultant was engaged to work in two other areas parallel to and inseparable from FHC's charge:

IV. Functional design and preliminary architectural renderings or schematics of facilities referenced in (I) above; and

V. Realistic current and projected future construction cost estimates for facilities referenced in (I) above.

To this end, the FHC team and the architectural consultant went to Tunisia in early June, 1977. They immediately

planned an initial series of meetings with principals of the Tunisian Ministry of Public Health and with officials of USAID/Tunis. Then, a field trip to gather information and to discuss the project in detail with provincial health and administrative officials was undertaken. This was followed by a final series of meetings in Tunis during which the preliminary draft reports were developed with Ministry collaboration.

The team members assigned to this project were:

William J. Bicknell, M.D., M.P.H., Team Leader, Professional Associate of Family Health Care
Carol Carp, Medical Sociologist, FHC
Julia Terry, Research Analyst, FHC

Susan Christie-Shaw, Architectural Consultant

Dr. Bicknell participated in the review of Tunisian health services development for the USAID Mission in Tunis in March 1976. Both Dr. Bicknell and Ms. Terry participated in the Mobile Seminar conducted for Tunisian health officials in the United States and Canada in November, 1976, and in the initial development of a rural health system for the provinces of Siliana and Sidi Bou Zid in December, 1976. Because FHC had worked previously with officials of the Ministry of Public Health, close collaboration was facilitated, which obviated the requirement for lengthy, preliminary interviews during this visit.

The first members of the team arrived in Tunisia on June 2, and the entire team had arrived by June 5, as had the architectural consultant. The first few days of the visit were spent in briefings at USAID/Tunis and at the Ministry. Also, comment on FHC's report submitted in February, 1977 was elicited. During this time, the team's scope of work was submitted in French to the Ministry (see Appendix 3). Throughout these meetings, Ministry of Public Health and USAID officials, as well as Ms. Christie-Shaw, participated actively and cooperatively with the FHC team in planning the rather extensive amount of detailed work which had to be accomplished in a short period of time.

The team left for the field on June 9, accompanied by Mr. Robert Slusser (USAID/Tunis Capital Development Officer), Mr. James Keyser (AID/Washington anthropologist), and Ms. Christie-Shaw. The following day, Mr. Wassim Mahmoud (an architect from Tunis) joined the group and worked closely with both teams until their departure from Tunisia. The group was accompanied during the entire field trip by either the Provincial Health Administrator (Mr. Azzouz Gharbi in Sidi Bou Zid and Mr. Abderrahman Gharbi in Siliana), or a senior member of their staff.

During the field trip, the team visited some 38 facilities and met with numerous individuals, including the Governors and Secretaries-General of both provinces; town officials and townspeople; health administrators; dispensary supervisors; physicians; nurses and other health workers in different services and at various levels of the health system; civil engineers responsible for health facility construction; a foreign contract technical assistance doctor; and many others. A list of individuals interviewed follows on pages 8-11.

Throughout these visits and meetings in Siliana and Sidi Bou Zid, the team shared its current thinking in the different areas of project development with the individuals concerned, and their responses have had significant impact on this report.

The field trip was followed by four days of intensive, preliminary report development in Tunis, again in close collaboration with Ministry and USAID officials. The first draft was presented in English on June 14, and after detailed discussion over a two-day period, a second draft was written and completed on June 17. This paper was then translated into French and both the English and the French versions submitted to the Ministry on June 21, the day before the last team members departed. The final version was submitted jointly with the draft architectural report prepared

by Ms. Christie-Shaw. (The FHC drafts are included with this report as Appendices 4 and 5.)

The present report is an enlargement upon the information, ideas and project rationale developed and agreed on during the team's June visit to Tunisia. It is reflective of many formal and informal meetings and working sessions with those Tunisian counterparts who will be responsible for coordinating and directing the proposed project in Siliana and Sidi Bou Zid.

Family Health Care emphasizes the importance of reading this report and architect Susan Christie-Shaw's paper in conjunction with each other; they were undertaken as joint projects and each is complementary to the other.

B. LISTING OF INDIVIDUALS INTERVIEWED BY FAMILY HEALTH CARE, INC.

Dr. Hakim Abderrazak, Tunisian Physician, Bou Arada

Ms. Amara, Midwife, Maknassy

Dr. Ammar, Intern in Preventive Medicine, Siliana

Dr. Raouf Ben Ammar, Regional Health Inspector Designate, Ministry of Public Health

Mr. Hachemi Amri, Governor, Sidi Bou Zid Province

Mr. Habib Arwafi, Civil Engineer, Ministry of Equipment, Siliana

Mr. Asnawi, Hospital Supervisor, Maknassy Hospital

Mr. Habib Attia, Professor of Geography, University of Tunis

Mr. Anwar Bachbacuab, Special Assistant to Family Planning and Health Officer, USAID/Tunisia

Dr. Bahri, Director of Hospitals, Ministry of Public Health

Mr. Robert Beckman, Program Officer, USAID/Tunisia

Mr. Moncef Boussoffara, Civil Engineer, Ministry of Equipment, Sidi Bou Zid

Mr. John Burfield, Architect, IBRD, Washington

Mr. Essaid Chedly, Administrator, Maktar Hospital

Mr. Mekki Chekir, Director of Studies and Planning, Ministry of Public Health

Mr. Mezri Chekir, Director, National Office of Family Planning and Population, Tunis

Mr. Hermon S. Davis, Director, USAID/Tunisia

Mr. Dehmani, Mayor, Rohia

Ms. Zohra Derbaly, Midwife, Sidi Bou Zid

Mr. Mohamed Djebari, Nurse, Robaa

Mr. Abdelmajid Ben Djemaa, Supervisor, Dispensaries and Preventive Medicine Service, Siliana

Dr. Ahmed Ridha Farah, Director of International Cooperation, Ministry of Public Health

Mr. Whitney Foster, Resident Representative, UNDP, Tunis

Mr. Maurad Ghachem, Director of Bilateral Cooperation, National Office of Family Planning and Population, Tunis

Mr. Abderrahman El Gharbi, Provincial Health Administrator, Siliana

Mr. Azzouz El Gharbi, Provincial Health Administrator, Sidi Bou Zid

Mr. Tahar Ghedira, Architect, Division of Buildings and Equipment, Ministry of Public Health

Mr. Mongi Hermassi, Nurse, Rohia

Mr. Habib Horshani, Nursing Assistant, Bir El Haffey

Dr. Abderrahim Iraqai, Palestinian Contract Physician, Bou Arada

Mr. Hassan Jesserie, Administrator, Sidi Bou Zid Hospital

Mr. Lamine Kadri, Secretary-General, Sidi Bou Zid Province

Dr. Jamel El Kayed, Palestinian Contract Physician, Rohia

Mr. James Keyser, Anthropologist, AID/Washington

Mr. Mohamed Ben Khedder, Director of Buildings and Equipment, Ministry of Public Health

Dr. J. Kortleven, Biologist, Integrated Medicine Project of Cap Bon, Nabeul

Mr. Wassim Mahmoud, Architect, Tunis

Mr. Abdel Majid, Delegate, Rohia

Mr. Herman Marshall, Deputy Director, USAID/Tunis

Mr. Mohammed Massri, Omda, Former Deputy to General Assembly, El Mansourah (Ben Aoun)

Mr. Labidi Mouldi, High School Student, El Krib

Pr. Taoufik Nacef, Director, Division of Preventive Medicine, Ministry of Public Health

Mr. Abderrazak Rekhis, Secretary-General, Siliana Province

Mr. Ali Richi, Supervisor, Preventive Medicine Service, Nabeul

Mr. Tahar Risgi, Supplies Supervisor, Siliana

Mr. Charles Sadler, Assistant Program Officer, USAID/Tunis

Mr. Kremie Sadouk, Nurse Hygienist, Ben Aoun Dispensary

Dr. Saffour, Syrian Contract Physician, Maknassy

Mr. Sabbara Salah, Dispensaries Supervisor, Sidi Bou Zid Province

Mr. Youssef Seybi, Governor, Siliana Province

Mr. Alexander Shaw, Population and Nutrition Projects, IBRD, Washington

Mr. Robert Slusser, Capital Development Officer, USAID/Tunis

Statistician, Division of Preventive Medicine, Ministry of Public Health

Mr. Tarifa, National Institute of Statistics, Ministry of Plan

Teacher, Siliana School for Paramedics

Mr. Bechir Touati, Party Secretary, Maktar

Dr. Vande Voorde, Division of Preventive Medicine, Ministry of Public Health

Mr. Wilbur Wallace, Family Planning and Health Officer, USAID/Tunis

Mr. Aubrey Williams, Population and Nutrition Projects, IBRD, Washington

Mr. Tahar Ben Youssef, Special Assistant to the Minister, Ministry of Public Health

Dr. Samir Zoghby, Director, United States Peace Corps, Tunis

Other Persons Interviewed:

Various public health personnel in Bou Arada, Gafour, Siliana, Sidi Bou Zid, Menzel Bouzaiane, Mezzouna, Er-Rgeub, Es-Saida, El Kcham, Jelma, Maktar, Kessera, and El Mansourah.

Midwives and Obstetrical Aides in Bou Arada, Gafour, and Maktar

Preventive medicine workers in Sidi Bou Zid and Siliana

Various private citizens in Kessera, Tunis, El Mansourah (Maktar), and El Mansourah (Ben Aoun)

C. GLOSSARY OF TERMS

PERSONNEL

personnel médical	physicians
personnel para-médical	non-physician health personnel
auxiliaire de la santé publique	general term for public health worker
ouvrier*	non-skilled worker, e.g. cleaner, sometimes an assistant to a physician or other health worker
ouvrier spécialisé*	skilled worker, e.g. electrician, driver, sometimes an assistant to a physician or other health worker
agent de santé*	health worker, generally in a preventive medicine service doing primarily malaria prevention (often used interchangeably with "ouvrier")
aide hygiènist*	environmental health aide
aide sanitaire*	environmental/clinical health aide
aide soignant*	clinical health aide, usually assigned to a dispensary or salle de soins
aide soignant obstétrique*	assistant mid-wife
auxiliaire spécialisé	general term for specialized auxiliary, covering the first level of nurses, pharmacy and laboratory assistants, etc.
infirmier*	nurse
infirmier hygiènist*	nurse-hygienist, often assigned to a preventive medicine service
infirmier hospitalier*	hospital nurse
technicien sanitaire*	preventive medicine technician, usually a recycled "agent de santé"
auxiliaire supérieur	general term for senior auxiliary, referring to midwives and other health personnel with three years of specialized training following graduation from secondary school
sage-femme	mid-wife

*These terms are indicative in Tunisia of the level of education and number of years of health training, but not always indicative of the type of work being performed by the individual.

surveillant général	general supervisor, here usually referring to a provincial dispensaries supervisor
économe	administrator, as of a hospital
animatrice sociale	social/health worker (non-professional)

HEALTH FACILITIES

salle de soins	aid station or treatment room, in Tunisia referring to a locale where no physician consultation is available (can be physically identical to a dispensary)
dispensaire	dispensary, providing at least one physician consultation per week
hôpital	hospital
PMI (protection maternelle et infantile)	maternal/child health center, always located in larger towns/delegation seats
maternité	maternity, either free-standing or a bed unit attached to a PMI or hospital
centre de planning familial	family planning clinic, usually with sterilization capacity
clinique de pneumo-phtisiologie	tuberculosis clinic
service d'hygiène	preventive medicine service
centre de santé de base	health center
centre de santé de base type A	health center providing primary care, hospitalization (15 general medical, pediatric and maternity beds), and preventive medicine services, in a delegation seat
centre de santé de base type B	health center providing primary care, maternity services (8-10 beds), and preventive medicine services, serving a population of 5,000-10,000
centre de santé de base type C*	health center providing primary care and preventive medicine services, visited by a physician, and serving a population of 2,000-5,000

*FHC has chosen to distinguish between two type C centers as follows: Type C_1 would serve the upper range population (to 5,000) and be located in more accessible areas; type C_2 would serve slightly smaller population groups and be in slightly more remote areas. Final designation of sites for C_1 versus C_2 would be made during project implementation.

OTHER TERMS

gouvernorat province	political/administrative division, somewhat comparable to a state
gouverneur	governor, head of a gouvernorat or province
délégation	political/administrative division of a gouvernorat, somewhat comparable to a county
délégué	head of a delegation
secteur cheikhat	political/administrative division of a delegation, somewhat comparable to a township
ômda	head of a secteur or cheikhat
regroupement	voluntary relocation of households into settlements, where municipal, educational and health services can be more easily provided
région	region, sometimes referring to a grouping of several provinces for health administration purposes
région sanitaire	health region
régionalisation	regionalization, referring here to the plan to delegate health administration to regional health inspectors
recyclage	retraining
stage	training session or period, sometimes part of a "recyclage", can also refer to a medical internship
agglomération	population cluster
avortissement social	abortion as a family planning technique
piste	dirt road or track

II. THE PROJECT AND ISSUES IN OVERVIEW

II. THE PROJECT AND ISSUES IN OVERVIEW

The proposed program of integrated rural health services for Siliana and Sidi Bou Zid provinces will begin in the Winter of 1977/78 and continue for three calendar years. The goal of the program is to assist the Ministry of Public Health to more rapidly and effectively implement the Tunisian Government's policy of integrating preventive and curative health services (including family planning services) at the point of delivery. The project will focus on the provinces of Sidi Bou Zid and Siliana--two rural provinces in central and south central Tunisia which were established in 1973 and 1974, respectively. The creation of these two provinces was one of the steps taken by the Tunisian government in its long-term policy of targeting for development those areas of the country which are in greatest social and economic need (see Appendix 8).

The project has two major components: (1) technical assistance--a grant of approximately $750,000; (2) capital assistance--a loan of $3,000,000; and $1,000,000 in well-defined, project-related Tunisian government contributions. The reader will note in the February 1977 FHC report (pp. 78-115, attached as Appendix 6), that the proposed program was composed of five Technical Assistance Projects:

1. Service design and job restructuring;

2. Budget planning: the operating cost implications, capital investment decisions, as well as management systems and patient records;

3. Training and orientation of supervisors and managers and the orientation of key community figures;

4. Strengthening of preventive medicine internships;

5. Evaluation, design and implementation.

The Capital Assistance component of the project had two major foci: (1) rural regional hospital improvement, and (2) ambulatory facility design and construction.

The fundamental thrust of the overall program is to take existing workers, broaden their skill base in both preventive and curative health services, and then utilize these retrained workers in their new roles in new or renovated facilities. These facilities, in turn, shall be functionally designed to complement the retrained health workers in their new roles and to enhance the delivery of integrated curative and preventive "front line" services.

This report addresses aspects of Technical Assistance Projects (1) and (3) above, as well as both of the Capital Assistance Projects. The intent of this report is to respond to the unresolved issues raised in the FHC field assessment on February 1, 1977 (English edition) entitled, "A Program Proposal for Integrated Rural Health Services of Siliana and Sidi Bou Zid Provinces, Tunisia." It addresses

particularly pages 133-135 ("Major Unresolved Issues").

Those items (A-G) were subsequently incorporated in the AID Project Review Paper. They are as follows:

"A. THE EFFECT OF POLICY IMPLEMENTATION ON RURAL PHYSICIAN MANPOWER

The effect of current government policies vis-a-vis encouraging Tunisian physicians to live and work in rural areas should be reassessed. Tunisian physicians are essential to the maintenance of a quality rural health service. The unintended effect of current government policies as they impact on Tunisian physicians appears to discourage their settling in rural areas; this makes hospital-associated practice difficult, if not impossible. The successful long-term quality operation of this proposed program will be greatly enhanced by a continuing input from Tunisian physicians. Additionally, and of greater importance, the potential benefit to the government from their investment in training Tunisian physicians is not now being realized.

B. SERVICE ASSUMPTIONS

The degree of integration suggested in this proposal and the specific service assumptions made either must be agreed to, or revised and agreed to, as a necessary step prior to further development of functional facility designs.

C. CONSTRUCTION COSTS

As construction estimates vary widely, no firm projection as to the amount of construction possible can be made at this time. Particular attention must be addressed to a precise determination of construction costs in rural areas relevant to the renovation and new construction of dispensaries and health centers. (See Section IV.-B.).

D. FUNCTIONAL AND ARCHITECTURAL DESIGN

When service criteria and construction costs are respectively agreed to and determined, functional facility designs and derivative architectural drawings then need to be developed. This should take place during the next phase of program development."

"E. OPERATING COSTS

The operating cost implications of this proposed program are relatively modest. However, given the probable operating costs of the many health facilities already under construction and planned throughout the nation, there may not be sufficient resources available to provide adequate support to this program over the next five to seven years.

F. REGIONALIZATION

Is the regionalization program within the Ministry of Public Health going to be approved and implemented? What will be the actual roles and responsibilities of the regional health administrators?

G. JOB RESTRUCTURING

This proposed program is dependent upon the ability of the Ministry of Public Health to reassess the role of the existing health workers, and, to the maximum extent feasible, integrate the delivery of front-line curative and preventive health services. Even with the Ministry's willingness to undertake these tasks, are they possible to implement? For instance, can malaria workers be retrained to fit the new health worker program? More information on the selection criteria for existing health workers must be gathered and evaluated. And, some preliminary data are needed on the numbers of existing health workers which may be available for retraining."

It is FHC's judgment that at this time there are no major unresolved issues or unanswered questions regarding the proposed projects, specifically:

1. The Ministry of Public Health is serious about the policy of integrating preventive and curative services. Initial successful efforts at integration can be seen. Policymakers, health workers and consumers recognize the need and desirability of further integration and decentralization.

2. Sufficient numbers of front line workers are already employed in Siliana and Sidi Bou Zid to provide minimally adequate staffing at all facilities proposed for renovation or new construction.

3. The projected operating budgets of the Siliana and Sidi Bou Zid provinces, as estimated by FHC, are marginally sufficient to sustain the operating costs of the improved delivery system without ongoing foreign donor assistance in the next several years and will be sufficient thereafter.

4. The siting criteria are rational. Basically, they relate to siting facilities in a manner which makes them accessible to progressively smaller and more rural populations, enhancing the capacity to supply peripheral facilities. They allow for periodic supervision to the front line worker in such facilities, and on occasion provide referral of patients to higher level facilities.

5. The capital costs estimates, in the context of the Tunisian construction design process as we understand it, are sufficient to allay prior concerns regarding undefined, undefinable costs (see architect Susan Christie-Shaw's report).

6. The government's very recent adoption of Centres de Sante de Base Types A, B, and C (see this report page 29) provides a unique opportunity for USAID to contribute directly and positively to the program and facility design process (see architect Susan Christie-Shaw's report).

Family Health Care, Inc. reaffirms its recommendations which were made in the February 1977 report for all the proposed Technical Assistance and Capital Assistance Projects.

Technical Assistance Projects (3) and (4) are particularly important, as effective training of physicians in preventive medicine is central to the long-term success of this proposed project, and relevant to issue (A) quoted above. Of equal importance is the establishment and maintenance of realistic preventive medicine training, which is central to the Ministry's stated national goal of effectively integrating curative and preventive services. Projects (3) and (4) are mentioned here together because adequate management systems and patient records are a necessary substratum or underpinning for effectively planning, delivering, and evaluating integrated preventive and curative health services and, derivatively, for instructing physicians in preventive medicine.

The reader's attention is directed to the maps and tables in Appendix 2, which clearly show the existing delivery system, proposed changes and the final structure when the project is completed. The tables relate the final network of facilities to estimates of the populations to be served in each province.

For the reader unfamiliar with Tunisia and the Tunisian health sector, Table 1 from the FHC February, 1977 report is included on the following page.

TABLE I [1]

TUNISIA
SELECTED INDICATORS [2]

Borders:	North and East: Mediterranean Sea South and East: Libya South and West: Algeria
Population:	5,618,572 [3]
Population Density:	94 Persons/Square Mile
Infant Mortality Rate:	106/1,000 Live Births [4]
Annual Population Growth Rate:	2.3% (2.65% if emigration excluded)
Number of Years to Double:	30.5 (26.5 if emigration excluded)
Life Expentancy at Birth (in Years):	53.5 (Males); 54.4 (Females)
Sex Ratio (M/F):	1.03
Population Below 15 Years of Age:	43%
Population Between 15 & 64 Years of Age:	54.3%
Population 65 Years and Over:	3.7%
Population in Rural Areas:	53%
Population in Very Dispersed Rural Areas:	35%
Literacy Rate:	55% [5]
Hospital Beds:	2.42/1,000 People [4]
Physicians (1975):	1/4,553 People [4]
Physicians (Projected in 1985):	1/2,151 People [4]
GNP Per Capita (Current Prices):	$782 [6]
Health Expenditures Per Capita	$23,50 [7] (3.0% of GNP)
Annual Inflation Rate: (Averages for 1973-1976)	6.0% (Consumer Prices) [6] 10.5% (Investment Prices)
Rate of Exchange:	U.S. $1.00 = 0.43 dinars (current) [8] U.S. $1.00 = 0.42 dinars (1976)

1. Source: The FHC Report "A Program Proposal for Integrated Rural Health Services in Siliana and Sidi Bou Zid Provinces, Tunisia," February 1, 1977.
2. Unless otherwise indicated, all data are from Ve Plan de Development Economique et Social, 1977-1981, Volume 1, Les Projections Globales, Republique Tunisienne, August 1976.
3. 1976 estimated, Ministry of Public Health working documents.
4. The Family Health Care Report "A Review of Health Services Development in Tunisia," March 10, 1976.
5. U.S. Department of State. Development Assistance Plan 1975; citing a 1966 survey.
6. World Bank estimates.
7. Estimate in Chart III of Appendix A (The Family Health Care Report, op. cit.) revised to account for lower (than anticipated then) MOH 1976 budget.
8. 1976 rate of exchange of 0.42 dinars is used in this report.

III. PLANNING ASSUMPTIONS

III. PLANNING ASSUMPTIONS

A CAVEAT

The revised planning assumptions which follow are both more accurate and more refined than the initial planning assumptions made in the FHC report of February, 1977 (see pages 51-53). In the interim, these assumptions have been tested in substantial detail against existing field conditions and have benefitted from comprehensive review and modification by representatives of the Tunisian Ministry of Public Health, as well as by other relevant figures.

Despite this review process, the possibility for errors of omission and commission remains--the Tunisian rural health care delivery system is both dynamic and progressive. Therefore, we recommend that in the early stages of program implementation, the planning criteria and the derivative program proposals should again be revalidated by the Ministry of Public Health and USAID contractor technical assistance personnel.

The planning assumptions as originally outlined in the FHC February, 1977 report have been revised as follows:

1. Population - Siliana = 192,668; Sidi Bou Zid = 218,511;

2. Growth Rate - 1.5% per year net corrected for out-migration;

3. Births - 6,000 pregnancies and live births per year (all surviving through age 14);

4. Population Under 15 Years - 42%;

5. Population 15 Years and Older - 58%;

6. Household Size - 12 persons;

7. Population Distribution:

   a. Towns - 35%
   b. Regroupments - 30%
   c. Disbursed Households - 35%

8. Number of Principle Towns (Delegation Seats), Including Provincial Capitals, Per Province - 7;

9. Maximum Desired Travel Time to Point of First Health Faciltiy - 1.5 Hours;

10. Patients Always Attended by One Visitor (Relative or Friend);

11. Ambulatory visits take place in a four to five hour time frame between the hours of 8 a.m. to 2 p.m., five days a week. Clinic health workers work eight hours a day, Monday through Thursday, and half a day each, Friday and Saturday mornings. This is equivalent to an eight-hour day and a five-day week, forty-eight work days per year. Ambulatory facilities are open 52 weeks per year;

12. Substantial front-line worker job resturc-turing will take place;

13. Preventive Services - 50% delivered in household; 50% delivered in ambulatory health facilities;

14. Illness Services - 95% will be delivered in health facilities (assume 100% for facility planning purposes and 95% for program curriculum planning);

15. Facility- and community-delivered services will emanate from facilities in approximately the following proportions:

    Type A - 56%
    Type B - 2%
    Type C - 42%

16. Front-line workers whose place of assignment is in a centre de santé de base can provide 25 visits per day (facility and home visits), or 6,000 visits per year (calculated for 48 weeks per year; 6,500 visits for 52 weeks).

17. Midwives can provide 30 visits per four-hour clinic time block, 6 blocks per week or 180 visits per week, 8,640 visits per year (9,360 visits for 52 weeks).

18. Physicians can provide 60 visits per four-hour clinic block of time, 6 blocks per week, or 360 visits per week, 17,280 visits per year (18,720 visits for 52 weeks).

19. The minimum number of visits by age and type of visit, expressed as rates, is unchanged from Table 9 in the FHC report of February, 1977.

20. Assuming a 1980 population for Siliana of 207,558 and for Sidi Bou Zid of 248,326, a total ambulatory visit rate, expressed as visits/person/year, will be 2.69 (see Table 7).

21. Given the assumption that no more than 80% of the population will use the proposed delivery system, either due to choice or limited geographical accessibility, then the population served for both provinces drops to 364,707 and the visit rate per person per year rises to 3.37.

22. Initial aggregate facility and community ambulatory visit capacities for the centre de santé de base:

    Type A - 40,040 visits per year

Type B - 12,740 visits per year
Type C - 11,180 visits per year

23. Initial (minimum) staffing assumptions for centre de santé de base Types A, B, and C are shown in Table 2.

24. Centres de santé de base Type A each have 15 maternity and infirmary beds, at least two-thirds of which are multi-purpose (i.e., capable of being used for any type of admission, depending upon variations in patient load). Centres de santé de base Type B each have up to ten beds, solely for maternity use. Centres de santé de base Type C have no bed capacity.

25. The proposed delivery system is four-tiered:

a. The home, school and community
b. The health centers
   - o Types C and B, regroupments in smaller villages
   - o Type A, delegation seats
c. The rural regional centers (Siliana and Sidi Bou Zid cities), and
d. Referral hospitals in Sousse, Sfax, and Tunis.

IV. INTEGRATED PREVENTIVE AND CURATIVE HEALTH SERVICES

IV. INTEGRATED PREVENTIVE AND CURATIVE HEALTH SERVICES

The Tunisian Ministry of Public Health has adopted a policy of integrating health facilities at all levels; this directly supports the integration of preventive and curative health services. Under this policy, salles de soins, dispensaries, PMI centers, maternity centers, possibly family planning education centers (which, among other things, provide social abortions) and some smaller circumscription hospitals are to be redesignated as centres de santé de base, designated as Types A, B, and C facilities. All new facilities constructed in delegation seats and those in smaller agglomerations and regroupments will follow the program principles specified for centres de santé de base.

Efforts will be made to convert existing facilities and facility complexes to the new format by job restructuring and facility renovation. The first implementation of this Ministry plan will be in Siliana and Sidi Bou Zid, and it will be supported by the USAID project as described herein and in architect Christiehaw's report.

As the program and facility effort proposed for Siliana and Sidi Bou Zid will precede that made in other provinces, and as only provisional plans for

Type A centers now exist (with Type B and C plans still in the early stages of development), there is a great potential value for AID in fostering an interrelated program and facility development process. Foreign donors (particularly the World Bank) are considering similar projects in other provinces and, therefore, there is a real opportunity to coordinate both program and facility planning in a manner that greatly improves the Tunisian and American return on investments.

Salles de soins and dispensaries are precursors of Type C facilities; Type B centers do not exist at present; the Type A center exists in developmental or pre-prototype form at Maknassy, Gafour, and Bou Arada.

The definitions and the program of services by location of services, as shown below, build on the Ministry's plan for centres de santé de base types A, B, and C and were developed in full collaboration with Ministry staff, particularly Dr. Taoufik Nacef.

A. SERVICES BY LOCATION OF SERVICE

The quoted sections which follow are taken directly from the FHC June draft report developed in Tunisia with Ministry of Public Health staff. The proposed laboratory program as described for each type

of center was developed in consultation with Mr. Kortleven, Laboratory Director for the Tuniso-Belgian Nabeul project, and with Dr. Taoufik Nacef.

1. Community Services

The outreach services described below will be provided by workers in Types A, B, and C centers as appropriate.

"Community:

Home

Environmental education including burn and poisoning prevention; waste disposal and protection/purification of drinking water; nutrition and family planning education; identification and treatment of conjunctivitis and ringworm; maternal education re: dietary regimens appropriate for the home management of mild diarrhea; provision of family planning supplies (condoms and pills); immunizations (not routinely); identification, education and referral of pregnant women, particularly high risk mothers; malaria screening as needed; management and monitoring of chronic conditions as tuberculosis, arthritis/rheumatism, diabetes.

Commercial and Public Areas (1)

*Sampling for analysis drinking water supplies--piped and well
*Treatment of wells by the method of the jar
*Field testing for residual chlorine
Inspection and control of slaughtering points
Inspection and control of retail establishments, particularly re: stores selling perishable foods, and hotels
*Advising on the protection and improvement of existing water sources
*Advising on the transport and storage of water from the source to the point of consumption

(1) All listed services are provided by a technician sanitaire. Services indicated by an asterisk may also be provided by centres de sante de base workers on an outreach basis."

Schools

Nutrition education; case finding of pregnant women through the children in school; environmental education akin to that offered in the home; identification and treatment or referral of conditions common in school children; immunizations; management of chronic conditions such as tuberculosis and diabetes."

2. Type C Centers

The Type C center provides integrated (curative and preventive) ambulatory services and is intended to serve a population of from 2,000 to 5,000 people. Minimum staff consists of one front-line worker.

> "The Type C center is proposed in two sizes. A smaller size is fully suitable for intermittant physician visits but planned to initially operate without physician services or midwife services. This first level of facility is staffed by an entry level integrated preventive and curative worker (e.g., recycled malaria worker or aide soignant recycled or aide sanitaire recycled). The only differences between small and large Type C centers are physical size, population served and the presence of itinerant physician services."

Siting criteria for the Type C centers are as follows:

1. In an existing or proposed regroupment;
2. In a village or other agglomeration;
3. In an area which is reasonably approximate to an existing or planned primary school;
4. In places where year-round water supply can be assured through some mix of wells, rain water collection, and haulage by tanker in the dry season;

5. Within the catchment area of a Type A or B center and thus accessible by road or track most of the year for purposes of supervision and resupply; and

6. In areas serving a population of 2,500.

Services provided from the Type C center include:

1. School health
2. Home health
3. Commercial and public area
4. Provision of routine and continuing care as prescribed by a physician--distribution of oral medications, injections and dressings
5. Definitive treatment of minor trauma
6. Stabilization and referral of major trauma (trauma should be read to include burns)
7. Identification and initial treatment of common skin disorders and minor illnesses
8. Identification, temporizing treatment, consultation or referral, as appropriate, of serious illnesses (acute pulmonary infection with high fever, fever and stiff neck, moderate and severe diarrhea)
9. Provision of selected prenatal services (list to be expanded in the case of female provider). Services suggested do not require physical contact/exam of the pregnant woman beyond cursory overall visual inspection and palpation of the ankles for edema, risk assessment by history, determination of hemoglobin, provision of prophylactic oral iron, nutrition education.
10. Provision of family planning information and supplies (pills and condoms) with referral IUDs, sterilizations and social abortions.
11. Laboratory services are limited to hemoglogin determination.*"

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* Hemoglogins will be done at the Regional Hospital laboratory using the bench type of spectrophotometer--also used for several other procedures. Hemoglobins in the centre de sante de base will be done by a method such as the method of Lovibond (described in Maurice King's A Medical Laboratory for Developing Countries) (see Bibliography #19).

3. Type B Center

The Type B center is intended for larger regroupments and areas where population density warrants, and is generally located on all-weather roads. The center is fundamentally an expansion of the Type C center described above (an integrated ambulatory care facility) supplemented by up to 10 maternity beds and a very minimum laboratory capacity. Minimum staff includes one midwife and one integrated front line worker and the center is to be visited by a physician at least one-half day per week. The population served is between 5,000 and 10,000 people.

"Basic Health Center (Centre de sante de base):

Type B

Includes all Type C services and, in addition, a full range of prenatal, normal delivery, postnatal, and family planning services that fall within the capacity of the sage-femme. Laboratory services limited to non-microscopic urinalysis of protein and sugar and determination of hemoglobin by method as in Type C centers. Includes 5 to 10 maternity beds."

4. Type A Center

The Type A center is situated in a delegation seat and serves a population of 10,000 or more. This center provides basic integrated preventive and curative services and some referral services--maternity services and inpatient infirmary-type services in the areas of pediatrics and medicine. Such

a center is staffed by at least one physician and one midwife and provides basic laboratory services, excluding bacteriology. The bed compliment will not exceed 15, of which up to 10 beds are for maternity, 5 for pediatrics and adult medicine, and 5 to be used as "swing" beds for maternity, pediatric, or adult services as needed.

"Basic Health Center (Centre de santé de base):

Type A

All Type B services plus 5 to 10 general medical/ pediatric beds for the definitive treatment of non-surgical, acute illnesses requiring short-term inpatient care; casting of simple fractures; minor surgery that can be accomplished on an outpatient basis under local anaesthesia. Lab services include complete urinalysis including microscopic, white blood count and differential, blood urea and nitrogen, blood glucose, hematocrit, hemoglobin, erythrocyte sedimentation rate, collection of sputum specimens for acid fast staining and culture. It is recommended that space be provided now for later expansion of laboratory functions and eventual installation of radiography or radioscopy."

5. Equipment, Service Capacity, and Staffing Patterns

1. The equipment lists for Types A, B, and C centers respectively are shown in Appendix 9. Initial (minimal) and future (more desirable) staffing patterns for each type of center follow in Table 2.

2. The projected annual ambulatory capacity of retrained front-line workers, midwives, and physicians is shown in Table 3.

3. Table 4 shows the projected annual visit capacity of centres de santé de base Types A, B, and C, as well as the derivation of the projected capacity.

4. The location of existing facilities, proposed new construction and renovation, and the final system by type of facility and capacity are summarized in Tables 5 and 6.

5. The projected initial ambulatory capacity of the restructured delivery system is shown in Table 7.

6. The geographic distribution of centers and their estimated relation to population is shown in Appendix 2.

TABLE 2

STAFFING PATTERN

TYPE A CENTER	INITIAL	FUTURE
Physician (on-site and also doing Type B and C visits)	1	2-3
Midwife (on-site and also doing Type C visits)	1	2-3
Front-Line Workers	4	6-8
Clerk	1	1
Lab Technician[1]	1/2	1
X-Ray Technician[1]	1/2	1
Pharmacy	1	1
Custodian	1	1
Cook	1	1
Cook Helper	-	1
Econome	-	1
Driver	1	2
	12	20-24

1. One technician could be trained to do both functions.

TABLE 2 (Continued)

STAFFING PATTERN

TYPE B CENTER	INITIAL	FUTURE
Front-Line Worker	1	1-2
Physician[1]	2 blocks/week	2-4 blocks/week
Midwife[1]	3 blocks/week	5 blocks/week
Midwife Assistant	1	1
Maintenance/Cleaning	1	1
Cook	1/2	1/2
TYPE C_1 CENTER (Large)		
Front-Line Worker	1	1-2
Physician	1 block/week	1-3 blocks/week
Midwife	1 block/week	2-3 blocks/week
TYPE C_2 CENTER (Small)		
Front Line Worker	1	1-2
Physician	-	1-2 blocks/week
Midwife	-	1-2 blocks/week

1. See planning assumptions concerning the definition of "blocks" on page 24 and Table 3 following. Essentially, one block is equivalent to a facility visit (1/2 day for physicians and 1 day for midwives).

TABLE 3

HEALTH WORKER PRODUCTIVITY PROJECTIONS

Front-Line Worker

25 visits/day[1] x 5 days[2] x 48 weeks = 6,000 visits/year

Midwife

30 visits/4-hour block x 6 blocks/week x 48 weeks = 8,640 visits/year

Physician

60 visits[3]/4-hour block x 6 blocks/week x 48 weeks = 17,280 visits/year

1. Includes visits conducted in a centre de santé de base and in the community.
2. Four full days, plus two 1/2 days.
3. Substantially higher than the United States visit rate, but substantially lower than many current visit rates, which may approach 40 visits/hour. (NOTE: It is important that physician time is available in clinic settings for supervision of front-line workers.)

TABLE 4

PROJECTED INITIAL AMBULATORY VISIT CAPACITY
OF CENTRES DE SANTE DE BASE
TYPES A, B, AND C

TYPE A

4 front-line workers x 52 weeks[1] x 125 visits/week	=	26,000 visits/year
3 physician blocks/week x 52 weeks[1] x 60 visits/block	=	9,360 visits/year
3 midwife blocks/week x 52 weeks[1] x 30 visits/block	=	4,680 visits/year
		40,040 visits/year

TYPE B

1 front-line worker x 52 weeks[1] x 125 visits/week	=	6,500 visits/year
1 physician block/week x 52 weeks[1] x 60 visits/block	=	3,120 visits/year
2 midwife blocks/week x 52 weeks[1] x 30 visits/block	=	3,120 visits/year
		12,740 visits/year

TYPE C

1 front-line worker x 52 weeks[1] x 125 visits/week	=	6,500 visits/year
1 physician block/week x 52 weeks[1] x 60 visits/block	=	3,120 visits/year
1 midwife block/week x 52 weeks[1] x 30 visits/block	=	1,560 visits/year
		11,180 visits/year

1. Assuming coverage arrangements (and overtime) allow year-round (52 week) staffing and operation.

TABLE 5

SUMMARY OF EXISTING, PROPOSED, AND FINAL SERVICE NETWORK SILIANA

EXISTING

Delegation	Salle de Soins	Dispensary	Maternity	PMI	Hospital
El Krib		4			
Gafour	1	5		1	1
Bou Arada	2	1	1	1	1
Siliana		5		1	1
Robaa		2			
Maktar	5	2			1
Rohia	3	1			
	11	20	1	3	4

PROPOSED

Delegation	NEW / RENOVATED Type C	Type B	NEW / RENOVATED Type A
El Krib	1 / 1		1 /
Gafour			/ 1
Bou Arada	/ 2		/ 1
Siliana	1 / 1		/ 1
Robaa		1	
Maktar	1 / 1		/ 1
Rohia	3 / 1		1 /
	6 / 6	1	2 / 4

UNALTERED EXISTING TYPE C CENTERS[1] AFTER COMPLETION OF THE PROJECT, BY DELEGATION

El Krib	2
Gafour	4
Bou Arada	2
Siliana	3
Robaa	1
Maktar	3
Rohia	1
Total	17

FINAL NETWORK

Delegation	Type C	Type B	Type A
El Krib	4		1
Gafour	4		1
Bou Arada	4		1
Siliana	5		1
Robaa	1	1	
Maktar	5		1
Rohia	5		1
	28	1	6

TABLE 6

SUMMARY OF EXISTING, PROPOSED, AND FINAL SERVICE NETWORK SIDI BOU ZID

EXISTING

Delegation	Other[1]	Salle de Soins	Dispensary	Maternity	PMI	Hospital
Jelma			8			
Sidi Bou Zid	2		5	1	1	1
Ouled Haffouz			3			
Er-Regueb			4		1	
Si. Ali Ben Aoun			6		2	
Maknassy			4	1	1	1
Mezzouna			5			
	2	0	35	2	5	2

PROPOSED

Delegation	NEW / RENOVATED Type C	Type B	NEW / RENOVATED Type A
Jelma	/ 1		1 /
Sidi Bou Zid	2 / 1		/ 1
Ouled Haffouz	1 / 1		1 /
Er-Regueb	2 /		/ 1
Si. Ali Ben Aoun	2 /		/ 1
Maknassy	2 / 2	1	/ 1
Mezzouna	/ 3		1 /
	9 / 8	1	3 / 4

UNALTERED EXISTING TYPE C CENTERS[2] AFTER COMPLETION OF THE PROJECT, BY DELEGATION

Jelma	6
Sidi Bou Zid	3
Ouled Haffouz	1
Er-Regueb	2
Si. Ali Ben Aoun	3
Maknassy	0
Mezzouna	1
Total	17

FINAL NETWORK

Delegation	Type C	Type B	Type A
Jelma	7		1
Sidi Bou Zid	6		1
Ouled Haffouz	3		1
Er-Regueb	4		1
Si. Ali Ben Aoun	5		1
Maknassy	4	1	1
Mezzouna	4		1
	33	1	7

1. Sidi Bou Zid Regional Hospital includes a free-standing tuberculosis clinic and a separate family planning center.
2. Currently referred to as either dispensaries or salles de soins.

TABLE 7

AMBULATORY CAPACITY SUMMARY
AFTER PROJECT COMPLETION

SILIANA

Type A[1]		Type B[1]		Type C[1]
6 x 40,040 visits/year	+	1 x 12,740 visits/year	+	28 x 11,180 visits/year
		equals		
240,240	+	12,740	+	313,040
		equals		
		566,020 visits/province/year		

$$\frac{566{,}020 \text{ visits}}{207{,}558 \text{ persons}^{2}} = 2.73 \text{ visits/person/year}^{3}$$

or, if only 80% of the population is served, 2.73/.8 = 3.41 visits/person/year

SIDI BOU ZID

Type A[1]		Type B[1]		Type C[1]
7 x 40,040 visits/year	+	1 x 12,740 visits/year	+	33 x 11,180 visits/year
		equals		
280,280	+	12,740	+	368,940
		equals		
		661,960 visits/province/year		

$$\frac{661{,}960 \text{ visits}}{248{,}326 \text{ persons}^{4}} = 2.67 \text{ visits/person/year}^{3}$$

or, if only 80% of the population is served, 2.67/.8 = 3.34 visits/person/year

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1. See Table 4 for derivation of projected initial visit capacity.
2. Based on 1975 population of 192,668 with a net growth rate of 1.5% per year for five years.
3. Please refer to current estimated capacity of 1.39 and 1.38 visits per person per year on page 44 of the FHC February report.
4. Based on 1975 population of 230,511 with a net growth rate (corrected for out-migration) of 1.5% per year for five years.

6. The Rural Regional Hospitals

The program proposed for the Siliana and Sidi Bou Zid Regional Hospitals in the February 1977 FHC report should be modified to reflect the progress that has taken place in facility and program improvement during the last five months. Both facilities now have X-ray apparatuses on-site and these are ready for installation.

The provision for standby electric generating capacity, given the requirements for U.S. manufactured equipment and the increasing reliability of rural power, should no longer be considered a priority. However, other needed improvements at both hospitals still remain to be accomplished.

In the context of this discussion, it should be noted that although there is a desire for completely new hospital facilities in Siliana and Sidi Bou Zid, there are no plans or budget allocations for such facilities in the upcoming five-year period. The new five-year plan, as currently developed, proposes no construction of totally new facilities, only the completion of most (about 85%) of projects begun in the previous plan period, and a limited number of additions to existing facilities. Thus, it is likely that the existing Siliana and Sidi Bou Zid facilities will be delivery sites well into the 1980s. Each site is comprised of multiple buildings. A careful analysis of design,

function, and cost-effective renovation alternatives needs to be undertaken for each site. In the team's judgment, with the full concurrence of architect Christie-Shaw, significant efficiency improvements in the provision of all services at Siliana and Sidi Bou Zid could be achieved at relatively low cost through the combination of architectural and health services analysis and planning. This could be accomplished early in the project by a team composed of the Provincial Health Administrator from Siliana and Sidi Bou Zid, Ministry of Public Health and private Tunisian architects, and with concentrated input from on-site and intermittent (architectural) technical assistance staff. It would include a functional analysis and long-range plan directed toward bringing ambulatory capacity and the integration of curative and preventive services to the level found in newly constructed Type A centers.* This is essential as the Siliana and Sidi Bou Zid sites will be the primary locales for retraining health personnel. Training sites should functionally, if not physically, approximate ultimate service sites. A rational ambulatory care facility improvement plan will consider all the facilities at each

* Such a process would include, but go far beyond, considering the appropriate location and layout of X-ray, training and laboratory space, and space for a large sterilizer in a central sterile supply area (see Appendix 7 for Regional Hospital Equipment List).

site--inpatient, outpatient, and support. Thus, a plan for the functional improvement of inpatient and support services space can and should be developed simultaneously with an ambulatory care improvement plan.

> "It is strongly recommended that in addition to the services mentioned below (the services listed are limited to those that this project will directly support in whole or in part) all services and facilities at the Siliana and particularly the Sidi Bou Zid hospital complexes be analyzed as to the appropriateness of the location of services from the point of view of patient convenience, patient management and provider efficiency.
>
> The rural regional hospital includes a capacity for all Type C services plus radiography, and an expanded laboratory to include transaminase; blood banking, typing, and cross-matching; stool, blood and cerebro-spinal fluid cultures; gram and acid fast stain and analysis; specimen collection and innoculation of media but not analysis of cultures for acid fast bacteria (growth and analysis suggested for Tunis); culture media preparation; stool examinations for parasites; bacteriological analysis of water (ice cream and milk may be easily added); serological tests for syphilis and typhoid; reading malaria smears; microscopic examination of hair for fungal infections."

(A note in passing: Library materials for regional hospitals, either located centrally in the Division of Preventive Medicine, Ministry of Public Health, or in the provinces, need not be exclusively in French. Technical English is more and more widely read, particularly by physicians.)

TABLE

EXISTING & PROPOSED BEDS: SILIANA AND SIDI BOU ZID PROVINCES

	EXISTING BEDS			BEDS PLANNED OR UNDER CONSTRUCTION			BEDS PROPOSED UNDER USAID PROJECT			TOTAL
	PEDIATRIC + GENERAL MED. BEDS	MATER-NITY BEDS	TOTAL BEDS	MATER-NITY BEDS	SOCIAL ABORTION BEDS	TOTAL BEDS	PEDIATRIC + GENERAL MED. BEDS	MATER-NITY BEDS	TOTAL BEDS	
SILIANA PROVINCE:										
Siliana	29	6	35	-	12	12	-	-	-	47
Bou Arada	6	6	12	-	-	-	-	-	-	12
Gafour	30	6	36	-	-	-	-	-	-	36
El Krib	-	-	-	-	-	-	10	5	15	15
Robaa	-	-	-	-	-	-	-	10	10	10
Maktar	34	6	40	-	-	-	-	-	-	40
Rohia	-	-	-	-	-	-	10	5	15	15
TOTAL: SILIANA	99	24	123	-	12	12	20	20	40	175
SIDI BOU ZID PROVINCE:										
Sidi Bou Zid	39	10	49	-	12	12	-	-	-	61
Jelma	-	-	-	-	-	-	10	5	15	15
Ouled Haffouz	-	-	-	-	-	-	10	5	15	15
Er-Regueb	-	-	-	-	-	-	10	5	15	15
Si. Ali Ben Aoun	-	-	-	-	-	-	10	5	15	15
Maknassy	9	3[1]	12	5	-	5	-	-	-	17
Mezzouna	-	-	-	-	-	-	10	5	15	15
Menzel Bouzaiane	-	-	-	-	-	-	-	10	10	10
TOTAL: SIDI BOU ZID	48	13	61	5	12	17	50	35	85	163
TOTAL BOTH PROVINCES	147	37	184	5	24	29	70	55	125	338[2]

NOTES:

1. It is planned that the existing maternity beds in Maknassy will be converted to pediatric and general medicine beds
2. For each province, after all current and proposed construction is completed, the hospital, infirmary and maternity bed supply will remai· inadequate to meet minimum population needs.

TABLE 9[1]

HOSPITAL BED UTILIZATION AND PROJECTED TOTAL BED NEED: 1976
SILIANA AND SIDI BOU ZID

FACTORS	PROVINCE		
	SILIANA	SIDI BOU ZID	TOTAL
Actual:			
Population[2]	192,668	218,511	411,179
Beds[3]	135	78	213
Patient Days/Person/Year[4,5]	.08	.04	
Percent Occupancy[6]	47.3	45.4	
Projected:			
1985 Population[7]	223,600	253,600	477,200
Beds Required @ 90% Occupancy and .5 Days/Person/Year Utilization[8,9,10]	340	386	726
Total Beds at Completion of Project[11]	175	163	338
Probable Deficit:	340 - 175 = 165	386 - 163 = 223	388

NOTES:

1. Adapted from Table 12, FHC Report, February, 1977.
2. From Ministry of Health working documents.
3. Including social abortion and maternity beds now under construction (see Table 8).
4. Based on first and second trimester Ministry of Health data for 1976 extrapolated to full year. First to second trimester variation is +6% for Siliana and -3% for Sidi Bou Zid. Countrywide (i.e., all provinces) variation is +1%. Excludes beds under construction and some maternity beds, and excludes current out-of-area utilization.
5. Excludes out-of-province hospitalization which is not known. Even if current rates are doubled or tripled by out-of-province use (highly unlikely - more reasonable would be +10-50%), current low hospitalization rates probably reflect a mix of inadequate primary care capacity (case finding and referral), access and transportation deficiency as well as qualitative deficiencies perceived by potential patients in the rural hospitals.
6. Average for first and second trimesters 1976. Excludes some maternity beds.
7. 1.5% net population growth per year for each province.
8. These are very rigorous assumptions. 85% occupancy is not unreasonable, in which case bed need projections for siliana are 505 and Sidi Bou Zid are 572. At 90% occupancy each, .1 day/person/year equals .3 beds for each 1,000 persons. Moving from .5 to .7 days per person per year for both provinces in 1985 at 90% occupancy results in an additional bed need of 145 beds or a total projected need of 871 beds.
9. Excludes out-of-area hospitalization. In fact, needed and appropriate tertiary (specialized) referrals should probably account for an additional .1-.2 days/person/year of hospitalization which will not be reflected as beds needed in these provinces.
10. Formula: $\frac{\text{Beds} \times 365 \times \text{Percent Occupancy}}{\text{Population}}$ = Patient days/person/year
11. From Table 8.

B. AMBULATORY CARE AND HOSPITAL, INFIRMARY, AND MATERNITY BEDS

A summary of existing and proposed beds in Siliana and Sidi Bou Zid provinces is presented in Table 8. Table 9 projects a minimum figure for beds required in 1985. The assumptions for preparing the bed projection are rigorous: 90% occupancy (very difficult to achieve in rural areas and areas where beds will be available generally only in small units--it is easier to achieve a 90% occupancy in one 300-bed hospital than it is in 10 30-bed hospitals). The utilization rate assumed is one-half a day per person per year. This is a very low utilization rate--lower than that achieved in most U.S. prepaid group practices. Such a rate assumes short lengths of stay, maximum care on an ambulatory basis, some out-of-area hospitalization and some unmet need.

A question remains. How can more beds be needed, or why should infirmary and maternity beds be added now if occupancy rates in the few existing beds are so low? Utilization is low because of:

1. Inadequately developed primary care services; and
2. Inadequately staffed and equipped hospitals in both provinces.

Inadequately developed primary care services constitutes an unusual but valid explanation of low utilization. It is true that good quality, accessible primary care services can reduce needless hospitalization where there is

inappropriately high utilization. However, where primary care centers are deficient and in some cases absent, the introduction of acceptable and accessible primary care, coupled with a modest opportunity to refer patients to infirmary and maternity beds, will result in an appropriate increase in bed use. The reason is straightforward: illnesses and conditions that are best treated in hospital or infirmary settings will be discovered and referred on a more timely basis. This is a lasting effect and more important than any initial increase associated with the introduction of primary care services that uncovers a backlog of unmet need in the population.

The Siliana and Sidi Bou Zid projects propose a very substantial increase in primary care capacity in order to support the non-physician front-line workers and to respond to the legitimate needs of the population. Ambulatory care centers with infirmary and maternity beds (Type A) are proposed for each delegation seat.* In determining what a Type A center should look like, one must ask at least two questions:

1. What does the population in the area legitimately need?

2. What are the minimum facilities and programs that will attribute to attracting and maintaining a functional physician in a rural delegation seat?

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* Except Robaa where proximity to Siliana allows substisution of a Type B center.

Such an ambulatory care facility should be well supplied with drugs, have a modest diagnostic capacity, a place for the eventual installation of a simple X-ray apparatus, adequate space to allow relatively high patient volume without creating an environment that is unacceptable to either provider or patient, and should include a small number of beds for two purposes:

1. Maternity (10)
2. Pediatrics and Medicine (5-10)

The maximum bed capacity proposed at any Type A center is 15--with five or more maternity beds being available as needed for pediatric or general medical use. At the present time, in the areas that the Type A centers will be serving, 90-100 percent of deliveries take place at home unattended by any trained personnel. Certainly a number of deliveries can safely take place at home. However, there is no question that some percentage of deliveries, particularly those where there is an identifiable high risk for either mother or child, are best accomplished by a trained midwife in an inpatient setting. (It should be noted that Tunisian Government policy goes far beyond this modest goal: it seeks to make trained midwives available for attendance at births in formal maternity settings throughout the country.)

The somewhat random nature of deliveries and the very small total number of infirmary/maternity beds proposed for

each facility demands that, for efficient utilization, all beds be available for more than one purpose. The principal purpose of the pediatric and medical beds is short hospitalization for relatively common illneses which cannot be treated on an ambulatory basis and for which referral is neither available nor needed, for instance: moderate and severe diarrhea in infants and young children; certain pneumonias; overnight observation of a person with a recently casted extremity who lives in a distant village; and the inadequately controlled diabetic (reportedly a very common illness in Tunisia).

One can be certain that if ambulatory care services improve and Type A infirmary services are satisfactory to patients, there will be high (and needed) utilization of all existing and proposed beds. It is important that minimum adequate staffing and diagnostic support be available; otherwise, potential patients will quickly realize that the services are little better than what they can receive at home and, depending on motivation and means, they will either stay at home or travel to the provincial capital or beyond.

Thus, FHC concludes that the additional infirmary and maternity capacity proposed (125 in total) is necessary. After this capacity is added, a substantial unmet need for hospital beds will still exist--about 388 (see Table 9). The 1985 projected bed need deficit is 726 less 338 or 388.

After an integrated rural service is in place, actual need can be better determined. National planning for a new or substantially expanded capacity in Siliana and Sidi Bou Zid cities (for construction in the early/mid 1980s) can realistically begin. FHC estimates each regional hospital will ultimately require about 150 to 175 total beds, including surgical beds.

C. VEHICLES

Vehicles have two principal uses in the proposed program:

1. The transport of personnel; and
2. The transport of patients.

The transport of personnel includes taking front-line workers and members of mobile health teams to their place of work, transporting supervisors (surveillants généraux, physicians, économes, and in some cases, midwives and environmental health technicians with supervisorial functions), and transporting supplies and equipment. The ambulance function is traditional. However, the most important function for vehicles is the delivery of supervisorial staff and supplies to the periphery of the service delivery network, e.g., to the Type C centers. These are often located in more remote rural areas on dirt roads or tracks that from time to time become impassable to conventional vehicles. Four-wheel-drive vehicles of at least six to eight passenger capacity are needed.

Ultimately each delegation seat should have two vehicles: one for staff transport and to be used in an emergency for patient transport, and the other devoted primarily to patient transport, and to serve as a backup for staff transport. Initially, one functioning dual-purpose vehicle for each delegation site is sufficient. At present Siliana has two vehicles in good condition and three in very poor condition. Sidi Bou Zid has three vehicles in good condition and one in poor (but acceptable) condition at Er-Regueb. Therefore, additional vehicles with spare parts are required. The vehicles provided should be equivalent to a long-wheel-base Landrover (International Harvester Travelall or equivalent U.S. product). Vehicles are recommended as follows:

Siliana Province:	Bou Arada	1
	Gafour	1
	Robaa	1
Sidi Bou Zid Province:	All delegation seats except Er-Regueb and the City of Sidi Bou Zid	5
TOTAL ADDITIONAL VEHICLES REQUIRED:		8

The cost for vehicles with spares, delivered in Tunisia, is estimated at $20,000 per vehicle x 8 = $160,000.

V. MANPOWER AND TRAINING

V. MANPOWER AND TRAINING

The training program will be field-based; that is, training of workers will take place in the provinces where they live and work. Curriculum development and training will be carried out by the Ministry of Public Health staff working together with U.S. contractor technical assistance personnel. Wherever possible, regional physicians, *surveillants généraux*, and as appropriate, other health personnel (e.g., *techniciens sanitaires*, midwives) should be the instructors in both classroom and practical (clinic and community) settings.

Instruction may reasonably take place in three phases:

1. Periodic, short (1-3 week) *stages* for the development of new or augmentation/refreshment of old skills;
2. Reinforcement and continuing education through supervision on the job;
3. Periodic (every 1 to 2 years) updating after basic retraining is completed, through participation in a *stage* lasting 2 to 4 weeks.

Item (1) above suggests that 1 to 3 week *stages* be developed for between 5 and 15 workers at a time. Each *stage* will be limited by the availability of either community sites or patients for practical training, particularly where the training is of a clinical or personal preventive nature. This is a most important factor to

consider in the design of the training program; it has been one of the problem factors in the Siliana school for paramedical personnel. (Note: The existing Siliana training site could serve as an excellent core facility for the proposed recyclage in Siliana.)

Over the course of three years, it should be possible for all eligible aides soignants, aides hygiènistes, service d'hygiène personnel and, as needed, midwives, assistant midwives, and techniciens sanitaires, to pass through sufficient retraining stages to reach the skill levels outlined in Table 10.

In the first 12 to 18 months of the project, it is most important that personnel who will be involved in the supervision of retrained workers, including physicians, participate in a structured training experience. This should expose supervisors to the goals of the overall project, the new skill capacities of the retrained front-line workers, their own modified roles and responsibilities vis-a-vis the supervision of these workers and, finally, the vital part they must play if the full potential of the front-line worker is to be realized. The support and reinforcement, through ongoing supervision, of the front-line workers will be a important element of this project.

Finally, after an individual completes all steps or stages in formal retraining, and has worked under appropriate

supervision for one to two years in a centre de santé de base, he or she should be offered continuing education or a refresher stage lasting two to four weeks. The refresher stage should be repeated every one to two years.

Newly assigned workers will gradually enter the provinces and their skills will have to be upgraded. Over time, however, particularly if the program is viewed as successful, the modification of existing curricula for new workers should take place in training programs throughout Tunisia. FHC recognizes that influencing the present formal educational structure and introducing curriculum change is a slow process. Thus, the need for a continued recyclage field capacity can be anticipated to extend beyond the life of this project. Therefore, it is particularly important that training methods and personnel make maximum use of permanent Ministry of Public Health staff, assisted by contractor technical assistance personnel, rather than depend upon contractor personnel for the primary teaching role.*

There are five general categories of health workers who must be considered for targeted retraining or continuing education if the successful integration of preventive and curative services is to take place:

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* The coordination of training efforts with the Tunisio-Belgian project in Nabeul and the UNDP training of trainers project is strongly encouraged--see Administrative Structure Recommendations (Chapter VI) and Foreign Donor Coordination (Appendix 9).

1. Non-physician, predominantly clinical workers, now staffing salles de soins and dispensaries (e.g., aides soignants and aides sanitaires);

2. Service d'hygiène personnel;

3. Midwives and aides soignantes obstétriques;

4. Environmental health technicians (techniciens sanitaires); and

5. Supervisorial personnel at the provincial and delegation levels (e.g., physicians, économes, surveillants généraux, etc.).

Prior to beginning a training program, FHC recommends that the technical assistance personnel, in conjunction with provincial and central Ministry of Public Health staff, complete each step suggested in Appendix 6 (from FHC February, 1977 report).

Table 10 indicates the activities that workers in categories 1, 2, and 3 typically perform at present. It does not indicate skills that may have been taught but are not generally used. This table also illustrates the goals of the recyclage program for workers in categories 1, 2, 3, and 4. The current activity assessment of existing workers is a judgment of the FHC team. The goals of recyclage have been reviewed with, modified and agreed to, by Dr. Taoufik Nacef, Director of Preventive Medicine, Ministry of Public Health.

The intent of the proposed recyclage is to improve the efficiency and relevance of the rural delivery system.

TABLE 10

CURRENT AND PROPOSED SKILLS:
INTEGRATED FRONT-LINE HEALTH WORKERS

SKILLS	CURRENT SKILLS WORKER CATEGORY			PROPOSED SKILLS WORKER CATEGORY		
	1	2	3	1&2	3	4
Family Planning:						
Pills			x	+	+	
Condoms			x	+	+	
IUDs			x		+	
Social Abortions					+?	
Nutrition Education:						
Adults			x	+	+	+
Children			x	+	+	
Pregnant Women, Mothers			x	+	+	
Use and Distribution of SAHA and/or Instruction in the Preparation and Use of Other Weaning Foods				+	+	
Immunizations:						
Routine (e.g., DPT)	x	(x)*	x	+	+	+
Episodic (e.g., Rabies)	x		x	+	+	
Prenatal Care:						
Casefinding				+	+	
Initial Risk Assessment			x	+	+	
Education			x	+	+	
Management (Minimum 3 Prenatal Visits)						
- Interview & Observe			x	+	+	
- Lab				+	+	
- Physical Exam			x		+	
Labor and Delivery:			x		+	
Postnatal/Child:						
Acute Post-Birth Care (Airway, Etc.)			x		+	
Post-Birth Preventive Treatment & Exam (Eyes and Hips)			(x)		+	
Postnatal/Mother:						
Family Planning						
- Advice/Education			x	+	+	
- Supplies			x	+	+	
- IUD Insertion			x		+	
Child Care Education						
- Breast feeding			x	+	+	
- Hygiene and Cleanliness			x	+	+	
- Treatment of Mild Diarrhea			x	+	+	
Clinical Care:						
Diagnosis and Emergency Treatment/Referral of Diarrhea						
- Mild	x		(x)	+	+	
- Moderate				+	+	
- Severe				+	+	

* () indicates that some workers do these procedures, some do not.

TABLE 10 (Continued)

SKILLS	CURRENT SKILLS WORKER CATEGORY			PROPOSED SKILLS WORKER CATEGORY		
	1	2	3	1&2	3	4
Clinical Care (Continued):						
Common Skin Disorders	(x)		(x)	+	+	
Conjunctivitis	(x)			+	+	
Otitis Media				+	+	
Sympton Recognition & Emergency Treatment						
- High Fever with Chest Findings	(x)			+	+	
- High Fever with Stiff Neck	(x)			+	+	
- High Fever with Diarrhea	(x)			+	+	
Anemia Identification & Prophylaxis				+	+	
Treatment of Visible Stool Parasites				+	+	
Trauma - Minor (Abrasions, lacerations and burns--first and some second)	x			+	+	
Trauma - Major (Maintain airway; stabilize fractures; transport of patient; identification, temporizing treatment and referral of some second and all third degree burns)				+	+	
Common Gynegologic Disorders			(x)		+	
Poisoning						
- Identification and Referral				+	+	
- Lavage				+?	+?	
Identification of High Risk Infants and Children:			x	+	+	+
Treatment Through Education of Family			x	+	+	+
Treatment Through Food Supplement				+	+	
Referral				+		+
Environmental Education: Water, Poisoning, Burns				+	+	+
Malaria Screening:						
Active		x		+	+	
Passive	(x)	x		+		+
Water Supply:						
Wells: Physical assessment, testing & recommending improvements		(x)		+		+
Home: Transport, storage & purification		(x)		+		+
Piped: Testing		(x)		+		+
Inspection of Establishments:						
Restaurants				+		+
Slaughtering Points						+
Butcher Shops						+
Hotels				+		+
Factories & the Work Place:						+?
Dog Control:						
Owner Education				+		+
Eradication						+
Immunizations						+

* () Indicates that some workers do these procedures, some do not.

TABLE 10 (Continued)

SKILLS	CURRENT SKILLS WORKER CATEGORY 1	2	3	PROPOSED SKILLS WORKER CATEGORY 1&2	3	4
Miscellaneous Skills:						
Drawing Blood						
- Finger Stick	(x)	x	(x)	+	+	+
- Venapuncture	(x)		(x)	+	+	
Specimen Collection: Acid Fast Material	(x)			+	+	
Intravenous Infusions					+	
Clysis				+	+	
Collecting Stools for Culture or Microscopic Exam	(x)					

* () indicates that some workers do these procedures, some do not.

NOTES:

1. Administrative skills (e.g., recordkeeping, clinic management and equipment maintenance) need to be, as appropriate, included in the skill goals list and formally addressed in the training programs.
2. The proposed skills for workers in Categories 1 and 2 assume that these workers will remain predominantly male. Therefore, common gynecologic disorders are excluded from the proposed skill list for such workers. Should, as would be desirable, women become available for this role, then some revision in the skill list would be appropriate.

Workers in categories (1) and (2) will undertake a recyclage process that will enhance, refresh, or add skills sufficient to allow them to serve as the core staff for the basic health center, Types A, B, and C. Workers in category (3) will expand their skills to include the identification and treatment of common childhood illnesses as well as non-obstetric/gynecologic illnesses commonly occurring in women of child-bearing age.

Workers in category (4) will develop an increased capacity and depth of knowledge through the practical field application of their current skills in community and environmental sanitation. They will also be provided with limited orientation to the concept of integrated curative and preventive services, selected additional skills in the area of personal preventive services and supervisorial skills relevant to their role vis-a-vis personnel in categories (1), (2), and (3).

Supervisors in category (5) will be appraised of the role and change of responsibilities of the front-line workers, as well as the rationale for integrating curative and preventive services. They will be assisted in the development of effective supervisorial techniques which actively foster the successful implementation and maintenance of integrated preventive and curative services.

At the present time, approximately 100 workers in Siliana and 75 workers in Sidi Bou Zid fall into categories

(1), (2), and (3) and would be candidates for retraining. The skill goals shown in Table 10 represent an initial service needs assessment of the population, and reflect the priorities discussed in pages 55-60 of the February, 1977 Family Health Care report.

The administrative and management capacity in the Tunisian Ministry of Public Health is impressive. However, particularly with the expanded functions of the front-line worker and the integration of preventive and curative services, the single provincial surveillant général who is now largely responsible for the supervision of dispensary workers will be most heavily burdened. During the earliest phase of the project, a realistic assessment should be made of how much one surveillant général can do. An assessment should also be made of what économes assigned to small hospitals (e.g., Maktar) and ultimately to all Type A facilities, can do in the way of direct field supervision. Optimal use of these supervisors, as well as of physicians trained to support and guide the front-line workers in the utilization of their new skills, will be essential if the training investment is to result in a permanently improved service delivery capacity.

Recyclage will take place largely in the cities of Siliana and Sidi Bou Zid. On occasion, other sites within the two provinces may be used for relevant demonstration and

field experiences. However, no significant amount of training will be planned for sites outside of the two provinces.

Training personnel will include existing provincial health services staff and USAID-supported technical assistance staff. As available and appropriate, central staff of the Ministry of Public Health and representatives from other components of the public and private sector, both from inside and outside the provinces of Siliana and Sidi Bou Zid, will be utilized.

Recyclage will take place in stages and the process in aggregate may extend for any one individual over a period of several years. An assessment of the actual skill status of existing workers will be related to the priority needs of the area. Where there is a clear deficit in skill, the needs will be met by short-term training ranging in length from one to three weeks. For example, techniciens sanitaires are trained to test water sources and to purify wells. Thus, they are unlikely candidates for recyclage in this particular skill. However, aides soignants and malaria workers will be logical candidates for recyclage in this skill area. Sufficient time will be allocated for all stages so that one or more specific skills or skill areas will be completely covered (e.g., environmental education, the prevention and emergency treatment of infantile diarrhea,

etc.). An advantage of short stages is that they allow for continued operation of facilities by temporary coverage arrangements and/or short-term changes in hours or days of operation.

The end result of recyclage will be the functional integration of preventive and curative services, including family planning. The benefits should be immediate in that more workers will be delivering more needed services, and services will be of higher quality. For instance, the dispensary agent will be able to provide school health services, make outreach visits into the home and community covering such areas as water supply, nutrition and family planning, while also undertaking case finding for high risk pregnant women. At present the dispensary agent rarely leaves the clinic, and his primary function is one of support during physician consultations. When the physician is not present, the worker's activities tend to be limited to changing dressings and dispensing medications (the latter on prescription). "Down time" for dispensary staff represents a large portion of the work week, with most services performed during those mornings when a physician visits for one to four hours: few services are rendered in the afternoons.

The malaria worker now takes malaria smears from villagers. In Siliana and Sidi Bou Zid, malaria smears

have been consistently negative for at least three years. Whether or not active malaria surveillance continues, the malaria worker can do more. Villagers, workers and supervisors all support an expanded role for the malaria worker.

FHC feels the foregoing is realistic. A small number of malaria workers are already being retrained. After a two-year recyclage effort at Nabeul, they then assume the responsibilities of an aide hygièniste and work in rural dispensaries. Their full potential is yet to be realized, but in principal the effort is similar to what is proposed in this project. In the Siliana province the team observed the results of initial efforts of integrating services. Here the service d'hygiène workers have assumed a health function in the school, with diagnostic and treatment responsibility for selected skin conditions, and responsibility for referral of more serious maladies. The service d'hygiène is also being physically installed in PMI centers, where initial coordination of data and outreach services is beginning. Dispensary agents are leaving their dispensaries in the afternoons to make home and community visits, and arrangements have been made to legally close dispensaries so that such outreach services may take place. The proposed project will help to speed up the process described above, and give the front-line workers relevant skills quickly.

Finally, by constructing or renovating facilities in a manner that derives from the Ministry's concept of integrating preventive and curative services, there will be not only a better milieu for efficient service delivery, but the very structures themselves will support and maintain the concept of integrated delivery of preventive and curative services.

It should be noted that the environmental technician (technicien sanitaire) is a quite highly skilled person. At present, the plan is to provide one for each delegation. This worker is now trained expressly as an environmental health technician. The effective use of these technicians in the larger population seats and as an occasional supervisor for retrained workers (particularly in Type C centers) should be a concern of this project.

Constraints of time during the FHC team's visit in Tunisia did not permit the development of detailed job descriptions for recycled workers. However, the skill goals shown in Table 10, in conjunction with the functional program statement entitled "Services by Location of Service" (Section A, Chapter IV), were fully discussed and agreed to in Tunisia. They form the basis for the development of these specific job descriptions.

In summary, the thrust of recyclage will be:

1. To expand the preventive and curative skills of service d'hygiène personnel so that they may serve as the basic core staff in all types of

centres de santé de base. They will provide integrated curative and preventive services, including family planning, in the center and in the surrounding community;

2. To refresh and/or increase preventive skills and selectively upgrade curative skills of the current staff of salles de soins and dispensaries (now being redesignated as Type C centers);

3. To provide recyclage equivalent to item (2) above for clinical staff and other staff in PMI, family planning and maternity centers;

4. To expand the clinical skills of midwives and assistant midwives, particularly in the areas of common childhood illnesses and illnesses that commonly occur in women of childbearing age; and

5. To provide supervisors (non-physician and physician) with an understanding of the objectives of the program as well as supervisorial skills relevant to the roles of the restructured front-line workers.

VI. OPERATING COST IMPLICATIONS

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One of the major unresolved issues which FHC raised in its February 1977 report was the capacity of the Government of Tunisia to absorb the increased operating costs in the budgets of Siliana and Sidi Bou Zid provinces which would be incurred as a result of the proposed project. The analysis which follows outlines those operating costs and several options for their absorption over time, in a manner which should allow these provincial systems to be operated by the Ministry without foreign donor assistance.

Currently, in Siliana and Sidi Bou Zid there are about 67 salles de soins and dispensaries (freestanding or hospital outpatient departments) for which an operating budget is available in 1977. Additionally, in Sidi Bou Zid there are four unopened PMI/maternity/family planning facilities (Sidi Bou Zid City, Er-Regueb, Ben Aoun, and Maknassy). It is the team's understanding that the operating budget for the four referenced facilities in Sidi Bou Zid is available through the National Office of Family Planning (NOFP) and that these facilities have not yet opened for the following reasons:

1. Sidi Bou Zid: Facility construction not yet complete.
2. Er-Regueb: Awaits final acceptance by the government of contractor's work (a few modifications remain to be made in the building in order to make it satisfactory).

3. Ben Aoun: Same as Er-Regueb.

4. Maknassy: Facility accepted, equipping and transition about to begin.

Sufficient front-line workers (e.g., service d'hygiène personnel and dispensary agents of various types) are already employed (in Siliana about 77; in Sidi Bou Zid about 100) to meet the minimal staffing needs projected for all Type C centers and to substantially contribute to the minimum staffing required for Type A and B centers.

The minimum number of physicians required for each province are: Siliana seven and Sidi Bou Zid eight. Currently, there are seven or eight physicians in Siliana, one in each delegation seat and two (possibly three) in Siliana City. All physicians are in government service except for one physician who may be in private practice in Siliana City. In Sidi Bou Zid, there are either seven or eight physicians distributed as follows: six government physicians in Sidi Bou Zid City, one private physician in Sidi Bou Zid City and one government physician in Maknassy. In Sidi Bou Zid, some redistribution of physicians as well as the acquisition of a few new physicians would provide minimally adequate coverage of the province. For instance, it might be reasonable to move two physicians from Sidi Bou Zid City to Ben Aoun and Er-Regueb, and at a later date acquire new physicians for Jelma, Ouled Haffouz, and Mezzouna. Thus, in aggregate, only three additional

physicians are needed for both provinces to meet the minimum staffing criteria for supporting a rural delivery system (one physician per delegation seat); none are required immediately. As over three-hundred graduates from Sousse and Sfax Faculties of Medicine will be available within three years, it is not at all unreasonable to assume that, by virtue of government policy and competitive pressures, these three positions can be filled by Tunisian physicians. Further, some of the foreign contract physicians will be replaced within the next 2-5 years by Tunisian physicians. Additionally, in at least the provincial seats and possibly in the larger delegation seats, private practice may well become more common, reducing some of the service demand on the government system. However, this raises the problem of dual systems of care and dual standards of practice (see pp. 30-35 in the FHC February, 1977 report for a discussion of the Tunisian physician in rural areas).

It should be noted that the salaries of many physicians do not appear in regional hospital budgets and are an expense charged directly to the central Ministry of Public Health. The cost of three additional physicians per year is estimated at $22,170 (9,312 Tunisian dinars) per physician per year or $66,516 annually. This is a very high estimate and is derived from the mean annual earnings of

all physicians in Tunisia (Family Health Care report, March 10, 1976, Appendix A, Charts III and IV). As new physicians will almost certainly be either in a training status or just joining the government service, one can assume they will be earning about 3/4ths of the average annual income of Tunisian physicians in general, or $16,629 per year--in aggregate $49,887.*

Midwives earn approximately 100 Tunisian dinars per month with indeminities. To meet minimal staffing needs, no more than four additional midwives would be required for Sidi Bou Zid (Jelma, Ouled Hafouz, Mezzouna, and Menzel Bouzaiane) and three for Siliana (El Krib, Robaa, and Rohia). The annual operating cost in current dollars of seven midwives is (7 x 100 x 12) divided by .42 or $20,000.

Health workers whose jobs are not readily filled by retrained front-line workers (see staffing patterns on pages 37-43) will be needed as follows for Type A and B centers where staff may not be present:**

Type B centers:	Menzel Bouzaiane and Robaa = 2 centers x 2.5 workers x 80 Tunisian dinars per month x 12 months divided by .42 =	$11,429

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* This figure is compatible with the low range of physician salaries as stated in a document dated 12/18/76, provided by the Ministry of Health.

** Physicians, midwives, and retrained front-line workers (former dispensary agents and service d'hygiene personnel) are excluded from the figures as they are either counted separately or are already present in sufficient numbers.

Type A centers:	El Krib, Rohia, Mezzouna, Jelma, and Ouled Haffouz = 5 centers x 6 workers per center x 80 dinars per months x 12 months divided by .42 =	$68,571
TOTAL		$80,000

The annual non-personnel operating cost for Type A, B, and C centers has been estimated by provincial health administrators as follows:

Type A:	4,500 Tunisian Dinars annually	($10,714)
Type B:	3,000 Tunisian Dinars annually	($7,143)
Type C:	1,500 Tunisian Dinars annually	($3,571)

Non-Personnel Operating Costs
for New or Substantially Expanded Centers

Type A

4,500 TD x 5 centers = 22,500 TD - (1,500 x 5) = 15,000 TD

Type B

3,000 TD x 2 centers = 6,000 TD - (1,500 x 2) = 3,000 TD

Type C

1,500 TD x 15 centers =	22,500 TD
TOTAL	40,500 TD Annually or $96,428

As dispensaries already exist wherever Type A and Type B centers will be constructed, the annual operating cost of 1,500 Tunisian Dinars has been subtracted for each such center in the above calculations.

Incremental Operating Cost Summary
(Constant Dollars) for Siliana and Sidi Bou Zid Provinces

Cost Categories	$ Per Year	# of Workers
Physicians	$49,887	3
Midwives	20,000	6
Front-Line Workers	0	0
Other Workers	80,000	35
Non-Personnel Costs	96,428	N/A
TOTALS	$246,315	44

From the foregoing summary it can be seen that the minimum annual operating cost increment in current dollars attributable to the proposed project in Siliana and Sidi Bou Zid provinces will be approximately $246,000 per year. (Front-line workers are omitted, as sufficient numbers are already employed, and thus will not represent an incremental operating cost for the new system.)

The salary levels of front-line workers who are retrained are not anticipated to change solely because of retraining. Both centrally and in the provinces, Ministry of Public Health staff stated that salary structure would change only insofar as the total Ministry pay scale changed.

The combined 1976 budgets for Siliana and Sidi Bou Zid provinces are estimated at $571,132 (see estimate in Table 9, footnote 4). In order to absorb the cost increment of $246,000, budgets in the aggregate for both provinces would have to grow in real terms (excluding inflation) at 12.7%

per year to achieve a $703,000 operating budget in three years. They would have to grow at a rate of 7.4% per year to achieve the necessary growth in five years (assumes all new monies are devoted to staffing and operating facilities constructed pursuant to this program).

It was pointed out to the team that a Tunisian law obligates the Ministry of Public Health to operate a completed facility; compliance with this law and the intent of the Ministry to operate new facilities explains why all sites viewed by the team in Siliana and Sidi Bou Zid provinces were equipped, stocked and staffed to a common standard.

If Siliana and Sidi Bou Zid provinces continue to receive even some preferential budget treatment to redress allocation imbalances (see Table 9) it is likely they will be able to meet operating cost requirements in three years. If preferential allocation does not occur, operating cost requirements would be met in 6.2 years at 6% real annual growth rate and in 9.1 years at 4% real growth per year in the budget.

It is the team's impression that budget mechanisms are now in place that will assure the availability of operating funds for newly constructed or renovated centers.

However, since it will be most cost-effective to begin construction as early as possible (to minimize the impact of

inflation on the construction program). FHC suggests that it would be prudent for final AID Loan documents to require that a minimal operating budget be available for each center, prior to AID reimbursement of Tunisian Government construction costs--in full or in part.

TABLE 11

SILIANA & SIDI BOU ZID BUDGET REVIEW, 1974-1976
(Share of MOH Budget Relative to Share of Total Population)
(Actual Expenditures in $US)

BUDGET ITEM	1974[1]	1975[2]	1976[3]	Percentage Increase 1974-1975	Percentage Increase 1975-1976
Siliana Regional Hospital[4]	$81,905	$160,952	$183,095	97%	14%
A. As % of Total MOH Budget	.14%	.22%	.22%	57%	0%
B. Regional Population as % of Total National Population[5]	3.43%	3.43%	3.43%	--	--
B/A	24.50	15.59	15.59	--	--
Sidi Bou Zid Regional Hospital[4]	$148,333	$258,571[6]	$273,810	74%	6%
A. As % of Total MOH Budget	.25%	.35%	.32%	40%	-9%
B. Regional Population as % of Total National Population[5]	3.89%	3.89%	3.89%	--	--
B/A	15.56	11.11	12.16	--	--
Ministry of Health Total Operating Budget[7]	$58,764,286	$74,426,190	$84,285,714	27%	13%

1. From Journal Officiel de la Republique Tunisienne (J.O.R.T.), 31 December 1974, p. 2869.
2. From J.O.R.T., 31 December 1975, p. 2933.
3. From J.O.R.T., 31 December 1976, p. 3185.
4. Excludes National Family Planning Office (ONPFP), preventive medicine and certain physician salaries paid from the central MOH budget (in aggregate FHC estimates that the total regional budgets may be 125% of the figures reported in this table, e.g., Siliana: $228,869 and Sidi Bou Zid: $342,263.
5. Assuming population totals as follows: Tunisia Total = 5,618,572; Siliana = 192,668; Sidi Bou Zid = 218,511. All figures as of 1975.
6. Erroneously shown in FHC's February report as $280,809.
7. From J.O.R.T., 31 December 1974, p. 2927; J.O.R.T., 31 December 1975, p. 2863; and J.O.R.T., 31 December 1976, p. 3177.

VII. NEW RECOMMENDATIONS

VII. NEW RECOMMENDATIONS

Family Health Care, Inc. reaffirms its recommendations which were made in the February 1977 report for all the proposed Technical Assistance and Capital Assistance Projects.

In addition, we offer the following new or modified recommendations:

A. A Mobile Seminar in the U.S. should be arranged for provincial hospital administrators (if new ones are assigned) and regional health inspectors (when assigned), along with architects from the Ministry of Public Health and from the private sector.

B. Three staff options are recommended, each assuming three full-time contractor technical assistance personnel.

C. Formalized foreign donor coordination is recommended.

D. Planning for and design of Siliana and Sidi Bou Zid regional facility improvement is recommended.

E. Operating cost assurances should be obtained.

F. Vehicles are required.

A. MOBILE SEMINAR

At the present time, it appears likely that one or both of the provincial health administrators for Siliana and Sidi Bou Zid may be transferred within the next several months. In addition, regional health inspectors may soon be appoin-

ted for these two provinces. It is certain that at least one of the two regional health inspectors will not have been exposed to the contents of integrated rural health services. Finally, Tunisian architectural health experience has been primarily limited to large inpatient facilities, and much of the architectural design work has been done by foreign architects. The recent adoption by the Ministry of the concepts of the centre de santé de base and of integrated health services present an unusual opportunity for USAID to contribute to improved program and facility design: the detailed program planning and functional design for these facilities is in the early stages; there is a relative lack of Tunisian experience with ambulatory facility planning, and the pattern and methods of close collaboration between architects and health program personnel is not well developed. There would therefore be great value in conducting a short, intensive formal seminar in the United States for responsible Tunisian officials.*

The seminar might reasonably take place at a stage in facility design when participants could most benefit from observing the results of effective integration of architectural and program planning in the facility development process.

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* It is likely that, either with Tunisian financing or with the assistance of other foreign donors (for example, the World Bank), the Siliana and Sidi Bou Zid projects could serve as prototypes for facility and program design elsewhere in the country.

B. STAFFING OPTIONS

Family Health Care feels that a contract technical assistance component should consist of at least three full-time overseas personnel. Certainly, the technical assistance budget as it is proposed will now only marginally support three overseas personnel (see Budget Recommendations). The contractor staff would work for the Ministry in defined positions and in such a way that they would depend upon and work within the Ministry of Public Health structure. The larger the number of contractor personnel, the more likely it is that their function will be too independent, jeopardizing the relevance, acceptability, and ultimate success of the project. Therefore, the following staff options are suggested.

Option A - 3 persons	
Tunis	Evaluation design/health services research specialist
Siliana	Management/planning and systems development specialist, or
or	
Sidi Bou Zid	Trainer/curriculum development specialist
Option B - 3 persons	
Tunis	Evaluation design/health services research specialist
Siliana	Trainer/curriculum development specialist with some background in health systems management and planning, or
or	
Sidi Bou Zid	Physician

Option C - 3 persons Tunis	Management and program development associate
Siliana	Trainer/curriculum development specialist with some background in health systems management and planning, or
or	
Sidi Bou Zid	Physician

Assignment of a small, well-chosen contractor technical assistance team, working in well-defined job positions within the Ministry structure, offers the best opportunity for successful program implementation. Furthermore, minimizing technical assistance personnel encourages the greatest possible Tunisian participation and control from the beginning of the project.*

C. FOREIGN DONOR COORDINATION

Foreign donor activities in program areas closely related to the proposed Siliana and Sidi Bou Zid project are numerous. Possible World Bank support for the construction of centres de santé de base in other provinces, UNDP training of paramedical trainers in Tunis, Project HOPE and the Tuniso-Belgian project based in Nabeul are examples of programs that relate directly to the activities proposed for Siliana and Sidi Bou Zid.

* If Regional Health Inspectors are appointed, a carefully selected Peace Corps Volunteer could be assigned to each of the inspectors responsible for Siliana and Sidi Bou Zid provinces.

FHC recommends that an integral part of this project be the development of a formal process by which contractor technical assistance personnel meet regularly to share information and ideas with all appropriate foreign donor representatives, including those of other USAID-supported programs in Tunisia. This process might be developed by the Division of Preventive Medicine, Ministry of Public Health, or be under its guidance.

See Appendix 9 for further discussion of foreign donor activities.

D. REGIONAL FACILITIES

For discussion of the rural regional hospitals, see Chapter V.A.6., page 44.

E. OPERATING COSTS

For discussion of FHC's recommendation concerning operating costs, see Chapter VI, page 71.

F. VEHICLES

Vehicles are discussed and recommendations made in Chapter V.C., page 53.

In summary: As FHC feels that no significant obstacles remain, nor is further developmental work necessary or appropriate at this time, we strongly recommend that the proposed project move as rapidly as possible to the implementation phase.

VIII. PROGRAM BUDGET SUMMARY

VIII. PROGRAM BUDGET SUMMARY

In order to give the reader an understanding of the costs involved in the implementation of an integrated health services delivery program for the provinces of Siliana and Sidi Bou Zid, illustrative budgets have been formulated for both the Capital Assistance and Technical Assistance components.

Capital Assistance budget costs are, in substantial part, derived from architect Susan Christie-Shaw's cost estimates.

In order to facilitate budget modifications, Family Health Care suggests the following priorities for additions to, as well as deletions from, the capital component of the proposed project:*

Additions

1. Increase the USAID contribution to ambulatory care improvements at Maktar to $100,000-150,000.

2. All Type C centers in Siliana and Sidi Bou Zid provinces not scheduled for renovation or re-equipping are to be fully brought up to the standard of renovated/newly constructed Type C centers.

3. Increase USAID contribution for renovation and new construction by $50,000-100,000 each for ambulatory care improvements at the Siliana and Sidi Bou Zid hospitals.

* It should be noted that neither additions nor deletions have been discussed with either Ministry or USAID Mission representatives. However, the suggestions in both are derived from Family Health Care's understanding of Tunisian priorities.

4. Extend this program to other rural delegations in other provinces.

Should deletions from the program be necessary, FHC proposes the following:

ITEMS	SAVINGS PER ITEM	CUMULATIVE SAVINGS
All Sites: Vehicles	$160,000	$160,000
Jama	44,286	204,286
Er-Regueb	10,000	214,286
Sidi Ali Ben Aoun	10,000	224,286
Gafour	10,000	234,286
Menzel Bouzaiane	118,969	353,255
Maknassy	10,000	363,255
Robaa	154,763	518,018
Ouled Haffouz	330,057	848,075

An Explanation of Deletion Priorities:

Because of the expense involved, both in terms of purchase and maintenance, all vehicles are deleted for both provinces. Jama is a optional construction site and is deleted in its entirety. Er-Regueb, Ben Aoun, Gafour, and Maknassy are modified by deleting only the renovations. Menzel Bouzaiane, rather than being converted to a Type B center, will remain as a Type C center. Robaa would become a Type C_1 center newly constructed and equipped, deleting all the costs associated with Type B construction and equipment. Ouled Haffouz, in lieu of a newly constructed and equipped Type A center, would have a newly constructed and equipped Type B center.

The technical assistance budget proposed in the February 1977 Family Health Care report is lean. It does not include funds for the proposed Mobile Seminar and it may not include adequate technical assistance funds to assure optimum utilization of the Siliana and Sidi Bou Zid hospital sites. Further, only two to two-and-a-half years per person of contractor technical assistance is recommended. The budget could easily and usefully be expanded as follows:

Physician	--increase from 2 to 2.75 years	= +$75,000
Trainers/Curriculum Development Specialist	--increase from 2.5 to 3 years	= +$32,000
Evaluation Design (Health Services Specialist)	--Increase from 2.5 to 3 years	= +$25,000
SUBTOTAL		+$132,000
Mobile Seminar for Architects & New Provincial Hospital Administrators and Regional Health Administrators		+ $35,000
SUBTOTAL		+$167,000
Previously Proposed Technical Assistance		$750,000
AMENDED TECHNICAL ASSISTANCE BUDGET		$917,000

TABLE 12

CAPITAL ASSISTANCE AND TECHNICAL ASSISTANCE
BUDGETS SUMMARY
SILIANA AND SIDI BOU ZID PROVINCES

CAPITAL ASSISTANCE	
Land acquisition*	----
Facility Renovation and New Construction	$3,122,360
Equipment	323,345
Vehicles	160,000
If formal facility development process used	174,680
Contingency	219,615
	$4,000,000
Tunisian Contribution	($1,000,000)
TOTAL	$3,000,000
TECHNICAL ASSISTANCE	
Basic Technical Assistance	$750,000
Supplementary Technical Assistance (see p. 93)	167,000
TOTAL	$917,000

* There are no land acquisition costs. Acceptable sites have been identified by the Government of Tunisia, and these will be made available at no cost to this project.

TABL

CAPITAL BUDGET

BASED ON INFORMAL FACILITY DEVELOPMENT PROCESS (1)

FACILITY	SILIANA (2)				SIDI BOU ZID (2)				TOTALS	
	RENOVATION		NEW CONSTRUCTION		RENOVATION		NEW CONSTRUCTION			
	NO.	COST $US	NO.	COST $US	NO.	COST $US	NO.	COST $US	NO.	COST $US
Type A	4	$225,000	2	$704,000	4	$180,000	3	$1,056,000	13	$2,165,000
Type B		0	1	154,440	1	110,000		0	2	264,440
Type C	6	60,000	6	235,620	4	40,000	9	335,300	25	690,920
Type C (Minimum Equipment Only)		0		0	4	2,000		0	4	2,000
TOTALS	10	$285,000	9	$1,094,060	13	$332,000	12	$1,411,300	40	$3,122,360

Construction/Renovation		$3,122,360
Equipment: (3)		
Siliana	$146,524	
Sidi Bou Zid	176,821	
		323,345
Vehicles: (4)		
8 x $20,000 (including spares)		160,000
If formal facility development process is used, add		174,680
Subtotal		$3,780,385
Contingency (About 5.8%) (5)		219,615
Subtotal		$4,000,000
Less Tunisian Government Contribution of 25%		($1,000,000)
TOTAL		$3,000,000

NOTES:
1. See report of Architect S. Christie-Shaw for a discussion on cost estimating and facility development process.
2. See Appendix 2 for specific site listing and approximate locations.
3. See Appendix 7 for detailed equipment list.
4. See page 53 for discussion on vehicles.
5. This contingency is in addition to any contingency built into the basic construction cost estimates.

A. ILLUSTRATIVE BUDGET: TECHNICAL ASSISTANCE PROJECTS NUMBER ONE - FIVE (See Section IV)*

	Annual Cost		Years	Total
Resident Staff (Option 2)				
Physician	$100,000	x	2.0 years	$ 200,000
Trainer/Curriculum Development Specialist	64,000	x	2.5 years	160,000
Evaluation/Design Health Services Specialist	50,000	x	2.5 years	125,000
				$ 485,000
Contractor Support (Washington, D.C.)				
Project Coordinator (1/5 time)				30,000
Supplies, equipment, cables, other travel				8,000
				$ 38,000
Short-Term Technical Assistance (includes TA for capital projects)				
Architectural, health manpower, curriculum training specialist, environmental health and veterinary medicine, budget planner, medical records, management systems, health planning. (Most overseas, but some provided in the U.S.)	$400/day	x	375 days	$ 150,000
Five TA visits/year, 21 days/visit overseas,				
21 days x 5 trips x 3 years x $55/day = per diem				17,325
5 trips x 3 per year x $1,200 = air fare				18,000
				$ 35,325
Short-Term Training - Tunisians in the U.S.				
Three sessions, 3 months/session				
$1,500/month x 3 months x 3 sessions =				$ 13,500
3 x $1,200 = air fare				3,600
Air and other travel in the U.S. @ $575 x 3 =				1,725
Per diem 90 days x 3 sessions x $55/day =				14,850
				$ 33,675
Library				
Hospitals at Siliana and Sidi Bou Zid				
$1,500 each x 2 =				$ 3,000
Preventive medicine at Tunis				5,000
				$ 8,000
TOTAL TECHNICAL ASSISTANCE				$ 750,000

* This table is reproduced intact from the FHC February, 1977 report, p. 140.

C. COST ASSUMPTIONS: TECHNICAL ASSISTANCE PROJECTS NUMBER ONE - FIVE

	Salary		Support[13]	Annual Cost
Resident Staff (Option Two)				
Physician	$40-55,000	+	$50,000	$100,000
Trainer/Curriculum Development Specialist	18-26,000	+	40,000	64,000
Evaluation Design/Health Services Management	16-22,000	+	30,000	50,000
				$214,000
Contractor Support (Washington, D.C.)				
Project Coordinator (1/5 time)	$ 25,000	+	$ 5,000	$ 10,000
Short-Term Technical Assistance				
Architectural, health manpower, curriculum training specialist, environmental health and veterinary medicine, economist/budget planner, medical records, management systems, health planning			$ 400/day	
Short-Term Training of Tunisians in U.S.				
Instructional Costs			$1,500/month	
Travel and per diem while in U.S.			1,500/month	
Per Diem and Travel				
$55 is assumed for everyone everywhere and includes room and board, as well as miscellaneous expenses such as taxis				
Round trip air fare: Tunis-U.S.-Tunis			$1,200	
Library Resources				
Hospitals @ $1,500/hospital x 2			$ 3,000	
Preventive medicine at Tunis			5,000	

[13] Includes fringe benefits, insurance, moving and travel costs, dependency allowance, pro rata home leave, and contractor overhead. Housing may be provided by the Government of Tunisia.

* This table is reproduced intact from the FHC February, 1977 report, p. 142.

APPENDIX 1

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BIBLIOGRAPHY*

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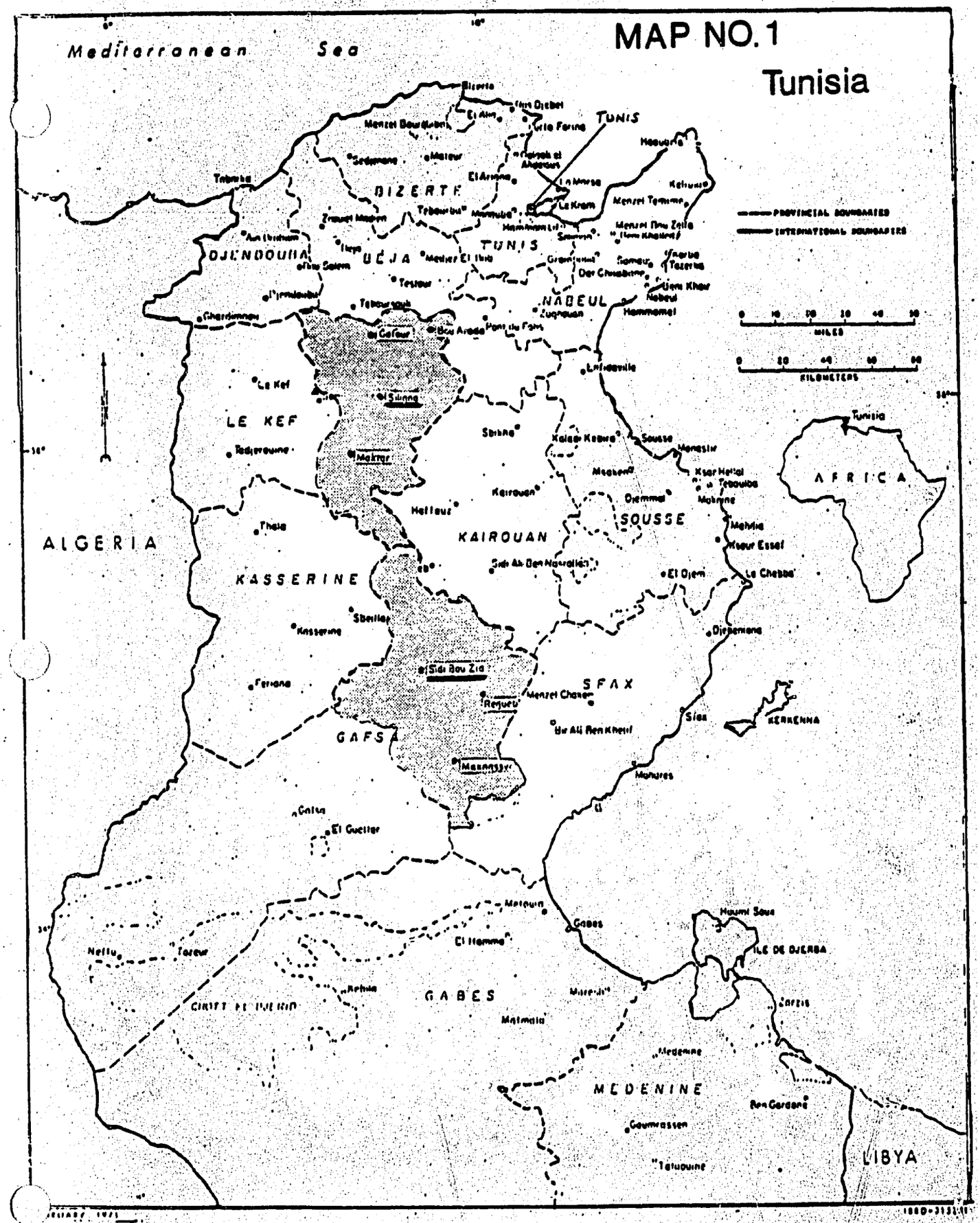
APPENDIX 2

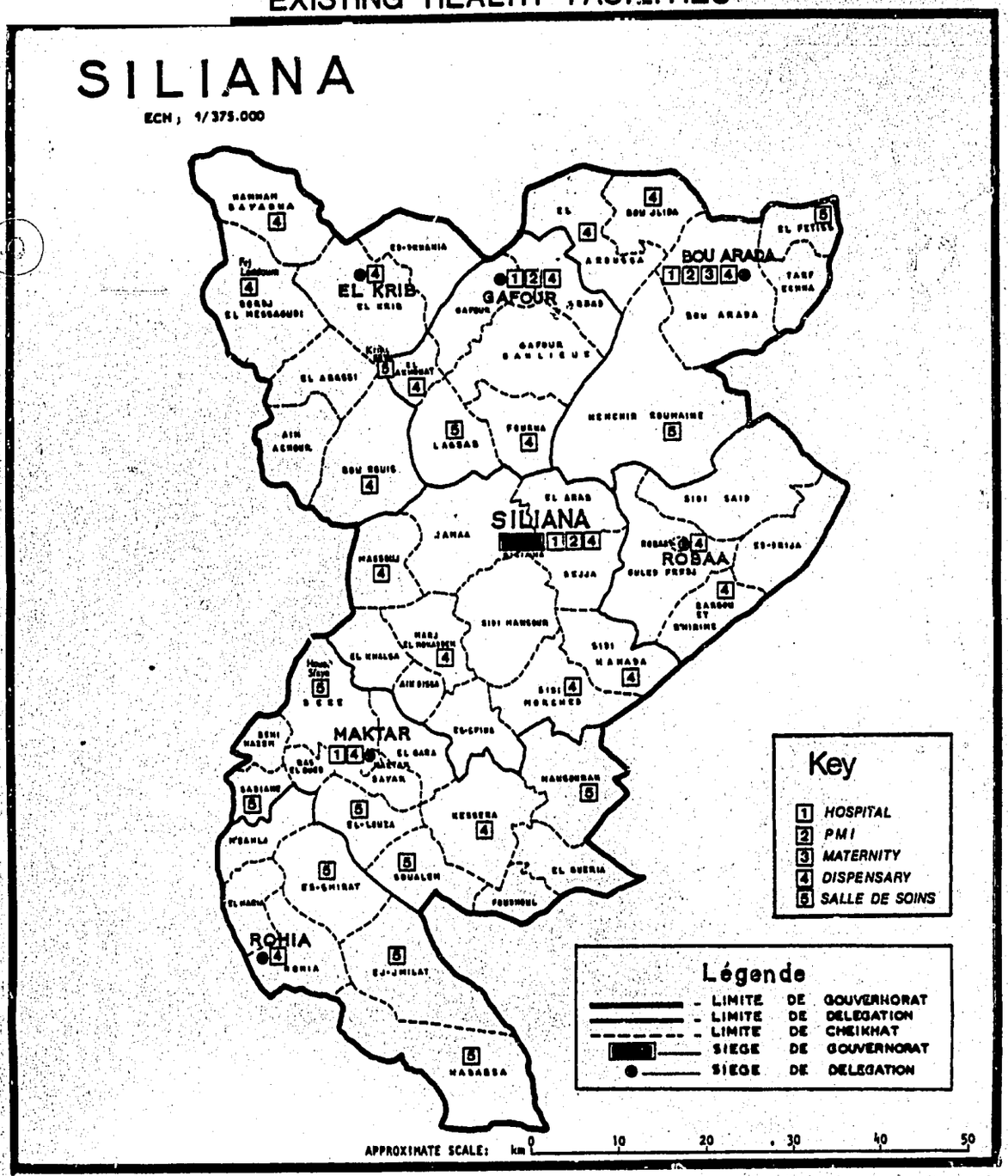
MAPS AND POPULATION DATA



1) Names of provincial capitals are underlined.
2) This map does not show the most recent provincial borders.
3) Siliana and Sidi Bou Zid provinces, represented by shaded areas, are shown in larger outline maps on the next two pages.

MAP NO. 2

EXISTING HEALTH FACILITIES

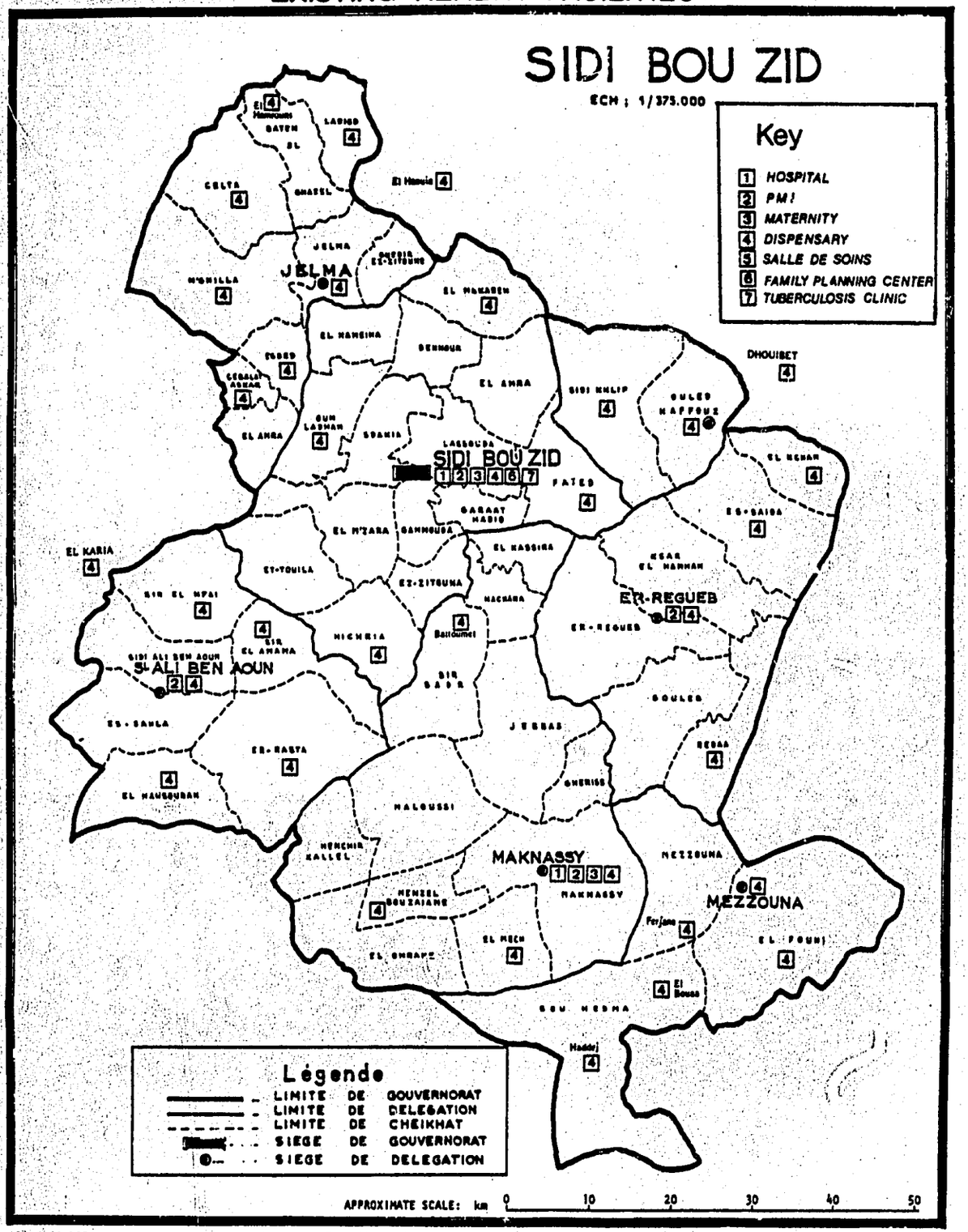


SOURCE: Government of Tunisia, Ministry of Public Health

Notes: Provincial boundaries do not reflect the most recent addition of new delegations. Some locations will therefore appear outside the province.
Locations of facilities Nos. 4 and 5 are not geographically exact, but are within their respective secteurs.

MAP NO. 3

EXISTING HEALTH FACILITIES



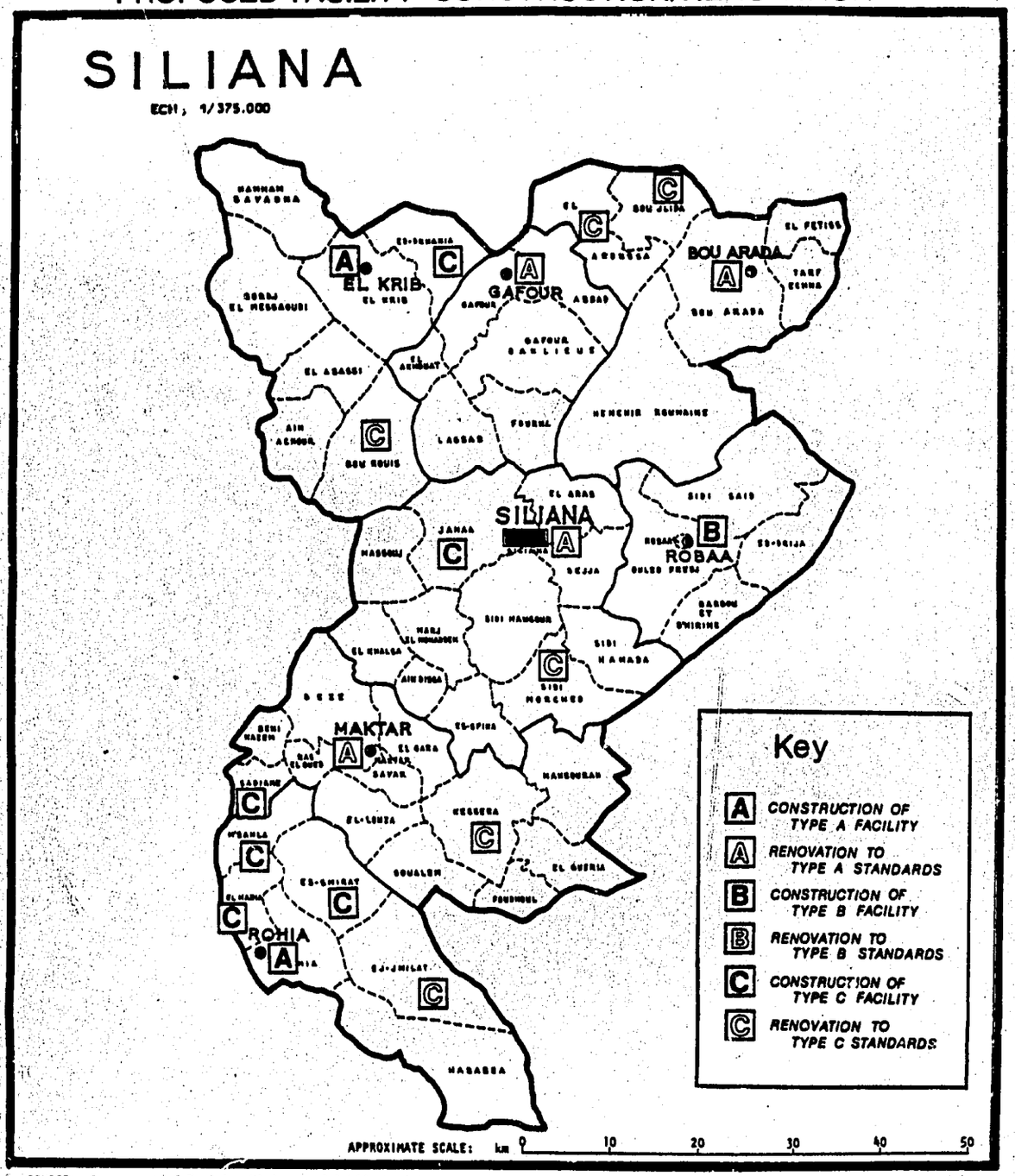
SOURCE: Government of Tunisia, Ministry of Public Health

Notes: Provincial boundaries do not reflect the most recent addition of new delegations. Some locations will therefore appear outside the province.

Locations of facilities Nos. 4 and 5 are not geographically exact, but are within their respective secteurs.

MAP NO. 4

PROPOSED FACILITY CONSTRUCTION/RENOVATION



SOURCE: Government of Tunisia, Ministry of Public Health

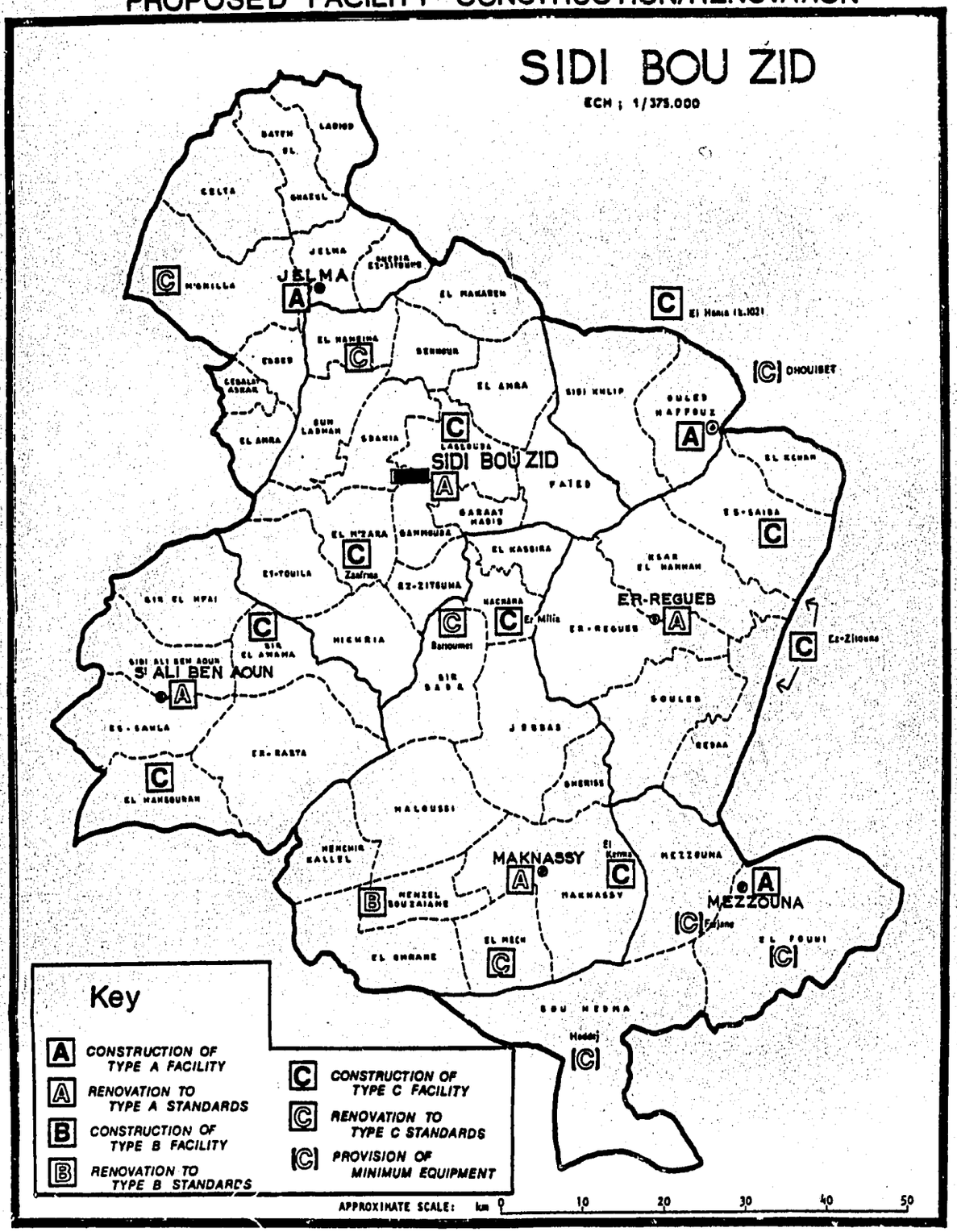
Notes: Provincial boundaries do not reflect the most recent addition of new delegations. Some locations will therefore appear outside the province.

Locations of all Type C facilities are not geographically exact but are within their respective secteurs.

The map does not differentiate between Type C_1 and Type C_2 facilities since final determination will be made during early project implementation (See discussion in text).

MAP NO. 5

PROPOSED FACILITY CONSTRUCTION/RENOVATION

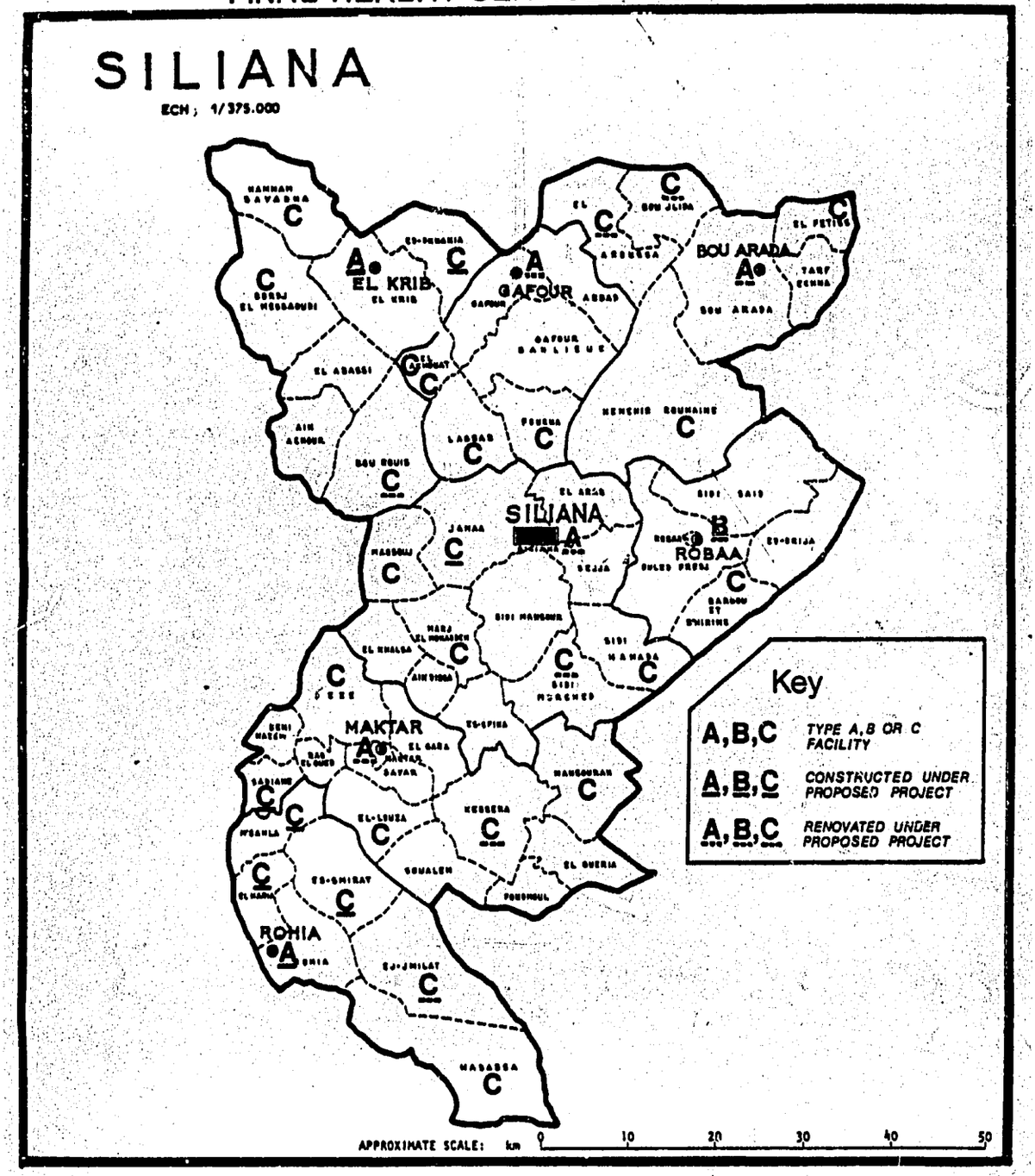


SOURCE: Government of Tunisia, Ministry of Public Health

Notes: Provincial boundaries do not reflect the most recent addition of new delegations. Some locations will therefore appear outside the province.
Locations of all Type C facilities are not geographically exact but are within their respective secteurs.
The map does not differentiate between Type C_1 and Type C_2 facilities since final determination will be made during early project implementation. (See discussion in text.)

MAP NO.6

FINAL HEALTH SERVICES NETWORK

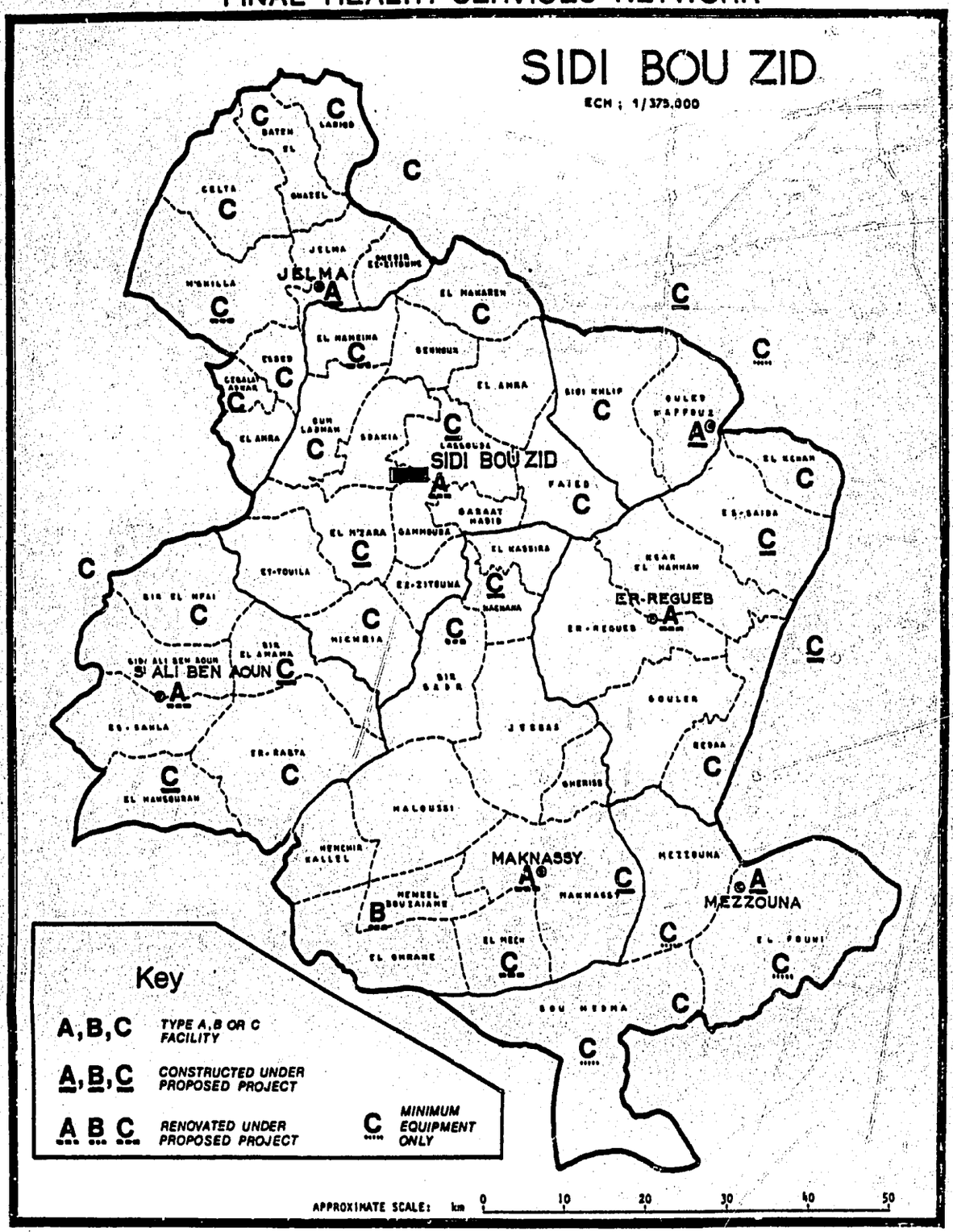


SOURCE: Government of Tunisia, Ministry of Public Health

Notes: Provincial boundaries do not reflect the most recent addition of new delegations. Some locations will therefore appear outside the province.
Locations of all Type C facilities are not geographically exact but are within their respective secteurs.
The map does not differentiate between Type C_1 and Type C_2 facilities since final determination will be made during early project implementation (See text for discussion).

MAP NO. 7

FINAL HEALTH SERVICES NETWORK



SOURCE: Government of Tunisia, Ministry of Public Health

Notes: Provincial boundaries do not reflect the most recent addition of new delegations. Some locations will therefore appear outside the province.
Locations of all Type C facilities are not geographically exact but are within their respective secteurs.
The map does not differentiate between Type C_1 and Type C_2 facilities since final determination will be made during early project implementation (See text for discussion).

FINAL LIST OF PROPOSED CONSTRUCTION / RENOVATION FOR SILIANA AND SIDI BOU ZID

	SILIANA	SIDI BOU ZID	Totals
Type A New Construction	El Krib Rohia	Jelma Ouled Haffouz Mezzouna	5
Type A Renovation	Bou Arada Gafour Maktar Siliana	Si.Ali Ben Aoun Er-Regueb Maknassy Sidi Bou Zid	8
Type B New Construction	Robaa	--	1
Type B Renovation	--	Menzel Bouzaiane	1
Type C New Construction	Jama (Siliana) Ed-Dkhania (El Krib) Sadiane (Maktar) Es-Smirat (Rohia) M'Sahla (Rohia) El Haria (Rohia)	Lassouda (Sidi Bou Zid) Zaafriaa (Sidi Bou Zid) Ez-Zitouna (Er-Regueb) Es-Saida (Er-Regueb) El Hania, k.102 (Ouled Haffouz) Bir El Amama* (Si. Ali Ben Aoun) El Mansourah* (Si. Ali Ben Aoun) Er Milia (Maknassy) El Kerma (Maknassy)	15
Type C Renovation	Sidi Morched (Siliana) Bou Rouis (El Krib) El Aroussa (Bou Arada) Bou Jlida (Bou Arada) Kessera (Maktar) Ej-Jmilat (Rohia)	M'Ghilla (Jelma) El Hameima (Sidi Bou Zid) Battoumet (Maknassy) El Mech (Maknassy)	10
Type C Minimum Equipment	--	Dhouibet (Ouled Haffouz) Haddej (Mezzouna) Ferjane (Mezzouna) El Founi (Mezzouna)	4

Note: Substantial renovation or new construction could be considered for Type C centers in the Siliana Gouvernorat in the following locations: Massouj (Siliana delegation), Marj El Mokaddem (Siliana delegation), Bargou (Robaa delegation), Fourna (Gafour), El Akhouat (Gafour). Sidi Bou Zid Gouvernorat, to the best of our knowledge, is well covered in the above list.

*These Type C centers are in communities where community interest and commitment to obtaining health services is such that contributions of materials and labor are offered up to 50% of the cost of construction. Two centers, therefore, are equivalent in cost to one. Such community involvement might be explored in other sites

HEALTH CENTERS IN RELATION TO POPULATION

Notes: Siting of existing and proposed facilities is based on where population groupings currently exist or where they are growing (e.g. regroupments). Our siting recommendations come from information gathered both from Tunisian authorities in the provinces and from our own observations in the field.

Available maps do not entirely reflect all existing delegations in each province. Neither do they show exact geographic locations of towns or other agglomerations, except in the case of provincial capitals or larger delegation seats. In addition, the population census figures (See Bibliography reference No. 12) are from 1975, are not now wholly accurate, and do not always refer to the same secteurs listed on the maps.

Additionally, service populations will overlap in many cases: patients will attend the closest and most convenient service facility (not necessarily in their own secteur); patients will also be referred from smaller to larger centers.

For these reasons, the following tables can only estimate numbers of people covered by each health center.

As an example, El Krib (Siliana Province) is proposed for a Type A center. We assume that:

1) This center, as all Type A centers, will serve as the core facility for the entire delegation;

2) The center will directly serve El Krib commune and the surrounding secteur as the primary care center;

3) It will also be attended by many patients from outside the commune or delegation who find it closer or more convenient than another center (people from Ed-Dkhania, Bordj El Messaoudi, Hammam Bayadha or El Abassi);

4) El Krib will be the referral point for patients from surrounding Type C centers. Their numbers would be difficult to estimate;

5) A physician is already in residence in El Krib, but with inadequate facility and staff. The patient population is already sufficient, and a good support facility and staff would increase the physician's effectiveness.

The figures estimated on the following pages under "Population Served" assume that 80% of the immediate population will attend the center, and 50% of nearby populations will also attend.

APPENDIX 4

"FOR DISCUSSION: DRAFT OUTLINE FOR SILIANA AND SIDI BOU ZID RURAL HEALTH PROJECT,"

JUNE 14, 1977

FOR DISCUSSION

DRAFT OUTLINE FOR
SILIANA AND SIDI BOU ZID RURAL HEALTH PROJECT

June 14, 1977

The Family Health Care team, working in close conjunction with Mrs. Christie-Shaw (architect), was charged with the following tasks:

1. Determining the functional program for all facilities that would be renovated or newly constructed with USAID loan assistance;

2. Determining the preliminary job definition of - front line workers and supervisory workers in or programmatically associated with the facilities referenced in 1. above;

3. Determining the programmatic siting criteria for facilities referenced in 1. above and initial specification of actual sites.

The purpose of the visit is to develop in conjunction with representatives of the Ministry of Health sufficient program and cost information to allow the final stage (Project Paper) of USAID program development to be completed with loan and grant agreements expeditiously signed thereafter.

This visit builds on and all work conducted falls fully within the overall program design approved in principle by USAID (Project Review Paper) and outlined in the Family Health Care Report entitled "A Program Proposal for Integrated Rural Health Services in Siliana and Sidi Bou Zid Provinces, Tunisia", dated February 18, 1977 (French edition). See particularly Chapter IV, "Program Design and Project Recommendations". The reader's attention is also directed to Chapter VII, entitled "Major Unresolved Issues" and Chapter VIII, entitled

"Program Budget Summary". The team feels it is also important to emphasise the following:

1. Documenting the feasibility of the proposed job restructuring and estimating the impact of such restructuring in quantitative terms on the capacity of the restructured delivery system emphasizing integrated preventive and curative health services;

2. Documenting and redetermining the rationale of the Government of Tunisia that led to the creation of the provinces of Siliana and Sidi Bou Zid and the institution of province-wide economic and social development projects.

In recognition of the Government of Tunisia and the Ministry of Health's policy to provide integrated preventive and curative services at the front line (santé de base), the team proposes the following:

1. Recyclage of selected health workers

   a. Malaria workers
   b. Current staffs of dispensaries and salles de soins
   c. Current nursing and sage-femme staffs of PMIs and maternity centers, as well as family planning centers

2. Construction or renovation of health facilities, including:

		Siliana	Sidi Bou Zid	Total
Centre de Sante de Base	Type A	5	7	12
	Type B	1	1	2
	Type C	10	13	23

Hospitals - Rural Regional - laboratory, X-ray, teaching space and outpatient (dispensary/PMI/family planning) improvement

3. Provision of transport

   a. Patient transport
   b. Field personnel

The thrust of the recyclage will be

a. To expand the preventive and curative skills of malaria workers so that they may serve as basic core staff in the Type C center providing integrated curative and preventive services, including family planning within the center and in the surrounding community;

b. To refresh and/or augment the preventive, and selectively upgrade the curative, skills of the current staffs of salles de soins and dispensaries (now redesignated as Type C centers);

c. To provide recyclage equivalent to b. above for clinical, non-midwife staff in PMI, family planning and maternity centers;

d. To expand the clinical skills of midwives, particularly in the areas of common childhood illnesses and adult illnesses that commonly occur in women of child-bearing age.

Training will be done in Siliana and Sidi Bou Zid by existing Ministry staff with the assistance of technical assistance personnel along the lines outlined in Budget Option 1 or 2 on page in Chapter V of the February Family Health Care Report. The training program will be directed toward substantially achieving the skill levels indicated in Attachment 1. It is noteworthy that the team found both acceptance and enthusiasm for recyclage at every level within the health system including the consumer.

Facilities will be designed in a manner that fully supports the development and maintenance of an integrated curative and preventive delivery system at the front line.

Facility Improvement Recommendations

All delegation seats to be provided with either a renovated or newly constructed Type A center with the exception of Robaa, where a Type B center is proposed:

SILIANA

Renovation:	Gafour	Type A
	Bou Arada	Type A
	*Makthar	ambulatory component of existing facility to Type A standards
	Siliana	" " " " "
New Construction:	*Le Krib	Type A
	*Rohia	Type A
	Robàa	Type B

SIDI BOU ZID

Renovation:	Maknassy, Ben Aoun, Regueb	Minor renovations of recently constructed facilities to bring them into conformance with the intent of Type A standards
	Sidi Bou Zid	Ambulatory component of existing facility to Type A standards
New Construction:	*Djilma	Type A
	*Ouled Haffouz	Type A
	*Mezzouna	Type A
	*Menzel Bou Zaiene	Type B - Not a delegation seat but a rapidly growing regroupment

Type C centers are proposed for the following secteurs in Sidi Bou Zid:

Renovation: El Haemeia, M'Ghilla, *Battoumet, El Mech

Minimum equipment only: Dhouibet, Haddej, Ferjane, El Foumi

Construction: *El Milia, *El Kerna, *Ez Zitouna, *Sadia, El Haima, Za Fri a, Lessouda, *El Mansoura, *Bir Amama (the last two equivalent in cost to one center because of local contributions of materials and labor)

Type C centers are proposed for the following secteurs in Siliana:

Renovation: *Kesra, Sidi Bou Ris, *Jimilat,

New Construction: *Em Salia, *El Maria, *Esmirat, *Saidenae, *Doukhaine, Bargout, *Jamma

Siting criteria include for Type A, B and C centers:

1. Assuring services to populations with limited or no access to basic health services;
2. Providing a framework for supply, supervision and referral
3. Proximity to roads or pistes that are somewhat passable
4. Complement, the economic and social development priorities - provincial

Facilities marked with an asterisk are felt to be of highest priority. As cost estimates are refined it may become clear that all projects proposed cannot be undertaken. If so, priority will be given to those marked with an asterisk.

It should be noted that the loan component of the program is not expected to exceed $3 million and that the loan will be solely devoted to the capital component of the project. However, as a requirement of USAID loans is a 25 percent Government of Tunisia contribution the effective funds available for construction, renovation and equipment total $4 million. The following construction costs and square footage estimates seem likely at this time:

	TD/Sq.Meters	Sq.Meters	TOTAL Cost (1)
Type A	125	900	126,000
Type B	125		
Type C (small)	116	200	12,600
Type C (large)	102	108	18,900

(1) Excludes site acquisition or equipment.

rovision of Transport - Vehicles of two types are recommended:

1. Patient transport vehicles, with the goal of assuring one functioning ambulance-type vehicle per delegation. Siliana requires _____ and Sidi Bou Zid requires_____.

2. Multi-purpose vehicles - Staff transport (Mobile Equipes) and back up for patient transport. Four wheel drive vehicles will be necessary in those delegations where travel is most difficult and the service population is most remote. Siliana requires _____ and Sidi Bou Zid requires_____.

An initial assessment of the probable operating cost implications of the program suggested above suggests that the operating costs in the steady state will fall within the future year budget capacity of the Ministry. Furthermore, given the numbers of staff now available and the efficiencies to be achieved through recyclage, minimum staffing levels for all facilities are assured.

Summary

Recycled workers, primarily existing workers, will staff new and renovated facilities at the front line providing integrated preventive and curative health services throughout the provinces of Siliana and Sidi Bou Zid. The project operating costs are affordable to the Government without foreign donor assistance and the project is targeted at the two provinces in the nation that are most rural, have the lowest socio-economic indicators, and the greatest unmet health needs.

Appendix 1

INTEGRATED
/ HEALTH PERSONNEL

There are five types or general categories of health worker who must be considered if the successful integration of preventive and curative services is to take place:

1. Non-physician, predominantly clinical workers now staffing salles de soins and dispensaries, (e.g. aides soignant an aides sanitaires)
2. Malaria workers
3. Midwives and aides soignant obstetrique
4. Environmental health technicians (technicien sanitaire)
5. Supervisorial personnel at the provincial level

The intent of the recyclage proposed is to improve the efficiency and relevance of the rural delivery system.'

Workers in categories 1. and 2. will undertake a recyclage process that, as appropriate, will enhance, refresh and add skills sufficient to allow these workers to serve as the core staff for basic health centers Types A, B and C. Workers in category 3. will expand their skills to include the identification and treatment of common childhood illnesses, as well as non-obstetric/gynecologic illnesses commonly occuring in women of child-bearing age.

Workers in category 4. will develop an increased capacity and depth of knowledge re the practical field application of existing skills in community and environmental sanitation. They will be provided with limited orientation to the concept of integrated curative and preventive services, and selected additional skills in the area of personal preventive services may also be taught.

Supervisors (category 5.) will be appraised of the role and changed responsibilities of front line workers as well as the rationale for integrating curative and preventive services. They will be assisted in the development of effective supervisorial techniques that actively foster the successful implementation and maintenance of integrated preventive and curative services.

Recyclage will take place largely in the cities of Siliana and Sidi Bou Zid. On occasion other sites in the two provinces may be used for relevant demonstration and field experiences. However, no significant amount of training is planned to take place outside of the province.

Personnel for training will include existing provincial health services staff and USAID-supported technical assistance

personnel. As available and as appropriate, regional and central staff of the Ministry of Health, representatives from other components of the public and private sector from inside and outside of the provinces of Siliana and Sidi Bou Zid will be utilized.

Recyclage will take place in stages and the process in aggregate may extend for any one individual over a period of several years. An assessment of the actual skill status of existing workers will be related to the priority needs of the area. Where there is a deficit in skill the needs will be fulfilled by short-term training ranging in length from one to three weeks. In the time allocated for such a stage one or more specific skills or skill areas will be completely covered (e.g. environmental education, the prevention and treatment of infantile diarrhea, etc.). An advantage of short stages is that such an approach allows for continued operation of facilities through temporary coverage arrangements and/or short-term changes in hours or days of operation.

N.B. The following list includes functions that in many cases are being carried out by certain workers (e.g., technicien sanitaires are trained in and carrying out work directed at the testing of water sources and the purification of wells. Thus they would be unlikely candidates for recyclage in this skill area. However, aides soignants and malaria workers would be quite reasonable candidates for recyclage in these skill areas).

Skills	Type of Worker 1 and 2	3	4
Family Planning			
pills	x	x	
condoms	x	x	
IUDs		x	
social abortions		x?	
Nutrition education			
adults	x	x	x
children	x	x	
pregnant women, mothers	x	x	
use and distribution of SAHA	x	x	
Immunizations			
routine (e.g. DPT)	x	x	x
episodic	x	x	
Prenatal Care			
casefinding	x	x	
initial risk assessment	x	x	
education	x	x	
management (minimum 3 prenatal visits)			
- interview & observe	x	x	
- lab	x	x	
- physical exam		x	
←Labor and delivery		x	
←Postnatal/child			
acute post-birth care (airway etc.)		x	
post birth preventive treatment and exam (eyes and hips)		x	
Postnatal/mother			
family planning			
-advice/education	x	x	
-supplies	x	x	
-IUD insertion		x	

Skills	1 and 2	3	4
(Postnatal/mother)			
child care education			
-breast feeding	x	x	
-hygiene and cleanliness	x	x	
-treatment of mild diarrhea	x	x	
Clinical Care			
diagnosis and treatment of diarrhea			
-mild	x	x	
-moderate	x	x	
-severe	x	x	
common skin disorders	x	x	
conjunctivitis	x	x	
otitis media	x	x	
symptom recognition and emergency treatment			
-high fever with chest findings	x	x	
-high fever with stiff neck	x	x	
-high fever with diarrhea	x	x	
~~symptom recognition and treatment of common illnesses~~			
~~--sore throat-~~			
anemia identification and prophylaxis	x	x	
treatment of visible stool x parasites	x	x	
trauma - minor			
- abrasions, lacerations and burns (first and some second)	x	x	
trauma - major			
- maintain airway, stabilize fractures, transport of patient, identification, temporizing treatment and referral of some second and all third degree burns	x	x	

Skills	1 and 2	3	4
poisoning			
- identification and referral	x	x	
- lavage	x?	x?	
Identification of high risk infants and children	x	x	x
treatment through education of family	x	x	x
treatment through food supplement	x	x	
referral	x		x
Environmental Education water, poisoning, burns	x	x	x
Malaria screening			
passive	x	x	
active	x		x
Water Supply			
wells -physical assessment, testing, and recommending improvements	x		x
home -transport, storage and purification	x		x
piped -testing	x		x
Inspection of establishments			
restaurants	x		x
slaughtering points			x
butcher shops			x
hotels	x		x
Factories and the Work Place			x?
Dog control			
owner education	x		x
eradication			x
immunizations			x

Skills	1 and 2	3	4
Miscellaneous Skills			
drawing blood			
-finger stick	x	x	x
-venapuncture	x	x	
specimen collection			
-acid fast material	x	x	
intravenous infusions		x	
clysis	x	x	
collecting stools for culture or microscopic exam	x	x	
collecting blood for			

Appendix 2

SERVICES BY LOCATION OF SERVICE

Community:

Home - Environmental education including burn and poisoning prevention, waste disposal and protection/purification of drinking ~~x~~ water; nutrition and family planning education; identification and treatment of conjunctivitis and ringworm; maternal education re: the home treatment of mild diarrhea; provision of family planning supplies (condoms and pills); immunisations (not routinely); identification, education and referral of pregnant women particularly high risk mothers; malaria screening as needed.

Commercial and public areas -

*Sampling for analysis drinking water supplies - piped and well
*Treatment of wells by the method of the jar
*Field testing for residual chlorine
Inspection and control of slaughtering points
Inspection and control of solid and liquid waste
Inspection and control of retail establishments, particularl re: stores selling perishable foods and hotels
*Advising on the protection and improvement of existing water sources
*Advising on the transport and storage of water from the source to the point of consumption

Schools - Nutrition education; case finding of pregnant women through the children in school; environmental education akin to that offered on the home; identification and treatment or referral of conditions common in school children; immunizations.

Basic Health Center (Centre de sante de base)[1]

Type C - The Type C center is proposed in two sizes. A smaller size fully suitable for intermittant physician visits but planned to initially operate without physician services or midwife services. This first level of facility is staffed by an entry level integrated preventive and curative worker (e.g. recycled malaria worker or aide soignant recycled or aide sanitaire recycled).

draft

1 - For staffing patterns of all basic health centers, see/architectural program statement attached.

The only difference between small and large Type C centers is physical size, population served and the presence of itinerant physician services.

Services provided within or out of the Type C Center include:

1. school health
2. home health
3. commercial and public areas activities indicated by an asterisk (see above)
4. provide routine and continuing care as prescribed by a physician - distribution of oral medications, injections and dressings
5. Definitive treatment of minor trauma
6. stabilization and referral of major trauma (trauma should be read to include burns)
7. Identification and initial treatment of common skin disorders and minor illnesses
8. Identification, temporizing treatment, consultation or referral as appropriate of serious illnesses (acute pulmonary infection with high fever, fever and stiff neck, moderate and severe diarrhea)
9. Provision of selected prenatal services (list to be expanded in the case of female provider). Services suggested do not require physical contact/exam of the pregnant woman beyond cursory overall visual inspection and palpation of the ankles for edema, risk assessment by history, determination of hemoglobin, provision of phophylactic oral iron, nutrition education.
10. Provision of family planning information and supplies (pills and condoms)with referral IUDs, sterilizations and social abortions.
11. Laboratory services are limited to hemoglobin determination by a simple, reliable method similar to that described in Maurice King's book on laboratory services in developing countries.

Basic Health Center

Type B - Includes all Type C services and in addition a full range of prenatal, normal delivery, postnatal and family planning services that fall within the capacity of the sage-femme. Laboratory services limited to non-microscopic urinalysis of protein and sugar and determination of hemoglobin by method as in Type C centers. Includes 5 to 10 maternity beds.

Basic Health Center

Type A - All Type B services plus 5 to 10 general medical/pediatric beds for the definitive treatment of non-surgical, acute illnesses requiring short-term inpatient care; casting of simple fractures; minor surgery that can be accomplished on an out-patient basis under local anaesthesia. Lab services include complete urinialysis including microscopic, white blood count and differential, blood urea and nitrogin, blood glucose, hemotocrit, hemoglobin, erythrocyte sedimentation rate, collection of sputum specimens for acid fast staining and culture. It is recommended that space be provided now for later expansion of laboratory functions and eventual installation of radiography or radioscopy.

Regional Rural Hospital

The services listed are limited to those that this project will directly support in whole or in part. It is strongly recommended that in addition to the services mentioned below that all services and facilities at the Siliana and particularly the Sidi Bou Zid hospital complex be analyzed as to the appropriateness of the location of services from the point of view of patient convenience, patient management and provider efficiency.

The rural regional hospital includes a capacity for all Type C services plus radiography, and an expanded laboratory to include transaminase; blood banking, typeing and cross-matching; stool, blood, and cerebro-spinal fluid cultures; gram and acid fast stain and analysis; specimen collection and innoculation of media but not analysis of cultures for acid fast bacteria (growth and analysis suggested for Tunis); culture

media preparation; stool examinations for parasites; bacteriological analysis of water (ice cream and milk may be easily added); serological tests for syphilis and typhoid; reading malaria smears; microscopic examination of hair for fungal infections.

Appendix 3

Laboratory Services

Regional Hospital: Complete urinalysis including microscopic, hemoglobin, hematocrit, white blood count, differential, red blood cell morphology, erythrocyte sedimentation rate, blood urea nitrogen, bilirubin, transamenase, blood typing and cross matching, stool culture, blood culture, cerebro-spinal fluid culture, gram stain, acid fast stain and examination, acid fast specimen collection and implantation for culture (culture at Tunis), media preparation, microscopic examination of the stool for parasites and ova, water bacteriology serology, serology for syphilis and typhoid, analysis of malaria smears, microscopic examination of hair for fungal infection, blood glucose.

Centre de Sante de Base Type A: Complete urinalysis including microscopic, hemoglobin, hematocrit, white blood count, differential, erythrocyte sedimentation rate, acid fast specimen collection for staining and analysis at regional hospital.

Centre de Sante de Base Type B: Urinalysis for albumin and sugar, hemoglobin.

Centre de Sante de Base Type C: Hemoglobin.

APPENDIX 5

"FOR DISCUSSION: DRAFT OUTLINE
FOR SILIANA AND SIDI BOU ZID
RURAL HEALTH PROJECT,
JUNE 14, 1977,"
REVISED JUNE 17, 1977

Revised 6/17/77

FOR DISCUSSION

DRAFT OUTLINE FOR SILIANA AND SIDI BOU ZID RURAL HEALTH PROJECT

June 14, 1977

The Family Health Care team, working in close conjunction with Ms. Christie-Shaw (Architect), was charged with the following tasks:

1. Determining the functional program for all facilities that would be renovated or newly constructed with USAID loan assistance;

2. Determining the preliminary job definition of front line workers and supervisory workers in or programmatically associated with the facilities referenced in 1. above;

3. Determining the programmatic siting criteria for facilities referenced in 1. above and initial specification of actual sites.

The purpose of the visit is to develop in conjunction with representatives of the Ministry of Health sufficient program and cost information to allow the final stage (Project Paper) of USAID program development to be completed with loan and grant agreements expeditiously signed thereafter.

This visit builds on, and all work conducted falls fully within, the overall program design approved in principle by USAID (Project Review Paper) and outlined in the Family Health Care report entitled "A Program Proposal for Integrated Rural Health Services in Siliana and Sidi Bou Zid Provinces, Tunisia", dated February 18, 1977 (French edition). See particularly Chapter IV, "Program Design and Project Recommendations". The reader's attention is also directed to Chapter

VII, entitled "Major Unresolved Issues" and Chapter VIII, entitled "Program Budget Summary". The team feels it is also important to emphasize the following:

1. The need to document the feasibility of the proposed job restructuring and estimate the impact of such restructuring in quantitative terms on the capacity of the restructured delivery system emphasizing integrated preventive and curative health services;

2. Documenting and redetermining the rationale of the Government of Tunisia that led to the creation of the provinces of Siliana and Sidi Bou Zid and the institution of province-wide economic and social development projects.

In recognition of the Government of Tunisia and the Ministry of Health's policy to provide integrated preventive and curative services at the front line (santé de base), the team proposes the following:

1. Recyclage of selected health workers

   a. malaria workers
   b. current staffs of dispensaries and salles de soins
   c. current nursing and sage-femme staffs of PMI, maternity and family planning centers

2. Construction or renovation of health facilities, including:

Centre de sante de base:

	Siliana	Sidi Bou Zid	Total
Type A	5	6	11
Type B	1	1	2
Type C	10	12	22

Hospitals:
Rural Regional - Laboratory, X-ray, reaching space and outpatient (dispensary/PMI/family planning) improvement to Type A functional standard.

3. Provision of transport

   a. patient transport
   b. field personnel

The thrust of the recyclage will be:

a. To expand the preventive and curative skills of malaria workers so that they may serve as basic core staff in all types of basic health centers (centres de sante de base). They will provide integrated curative and preventive services, including family planning, within the center and in the surrounding community;

b. To refresh and/or augment the preventive, and selectively upgrade the curative, skills of the current staffs of salles de soins and dispensaries (now redesignated as Type C centers);

c. To provide recyclage equivalent to b. above for clinical, non-midwife staff in PMI, family planning and maternity centers;

d. To expand the clinical skills of midwives, particularly in the areas of common childhood illnesses and adult illnesses that commonly occur in women of child-bearing age.

Training will be done in Siliana and Sidi Bou Zid by existing Ministry staff with the assistance of technical assistance personnel along the lines outlined in Budget Option 1 or 2 in Chapter V of the February Family Health Care Report. The training program will be directed toward substantially achieving the skill levels indicated in Appendix 1. It is noteworthy that the team found both acceptance and enthusiasm for recyclage at every level within the health system, including among consumers.

Facilities will be designed in a manner that fully supports the development and maintenance of an integrated curative and preventive delivery system at the front line (See Appendices 2 and 3).

Coordination and cooperation with other related and complementary projects is strongly recommended, e.g., the Tuniso-Belgian Nabeul project, Project HOPE Monastir Rural Health, the UNDP-supported training program for paramedical trainers in Tunis, the USAID-supported nutrition education project.

Facility Improvement Recommendations (See Appendix 4, Budget Summary)

All delegation seats are to be provided with either a renovated or newly constructed Type A center with the exception of Robaa, where a Type B center is proposed:

SILIANA

Renovation:	Gafour	Type A
	Bou Arada	Type A
	*Maktar	ambulatory component of existing facility to Type A standards
	Siliana	ambulatory component of existing facility to Type A standards
New Construction:	*Le Krib	Type A
	*Rohia	Type A
	Robaa	Type B

SIDI BOU ZID

Renovation:	Maknassy, Ben Acun, Er Regueb	Minor renovations of recently constructed facilities to bring them into conformance with the intent of Type A standards
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	*Ouled Haffouz	Type A
	*Mezzouna	Type A
	*Menzel Bouzaiane	Type B - not a delegation seat but a rapidly growing regroupment

Type C centers are proposed for the following secteurs in Sidi Bou Zid:

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Minimum equipment only: Dhouibet, Haddej, Ferjane, El Founi

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(Facilities marked with an asterisk (*) are felt to be of highest priority. As cost estimates are refined it may become clear that all projects proposed cannot be undertaken. If so, priority will be given to those marked with an asterisk.)

It should be noted that the loan component of the program is not expected to exceed $3 million and that the loan will be solely devoted

to the capital component of the project. However, as a requirement of USAID loans is a 25 percent Government of Tunisia contribution, the effective funds available for construction, renovation and equipment total $4 million. The following construction costs and square footage estimates seem likely at this time:

	TD/sq.meter	Sq.meters	TOTAL COST (1) TD	$US
Type A	150	998	165,000	400,000
Type B	150	501	83,000	200,000
Type C (large)	100	200	22,000	53,000
Type C (small)	100	111	12,000	30,000

Provision of transport: Vehicles with dual functions are recommended:

1. Patient transport vehicles, with the goal of assuring one functioning ambulance-type vehicle per delegation;
2. Staff transport vehicles (équipes mobiles).

Four wheel drive vehicles will be necessary, as in both provinces there are areas where travel is most difficult and the service population is very remote. Four such vehicles are recommended for each province.

An initial assessment of the probable operating cost implications of the program suggested above suggests that the operating costs in the steady state will fall within the future year budget capacity of the Ministry. Furthermore, given the numbers of staff now available and

(1)Excludes site acquisition or equipment

the efficiencies to be achieved through recyclage, minimum staffing levels for all facilities are assured.

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2. Malaria workers
3. Midwives and aides soignant obstetriques
4. Environmental health technicians (techniciens sanitaires)
5. Supervisorial personnel at the provincial and delegation level (physicians, economes, surveillants generals, etc.)

The intent of the recyclage proposed is to improve the efficiency and relevance of the rural health delivery system.

Workers in categories 1. and 2. will undertake a recyclage process that, as appropriate, will enhance, refresh and add skills sufficient to allow these workers to serve as the core staff for basic health centers Types A, B and C. Workers in category 3. will expand their skills to include the identification and treatment of common childhood illnesses, as well as non-obstetric/gynecologic illnesses commonly occuring in women of child-bearing age.

Workers in category 4. will develop an increased capacity and depth of knowledge re the practical field application of existing skills in community and environmental sanitation. They will be provided with limited orientation to the concept of integrated curative and preventive services, and selected additional skills in the area of personal preventive services may also be taught.

Supervisors (category 5.) will be apprised of the role and changed responsibilities of front line workers as well as the rationale for integrating curative and preventive services. They will be assisted in the development of effective supervisorial techniques that actively foster the successful implementation and maintenance of integrated preventive and curative services.

Recyclage will take place largely in the cities of Siliana and Sidi Bou Zid. On occasion other sites in the two provinces may be used for relevant demonstration and field experience. However, no significant amount of training is planned to take place outside of the province.

Personnel for training will include existing provincial health services staff and USAID-supported technical assistance personnel.

As available and as appropriate, regional and central staff of the Ministry of Health, representatives from other components of the public and private sector from inside and outside of the provinces of Siliana and Sidi Bou Zid will be utilized.

Recyclage will take place in stages, and the process in aggregate may extend for any one individual over a period of several years. An assessment of the actual skill status of existing workers will be related to the priority needs of the area. Where there is a deficit in skill the needs will be fulfilled by short-term training, ranging in length from one to three weeks. In the time allocated for such a stage one or more specific skills or skill areas will be completely covered (e.g. environmental education, the prevention and treatment of infantile diarrhea, etc.). An advantage of short stages is that such an approach allows for continued operation of facilities through temporary coverage arrangements and/or short-term changes in hours or days of operation.

N.B. The following list includes functions that in many cases are being carried out by certain workers (e.g., techniciens sanitaires are trained in and are carrying out work directed at the testing of water sources and the purification of wells. Thus they would be unlikely candidates for recyclage in this skill area. However, aides soignant and malaria workers would be quite reasonable candidates for recyclage in these skill areas).

Skills	Type of Worker 1 and 2	3	4
(Postnatal/Mother)			
child care education			
-breast feeding	x	x	
-hygiene and cleanliness	x	x	
-treatment of mild diarrhea	x	x	
Clinical Care			
diagnosis and emergency treatment/ referral of diarrhea			
-mild	x	x	
-moderate	x	x	
-severe	x	x	
common skin disorders	x	x	
conjunctivitis	x	x	
otitis media	x	x	
symptom recognition and emergency treatment			
-high fever with chest findings	x	x	
-high fever with stiff neck	x	x	
-high fever with diarrhea	x	x	
anemia identification and prophylaxis	x	x	
treatment of visible stool parasites	x	x	
trauma: minor			
-abrasions, lacerations and burns (first and some second)	x	x	
trauma: major			
-maintain airway, stabilize fractures, transport of patient, identification, temporizing treatment and referral of some second and all third degree burns	x	x	
poisoning			
-identification and referral	x	x	
-lavage	x?	x?	
Identification of high risk infants and children	x	x	x
treatment through education of family	x	x	x
treatment through food supplement	x	x	
referral	x		x

Skills	Type of Worker 1 and 2	3	4
Environmental Education			
water, poisoning, burns	x	x	x
Malaria screening			
passive	x	x	
active	x		x
Water Supply			
wells -physical assessment, testing, and recommending improvements	x		x
home -transport, storage and purification	x		x
piped -testing	x		x
Inspection of establishments			
restaurants	x		x
slaughtering points			x
butcher shops			x
hotels	x		x
Factories and the Work Place			x?
Dog Control			
owner education	x		x
eradication			x
immunizations			x
Miscellaneous Skills			
drawing blood -finger stick	x	x	x
-venapuncture	x	x	
specimen collection -acid fast material	x	x	
intravenous infusions		x	
clysis	x	x	
collecting stools for culture or microscopic exam	x	x	

Appendix 2

SERVICES BY LOCATION OF SERVICE

Community:

Home - Environmental education including burn and poisoning prevention, waste disposal and protection/purification of drinking water; nutrition and family planning education; identification and treatment of conjunctivitis and ringworm; maternal education re: dietary regimens appropriate for the home management of mild diarrhea; provision of family planning supplies (condoms and pills); immunisations (not routinely); identification, education and referral of pregnant women, particularly high risk mothers; malaria screening as needed; management and monitoring of chronic conditions as tuberculosis, arthritis/rheumatism, diabetes.

Commercial and public areas(1)

*Sampling for analysis drinking water supplies - piped and well
*Treatment of wells by the method of the jar
*Field testing for residual chlorine
Inspection and control of slaughtering points
Inspection and control of solid and liquid waste
Inspection and control of retail establishments, particularly re: stores selling perishable foods, and hotels
*Advising on the protection and improvement of existing water sources
*Advising on the transport and storage of water from the source to the point of consumption

Schools - Nutrition education; case finding of pregnant women through the children in school; environmental education akin to that offered in the home; identification and treatment or referral of conditions common in school children; immunizations; management of chronic conditions such as tuberculosis and diabetes.

(1) All listed services are provided by a technicien sanitaire. Services indicated by an asterisk may also be provided by centres de sante de base workers on an outreach basis.

Basic Health Center (Centre de sante de base)[1]

Type C - The Type C center is proposed in two sizes. A smaller size is fully suitable for intermittant physician visits but planned to initially operate without physician services or midwife services. This first level of facility is staffed by an entry level integrated preventive and curative worker (e.g., recycled malaria worker or aide soignant recycled or aide sanitaire recycled). The only differences between small and large Type C centers are physical size, population served and the presence of itinerant physician services.

Services provided within or out of the Type C Center include:

1. school health
2. home health
3. commercial and public areas activities indicated by an asterisk (see above)
4. provision of routine and continuing care as prescribed by a physician - distribution of oral medications, injections and dressings
5. definitive treatment of minor trauma
6. stabilization and referral of major trauma (trauma should be read to include burns)
7. identification and initial treatment of common skin disorders and minor illnesses
8. identification, temporizing treatment, consultation or referral, as appropriate, of serious illnesses (acute pulmonary infection with high fever, fever and stiff neck, moderate and severe diarrhea)
9. provision of selected prenatal services (list to be expanded in the case of female provider). Services suggested do not require physical contact/exam of the pregnant woman beyond cursory overall visual inspection and palpation of the ankles for edema, risk assessment by history, determination of hemoglobin, provision of prophylactic oral iron, nutrition education.
10. provision of family planning information and supplies (pills and condoms) with referral IUDs, sterilizations and social abortions.
11. laboratory services are limited to hemoglobin determination by a simple, reliable method similar to that described in Maurice King's book on laboratory services in developing countries (e.g. method of Lovibond).

(1) For staffing patterns of all basic health centers, see draft architectural program statement prepared and submitted by Ms. Christie-Shaw.

Basic Health Center (Centre de sante de base)

Type B - Includes all Type C services and, in addition, a full range of prenatal, normal delivery, postnatal and family planning services that fall within the capacity of the sage-femme. Laboratory services limited to non-microscopic urinalysis of protein and sugar and determination of hemoglobin by method as in Type C centers. Includes 5 to 10 maternity beds.

Basic Health Center (Centre de sante de base)

Type A - All Type B services plus 5 to 10 general medical/pediatric beds for the definitive treatment of non-surgical, acute illnesses requiring short-term inpatient care; casting of simple fractures; minor surgery that can be accomplished on an outpatient basis under local anaesthesia. Lab services include complete urinalysis, including microscopic, white blood count and differential, blood urea and nitrogin, blood glucose, hematocrit, hemoglobin, erythrocyte sedimentation rate, collection of sputum specimens for acid fast staining and culture. It is recommended that space be provided now for later expansion of laboratory functions and eventual installation of radiography or radioscopy.

Regional Rural Hospital

The services listed are limited to those that this project will directly support in whole or in part. It is strongly recommended that in addition to the services mentioned below all services and facilities at the Siliana and particularly the Sidi Bou Zid hospital complexes be analyzed as to the appropriateness of the location of services from the point of view of patient convenience, patient management and provider efficiency.

The rural regional hospital includes a capacity for all Type C services plus radiography, and an expanded laboratory to include transaminase; blood banking, typing and cross-matching; stool, blood and cerebro-spinal fluid cultures; gram and acid fast stain and analysis; specimen collection and innoculation of media but not analysis of cultures for acid fast bacteria (growth and analysis suggested for Tunis); culture media preparation; stool examinations for parasites;

bacteriological analysis of water (ice cream and milk may be easily added); serological tests for syphilis and typhoid; reading malaria smears; microscopic examination of hair for fungal infections.

Appendix 3

LABORATORY SERVICES

Regional Hospital: Complete urinalysis including microscopic, hemoglobin, hematocrit, white blood count, differential, red blood cell morphology, erythrocyte sedimentation rate, blood urea nitrogen, bilirubin, transamenase, blood typing and cross matching, stool culture, blood culture, cerebro-spinal fluid culture, gram stain, acid fast stain and examination, acid fast specimen collection and implantation for culture (culture at Tunis), media preparation, microscopic examination of the stool for parasites and ova, water bacteriology serology serology for syphilis and typhoid, analysis of malaria smears, microscopic examination of hair for fungal infection, blood glucose.

Centre de sante de base Type A: Complete urinalysis including microscopic, hemoglobin, hematocrit, white blood count, differential, erythrocyte sedimentation rate, acid fast specimen collection for staining and analysis at regional hospital.

Centre de sante de base Type B: Urinalysis for albumin and sugar, hemoglobin.

Centre de sante de base Type C: Hemoglobin.

Appendix 4

BUDGET SUMMARY (1)
(Tunisian Dinars)

	Siliana	Sidi Bou Zid	Totals
Construction	672,199	791,371	1,463,570
Equipment	63,615	63,615	127,230
Vehicles	31,808	31,807	63,615
Contingency	20,993	20,993	41,986
TOTALS	788,615	907,786	1,696,401
Tunisian Contribution 25%			-424,100
Total U.S. Loan			TD 1,272,301

BUDGET SUMMARY
(U.S.$) (1)

	Siliana	Sidi Bou Zid	Totals
Construction	1,585,000	1,866,000	3,451,000
Equipment	150,000	150,000	300,000
Vehicles	75,000	75,000	150,000
Contingency	49,500	49,500	99,000
TOTALS	1,874,500	2,125,500	4,000,000
Tunisian Contribution 25%			-1,000,000
Total U.S. Loan			$ 3,000,000

(1) U.S.$ = .4241 Dinars
TD = $2.3579

SILIANA
(U.S.$)

Construction	New			Renovation/Expansion			
Type A	Le Krib	400,000		Gafour	25,000		
	Rohia	400,000		Bou Arada	25,000		
				Maktar	53,000		
				Siliana*	150,000		
		800,000	+		253,000	=	1,053,000
Type B	Robaa	200,000					200,000
Type C (C_1 and C_2)	M'Sahla, El Haria, Esmirat, Sadiane	4 C_2 each @ 53,000		Kesra	10,000		
				Sidi Bou Rouis	10,000		
				Jmilat	10,000		
	Dokhania, Bargou, Jama	3 C_1 each @ 30,000					
	(4 x 53,000) + (3 x 30,000)		+		30,000	=	332,000
							1,585,000
Equipment							150,000
Vehicles - 4 @ 15,000 + 15,000 spares							75,000
				TOTAL			$1,810,000

* Lab, X-ray space, ambulatory care renovation, teaching space

SIDI BOU ZID
(U.S.$)

Construction	New		Renovation/Expansion		
Type A	Jelma	400,000	Maknassy, Ben Aoun, Regueb	minor - 3 @ 10,000	
	Ouled Haffouz	400,000			
	Mezzouma	400,000			
		1,200,000 +		30,000 =	1,230,000
			Sidi Bou Zid*	150,000	150,000
Type B			Menzel Bouzaiane (includes major expansion)	114,000	114,000
Type C (C_1 and C_2)	Er Milia, El Kerma, Ez-Zitouna, Sadia	4 C_2 each @ 53,000	El Hameima	10,000	
			M'Ghilla	10,000	
			Battoumet	10,000	
			El Mech	10,000	
	Zaafriaa, El Hania, Lessouda, El Mansourah**, Bir Amama**	4 C_1 each @ 30,000			
	(4 x 53,000) + (4 x 30,000)			40,000 =	372,000
					1,866,000
Equipment***					150,000
Vehicles - 4 @ 15,000 + 15,000 spares					75,000
				TOTAL	$2,091,000

* Lab, X-ray space, ambulatory care renovation, teaching space
** Equivalent to one type C_2 because of donated materials and labor
*** Includes minor equipment @ $500/center for Dhouibet, Haddej, Ferjane, El Founi

APPENDIX 6

"IV. PROGRAM DESIGN AND PROJECT RECOMMENDATIONS,"
FROM FHC FEBRUARY, 1977 REPORT:
A PROGRAM PROPOSAL FOR INTEGRATED RURAL
HEALTH SERVICES IN SILIANA AND SIDI BOU ZID PROVINCES,
TUNISIA, pp. 78-115

IV. PROGRAM DESIGN AND PROJECT RECOMMENDATIONS

A. INTRODUCTION

The seven projects proposed in this section comprise the total recommended program and are divided into two broad categories:

Technical Assistance

1. Service Design and Job Restructuring
2. Budget Planning: The Operating Cost Implications of Capital Investment Decisions, and Management Systems and Patient Records
3. The Training and Orientation of Supervisors and Managers and Orientation of Community Leaders
4. Strengthening of Preventive Medicine Interships
5. Evaluation Design and Implementation

Capital Assistance

1. Hospital Improvement
2. Ambulatory Facility Design and Construction

Prior to the implementation of any project, several antecedent activities must take place. Specifically, they are:

1. USAID formal approval in principal of this proposed program and its specific projects.
2. Joint U.S./Tunisian preparation of a Project Paper that, among other things, specifies in detail the following:

a. Program goals and objectives
b. Specific project activities with detailed implementation and evaluation plans
c. Resources required
   (1) Fiscal
      (a) Grant (U.S.)
      (b) Loan (U.S.)
      (c) Tunisian matching funds
   (2) Fiscal operating cost estimates
   (3) Personnel
      (a) U.S. contract technical assistance
      (b) Tunisian personnel

3. Approval of the Project Paper and the preparation and signing of formal intergovernmental grant and loan agreements.

4. The choice of a technical assistance contractor.

5. Recruitment and placement overseas of initial technical assistance personnel.

In the case of both funds and personnel, steady-state operating budget requirements must be specified and reasonable assurances provided that Tunisian resources will be available to maintain all programs initiated with U.S. grant/loan funds. These resource requirement estimates should be fully within the projected operating budget capacity of the MOPH and independent of other foreign donor assistance.

Phases "1" through "5" could take nine to twelve months to complete. Then, the program will be ready to begin in a visible manner in Tunisia. The first stage must be detailed planning for implementation. During this phase, lasting one to four months, several activities

will go on. For instance:

1. Review and revision, as necessary, of technical assistance activities and approaches proposed in the Project Paper.

2. Architectural and engineering assessments of Siliana and Sidi Bou Zid hospitals in regard to necessary renovations.

3. Specific technical requirements prepared for new equipment in the Siliana and Sidi Bou Zid hospitals.

4. The preparation and letting of contracts for building, renovating, purchasing, installing, and the training of technicians relative to hospital equipment acquisition (lab, x-ray, sterilizers, power, etc.).

5. Initiation of job restructuring.

6. Revision of functional designs and architectural drawings of dispensaries and health centers based on additional job restructuring.

As soon as possible, each project activity should commence. However, a project activity should not begin until relevant portions of step "1" have been completed. This will essentially provide a safety check that says the following:

> As the project is about to begin, does the activity truly make sense as specified? What revisions, if any, are appropriate?

The intent is not to delay, but rather to verify the relevance and utility of the initial plans before a total commitment to implementation is made.

Tables 21 and 22 in Section IV show the time inter-relationships between the various projects and the stages of program development and implementation.

Throughout the initiation of the program, it will be important to establish and maintain an open line of communication between both the Governors' offices and the program staff that informs and, as appropriate, involves them in project development. An early critical task facing the program staff will be determining, in consultation with the Governors' offices, the most effective and acceptable way to relate to those offices for purposes of coordination, guidance, and approval. It should be emphasized that relations with the Governors' offices are an integral part of every component of the program--from job restructuring through capital development.

B. TECHNICAL ASSISTANCE

Project Number One: Service Design and Job Restructuring

The central theme of the entire program is job restructuring within a newly designed integrated health service delivery program. Therefore, the specific project that approaches job restructuring is considered first in our review of recommended projects within the total program. The thrust of Project Number One is to assess in the field the capacities of existing front-line workers (as evidenced by their current work experience), compare those capacities to the needs of the population for front-line services, and then train existing workers in a manner which will allow them to expand their skill base to more adequately meet

the peoples' needs in an integrated and comprehensive way.

1. Define the Current Situation

   a. Task Inventory
      (1) Who, in what numbers, now perform what tasks, in what volume, for what reason, in what time frame, documented how, and supervised by whom?
      (2) Are current tasks appropriate to prior training? Determine the nature of prior training, but do not rely on this assessment as an index of current skill level.
   b. Service Needs Assessment
      (1) The perceived needs of citizens.
      (2) Priorities of the provincial government.
      (3) Priorities of current providers, both the Ministry of Public Health and private practitioners.
      (4) Priorities based on an analysis of current and historical (where available) health facilities utilization.
      (5) Priorities derived from the result of special surveys (e.g., nutrition survey; widespread iron deficiency anemia).
   c. Administrative Inventory
      Who is now responsible for what types of supervision and management? What are the various chains of command, supply, and payment? What program/management/budget tools are employed and what are current program expenses?
   d. Facilities and Equipment Inventory
      What is available? What is its condition? What is its capacity?
   e. Demography
      What is the current population in aggregate, by age, by sex, and how is it distributed geographically? What is the population projection for five and ten years in aggregate, by age, and geographic distribution?

   Following the inventory, information would be available to move to the next step in job analysis

and task restructuring; that is, which needs are to be filled by whom, providing services where? Why is that particular choice a good choice? What are the costs, both start-up and operating, of that particular choice? The questions listed above must be answered with a clear knowledge of the manpower resources available, such as:

(1) The existing workers to be retrained;
(2) The calculated deficit in number of workers to meet minimal essential needs after retraining; and
(3) If there is a projected deficit, then it must be:
    (a) Accepted, with a re-assessment of its implied priorities, or
    (b) Met, by developing new resources, trainers, supervisors, and trainees.

A compromise within "(3)" is possible; that is, for instance, a lowering of goals, coupled with the acquisition of modest additional resources.

2. Curriculum Development and Job Restructuring

Based on the foregoing information-gathering and analysis tasks, the following steps may then be taken:

a. Develop new job descriptions for front-line workers, including, as appropriate, revised job descriptions for supervisors and managers (including physicians).
b. Propose necessary modifications in the Ministry of Public Health's existing administrative structure within which new or modified jobs will be carried out. This process would include those structures with the responsibility for budget and personnel

at the level of dispensaries, health centers, and hospitals. It also would consider the relationship between the central Ministry of Public Health's divisions and bureaus (particularly family planning and the National Institute for Child Health, Division of Buildings and Equipment, Division of Hospitals, Preventive Medicine, and Nutrition Institute) to regional programs. In so far as the social/health worker may be directly or indirectly affected by this restructuring, both regionally and centrally, the Ministry of Social Affairs must be involved in decisions which affect their personnel.

c. Negotiate and obtain written approval for modified jobs and changes in the administrative structure from authorized individuals within the Ministry of Public Health and, as necessary, from other ministries which may have authority over changes in staffing patterns and job descriptions. As the Ministry of Education has substantial authority in the area of curriculum development and training, determine what its role must be in order for this project to succeed.

d. Initiate curriculum development.

e. Retrain, probably on a cyclical and small-group basis, existing workers. Recruit and train de novo, or augment the training of newly assigned workers, subject to the availability of a budget to support these workers after training.[7]

Project Number Two: Budget Planning: The Operating Cost Implications of Capital Investment Decisions, and Management Systems and Patient Records

1. The Operating Cost Implications of Capital Investment Decision

The problem of projecting future year operating costs implications of capital investment decisions has been discussed (Section II.F.). Basically, sound capital construction planning requires projection of probable

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[7] Some service sites may have to be closed for a limited time during periods of retraining for existing workers.

future year operating costs. Otherwise, the operating budgets likely to be available will be insufficient to fund adequately the future year program requirements of the Ministry of Public Health. Therefore, Family Health Care recommends to the Ministry and the Government of Tunisia that a mechanism be developed to project, for purposes of program and budget planning, future year operating cost implications of capital investments underway and proposed in the health sector. The team recommends further that USAID provide technical assistance to the MOPH to support the rapid development of this mechanism. The resident technical assistance personnel suggested in this proposal can assist in this function, but intermittent technical assistance staff with backgrounds in financial and economic analysis relevant to facilities planning must be provided.

This project component is recommended not only for its national planning benefits, but also to assure that:

a. The operating funds for the proposed Siliana and Sidi Bou Zid rural health system will be available.

b. The Siliana and Sidi Bou Zid capital planning process considers the level of future operating costs which will assure that the recurrent costs of the final program will be fully met within projected Tunisian revenue levels and without recourse to foreign donor assistance.

c. And, that the magnitude of projected operating costs makes the project, at the time of its initial design, potentially feasible for replication in other provinces.

2. Management Systems and Patient Records

The rural health delivery system that will be planned in detail, and developed and implemented along the lines outlined elsewhere in this report, will require a management system that allows resources applied (money and people) to be related to the services provided to a defined population. This capability, when linked to an ongoing assessment of morbidity patterns as partially revealed by a review of medical records, allows an assessment of the relevance of outputs from the rural health service programs to the needs of the population. Though changes in patterns of morbidity can, at most, be attributed only in part to any health program, changed morbidity patterns do require a changed delivery capacity, and they can suggest the changes needed in the content of training programs. This will be particularly true in areas such as Siliana and Sidi Bou Zid where escalation in the rate of economic and social development can reasonably be projected. In the face of such development rates, particularly when coupled with improved preventive and curative services,

it is reasonable that there will be changing pattern of illness over the next 10 to 20 years and, therefore, a requirement for new or modified preventive and curative interventions. Therefore, a management and medical records component to the project is proposed. It has the following objectives:

a. Develop and implement a simple manual system for identifying all fiscal resources (capital and operating) devoted to provincial health programs and allocate these resources to program elements by cost category.

b. Identify managerially useful program elements. Specific program elements at this time can only be illustrated, as the definition is dependent upon the completion of job restructuring and systems redefinition described elsewhere. However, an illustrative program element might be inpatient services or dispensary services. Cost categories common to all program elements might include personnel, supplies, pharmaceutical supplies, and travel.[8]

c. Define and identify the population base and the population served, grouped by age, sex, and geographic area. Relate the population served and population not served to estimates of unmet need and to the associated costs of delivering services needed by the uncovered population groups.

d. Provide a problem oriented patient medical record, probably housed at the dispensary level, which relates to family, household unit, and community. This record might

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[8] Reasonable cost categories are already developed and in use. The greatest need is to develop the capacity to allocate costs by program element and relate those costs to services provided.

build on the existing malaria census and household nummbering system. Such a record is to allow for:

(1) The planning and recording of the results from individual and mass preventive activities--e.g., immunizations and pre-natal care.

(2) The recording and ready identification of major individual health problems, therapeutic interventions, and ultimate resolutions.

(3) The assessment of services delivered for individual health care needs.

(4) The assessment of the perceived needs of the population, the diagnosed ills of those who seek care, and the discovered needs of those identified in screening programs.

(5) The planning for the initial, as well as periodic, modifications of training programs for front-line workers and other preventive, promotive, and curative programs.

Project Number Three: The Training and Orientation of Supervisors and Managers and Orientation of Communit Leaders

The restructuring of roles for front-line workers requires the following:

1. Understanding of and agreement to the roles by the supervisorial/managerial hierarchy.

2. Change in the supervisor's role, and to a lesser extent the manager's role, which will derive from any change in roles and responsibilities for front-line workers. Specifically, immediate supervisors may well have to acquire additional skills or familiarity with new technical areas in order to be able to adequately supervise workers who may be trained to do tasks outside the experience and training of the supervisor.

3. Official approval--by the Ministry of Public Health and by other concerned ministries--

of any changes either in the job descriptions of front-line workers and of their supervisors or in the responsibilities of higher levels of managerial and technical supervision.

4. Understanding and support of the needed changes in health personnel, particularly those relating to the front-line worker, by those parts of the provincial government structure which are outside the Ministry of Public Health administrative channels.
   a. The regional offices and staffs of other ministries and relevant agencies, e.g., Social Affairs, Agriculture, and SONEDE (the first is responsible for the social/health worker, and the latter two have responsibilities for water resources and drinking water quality).
   b. The political structure at and below the regional level--délégués, ômdas, etc.--and its administrative support structure. These individuals will play a key role in gaining the people's acceptance of a changed service pattern.
   c. The Governor's office: This office, with its broad administrative program and political responsibilities, must be fully aware of, approve, and support all program activities, but particularly those associated with job restructuring.

Representatives from all groups mentioned in "1," "2," "3," and "4" will be involved in the initial job analysis. In addition, specific efforts emphasizing--as appropriate--training, orientation, or coordination will be directed at each group.

1. Supervisors and Managers

Training and Orientation: After the completion of the job analysis and restructuring, and during the course of retraining front-line workers, supervisors

will be oriented to new front-line worker roles. This orientation will emphasize changes in the roles front-line workers will be expected to play in both service delivery and record-keeping (both patient and management records). The supervisor's responsibility vis-a-vis the new roles will be specifically reviewed, including techniques of field management, continuing education through supervision, performance reviews, and the identification of exceptional performers (both good and bad). Training of supervisors will be given in the specific technical areas in which they may lack prior training and experience and in which they will have responsibility for the front-line workers' performance. In the next stage of program planning, the National School of Administration, Tunis, should be contacted regarding a potential role in program development and implementation.

2. Omdas and Délégués

The preferable method of working with ômdas and délégués will be developed in conjunction with the Governor's office in each province. It is expected that after there is a substantial redefinition of jobs and approval of a modified service and job structure, individual and small-group discussions will take place, which bring together ômdas and

délégués with selected administrative and health service personnel from the region (quite possibly including front-line workers and their immediate supervisors).

Project Number Four: Strengthening of Preventive Medicine Internships

1. Public Health Internships

The key to improving and maintaining the quality of rural health services is the training of a small but reasonably stable cadre of physicians who are professionally challenged by the opportunities in public health, preventive medicine, and primary care. It is essential that a hospitable work and, to the extent feasible, social environment be structured to allow the physician with an interest in rural services to pursue further training and finally to find rewarding employment in rural areas.

In any case, a set of educational experiences--ideally starting with the medical school selection process, continuing through medical education, and building to the six-month preventive medicine obligatory stage of internship--are necessary steps. The internship is typically the last and most critical point at which a decision to enter residency training in public health and preventive medicine can be made.

To complement this stage of the educational experience, this project proposes the development and implementation of a model clinical experience in public health and preventive medicine (this phase of the project is substantially dependent upon the successful recruitment of a contract technical assistance physician trained in preventive medicine and public health).

Suggestions for project development are:

a. Determine the number of assignees likely per province per rotation. (It has been estimated that 100 interns could be assigned nationally to preventive medicine every six months; if they are assigned to all provinces equally (an assumption that may not be true or desirable), then an estimated four to five interns would be assigned every six months to each province.)
b. Determine the desirability of naming Siliana and Sidi Bou Zid as special elective sites that could be requested by potential interns.
c. Develop a short orientation for all pre-internship students to acquaint them with the Siliana and Sidi Bou Zid option in order to attract particularly good students.
d. Conduct small-group seminars for interns on principles of practice in public health, preventive medicine, and primary care, and covering such topics as:
    (1) Approaches to primary care
    (2) Practical epidemiology and health program planning
    (3) Health manpower--techniques of supervision, delegation, and consultation
    (4) Health manpower--alternative roles for physicians and non-physicians

(5) Principles of program management and budgeting
(6) Cost-effectiveness analysis
(7) Current morbidity and alternative approaches to morbidity control
(8) The rural problem oriented medical record--a tool for patient care, program management, and evaluation
(9) Resource allocation, rural development, and alternative health care program approaches
(10) The development, management, and testing of rural drinking water supplies
(11) Waste disposal in rural areas
  (a) sewage
  (b) solid waste
(12) The food chain--protection of the consumer and promotion of productivity
(13) Nutrition and health--the role of public health programs
(14) The delivery of maternal and child health services
(15) Trauma management in rural areas
(16) The organization of referral, emergency, and specialty services needed by the rural population

e. Structure field work for interns, including:
(1) "Research" projects chosen by students, designed to foster relevant problem identification and the development of realistic (affordable and effective) responses, including simple measures of program effectiveness
(2) Selected clinical experiences at the level of:
  (a) dispensary and home
  (b) integrated family health center
  (c) Inpatient management at the rural hospital
(3) Participation in the training and field supervision of front-line workers to expose the intern to curriculum development as well as to didactic and supervisorial techniques

(4) Program management: Attendence and participation in selected management meetings and management functions at the level of the provincial health administrator and the Regional Health Inspector.

The development of the program will be carried out conjointly by the U.S. contract physician assigned to the project, working under the overall guidance and within the framework agreed to by the Director of Preventive Medicine from the Ministry of Public Health, and the Chairman of Preventive Medicine at the Faculty of Medicine, Tunis. The Regional Health Inspectors, designated as field supervisors/instructors, are critical resources for the development of the interns' clinical experience. Additionally, physician staff should be identified in the university and MOPH systems whose interests in public health are such that they can contribute to the development or implementation of this component of the program.

It may become apparent that special periods of short-term overseas training are warranted for a few carefully selected staff members of either the division of Preventive Medicine, Ministry of Public Health, or the Preventive Medicine Faculty. For example, training might take place in such areas as systems analysis, the use and implementation of problem oriented records,

the physician's role in training and supervision of paramedical personnel, epidemiologic techniques, and health planning. It is suggested that any training be specifically structured on a case-by-case basis to meet the unique needs of the individual recommende for overseas training. Such training would normally last for one to three months and would be arranged by the technical assistance contractor drawing on, bu not limited to, relevant university resources in the United States, Canada, and Great Britain.

The personnel requirements associated with this project are such that persons recruited, particularly physicians, should either have, or wish to develop, a university affiliation of some type. Such an affiliation would not only be beneficial to the individuals, but would demonstrate to the Tunisian Ministry of Public Health and to the Faculty of Medicine/Tunis that senior individuals on the team are in fact currently members in good standing of the American academic community.

2. Library Resources

During the phase of the project leading to the Project Paper development, it is recommended that there be full exploration of the library needs of the Ministry and Faculty of Medicine in the field of

preventive medicine. There should be consultation on this with the Director of Preventive Medicine in the Ministry, and the Chairman of Preventive Medicine at the Faculty of Medicine. Should available library resources merit strengthening, then Family Health Care recommends serious consideration be given to providing a one-time grant for basic text and reference works on preventive medicine, public health, health planning, and epidemiology, as well as for selected series of multi-year subscriptions to relevant journals.

In Siliana and Sidi Bou Zid hospitals, there is no question that a small working library--containing basic clinical medical texts, public health preventive medicine texts, and a few selected journals--should be provided. At present, there is no way for either contract physicians, Tunisian physicians, or proposed contractor technical assistance staff (physician or non-physician) to draw on recorded experience in medicine and health. The provision of a small basic library resource (probably at a cost per hospital of about $1,500) will contribute substantially to the improvement of the professional environment in each province.

Additionally, Family Health Care directs AID's attention to a recommendation made in its original

report, "A Review of Health Services Development in Tunisia". At that time, the FHC team urged the provision of a basic set of library resources (text and journals) to the new faculties of medicine at Sousse and Sfax. It also recommends that consideration be given to providing each medical student with a basic set of current medical texts (in English). These texts should ideally be given to students, some on entry to medical school and again on entry into clinical studies. They should cover the following subjects:

a. Preclinical: Anatomy, physiology, biochemistry, pathology, pharmacology
b. Clinical: Physical diagnosis, medicine, surgery, public health and preventive medicine, obstetrics, gynecology, pediatrics, laboratory diagnosis, office procedures and practice.

Unless there has been a dramatic change since February 1976 (when FHC first visited Tunisia), the students at Sousse and Sfax, and many of the faculty, are seriously handicapped in the educational process by the lack of basic reference materials. Available French language texts are often translated from the English version of a past edition. For instance, the available French version of Harrison's Textbook of Medicine is an old edition which is at least five to seven years out of date, but now selling in Tunisia for over $80 (two to two and a half times the retail cost of

the current English language edition in the United States). Alternative sources of supply are various Southeast Asian suppliers whose copies of English language texts may be of questionable legality[9], but are of undoubted accuracy, currency, and usefulness. They are said to be available at a price advantage that would doubtless allow a substantially greater number of acquisitions.

Project Number Five: Evaluation Design and Implementation

Do the Siliana and Sidi Bou Zid rural health improvement programs make sense? Should they be continued? Should they be expanded to other provinces? How might they be modified? What can we learn from these experiences? Have the programs contributed to meeting the health needs of the population any better than unrestructured programs in other provinces? If so, is the additional cost worth the benefit?

These are legitimate questions and should be addressed. They fall within the purview and research interest of the Department of Preventive Medicine at the Faculty of Medicine, Tunis.

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9 Vis-a-vis direct U.S. procurement

The team proposes that the design and implementation of an analytic program evaluation be carried out by the Faculty of Medicine, in conjunction with the Ministry of Health, phased as follows:

1.	Evaluation design:	Months 2 - 6
2.	Assessment of design feasibility and utility of any data gathering instruments:	Months 3 - 6
3.	Design revision:	Months 6 - 9
4.	Data gathering:	Months 10 - 36
5.	Preliminary report: (Deliver a preliminary report on first 24 months of project with tentative assessment and recommendations)	Month 26
6.	Final report: (Deliver a final report on total project with final assessment and recommendations)	Month 40

C. CAPITAL ASSISTANCE

Project Number One: Hospital Improvement

This component of the project is vital. The rural hospitals in the towns of Siliana and Sidi Bou Zid should be capable of at least providing treatment based on accurate diagnoses, confirmed by physicians, by selected use of basic laboratory and x-ray examinations. This capacity is an essential cornerstone of any rural health system. If resources are to be focused sharply on actual health needs, this project must develop the health system's

ability to accurately identify illnesses common to an area and to use clinical experience as an input into service design and health worker training. In addition, the rural hospitals should have some components of inpatient space with sufficiently attractive amenities to encourage private patients to elect hospitalization in Siliana or Sidi Bou Zid. Finally, training space for front-line workers must be provided. The clinicians and supervisorial staff involved in curricula development and training will be based at the rural hospital. The provision of adequate classroom, office, and library space, as well as of related supplies and equipment, are fundamental to the rural service restructuring program as proposed in this report.

The hospital improvement project has seven related components:

1. X-ray
2. Clinical laboratory [10]
3. Library--clinical and public health
4. Classroom and office space
5. Emergency power
6. Sterilization of supplies and equipment
7. Improvement of inpatient-related amenities

The triad of Tunisian physicians, adequate diagnostic capacity, and reasonable inpatient space contributes to the creation of a milieu that could have the following effects:

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10 For a discussion of this subject, see Part B, Technical Assistance, Project Number Four.

1. Patient utilization of the Siliana or Sidi Bou Zid hospitals for selected illnesses by those able to afford private care in a major city.

2. A practice environment attracting the Tunisian private physicians into the government hospital.

3. Development of a reputation for the hospital among indigent and less well-to-do patients as one providing services that are both desirable and reasonable. (This factor may contribute to a subsequent increase in utilization of the hospital by at least some people who could afford to go elsewhere.)

1. Laboratory Equipment

a. Centrifuge
   (1) Microhematocrit (2)
   (2) Urine and general purpose (2)
b. Incubator, bacteriologic (2)
c. Microscopes (2)--with scanning, low power, high-dry, and oil immersion lens in a quadruple mount, movable stage, binocular eye pieces, built-in condensor and light source (the light source should have the ability to convert to the use of reflected light with a substage mirror)
d. Spectrophotometer (1)--table top, clinical laboratory type
e. Refrigerator (1)--electric, for media, specimen, and blood storage
f. Sterilizer (1) (in addition to the hospital sterilizer)--for decontamination of used media, media preparation (unless prepared media or disposable plates of media are available and cost-effective) and sterilization of various re-usable laboratory supplies (see Appendix 5)
g. Complete complement of glassware, chemicals, stains, racks, etc.

The above list should be reviewed by a clinical pathologist or a senior clinical laboratory technician in the United States in collaboration with a physician familiar with Tunisian rural health service needs. A modified, far more detailed, slightly expanded list specifying suggested equipment, possible suppliers, precise specifications, and prices could then be documented more completely. This should be accomplished prior to the next step of program development and be made available to the AID contract team making an input into the Project Paper process.

2. Emergency Power

A standby diesel generator, with sufficient capacity to handle the basic power requirements of the hospitals in the case of power outages, is strongly recommended. Detailed requirements for such a generator, power output, whether it ought to have an automatic start-up feature (e.g., a power failure automatically cuts in the generator), and the like, should be determined during the next phase of program development. The specifications for one type of a generator, diesel power, which might be appropriate, are included in Appendix 5.

3. --Sterilizing Capacity

Each hospital needs a single sterilizer sufficient to support basic clinical functions. This will allow the provision of a reasonable number of safe syringes needles, instruments, and linens. (See Appendix 5.)

4. Inpatient Amenities

During the next stage of program development, architects and hospital administrators should consult together and review the hospitals in Siliana and Sidi Bou Zid with a view toward upgrading the amenities associated with perhaps 10 to 15 beds in each hospital. The intent would be to make these beds comparable to those available in a private urban clinic. Then, given improved diagnostic capacity and the availability of qualified Tunisian physicians, private patients would have a locally available hospital which they find personally satisfactory. Thus, for private patients in Siliana and Sidi Bou Zid, all criteria for electing local hospitalization for certain illnesses would be met.

A surgical suite with operating room and associated equipment has been omitted from this proposal. Sidi Bou Zid has a small operatory (in the PMI center) that could, with the addition of sterilizing capacity, emergency power, additional

instruments, and a physician trained in selected aspects of surgery, allow the performance of much minor surgery and limited abdominal and orthopedic surgery. Siliana has no such capacity. In both cases, however, no surgeon is available.

An additional reason for not supporting surgical capacity at this time is that the current burden of surgical illness allows for referral. Though this is not an optimal long-term choice, it is satisfactory for the immediate future. However, the care of basic medical, pediatric, obstetrical, and gynecological illnesses is so fundamental, and these illnesses occur so often, that an absent capacity cannot even be approached adequately by referral. The end result is no care and no real knowledge of the illness burden of the population.

As the hospitals in Siliana and Sidi Bou Zid improve, the demand for these services, particularly in emergency situations, will increase. Thus, there is a real need for an expanded patient transport or ambulance system. In Sidi Bou Zid, it is the team's understanding that three Peugeot diesel ambulances are now being purchased out of the Governor's discretionary development funds. These will go a long way toward alleviating emergency patient transport needs in that

province.[11] Assurances should be obtained from Siliana that a similar capacity will be developed and timed to come on-line at the completion of the hospital improvement phase of this project.

5. X-Ray/Fluoroscopy

Fluoroscopy, without image intensification, is a popular diagnostic procedure in Tunisia, and in rural areas it is often the only radiologic procedure available. The installation of a radiographic (dry plate) capacity in rural hospitals and family health centers offers several advantages over fluoroscopy alone:

a. Greatly improved picture quality and better diagnostic accuracy.
b. A permanent film record.
c. Decreased radiation exposure for patients and health workers.
d. Far greater flexibility vis-a-vis the range of basic diagnostic procedures that can be undertaken (fluoroscopy alone without the capacity for taking spot films is a procedure that is essentially limited to an examination of the chest directed toward the identification of pulmonary pathology).

However, the acquisition cost, maintenance cost, and operating costs of even the simplest x-ray

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[11] Although no cost estimates are given in the budget for this project, the FHC team recommends subsequent consideration for AID assistance on the acquisition of transport for project staff, i.e., mobilettes.

apparatus exceed the comparable costs for a fluoroscopy unit. Implicit in the cost comparison is the assumption that the equipment will be used. This requires logistic support that actually delivers film and chemicals on a regular basis, and provides spare parts and maintenance workers on an on-call basis.

Although the operating and acquisition costs of x-ray or x-ray plus fluoroscopy are greater than fluoroscopy alone, the additional increment in health care costs associated with either x-ray alone or x-ray plus fluoroscopy is warranted because of the four factors listed above. The additional flexibility of x-ray plus fluoroscopy is particularly attractive. The acquisition cost of such a unit is the highest; however, the operating costs, particularly the costs associated with decreased use of film and chemicals, are lower.

For these reasons, FHC recommends that each rural hospital and selected family health center be provided with a single complete x-ray room, dark room, shielding for the x-ray apparatus, appropriate aprons and gloves for operators, spare parts, film, film holders, view boxes, and chemicals. The apparatus chosen should have the following operating characteristics:

a. Takes radiographs of patients in the upright, sitting, and supine positions, including films of the skull, chest, abdomen, and extremities.
b. Does not include or require a built-in tilt table.
c. Has provision for fluoroscopy without image intensification or spot films.
d. A projected ten-year or more operating life span.
e. When and if additional or more sophisticated radiographic technology and capacity is introduced into either rural hospitals (likely) and family health centers (less likely and probably not warranted), the unit will continue to be useful as a complement to any additional radiographic/fluoroscopic capacity.
f. Parts and service can be assured to be reasonably available over the lifetime of the equipment.
g. The final equipment chosen is easy to install with a minimum of plant modification or renovation.
h. Its maintenance history is good and similar equipment can experience relatively high use in remote sites.
i. The parts supply and service reputation of the manufacturer chosen is good.

As the final specifications for equipment are drawn up, consideration should be given to concern in the United States with the excess radiation exposure which is associated with the use of fluoroscopy without image intensification. As image intensification is probably not warranted on cost and maintenance grounds, and much if not all benefits of simple fluoroscopy can be replaced by dry films (although at a slightly higher operating cost),

consideration could be given to acquiring units without a fluoroscopic capacity.

A more sophisticated variant of the equipment recommended would be an x-ray machine with a fluoroscopy attachment. That is, one which included the capacity to take spot films. This additional capacity, and increment of cost, is probably not warranted for several reasons:

a. The acquisition cost of machines of this type are generally higher than either those that provide x-ray alone or those that provide x-ray plus fluoroscopy without spot film capacity.
b. The mechanical and design complexity of the fluoroscopy spot film unit is more complex.
c. This type of apparatus generally comes with a tilting examination table, which again adds complexity.

The benefit of the fluoroscope with spot film and the tilt table is the added capacity and flexibility which allows contrast studies of the upper and lower gastrointestinal tract to be performed. However, these procedures require the availability of an on-site radiologist or gastroenterologist. When and if such a specially trained physician is available, then a more appropriate step would be to acquire such a machine as a second generation piece of equipment in the Siliana or Sidi Bou Zid

hospitals to complement the basic equipment already described and proposed to be acquired through this project. It is also likely that in five to ten years the capacity of the delivery system and the needs of the rural hospitals would be such that additional equipment would be required. Furthermore, the reliability, cost, and ease of maintenance for the more technologically advanced equipment (e.g., image intensification) may be such that this would be warranted, and this equipment should be considered for acquisition toward the end of the next decade.

X-ray utilization may be such, particularly in family health centers, that it would be prudent to consider cross-training laboratory technicians in the operation and routine maintenance of radiographic apparatus. In any case, a condition necessary to be met with regard to all x-ray apparatus provided, is the provision of a technician on or about the time of installation. This person can be instructed in proper operation and maintenance by the equipment manufacturers' representatives.

Project Number Two: Ambulatory Facility Design and Construction

Planning the construction program to relate to and follow agreed upon program milestones as indicated in Table 22, Section VIII, is complex, and there are interrelated subjects in ambulatory facility construction projects requiring the following activity sequence: functional program, determination of budget, architectural design, preparation of construction documents, cost control and the completion of construction within budgetary and time constraints.

The facility design process must sufficiently follow or lag behind the program design (job restructuring--who does what, where, and staffing patterns); population needs (how many people to be served by facilities located where); and resource constraint assessment (can we afford all of those facilities) sufficiently to allow reality-based, functional facility design. But, if the lag is too great, the full benefit of the personnel and management systems improvement will be delayed and the impact of the program substantially diminished.

We have already discussed the Government of Tunisia and the Ministry of Health's recently adopted policy of decentralization and integration of health services. The exact nature and shape those services ought to take

in Siliana and Sidi Bou Zid has yet to be determined. In this sense, the existing preliminary drawings for family health centers and dispensaries are most appropriately viewed as a point of departure and illustrative of initial thinking rather than defining the shape of final program and facility design.

Construction costs are said to be rising rapidly in Tunisia. The FHC team has been made aware of both actual and estimated construction costs for completed buildings (including plumbing, electricity, and heating). These completed structures would be ready for occupancy, but without fixed or movable equipment. The range for these costs is shown in Table 20. Furthermore, cost estimates for apparently comparable construction vary widely, ranging from $9 per square foot to $40 per square foot (see Table 20). It is imperative, therefore, that construction costs be established with considerable precision early in the facility design process. This will allow an affordable mix of health centers, dispensaries, and hospital improvements to be determined and then designed. The following steps (not sequential) are proposed for consideration during the course of and prior to the completion of the Project Paper:

- Establish current costs for various types of construction, such as wood-frame, adobe, local stone, concrete block, and reinforced concrete.

- Establish the availability and probable interest of contractors able to:
  - Renovate dispensaries
  - Construct new dispensaries
  - Construct new family health centers

- Determine whether craftsmen are available to carry out the necessary construction.

- Determine if materials are available; what is the supply source and how are prices guaranteed.

- Explore the possibility of a government imposed construction moratorium (said to be under consideration). Determine whether or not it will affect public sector projects. If so, what would be the effects on this proposed project?

- Review and refine initial siting and service criteria.

- Make a preliminary decision on the fundamental layout of prototype:
  - Dispensaries
  - Family health centers

- Develop architectural plans derived from functional layouts, along with typical construction details and preliminary specification data, sufficient to allow accurate cost calculations.

- Gain an understanding and describe in detail the Government of Tunisia's design and construction process as it would relate to family health centers (centrally funded) and dispensaries (regionally funded). Specifically, determine the role of the Ministry of Public Health, the Ministry of Buildings and Equipment, and the role of other ministries. Who can make what inputs

of what type, when during the design and construction process? Where is the actual design work done? Who supervises the bidding and construction process? Who is responsible for accepting the building for the government? When are changes possible in the design and with whose permission?

- Explore the costs and feasibility of renovating existing structures (e.g., PMI centers for conversion to family health centers, and upgrading existing dispensaries).

The variations in cost estimates, a history of rapid construction cost escalation over the past five years, the legitimate uncertainty as to the final design of the proposed facilities at this time in program development, and the construction uncertainties which may be ahead (government moratorium), constitute some of the significant variables which make it difficult to fix costs with precision. With the information currently available, a realistic cost estimate permitting a decision as to the number and type of facilities which could be built within the $3 million proposed AID capital development loan (1.26 million dinars) cannot be made with any degree of precision at this time. However, if one assumes the following low estimates calculated on a per unit basis for gross square footage:[12]

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[12] See functional design and square footage suggestions in Appendix 4.

- Dispensaries: 2,000 square feet service space and 400 square feet housing at $16 per square foot.

- Family health centers with beds: 10,000 square feet at $16 per square foot;

then, the unit costs of these facilities would be as follows:

- Dispensaries: $38,400

- Family health centers with beds: $160,000.

Using the same square footage assumptions, but with higher cost per square foot ($36 per square foot), estimates would result in the following unit costs:

- Dispensaries: 2,400 square feet @ $36/sq. ft. = $ 86,400

- Family health centers with beds: 10,000 square feet @ $36/sq. ft. = $360,000

In summary, the following points are made:

1. A program and design concept sufficient to place an upper limit on square footage is very necessary.

2. Further, a far more precise estimate of construction costs (taking into account the most recent relevant Tunisian experience), based on a preliminary design specifying probable type of materials, manner of construction, delay, and other cost escalation factors likely to be encountered, is essential during the Project Paper phase.

One approach to design which considers program assumptions as outlined in Section III.B. and which is fully compatible with designing to cost is shown in

Appendix 4, "Suggested Facility Requirements Based on Program Assumptions". For purposes of illustration and comparison, the floor plans from the Black River (North Carolina) Health Center--a site visited by the Mobile Seminar in November 1976--are also included in Appendix

APPENDIX 7

EQUIPMENT LISTS

A. Type C Centre de Sante de Base

B. Type B Centre de Sante de Base

C. Type A Centre de Sante de Base

D. Rural Regional Hospitals

APPENDIX 7

EQUIPMENT LIST FOR PROPOSED FACILITY CONSTRUCTION/RENOVATION

The following four tables show the proposed equipment for the three centres de sante de base types A, B, and C, and the regional hospital laboratories. The letters in the column "Availability" refer to information received from the Ministry of Public Health, Division of Buildings and Equipment: T = available in Tunisia ; O = must be ordered from a foreign manufacturer and, depending upon size of the order, will take from 4-7 months for delivery; E = must be ordered, but easily available. For those items where this category is left blank, we did not receive exact information on availability.

The prices listed are either ones we received from the Ministry in dinars, which we have converted here to dollars (1 dinar = $2.38) or are estimates based on U.S. cost (estimates are marked with an asterisk). It should be noted that these are not fixed or final prices and variations should be expected.

EQUIPMENT FOR CENTRE DE SANTE DE BASE, TYPE C

SPACE	EQUIPMENT	NO.	AVAILABILITY	COST	TOTAL FOR SPACE
EXAM/CONSULTATION/ TREATMENT	Light	1		$24*	
	Patient Chairs	2	T	26	
	Desk	1	T	114	
	Physician Chair	1	T	43	
	Exam Table	1		132	
	Storage Cabinet	1	T	76*	
	Blood Pressure Cuff	1		120*	
	Stethoscope	1		24	
	Odoscope	1		76	
	Foot Stool	1		12*	$647 x 2 E/C/T Rms. = $1,294
WAITING	Benches, Male	5	T	196	
	Benches, Female	5	T	196	392
PHARMACY	Large Cabinet	1	T	76*	
	Small Refrigerator (250 Liters) (1)	1	E	364	
	Formica Top Table	1	T	24	
	Chairs	2	T	26	490
LAB	Small Dry Heat Sterilizer (2)	1	O	298	
	Hemoglobinometer	1		20*	
	Miscellaneous Glassware	1		20*	338
REGISTRATION	Table/Desk	1	T	60	
	Chair	1	T	13	
	Storage Cabinet	1	T	76*	
	File Boxes	3		71*	220
OUTREACH ROOM	Table	1	T	24	
	Blackboard	1		40*	
	Chairs	3	T	39	
	Storage Cabinet	2	T	152*	255

EQUIPMENT FOR CENTRE DE SANTE DE BASE, TYPE C

SPACE	EQUIPMENT	NO.	AVAILABILITY	COST	TOTAL FOR SPACE
PATIENT TRANSPORT	Wire Basket Stretcher	1		$107	
	Inflatable Splint Set	1		50	$157
TOTAL FOR CENTRE					$3,146

Notes:
1. Where electricity is available. Also for laboratory use.
2. Where electricity is available

EQUIPMENT FOR CENTRE DE SANTE DE BASE, TYPE B

SPACE	EQUIPMENT	NO.	AVAILABILITY	COST	TOTAL FOR SPACE	
EXAM	Same as C except gynecological table instead of exam table	1	O	$154	$669 x 3 E/C/T Rms. =	$2,007
OUTREACH ROOM	Same as C					255
WAITING	Benches, Male	10	T	393		
	Benches, Female	10	T	393		786
PHARMACY	Small Refrigerator (250 Liters) (1)	2	E	728		
	Formica Top Table	1	T	24		
	Chairs	2	T	26		778
LABOR	Beds	2	T	238		
	Chairs	2	T	26		
	Small Table	1	T	24		
	IV Pole	1	O	26		314
MAT. ED.	Demonstration Table	1	T	40*		
	Blackboard	1	T	40		
	Chairs	4	T	52		132
DELIVERY	Delivery Table	1	O	238		
	Instrument Cabinet	1		117		
	Fetal Stethoscope	1		30*		
	Miscellaneous Instruments	1		500*		
	Baby Bassinette	1		10*		
	Baby Scale	1		50*		
	Large Work Table	1	T	60*		
	IV Pole	1	O	26		
	Portable Surgical Light	1	O	300		
	Suction Machine	1		300*		1,631

EQUIPMENT FOR CENTRE DE SANTE DE BASE, TYPE B
PAGE 2

SPACE	EQUIPMENT	NO.	AVAILABILITY	COST	TOTAL FOR SPACE
PATIENT ROOMS	Beds	8	T	$952	
	Bassinettes	8		80*	
	Night Stands	8	T	457	
	Chairs	8	T	105	
	IV Pole	2	O	52	$1,646
KITCHEN	Small Refrigerator	1	E	364	
	Small Stove	1	O	119	
	Large Work Table	1	T	60	
	Chairs	2	T	26	569
LAB	Small Dry Heat Sterilizer	1	O	298	
	Hemoglobinometer	1		20*	
	Miscellaneous Glassware (2)	1		50*	
	Portable Bunson-Burner	1		10*	378
LAUNDRY	Freestanding Tubs	2	T	48*	48
REGISTRATION	Storage Cabinet	1	T	76*	
	File Boxes	5		119*	
	Chair	1	T	13	
	Desk	1	T	60	268
PATIENT TRANSPORT	Wire Basket Stretcher	1		107	
	Infl. Splint Set	1		50*	157
TOTAL FOR CENTRE					$8,969

Notes:
1. Also for laboratory use.
2. Including ESR apparatus, test tubes, white blood count apparatus.

EQUIPMENT FOR CENTRE DE SANTE DE BASE, TYPE A

SPACE	EQUIPMENT	NO.	AVAILABILITY	COST	TOTAL FOR SPACE
EXAM	Same as B			$669	
	Ophthomoloscope	1		25*	$694 x 4 Exam Rooms = $2,776
WAITING	Benches, Male	10	T	393	
	Benches, Female	10	T	393	786
PHARMACY	Small Refrigerator (1)	2	E	728	
	Table	1	T	24	
	Chairs	2	T	26	778
LABOR	Beds	2	T	238	
	Chairs	2	T	26	
	Small Table	1	T	24	
	IV Pole	1	O	26	314
MAT. ED.	Demonstration Table	1	T	40*	
	Blackboard	1	T	40*	
	Chairs	4	T	52	132
DELIVERY	Delivery Table	1	O	238	
	Instrument Cabinet	1		117	
	Fetal Stethoscope	1		30*	
	Baby Bassinette	1		10*	
	Large Work Table	1	T	60*	
	IV Pole	1	O	26	
	Portable Surgical Light	1	O	300	
	Suction Machine	1		300*	
	Baby Scale	1		50*	1,131
REGISTRATION	Desk	1	T	60	
	Chair	1	T	13	73
CONF/COMM. ROOM	Table	1	T	24	
	Benches	3	T	118	
	Blackboard	1	T	40*	
	Chairs	5	T	65	247

EQUIPMENT FOR CENTRE DE SANTE DE BASE, TYPE A

SPACE	EQUIPMENT	NO.	AVAILABILITY	COST	TOTAL FOR SPACE
PATIENT ROOMS	Bassinettes	8		$ 80*	
	Beds	15	T	1,785	
	Night Stands	15	T	857	
	Chairs	15	T	196	
	IV Poles	3	O	79	$2,997
EMERGENCY	Equipment Cabinet	1		117*	
	Portable Light	1	O	300	
	Instrument Tray	1		48*	
	Miscellaneous Instruments (2)	1		500*	
	Counter Space or Work Table	1	T	60*	
	Stretcher on Wheels	1	T	238	
	Table for Instruments	1	T	17	1,280
LAB	Small Dry-Heat Sterilizers	2	O	596	
	Hemoglobinometer	1		20*	
	Miscellaneous Glassware (3)	1		200*	
	Portable Bunson-Burner	1		10*	
	Microscope (binocular)	1	O	2,142	
	Centrifuge (micro-hematocrit)	1	O	533	
	Centrifuge (urine)	1	O	1,904	
	Hot Plate	1		10*	
	Lab Table	1	T	48	
	Chairs	2	T	26	5,489
LAUNDRY	Small Washing Machine (Mechanical Wringer)	1		4,760	
	Table	1	T	24	4,784

EQUIPMENT FOR CENTRE DE SANTE DE BASE, TYPE A

SPACE	EQUIPMENT	NO.	AVAILABILITY	COST	TOTAL FOR SPACE
LOUNGE:					
MALE	Chairs	5	T	$ 65	
	Table	1	T	24	
FEMALE	Chairs	5	T	65	
	Table	1	T	24	
					$178
ADMIN.	Storage Cabinet	1	T	76*	
	File Boxes	10		238*	
	Chairs	3	T	39	
	Desk	1	T	60	413
PATIENT TRANSPORT	Wire Basket Stretcher	2		214	
	Inflasplint Set	1		50*	264
KITCHEN	Chairs	2	T	26	
	Small Refrigerator	1	E	364	
	Small Stove	1	O	119	
	Large Work Table	1	T	60*	569
ISOLATION ROOM	Bed	1	T	119	
	Chair	1	T	13	132
TOTAL FOR CENTRE					$22,343

Notes:
1. Also for laboratory use.
2. Including delivery room miscellaneous instruments.
3. Including ESR apparatus, test tubes, and white blood count apparatus

EQUIPMENT LIST FOR REGIONAL HOSPITAL'S LAB

EQUIPMENT	NO.	AVAILABILITY	COST
Steam Sterilizer for Media Preparation (1)	1		$1,730
Binocular Microscope	2	O	4,284
Centrifuge (Hematocrit)	1	O	533
Centrifuge (Urine)	1	O	1,904
Table-Top Spectrophotometer	1		2,951
Incubator (Small)	1		952
Hemoglobinometer	1		20*
Refrigerator (Large Size)	1	E	488
Bunson Burners	2		20
Miscellaneous Glassware (2)	1		400*
Hot Plate	1		10*
Lab Table	1	T	48
Chairs	2	T	26
TOTAL FOR LAB			$13,366

Notes:

1. See Appendix 5 of FHC February, 1977 Report (U.S. delivery price).
2. Including ESR apparatus, test tubes, white blood count apparatus.

SILIANA

TYPE CENTRE	STATUS	TOTAL NUMBER	COST	TOTAL
A	New	2	$22,343	$44,686
A	Renovated	3	13,916 (1)	41,748
A (Regional Hospital)	Renovated	1	21,793 (2)	21,793
B	New	1	8,969	8,969
B	Renovated	0	0	0
C	New	6	3,146	18,876
C	Renovated	6	1,742 (3)	10,452
C	Equipment Only	0	0	0
TOTAL				$146,524

Notes:

1. For facilities which are to be renovated, an inventory of equipment needs to be made at the existing site. For our purposes, we are assuming that for A centres needing renovation, the total cost estimate for each centre may b estimated by adding the cost of the lab equipment ($5,489) to 50% of the cost of all other equipment ($16,854 ÷ 2 = $8,427), giving a total of $13,916.
2. For the regional hospitals we are assuming the cost of the regional hospital's lab ($13,366) plus 50% of all other equipment for centre A ($16,854 ÷ 2 = $8,427), giving a total of $21,793.
3. The cost of a renovated C centre was estimated by taking the cost of the lab equipment ($338), adding the cost of 50% of all other equipment ($2,808 ÷ 2 = $1,404), giving a total of $1,742.

SIDI BOU ZID

TYPE CENTRE	STATUS	TOTAL NUMBER	COST	TOTAL
A	New	3	$22,343	$67,029
A	Renovated	3	13,916 (1)	41,748
A (Regional Hospital)	Renovated	1	21,793 (1)	21,793
B	New	0	0	0
B	Renovated	1	8,969	8,969
C	New	9	3,146	28,314
C	Renovated	4	1,742 (1)	6,968
C	Equipment Only	4	500 (2)	2,000
TOTAL				$176,821
TOTAL FOR BOTH PROVINCES				$323,345

Notes:
1. These figures were derived as for Siliana.
2. This is an estimated cost.

APPENDIX 8

SOCIOECONOMIC DATA ON SILIANA & SIDI BOU ZID

APPENDIX 8

SOCIOECONOMIC DATA ON SILIANA AND SIDI BOU ZID

Sidi Bou Zid was designated a province on December 8, 1973, according to federal law #73-75;[1] Siliana was created on June 5, 1974 by federal law #74-47.[2] Both provinces were established from partitions of other areas, in part in order to allow the government to focus development assistance on two geographic areas of great unmet need. This was done as part of an overall, long-term policy to accelerate socioeconomic development in Tunisia.

While it was not the specific task of the FHC team to undertake a survey of the socioeconomic characteristics of these provinces, some relevant data was collected which supports the AID assistance requirement of targeting those populations in greatest need. In terms of the Siliana/Sidi Bou Zid program proposal and in terms of the health needs of these populations, it is our conviction that by designing an accessible, integrated system of health services, the basic health needs of the overriding majority of these populations can be met.

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1. Journal Officiel de la Republique Tunisienne, 14 Décembre, 1973.
2. Journal Officiel de la Republique Tunisienne, 7 Juin, 1974, p. 1242.

Most of the parts of the collected data which follow are based on statistics compiled from the national census of May, 1975. Some of these statistics have been published by the Institut National de la Statistique, Ministere du Plan, 33 Rue de la Commission, Tunis and are available to the public. Some of these statistics, however, are still being compiled and analyzed by this Institut and we are grateful to them for having made this unpublished data available to us during our last visit.

In addition to the sources listed for each table, two additional sources for Siliana province were given to us which we include here for further referral:

- "Contribution à la Planification dans le Domaine Sanitaire de la Région de Siliana," Thèse pour le Doctorat en Médécine (Diplôme d' Etat), Dr. Sami Dali, University of Tunis, (Faculté de Médécine et de Pharmacie), 15.16.FF. This doctoral thesis begins with a socioeconomic description of Siliana province which, while relevant, is too lengthy to be reproduced here.[3]

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3. Mr. Dali's conclusion, however, which summarizes this section, is as follows:

> "The poor condition of the roads, the rural dispersed type of housing, the over-crowding in the dwellings, as well as the bad conditions for distribution of potable water and energy, contribute to making the region of Siliana one of the least favored in the country." (p. 10)

- "Southern Siliana" (Description and Problems of an Area Proposed for an AID-Assisted Rural Development Project in Tunisia), USAID Mission to Tunisia, April, 1976, which gives comprehensive data on Maktar and Rohia delegations.[4]

Finally, the FHC team contacted Dr. Habib Attia, Profes... of Geography at the Faculty of Letters and Human Sciences, University of Tunis, who was recommended to us as the leading expert on these two provinces. Due to time restrictions, we were only able to contact him per telephone, but include his name here as a resource for further information.

Table 8A gives various data on the population of Tunisia and shows that Sidi Bou Zid is the most rural of all the provinces (93.9%), with the highest percentage of isolated inhabitants (85.3%). Next to Jendouba (85.2%), Siliana has the third highest percentage of rural inhabitants (84.3%), of which the majority too are isolated (60.4%). Both provinces have significantly higher isolated populations than most of the other provinces.

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4. "Maktar and Rohia present a set of severe human and physical constraints to development: Dispersed and isolated population, hard to reach from the paved roads; lack of trained personnel for government services or for productive activities; traditional attitudes that isolate women from effective participation in the community or the economy; a low level of community mobilization which would be conducive to self-help projects; rugged terrain; poor soils which are heavily eroded and in some instances are saline; inadequate or uncertain potable water supplies; and inadequate physical infrastructure for governance, transportation, education, and health. Yet these two delegations and their approximately 60,000 people are not unique with regard to the foregoing constraints. There are at least a dozen delegation-sized areas in north-central Tunisia that bear the burden of these characteristics, and thus ... same developmental problems. Moreover identical cons... affect negatively dozens of smaller-sized zones." (p. ...

Siliana also has the lowest rate of population growth for the country (1.00%).

Tables 8B, 8C, 8D, and 8E are directed toward the Tunisian labor force. These tables present serious problems in their interpretation but are included here for descriptive purposes. One of the problems lies in the definitions of "actively employed and "without work," as it is not known how these categories were derived and also because a serious problem in Tunisia is underemployment, which is difficult to measure and also not included in the figures we received. In addition, while the labor force totals are consistent in Tables 8B, 8C, and 8D, (e.g., totals for Tunisia are 1,621,820), in Table 8D this total includes those "without work" and "without work for the first time," while the total for Table 8C does not include these two categories, and Table 8B does not include "without work." Also it was not possible to obtain comparative figures for all the provinces.

Despite these problems it is possible to make some useful observations. In Tables 8B and 8C, it is clear that the largest part of the employed populations in these two provinces is engaged in agriculture; infrastructural capacities are not well-developed.[5]

5. These tables, particularly Table 8C, could be useful in considerations on the health labor force, especially in projecting potential population sources for additional workers. The tables which give categories divided by sex are helpful in understanding the under-developed role of women in certain capacities.

Of the totals in Table 8D, 26% in Siliana and 16% in Sidi Bou Zid are without work and without work for the first time; the Tunisian figure is 16%.

Tables 8F and 8G show the educational and literacy rates of all provinces. Table 8F shows Sidi Bou Zid to have the lowest rate of education for all provinces; Siliana has the fourth lowest. Table 8G shows both provinces to be in the lower third for the country in terms of literacy.

Table 8H shows that, of the selected provinces, Siliana and Sidi Bou Zid have the highest general fertility rates. It can also be assumed that the recording of births in these provinces particularly is inaccurate and probably under-recorded, and that therefore the general fertility rates are probably higher than as tabulated here.

Tables 8I, 8J, and 8K focus on housing in Tunisia. Tables 8I and 8J show percentages of lodgings having certain facilities and demonstrate clearly that the greater majority of lodgings in both provinces are lacking the facilities in question, particularly Sidi Bou Zid. In regard to electricity, running water, and bathrooms with hot running water and shower (Table 8I), Siliana and Sidi Bou Zid have the lowest percentages of all provinces. In nearly all categories in this table, both provinces are well below the national average. Table 8J shows both provinces to have the lowest percentage of total lodgings; at the same time, in nearly every category their percentage of total facilities are well under this percentage of total lodgings and here, too,

corresponding to the previous table, they fare poorly in comparison to the other regions.

Table 8K shows that 83% of all lodgings in Siliana have 1-2 rooms and 89% in Sidi Bou Zid (in Tunisia the average is 71%). The majority of other provinces have lodgings with a somewhat higher figure. These figures are, of course, dependent on size of rooms and number of persons in each dwelling.[6]

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6. These last three tables were taken from statistics gathered together in one document ("Logements") by the National Institute of Statistics. This document may be referred to for additional data which may be of interest but which is not included in this appendix because either it is not directly relevant or because of the length of the explanations involved in presenting the data. These other areas presented in the document are: types of dwellings (not included here because, due to the method of grouping of types, there is no consistent indication of socioeconomic development); dwellings which are vacant or where the occupants are absent; dwellings according to materials of construction in the walls and roofs (Siliana has the lowest percentage of dwellings which are of "strong resistance in construction" of all provinces--p. 52); dwellings according to categories of occupancy ("owner," "tenant," or "free title")--this table, as pointed out in the text of the document, is a reflection of the degree of urbanization rather than economic status (e.g., Sidi Bou Zid has the highest number of dwellings which are owned by the inhabitants of all the provinces); and more extended data on the three tables included in this appendix.

DISTRIBUTION OF THE POPULATION
ACCORDING TO SELECTED CRITERIA

PROVINCE (Gouvernorat)	POPULATION	PERCENT	ANNUAL RATE OF POPULATION GROWTH	DENSITY (INHABITANTS/ KILOMETER)	PERCENT OF THE POPULATION IN COMMUNES i.e. URBANIZED	PERCENT OF THE POPULATION NOT IN COMMUNES, i.e., RURAL		
						IN* AGGLOMERATIONS	ISOLATED	TOTAL
Siliana	192,668	3.4	1.00	41.3	15.7	23.9	60.4	84.3
Tunis Sud	205,097	3.7	2.27	50.4	22.0	22.1	55.9	78.0
Mahdia	218,217	3.9	2.52	75.5	33.2	17.6	49.2	66.8
Sidi Bou Zid	218,511	3.9	2.47	31.0	6.1	8.6	85.3	93.9
Monastir	223,150	4.0	2.85	229.3	76.9	15.2	7.9	23.1
Le Kef	233,155	4.2	1.30	46.7	23.3	32.3	44.4	76.7
Gafsa	237,844	4.2	2.21	17.3	56.8	15.8	27.4	43.2
Kasserine	238,499	4.3	2.45	29.8	20.7	3.0	76.3	79.3
Béja	248,770	4.4	1.39	69.8	25.2	44.3	30.5	74.8
Sousse	254,601	4.6	2.70	96.1	70.5	17.0	12.5	29.5
Gabès	255,717	4.6	2.37	8.6	36.6	36.7	26.7	63.4
Medenine	292,970	5.2	1.95	6.1	40.1	16.7	43.2	59.9
Jendouba	299,702	5.4	1.55	97.2	14.8	43.2	42.0	85.2
Kairouan	338,477	6.1	2.52	50.4	21.6	22.1	56.3	78.4
Bizerte	343,708	6.1	1.85	92.6	52.3	22.5	25.2	47.7
Nabeul	368,114	6.6	3.20	131.1	48.0	14.0	38.0	52.0
Sfax	474,879	8.5	2.15	63.5	59.7	11.3	29.0	40.3
Tunis	944,130	16.9	3.17	702.3	92.5	3.3	4.2	7.5
TOTAL	5,588,209	100.0	2.32	36.0	47.5	18.2	34.3	52.5

* A grouping of at least 50 inhabitants. Siliana has 261 agglomerations, of which 77.4% have less than 200 persons, 17.2% 200-399 persons, 2.3% have 400-599 persons, 1.5% have 600-999 persons, and 1.5% 1000 persons or more. Sidi Bou Zid has 74 agglomerations, of which 67.6% have less than 200 persons, 14.9% 200-399 persons, 4.0% 400-599 persons, 8.0% 600-999 persons and 5.4% 1000 persons or more. A breakdown of the population according to dwellings (logements) and households (menages) is not relevant for the purposes of this discussion but may be found in "Logements" (results of the 1975 National Census), Institut National de la Statistique, Ministere du Plan, Tunisia.

SOURCE: "Recensement Général de la Population et des Logements," 8 Mai 1975 (Population par division administrative), Institut National de la Statistique, Ministere du Plan.

TABLE 8B

DISTRIBUTION OF THE ACTIVELY EMPLOYED POPULATION (1)
ACCORDING TO BRANCH OF ECONOMIC ACTIVITY

ECONOMIC BRANCH	SILIANA			SIDI BOU ZID			TUNISIA		
	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL
Agriculture	21,200	430	21,630	30,880	2,370	33,250	456,620	69,410	526,030
Extractive Industries (e.g., Mining)	650	--	650	190	10	200	26,780	430	27,210
Processing Industries (Agriculture Only)	520	2,690	3,210	380	5,290	5,670	73,230	122,420	195,650
Other Processing Industries	510	10	520	160	--	160	42,590	2,400	44,990
Electricity, Gas & Water	150	--	150	80	--	80	11,160	520	11,680
Construction (Buildings & Public Works)	2,870	10	2,880	4,250	10	4,260	139,560	1,180	140,740
Transportation & Communication	640	--	640	820	10	830	54,530	2,850	57,380
Commerce, Banking, Insurance, Private Business	1,490	10	1,500	1,590	10	1,600	118,210	9,130	127,340
Services	3,610	620	4,230	4,330	370	4,700	169,960	47,830	217,790
Not Known	11,720	970	12,690	3,980	350	4,330	133,910	19,980	153,890
Without Work for the First Time (2)	4,350	980	5,330	3,440	900	4,340	91,760	27,360	119,120
TOTAL	47,710	5,720	53,430	50,100	9,320	59,420	1,318,310	303,510	1,621,820

1. Those fifteen years of age and older, born in 1960 or before.
2. Those persons never having worked before but presently seeking work.

SOURCE: Figures are based on data from the 1975 National Census, provided by the Institut National de la Statistique, Ministere du Plan, Tunis. These figures are as yet unpublished, presently being compiled by this Institut.

TABLE 8C

DISTRIBUTION OF THE ACTIVELY EMPLOYED POPULATION (1) BY PROFESSION

	PROFESSION (2)	SILIANA			SIDI BOU ZID.			TUNISIA		
		MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL
0/1 (3)	Liberal Arts professionals, technical professionals and allied professions	210 950	30 90	240 1,040	250 1,130	20 50	270 1,180	15,660 140,430	4,670 11,330	20,330 151,760
2	Administrative directors and their special assistants	20	-	20	50	-	50	4,470	230	4,700
3	Other administrative personnel and allied workers	1,330	130	1,460	1,090	80	1,170	68,630	17,160	85,790
4	Persons engaged in commerce and sales	1,200	20	1,220	1,350	10	1,360	72,040	2,580	74,620
5	Service professions	1,130	340	1,470	1,050	190	1,240	67,230	26,710	93,940
6	Persons engaged in agriculture, animal husbandry, forestry, fishing and hunting	21,170	440	21,610	30,870	2,370	33,240	456,420	69,280	525,700
	Skilled and unskilled workers not in 6; train conductors and drivers of vehicles	980 1,010 6,360	2,730 - 90	3,710 1,010 6,450	540 660 6,090	5,340 - 20	5,880 660 6,110	64,460 84,740 266,450	120,620 1,720 7,990	185,080 86,460 274,440
10	Other workers not classified in 7,8,9	13,340	1,850	15,190	6,940	1,200	8,140	176,620	40,940	217,560
	Not Known	10	-	10	80	40	120	1,160	280	1,440
	TOTAL	47,710	5,720	53,430	50,100	9,320	59,420	1,318,310	303,510	1,621,820

1. Those 15 years of age and older, born in 1960 or before.

2. For an exact break-down of these categories of professions see: "Classification des Professions (Code Analytique)", Direction des Statistiques Démographiques et Sociales, Institut National de la Statistique, Octobre, 1975. (The numbers given in the first column correspond to this code).

3. This category includes physicians, dentists, veternaries, dietitians, nurses with diplomas, and mid-wives.

Source: Figures are based on data from the 1975 National Census, provided by the Institut National de la Statistique, Ministere du Plan, Tunis. These figures are as yet unpublished, presently being compiled by this Institut.

TABLE 8D

DISTRIBUTION OF THE EMPLOYABLE AND ACTIVELY EMPLOYED POPULATIONS

STATUS	SILIANA			SIDI BOU ZID			TUNISIA		
	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL
Actively Employed	35,750	3,930	39,680	41,690	8,100	49,790	1,105,940	260,580	1,366,520
Without Work	7,610	810	8,420	4,970	320	5,290	120,610	15,570	136,180
Without Work[1] for the first time	4,350	980	5,330	3,440	900	4,340	91,760	27,360	119,120
TOTAL	47,710	5,720	53,430	50,100	9,320	59,420	1,318,310	303,510	1,621,820

/1 Those persons never having worked before but presently seeking work.

Source: Figures are based on data from the 1975 National Census, provided by the Institut National de la Statistique, Ministere du Plan, Tunis. These figures are as yet unpublished, presently being compiled by this Institut.

TABLE 8E

DISTRIBUTION OF THE EMPLOYABLE AND ACTIVELY EMPLOYED POPULATIONS IN AGRICULTURE

STATUS	SILIANA			SIDI BOU ZID			TUNISIA		
	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL
Actively Employed	20,630	420	21,050	30,330	2,370	32,700	439,950	68,980	508,930
Without Work	570	10	580	550	-	550	16,670	430	17,100
Without Work[1] for the first time	-	-	-	-	-	-	-	-	-
TOTAL	21,200	430	21,630	30,880	2,370	33,250	456,620	69,410	526,030

/1 Those persons never having worked before but presently seeking work.

Source: Figures are based on data from the 1975 National Census, provided by the Institut National de la Statistique, Ministere du Plan, Tunis. These figures are as yet unpublished, presently being compiled by this Institut.

TABLI

RATE OF EDUCATION (SCOLARISATION) OF THE POPULATION
AGED 6-14 YEARS BY SEX AND BY PROVINCE

	MALES			FEMALES			TOTAL		
PROVINCE (GOUVERNORAT)	EDUCATED (1) POPULATION (in No.'s)	EDUCABLE(2) POPULATION (in No.'s)	RATE (%)	EDUCATED POPULATION (in No.'s)	EDUCABLE POPULATION (in No.'s)	RATE (%)	EDUCATED POPULATION (in No.'s)	EDUCABLE POPULATION (in No.'s)	RATE (%)
Sidi Bouzid	14,750	28,060	52.56	4,750	26,230	18.10	19,490	54,280	35.91
Kairouan	20,910	41,410	50.49	9,760	39,190	24.90	30,670	80,600	38.05
Kasserine	17,070	31,410	54.34	7,780	29,580	26.30	24,850	60,990	40.74
Siliana	14,710	25,020	58.79	8,120	23,190	35.01	22,830	48,210	47.36
Jendouba	24,140	39,190	61.59	13,950	39,050	35.72	38,090	78,240	48.68
Béja	19,470	31,190	62.42	11,500	29,030	39.61	30,910	60,160	51.38
Mahdia	20,310	27,970	72.61	8,720	25,850	33.73	29,030	53,820	53.96
Kef	20,580	31,090	66.19	12,660	29,570	42.81	33,230	60,650	54.79
Gafsa	21,800	31,580	69.03	12,870	29,900	43.04	34,660	61,470	56.39
Gabès	24,120	34,570	69.77	13,150	31,220	42.12	37,270	65,790	56.65
Tunis Sud	18,240	26,330	69.27	10,410	23,850	43.64	28,640	50,170	57.09
Bizerte	28,130	41,540	67.71	22,130	41,490	53.33	50,260	83.030	60.53
Medenine	27,060	36,270	74.60	16,070	34,360	46.76	43,130	70,630	61.06
Nabeul	36,910	48,900	71.39	27,010	45,810	58.96	61,910	94,700	65.37
Sfax	47,780	62,550	76.38	33,830	61,020	55.44	81,590	123,550	66.04
Sousse	24,420	31,260	78.11	17,620	30,520	57.73	42,030	61,770	68.04
Monastir	24,870	30,530	81.46	20,220	27,360	73.90	42,460	57,890	73.35
Tunis	98.020	117,480	83.43	87,880	113,960	77.11	185,850	231,390	80.32
TOTAL	501,290	716,350	69.97	338,430	681,180	49.68	836,900	1,397,340	59.89

1. Those persons between the ages of 6-14 who are in school.
2. Those persons between the ages of 6-14.

SOURCE: Figures are based on data from the 1975 National Census, provided by the Institut National de la Statistique, Ministere du Plan, Tunis. These figures are as yet unpublished, presently being compiled by this Institut.

TABLE 8G

RATE OF LITERACY BY PROVINCE

PROVINCE (GOUVERNORAT)	%
Kairouan	29.76
Sidi Bou Zid	30.79
Jendouba	33.29
Kasserine	33.36
Siliana	34.81
Béja	36.01
Mahdia	37.26
Tunis Sud	39.96
Kef	40.29
Medenine	41.17
Gabès	41.73
Gafsa	43.57
Bizerte	43.86
Nabeul	46.79
Sousse	49.48
Sfax	52.55
Monastir	53.54
Tunis	62.47

Source: Figures are based on data from the 1975 National Census, provided by the Institut National de la Statistique, Ministere du Plan, Tunis. These figures are as yet unpublished, presently being compiled by this Institut.

TABLE 8H

GENERAL FERTILITY RATES
FOR SELECTED PROVINCES

PROVINCE	Average Monthly Births 1975	Number of Women Between 15-44 1975	General[1] Fertility Rate 1975
Siliana	600	38,620	186
Sidi Bou Zid	802	41,240	233
Tunis	2,410	214,440	135
Sfax	1,353	100,470	162
Le Kef	638	49,810	154
Tunis Sud	566	42,090	161
Kairouan	1,193	66,150	216
Gabes	909	53,230	205
Bizerte	723	70,360	123
Tunisia	16,712	1,162,340	173

/1 General fertility rate = $\frac{\text{average monthly births} \times 12}{\text{number of women between 15-44}} \times 1000$

An attempt was made to tabulate the crude death rates and rates of emigration for these selected provinces, based on numbers of average monthly deaths and average monthly emigrations, data also obtained from the "Bulletin Mensuel de Statistique." However, due to lack of internal consistency of these tabulations (assumed to be related to such factors as possible abnormal age distributions and/or inaccuracies in obtaining and/or recording data), we have not included these tabulations here.

Source for average monthly births: "Bulletin Mensuel de Statistique" (Institut National de la Statisque, MOP), #266, Fev. 1977, pp. 6-7.

Source for number of women, 15-44: Based on data from the 1975 National Census, provided by the Institut National de la Statistique, Ministere du Plan, Tunis. These figures are as yet unpublished, presently being compiled by this Institut.

TABLE 81

PERCENTAGE OF LODGINGS WHICH HAVE CERTAIN FACILITIES ACCORDING TO PROVINCES

Province (Gouvernorat)	PERCENTAGE OF LODGINGS HAVING: Kitchen	W.C.	Bathroom Having Hot Running Water	Bathroom Having Shower & Hot Running Water	Bathroom Not Installed	Cistern	Well	PERCENTAGE OF LODGINGS CONNECTED TO SYSTEMS OF: Electricity	Running Water	Water Drainage
Tunis	77.27	84.90	17.33	10.04	7.20	2.57	9.38	78.01	70.75	65.08
Tunis Sud	40.79	30.35	1.56	1.17	0.78	1.26	6.34	18.58	14.32	10.01
Bizerte	49.28	49.44	3.54	2.64	2.26	1.58	16.03	35.97	27.71	37.13
Béja	23.60	25.33	2.00	0.87	0.68	0.73	2.48	17.03	15.81	17.28
Jendouba	27.12	20.32	1.82	1.86	0.83	0.48	8.71	12.71	13.74	13.60
Kef	32.64	27.23	2.20	1.68	0.50	0.52	2.50	16.90	15.47	12.26
Siliana	50.63	18.84	0.95	0.54	0.22	0.89	3.05	8.11	8.87	6.55
Kasserine	21.28	14.05	0.72	1.06	1.29	3.19	1.74	8.84	9.44	1.68
Sidi Bou Zid	15.12	11.52	0.67	0.79	1.08	30.60	4.92	4.84	2.43	1.47
Gafsa	43.43	43.16	2.37	2.97	1.95	3.54	2.61	40.12	29.43	7.40
Medenine	31.68	19.91	2.09	2.07	11.53	14.71	2.65	17.85	11.62	0.90
Gabès	45.28	45.60	3.41	3.94	2.88	9.75	7.08	23.63	21.54	8.87
Sfax	64.02	60.28	6.77	4.39	29.90	49.17	32.24	49.02	26.28	12.12
Kairouan	22.40	19.60	1.78	1.42	0.61	8.58	3.26	13.33	11.24	10.00
Mahdia	33.31	30.41	1.94	1.12	4.53	29.13	21.30	18.70	9.13	5.63
Monastir	47.79	62.01	5.79	3.36	5.16	7.45	18.57	51.54	36.47	13.41
Sousse	48.39	56.04	6.95	3.69	3.81	12.82	8.60	48,37	35.82	26.48
Nabeul	40.50	52.15	4.23	2.60	5.40	7.73	36.64	39.26	20.59	26.83
Tunisia TOTAL	44.31	43.31	5.22	3.44	6.11	11.32	12.16	34.20	26.41	20.73

SOURCE: "Logements" (based on data from the 1975 National Census), Institut National de la Statistique, Ministere du Plan, Tunis.

TABLE 8J

PERCENTAGE EACH PROVINCE HAS OF TOTAL NUMBER OF LODGINGS WITH CERTAIN FACILITIES

Province (Gouvernorat)	Percentage of Total Lodgings	FACILITIES:							CONNECTION WITH A SYSTEM OF:		
		Kitchen	W.C.	Bathroom Having Hot Running Water	Bathroom Having Shower & Hot Running Water	Bathroom Not Installed	Cistern	Well	Electricity	Running Water	Water Drainage
Tunis	14.65	25.56	28.74	48.61	42.75	17.30	3.33	11.30	33.44	39.27	46.02
Tunis Sud	3.31	3.05	2.32	0.99	1.13	0.42	0.37	1.72	1.80	1.79	1.61
Bizerte	6.01	6.68	6.85	4.07	4.62	2.23	0.84	7.92	6.32	6.31	10.76
Béja	4.07	2.16	2.38	1.56	1.04	0.46	0.26	0.83	2.03	2.44	3.40
Jendouba	5.50	3.36	2.58	1.92	2.97	0.75	0.24	3.94	2.05	2.86	3.61
Kef	3.97	2.93	2.50	1.97	1.93	0.33	0.18	0.82	1.96	2.32	2.35
Siliana	3.12	3.56	1.35	0.57	0.49	0.11	0.25	0.78	0.74	1.05	0.99
Kasserine	4.68	2.25	1.52	0.65	1.44	0.99	1.32	0.67	1.21	1.67	0.38
Sidi Bou Zid	4.12	1.41	1.10	0.53	0.95	0.73	11.14	1.67	0.58	0.38	0.29
Gafsa	4.18	3.82	4.16	1.90	3.61	1.33	1.31	0.90	4.90	4.66	1.49
Medenine	6.52	4.65	3.00	2.61	3.93	12.30	8.46	1.42	3.40	2.87	0.28
Gabès	4.66	4.75	4.91	3.04	5.34	2.20	4.01	2.71	3.22	3.80	2.01
Sfax	9.15	13.23	12.74	11.85	11.66	44.78	39.73	24.25	13.11	9.11	5.35
Kairouan	6.28	3.17	2.84	2.15	2.61	0.63	4.76	4.27	2.45	2.67	3.03
Mahdia	4.34	3.75	3.04	1.62	1.41	3.22	11.17	7.60	2.51	1.50	1.18
Monastir	4.08	4.41	5.84	4.53	3.98	3.45	2.69	6.24	6.15	5.64	2.64
Sousse	4.88	5.33	6.32	6.48	5.23	3.04	5.52	3.45	6.90	6.61	6.23
Nabeul	6.48	5.93	7.81	5.25	4.91	5.73	4.42	19.51	7.44	5.05	8.39
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SOURCE: "Logements" (based on data from the 1975 National Census), Institut National de la Statistique, Ministere du Plan, Tunisia.

TABLE 8K

PERCENTAGE OF LODGINGS ACCORDING TO NUMBER OF ROOMS BY AREA AND BY PROVINCE

NUMBER OF ROOMS	PROVINCE (GOUVERNORAT)																		
	TUNIS	TUNIS SUD	BIZERTE	BÉJA	JENDOUBA	KEF	SILIANA	KASSERINE	SIDI BOU ZID	GAFSA	MEDENINE	GABÈS	SFAX	KAIROUAN	MAHDIA	MONASTIR	SOUSSE	NABEUL	TOTAL
	URBAN AREAS																		
1	15.85	23.94	20.99	28.32	29.94	24.03	22.62	19.78	20.33	19.75	22.08	13.40	14.62	19.83	29.26	24.38	26.87	21.87	19.80
2	28.94	38.39	40.80	31.89	38.40	34.37	46.72	39.21	37.80	34.52	31.51	32.15	31.41	33.42	35.41	37.40	34.00	33.22	33.04
3	29.95	22.34	22.83	23.68	20.00	28.03	21.14	26.50	25.20	27.52	25.99	27.33	29.31	27.79	21.75	23.65	24.17	26.68	26.93
4	14.78	8.76	10.27	10.49	8.96	7.90	5.71	10.55	10.16	10.09	12.44	16.54	16.88	12.90	9.37	9.48	9.89	12.14	12.67
5 & +	10.48	6.57	5.11	5.11	5.62	2.70	5.67	3.81	1.96	6.51	8.12	7.98	10.58	6.78	6.06	4.21	5.07	6.14	7.56
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	RURAL AREAS																		
1	39.66	45.56	56.65	72.79	68.30	48.24	54.16	71.55	69.64	53.96	44.59	38.84	59.69	70.50	55.85	40.96	54.60	58.17	58.29
2	32.50	36.93	33.79	20.52	25.36	33.11	31.12	18.91	21.38	26.49	33.22	31.76	27.95	23.71	33.22	27.30	32.65	26.70	28.16
3	16.90	11.80	7.16	4.38	4.54	11.94	9.51	6.15	5.78	11.74	14.66	15.86	7.86	4.08	7.67	15.67	8.56	9.34	8.73
4	6.07	3.67	1.48	1.60	1.43	4.58	3.10	2.15	1.92	4.37	5.13	7.90	2.96	1.06	2.48	3.76	2.19	3.53	3.05
5 & +	4.87	2.04	0.92	0.71	0.37	3.13	2.11	1.24	1.08	3.44	2.40	5.64	1.54	0.65	0.78	2.31	2.00	2.26	1.77
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	TOTAL																		
1	17.55	41.00	38.67	62.47	62.53	42.68	49.32	62.18	66.83	34.81	36.31	30.50	33.36	60.88	47.30	28.36	35.91	41.11	40.95
2	29.19	37.24	37.33	23.16	27.32	33.40	33.52	22.59	22.38	30.99	32.59	31.89	29.97	25.56	33.92	37.37	33.56	29.76	30.36
3	29.02	14.03	15.06	8.86	6.86	15.64	11.29	9.83	6.96	20.58	18.83	19.62	20.39	8.58	12.20	21.74	19.09	17.49	16.93
4	14.16	4.75	5.91	3.66	2.56	5.34	3.50	3.67	2.42	7.57	7.83	10.73	11.09	3.31	4.70	8.11	7.38	7.57	7.39
5 & +	10.08	2.98	3.03	1.85	0.73	2.94	2.37	1.73	1.41	6.05	4.44	7.26	5.19	1.67	1.88	4.42	4.06	4.07	4.37
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SOURCE: "Logements" (based on data from the 1975 National Census), Institut National de la Statistique, Ministere du Plan, Tunisia.

APPENDIX 9

FOREIGN DONOR COORDINATION

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A. CARE-MEDICO

The CARE-Medico project to develop the water supply in remote rural areas of Siliana province is reported to be going well. Under the first phase of the project fifty wells and springs, mostly in the delegations of Maktar and Rohia, are being renovated and equipped with workable and durable manual pumps. CARE-Medico, in collaboration with health and administrative officials, is training local sanitation workers in the maintenance and proper chlorination of these wells. In addition, a minimum of 100 latrines will be constructed on a "self-help" basis, with CARE-Medico contributing materials and technical assistance. A latrine construction project of this type has recently been completed with success in Le Kef.

As a second phase to the project, CARE-Medico plans to create a certain number of new wells in Siliana province. Since CARE-Medico has no prior experience in well-drilling in Tunisia, a feasibility study and test drilling would precede this phase of the project.

As recommended in the February FHC report, coordination of the health project with CARE-Medico's water supply project is clearly desirable.

B. USAID/RURAL DEVELOPMENT PROJECT - SOUTHERN SILIANA

This project is a comprehensive development program and represents a major program thrust of the USAID Mission and the Government of Tunisia. A contract has been let for initial implementation. The Project Paper is available from the Mission or from AID/Washington for readers wishing to have further information. Coordination and development of complementary activities would be advisable.

C. PEACE CORPS

At present no new Peace Corps programs in curative health care are planned for Tunisia. However, there is considerable interest in developing preventive health activities for Peace Corps volunteers, and FHC recommends that collaboration between Peace Corps and the rural health project be actively explored.

One female Peace Corps Volunteer is now doing preventive health work in Tunisia, with apparently encouraging results. This Volunteer works with a local animatrice social in the inspection of rural wells. In the course of their visits, they watch for clinical symptoms in infants, taking blood samples when indicated, and actively encouraging mothers to take their children to the nearest PMI.

As discussed in the previous FHC report, volunteers with backgrounds in health curriculum development, paramedical training, or management of health and environmental sanitation services

could provide a useful complement to the technical assistance contract personnel working in the rural health project in Siliana and Sidi Bou Zid. Specifically, volunteers could be assigned to the regional health inspectors, should regionalization be implemented early in the life of the program.

D. PROJECT HOPE

Project HOPE/Tunisia has collaborated for several years in the development of paramedical training programs and in the development of integrated health service programs providing practical training sites for non-physician health workers. HOPE has provided technical assistance to the paramedical programs in Sousse, Monastir, and Nabeul, and is connected as well to the health system in all three areas. In addition, Project HOPE is now planning to assist in the development of a community medicine department within the Faculty of Medicine at Sousse.

Project HOPE's emphasis has been on improvement of the health system rather than on direct provision of manpower, and its experience in this area should be explored. Coordination and exchange of information with Project HOPE, Tunis, is recommended.

E. UNDP

The contract technical assistance staff assigned to the UNDP-supported training school for paramedical trainers has now arrived in Tunis and begun work in the development of the school. Continued contact with the UNDP representative in Tunis, as well as with the staff of the new school, is highly recommended.

F. WORLD HEALTH ORGANIZATION

Although WHO was not contacted on this visit, project review and collaboration with WHO is urged, as recommended in FHC's February report.

G. INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT (WORLD BANK)

The current exploratory talks between the Bank and the Government of Tunisia concerning the financing of centres de sante de base in all provinces other than Siliana and Sidi Bou Zid may result in a substantial loan for facility construction. If so, the program and facility design experience from the proposed USAID project should be recognized by and, when appropriate, incorporated within any Tunisian/World Bank project.