

IMPACT STUDY FOR THE EL MENZAH
SEWER NETWORK PILOT PROJECT

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ACRONYMS

BOT	Build-operate-transfer
DATC	Direction d'Assistance Technique et de Coordination
DT	Tunisian dinars
HG	Housing guaranty
GOT	Government of Tunisia
ONAS	Office National de l'Assainissement
PACT	Policy Action and Cooperation Timetable
PMU	Performance Monitoring Unit (in French: UCP)
PPES	Private Participation in Environmental Services Program
RFP	Request for proposals (appel d'offres)
RHUDO	Regional Housing and Urban Development Office (USAID)
SEM	Société des Eaux de Marseille
SOMEDEN	Société Méditerranéenne pour l'Environnement
UCP	Unité de Contrôle de Performance (in English: PMU)
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

A. Results on the First Pilot Project

The first pilot project of the Private Participation in Environmental Services (PPES) Program has achieved success over the past several months.

- The contractor, Société Méditerranéenne pour l'Environnement (SOMEDEN), which is technically competent and well organized, is meeting the contract's technical requirements. No penalties have been assessed during the first three months of operation. In the pilot project area, the cost of operations has been reduced, the response to complaints is faster, and service quality been maintained.

B. The Private Participation in Environmental Services Program

Based on the first project experience, the PPES program is proceeding smoothly and appears to be sustainable, evidenced by the following:

- The process toward greater private participation in the sector is maturing and achieving greater sustainability as the political will develops to move private participation forward.
- Bids have been received for the second private participation project, which involves operation of three wastewater treatment plants. It is anticipated that the contract will be awarded in July 1997 and work will begin in September 1997.
- The remaining pilot projects, which have been included in the 9th plan, are likely to be implemented.

C. Organizational Effectiveness and Efficiency

Up to this point, organizational arrangements for monitoring the first pilot project and the PPES program as a whole have been relatively informal, but have proved adequate.

- The monitoring of the contractor by the performance monitoring units (PMUs) of the Office Nationale de l'Environnement (ONAS) has been adequate to ensure satisfactory work quality and quantity.
- The costs for PMU project monitoring are modest compared to the savings in operations and maintenance.

As more projects start up, the PMUs will need to develop formal organizational arrangements, especially if the contracts are more complex or present logistical or management challenges.

D. Technology Transfer

There has been little technology transfer to date, with few mechanisms in place for transferring technology from the contractor to ONAS.

E. The Contract

Due to the lack of reliable performance indicators directly related to the contractor's performance, a performance-based contract is not currently practicable. While the technical section of the contract for the first pilot project appears to be a unit price contract, it is not, for the most part. The contractor receives a flat monthly payment for cleaning sewers independent of the actual amount of work done. As the ONAS staff is unfamiliar with the format of the contract's technical sections, staff members have difficulty interpreting these sections, which do not adequately describing portions of the work. By contrast, the contract's administrative section was similar to past ONAS contracts. Because of this familiarity, ONAS staff had no significant difficulties in understanding the contract's administrative clauses.

F. Recommendations

F1. Private Participation

Private participation in the wastewater industry should be increased. To achieve this goal, the following steps are recommended:

- Reduce the length of the contracting period. Adopt as a goal that contractors start work within six months of the date that bids are opened.
- For greater economies of scale, increase the size of private participation projects to three to five times the size of the current project.
- Reserve several small projects for Tunisian firms. While initial economies may not be as great, the projects will develop local managerial skills, contributing to greater economies over the long run and savings on future projects.
- Increase the area assigned to the present contractor.

F2. Organization

To develop PMU capacity and efficiency in project management, the units must be involved in all phases of the private participation program, including planning. The following steps should be taken to formalize the organization of existing PMUs and develop their capacity:

- Develop job descriptions for all PMU personnel, starting with job descriptions written by staff. Circulate, review, and modify these descriptions as experience is gained.
- Analyze existing staffing and recommend future staffing as the number of projects monitored increases.
- Provide training for the PMU, such as the session provided by USAID/RHUDO in February 1997.

- Develop internal management systems within the PMUs.
- Assign separate and formal budgets for the PMUs. Track PMU hours and expenses for analysis and reporting.
- Develop means of transferring innovative technology, particularly managerial technology, from private enterprises to ONAS staff.
- Strive to minimize private enterprises monitoring needed to achieve satisfactory results. A suggested one-page summary monitoring form is presented in Annex E.
- Develop instructions for using existing forms in the operations notebook. Modify instructions and forms as experience is gained.
- Make copies of previously prepared reports available to all PMU members. Read and discuss documents, with the understanding that they may not necessarily be relevant.
- Grant formal recognition to the PMUs by showing units on organizational charts, appointing PMU staff in writing, and assigning PMU staff titles and including titles on business cards and name tags.

F3. The Contract

The technical sections of the contract for the first private participation project should be revised to convert it into a true unit price contract. The unit price contract that ONAS uses for construction contracts is familiar to ONAS staff and is a suitable model for the new contract.

SECTION I BACKGROUND AND INTRODUCTION

A. Purpose of the El Menzah Project

To allow Tunisia to more fully participate in trade globalization, the Government of Tunisia has undertaken liberalization of the country's economy. Under this program, the private sector will be the driving force of economic activity and competitive sectors. Ten years ago, when Tunisia's 7th plan was starting, the ratio of public sector to private sector in the economy was 56/44. The goal of current government policies is to reverse this ratio—i.e., for most economic activity to take place in the private sector. New government policies are expected to improve economic efficiency and attract private investment in infrastructure, reducing the burden on the budget of the Office Nationale d'Assainissement (ONAS).

The Private Participation in Environmental Services (PPES) Program is a joint program of the Government of Tunisia (GOT) and the United States Agency for International Development Regional Housing and Urban Development Office, Near East and North Africa (USAID/RHUDO/NENA).

USAID's goal in this program is to help the government improve the coverage and efficiency of urban environmental services through increased participation of private sector and community groups in providing and financing services.

The PPES program includes \$40 million in Housing Guaranty loans to support government programs that provide improved Housing Guaranty-eligible environmental infrastructure in poor neighborhoods. These loans are a bridging mechanism until greater private sector investment takes place.

The PPES program also includes a \$3.65 million sectoral policies component for policy analyses, institutional strengthening, and implementing of pilot projects to support greater private sector participation. The policy component includes 95 activities defined in the Policy Action and Cooperation Timetable (PACT).

As one of the PACT pilot actions, the Office Nationale de l'Environnement (ONAS), Tunisia's national sewerage agency, has subcontracted to a private firm the operation of the El Menzah sewer system, which serves a residential neighborhood in Tunis. PACT provides for this pilot project to be replicated at other sites.

Objectives of the pilot project are to:

- Reduce the costs for ONAS
- Ensure sufficient revenue for private enterprise
- Improve service quality

The objectives of this study are to evaluate the technical, social, legal, and environmental results of the El Menzah sewer network effort and offer suggestions for improving projects at other sites.

B. History of the Project

To develop the PPES program, USAID funded a series of studies, examined below in Section II. In late 1994, studies were carried out on national laws and regulations concerning the wastewater industry, the possibility of establishing a performance monitoring unit (PMU), and the potential market for the private sector in the wastewater industry.

In early 1995, the PPES program undertook a feasibility study and developed a sample contract for wastewater network operation.

In August 1995, ONAS issued a request for proposals for bids for operation of the El Menzah sewer network. A total of eight bids were received. The contract was awarded in late 1996 to SOMEDEN, which began work in February, 1997.

SECTION II PROJECT APPROACH

A. Terms of Reference and Project Team

This study was assigned to Chemonics International, based in Washington, D.C. The scope of work for the impact study is presented in Annex A. In response to the scope of work, Chemonics furnished a three-person team consisting of:

- Bonneau Dickson, urban planning and policy specialist (United States)
- Habib Khanfir, social and demographic analyst (Tunisia)
- Rachid Nafti, environmental management specialist (Tunisia)

Each team member had extensive consulting experience, including previous experience in Tunisia.

The team followed the following procedure:

- Reviewing background information and documents
- Meeting with involved parties and preliminary discussions
- Reviewing information received
- Developing points to be discussed at meetings
- Holding follow-up discussions with involved parties
- Preparing the report

B. Persons Contacted

The project team spent most of the first week in the field meeting with ONAS officials and the contractor, SOMEDEN. The team met with ONAS officials involved in operating the El Menzah sewer network, planning the pilot project, and bidding and contracting the pilot project, as well as project monitoring personnel. A list of the persons contacted during the course of the impact study is presented in Annex B.

The team met with the contractor personnel, including the manager, Christian Echaroux, and the technical director, Mohamed Ali, and observed work teams in action. The team visited both the contractor's office and depot.

Toward the end of field work, the team held debriefing sessions with ONAS and USAID.

C. Documents Reviewed

The team reviewed such documents as USAID-funded studies leading up to the first pilot project, the request for proposal issued by ONAS, and a contractor technical report (Réalisation du Contrat par SOMEDEN) that summarized its operations. These documents are listed in the bibliography in Annex C. The team also reviewed various forms used by the contractor and the ONAS inspector for day-to-day control. While these are not listed in the bibliography in Annex C, many of the contractor's forms are included in the SOMEDEN technical report mentioned above.

The actual contract between ONAS and the SOMEDEN and the Selection Committee Report (Rapport de Depouillement) were not available to the project team.

D. The Household Survey

As required by the terms of reference, the team surveyed households to monitor public satisfaction with the private contractor's work. Details of the survey are discussed in Section III. Survey results are presented in Annex F.

E. Tabulation of Complaints

An analysis of public complaints was conducted before the contractor took over the pilot project area. Team members found that data on past complaints was not kept in a format that could be analyzed. Complaints since the contractor began operations are discussed in Section III.

F. General Observations and Comments

The project team is grateful to all parties involved in this study for their cooperation, candor, and constructiveness. In particular, the team thanks Fadhel Ghariani of USAID/RHUDO for arranging and facilitating interviews with various parties. The team noted the genuine commitment of all parties to make private participation in the wastewater sector a successful reality.

The team worked under several constraints. As discussed above, the project team did not have access to copies of the final contract between SOMEDEN and ONAS. However, the team did have an opportunity to briefly study the contract, which appeared quite similar to the sample contract included in the request for proposal. For the purposes of this report, it has been assumed that there are no significant differences between the sample contract in the request for proposal and the final contract.

Nor was the project team allowed access to the Selection Committee report ("Rapport de Depouillement") but was verbally informed of its contents during meetings with ONAS. It appeared that selection procedures had been carefully followed and the proposals received thoroughly analyzed. Finally, the project team did not have access to contractor invoices.

A significant constraint on the evaluation of the impact of the project is the fact that the contractor began operation in February 1997, just three months from the time that most field work was done. Significantly, there had been no significant rains during this period. Despite the short time frame and lack of rain, the project team believes that it was able to make a realistic assessment of contractor performance.

SECTION III
ANALYSIS OF THE PILOT PROJECT

A. Conditions Under Which the Pilot Project Was Implemented

A1. Project Implementation

ONAS implemented the first private participation pilot project using its standard contracting methods for large projects. While most large ONAS projects are construction efforts, the necessary administrative clauses are similar.

It was an advantage that ONAS is accustomed to large contracts. The office, which is familiar with procedures required by higher government organizations, has developed internal procedures for handling such projects.

A2. Procedures Followed

Procedures that were followed were similar to procedures for construction projects. A request for proposals was issued in August, 1995, which included the following sections:

- Part 0.0 Notice to Contractors (Modalités d'Appel d'Offres)
- Part 1.1 Contract (Acte d'Engagement)
- Part 1.2 Conditions of the RFP (Conditions d'Appel d'Offres)
- Part 1.3 Agreement (Convention)
- Part 1.4 Administrative Clauses (Cahier des Clauses Administratives)
- Part 1.5 Technical Requirements (Cahier des Clauses Techniques)
- Part 1.6 Bid Schedule (Bordereau des Prix)
- Part 1.7 Estimating Details (Détails Estimatifs)

A pre-bid meeting was held to show potential bidders the project area and receive questions. In general, the bidders asked relatively minor questions indicating that the bidding procedures were well understood. During the bidding period, two addenda were issued to answer questions raised by the bidders.

As often the case for international contracts, the bidding documents were submitted in two envelopes, the outer envelope containing the firm's technical qualifications and the inner envelope containing the firm's cost proposal. A firm's cost proposal was opened for firms judged technically qualified to perform the contract. There was no pre-qualification of bidders and all eight of the firms that submitted bids were judged as technically qualified.

The request for proposals included a description of the evaluation system that would be used to select the successful bid. About half the decision was based on bidder's technical qualifications and the other half on other aspects of the bid. The bids were not opened in public. In the past, the Tunisian government has experienced problems with public opening of bids, especially in cases which the winning bid was selected on the basis of criteria other than price. Disputes had resulted in cases in which the lowest bidder had lost due to non-cost factors.

The bids were evaluated by a selection committee (Comité de Dépouillement) consisting of five persons from within ONAS. A selection committee report (Rapport de Dépouillement) was

prepared but not released. Mohamed Touati, the head of the central PMU, coordinated the bidding and evaluation process and authored the selection committee report.

The announcement of the contract award was made in the fall of 1996 and the successful bidder, SOMEDEN, began work in February, 1997.

The procedure was lengthy for this operation, in part due to administrative procedures to create the Tunisian firm, request tax shields, and arrange customs clearance for equipment.

In summary, contracting procedures for the El Menzah pilot project were standard and proceeded without significant problems.

A3. The Selected Contractor

The successful bidder on the first pilot project is the Société Méditerranéenne pour l'Environnement (SOMEDEN), created for the first pilot project in Tunisia. It is a Tunisian firm with capital from the Société des Eaux de Marseille (SEM), a large company founded in 1943 specializing in the operation of potable water systems and sewerage systems.

SEM was founded in 1943. The company, which operates utility systems in about 70 cities, has approximately 2,000 permanent employees and annual billings of about \$300 million.

Christian Echaroux, company manager, is responsible for managing SOMEDEN. The Tunisian operation has 17 local employees. As discussed elsewhere in this report, two of these employees previously worked for ONAS. The Tunisian personnel were trained by a technician who came from France for the first month of operations.

Equipment that SOMEDEN has available for use on the pilot project includes:

- 2 hydroflusher trucks
- 2 pickup trucks
- 1 tractor
- 1 trailer with hoisting mechanism for lifting buckets of debris
- 2 dumpsters for storing debris
- 1 trailer for hauling the dumpsters
- Miscellaneous small equipment

B. Technical Aspects of the Project

B1. Technical Requirements of the Contract

B1a. General

This section discusses the contract's technical requirements. The contractual arrangements are discussed below in D1.

The contract's technical requirements were stated in Section 1.5 of the request for proposals. Further information on technical requirements is contained in other sections of the RFP.

There were two addenda that slightly modified the request for proposal. Based on a cursory inspection of the signed contract between the successful bidder and ONAS, it appeared to follow the format in the request for proposals, though some changes may have been made at different places. This project team did not receive a copy of the signed contract; therefore, it is assumed in this report that the final contract is not different from the documents provided in the request for proposal.

B1b. Inventory of Facilities

Article 1 of Section 1.5 lists the facilities included in the pilot project area as follows:

Sanitary sewers (conduites d'eaux usées)	67,749 meters
Combined sewers (conduites unitaires (or mixte))	35,320 meters
Storm sewers (conduites pluviales)	45,350 meters
Manholes and catch basins (regards et avaloirs)	6,507 each
Connection boxes (boîtes de branchement)	6,367 each

The network's total length is 148,459 meters (the total length differs slightly from the sum of the above lengths). There are no pumping stations in the pilot project area.

The following cleaning frequency is required:

- 1.3 times for the total length of the sewers (conduits)
- 1 time for the connection boxes (boîtes de branchement)
- 3 times for manholes (regards) and catch basins (avaloirs).

Article 2 of Section 1.5 lists in considerable detail the subtasks associated with cleaning the piping network. Some subtasks and associated technical problems are discussed below.

B1c. Method and Quality of Cleaning

Article 2.1.1 covers cleaning of the pipes but includes no definition of what constitutes acceptable cleaning methods or quality. Possible cleaning methods include manual and machine cleaning. Machine cleaning could include hydroflushing, rodding, or blading. These methods are not equally effective or acceptable under all conditions.

ONAS uses hydraulic flushing trucks, which is apparently what the contract envisioned. SOMEDEN also uses hydraulic flushing trucks. The request for proposals required that the bidder list equipment to be used. This requirement imposed a degree of control over equipment used.

A poor quality contractor could furnish equipment that will not effectively clean the sewers. For example, a bidder might indicate that he will supply a rodding machine that runs a cable through the sewer pipe in addition to hydraulic flushing trucks. Rodding machines of this sort are useful for dislodging solid objects causing blockages, but otherwise provide little cleaning. Unless the wording of the bid is specific and carefully reviewed, the contractor might later claim that running the rodding machine cable through the pipes constitutes a cleaning, despite the fact that this technique does not remove sand and other deposits as effectively as the hydraulic flushing method.

Initially there were disagreements between the ONAS inspector and the contractor on cleaning quality. The ONAS inspector complained that in some cases the work was of inferior quality and demanded that the contractor clean certain pipe length several times. The contractor complained that the inspector was being unreasonably demanding. While these disputes were eventually resolved, it may not be easy to resolve future disputes if the contract does not provide guidance on acceptable cleaning quality.

B1d. Small Repairs

Under Article 2.1.9 of Section 1.5 of the request for proposals, the contractor is required to make the following small repairs:

- Replacement of cast iron manhole covers and grills on catch basins
- Replacement of broken covers on house connection boxes
- Rehabilitation of manholes
- Encasement in concrete of damaged pipe parts.

The first two items are self explanatory, but the request for proposals contained no description of the last two items.

The technical requirement for manhole rehabilitation is unclear. For instance, the rehabilitation work could imply the raising of the roadway after laying a coat of cement.

Many, even most, manholes and catch basins have small cracks and corrosion damage. This is normal. The contract does not define when conditions require the contractor to make minor repairs. At some point, cracks and corrosion damage become so severe that the repair is no longer considered minor and is thus not covered by the contract. Without definitions, the distinction between a minor and a major repair is useless.

The final item under minor repairs, pipe repairs, is also vague. It appears to require that broken pipes be uncovered and the break encased in concrete. If a pipe has partially collapsed, this technique would not be feasible since the concrete encasement would partially block the pipe's area. In the case of a pipe's partial collapse, a better repair procedure is to cut out the damaged pipe length and replace it with new pipe. One of the addenda clarified that pipe repairs are limited to lengths of no more than 1 meter, but did not describe the work in detail or define work quality. The potential financial impact of minor repairs is discussed later in this section.

B2. Performance of the Contractor and Technical Requirements

As noted above, the contract does not clearly define technical or quality requirements for required sewer cleaning. Despite this weakness in the contract, SOMEDEN furnished hydraulic flushing equipment capable of adequately cleaning the sewers. Initial disputes on work quality have been resolved and the technical performance of SOMEDEN crews using the equipment provided has been assessed as satisfactory.

B3. Technology Transfer

The contractor's equipment for the pilot project is similar to current ONAS equipment and thus does not provide a significant technology transfer. The contractor does, however, use

innovative methods to manage, organize, and execute work that could benefit ONAS by improving the office's internal organization and operations. These innovations include:

- **Working drivers.** The SOMEDEN trucks have two-person crews with drivers that are working crew members. ONAS uses a crew of three persons on its trucks, with the driver normally not participating in the crew's work.
- **Three shifts.** SOMEDEN works three shifts, allowing equipment to be used around the clock. This reduces the amount of equipment needed—or allows the same equipment to cover a much greater length of the sewer system.
- **Motivation.** SOMEDEN pays bonuses to the crews based on productivity (amount of pipe cleaned) and equipment availability. The bonus for equipment availability motivates the crews to take better care of equipment and is an incentive for mechanics to get broken equipment back into operation as quickly as possible.
- **Handling debris.** The contractor has developed a special trailer with a hoist that facilitates loading debris into the trailer. The debris is then transferred to storage boxes at the contractor's depot. Water is allowed to drain from the debris to reduce the weight of debris taken to the disposal site.
- **Mechanical versus manual cleaning of catch basins.** SOMEDEN cleans catch basins mechanically while cleaning the lines that connect catch basins to sewers. According to SOMEDEN, this is more efficient than the manual cleaning practiced by ONAS crews.
- **Use of well water.** The contractor has dug a well at the depot which is used to fill cleaning trucks. Municipal water costs 0.800 dinars per cubic meter. As the contractor uses about 25 cubic meters of water per day, using well amounts to a savings of 20 dinars a day.
- **Better communications.** Each contractor crew is equipped with a mobile telephone, enabling it to respond quickly to changing conditions or customer complaints.
- **Mapping.** The contractor has prepared large-scale maps in a convenient notebook size to be used during field work. Up to now, the maps have been made by enlarging available ONAS mapping. In the future, the contractor intends to map the system via a computerized geographic information system.
- **Ready access to spare parts.** SOMEDEN has arranged for rapid supply to needed spare parts for its equipment.
- **Computerized priority system.** The contractor is developing a computerized system for establishing pipe-cleaning priorities. Such systems are commercially available in the United States and elsewhere. Information on pipe type, condition, and past cleaning is entered and the program recommends cleaning frequency for each length of pipe. As some pipes are cleaned frequently and some pipes rarely or never, a system of this sort focuses cleaning efforts where they are most needed.

Currently, the contractor is isolated from ONAS, with regular contact made only with the office inspector. There are, in addition, no formal mechanisms in place for transferring technology to ONAS. Mechanisms that might be established include:

- Brief technical reports by the ONAS inspector noting improved operating methods that ONAS staff might wish to adopt. These reports would be circulated to ONAS managers.
- Tables of cost or man-hours per linear meter cleaned, comparing contractor results with the results at various ONAS centers. These comparisons would be transmitted to the ONAS center managers to foster constructive competition.
- Field visits by ONAS staff to observe contractor's operations.
- Participation of ONAS staff in the contractor's crews for short training periods of one or two weeks. The contractor would benefit from the free additional labor and ONAS personnel would learn ways to be more effective.

B4. Quality of the Service

The request for proposals required that the contractor respond to customer complaints within a period of time set by ONAS, but no less than one hour. ONAS set the response period at two hours, which is reasonable. It is recommended that the required response time be stated in future RFPs, so that bidders fully understand it.

In general, the contractor has responded within the required period of time, even at night, on holidays, and on weekends. The response time was longer than two hours in only 2 out of the 48 cases reported in the survey.

Based on survey results, the public perceives that the response to complaints is faster since the contractor began operations.

C. Impacts

C1. On the Population Served

The impact of private sewer system operation in the pilot project area was measured by a survey of people who had registered complaints during the three months that SOMEDEN operated the system. The results of the survey are presented below in Subsection E.

As the private contractor operated the system for a short time, survey results are preliminary. However, based on information received, it can be concluded that service quality has been maintained and response time is somewhat faster. Therefore, the impact on the population served appears to be slightly positive.

C2. On Sanitary Conditions and Environmental Quality

Impact on sanitary conditions and environmental quality is mostly the result of overflows from the sewer system. During the period that the private contractor operated the sewer system, there were approximately the same number of complaints as previously, implying that there have been approximately the same number of overflows due to blockages.

There has been little rain since the contractor took over sewer system operation. Thus, the number of overflows due to insufficient hydraulic capacity is much lower than in previous periods.

The private contractor has not been responsible for the sewer system long enough to detect an impact on sanitary conditions and environmental quality. Since the service provided by the contractor appears to be equal to the service provided by ONAS, it is unlikely that there will be a significant impact on sanitary conditions or environmental quality.

D. Contractual

D1. The Contracting Procedure

As discussed above in Subsection A, the bidding process for the pilot project was handled in the same way that ONAS handles other major projects. The process seems to have been well understood by the bidders and has proceeded correctly.

The contract's administrative sections have worked well and conform to international standards. Changes in the administrative clauses would require approvals at high government levels and would probably slow down future reviews. Therefore there is no need to change the administrative clauses and strong reasons not to change them.

The request for proposals was advertised only in Tunisia, which was sufficient. There were an adequate bidders (eight), including three international firms and one international firm in joint venture with a Tunisian firm. At least three of the Tunisian firms were primarily experienced in construction rather than operations.

The contracting procedure was lengthy. Indeed, the request for proposals was issued in August 1995, but the contractor did not start work until February, 1997. Several levels of review must be made. For contracts under 5 million dinars, only ONAS conducts the reviews—reviews are not required from outside agencies. The 18-month contracting process is not surprising given that this was the ONAS's first experience with an unusual contract. In addition, creating and establishing the new contracting firm required time. However, it should be possible to shorten the contracting process for future projects, since all reviews are internal to ONAS. Using the same administrative contract clauses should reduce the time needed to review future contracts.

The bids were not publicly opened and the Selection Committee Report (Rapport de Dépouillement) has not been published, in accordance with current law. Such lack of disclosure could create the impression within the contracting community that the contracting procedure is not fair and open.

D2. Basing the Contract on Performance

In theory, contracts should be performance based, i.e., that the contract state only the required results (outputs) and the contractor be allowed to arrange the amount and type of work (inputs) in whatever way he chooses to achieve the desired result. Performance indicators are required to clearly measure progress to ensure that a performance based contract works as intended. Such indicators, unfortunately, are not readily available for a project involving operation of a sewer system.

Among the performance indicators considered, the following appear to be most directly related to the work performed:

- Fewer overflows due to blockages in the system portion under the contractor's control
- Faster response to complaints
- Fewer complaints

There are numerous difficulties in applying even these basic performance measures. First, it is not reasonable to judge the contractor's work on the basis of blockages until he has had an opportunity to clean the entire system at least once. This will not be achieved for a year or more.

Blockages are normally detected when there is an overflow from the sewer system, but many overflows are due to inadequate hydraulic capacity, i.e., the pipes are simply not large enough to handle peak flows, usually associated with rains. Thus an overflow is not necessarily a reflection on the contractor's work. The amount and pattern of rainfall varies widely from year to year. Therefore, there may be dramatic changes in the number of overflows even as the quality of the contractor's work remains constant.

Many blockages occur at the siphons at the outlet side of connection boxes. These siphons have a much smaller diameter than the pipes to which they connect; they can be easily plugged by solid objects such as rags or pieces of plastic put down drains in houses. The contractor's work on pipes and connection boxes probably has little effect on whether or not blockages occur at the siphons.

Blockages in sewers are also caused by random events such as sticks that lodge in the pipes or large solid objects discharged into the sewer system. Such events have little relation to the contractor's work. In fact, they can occur immediately after the contractor had cleaned a particular line or structure. For these reasons, blockages in the sewer system may not be a good indicator of contractor performance. While the number of blockage-related complaints will probably decrease over time as the contractor's cleaning program takes effect, this is not certain to occur.

A copy of the complaint response form (fiche de débouchage) that the contractor is using is presented in Annex D. There are four boxes that can be checked to show the location of the blockage. The box entitled "canalisation privé" (private piping) is for parts of the system not under the contractor's control, while the other three categories are under the contractor's control.

While the contractor's form is specifically for blockages, there are complaint categories not related to blockages, such as overflows due to inadequate hydraulic capacity. Additional boxes added to the form would allow contractors to track the number and percentage of complaints related to aspects of the system under the contractor's control.

Speed of response to complaints is clearly under the contractor's direct control. As can be seen on the form in Annex D, the time between receipt of a complaint and the response is entered on the complaint response forms. This data should be tabulated and submitted as a part of the monthly report.

The number of complaints received is only indirectly related to the contractor's performance. About 20 percent of complaints received since the contractor began work concerned blockages upstream of the connection boxes, that is, in building owners' part of the system, not

in the part of the system under the contractor's control. Such complaints have no direct relation to the contractor's work. As discussed above, many or most sewer system overflows in an average year can result from rainfall rather than blockages. In those cases, complaints are not related to the contractor's work.

Excellent contractor performance may actually increase the number of complaints. If the public believes that it does no good to call in a complaint, few may complain. If the public perceives greater responsiveness, people may be more inclined to complain. Complaints about odors are also extremely subjective, depending on individual perceptions of acceptable odor levels, the wind direction, and weather conditions. For the above reasons, the total number of complaints received is probably not a good indicator of the contractor's performance. Nevertheless, it is recommended that the total number of complaints be tabulated and included in the monthly report.

Because there is a lack of clearly defined performance indicators, it is not feasible to use a performance-based contract at this time. After tracking the above performance measures or others that can be developed, consideration could be given to including penalties or bonuses based on indicators in future contracts.

D3. Work Description and Quantity

A major weakness in the contract documents used for the first pilot project was the lack of full description of the nature or quantity of required work. Technical problems related to the description of cleaning quality and the definition of minor repairs were previously discussed in Subsection B.

D3a. Manhole Repairs

The description of manhole rehabilitation and spot repairs to pipes in Article 2.1.9 of Section 1.5 of the request for proposals is extremely vague. As some of the listed repairs could be quite costly, this clause is a potential source of disputes. There is no estimate of the quantity of such work and no unit prices. Because the contractor is neither positively motivated by additional pay for this work nor financially penalized for not performing the work, it may be difficult to ensure that the contractor indeed carries out these tasks. And, in fact, no such work has been done to date.

Rehabilitation of a manhole costs at least 100 dinars and could cost several times more, depending on the exact nature of the work. At this unit cost, repairing all the 6,507 manholes and catch basins in the project would cost 650,507 dinars—about one-third of the total contract price.

A description of the required repairs and a unit price for each repair would clarify the contract's content.

D3b. Pipe Repairs

As noted above, the original request for proposals gave little description of the required pipe repairs. Addendum II noted that the repairs were limited to lengths of no longer than 1 meter in length that did not occur more than once per quarter in the same length of pipe between two successive manholes. There are approximately the same number of pipe lengths as there are

manholes, that is, 6,507. If the contractor had to repair one break in each length of pipe once each quarter, it is theoretically possible that the total number of pipe repairs would reach 26,000.

Repairs of localized damage are called spot repairs in the United States. The typical cost of a spot repair in a paved street is at least \$1,000 in the United States. The cost in Tunisia is considerably less, about 500 dinars. At this unit cost, the total cost of the 26,000 spot repairs that the contractor could theoretically be required to make would be 13 million dinars, about seven times the total value of the contract.

Obviously, it was not envisioned that the number of spot repairs would be this large. The important point is that while the amount of work could be significant, the contract documents did not adequately address this issue. The inclusion of a unit price for this work would clarify bidder's financial risk.

As the contractor is neither paid nor penalized for spot repair performance, he is unlikely to do more than the bare minimum to keep the system in operation. In fact, no work of this type has been done to date.

D3c. Cleaning of House Laterals

The contract's technical sections do not state that the pipes of house connections (branchements) must be cleaned, only that connection boxes must be cleaned. However, the wording in paragraph 2 at the top of page 6 of the agreement, Section 1.3 (Convention), specifically mentions the boxes and conduits. The length of conduits in the system was given in Article 1 of Section 1.5 as 148,459 meters, including only the main sewers in the streets, not the house laterals. Initially the contractor maintained that he should also be paid for the length of the house laterals, but has since dropped this demand.

This ambiguity could present a problem with future contractors. Technical clauses should clearly state that the contractor is required to clean the house connection pipes as well as the connection boxes. Furthermore, the contract does not clearly state that the contractor is only required to clean up to the connection box—i.e., not the pipes leading from the connection boxes to the houses—although this was apparently the understanding.

D3d. Uniformity of Cleaning

The contract is unclear on whether each conduit must be cleaned at least once per year or if some pipes can be cleaned many times and others not at all. The factor of 1.3 for pipe cleaning was apparently intended to mean that some pipes would be cleaned more than once a year.

Some pipes need more cleaning than others depending on age, condition, and slope. The contractor has established priorities for storm sewers and combined sewers, both of which receive large loads of sand. These will be cleaned twice in the first year, and the contract's remaining length requirement will be spent on the sanitary sewers (réseau domestique). The result is that only about half of the sanitary sewers will be cleaned in the first year. This may or may not have been the contract's intent. As with the pipes, it is not clear whether all manholes (regards) and catch basins (avaloirs) must be cleaned at least once or exactly three times during the year.

Priorities should be established for cleaning pipes and other structures. Cleaning priorities along with any modifications and constraints that ONAS wishes to add should be laid out in the

request for proposals for future projects. As mentioned above, the contractor is developing a computer program to help establish cleaning priorities.

D3e. Measurement of Lengths

The request for proposals noted the length of pipes included within the pilot project area. This measurement is subject to minor inaccuracies and omissions. The contractor has noticed discrepancies between the system's actual length and the length noted in the request for proposals. The discrepancy may be due to measurement techniques. Pipe length can be measured to the center of the manholes and catch basins, to the inside face, or to the outside face. On average, the pipe length between manholes is 23 meters. The one meter length through the manhole thus represents a 4 percent difference in the overall length. For greater clarity, it is recommended that the request for proposals state how lengths are measured.

D3f. Authority of the ONAS Inspector

The contract does not give the ONAS inspector authority to require that inadequate work quality be corrected, though presumably the inspector could refuse to count unsatisfactory work toward the amount that the contractor is required to perform. To rectify this situation, the request for proposals should clearly define the ONAS inspector's authority.

D3g. Monitoring of Overflows

While the contractor is required to monitor overflows, there is no separate payment or penalty for this work, and therefore no incentive for the contractor to carry it out. ONAS has not systematically monitored overflows in the past. To date, the contractor has not carried out this task, possibly because of the lack of rain since the contractor started work.

D4. Unit Prices

The Selection Committee Report (Rapport de Dépouillement) compared the bids received and the historical costs of ONAS operation on the basis of unit cost per meter per year. Unit costs were generally in the range of 2 to 4 dinars per linear meter a year. Costs are available from other countries for comparison. However, the unit prices for cleaning were different in the technical sections of the request for proposals. The Estimating Details—Section 1.7 (Details Estimatifs) contained an estimate of the length of sewer to be cleaned that was 12 times the actual length of the sewer system. This reflected that the pipe was available for cleaning at the beginning of each month, i.e., 12 times during the year. This does not accurately reflect the contract rural cleaning obligations, stated as 1.3 times the actual length of the network.

The bidders inserted unit prices in local and foreign currency at the bottom of a form in the Bid Schedule in Section 1.6 (Bordereau des Prix). Apparently it was intended that the unit prices would be multiplied by the lengths presented in Section 1.7 to arrive at the contractor's flat monthly payment. As noted below, however, this procedure yields an annual rather than a monthly price.

Sample Calculation

- SOMEDEN inserted unit prices in the Table for Series 1 of Section 1.6 of 0.146 dinars a linear meter, plus 0.158 French francs (FF) a linear meter. It is understood that

SOMEDEN later agreed to also accept the foreign currency portion of the payment in Tunisian dinars.

- At the recent exchange rate of 1.844 dinars to 10 French francs, one French franc is worth 0.1844 dinars.

The foreign currency portion of the payment thus is:

$$0.1844\text{DT/FF} * 0.158\text{FF/LM} = 0.029\text{DT/LM}.$$

The total unit price proposed by SOMEDEN was thus:

$$0.146\text{DT/LM} + 0.029\text{DT/LM (for the foreign exchange part)} = 0.175\text{DT/LM}.$$

The flat monthly payment (forfait mensuel) during the first year calculated by using the length in Section 1.7 should thus be:

$$0.175\text{DT/LM} * 1,781,500 \text{ LM} = 311,763\text{DT}.$$

This is, in fact, the *annual*, not the *monthly* payment.

It is not clear what advantages were envisioned in setting up the bidding documents' technical sections as they were. A private contractor developed the procedure and suggested it to ONAS. The system makes it difficult to compare unit prices from elsewhere, since the numbers entered in the form have been adjusted and seem complicated and susceptible to misinterpretation. Furthermore, the system is unfamiliar to ONAS staff.

D5. Penalties

The agreement in Section 1.5 (Convention) in Articles 8.1 and 8.2 includes systems for calculating monthly penalties if the sewer cleaning each month is less than 75 percent of the average amount required by the contract and semiannual penalties if the work each six-month period is less than the amount required by the contract.

The monthly penalty is obtained by multiplying the prices in Series 1 of the Bid Schedule times 1.5 times the difference between the actual amount of pipe contractually required to be cleaned and the amount actually cleaned. The amount of pipe to be cleaned is defined as:

- "75 percent of one-twelfth of 1.3 times the length of pipe placed at his (the contractor's) disposition on the first day of the month considered."

The length of pipe placed at the contractor's disposition each month is the total length of the network, i.e., 148,459 meters. The unit prices are those from Series 1 of the Bid Schedule. These were discussed above and amount to 0.175 dinars a linear meter.

On average, the amount of pipe that the contractor is required to clean each month is:

- 148,459 meters per year/12 months per year * 1.3 = 16,083 linear meters

A penalty is applied if the contractor cleans less than 75 percent of the above amount, that is:

- 75 percent * 16,083 = 12,062 linear meters

If the contractor cleans no pipe at all, the penalty is:

- 1.5 * 0.175DT/linear meter * 12,062 linear meters deficiency = 3,166DT.

Under the current flat monthly payment arrangements, the contractor receives a flat monthly payment of one-twelfth of 311,763 dinars, i.e., 25,980 dinars. The contractor receives most of the flat monthly payment even if he cleans no pipe at all. Clearly, this is not in the ONAS' best interest.

There is also a minor penalty if 75 percent of the required number of manholes and catch basins and house connections are not cleaned.

There is a 20 dinar penalty for not responding to complaints within two hours. There are about 50 complaints per month, resulting in penalties of about 1,000 dinars, or 4 percent of the monthly contract payment. Even though the penalty for ignoring complaints is trivial, the contractor has done a good job of responding to complaints. If the response time to complaints is considered an important aspect of the contractor's work, more importance should be attached to it, perhaps in the form of a larger penalty or some sort of bonus.

D6. Type of Contract: Unit Price Versus Lump Sum

While the request for proposal's technical sections appear to involve a unit price contract, the sewer cleaning work representing the vast majority of the contract is in fact paid for on a lump sum basis. Bidders were required to include unit prices per meter of sewer for cleaning the system, which were used to calculate a flat monthly payment. These prices will not be used to calculate a monthly payment based on work actually performed, which would be typical under a normal unit price contract. The contractor therefore receives a flat monthly payment (forfait mensuel) for cleaning work that is unrelated to work performed, except for penalties if less than 75 percent of the required work was performed.

The contract's technical sections, developed by a private contractor, are unique to private participation contracts. ONAS had no prior experience with the technical requirements and there are differences of opinion among ONAS staff on the meaning of various clauses.

ONAS regularly uses unit price contracts for construction projects by private contractors and is familiar with true unit price contracts. In the pilot project contract, there are clear unit prices for constructing or replacing house lateral pipes and connection boxes. Prices are given for two pipe sizes and two types of concrete connection boxes. Such unit prices allow payment to be calculated accurately. Although this work has not yet been carried out, accurate unit prices avoid the problem of creating disincentives that penalize contractors for initiating needed repairs. This seems to be clear to ONAS staff administering the contract.

It is recommended that the pilot project contract's sections on price be revised, transforming the document into a true unit price contract. Unit prices should be included for:

- Linear meters of sewer pipe cleaned, along with the method for measuring pipe length.
- The number of manholes and catch basins cleaned.
- The number of house connections, including the pipes and the connection boxes cleaned.
- The number of manholes rehabilitated, including the method of rehabilitation. If there is more than one method and costs vary significantly, a unit price for each method should be included.
- The number of spot repairs made.
- The number of new house connections and the number of connections that are constructed, or totally reconstructed. (The unit price in the existing contract documents is satisfactory.)
- New sewers that are constructed (separate unit prices for different pipe sizes and burial depths may be needed).
- New manholes and catch basins that are built or totally reconstructed.

A separate unit price can be included for complaint response or this can be treated as part system cleaning, as is done at present, since the same crews carry out both tasks. A separate unit price can be included for monitoring overflows.

As ONAS is accustomed to administering true unit price contracts, it would be simpler to administer the entire contract as a unit price contract, paying the contractor on the basis of sewer meters cleaned.

If a fixed monthly payment is considered easier than paying for actual sewer length cleaned, penalties for nonperformance should be increased significantly to ensure that the contractor does not receive payment for work not performed.

D7. Size of Future Contracts

The small current contract does not allow for maximum economies of scale. A larger contract would spread overhead over more work and equipment over larger areas. The contractor noted that an area in Marseille 10 times larger than the project area is served by only 4 times the trucks used in Tunis. In other words, each truck in Marseille covers 2.5 times more area than in Tunis, largely due to economies of scale.

Another advantage of larger contracts is that the breakdown of equipment—for example, a cleaning truck—represents a much smaller fraction of total available contractor capacity. The impact of losing one truck out of two is much greater than losing one truck out of eight.

On the other hand, increasing project size will make it more difficult for Tunisian firms to compete, as there is little in-country expertise in wastewater facility operation outside ONAS. It is important to develop in-country capabilities in private wastewater management, as the cost of foreign staff represents a major portion of contracts' total costs. Replacing foreign staff by

Tunisians will significantly reduce project costs. Future pilot projects should therefore include smaller projects the size of the first pilot project, reserved for Tunisian firms.

D8. Length of Future Contracts

The length of the first pilot project contract may not be long enough to obtain maximum economies. For instance, amortizing major equipment over longer than five years would result in greater economies, making longer contracts or provisions for contract renewal attractive options.

D9. Contractor Performance, Disputes, and Payment

The contractor's performance has complied with the contract's administrative clauses and no penalties have been applied.

There have been no significant disputes on the first pilot project. As discussed above, there was initially a difference of opinion between the ONAS inspector and the contractor over required quality cleaning but the difficulty has since been resolved.

SOMEDEN noted sewers from outside the network sometimes discharge into the pilot project network. Responsibility for problems may be unclear at boundaries between the contractor's project area and areas under control of ONAS or others. To the extent feasible, project areas should include an entire drainage basin with a minimum number of interfaces with other systems. Ideally, there would be a single discharge point at the downstream end of the system.

SOMEDEN had initial difficulties clearing equipment through customs. Ideally, ONAS would facilitate this process. At a minimum, the request for proposals should describe problems explicitly. The existing contract includes a mobilization period when such problems can be resolved.

D10. Monitoring of the Pilot Project by ONAS

In general, ONAS monitoring of the first private participation project has been effective and efficient. The contractor has complied with the contractual and technical aspects and no penalties have been applied. The ONAS inspector is satisfied with the quality and quantity of work performed.

To monitor the contractor, ONAS assigned a full-time inspector, a vehicle, and part of the time of the engineer in charge of the local and central PMU. As existing office space and equipment have been used, there have been few additional costs for these items. Total additional costs for monitoring the contractor's performance on the first pilot project are less than 2,000 dinars a month, approximately 7 percent of the contract's monthly cost. Since the savings over the previous operation costs are significant, the monitoring costs are well justified.

While the inspector works one shift a day, the contractor's truck crews work three shifts. The inspector occasionally makes spot checks of work done at night and has concluded that this work is similar in quality to the work performed during the day shift. Such periodic spot checks of second and third shift work should continue.

To improve monitoring effectiveness, the PMU should develop a project monitoring notebook, with written instructions on conducting monitoring and measuring how results. The inspector could draft the written instructions, which would be circulated for review and comment. These instructions, which would evolve continuously, would be considered guidelines, not rules. These guidelines could be included in future request for proposals to describe expected work quality and monitoring.

The progress of the pilot project could be monitored by means of a two-page monthly report. The second page would contain a summary table comparing actual performance to requirements. A suggested format for this report is presented in Annex E, with the actual results from the pilot project's first few months filled in.

The first page of the monthly monitoring report would be a cover sheet providing general observations, a description of such items as problems encountered or foreseen, disputes, and changes in the contractor's staff or equipment.

E. Commercial

E1. Relations with Users

Because the contractor has only been operating for a few months and complaints are still passed through ONAS, sewer system users have had little contact with the contractor. Nevertheless, a survey was conducted to determine public perceptions on private contractor's services.

Complaints received by ONAS last year were reviewed to establish a baseline for measuring contractor performance. This effort was not fruitful due to the fact that complaints for the pilot project zone were included with other complaints. In addition, records included only addresses, omitting names or telephone numbers of the person who filed the complaint or details on the reported problem. It was therefore not possible to create a baseline.

As few users think about the sewer system except when there is a problem, a decision was made to focus the survey on people who had filed complaints since the contractor took over operations. As can be seen in Annex E, a total of 163 complaints were received from February through April. Of these, 130 (80 percent) concerned problems with the parts of the system under contractor control.

Notices signed by ONAS asking for participation in an interview were sent to these persons, who were then individually contacted. Usable interviews were obtained from approximately half of those who had filed complaints during the three-month period. The results of the survey are presented in Annex F.

E2. Level of User Satisfaction

Most users were satisfied with the private contractor's service. The responses on page 1 of Annex F indicate that 55 out of the 57 respondents who answered rated the service as satisfactory or better.

E3. Response Time

Page 2 of Appendix F concerns the time passing between complaints and contractor response. The contract requires SOMEDEN to respond to complaints within two hours of the complaint's receipt. As can be seen, 46 out of the 48 responses (96 percent) were carried out within the required two-hour period.

E4. Image of the Service

Page 3 of Annex F presents data on the public's image of SOMEDEN workers' conduct. There is only a sprinkling of unsatisfactory ratings. Under an overall rating, only one respondent considered the workers' comportment as unsatisfactory.

Page 4 presents information from 23 respondents who had registered complaints to both ONAS and SOMEDEN. In all categories, most respondents considered SOMEDEN's service as similar to ONAS' service. Several rated the service as better; only one thought it was worse. Public perception was that both ONAS and SOMEDEN provide a high level of service.

Although questions on public perception of private participation in the wastewater industry were not included in the survey, the interviewers noted that the persons interviewed had no objections to a private contractor and perhaps even mildly preferred this arrangement.

F. Social

F1. Reassignment of ONAS Staff

Total ONAS operations staff in the two centers within the first pilot project area amounted to about 70 people. The private contractor displaced about half of these people.

ONAS, which is still expanding its operations, had open positions in nearby areas. ONAS was thus able to retain employees who were displaced by the first pilot project, transferring them to new areas with little or no hardship on the employees.

In the future, there is likely to be more social impact, as ONAS may not have positions available for displaced employees or available positions will not be nearby.

ONAS is reportedly considering locating some future sewer system pilot projects in newly served areas, i.e., where there have not been sewers and therefore no past ONAS operations. This arrangement, if possible, would reduce the social impact of future pilot projects, since no ONAS employees would be displaced. However, it would be difficult to compare contractor performance in a new area to performance in older, existing areas since new and old systems are so dissimilar.

F2. Disputes

The union that represents ONAS workers is known to oppose private participation in the wastewater industry and such contractor's work organization methods as having cleaning truck drivers serve as workers.

Despite the union's general opposition, it has taken no specific actions to date.

F3. Transfers of Staff to the Contractor

While the private contractor was willing to hire ONAS staff, relatively few ONAS staff were interested in working for the contractor. ONAS employees are reluctant to leave the perceived security of their positions, presumably because of high unemployment in Tunisia. As public agencies are scaled back to transfer economic activities to the private sector, the security of government employment will decline and more ONAS staff may be willing to accept positions with private contractors.

The contractor hired three former ONAS employees. Two of these employees worked out well, with one of the former employees becoming superintendent (chef de travaux) of the contractor's work force. To lure this employee away, the contractor had to offer him approximately twice his salary at ONAS.

The contractor also successfully hired a driver away from ONAS.

An engineer hired away from ONAS was unable to make the transition successfully and has since left the contractor.

F4. Contractor's Employment Situation

The contractor reported that he is paying base salaries about 40 percent higher than those paid by ONAS. Apparently most of this increase is for senior, skilled employees, with the least skilled workers paid approximately the same salaries as at ONAS.

The contractor pays the standard fringe benefit package required by law. Benefits at ONAS are significantly higher.

The contractor pays bonuses for productivity and the equipment availability. The contractor believes that bonuses motivate workers to achieve high productivity rates and take better care of equipment.

G. Organizational

G1. Envisioned PMU Organization

Suggested organization for local and central Performance Monitoring Units, (PMUs) was discussed in the "Etude sur l'Unité de Contrôle de Performance (UCP) à l'ONAS." A copy of the organizational chart proposed in the report is presented in Annex G. Under the plan, the central PMU would be located in a staff section reporting to the ONAS head through not more than one intermediate level. The local PMUs would be under districts in charge of operation of the sewer system or wastewater treatment plant under private management.

The central PMU overseeing the private participation program should be located at ONAS headquarters, especially since much of this group's work will involve preparing request for proposals and bidding new projects.

The proposed organizational structure appears appropriate. Placing the local PMU within the district operating the wastewater facilities ensures that the unit is close to the project site and maintains contact with the ONAS unit with information in project area conditions. In addition,

the unit will be close to the customers being served. The advantages of proximity to the project site are not apparent on the first pilot project, because the project site is located in Tunis, close to ONAS headquarters. As additional pilot projects are undertaken at more remote sites, the advantages of the local PMUs located within local operating districts will be more apparent.

A disadvantage of this arrangement is that there is no direct link between the local and central PMUs. This lack of a direct hierarchical link can be overcome by a well-organized functional link.

The organization recommended in the Etude sur l'UCP has not been tested in the field. While it may not necessarily be the most effective or efficient organizational arrangement, based on the experience to date, the organization recommended in the Etude sur l'UCP appears to be sound.

G2. Actual Organization of the PMU to Date

The actual organization of local and central PMUs is more or less as recommended in the Etude sur l'UCP. The PMUs as they currently exist are described below.

G2a. Central PMU

The central PMU is in overall charge of preparing contracts, receiving bids, selecting the successful bidder, and awarding the contract. It should also monitor private contractors' overall performance and evaluate the progress of privatization.

Mohamed Touati, a principal engineer, was formally placed in charge of the central PMU in August 1995. He is located in the Direction d'Assistance Technique et de Coordination (DATC), one of the central departments that reports to the ONAS director. He has been involved in preparing the request for proposals and evaluating bids received for the first two private participation projects. He is the chief author of the selection committee reports (Rapports de Dépouillement). He is not, however, directly involved in planning the privatization projects. Planning has been handled by the Development Department, under the control of Nejib Abid.

The central PMU's location matches the recommendation of the Etude sur l'UCP. It allows the central PMU's leader to work with other specialized departments. Several of these other departments are involved in the contracting process and supply members to the selection committee.

This location is also independent of the operating departments, which should allow the central PMU to take a broader view of the overall process without being drawn into the details of day-to-day operations.

Because the private contractor's work has only recently started, there has not been a major effort to develop the central PMU's and local PMU's role and organization. The engineers in charge of the central PMU have had an informal, but adequate, management relationship. If problems arise, as more contracts are let, formal functional arrangements, industry standardized reporting procedures, will be required.

G2b. Local PMU

Radhouane Ben Chedly's assignment as local PMU chief was less formal than the appointment of Mr. Touati. Mr. Ben Chedly, who was appointed orally in February 1997, has no formal job description (note organique) as head of the local PMU.

Mr. Ben Chedly, an engineer, was assigned as local PMU chief in addition to his duties as chief of the Technical Services Section within the Département d'Exploitation du Département Régional de Tunis. In this capacity, he is in charge of developing small projects up to 30,000 dinars. This experience makes him well qualified for his role with the local PMU.

An inspector, Youssef Jouini, is assigned to the El Menzah project and is performing well. He was formerly chief of the pilot project area's operating centers and thus is quite familiar with the sewerage system and the work required.

Placement of the local PMU within the Operations Unit of the Tunis district conforms with the recommendations of the Etude sur l'UCP.

G3. PMU Relations to SOMEDEN

To date, the PMU's interaction with the contractor, SOMEDEN, has been limited almost exclusively to contact with the inspector, Mr. Jouini. Mr. Jouini spends much of his time on-site, monitoring activities of the SOMEDEN crews.

As discussed earlier, the relationship between the inspector and the contractor was initially rather strained but earlier problems have since been resolved.

G4. PMU Documents and Communications

SOMEDEN submits a monthly report, which includes summaries of work done during the month and work performed to date. Detailed information is available on work performed by each crew on specific days. The work is entered on a daily worksheet (fiche d'intervention) and the areas covered are marked on enlargements of a map.

The inspector maintains a daily diary to confirm the contractor's work.

ONAS and the contractor keep records of complaints received. Annex D contains the complaint form used by the contractor.

ONAS has developed an operations notebook (cahier d'exploitation). Forms included in the notebook are not accompanied by a description of how the forms should be used. More importantly, the notebook does not lay out how private contracts and contractors should be managed.

While the day-to-day detailed working forms are adequate, a concise monthly report would be desirable. A suggested form for such a report is presented in Article D10 and Annex E includes an example.

With USAID support, several reports on the private participation program have been prepared. These reports, which contain a useful suggestions and background information, have

not yet been fully used by the PMUs. For example, the local PMU was unaware of the Etude sur l'UCP report and did not receive a copy of the contract with SOMEDEN until late April 1997. This project team lent the local PMU a copy of the Etude sur l'UCP report for copying. It is recommended that a library of such relevant documents be collected at the central PMU all PMU members and others interested in the private participation project. Individual copies of the most relevant documents should be made available to PMU members. At this time, the most relevant documents appear to be the Etude sur l'UCP and the request for proposals and contract with SOMEDEN.

G5. PMU Resources

As discussed above, Mr. Touati is the only person currently assigned to the central PMU. As the contractor on the first private participation project recently started work and is well organized, Mr. Touati has only spent a short time reviewing the contractor's progress. However, he has been heavily involved in the contracting process for additional private participation projects. He estimates that the selection process for the second contract has consumed up to 50 percent of his time. His other duties include review of internal studies and project development.

Mr. Ben Chedly has spent considerable time reviewing the inspector's reports and developing monitoring procedures for the local PMU. In addition, he is responsible for other duties.

Mr. Jouini is deployed full time as inspector on the first private participation project.

In total, the manpower deployed on the first pilot project is equivalent to approximately one and one-quarter full-time persons.

A car has been made available to the inspector. As the PMUs use previously assigned office space and vehicles, relatively few additional resources have been required. Mr. Touati has a computer. Local PMU staff members believe they also need computers.

Available facilities that appear to be adequate for the PMUs to carry out required work.

The report Etude sur l'UCP recommended that each sewer system private contract include an assigned engineer and inspector. Based on the first pilot project experience, this may be more staff than actually required. If future contractors are as well organized and competent as SOMEDEN, the number of PMU staff required probably be reduced considerably. Each contract will need an inspector to serve as liaison with ONAS; however, it appears that each engineer in charge of local PMUs can probably manage more than one inspector and contract. Based on the first pilot project, one engineer might manage three to five contracts, each with one full-time inspector.

If suitable reporting and monitoring tools are developed, Mr. Touati should be able to oversee all local PMUs for the first round of 11 pilot projects since may only involve 3 engineers in the local PMUs. As more private participation projects are let in the future, the central PMU should probably be expanded to prepare the request for proposals and evaluate bids.

Using private contractors for operations is new for ONAS, which could benefit from training in management techniques for overseeing contractors. The PMU staff is interested in

such training and reported that the training course provided by USAID in February 1997 was helpful.

G6. Summary on the Organization

The PMU organization that has been established is similar to the organization recommended in the Etude sur l'UCP. Local PMU staff was recently assigned on an informal basis. Interaction between central and local PMUs has been informal, but adequate. As more pilot projects are let, more formal PMU organization will be required, particularly if future contractors are less organized than SOMEDEN.

It is recommended that the PMUs be formally recognized as a part of ONAS' organization. The units should be shown on organizational charts and unit members should have titles indicating their PMU assignments.

Before the work load increases, ONAS should define local and central PMU organizational and functional arrangements. These efforts should include the following actions.

- Copies of all relevant past reports and documents should be made available to PMU staff.
- Mr. Ben Chedly should be assigned in writing as head of the local PMU for the first pilot project.
- Written job descriptions should be prepared, by Messrs. Touati, Ben Chedly, and Jouini. These descriptions should be reviewed by others and updated when required.
- The policy manual on PMU operations that has been started should be improved. Instructions should be developed on using forms in the notebook. PMU staff members should be encouraged to review proposed procedures and suggest improvements.
- The notebook should discuss how private contractors can be monitored adequately with the least effort.
- Written projections on staff numbers needed by the PMUs should be prepared. These projections should state the assumptions upon which they are based and should be as quantitative as possible. The projections should be updated frequently.

PMU personnel should receive training in effectively managing private contractors with a minimum of effort.

Separate budgets should be established for PMUs, and time and money on PMU activities should be tabulated and analyzed.

H. Ethical

No indication of ethical problems was discovered by this project team. Nevertheless, the potential for ethical problems must be discussed. The two areas in which ethical conflicts might occur are:

- Selection of the successful bidder
- Inspection of the contractor's work

Selection criteria for the winning bid are evenly divided between proposed price and technical qualifications. This is appropriate for contracts of this type. However, as but the evaluation of technical qualifications is somewhat subjective, there is the potential that one or more evaluators might be biased in favor of a bidder.

To make the selection process as free of bias as possible, each of the reviewers should independently rank the bidders on technical qualifications. Individual rankings should be saved in files, along with notes describing the factors that the reviewer considered in making the ranking. Individual rankings should then be tabulated and averaged to select the successful bidder. With this method, it is difficult for the bias of a single evaluator to affect the selection process outcome since there are typically about five evaluators. A biased evaluation will be compared to the other evaluations.

A regulation should forbid selection committee members from working for the selected bidder for at least two years after the contract award.

Inspectors must constantly decide whether work quality and quantity conform to contract requirements. Usually there is a considerable "gray area", i.e., an area that is not clearly acceptable or unacceptable. Within this range, the inspector must often make judgements.

Both the contractor and the inspector keep extensive daily records of work performed on the first pilot project. These records should be supplemented by occasional spot checks of work quality and quantity by an independent third party, such as the head of the local PMU or a central PMU staff members. Ideally the person would observe without indicating that work was being checked. Later, daily reports would be reviewed to confirm that they reported the same work quality and quantity observed by the third party.

No ethical problems are known to have occurred.

I. Verification of Achievement of the Feasibility Criteria

II. ONAS

The main feasibility criterion for ONAS is a reduction in operating costs. According to the Selection Committee Report (Rapport de Dépouillement), the unit price bid by SOMEDEN for sewer system cleaning was 2.112 dinars a meter. The unit cost of ONAS operation in the pilot zone was reported as 3.500 dinars a meter, calculated on the basis of El Menzah centers' operating budgets plus ONAS overhead. The low bidder's price saved at least 40 percent over ONAS' cost.

ONAS assigned a total of 72 persons to the two centers from which the first pilot project area was taken. Based on the ratio of pipe length in the pilot project area to total pipe length, about 36 people were working in the pilot project area. The contractor has a total Tunisian crew of 17, about half of the equivalent ONAS crew, but pays them 40 percent more than ONAS paid. In equivalent terms, it can be said that the contractor's Tunisian labor costs are as follows:

$0.5 \text{ As Much Staff} * 1.4 \text{ Relative Wage Rate} = 0.70 \text{ Equivalent.}$

This rough calculation implies that there is a savings of about 30 percent for local labor.

Information in Table 2 of the feasibility study implies that ONAS had about 50 percent more equipment than the contractor but this comparison may be misleading since the ONAS equipment is older.

In summary, it appears that the savings achieved in the first pilot project considerably exceed the 6.3 percent projected in the feasibility study.

The low bidder's unit price also compares favorably with prices observed elsewhere. For example, in a recent project in Piedmont, California, in the United States, a unit price of \$1.37 per foot was bid for cleaning about 10 kilometers of sewers. For the larger sewer system included in the pilot project, the U.S. price would decrease to about \$1.00 per foot.

The contractor's bid price of 2.112 dinars/ML is equivalent to about \$0.60 per foot, which compares favorably to U.S. costs. The cost of equipment in Tunisia and the United States is comparable, the lower overall price in Tunisia reflects lower labor costs.

The contractor's economies are based on better work organization and management. Examples of greater efficiency include using equipment for three shifts rather than one and including truck drivers in cleaning crews, reducing the effective size of cleaning crews from three persons to two.

The contractor reported finding clandestine sewer connections and unknown manholes, implying that the contractor's cleaning efforts are more thorough than previous efforts.

Household survey results indicate that quality of response to complaints has not decreased and response speed has improved somewhat.

The contractor has brought several hundred thousand dinars worth of equipment to the project, i.e., the use of the private contractor has mobilized additional capital resources.

Overall, ONAS feasibility criteria have been met and savings are considerably higher than projected in the feasibility study.

I2. Contractor

The contractor's main feasibility criterion is making a profit.

As SOMEDEN started its activities only a few months ago, it is not yet possible to evaluate its first account statement.

The project team's estimate of the contractor's costs confirms that the contractor will probably realize little profit at first, given the investment at start-up. However, the contractors' activities have the potential for future development.

After the first two fiscal years, another evaluation, is necessary to objectively assess the contractor's feasibility criterion.

I3. Public Sector

Survey participants indicated that the level of service has been high under both ONAS and the contractor. Many people interviewed were not aware that a private contractor was operating the sewer system. There was a perception among those surveyed that response speed was somewhat improved but this improvement was difficult to quantify.

To summarize, the public has not suffered a decrease in service level.

Savings in operating costs will not be reflected immediately in lower the bills for customers but, over time, decreasing costs should decrease prices.

SECTION IV REPLICATION OF THE PILOT PROJECT

The Policy Action and Cooperation Timetable (PACT) calls for private participation pilot projects to be undertaken on five sewerage networks and five wastewater treatment plants. In addition, there will be one private build-operate-transfer (BOT) project. These projects are part of a larger Government of Tunisia strategy to make the private sector the country's engine of economic growth.

The El Menzah project is the first of several pilot projects. Bids have been received for the second pilot project, which concerns operation of wastewater treatment plants. It is expected that evaluation of bids will be complete by July 1997 and that the contractor on the second project will begin work in September 1997.

The remaining pilot projects have been included in the 9th plan and are thus likely to be implemented.

Although replication of the first pilot project appears to be proceeding, the program's pace is quite slow. Annex E of the National Strategy report (see the bibliography in Annex B) listed proposed sites for the pilot projects but site selection is not yet sure, with sites still under review. A feasibility study will be conducted on each site, which may slow down the selection process.

SECTION V
LESSONS LEARNED AND RECOMMENDATIONS

A. Lessons Learned and Conclusions

A1. General

Private participation in the wastewater industry in Tunisia has begun:

- The first pilot project is off to a reasonably good start.
- There is a strong political will to move private participation forward. The process is maturing, increasing chances for sustainability. ONAS management staff members seem committed to making private participation work.
- Bids have been received for the second private participation project, which involves the operation of three wastewater treatment plants. The contract will be awarded in July 1997 and work will begin in September 1997.
- The remaining pilot projects have been included in the 9th plan and therefore are likely to be implemented.

However, the rate of private participation is slow. At the present rate, only a tiny percentage of the country's wastewater operations will be handled by the private sector by the end of the 9th plan in 2001.

A2. Technical

The contractor has met the contract's technical requirements. The contractor has excellent equipment, is competent technically, and has developed a competent local staff. The contractor has responded well to complaints from the public.

While the contractor has not introduced major equipment that is significantly different from ONAS equipment, the contractor's work management and organization methods represent a significant improvement. Unfortunately, there are currently few mechanisms to transfer improved management and work organization techniques to ONAS, as the contractor's operation is isolated from ONAS.

Based on the survey's results to date, the public perceives that technical service quality remains high.

A3. Impact on the Community and Commercial

While it is difficult to measure the project's impact, the main impact should be in the following areas:

- Fewer overflows due to blockages in the portion of the system under the contractor's control

- Faster response to complaints and more complete and effective of problem resolution
- Fewer complaints

Meaningful data on blockages, response time and performance, and complaints prior to the contractor's operations are not available. Public perception seems to be that service is as good as before and the response time somewhat faster.

A4. Contractual and Legal

The bidding process was handled in the same way that ONAS handles other major projects. The bidders appeared to understand the process, which went smoothly. The contract's administrative portions worked well.

The request for proposals was published only in Tunisia, which seems to have been sufficient. There were eight bidders, an adequate number, including three international firms and one international firm in joint venture with a Tunisian firm.

The contracting procedure was lengthy. Specifically, the request for proposals was issued in August 1995, but the contractor did not start work until February, 1997. The process' 18-month duration could be shortened on future projects.

The bids were not publicly opened and the Selection Committee Report (Rapport de Dépouillement) has not been made available to the public or the project team. Such lack of disclosure could create an impression among contractors community that the contracting procedure is not fair and open.

A performance-based contract is not possible at this time because viable and reliable indicators of performance, other than speed of response to complaints, are not available. Contractor performance of the should be reviewed after the first year of operation to identify suitable performance indicators.

The contract's technical parts were not developed by ONAS; as a consequence, ONAS staff members are not familiar with them. These sections do not precisely describe the work and are confusing. Required cleaning quality is not defined. There is an inadequate description of work required to rehabilitate manholes and catch basins and perform spot repairs to pipes. As the potential cost of such work is great, it is potentially a source of major disputes. Numerous minor clarifications should be made in the contract's technical portions of the contract, specifically, Article D of Section III.

The contractor bid fictitious unit prices to fit the bidding form requirements. These prices therefore cannot be compared to other prices. There appear to be errors in how these are applied; for example, the document appears to state that the annual contract amount is owed each month.

The low contract penalties would not adequately motivate a contractor whose performance was caused by financial distress or other problems.

Despite the contract's technical deficiencies, there have been no significant disputes to date on the first pilot project.

Larger, longer term contracts probably would result in greater economies.

ONAS has demonstrated efficiency and effectiveness in monitoring the private contract.

A5. Commercial

See A3 above.

A6. Social

The first project's social impact on ONAS has been small. ONAS employees displaced by the contractor were transferred to nearby areas where ONAS was expanding operations. Social impact is likely to be much greater in the future, when ONAS has no positions available for displaced workers.

The union representing ONAS workers is opposed to private participation in the wastewater industry and contractor work organization methods such as having the cleaning truck driver serve as a worker. To date the union has not taken specific actions.

The contractor hired three ONAS employees. Two worked out well, with one former ONAS employee serving as superintendent (chef de travaux) of the contractor's work force. One of the former ONAS employees did not work out and has left the contractor.

The contractor offers government-required fringe benefits and appears to pay somewhat higher wages than ONAS, at least to skilled workers.

A7. Organizational

The local and central PMU organization is similar to that recommended in Etude sur l'UCP but local and central PMU functioning has not been well defined.

Mohamed Touati was formally placed in charge of the central PMU in writing in August 1995. The assignment of Radhouane Ben Chedly to be chief of the local PMU was made orally in February 1997. He has no job description as engineer in charge of the local PMU.

The engineers assigned to the local and central PMUs have not been relieved of other duties. Their PMU responsibilities are in addition to work previously assigned.

There is no formal functional relationship between the engineers in charge of the local and central PMUs. Their management relationship to date has been informal, but adequate. If problems arise as more private contracts are let, more formal arrangements will be required, such as standardized reporting procedures.

An inspector, Youssef Jouini, has been assigned for the El Menzah project and is performing well.

A notebook describing PMU operations has been started. It includes certain forms but does not describe how the forms should be used. There is not yet a clear understanding of how private contracts and contractors should be managed. A suggested one-page monitoring form is included in Annex E of this report.

The Etude sur l'UCP recommended that each sewer system private contract have an engineer and an inspector assigned. This may be more staff than required. If future contractors are as well organized and competent as SOMEDEN, the number of PMU staff can be decreased. While each contract will need the recommended inspector to liaise with ONAS, an engineer in charge of a local PMU can probably manage more than one inspector and contract. Based on the first pilot project experience, one engineer might manage three to five contracts, each with a full-time inspector.

The organization recommended in the Etude sur l'UCP has not been tested in the field. It is therefore unclear whether it is the most appropriate or economical organization.

A8. Ethical

While there is always a potential for ethical problems, none have developed to date. Ethical problems do not seem to pose a major problem.

A9. Verification of Feasibility Criteria Achievement

A9a. ONAS

ONAS has achieved its objective of reducing operating costs. According to the Selection Committee Report (Rapport de Dépouillement), the average cost of contractor system operation is only 2.112 dinars/linear meter a year, compared to a cost of 3.500 dinars/linear meter a year for ONAS. In other words, the cost of the private contractor is 60 percent of the ONAS cost, considerably exceeding the expected savings.

A9b. Contractor

The contractor states that he is not making a profit on this project. In part, he attributes this to the project's size, which is too small to allow sufficient economies of scale. This project team's independent estimate of the contractor's real costs confirms that there is little profit.

A9c. Public Sector

The public sector is pleased with the contractor's service and perceives that response speed has improved.

B. Recommendations

B1. General

The pace of private participation should be accelerated:

- The review, selection, and award process should be shortened. The central PMU should assist contractors in starting work within six months of the bid opening date.
- To accelerate the private participation process and achieve greater economies, pilot project total volume should be increased to three to five times the amount previously planned. This will help compensate for the slow rate at which private participation projects are being let.

- To accelerate private participation, the size of the existing pilot project should be increased. There is an area adjacent to the project area which could reportedly be turned over to the contractor, increasing area under the contract by 20 percent.

The bids should be opened in public and the selection committee's report should be made available to the public. This will increase the contracting community's confidence that the bidding process is open and fair. In addition, the additional information available in the selection committee's report will help bidders on future projects be more responsive.

B2. Technical

Technology must be transferred from the contractor to ONAS personnel. Various techniques for achieving this are discussed in Section III.

The contractor should propose a system for prioritizing cleaning lines based on the condition and past history of each length of sewer pipe, manhole, and other factors. Cleaning schedules should not be applied to entire areas, as some pipes are steeper or in better condition than others, therefore requiring less frequent cleaning.

B3. Impact on the Community

A complaint form should be developed with categories that clearly distinguish between complaints associated with blockages in lines that the contractor is responsible for cleaning and complaints that are not. Complaint types received should be tabulated monthly. With added experience, consideration should be given to including in contracts the number and percentage of blockage-related complaints as an objective performance measure. SOMEDEN has a form, presented in Annex D, with some of these categories.

B4. Contractual

Standard administrative clauses used on the first project should continue to be used and should not be changed.

Contracts' technical sections should be revised into a true unit price contracts, i.e., a contract with unit prices for all tasks, which specifies a monthly payment that is equal to the unit prices times the amount of work performed. Less than one dozen unit price items will be required. It would be advantageous to pattern the unit price contract on the contract that ONAS uses on construction projects, since ONAS staff is familiar with this contract.

Recommendations for the new contract technical sections include:

- Each item of work should include a detailed description of the work, required quality, a quantity estimate, and a unit price.
- Required cleaning methods and quality should be defined as precisely as possible.
- The ONAS inspector should have the authority to reject unsatisfactory work and require that it be corrected. Payment should not be made for work of inadequate quality.

The contractor can receive a flat monthly payment, if this is considered simpler than using unit prices multiplied by the actual work quantity. However, penalties should be significantly increased since current penalties are trivial.

To obtain greater efficiency and savings, some future contracts should be larger than the existing contract, at least three to five times larger. Such contracts will probably be won by international firms.

To develop in-country capabilities, some future contracts should be no larger than the current one. The contracts should be reserved for Tunisian firms.

Consideration should be given to developing contracts with longer terms and renewing existing contracts.

Pilot project areas chosen should have as few interfaces with other systems as possible. Ideally the only interconnection would be the discharge point at the network's downstream end.

B5. Commercial

There should probably be increased direct contact between the contractor and the public. In particular, complaints should be phoned directly to the contractor rather than through ONAS. ONAS can monitor complaint number and responses by reviewing the contractor's log and complaint forms.

B6. Social

No recommendations.

B7. Organizational

The PMUs should be formally recognized as a part of ONAS' organization. They should be shown on organizational charts and unit members should have titles indicating their PMU roles.

ONAS should strive to define the organizational and functional arrangements of local and central PMUs. ONAS efforts should include the following items.

- Copies of all relevant past reports and documents should be made available to the PMUs' staff.
- Mr. Ben Chedly should be formally assigned in writing as local PMU head for the first pilot project.
- Written job descriptions should be prepared by PMU members. These descriptions should then be reviewed and improved on a regular basis.
- The notebook describing PMU operations should be improved. Instructions should be developed on using forms in the notebook. PMU staff members should review the proposed procedures and suggest improvements.

- The notebook should examine how private contractors can be monitored with the least effort. A suggested one-page monitoring form is presented in Annex E.
- Written projections of the staff members needed by the PMUs should be prepared. These projections should state the assumptions upon which they are based and be as quantitative as possible. The projections should be updated frequently.

The PMU personnel should receive training in effectively managing private contractors with minimal effort.

Separate budgets should be established for the PMUs, and time and expenses actually spent on PMU activities should be tabulated and analyzed.

B8. Ethical

ONAS should establish an independent system of occasional spot-checking to ensure that reported work is in fact being carried out.

B9. Verification of Achievement of Feasibility Criteria

ONAS should regularly calculate the operation costs in each center in dinars/linear meter/year. These results, along with the price paid to private contractors, should be tabulated and widely disseminated.

Baseline surveys should be carried out in areas that are to be turned over to private contractors before contracts are awarded. These surveys should be repeated after the private contractor has been operation for a year to see if there are changes in public satisfaction or performance as measured by such items as number of blockages in the portion of the system under the contractor's control.

PIO/T No. 664-0356-3-70002

STATEMENT OF WORK

ARTICLE I. TITLE: Contracting Impact Study for the El Menzah sewer network pilot project.

ARTICLE II. BACKGROUND AND OBJECTIVES

The Private Participation in Environmental Services Program (PPES) is a joint program of the Government of Tunisia (GOT) and USAID to improve the coverage and efficiency of urban environmental services (e.g., solid waste collection and treatment, wastewater collection and treatment, storm drainage, and site development for low-income families), through increased participation of the private sector and of community groups in providing and financing these services.

The PPES program includes \$40 million in Housing Guaranty (HG) loans to support GOT programs that provide improved HG-eligible environmental infrastructure in poor neighborhoods, as a bridging mechanism until this greater private sector role begins to take effect.

The PPES program also includes a \$3.65 million "Sectoral Policies" component intended for policy analyses, institutional strengthening and the implementation of pilot projects to create an enabling environment for greater private sector participation. The policy component includes 95 specific activities which are defined in a document entitled Policy Action and Cooperation Timetable (PACT).

As one of the pilot actions planned in the PACT, the National Sewerage Agency (ONAS) has subcontracted to a private firm the operation of the sewer network of El Menzah, a residential neighborhood of Tunis. The PACT provides for this pilot project to be replicated at 5 other sites.

The objective of this delivery order are to:

- identify and examine the technical, social, legal and environmental results of the sewer network contracting effort in El Menzah;
- help ONAS prepare the duplication of this pilot effort at five other sites.

ARTICLE III. WORK TO BE PERFORMED

The following tasks A, B and C make up this delivery order:

A. Document review and Field survey

Task A includes three sub-tasks:

- document review;
- meetings with the concerned authorities; and,
- field surveys.

1. Document review

The Contractor shall familiarize him/herself with all existing documents pertaining to the pilot projects and to the context of private-sector participation in the operation of sewerage works. The following is a partial list of the most important documents:

a. base-line studies:

- Feasibility study for the operation of a sewerage system by a private firm in the El Menzah area (PADCO-EICO, August 9, 1995);
- National strategy study for private participation in the liquid waste sector (PADCO-EICO-SMART, April 1996); and
- Market study (PADCO-SIDES, December 15, 1994).

b. Contracting documents:

- contract documents between ONAS and the operator;
- important correspondence between ONAS and the operator;
- progress reports;
- operating records;
- monthly work and service schedules;
- monthly and annual technical reports;
- claims registers;
- documents held by the Performance Monitoring Units (PMU) (local and central); and,
- actual and estimated operating accounts.

2. Meetings with concerned key persons

The Contractor shall hold meetings with executives of ONAS and with private operators:

At ONAS, the Contractor is to interview the authorities and agents involved in the management and monitoring of pilot projects within the PMU and in the other ONAS units.

At the private firm, the Contractor is to interview executives of the firm, and technical and managerial agents who are in contact

with ONAS.

3. Field survey

The Contractor shall make field visits to view operating conditions at the installations and to see how they are run and shall make a brief survey of user satisfaction.

In particular, the Contractor shall:

- visit a representative sampling of works: manholes, connection boxes (using the ONAS camera, if necessary);
- visit the operator's equipment garage;
- visit maintenance and clearing operations as they are being carried out, ;
- conduct a field survey among a representative sample of the population concerned, to assess user satisfaction. At least 100 households are to be surveyed, and the choice of the sample is to be submitted to ONAS for approval.

B. Analysis of the Pilot Project

Based on the data collected in Task A, the Contractor is to analyze the conditions under which the pilot project was implemented.

Task B is divided into two sub-tasks:

- analyze the conditions under which the project was conducted;
- determine whether the feasibility criteria have been met.

1. Analysis of the conditions of project implementation

The Contractor shall analyze the conditions of execution and management of the contract with the private operator. He will develop for this purpose a set of impact indicators. This analysis is to bear particularly on the following aspects:

a. Technical

- assessment of performance and of quality of service;
- compliance with standards and the contractual technical provisions;
- assessment of project impact with respect to transfer of know-how and adoption by ONAS of the good practices of the private operator; and,
- judgement of the quality of service based on the field survey and by a comparison with the situation before the operator's intervention

(frequency of overflows, number of complaints, etc...).

b. Impact on the population served

Based on analysis of the results of the field survey and the information and data gathered, the Contractor is to assess project impact on the population served, on sanitary conditions, and on environmental quality.

c. Contractual and legal

The Contractor is to:

- list and comment on any disputes between the Operator and with third parties, and any difficulties in the application of the contract with ONAS;
- analyze the efficiency of the contract management;
- analyze the relevance of the contract clauses: definition of tasks to be subcontracted, contract term, methods of payment, etc...; and
- analyze the relevance and appropriateness of the contract type.

d. Commercial

The Contractor shall assess the quality of relations with users and the level of user satisfaction, the volume of claims made, the response time, and the image of the service,...

e. Social

The Contractor shall:

- assess how ONAS reassigned staff displaced by the pilot project;
- list any disputes, with comments;
- assess the effects of any transfers of staff to the private operator; and
- assess generally the private operator's employment situation.

f. Organizational

The Contractor shall analyse the following aspects:

● Role of the PMU:

- Current role of the PMU and task

allocation among the PMU and existing departments;

- Distribution of tasks within the PMU.

- PMU organization and operating methods:

- Organization of the central and local PMU and their methods of operating;
- Functioning of the PMU with the other ONAS units (hierarchical relations and functional relations);
- Various documents that circulate within the PMU, and between the PMU and the other divisions of ONAS;
- General circulation of information among these different units;
- Frequency with which the different documents are drafted;
- Frequency and nature of contacts with the private company.

- PMU human and material resources:

- Number of PMU staff and their qualifications ;
- Equipment allocated to the PMU to carry out their mission, (computer hardware and software, space and offices, vehicles, etc.).
- Matching of human and material means assigned to the PMU and their activities.

- PMU Budget:

- Current capital and annual operating PMU budget;

g. Ethical

The Contractor shall identify any problems that arise concerning ethics. In this matter, the Contractor shall enumerate the difficulties encountered by both ONAS and the operator, and identify the causes of these difficulties.

2. Verification of achievement of the feasibility criteria

For ONAS, this means chiefly:

- Reducing the operating budget for subcontracted activities. To do this, the Contractor should analyze the impact of the pilot project on the ONAS operating budget for the subcontracted activities, specifying the

- expenditures made and those planned, and comparing them with those for ONAS operation; and
- Improvement in service quality.

For the private operator, it means chiefly verifying the profitability criteria.

The Contractor shall also make an estimate of private firm real costs.

C. Recommendations and Lessons Learned

Based on the analyses achieved in the task B, the Contractor shall formulate proposals for improving the currently-executed pilot project, draw lessons, and make recommendations for future projects.

1. Recommendations

The proposals and recommendations to be made shall bear on all the aspects analyzed in task B, and other aspects as appropriate.

The Contractor shall focus mainly on the contractual and organizational aspects:

- When making recommendations on contractual aspects, the Contractor shall define the types of contracts that would be most appropriate for future pilot projects. To increase the effectiveness of private sector participation and to allow for innovation and the transfer of expertise to ONAS and others, the Contractor may, if the conditions of the current contract implementation allows, recommend greater delegation of responsibility to the contractor based on performance and results achievement instead of inputs requirements. (e.g. Current ONAS contract with the private sector operator states that lines must be flushed twice a month to reduce chance of blockage. The private sector operator knows from experience, however, that using a new technique; it can flush the lines once a month and maintain the same level of performance while reducing costs). ONAS should be encouraged to change future contracts clauses in order to increase benefits from private sector participation.

- On the organizational aspects, the Contractor is to confirm or modify the current situation regarding the role of the PMU's, their organization and operating methods, and their human and material resources. The Contractor shall make recommendations as to the number of PMU staff, their qualifications and their training needs. The Contractor should also evaluate the PMU budget.

These proposals should be specified with reference to future pilot project needs.

The Contractor shall propose a continuous monitoring and evaluation system based on the impact indicators defined in task B and on the findings of this study. This tool should facilitate future impact assessments to be conducted by the PMU. It may also be used for future pilot projects.

2. Lessons learned

Based on the analysis achieved in task B, the Contractor shall draw lessons for other similar projects to be implemented by the GOT as well as by USAID.

ARTICLE IV. DELIVERABLES

IV.1 General Deliverables:

a. Work plan

The Contractor shall submit a detailed Work Plan, drawn up according to Task and Secondary Task, within five days following the beginning of the work called for under the present purchase order. This work plan is to include at least the following: general schedule for every field visit to Tunisia; planned dates for submitting draft and final reports for each task; and the dates of every debriefing. He/she is to submit brief written updates of the schedule, which shall be determined with the USAID Project Officer.

b. Reports

The Contractor shall submit 20 copies in French of all draft and final reports and other written documents specified below. The Contractor shall submit five copies of final reports in English. The Contractor shall submit the final versions of all reports within ten days of receiving the comments of USAID and of the GOT on the drafts of these reports.

c. Debriefings

The Contractor shall present, or participate in the presentation of, oral debriefings to the HG-V Implementation Committee and to USAID, midway through each of the tasks defined in this scope of work. Other additional debriefings are to be presented at the request of the USAID Project Officer.

IV.2 Task Specific Deliverables

1. Within 3 weeks following the inception of the study, the Contractor shall, in accordance with the terms of Article III, Task A, organize field visits and surveys and work meetings with the concerned authorities in ONAS and in the private company (meetings, observation visits, examination of documents, etc.).
2. Approximately 4 weeks after finishing the activities described in 1, the Consultant shall submit 20 copies of a draft report in French. This report is to concern Tasks A, B and C. It should include an Executive Summary.
3. Approximately 4 weeks after submitting the draft report, the Consultant shall make an oral presentation of the main study findings to the "Liquid Waste" work group and to the HG-V Implementation Committee.
4. Four weeks following the presentation described in 3, the Consultant shall submit 20 copies of the final version of the report, in French, to USAID and to the HG-V committee. This report is to include the additional elements collected during the presentation.
5. Approximately 4 weeks after the formal acceptance of the final version in French, the Consultant shall submit 5 copies of the final report in English.

ARTICLE V. PERSONNEL NEEDS AND WORK DAYS ORDERED

The following technical specialist will be required to perform the work under this delivery order:

International

1. **Senior Urban Planning and Policy Specialist** (Specialist in Subcontracting Contracts and Management for Sanitation Services). Experience in North Africa desirable. Minimum of 5 years' experience in drafting and analyzing contracts for wastewater management. Basic knowledge of the wastewater sector in Tunisia also desirable. Knowledge of French desirable.
Work days ordered : 35.

Local

2. **Senior Environmental Engineer** (Specialist in Subcontracting Contracts for Wastewater Management Services). Five years' experience in private-sector participation in sanitation service management in Tunisia. Good Knowledge of French required.
Work days ordered : 25.

3. **Social and Demographic Analyst** (Specialized in the preparation, implementation and analysis of socio-economic surveys). Two to five years' experience in the urban sector. Good Knowledge of French and arabic required.
Work days ordered : 20.

ARTICLE VI. RELATIONS AND RESPONSIBILITIES

The Contractor will receive technical guidance from the USAID/RHUDO PPES Manager. He/she shall work in collaboration with the General Director for Infrastructure, at the Ministry of Economic Development (MDE), for all tasks, and with the General Manager of the National Sanitation Agency (ONAS).

ARTICLE VII. PERIOD OF PERFORMANCE

The Contractor shall begin work on this Delivery Order o/a March 31, 1997 and shall submit the final reports and documents no later than June 30, 1997.

ARTICLE VIII. BUDGET

A detailed illustrative budget is in Attachment A of this PIO/T.

ARTICLE IX. SPECIAL PROVISIONS

A. Duty Post

The work required under this delivery order is to be carried out in Tunisia and the United States.

B. Languages and other qualifications required

See Article V.

C. Access to confidential information

The Contractor shall not have access to any government classified material.

D. Logistic support

The Contractor may use USAID/RHUDO office facilities on a space available basis. No secretarial services or other logistic support will be provided.

E. Work week

A Six-day work week is authorized, at no premium pay.

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02/11/97

ANNEX B
PERSONS CONTACTED

Abid, Nejib. ONAS, Departement de Devellopement.

Aniba, Belhassan. Directeur du Control de Gestion et du Budget, ONAS.

Ayed, Habib. ONAS.

Ben Chadli, Radhouane. Chef de Service Technique, Direction d'Exploitation, Departement de Tunis. ONAS. Also Chef de PMU Locale.

Dobberstein, Scott G. Acting Director, Regional Housing and Urban Development Office, Near East and North Africa, USAID.

Echaroux, Christian, Gerant, SOMEDEN.

Ghariani, Fadhel. RHUDO/USAID.

Hadj Ali, Habib. ONAS.

Jouini, Youssef. Inspector on the SOMEDEN project for ONAS.

Kraiem, Fathi. RHUDO/USAID.

Maacha, Abdallah. Directeur d'Exploitation, Departement de Tunis, ONAS.

Touati, Mohamed. ONAS. Chef de PMU Centrale.

Trabelsi, Ezzedine. Directeur, Secretariat Permanent de la Commission Interne des Marche, ONAS.

ANNEX C

BIBLIOGRAPHY

ANNEX C
BIBLIOGRAPHY

- 11/1/94 "Analyse Des Normes et Definition Des Exigences Dans le Domaine de L'assainissement Liquide en Tunisie", Beaumont, Jean-Pierre, Michel Laurin, Mohsen Tounsi, PADCO et la Societe d'Ingenierie pour le Developpement Economique et Social (SIDES), Preparee pour Le Bureau regional de l'habitat et du developpement urbain pour le Proche orient et l'Afrique du nord (USAID).
- 12/15/94 "Etude sur L'Unite de Controle de Performance a L'ONAS", Beaumont, Jean-Pierre, Imed Eddine Nouri, PADCO et la Societe d'Ingenierie pour le Developpement Economique et Social (SIDES), Preparee pour Le Bureau regional de l'habitat et du developpement urbain pour le Proche orient et l'Afrique du nord (USAID).
- 12/15/94 "Etude de Marche: le Role Potentiel du Secteur Prive dans le Domaine de l'Assainissement Liquide", Preparee par PADCO/SIDES, Preparee pour Le Bureau regional de l'habitat et du developpement urbain pour le Proche orient et l'Afrique du nord (USAID).
- 2/15/95 "Contrat-Type de Sous-Traitance des Travaux d'Exploitation des Reseaux d'Assainissement", PADCO, Inc., Etude d'Ingenierie et Conseil en Organization (EICO), Preparee pour Le Bureau regional de l'habitat et du developpement urbain pour le Proche orient et l'Afrique du nord (USAID).
- 3/15/95 "Feasibility Study: Contracting Out Operation and Maintenance of the El Menzah Liquid Waste Network", PADCO, Inc., Etude d'Ingenierie et Conseil en Organization (EICO), Prepared for United States Agency for International Development Regional Housing and Urban Development Office Near East and North Africa. (In English).
- 8/1995 "Dossier d'Appel d'Offres, Marche de Sous-Traitance des Trauvauux d'Exploitation du Reseau d'Assainissement en Eaux Usees et Pluviales des Zones d'el Menezeh (Menseh I a VIII), Notre Dame, Nord Hilton, Mutuelleville et El Manar III, Sises a Tunis", Ministere de L'Environnement et de l'Amenagement du

Territoire, Office National de l'Assainissement (ONAS).

- 8/9/95 "Etude de Faisabilite de l'Exploitation par une Entreprise Privée du Réseau d'Assainissement de la Zone Pilote d'El Menzah", PADCO, Inc., Etude d'Ingenierie et Conseil en Organization (EICO), Preparee pour Le Bureau regional de l'habitat et du developpement urbain pour le Proche orient et l'Afrique du nord (USAID).
- 4/96 "Etude sur la Strategie Nationale de Participation du Secteur Prive dans le Domaine de L'Assainissement Liquide en Tunisie", Abdeljaoud, Ilyes, et. al., PADCO/EICO/SMART, Preparee pour Le Bureau regional de l'habitat et du developpement urbain pour le Proche orient et l'Afrique du nord (USAID).
- 3/1997 "Realisation du Contrat par SOMEDEN", Societe Mediterraneenne pour l'Environnement (SOMEDEN).

ANNEX D

SOMEDAN COMPLAINT RESPONSE FORM

Fiche de débouchage N° Date et heure de réclamation : / / à : h

Equipe : _____

Heure début d'intervention : h Heure fin d'intervention : h

Poste : Matin
 Après Midi
 Nuit
 Astreinte

Personnel : chef d'équipe
(nombre)
ouvrier(s)

Matériel : Camion 10m³
 Camion 8m³
 Tracteur + remorque
 Isuzu

Zone d'intervention :

<input type="checkbox"/> 01	El Menzah I	<input type="checkbox"/> 05	El Menzah V	<input type="checkbox"/> 09	El Manar 3
<input type="checkbox"/> 02	El Menzah II	<input type="checkbox"/> 06	El Menzah VI	<input type="checkbox"/> 10	Mutuelle Ville
<input type="checkbox"/> 03	El Menzah III	<input type="checkbox"/> 07	El Menzah VII	<input type="checkbox"/> 11	Notre Dame
<input type="checkbox"/> 04	El Menzah VI	<input type="checkbox"/> 08	El Menzah VIII	<input type="checkbox"/> 12	Nord Hilton

N° du plan :

Rue : _____

N° : _____

Nature du réseau : Eau usée (EU)
 Eau Pluvial (EP)
 Mixte

Débordement sur la voie publique : OUI
 NON

Nature de l'obstruction : Objet
 Sable

Rupture de canalisation
 Racines
 Autre (précisez) :

Lieu de l'obstruction : Regard
 Avaloir

Canalisation publique
 Canalisation privé

Mode de débouchage : Mécanique Manuel les Deux

Résultat de l'intervention : Réussie
 Réussie mais travaux à prévoir
 Impossible de déboucher :

Observations :

Signature chef d'équipe

Signature chef de zone

Signature ONAS

ANNEX E

ONAS SUMMARY MONITORING FORM

ANNEX E

ONAS SUMMARY MONITORING FORM FOR SEWERAGE SYSTEM PILOT PROJECTS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Cleaning (Curage)													
Sewer Systems (Reseaux). Total Length of 148,459 Meters													
Actual for the Month		15289	23597	16309									
Required by Contract for the month		16083	16083	16083	16083	16083	16083	16083	16083	16083	16083	16083	176914
Monthly to Avoid Penalty		12062	12062	12062	12062	12062	12062	12062	12062	12062	12062	12062	
Actual Cumulative		15289	38886	55195									
Required by Contract Cumulative		16083	32166	48249	64332	80415	96498	112581	128664	144748	160831	176914	
To Avoid Semiannual Penalty							96498						
Manholes and Catch Basins (Regards/Avaloirs), Total of 6,507													
Actual for the Month		1465	1634	1341									
Required by Contract for the month		1627	1627	1627	1627	1627	1627	1627	1627	1627	1627	1627	17894
Monthly to Avoid Penalty		1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	1220	
Actual Cumulative		1465	3099	4440									
Required by Contract Cumulative		1627	3254	4880	6507	8134	9761	11387	13014	14641	16268	17894	
To Avoid Semiannual Penalty							9761						
House Connections (Boites de Branchement), Total of 6,367													
Actual for the Month		840	597	589									
Required by Contract for the month		531	531	531	531	531	531	531	531	531	531	531	5836
Monthly to Avoid Penalty		398	398	398	398	398	398	398	398	398	398	398	
Actual Cumulative		840	1437	2026									
Required by Contract Cumulative		531	1061	1592	2122	2653	3184	3714	4245	4775	5306	5836	
To Avoid Semiannual Penalty							3184						
Complaints (Reclamations)													
Total		53	61	49									
No. Due to Stoppages in Sewers													
Percent Due to Stoppages in Sewers													
Not in the Public Part of the System													

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ANNEX F

PRELIMINARY SURVEY RESULTS

Résultats préliminaires de l'enquête de satisfaction des usagers de l'ONAS

Evaluation de procédures de réclamation

Les abonnés sont en majorité très satisfaits de la qualité de communication avec le service des réclamations

taux de satisfaction relatif aux communications avec les réclamations

Echelle	réponses	%
Complètement satisfaits	35	59,3
plutôt satisfaits	17	28,9
moyennement satisfaits	3	5,1
plutôt insatisfaits	0	0
complètement insatisfaits	2	3,4
Sans réponse	2	3,4
Total	59	100

Il faut signaler le N° de téléphone 350000 est d'utilisation récente . Des efforts d'organisation doivent être déployés pour maintenir la qualité de réception des réclamations,

Réponses aux réclamations des usagers par la SOMEDENE

Six abonnés déclarent que le temps de réponse est long ,12 considèrent que le temps mis est normal et 39 jugent que la réponse est rapide.

A part 3 cas qui demeurent sans réponse , la durée moyenne\$ est de 3 heures 30 minutes avec un minimum de 13 minutes et un maximum de 48heures,Les cas supérieurs à 2 heures(limite fixée par le contrat) sont au nombre de 17 sur 59 ,

Il y a lieu donc de contrôler de plus près les réponses aux réclamations et de prendre les mesures qui s'imposent pour faire assumer la responsabilité du retard aux parties défaillantes,

Horaire d'intervention

Plus de 90 % des répondants jugent que l'horaire d'intervention est convenable. Les mécontents sont des cas qui ont reçus les interventions avec du retard

Il est donc conseillé de respecter le temps de réponses aux réclamations préconisé par le contrat pour éviter des réactions négatives de la part des usagers

Durée d'intervention

Les interventions sont dans la plupart des cas d'une durée très limitée ne dépassant pas les deux heures , Deux cas extrêmes ont été d'une durée d'une journée. La célérité dans l'intervention a été appréciée par les usagers qui ont eu une réponse rapide à leur réclamation . Elle était l'objet de critique de la part des usagers qui ont attendu longtemps la réponses à leurs réclamations
En effet 2% jugent que l'intervention était longue, 25 % jugent que le temps mis est normal ,alors que 73% considèrent que l'équipe était rapide dans ses interventions,

Durée d'intervention

intervalle de temps	nombre de cas	cumul
< ou = à 15 mn	10	10
15 à 30 mn inclus	18	28
30mn à 1 heure inclus	14	42
1 heure à 2 heures inclus	4	46
1 jours	2	48
sans réponses	11	59

La somedene doit préserver ses acquis en matière de prestations de services sur réclamation, Ceci permet de satisfaire aux mieux les besoins des abonnés,

Comportement du chantier

Aux yeux des usagers , les chantiers de la SOMEDENE ont été d'un comportement satisfaisant.

La conduite des équipes vis à vis des habitants était exemplaire. La circulation routière n'a pas souffert de la présence des chantiers,

Le matériel utilisé semble ne pas affecté l'environnement sonore. L'état général des ouvriers est bon.

Quelques usagers (6%) sont très critiques sur le plan de l'hygiène du milieu,

niveaux de satisfaction des usagers vis à vis du comportement du chantier

Niveau de satisfaction	ASPECT					
	respect habitants	circulation routière	environnement sonore	Hygiène du milieu	état général des ouvriers	comportement général
Complètement satisfaits	39	42	39	40	28	31
plutôt satisfaits	16	12	12	11	15	17
moyennement satisfaits	0	1	4	1	2	0
plutôt insatisfait	0	0	0	2	0	1
complètement insatisfait	0	0	0	1	0	0
S/Total	55	55	55	55	45	49
sans réponse	4	4	4	4	14	10
total	59	59	59	59	59	59

Ainsi , il est important pour SOMDEN de persévérer dans cette voie pour assurer un bon image de marque des services de l'assainissement liquide ,

Incidence des problèmes d'assainissement liquide sur les usagers

Les problèmes de l'assainissement liquide objet des réclamations semblent avoir des incidences très limitées sur les usagers.

Sur le plan économique , cinq cas ont déclaré avoir subi des ennuis .Les risques de maladie semblent être inexistant compte tenu de la qualité de vie des citoyens de la zone,

C'est la pollution de l'air qui est la plus inquiétante pour la population surtout le dégagement de mauvaises odeurs

La prolifération des cafards et des rats, dans le réseau d'assainissement constitue pour la population enquêtée un grave problème il est souhaitable d'introduire dans les prochains contrats une composante traitant de la lutte contre ces deux organismes

règlement du problème

d'après l'enquête 50 abonnés ont vu leur problème réglé grâce à l'intervention de la SOMEDENE

Sept continue à souffrir de ces problèmes dont 3 n'ont pas fait à la date de l'enquête l'objet d'intervention de la SOMEDENE les mêmes problèmes s'étaient reproduits après intervention de la SOMEDENE dans 11 cas ,IL s'agit essentiellement de sites vulnérables sur le plan technique

Niveau de satisfaction sur l'intervention en général

La majorité des répondants(91%) est satisfaite des prestations de service de l'ONAS et de La SOMEDEN, Quatre cas ont exprimé leur mécontentement,Somédene daoit accorder a cette catégorie priorité,

Evolution des prestations de service

Parmi les personnes enquêtées,il existe 23 cas qui ont fait des réclamations auprès de l'ONAS l'année dernière, D'après cette population la SOMEDEN semble avoir contribué à l'amélioration des services d'assainissement qui se manifeste par la rapidité d'intervention et le règlement à temps des problèmes

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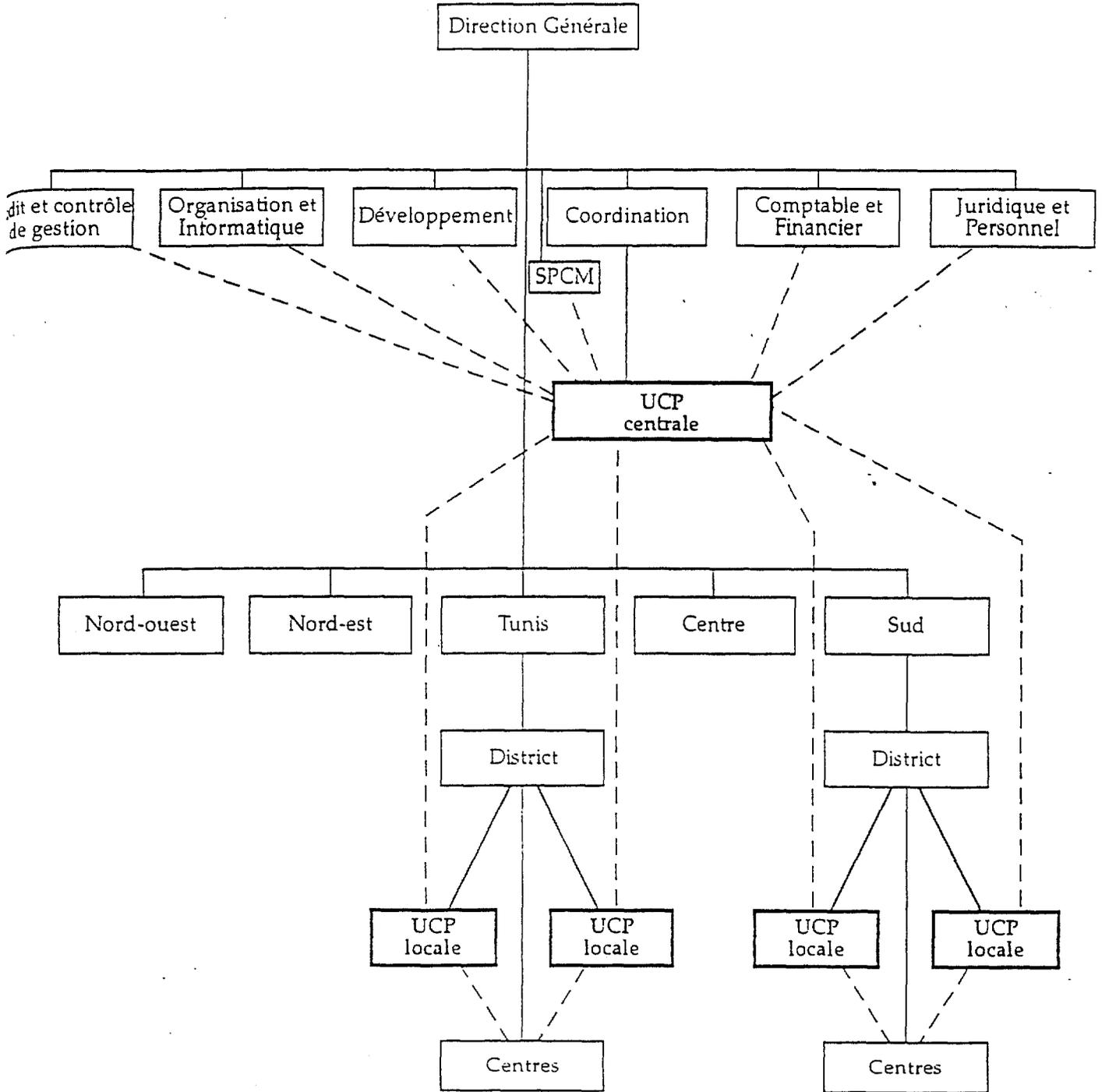
Comparaison année 1996 par rapport à 1997

niveau de satisfaction	Aspect				
	Réponse au réclamations	Durée d'intervention	Comportement du chantier	Solution du problème	prestations générales
Meilleure	10	7	4	6	4
similaire	12	15	17	17	18
moins bonne	1	1	1	0	0
Sans réponse	0	0	1	0	1

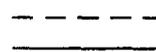
ANNEX G

ONAS ORGANIZATIONAL CHART WITH PMU LOCATION

Position et liens de l'UCP dans l'organigramme de l'ONAS



Légende:



--- Lien fonctionnel
 ——— Lien hiérarchique