

PROJECT EVALUATION SUMMARY (PES) - PART I

| | | | | |
|--|---------------------------------------|----------------------------------|---|--|
| 1. PROJECT TITLE - Siliana Rural Centers Water Systems - Rural Water System (Sbiba-Jedliane-Rohia) | | | 2. PROJECT NUMBER 664-0318 664-0312.4 | 3. MISSION/AID/W OFFICE USAID/Tunis |
| 5. KEY PROJECT IMPLEMENTATION DATES | | | 4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 664-843 | |
| A. First PRO-AG or Equivalent FY 78 | B. Final Obligation Expected FY 79 | C. Final Input Delivery FY 84 | 6. ESTIMATED PROJECT (000'S) FUNDING A. Total \$ 6,900 B. U.S. \$ 4,250 | |
| | | | 7. PERIOD COVERED BY EVALUATION From (month/yr.) 8/78 To (month/yr.) 12/83 Date of Evaluation Review | |

B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

| A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.) | B. NAME OF OFFICER RESPONSIBLE FOR ACTION | C. DATE ACTION TO BE COMPLETED |
|--|---|--------------------------------|
| -Final reimbursements for three completed water systems at Le Krib, Bou Arada and Siliana (Distribution) | M.A. Hassairi USAID/PROG -Khouadja/SONEDE | 4/84 |
| -Final Inspection and Certification of completion for the Siliana distribution system completed on 12/31/83 | AID Reg. Engineer | 2/84 |
| -Certification for completion of construction on the Gaafour water system for final reimbursement by AID of retained funds available under the project before the TDD of 9/30/84 | -AID Reg. Engineer -M.A. Hassairi USAID/PROG -M.A. Khouadja SONEDE | 6/84 |

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

| | | |
|--|--|--|
| <input type="checkbox"/> Project Paper | <input type="checkbox"/> Implementation Plan e.g., CPI Network | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Financial Plan | <input type="checkbox"/> PIO/T | _____ |
| <input type="checkbox"/> Logical Framework | <input type="checkbox"/> PIO/C | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> Project Agreement | <input type="checkbox"/> PIO/P | _____ |

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

A. Continue Project Without Change

B. Change Project Design and/or Change Implementation Plan

C. Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

USAID: Frank J. Kerber, Acting Program Officer
PROGRAM: Mohamed Ali Hassairi, Capital Dev. Specialist
SONEDE: Mohamed Ali Khouadja

12. Mission/AID/W Office Director Approval

Signature: *[Signature]*
Typed Name: James R. Phippard, Director
Date: 2.8.84

NEAR EAST EVALUATION ABSTRACT

| | | | |
|---|--|---|---|
| PROJECT TITLE(S) AND NUMBER(S) -Siliana Rural Centers Water Systems (664-03I8) -Rural Water System - Sbiba/Jedliane/Rohia (664-03I2.4) | | MISSION/AID/W OFFICE USAID/Tunis | |
| PROJECT DESCRIPTION Help finance the installation of three new systems and the reinforcement of eight potable water systems in development centers of the Governorate of Siliana | | | |
| AUTHORIZATION DATE AND U.S. LOP FUNDING AMOUNT - 7/26/78 \$3,500,000 - 9/T/79 \$750,000 | PES NUMBER 664-84-3 | PES DATE 2-8-84 | PES TYPE <input type="checkbox"/> Regular <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Special <input checked="" type="checkbox"/> Terminal |
| ABSTRACT PREPARED BY, DATE Mohamed Ali Hassairi, Program | ABSTRACT CLEARED BY, DATE Frank J. Kerber Acting Program Officer 2/15/84 | | |

1. Reason for doing the evaluation:

To determine the number of families or houses which have hooked up to the new or extended piped water systems installed under the project, the cost effectiveness of the project and whether the project goal has been achieved.

2. Status of the Project

- 10 water systems completed and functional
- 22 public taps constructed or upgraded to supply free water to the population not connected to the distribution grid for technical or financial reasons
- final water system at Gaafour nearing completion

3. Key Findings

- The project was carried out efficiently and easily and no serious problems were encountered
- The cost per connection was higher than anticipated
- The per household rate of consumption seems to have gone down while the number of house connections has gone up. There are two reasons for this decline. First, reinforcing and extending the water distribution networks to new areas has resulted in higher demands for individual house connections. Each household is now depending on its own private tap rather than drawing water from neighbors and sharing payment of water bills. Second, due to the relatively high cost of piped water when consumption exceeds 20M³/connection, most people prefer to use public tap water free of charge for washing clothes and cleaning. Home tap water is then used exclusively for drinking water in order to keep water costs down.
- The Public Authorities should direct their attention to expanding the network of ONAS to forestall the development of a serious waste water problem.

4. Lessons Learned

- The project is a successful one due to the professionalism of SONEDE (the Tunisian parastatal water company) and the simple procedure followed by USAID.
- SONEDE should carry out similar projects in the future
- Involvement of ONAS in similar projects should be considered in the future regarding waste water disposal
- Establishment of a methodology at the design stage of the project for assembling baseline data to determine bench marks for socio-economic indicators

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13. SUMMARY

This evaluation covers two similar projects implemented in Tunisia by the Tunisian National Water Company, SONEDE. The bigger one is the Siliana Rural Centers Water Systems project (664-0318), covering ten sites in Siliana governorate. The smaller one is the Sbiba-Jedliane-Rohia Potable Water Subproject (664-0312.4), covering the three towns mentioned and carried out as part of the CTRD project (664-0312). Rohia is in Siliana governorate while Sbiba and Jedliane are in Kasserine governorate. Although administratively different, in practical terms these are parallel projects. The evaluation findings include the following:

1. As we have come to expect from the SONEDE, the projects were carried out efficiently and easily, and no serious problems were encountered.
2. There are a substantial number of beneficiaries in each of the communities listed, and these include some of the poorer segments of the population.
3. The cost per connection was higher than anticipated.
4. The only unexpected outcome is that the per household rate of consumption seems to have gone down while the number of household connections has gone up.
5. The public authorities should direct their attention to expanding the network of ONAS to forestall the development of a serious waste water problem.

14. EVALUATION METHODOLOGY

The purpose of the evaluation was to (1) determine the number of families or houses which have hooked up to new or extended piped water systems installed under the project; and (2) determine the cost effectiveness of the project. The evaluation team consisted of Dr. Nicholas S. Hopkins, American University in Cairo, Social-economist and team leader, and Dr. Willian H. Turner, American Ground Water Consultants of Albuquerque NM, hydrogeologist and drilling specialist. The representative of the Tunisian government, M. Mohamed Mogadi, who worked with this team on the Central Tunisia Potable Water evaluation, was prevented by illness from working on this more modest activity. The team consulted with officials of the SONEDE, in Tunis, Siliana and Kasserine, collected documentation from these offices, and visited a number of the sites connected to both projects.

15. EXTERNAL FACTORS

The Government of Tunisia continues to support all efforts to supply potable water to all segments of the population. There are no changes in external factors.

16. INPUTS

Under Project 664-0318, new systems were constructed in the following communities in Siliana governorate: El Kantara, Sidi Hamada-Ganura, and Kesra and Hammam Kesra. Existing systems were expanded in Siliana town, Bargou, Laroussa, Bou Arada, Le Krib, Lakhouat-Gaafour, and Sidi Bou Rouis. All of these sites were completed at the time of the evaluation except Gaafour. In various combinations, these systems involved drilling new wells, capturing springs, building transmission mains and pumping stations, building or enhancing reservoirs, creating a network of distribution pipes for house connections, and installing and/or upgrading of a number of public taps, eventually fixed at 22.

Under Project 664-0312.4, the water systems of Sbiba, Jedliane and Rohia were upgraded, using a single source of water located outside Sbiba. Again, transmission mains, distribution pipes, new reservoirs, and public taps were included in the project.

All these communities have a municipality form of government except Kesra/Hammam Kesra, Sidi Bou Rouis, El Kantara, and Sidi Hamada/Ganura. In these communities, the Conseil du Gouvernorat is responsible for the bills and the maintenance of the public tap, whereas in the municipalities, the town council is responsible in the first instance.

17. OUTPUTS

The number of household connections was taken from SONEDE records. Given the total cost of each project, the number of connections has been divided into project cost to arrive at the cost per connection. If each connection represents a household with six members, the cost per person can be established. The evaluation team's analysis assumed that all project costs, whether expended for installation of mains, pumping stations, wells, other works, or the actual connections, are attributable to those connections actually made during term of construction. However, this over-estimates the final cost per household because additional families will install connections in future years at a small marginal cost. The average cost/hook-up, which takes into account the cost of distribution mains, pumping station, etc., will thus fall as more families participate. On the basis of connections to date, the cost per connection exceeds \$1000 (\$167 per capita), which is considerably in excess of the planned cost.

We determined the per capita use of water over a period of 5 years, as well as the rate of change. This information should serve to make projections of future water needs inasmuch as estimates found in SONEDE reports and other documents seem to have no basis in fact, but to be merely based on other estimates.

18. PURPOSE

The project purpose is given as "To improve potable water delivery, particularly to low-income families, in eleven rural and semi-urban areas in the Siliana Province of North Central Tunisia".

1. All eleven centers have water distribution networks. They are well built and functioning normally.
2. The number of public taps was reduced by agreement from 67 to 22; these have all been installed and are supplying adequate free water.
3. The quantity of water has been increased, though perhaps not to the extent specified in the logical framework. In fact, there is some evidence that the rate of household consumption has declined. There are two reasons for this decline. First, reinforcing and extending the water distribution networks to new areas has resulted in higher demands for individual house connections. Each household is now depending on its own private tap rather than drawing water from neighbors and sharing payment of water bills. Second, due to the relatively high cost of piped water when consumption exceeds 20M³/connection, most people prefer to use public tap water free of charge for washing clothes and cleaning. Home tap water is then used exclusively for drinking water in order to keep water costs down.
4. The number of persons benefitting from household connections has increased.
5. We have no information on the quality of the water.

19. GOAL

Under the logical framework for the Sbiba-Jedliane-Rohia project (664-0312.4), the goal is given as "improved quality of life in the project area." The goal is the same for Siliana project.

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The logical framework suggested that certain indicators could be used to gauge the impact of the SONEDE projects. These include increased school attendance, more local employment and hence less emigration, lower birth rate, and better health conditions. The team did not think that these figures would be revealing enough to make it worthwhile to collect them. It is entirely plausible that the disappearance of a need for children to haul water might result in increased school attendance, but it would be hard to use school attendance figures alone to show that, since it would not be possible to disaggregate this cause from other possible reasons for rising school attendance. Moreover, the effects of house connections on school attendance might not really be visible (even if they could be isolated) for several years. Methodologically, there is the fact that truly relevant information is hard to collect -- and if no one establishes the parameters at the beginning of the project and collects data to serve as a baseline, then collecting data afterwards is neither useful nor revealing.

20. BENEFICIARIES

The construction of these new water systems has extended the SONEDE network to new areas. This includes some communities that were simply not covered by SONEDE; in communities with existing systems, the network was expanded to encompass new quarters. In the first case, the beneficiaries include virtually the entire community, where the people no longer have to visit the spring or public water point and then haul the water home, but have running water in their homes. Kesra is a partial exception to this, for the location of the spring and the new pipes excludes a substantial portion of the community living up hill from the spring from direct benefit. They will benefit if they respond to government inducements to leave their traditional homes and settle in new areas along the road at the bottom of the mountain where the town is situated and the water is supplied using gravity flow. In the second case, the main beneficiaries are those inhabiting the new areas. We have no information on the socio-economic character of the new areas served by the distribution lines in these towns. They may be mostly civil servants and similar people. However, we have seen that the real increase is in the number of house connections rather than in the amount of water used per capita. This may reflect the continuing tendency to have only one tap per house.

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The most contentious issue in these projects is the provision for public water taps. USAID insisted on including these taps in the project in order to be sure that the poorer sections of the population, who could not afford house connections, would also benefit. Although the initial agreement was for 67 taps in the Siliana project, the number was gradually negotiated downwards to 22. The problem with the public taps is that no one entity is clearly responsible for all aspects of operation and maintenance. SONEDE agreed to supply them, although according to its regulations it ought to await a request from the public authority concerned. The public authority (a municipality where there is one, otherwise the Conseil du Gouvernorat) may regard the public taps as a nuisance and resist paying the bills. Although SONEDE is responsible for supplying the water, the public authority must provide installation of the tap itself, and these often are less than ideal in their construction and maintenance. Furthermore, the taps are often left running, or are more or less deliberately broken, thus causing a higher bill for the public authority and an even greater problem of disposal of waste water.

The problem can be seen as one of linkages between SONEDE and the public authority on the one hand, and between the public authority and the population on the other. If the user population cannot be made responsible for upkeep of these public taps, then possible other solutions would include: (1) an education campaign; (2) redesign or reinforcement of the systems; or (3) in extreme cases, shutting the taps down. Part of the problem of course is that everyone in authority sees the taps as a temporary solution until everyone has a tap at home.

21. UNPLANNED EFFECTS

None.

22. LESSONS LEARNED

1. The project is a successful one. This is due to the experience and professionalism of SONEDE, and to the relatively simple procedures followed by USAID. SONEDE should be encouraged to carry out similar projects in the future.

2. Waste water disposal is beginning to become a problem in these smaller centers. Consideration should be given to projects involving the Office National de l'Assainissement Sanitaire (ONAS). If one brings more water into a community, then the amount of waste water will also increase.

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3. If socio-economic indicators are going to be used seriously in evaluation, then the methodology should be established at the beginning of the project, and base line data assembled. Wherever possible these activities should be carried out in-country, so that the figures can be supplied to the evaluation team for their interpretation.

23. SPECIAL COMMENTS OR REMARKS

None.

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FINAL EVALUATION OF TWO SONEDE
PROJECTS IN SILIANA AND
CENTRAL TUNISIA

by

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December 1983

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FINAL EVALUATION OF TWO SONEDE PROJECTS IN
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13. SUMMARY

This evaluation, carried out in September 1983, covers two similar projects implemented in Tunisia by the Tunisian National Water Company, SONEDE. The bigger one is the Siliana Rural Centers Water Systems project (664.0318), covering ten sites in Siliana governorate. The smaller one is the Sbiba-Jedliane-Rohia Potable Water subproject (664.0312.4), covering the three towns mentioned and carried out as part of the CTRD project. Rohia is in Siliana governorate while Sbiba and Jedliane are in Kasserine governorate. Although administratively different, in practical terms these are parallel projects.

1. As we have come to expect from the SONEDE, the projects were carried out efficiently and easily, and no serious problems were encountered.

2. There are a substantial number of beneficiaries in each of the communities listed, and these include some of the poorer segments of the population.

3. The cost per connection was higher than anticipated.

4. At the end of the report, we offer some comments on the policy with regard to the public taps and the choice of areas to receive new connections under the program.

5. The only unexpected outcome is that the per household rate of consumption seems to have gone down while the number of household connections has gone up.

6. At this point, the public authorities should direct attention to expanding the network of ONAS to forestall the development of a serious waste water problem.

14. EVALUATION METHODOLOGY

The terms of reference for the technical aspect of the evaluation of the Siliana Rural Centers Water Systems project financed by USAID (664-0318) is to:

1. Determine the number of families/houses which have hooked up to new or extended piped water systems installed under the project; and
2. Determine the cost effectiveness of the project.

In preparing the evaluation of this project, SONEDE officials in Siliana and Kasserine were consulted. The evaluation team is particularly grateful to Mr. Ben Houidi and Mr. Bhourri of the SONEDE offices in Kasserine and Saliana respectively and to Mr. Mohamed Ali Hassairi of the USAID Mission in Tunisia. Messrs. Ben Houidi and Bhourri provided historical information on the total number of connections on each water system of interest for the period of 1977 through 1982 as well as total annual water consumption for the same period. Mr. Hassairi provided complete files on each of the water systems of interest. Mr. Hassairi's efforts have made the mission of the evaluation team any easy task. He has provided continuity to AID during the tenure of several AID engineers which the evaluators believe has led to the smooth performance of these projects. His work for the AID Mission is a credit to the United States

References

1. Project Documentation dated July 31, 1978, Project No. 664-0318.
2. Alimentation en Eau Potable de la Ville de Siliana, January 1981.
3. Alimentation en Eau Potable de Sidi Hamada: Note Preliminaire, January 1978.
4. Project Paper for Tunisia CTRD Rural Potable Water Project USAID 5/19/80 664-0312.7 (Cost per beneficiary shall not exceed \$125/beneficiary, \$25/large animal, and \$2.5/small animal.)
5. Project Assistance Paper Tunisia: Siliana Rural Center Water System, 5/26/78 USAID. (Consumption calculated at 80 l/c/d in small communities to 100 l/c/d in Siliana.)
6. Plan Directeur de la Ville de Siliana: undated.
7. Alimentation en Eau Potable de Kesra et Hammam Kesra, Avant Projet, August 1978.
8. Alimentation en Eau Potable du Krib, Avant Projet, January 1978.
9. Alimentation en Eau Potable du Complexe Sbiba, Jedliana, Rohia, June 1979.
10. Alimentation en Eau Potable de Siliana, Avant Projet, September 1978.
11. Alimentation en Eau Potable de la Ville de Siliana, Plan Directeur, June 1981.
12. Oral communication with Mr. Ben Houidi of the SONEDE Siliana office, September 1983.
13. Letter from J. R. Phippard to M. Ahmed Ben Arfa dated March 22, 1983.

14. Alimentation en Eau Potable de Laroussa, Avant Projet, October 1979.

15. F. Eugene McJunkin, Rural Water Supply and Sanitation Programs in Tunisia (Washington, D.C.: American Public Health Association, May 4, 1976).

16. IBRD, Village Water Supply (Washington, D.C., March 1976).

15. EXTERNAL FACTORS

The Government of Tunisia continues to support all efforts to supply potable water to all segments of the population. There are no changes in external factors.

16. INPUTS

Under Project 664.0318, new systems were constructed in the following communities in Siliana governorate: (1) El Kantara; (2) Sidi Hamada-Ganura; (3) Kesra and Hammam Kesra. Existing systems were expanded in (1) Siliana town, (2) Bargou, (3) Laroussa, (4) Bou Arada, (5) Le Krib, (6) Lakhouat, (7) Sidi Bou Rouis, and (8) Gaafour. All of these sites were completed at the time of evaluation except Gaafour. Gaafour was a late addition to the list in place of Makthar, which had to be dropped because there was no reliable source of water. In various combinations, these systems involved drilling new wells, capturing springs, building transmission mains and pumping stations, building or enhancing reservoirs, creating a network of distribution pipes for house connections, and installing and/or upgrading 67 public taps.

Under Project 664.0312.4, the water systems of Sbiba, Jedliane and Rohia were upgraded, using a single source of water located outside Sbiba. Again, transmission mains, distribution pipes, new reservoirs, and public taps were included in the project.

All of these communities have a municipality form of government except Kesra/Hammam Kesra, Sidi Bou Rouis, El Kantara, and Sidi Hamada/Ganura. In these communities, the Conseil du Gouvernorat is responsible for the bills and the maintenance of the public tap, whereas in the municipalities, the town council is responsible in the first instance.

17. OUTPUTS

The amount of data available for evaluation was as voluminous as it was confusing and a great deal of time was spent in trying to obtain meaningful data. Some of the difficulties were caused by:

1. Estimates of population reported for each water center were rarely identical and changed from document to document;
2. Inaccurate and inconsistent consumption rates given for persons and animals;
3. Unsubstantiated estimates of population growth for both persons and animals;
4. Inconsistent method of reporting information in AID documents;
5. Inadequate tracking of expenditures as a function of the work performed; and
6. Variation in currency exchange rates over the period of the project which made it impossible to easily determine Dinar costs when costs were expressed in U.S. Dollars and vice versa.

Overall, the evaluation has been impressed by SONEDE's:

1. High degree of competency in project planning, design, implementation, and follow through;
2. High level of professional competency among its staff;
3. Organization and systematized and complete record keeping and financial control;

The data found most useful in the analysis included:

1. Anticipated project costs from the Project Paper dated July 31, 1978;
2. The actual project completion costs based on a letter from J.R. Phippard to M. Ahmed Ben Arfa dated March 23, 1983;
3. Historical information on total number of connections per water system at the end of each year and total annual water consumption for each water system provided by SONEDE for the last five years;
4. The total population served by each water center in either 1981 or 1982 provided by SONEDE; and
5. The date of commencement and termination of construction of the various projects provided by Mr. Hassairi.

The above information has been tabulated in Table 1. Information on the total number of connections made during the project and presumably financed by the project were never located.

TABLE 1. Installed meters in listed communities provided by SONEDE.

| | YEAR | | | | | |
|---------------------|------|------|------|------|------|------|
| | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
| EL KANTARA | | | | | 3 | 59 |
| S. HAMADA | | | | | | 113 |
| SILIANA | 1123 | 1297 | 1439 | 1635 | 1928 | 2134 |
| BARGOU | 308 | 356 | 363 | 448 | 481 | 505 |
| ROUHIA | 75 | 82 | 83 | 141 | 158 | 239 |
| LAROUSSA | 129 | 134 | 135 | 145 | 150 | 232 |
| BOU ARADA | 720 | 781 | 868 | 919 | 1057 | 1196 |
| LE KRIB | 151 | 168 | 175 | 196 | 252 | 302 |
| GAFOUR | 470 | 526 | 674 | 797 | 900 | 1045 |
| LAKHONET | 52 | 53 | 57 | 60 | 73 | 79 |
| S. BOU ROUIS | 86 | 106 | 112 | 124 | 142 | 157 |
| KESRA & H. KESRA | | | | | 74 | 98 |
| SBIBA | 265 | 318 | 343 | 411 | 453 | 527 |
| JEDLIANA | 37 | 46 | 58 | 73 | 134 | 156 |

METER CONNECTIONS

To accommodate for the lack of information regarding the actual number of connections made during the term of the project, the number of connections made during one calendar year spanning the duration of the project was taken from SONEDE records.

Given the total cost of each project, the number of connections has been divided into project cost to arrive at the cost per connection. If it is assumed, that each connection is a home having about six inhabitants, the cost on a per person basis may be established. This number may be somewhat high because all costs expended for the construction of public fountains are added to the cost per connection. However, because only one or two public fountains were added per center, it is felt that increase in the cost per connection caused by the construction of the public fountains is small.

This analysis has assumed that all project costs whether expended for installation of mains, pumping stations, wells, otherworks, or the actual connections are attributable to those connections actually made during term of construction of the project for which funding was made. In all cases, the cost per connection exceeds \$1000 which is considerably in excess of the planned cost. These data are presented in Table 2.

A semilogarithmic plot of the total number of connections at the end of each year for each system was made. These plots are shown in Figure 1. A least squares linear regression was performed on the data for each center. This representation will be useful for evaluating the rate of growth in service for each community.

TABLE 2. Summary of cost data for private and public metered water connections for the communities listed. Source: SONEDE.

| | COSTEST 31JULY78 | MAR ACT COST (\$)** | POP 1981 | CONNEC 1982 | PP-1980 COST/PER (\$) | MAR ACT COST/PER (\$) | ACT COST PER CONN (\$) | ACT COST PER PERS (\$) | PROJ IMP DATE | PROJ TERM DATE |
|---------------------|---------------------|---------------------------|-------------|----------------|-----------------------------|-----------------------------|------------------------------|------------------------------|---------------------|----------------------|
| EL KANTARA | 239.5 | 79135 | 400*** | 59 | 325.92 | 197.84 | 1341.27 | 223.55 | 7-79 | 7-80 |
| S. HAMADA | 372.5 | 261696 | 1300* | 167 | 302.83 | 201.30 | 1567.04 | 261.17 | 4-80 | 3-81 |
| SILIANA | 603.8 | 1030240 | 11500 | 196 | 64.08 | 89.59 | 5256.33 | 876.05 | 3-79 | 5-80 |
| BARGOU | 242.4 | 153220 | 2500 | 67 | 101.76 | 61.29 | 2286.87 | 381.14 | 7-80 | 6-82 |
| ROUHIA | 162.7 | -- | 1400 | | -- | -- | | | 3-82 | 3-83 |
| LAROUA | | | | | | | | | | |
| BOU ARADA | 480.5 | 253330 | 6552 | 138 | 80.16 | 38.66 | 1835.72 | 305.95 | 5-80 | 7-81 |
| LE KRIB | 845 | 365848 | 5000 | 21 | 119.04 | 73.17 | 17421.33 | 2903.56 | 2-79 | 3-80 |
| GAFOUR | | | | | | | | | 12-82 | 5-84 |
| LAKHONET | | | | | | | | | | |
| S. BOU ROUIS | 204.5 | 85690 | 1400 | 12 | 426 | 59.51 | 7140.83 | 1190.14 | 5-79 | 4-80 |
| KESRA & H. KESRA | 524.2 | 164970 | 2850 | 74 | 127.92 | 57.88 | 2229.32 | 371.55 | 6-79 | 3-80 |
| SBIBA | 22 | 368480 | -- | -- | 418.56 | -- | | | 6-80 | 5-81 |
| JEDLIANE | | | | | | | | | | |

* INCLUDES POPULATION OF EL GANNARA

** COSTS IN DINARS ADJUSTED TO USD

*** ASSUMES 6 PERSONS PER HOUSEHOLD

WATER USE

Though not specifically required as part of the evaluation, it was decided to determine

1. The per capita use of water over the five years of historical record; and
2. The rate of change of water use over the five year period.

This information will be useful in making projections of future water needs inasmuch as estimates of the growth of water use found in SONEDE reports and other documents seems to have no basis in fact other than as estimates from Peace Corps Volunteers, the Ayad report and reports of the World Bank.

The cumulative water consumption over the period of historical record provided by SONEDE has been plotted on Figure 1 as well and a least squares regression was also carried out on these data. Water consumption information is presented in Table 3.

The positive slope to the total number of connections curve or course indicates that the number of connections is increasing annually. The positive slope to the cumulative water consumption curve indicates that the water use is also increasing annually. This increase is, of course, directly related to the number of connections. The more connections, the more water is used. Certainly before connections were obtained, people may have obtained their water from public fountains which are also metered, so that overall consumption by the total population served is probably quite accurately reflected.

If the slope of the cumulative water consumption line is greater than the slope of the cumulative meter connection curve then the indication is that the total consumption per connection and per person is increasing with time.

TABLE 3 Annual consumption and cumulative consumption in cubic meters for the communities listed. Source: SONEDE.

| | YEAR | | | | | | | | | | | |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|---------|
| | 1977 | | 1978 | | 1979 | | 1980 | | 1981 | | 1982 | |
| | CONS | CUM | CONS | CUM | CON | CUM | CONS | CUM | CONS | CUM | CONS | CUM |
| EL KANTARA | | | | | | | | | 38 | 38 | 2755 | 2793 |
| S. HAMADA | | | | | | | | | | | 9710 | 9710 |
| SILIANA | 165828 | 165828 | 201593 | 367421 | 243363 | 610784 | 258020 | 868804 | 309724 | 1178528 | 397477 | 1576005 |
| BARGOU | 34437 | 34437 | 38105 | 72542 | 42646 | 115188 | 56469 | 171657 | 56292 | 227949 | 66747 | 294696 |
| ROUHIA | 28990 | 28990 | 31434 | 60424 | 29804 | 90228 | 37175 | 127403 | 54427 | 181830 | 49998 | 231828 |
| LAROUSA | 24417 | 24417 | 28482 | 52899 | 30160 | 83059 | 27426 | 110485 | 27496 | 137981 | 41086 | 179067 |
| BOU ARADA | 97110 | 97110 | 92712 | 189822 | 108298 | 298120 | 104793 | 402913 | 138201 | 541114 | 153201 | 694315 |
| LE KRIB | 35335 | 35335 | 39034 | 74369 | 37328 | 111697 | 40913 | 152610 | 73957 | 226567 | 74776 | 301343 |
| GAFOUR | 147759 | 147759 | 159250 | 307009 | 163216 | 470225 | 162159 | 632384 | 176236 | 808620 | 251570 | 1060190 |
| LAKHONET | 49103 | 49103 | 64645 | 113748 | 71317 | 185065 | 96438 | 281503 | 143225 | 424728 | 107245 | 531973 |
| S. BOU ROUIS | 12146 | 12146 | 14266 | 26412 | 15592 | 42004 | 19596 | 61600 | 23651 | 85251 | 28773 | 114024 |
| KESRA & | | 0 | | 0 | | 0 | | 0 | 3156 | 3156 | 17419 | 20575 |
| H. KESRA | | 0 | | 0 | | 0 | | 0 | | 0 | | 0 |
| SBIBA | 52248 | 52248 | 53753 | 106001 | 70477 | 176478 | 72323 | 248801 | 76425 | 325226 | 77000 | 402226 |
| JEDLIANE | 44519 | 44519 | 47251 | 91770 | 54095 | 145865 | 57064 | 202929 | 17855 | 220784 | 88061 | 308845 |

18. PURPOSE

The project purpose is given as "To improve potable water delivery, particularly to low-income families, in eleven rural and semi-urban areas in the Siliana Province of North Central Tunisia."

1. All eleven (or ten ?) centers have water distribution networks. They are well built and functioning normally.

2. The number of public taps was reduced by agreement from 67 to 22; these have all been installed and are supplying adequate free water.

3. The quantity of water has been increased, though perhaps not to the extent specified in the logical framework. In fact, there is some evidence that the rate of household consumption has declined.

4. The number of persons benefitting from household connections has increased.

5. We have no information on the quality of the water.

19. GOAL

Under the logical framework for the Sbiba-Jedliane-Rohia project (664.0312.4), the goal is given as "Improved quality of life in the program area." The same goal was present in the Siliana project.

The logical framework suggested that certain measures could be used to gauge the impact of the SONEDE projects. These include increased school attendance, more local employment and hence less emigration, a lower birth rate, and better health conditions. The team did not think that these figures would be revealing enough to make it worthwhile to collect them. It is entirely plausible that the disappearance of a need for children to haul water might result in increased school attendance, but it would be hard to use school attendance figures alone to show that, since it would not be possible to disaggregate this cause from other possible reasons for rising school attendance. Moreover, the effects of house connections on school attendance might not really be visible (even if they could be isolated) for several years. Methodologically, there is the fact that truly relevant information is hard to collect -- and if no one establishes the parameters at the beginning of the project and collects data to serve as a baseline, then collecting data afterwards is neither useful nor revealing.

20. BENEFICIARIES

The main effect of the construction of these water systems has been to extend the coverage of the SONEDE network to new areas: (1) These include some communities that were simply not covered by SONEDE, such as Kesra, Sidi Hamada-Ganura, and El Kantara. (2) In other towns, the financial support of USAID has enabled SONEDE to lay distribution lines to new areas of settlement in these rapidly spreading rural towns.

In the first case, the main beneficiaries have been rural populations living in agglomerations large enough to meet the SONEDE guidelines. In Sidi Hamada, the existence of the SONEDE distribution lines has meant that many people now no longer have to climb up to the spring which is located above the village. In El Kantara, which is a large settlement inhabited mostly by workers in the nearby state farms and cooperatives that form the Lakhmess irrigation project, the house connections have also allowed people to cease their reliance on water supplied through the cooperative from the irrigation network. In cases such as these, people no longer have to haul water, with a considerable savings in time and effort. They appear willing to pay their bills. In El Kantara, some people are even using some of the water to irrigate small gardens of a few square meters in front of or near their house.

In Kesra, too, there are many new house connections. Here a spring that is the basis for the existence of the village has been partly captured and piped through the distribution system. One of the results of this is that the system now furnishes water to two

small settlements at the base of the hill on which Kesra is located as well as to the part of Kesra which is located between the captured spring and these settlements, i.e., the part downhill from the spring. However, approximately two-thirds of the traditional village of Kesra is located either above the level of the spring or in the opposite direction. These people have not benefitted by this work. They continue to supply themselves at another spring, captured and improved in the colonial period, in most cases using donkeys to help them carry the water higher. Here the project as conceived would have been improved by creating a reservoir further up the hill, and pumping water up to it, whence gravity flow could have been used to bring the water into the homes of a larger proportion of people's homes. However, it seems to be government policy to encourage people to move down the hill to a new site near the paved road -- the clinic, the school, and the delegate's office will all soon be down there -- so that this omission may reflect another policy imperative.

In the towns that already had a piped water supply through SONEDE, the USAID-financed project has principally had the effect of extending the geographical zones covered by the system. Most of these towns have areas of new housing on the edge of town. This reflects both a tendency in Tunisian towns to shift towards a lower density settlement pattern, and an increase in population. We have no information on the socio-economic character of the new areas served by the distribution lines in these towns. Many of those building houses in the new areas are civil servants from these towns who may serve elsewhere; some or even many of these houses will in fact be occupied by the increasing staff of civil servants, teachers

and others that are servicing the new institutions in these towns. Thus an improvement in the amenities available to these people will increase the likelihood that qualified and competent civil servants can be attracted to these small towns and so serve their populations. However, a comparison of the figures for water use (in cubic meters) and those for house connections suggests that the real increase is in the number of house connections, not in the amount of water that is used per capita. This amount appears to remain relatively low, around 30 litres per day.

Houses in all areas most commonly have a single tap, usually located in the wall that separates the courtyard from the outside. Buckets of water can be filled here, and sometimes people will use a length of hose to get the water to another part of their house. One may suppose that as long as each household only has one tap, the amount of water used and especially the way the water is used will not vary significantly from the use of the water when it had to be hauled.

People make their own adjustments. In Kesra people asked the contractor to build a separate trough for washing clothes, and at one public tap in El-Krib people had constructed a make-shift animal trough from mud. Other adjustments include blocking the tap open to ensure a continuous flow of water, which we observed on the edge of Jedliane.

The most contentious issue in these projects is the provision for public water taps. USAID insisted on including these taps in the project in order to be sure that the poorer sections of the population, who could not afford house connections, would also benefit. The agreement specified that there should be one public tap for every 250

inhabitants who were not connected directly to the water distribution system. SONEDE agreed to this stipulation though they now recognize that the effective construction and maintenance of such public taps was not entirely under their control. Normally, they respond to a request from the local public body for a public tap; in this case they had to solicit the request in order to live up to the agreement.

The number of public taps actually supplied appears to have been negotiated downwards over the life of the project. Thus in the beginning, the project documents for 664.0318 spoke of 67 public taps. In fact, 22 were constructed, and in some cases (e.g., Kesra), even this figure includes some already existing taps.

Each public tap must have a water meter and the bill for water measured by each meter is paid by a designated governmental authority. In cases where the community is organized into a municipality, the invoice is sent to the municipality; in other cases, it is sent to the Conseil du Gouvernorat. Invoices sent to the Conseil du Gouvernorat are paid from the budget of the Governor. Furthermore, although SONEDE is responsible for providing water to the public fountains, after the water passes the water meter the appropriate government authority becomes responsible for regulating water use and maintaining the public fountain.

This can create two problems: first, the government authority may not have sufficient funds to pay the SONEDE water bills (or may not want to); and, second, the government authority is responsible for the design, construction, and maintenance of the civil structures around the taps.

With regard to the civil works, the team believes the government authorities do not pay enough attention to sound design and maintenance. The public fountains are poorly maintained. Large amounts of water commonly leak on the government side of the water meter (resulting in very high water bills to the government authority), water may run continuously because of accidentally or deliberately broken valves, stagnant pools of water surround the taps, and in general drainage is poor. As best we could judge on a brief visit there is no movement among the population itself to improve matters around the public taps, nor is there concerted pressure to get the local government to do something. At the same time, in many cases the municipalities concerned are both new and small, and should not perhaps overestimate their abilities.

From an administrative point of view, there is a problem of linkages:

1. between SONEDE, the supplier of water, and the local government authorities; and
2. between the beneficiaries of the public tap and the local government authority.

As a result, there are the following problems:

1. Waste of water and concomitant high water bills to the local governing authorities; and
2. Dirty, muddy, and unsanitary conditions around the public taps.

These problems may cause the local government authority to withdraw support because the public fountains are a public nuisance and a financial drain. It is clear though that the low priority assigned by the local government authorities to public taps and their lack of attention to the details of public fountain design construction, use, and maintenance are at the heart of the problem that now

comes back to plague them. Perhaps SONEDE could be persuaded to mount a campaign against water wastage that would have some effect (after all the problems encountered here are fairly general in Tunisia). Otherwise, the only solutions to these problems may be either the redesign and reinforcement of systems or policing the systems and in extreme cases shutting them down. The latter approach was taken in El Kesra with some success: the delege told us that he had threatened to shut down the tap completely if people did not learn how to turn it off, and felt that this has worked.

21. UNPLANNED EFFECTS

None.

22. LESSONS LEARNED

1. The project is a successful one. This is due to the experience and professionalism of SONEDE, and to the relatively simple procedures followed by USAID. SONEDE should be encouraged to carry out similar projects in the future.

2. Waste water disposal is beginning to become a problem in these smaller centers. Consideration should be given to projects involving the Office National de l'Assainissement Sanitaire (ONAS). If one brings more water into a community, then the amount of waste water will also increase.

3. If socio-economic indicators are going to be used seriously in evaluation, then the methodology should be established at the beginning of the project, and base line data assembled. Wherever possible these activities should be carried out in-country, so that the figures can be supplied to the evaluation team for their interpretation.

23. SPECIAL COMMENTS OR REMARKS

None.

November 1983