

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET		1. TRANSACTION CODE <input type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number 1	DOCUMENT CODE 3
2. COUNTRY/ENTITY Egypt		3. PROJECT NUMBER 263-0048		
4. BUREAU/OFFICE NE		5. PROJECT TITLE (maximum 40 characters) Canal Cities Water & Sewerage		
6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 01 01 86		7. ESTIMATED DATE OF OBLIGATION (Under "B." below, enter 1, 2, 3, or 4) A. Initial FY - 78 B. Quarter <input type="checkbox"/> C. Final FY 83		

8. COSTS (\$000 OR EQUIVALENT \$1 = 0.833LE)

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	()	()	()	(102,000)	(21,000)	(123,000)
(Loan)	(60,000)	()	(60,000)	(60,000)	()	(60,000)
Other U.S.						
1.						
2.						
Host Country		48,019	48,019		114,339	114,339
Other Donor(s)						
TOTALS	60,000	48,019	108,019	162,000	135,339	297,339

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
		Code	Code						
(1) SA	729	541		36,000	60,000	87,000		123,000	60,000
(2)									
(3)									
(4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each) 545	11. SECONDARY PURPOSE CODE 519
12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)	
A. Code	BU
B. Amount	183,000

13. PROJECT PURPOSE (maximum 480 characters).

Provide urgently needed improvements in the existing water and sewerage systems of the Canal Cities through rehabilitation and expansion.

14. SCHEDULED EVALUATIONS	15. SOURCE/ORIGIN OF GOODS AND SERVICES
Interim MM YY MM YY Final MM YY 08 84 06 86	<input checked="" type="checkbox"/> 000 <input type="checkbox"/> 941 <input checked="" type="checkbox"/> Local <input type="checkbox"/> Other (Specify)

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

This project is being amended to finance the foreign exchange and local currency costs of a U.S. contractor on the difficult to construct wastewater project elements. Additional equipment and material are also being financed.

17. APPROVED BY	Signature <i>M. J. L. Stone</i>	Date Signed MM DD YY 11 21 93	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY
	Title		

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CANAL CITIES WATER AND SEWERAGE
PROJECT PAPER AMENDMENT

SUMMARY AND RECOMMENDATIONS

1. Grantee: Government of the Arab Republic of Egypt.
2. Beneficiary: The population of the cities of Port Said, Suez and Ismailia
3. Implementing Entity: National Organization for Potable Water and Sanitary Drainage (NOPWASD) and Suez Canal Authority (SCA).
4. Grant Amount: \$87.0 million.
5. Terms: To GOE entire amount as a grant. To NOPWASD \$80.6 million regrant; to SCA \$6.4 million regrant.
6. Project Description: The amendment will finance:
 - A. Foreign exchange costs of a U.S. contractor to install 24 km of interceptors, 8 new pumping stations and 22 km of force mains in the cities of Port Said, Ismailia and Suez.
 - B. Additional equipment principally pipe, fittings and valves.
 - C. U.S. Construction Supervision Services.
7. Purpose: Provide urgently needed improvements in the existing water and sewerage systems of the canal cities through rehabilitation and expansion.
8. Total Project Cost: Total cost of project, both foreign exchange and local currency is estimated at \$297.3 million equivalent. The foreign exchange component is estimated at \$162.0 million. AID will finance local currency costs the equivalent of \$21.0 million while the GOE will finance the equivalent of \$114.3 million.

9. Environmental Considerations: Have been addressed in the amendment and the original PP.
10. Grant Application: The GOE has requested AID provide the additional foreign exchange and a portion of local currency costs of this project. The application is attached as Annex A.
11. Recommendation: Authorize a \$87.0 million Grant to the GOE under the terms and conditions set forth in the draft first amendment to project authorization in Annex B.
12. USAID Project Committee: F. Guymont, DRPS/UAD
R. Redman, DRPS/UAD
T. Putscher, FM/FA
H. Lubell, DPPE/PAAD
B. Bryant, LEG
P. Amato, DPPE/PAAD

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CANAL CITIES WATER & SEWERAGE
AMENDMENT

I. INTRODUCTION

1.01 Amendment No.1: What it is, What it does? This amendment provides for additional funding of \$87 million to increase total project funding from \$96 million to a new total of \$183 million. The intent of the original project to provide engineering services and commodities is basically on target. This amendment has grown out of a clearer understanding of the actual scope of work and of the limitations on contracting capacity and technical expertise resulting from the rapidly changing and expanding economic environment in Egypt. Additional funding for the water systems is small and results from a later and better definition of the systems. Emphasis in this amendment is placed instead on the wastewater system projects in the three cities. The need for basic sanitary services in the three cities has become more pressing, which led the responsible implementing agency to request USAID assistance to finance U.S. Contractors with the requisite experience to undertake construction with a high degree of complexity and difficulty. Moreover, in the Mission review of the GOE request it quickly became apparent that the GOE investment required to make these systems viable is far greater than originally anticipated. These considerations led to the Mission decision to request funding for the total cost of U.S. construction contracts including both foreign exchange and local currency costs.

1.02 Although this amendment estimates construction costs in foreign exchange (U.S. Dollars) and local costs (Egyptian pounds) it is the intent of the Mission to put the construction contract out for bid in the United States as a single currency contract denominated in U.S. Dollars. Egypt is no longer considered an excess currency country by the U.S. Treasury, so all local currency has to be purchased. If this currency has to be purchased for the Mission by Treasury in Paris, there are significant potential USG delays built into the contract. For this reason the decision has been made to make purchase of local currency a contractor responsibility. Since risk of no-payment or delayed payments will be eliminated it is anticipated that there will be more competition than has been

previously the case and such competition should eliminate the possibility of windfall exchange profits. The new approaches are designed to reduce cost by reducing risk and to accelerate project implementation by eliminating presently built in delays to the award and payment process.

1.03 On the technical side a review of the sewerage projects in each city has been made by the GOE and USAID. Portions of the system requiring exceptional construction expertise and equipment, or where completion is critical to the early use of the system, were defined and set aside as appropriate for U.S. Contractors. The remainder of the system will be undertaken by GOE contractors. It is the intent to establish a liaison relationship between the U.S. and various Egyptian prime contractors. It should be noted that engineering design and all procurement documentation was essentially complete by the end of 1982.

1.04 The Original Project: The original Canal Cities Water and Sewerage Project Paper, submitted in September 1978, is valid except as modified herein.

II. BACKGROUND

A. Water and Sewerage in the Canal Cities

2.01 Chapter II of the original Project Paper describes the three Suez Canal Cities of Port Said, Ismailia, and Suez and their water and sewerage systems. The systems were heavily damaged during the war years 1967 and 1973 and suffered further deterioration during the period the cities were abandoned after the 1967 war.

2.02 In September and October 1977, with AID funding, the the Ministry of Development and New Communities now the Ministry of Reconstruction, Housing and Land Reclamation contracted with four U.S. consulting engineering firms* associated with Egyptian firms for the preparation of master plans for water and wastewater facilities in the Canal Cities. The final master plan identified priority water and wastewater projects to be undertaken in phases up to the year 2000. For all three cities the highest priority was to rehabilitate and upgrade the systems to meet the essential needs of the present population. A longer term objective was to expand and further upgrade the systems to provide for population growth projected through the year 2000.

2.03 Even before completion of the master plans the Government of Egypt (GOE) requested AID assistance in financing needed improvements in the three cities. AID approved a project to be financed with U.S.\$ 96 million, comprised of a loan of \$60 million in FY 1978 and a grant of \$36 million in FY 1979. The master plans were completed in mid 1979.

2.04 The four U.S. firms that prepared the master plans were selected to provide consulting engineering services for the rehabilitation and upgrading of the Canal cities water and wastewater systems. The four formed a joint venture known as Canal Cities Consultants (CCC), and associated with two

* Hazen and Sawyer, Metcalf and Eddy, and a joint venture of Frederick R. Harris and Malcolm Pirnie.

Egyptian firms, MECO and PACER, known together as Egyptian Canal Cities Consultants (ECCC). In late 1979 CCC/ECCC signed contracts with the General Organization for Sewerage and Sanitary Drainage (GOSSD)* and the Suez Canal Authority (SCA) for engineering services to include rehabilitation, training

and design. Both contracts must now be amended so CCC can provide additional engineering services in support of construction.

B. Organizational Responsibilities

2.05 The GOE implementing entities are:

- The Suez Canal Authority (SCA): Designs, constructs, operates and maintains the water systems in the three Canal Cities. This is a secondary function for SCA, which has as its prime responsibility the operations, maintenance, and development of the Suez Canal.
- The National Organization for Potable Water and Sanitary Drainage (NOPWASD): Designs and constructs water and sewerage systems throughout Egypt, excluding the cities of Cairo and Alexandria and water systems in the Canal Cities**. The responsibility for sewerage design and construction for the Canal Cities therefore rests with NOPWASD.

* In 1981 a separate organization, General Organization for Sanitary Drainage (GOSD) for Cairo was established. The balance of the old GOSSD merged with the General Organization for Potable Water to form the National Organization for Potable Water and Sanitary Drainage (NOPWASD).

** NOPWASD however is responsible for the construction of the Southwest Transmission Main from Suez to the Suez Cement Plant in the desert 60km south of Suez.

- The Governorates of Port Said, Ismailia and Suez: Operate and maintain the sewerage systems in their respective cities, after NOPWASD completes design and construction of facilities.

C. Rehabilitation - Work Completed and Underway:

2.06 Since the reopening of the Canal Cities in 1975, SCA, NOPWASD, and the Governorates have undertaken to rehabilitate the systems to provide water and wastewater services.

2.07 In addition to its other responsibilities CCC has provided technical assistance to NOPWASD and the Governorates in their wastewater system rehabilitation efforts. This has consisted of procurement of sewer cleaning equipment; training for and performing sewer inspection, evaluation and cleaning and the design of pumping station, pipe line and treatment plant improvements. Since 1979 NOPWASD has expended about LE 7.5 million from its budget on rehabilitation efforts. Some sewer cleaning equipment, procured through NOPWASD's own foreign exchange resources, already exists in the Governorates and approximately \$2 million more of AID financed sewer cleaning equipment is in process of being delivered. Training by CCC of both NOPWASD and Governorate personnel in sewer cleaning and pump station operation is continuing. These continuing activities have improved the existing system to a degree where street flooding has observably decreased.

D. New Construction - Wastewater

2.08 NOPWASD is now prepared to enter the construction phase for a number of new and much needed facilities for the wastewater systems in the Canal Cities. These are the facilities required immediately to complete a rational operational collection and transport system which will provide a level of sewerage service meeting the needs of the Canal Cities. Sewage treatment facilities are not included in the scope of the wastewater projects, except for the restoration to operating capacity of the existing sewage treatment plants. The Mission fully realizes the need for adequate treatment and disposal of sewage, however, with the existence of widespread lagoons of raw sewage in the streets, with obvious health consequences, it is USAID policy to give priority to collection and transportation of sewage away from the immediate vicinity of residences to drains or desert areas. It is the intent of USAID to address treatment problems after the collection systems are well underway.

2.09 Engineering designs and tender documents for the wastewater projects were essentially completed by the U.S. consultants prior to November 1982. NOPWASD and CCC have agreed upon essential engineering services and supervision needed during the construction phase.

2.10 In reviewing CCC's engineering investigations and designs for the wastewater facilities NOPWASD has become acutely aware of the difficult conditions under which much of the construction must be accomplished. Egyptian officials have expressed concern about the capabilities of local contractors to undertake those portions of the construction work which involve excavations in unstable soil with extremely high ground water tables. NOPWASD has accordingly requested that U.S. contractors be used for these parts of the work to ensure the required quality of construction on an acceptable schedule. Construction by U.S. contractors may cost more than that done by local contractors, though recent experience on the Cairo Sewerage project indicates that on difficult technical jobs with tight supervision local contractors are equally expensive. The local collection systems and laterals 200 to 300 mm in diameter will be contracted concurrently by Egyptian contractors financed by NOPWASD.

2.11 In late 1978, when the original Project Paper was written, all construction under the project was scheduled for completion by May 1982. Delays were encountered in mobilizing the consultant and design took longer than anticipated. Problems establishing letters of credit and the need to review the master plans accounted for much of the delay. The time from the beginning of construction contractor prequalification to a signed construction contract was also seriously underestimated. Review of final designs, tender documents, and prequalification information remain causes of delay. Reviewing tenders and establishing letters of credit will also cause longer delays than planned in the original Project Paper. The wastewater collection and transport systems planned for construction under this project are now scheduled for completion by the end of 1985. The schedule in the implementation section outlines project milestones in more detail.

E. New Construction-Water

2.12 Designs have been completed for water treatment plant, pump station and distribution system improvements. International tenders for construction of the treatment plant and pump stations for all three cities were received in early December 1982. The distribution system tender documents were released to international prequalified contractors in December 1982. This construction will be financed by the GOE as originally planned. The project is behind schedule for many of the same reasons as stated in Para. 2.11 above.

2.13 Additional AID funds are requested for minor additional equipment purchases identified in the final design and for U.S. construction supervision services. The amount of equipment in the original Project Paper was underestimated. There are no significant issues in the additional financing requested for the water projects.

III. THE PROJECT

3.01 This project paper amendment proposes a major change in the implementation of the wastewater portion of the Canal Cities Water and Sewerage Project and provides residual funding required for the water portion.

3.02 SCA is moving apace in implementing the water projects much as envisioned in the original PP and master plans, with \$43,316,000 of the original \$96 million AID funding. SCA is providing all funds for construction to be bid by international contractors. The list of prequalified contractors is included as Annex D. It is estimated that SCA will require an additional \$6.4 million to complete all U.S. material and equipment procurement and to fund CCC's construction supervision services.

3.03 The remaining \$52,684,000 of the original AID \$96 million funding is allocated to NOPWASD and is insufficient to finance the foreign exchange costs of the wastewater portion of the project. Additional U.S. dollar funding will be needed for American contractors to construct major elements of the project. The NOPWASD wastewater project is now estimated to require a total of \$100.2 million in foreign exchange and LE 66.5 million in local currency. A financial plan is presented in Table 6.1.

3.04 There also will be a need for U.S. engineering and supervision services during the construction of the water and wastewater facilities. All design work and construction tender documents were completed by the end of 1982. Both NOPWASD and SCA have indicated that they desire to have the present consultants (CCC) provide these services. USAID agrees that this is in the project's best interest. CCC's current contracts must be amended and/or extended and additional funding will be required for this purpose.

3.05 The total additional dollar funding required for both the water and wastewater projects is \$87.0 million consisting of \$66.0 million for foreign exchange costs and \$21.0 million to finance local currency expenditures of 17.5 million LE. The GOE will provide an additional L.E. 44.8 million in local currency to finance this project amendment. The GOE's request for the additional dollar funding is included as Annex A.

IV TECHNICAL ANALYSIS

4.01 The description in the original PP of the three Canal Cities' water and sewerage problems is still valid, as are the project's stated objectives.

4.02 The elements of work for the sewerage systems described in the original PP are fully addressed by the presently designed projects. When completed, these facilities will have met the objective of eliminating "ponding of sewage on streets and other surface areas, and sewage discharges into surface drainage systems." The second wastewater objective of eliminating "discharges of raw or inadequately treated sewage into Lake Manzalah, Lake Timsah, and Suez" will not be satisfied. Sewage treatment facilities will be required ultimately to fully satisfy that stated objective, but complete treatment facilities are beyond the scope of this project. The facilities required to complete the entire program (see Para. 4.04) necessary to meet the adequate treatment objective have been estimated by CCC to cost an additional \$220 million equivalent. They will include all needed treatment facilities as well as additional collection, pumping and transport elements. CCC has completed preliminary designs for this lower priority portion of the overall program, however, funding for it is not included in this amendment, nor is it programmed as an AID activity at this time.

4.03 Following the concept of eliminating the greatest public health risks as quickly as possible, the highest priority has been given to the design and construction of facilities to collect and transport raw sewage away from inhabited areas. These facilities, for which construction bid packages were completed by the end of 1982, have an estimated construction cost of \$122.7 million equivalent. This includes construction by U.S. contractors of an estimated \$69.3 million consisting of \$48.3 million in foreign exchange and L.E. 17.5 million in local currency.

4.04 The sewerage projects to be constructed are graphically depicted in Annex H. These projects include a "backbone" collection, pumping and transport system as well as many of the local area gravity collector sewers (smaller sewers usually 150 to 300 mm in diameter) to be connected to it. The "backbone" system, i.e. 24 km of interceptors (large gravity

sewers 400 to 1400 mm in diameter), 8 new and 7 rehabilitated pumping stations, and 22 km of force mains (sewers flowing under pressure), have been designed with sufficient additional capacity to accommodate all future flows from local area sewers to be added due to planned growth within the developing areas of the cities through the year 2000. Additional collection, pumping and transport facilities, as well as new collector sewers, will be needed for satellite areas of the three cities which may create a demand for additional service prior to the year 2000, but these systems would independently transport sewage for disposal or treatment. These latter facilities are included in the additional \$220 million program cited in 4.02 above.

4.05 Sewer collector and interceptor piping, manholes, pumping stations and other elements to be installed or constructed under this project are not, in and of themselves, sophisticated or technically difficult. Pipe sizes and materials; pumping capacities, equipment, and controls; and system operating pressures are not unusual nor do they require special engineering treatment or design. These are fairly standard items that are common to sewerage systems the world over. It is the adverse construction conditions in the Canal Cities which necessitate the installation of the systems by disciplined and well-managed construction contractors. The last major effort to upgrade the wastewater system (in Cairo only) was about 1965 prior to which little capital investment was undertaken. Adequate funding has never been available. With no significant projects being undertaken there was no way for Egyptian companies public or private to build up adequate experience either in technical expertise or management. Of the experience that has been accumulated most of it is in vertical construction.

4.06 The Egyptian construction industry is presently dominated by several public sector companies. Each of these companies probably has from 50 to 100 major projects under way with an uncountable number of minor ones. Though they undoubtedly do have competent managers, they do not have the numbers required to competently manage their numerous contracts. A major U.S. or European company would be hard pressed to complete the volume of work that theoretically the Egyptian companies are supposed to complete. The private sector is large or small depending on what is being sought. There are medium size contractors who plan well and do a good

job but again it is mostly in vertical construction. Basically, the needs and demands of Egypt in the water and wastewater sector are so great that the rush to put in place a significant percentage of the systems required to satisfy basic needs outstrips the country's normal requirements for expertise, funding and management capability.

4.07 This awareness is leading the Mission to develop alternative approaches, one of which is to insert expatriate expertise where this is needed to take care of major immediate demands which are significantly in excess of those to be expected in a normal situation. Another is to utilize the U.S. inputs to the greatest extent possible through liaison, training and various corporate arrangements to expose Egyptian contractors and construction personnel to U.S. management and technical approaches over a long enough period to provide a lasting base for successful construction in more normal times.

4.08 Engineering investigations and design considerations dictate that major segments of the sewerage facilities will necessarily be installed at relatively deep levels below ground surface. Soil borings confirm that much of the excavation necessary to install sewer pipe and manholes or to build pumping stations will encounter unstable soil conditions with unusually high water tables, e.g. sandy soils with ground water within a half to one meter below street level. Long runs of large diameter sewer pipes are expected to be installed at depths of up to eight meters (approximately 25 feet) below ground level and several pumping stations will require excavations even deeper. Dewatering equipment and know-how will be needed to enable the work to be installed properly. Additionally, the engineers have attempted to select routings which avoid the congestion of narrow downtown streets with multi-story buildings, but technical considerations make it necessary at times to construct facilities in areas such as these, thereby making dewatering operations even more critical. Improperly done, dewatering could cause damage to or collapse of nearby structures.

4.09 Dewatering technology per se is not unknown in Egypt. However, its correct design and optimum application and operation so as to provide sufficiently dry working conditions to enable accurate placement of work at required depths and still not endanger nearby structures or other utilities is not available. Egyptian contractors do not have sufficient experience with such dewatering operations.

4.10 Large quantities of long lengths of heavy large diameter cast-iron sewer pipe must be accurately aligned for both direction and gradient and joined under relatively clean conditions to assure minimal leakage when put into operation. Availability of mobile lifting equipment of the right capacity and configuration in good operating condition to handle this piping and other materials and equipment (e.g. dewatering pumps and piping) will be essential to expeditious progress of the work. Observations in Egypt, and general experience with Egyptian contract construction practices, indicate that great reliance is placed on hand methods, rather than in the use of equipment. Tools seem to be in short supply or not available. Materials handling equipment at job sites is often of an inappropriate type and/or capacity, and essential spare parts needed for continued operation of old equipment of many national origins are no longer available. These problems have been particularly evident during rehabilitation work NOPWASD has been undertaking and on the Southwest Transmission Main project element.

4.11 On-site project management is a major problem. Scheduling of work is not widely practiced and numerous delays result because certain material or spare parts are not available. Often times the local contractors' supervisory employees have little experience with the type of work that is being done with the result that specifications are often not followed.

4.12 NOPWASD has a commitment to complete functioning sewerage systems in the three Canal Cities. It also wants assurance that the installed wastewater facilities will meet design standards and operational rigors, and serve long useful lives. The magnitude and complexity of the construction problems discussed above have become better defined as the systems' engineering designs neared completion. These considerations have prompted NOPWASD officials to seriously question the wisdom of undertaking wastewater construction using only Egyptian contractors as originally contemplated. Admittedly, there are local contractors who have done, or are doing, sewerage construction in Egypt. However, with the inherent difficulties and the magnitude of this project, past experience indicates that from a construction management stand point these systems are unlikely to be constructed by Egyptian contractors with the desired results in the time allotted.

4.13 As a result of NOPWASD concern, and after intensive reviews by and discussions among NOPWASD, USAID and CCC, it has been concluded that certain critical elements of the systems should be constructed by an American contractor with appropriate equipment and experience. These elements would consist primarily of the backbone network of gravity interceptors, pumping stations and force mains needed to complete a rational operational wastewater system in each of the three cities. Local laterals and gravity collector sewers would be constructed by qualified Egyptian contractors and tied to the backbone system. The following is a direct quote from a CCC document of July 8, 1982 presenting the criteria used to allocate work to U.S. or Egyptian contractors:

"U.S. Contractors

Work included is difficult because of high ground water/deep excavations frequently in built-up areas near existing structures.

- All new pump stations meet this criteria and will require contractor furnished equipment for sheeting/dewatering technology that is not readily available in Egypt. The pump stations require integration of sophisticated mechanical/electrical/control systems and are essential to the total operation of the systems.
- Interceptors included meet the high ground water/deep excavation/built-up area criteria in addition to requiring extended linear construction and rigorous bedding/compaction requirements.
- Force mains included meet the same requirements as the interceptors and require restraint against surge forces in difficult foundation conditions.

Egyptian Contractors

Work included is normal to Egypt and with adequate supervision can be accomplished satisfactorily.

- All collector sewers."

4.14 Both NOPWASD and SCA agree that the U.S. consulting engineer's services will be needed through the planned construction period, which now extends through 1985. In addition NOPWASD has insisted that a broad training program be carried out by CCC during construction of the wastewater systems, primarily for Governorate O & M personnel. NOPWASD officials feel that without a good base of training, the investment in new sewer facilities would not result in optimum service over an extended life. Engineering services and resident supervision by CCC at the construction sites is expected to result in installed work meeting design standards and being completed on time. The present scope of work, preliminarily negotiated between CCC and NOPWASD and which contemplates CCC serving as NOPWASD's resident engineer at the construction sites, will be instrumental in producing the desired results. An analysis of CCC's proposed fees and costs is presented in the Financial Analysis Section.

4.15 In addition to U.S. engineering and construction services and commodity requirements have increased. These consist basically of pipe, fittings, valves and pumps for both the NOPWASD and SCA portions of the project. The additional equipment necessary to complete the main segments of the water and sewerage system amounts to about 12 percent of equipment budgeted to date.

V. ENVIRONMENTAL ANALYSIS

5.01 The environmental analysis provided in the original project paper remains essentially valid. While wastewater treatment plant construction is not part of this project, treatment needs have been studied in detail and specific recommendations have been made in each of the Canal Cities. In Ismailia pilot studies of rapid infiltration as a means of treating wastewater have been completed. Funding for construction is scheduled for phase 2 in the late 1980s but funds have not yet been identified.

5.02 The successful completion of the water and wastewater projects will lead to increased system quality and reliability. The quality of treated water will improve due to improved coagulation, filtration and chlorination systems. Expansion of pump station capacity and distribution system strengthening will increase water system pressure and reduce the frequency of pressure drops. This will reduce the instances of contamination of the water system through cross connections. Expansion of the wastewater system will result in more people connected to the water system with the resulting benefits of increased water use. Instances of flooding that would otherwise occur will be reduced.

5.03 Water quality from the wastewater plants is likely to improve only marginally. However, this is not likely to result in any appreciable decline in quality in the receiving waters.

5.04 While the increased capacity of the water system will account for only a very marginal increase in withdrawal from the Ismailia Canal, the Canal is close to capacity at present with major irrigation projects coming on line. The Ministry of Irrigation has plans for increasing the capacity of the Canal.

VI. FINANCIAL ANALYSIS

A. Funding Background

6.01 The original project provided approximately LE 30.9 million (\$43.2 million equivalent at \$1.40 = LE 1) to accomplish the construction of the high-priority wastewater projects for the three Canal Cities. Construction of the wastewater systems is now estimated at \$122.7 million equivalent (at the current \$1.20 = LE 1). This estimate is based on the Canal Cities Consultants (CCC) final designs for construction bid packages which will be completed by the end of 1982. The 184% cost increase over the estimate in the original PP is due to a number of factors, including (a) devaluation of the Egyptian pound, (b) inflation over an extended project duration (completion at the end of 1985 instead of May 1982), (c) construction conditions more accurately defined based on detailed engineering investigations, surveys and designs originally unavailable resulting in higher cost estimates and (d) a significant increase in the scope of work beyond that stated in the PP. The increase in scope was necessary because considerably less of the existing system was restorable to operating condition than was originally estimated, and operational considerations dictated a broader scope than originally planned in order to provide reasonably equitable city-wide service coverage. A significant portion of the projects designed responded to current needs of each of the cities. For instance housing projects were planned for areas not included in the original master plans.

6.02 CCC's current cost estimates are based on completed designs and U.S. pricing standards. Actual cost records or data for similar work recently installed by American contractors in Egypt are non-existent. CCC has used, however, recent bids by a U.S. consortium on the Cairo Sewerage project, and cost information provided by Nasr General Contracting Co. (Hassan M. Allam), a large reputable public sector Egyptian contractor, as independent means of verifying and substantiating its own estimates. Nevertheless, what U.S. contractors will finally bid for work of the type described in this project will depend on variables which cannot be evaluated until a bidding history has been established and is difficult to predict with any precision. Actual bids by contractors often differ significantly from the most careful of estimates

made under the best of conditions with a minimum of variables. USAID has reviewed and analyzed CCC's costing procedures and judges that the overall estimate is reasonable. Unit prices used by CCC to estimate costs include factors of 20% per year for inflation and 20% for contingencies. A more complete breakout of estimated costs is included in Annex H.

B. Funding Requirements and Financial Plan

6.03 The recommended project costs in foreign exchange and local currency are summarized in the Financial Plan Table 6.1. A summary cost estimate of construction elements, the principle cost component, for the three cities is presented in Table 6.2 in both U.S. dollars and Egyptian Pounds. Table 6.3 is a projection of expenditures by calendar year through the scheduled completion of all construction in 1985.

6.04 AID will participate in financing local costs to assure that the GOE gives proper emphasis and priority to the local collector system and laterals that will tie in individual households. This work will be financed from the GOE's own resources, and must be carried out concurrently with the AID financed construction program. This work is estimated at 44.5 million LE (equivalent to \$53.4 million) and is essential to the success of the project. Secondly total U.S. dollar funding of the contract will result in a more attractive project from a U.S. contractor's perspective since there would be no uncertainty regarding payment of either foreign exchange or local currency, a critical issue where local currency is provided by GOE. This should result in increased competition and lower prices. Thirdly time limits on approval would speed the contract approval process. Long delays have been encountered on the Cairo Water and Cairo Sewerage Projects because the approval process moves through numerous committees which invariably raise questions based on incorrect information, and then take months to make a decision. Fourthly, even with AID financing the local currency portion of the U.S. contractor's effort, the GOE will be providing a major share of total project costs, the equivalent of \$114 million of a \$297 million project or over 38% of the total. This represents a major GOE commitment to and involvement in the project.

6.05 Engineering costs for services and training are shown in the Financial Plan, Table 6.1. The aggregate total of CCC's contract amount to a normal percentage of the total costs of this type of project. An analysis indicates that the combined costs for engineering design training and construction supervision for both the water and wastewater projects totals approximately \$28.3 million equivalent, of which approximately \$2.9 million equivalent, relate to training. Total water and wastewater project costs (less CCC's costs and the costs of the Southwest Transmission Main) total approximately \$250.0 million equivalent. CCC's contract total as a percentage of the estimated installed construction costs come to approximately 11 percent including training and 10 percent if training is excluded. These costs fall well within the 15 percent estimated in the original project paper and are within acceptable limits considering the conditions and complexities of this project.

6.06 The additional dollar funds, \$ 87.0 million, proposed in this amendment will be provided as a grant to the GOE. We propose that the Grant Agreement contain provisions to regrant \$80.6 million to NOPWASD for the estimated AID Financed dollar and local currency costs of engineering services, equipment and construction. In the Cairo Sewerage Project Amendment 263-0091 approved in fiscal 1981 AID funds were regranted. We propose to regrant \$6.4 million to SCA. This total is slightly less than the \$6.9 million in engineering services that will be provided to SCA over the project life. In the recent Cairo Water Project Amendment (Grant 263-0038) engineering services were regranted rather than reloaned.

C. Projected Revenues and Expenses

6.07 Income and Expenditure projections for 1985 and 1990 at both economic and financial prices are shown in Annex Table F.3.1 for the water project and in Annex Table F.3.2 for the wastewater project. Both projections show levels of revenues that would be required to operate the water and wastewater systems on a basis that would cover operations and maintenance (O & M) expenses, depreciation, and some allowance for further capital expansion. The projection at budget prices incorporates cost subsidies (fuel and other energy costs) that

TABLE 6.1
CANAL CITIES WATER AND SEWERAGE FINANCIAL PLAN
 (THOUSANDS OF \$ AND LE)

	ORIGINAL PROJECT		THIS AMENDMENT			TOTAL PROJECT		
	\$ (AID)	LE (GOE)	\$ (AID)	LE (AID)	LE (GOE)	\$ (AID)	LE (AID)	LE (GOE)
<u>er (SCA)</u>								
Engineering services	3,416	988	3,500	-	1,200	6,916	-	2,188
U.S. materials and equipment	39,900	-	2,900	-	-	42,800	-	-
Construction	-	12,102	-	-	27,998	-	-	40,100
SCA Sub Total	43,316 <u>1/</u>	13,090 <u>1/</u>	6,400	-	29,198	49,716	-	42,288
<u>erage (NOPWASD)</u>								
Engineering Services	7,693	2,447	5,700	-	2,009	13,393	-	4,456
U.S. materials and equipment	32,891	-	5,609	-	-	38,500	-	-
Construction (Egyptian Contractors) <u>2/</u>	-	30,891	-	-	13,609	-	-	44,500
Construction (U.S. Contractors)	-	-	48,291	17,493	-	48,291	17,493	-
Sub Total	40,584	33,338	59,600	17,493	15,618	100,184	17,493	48,956
<u>er (NOPWASD)</u>								
Southwest Transmission Main (SWTM)	12,100	4,000	-	-	-	12,100	-	4,000
NOPWASD Sub Total	52,684 <u>1/</u>	37,338 <u>1/</u>	59,600	17,493	15,618	112,284	17,493	52,956
TOTALS	96,000	50,428	66,000	17,493	44,816	162,000	17,493	95,244

These sub-totals differ significantly from original project primarily because the SWTM was originally included as an element of water project under SCA; in 1981 the responsibility was assigned to NOPWASD.

¹Includes 7.5 million LE spent on rehabilitation work to date.

TABLE 6.2

CANAL CITIES WATER AND SEWFRAGE PROJECT
CONSTRUCTION COST ESTIMATES, WASTEWATER PROJECT
(THOUSAND OF \$ and LE)

<u>U.S. Contractors</u>	<u>U.S. \$</u>	<u>LE</u>
<u>PORT SAID:</u>		
Pumping Stations	3,949	1,431
Force Mains	4,976	1,797
Gravity Interceptors	6,411	2,315
Gravity Collectors	-	-
<u>ISMAILIA:</u>		
Pumping Stations	6,219	2,254
Force Mains	2,206	796
Gravity Interceptors	14,343	5,217
Gravity Collectors	-	-
<u>SUEZ:</u>		
Pumping Stations	2,547	924
Force Mains	997	360
Gravity Interceptors	6,643	2,399
Gravity Collectors	-	-
TOTAL	48,291	17,493
<u>Egyptian Contractors</u>		<u>LE</u>
<u>PORT SAID:</u>		
Emergency Pipeline (Collectors) <u>1/</u>	-	17,207
<u>ISMAILIA:</u>		
Gravity Collectors	-	13,243
<u>SUEZ:</u>		
Gravity Collectors	-	3,550
Rehabilitate 6 Pump Stations	-	3,000
TOTAL	-	37,000 <u>2/</u>

1/ Not included in original program.

2/ Excluding other rehabilitation work of 7.5 Million LE

TABLE 6.3
CANAL CITIES WATER AND SEWERAGE
YEARLY EXPENDITURES
(THOUSAND OF \$ and LE)

	1982			1983			1984			1985			Total		
	\$	LE (AID)	(GOE)	\$	LE (AID)	(GOE)									
WATER (SCA)															
Engineering Services	3,400	-	950	1,300	-	500	1,300	-	500	916	-	238	6,916	-	2,188
U.S. Materials and Equipment	35,000	-	-	7,800	-	-	-	-	-	-	-	-	42,800	-	-
Construction	-	-	-	-	-	14,000	-	-	20,000	-	-	6,100	-	-	40,100
SCA SUB-TOTAL	38,400	-	950	9,100	-	14,500	1,300	-	20,500	916	-	6,338	49,716	-	42,288
SEWERAGE (NOPWASD)															
Engineering Services	7,000	-	2,000	2,100	-	820	2,100	-	820	2,193	-	816	13,393	-	4,456
U.S. Materials and EQPT	3,000	-	-	30,000	-	-	5,500	-	-	-	-	-	38,500	-	-
Construction (Egyptian Contractors)	-	-	7,500	-	-	5,000	-	-	20,000	-	-	12,000	-	-	44,500
Construction (U.S. Contractors)	-	-	-	14,000	5,000	-	21,000	7,000	-	13,291	5,493	-	48,291	17,493	-
Sub Total	10,000	-	9,500	46,100	5,000	5,820	28,600	7,000	20,820	15,484	5,493	12,816	100,184	17,493	48,956
Water (NOPWASD)															
Southwest Transmission Main	11,400	-	1,500	700	-	1,500	-	-	1,000	-	-	-	12,100	-	4,000
NOPWASD Sub Total	21,400	-	11,000	46,800	5,000	7,320	28,600	7,000	21,820	15,484	5,493	12,816	112,284	17,493	52,956
Total	59,800	-	11,950	55,900	5,000	21,820	29,900	7,000	42,320	16,400	5,493	19,154	162,000	17,493	95,244

6.11 A rough estimate of the distribution of urban incomes against which to measure these required user charges at financial cost is shown in Annex Table 6.4. Table F.6 summarizes the impact on the different levels of household budgets of monthly combined user charges for water and wastewater in 1985 of LE 7.25 to cover O & M costs and depreciation and LE 12.14 to cover O & M costs, depreciation, and an allowance for capital expansion of 5 percent.

6.12 Recent presidential and cabinet level statements have indicated that water and sewerage improvements are a very high priority in the Egyptian Government. The GOE has publically stated that LE 3.4 billion will be committed to the sector over the next five years. These statements are responses to the needs articulated by the citizens of Egypt.

6.13 The GOE, however, will not be able to meet its investment goals or indeed maintain existing systems properly without sharply increased tariffs. Not enough local currency is generated through taxes or foreign exchange, through oil exports, Canal revenues, tourism or remittances to cover the necessary subsidy and to undertake other necessary investment programs. It has been USAID's experience that no one within NOPWASD or SCA argues against increased tariffs as the optimum method of operating the sewerage and water systems. However, these organizations cannot unilaterally set rates, and a recent decree requires all rate change proposals to be approved by the Prime Minister. These issues will come under close scrutiny in the water/wastewater assessment which started in January 1983.

6.14 The GOE appears to recognize that across the board subsidies cannot be continued indefinitely. The Cairo Water Organization was asked to make recommendations on a revised tariff structure. The October 5, 1982 Al Ahram carried a short article stating that a new policy to increase water tariffs with increasing consumption was under review and rates were increased in 1981 in Alexandria for industrial, commercial and government users. However, imposition of user charges for wastewater service receives no support apart from the remote possibility of a tariff as a function of water charges. U.S. experience is similar, most wastewater systems do have sizable subsidy elements such as the EPA Construction Grant Program.

ease the financial situation of the water and wastewater systems. The projection at economic costs discussed in the Economic Analysis section below identifies a considerably larger real cost burden than that revealed by the financial estimates.

6.08 The cost estimates at financial prices take account of energy related inputs at the heavily subsidized prices prevailing in Egypt in 1982, and of depreciation calculated on estimates of fixed assets that convert the foreign currency component of new investment at the official exchange rate of \$ 1 = LE 0.83. Depreciation is calculated as 3.3 percent of gross fixed assets at the beginning of the year. O & M costs are estimated on the basis of the Black and Veatch - A.T. Kearney Management and Tariff Study.

6.09 On the income side for the water project, user charges levied at 1982 rates would cover only 16.0 percent of outlays of the expanded water system for O & M and depreciation at financial prices in 1985 and 10.7 percent in 1990, with no allowance for capital expansion. User charges would have to be almost doubled to cover depreciation in 1985, more than quadrupled to cover O & M costs, and more than sextupled to cover O & M costs and depreciation. As indicated in Annex Tables F.5.1 and F.5.2, monthly user charges required to cover the household share of O & M costs and depreciation at financial prices would amount to LE 4.14 per household in 1985 and LE 5.02 per household in 1990. To cover in addition an allowance for capital expansion of 5 percent would require monthly user charges per household of LE 5.97 in 1985 and LE 8.07 per household in 1990.

6.10 On the income side for the wastewater project, the only entry is a small amount for connection fees. No user charges are now levied for use of the wastewater system. At financial prices, as indicated in Annex Tables F.5.3 and F.5.4, monthly user fee charges required to cover the household share of O & M costs and depreciation would amount to LE 3.11 per household in 1985 and LE 3.62 in 1990. To cover in addition an allowance for capital expansion of 5 percent would require monthly user charges per household of LE 6.17 in 1985 and LE 7.72 per household in 1990.

TABLE 6.4

CANAL CITIES: HYPOTHETICAL USER CHARGES TO COVER
FINANCIAL COST OF WATER AND WASTEWATER SYSTEMS
(IN 1982 PRICES) RELATIVE TO TOTAL
HOUSEHOLD EXPENDITURES, 1985

(1) Expenditure Bracket (LE per month)	(2) Proportion or Urban Households (%)	(3) User Charges Covering Current Costs <u>1/</u> (LE 7.25 per Month) as % of Total Expenditure	(4) User Charges Covering Current Costs <u>1/</u> plus 5% Allowance for Capital Expansion (LE 12.14 per Month) as % of Total Expenditure
1) Lowest: LE 0-69	11.6	10.5 +	17.5 +
2) Next to lowest: LE 70-97	15.0	7.4-10.5	12.5-17.5
3) Lower middle: LE 98-139	23.7	5.2 -7.4	8.7-12.5
4) Upper middle: LE 140-223	28.5	3.2 -7.4	5.4 -8.7
5) Highest: LE 224 +	21.2	Less than 3.2	Less than 5.4
All households (average): LE 163	100.0	4.4	7.4

1/ Current costs include O & M costs plus depreciation.

Sources:

- Cols (1) and (2): Table F.6.
- Col (3): LE 7.25 (see text) divided by Col. (1).
- Col (4): LE 12.14 (see text) divided by Col. (1).

6.14 The Mission believes that no resolution of these issues will be possible on a project specific basis but a sectoral approach should be taken. AID's participation in a number of large projects increases the opportunity for substantive dialogue leading eventually to the necessary changes. An assessment of the sector is under design and it is expected to form a basis for a high level dialogue between the Mission and the GOE to improve the financial base through a permanent self financing system.

GOE reluctance to change the system is obviously based on the government perception of the sensitivity of such a change in terms of political reactions. In so far as the GOE states that their concern is with the reaction of the poor, studies undertaken by USAID would indicate that their concern is misplaced. The poor already pay far more than their fair share. The real threat may come from the wealthier classes, who already receive full services and pay little or nothing for them.

6.16 While the Mission is in substantive agreement with AID/W on the tariff issue, it is our judgement that any movement (from our point of view) will be incremental. The wastewater system provides a service for basic human needs, without the system urban life can only deteriorate and health problems increase explosively. Consequently, the Mission strongly recommends that the additional funding requested in the amendment not be made contingent on tariff increases.

VII ECONOMIC ANALYSIS

A. Project Cost at Economic Prices

7.01 Shadow-pricing the local currency (LE) component of the project investment at LE 1.10 per dollar (instead of using the official exchange rate of LE 0.83 per dollar) reduces the value of this project investment in dollar terms in economic prices to \$263.8 million from the value in financial prices of \$296.9 million. The value of the expenditure in economic prices of the amendment proposed here would come to \$122.4 million rather than the value in financial prices of \$140.7 million. In LE, making the same adjustment for exchange rates, the economic cost is higher than the financial cost (see Table 7.1).

7.02 The Mission recognizes that in a well defined economic or financial sense there are no returns. Apart from charges for house connections, which are basically at cost plus an administrative fee, there is no recovery of investment or operating costs of the systems. The benefits are strictly social relating to improved health with consequent increased productivity and lower health investment. Egypt is among the world's countries with the highest infant mortality and suffers from numerous other water related diseases. However, we have not put a value on the improvements that will result from the project. Funding of U.S. construction contractors will improve the living environment in some areas and will do it within a short period of time. The faster use of U.S. provided commodities and the earlier improvement in social benefits must implicitly be credited against the cost of the amendment.

7.03 The economic justification for the whole project is that its completion is essential to the physical viability of the three Canal cities which have a major role to play in the continued economic development of Egypt. The Canal cities, in the first place, service the Suez Canal which is Egypt's permanent major foreign exchange earner. In addition they offer room for physical expansion and potentialities for employment in industry, tourism and other services which will divert some of the pressure of expanding urban populations away from Cairo and Alexandria, and away from the scarce agricultural land of the Nile Valley and the Delta. Without an adequate supply of clean water for human consumption and industrial uses, and without an adequate wastewater system to avoid continual sewage flooding in the three cities, their future economic growth would be seriously jeopardized.

TABLE 7.1.

CANAL CITIES WATER AND SEWERAGE PROJECT: INVESTMENT COSTS AT FINANCIAL PRICES
(USING THE OFFICIAL EXCHANGE RATE) AND AT ECONOMIC PRICES
(USING A SHADOW EXCHANGE RATE) ^{1/}

Cost Component	(1) Net Assets end 1981	(2) Total Thru 1985	(3) Investment of which: Proposed Amendment	(4) Total Investment Through 1985 [(1)+(2)]	(5) Investment 1986 - 1990	(6) Total Investment Through 1990 [(4)+(5)]
1. Dollar cost:						
a. \$'000	-	162,000	66,000	162,000	235,000	397,000
b. LE'000 (at LE 0.83/\$)	-	134,500	54,800	134,500	195,000	329,500
c. LE'000 (at LE 1.10/\$)	-	178,200	72,500	178,200	258,500	436,700
2. LE cost:						
a. LE'000	8,000	112,000	62,000	120,000	240,000	360,000
b. \$'000 (at LE 0.83/\$)	9,600	134,900	74,700	144,500	289,200	433,700
c. \$'000 (at LE 1.10/\$)	7,300	101,800	56,400	109,100	218,200	327,300
3. Total cost in dollars (\$'000):						
a. At financial prices (lines 1.a plus 2.b)	9,600	296,900	140,700	306,500	524,200	830,700
b. At economic prices (lines 1.a plus 2.c)	7,300	263,800	122,400	271,100	453,200	724,300
4. Total cost in LE (LE'000):						
a. At financial prices (lines 1.b plus 2.a)	8,000	246,500	116,800	254,500	435,000	689,500
b. At economic prices (lines 1.c plus 2.a)	8,000	290,200	134,500	298,200	498,500	796,700

^{1/} Estimated investment through 1985 derived as follows:

	Foreign Currency Component (\$'000)	Local Currency Component (LE'000)
Net assets at end 1979	-	8,000
AID project 263-0048	96,000	50,000
Proposed amendment to AID project 263-0048	66,000	62,000
Total	162,000	120,000

B. Subsidies versus User Costs

7.04 It was noted in the financial analysis section above that user charges will come nowhere near covering the current costs of maintaining the expanded Canal cities water and wastewater systems and even less any provision for further expansion of the systems. At present (1982) tariff rates for use of the systems, the direct beneficiaries will not be paying the current financial costs of systems; if future current costs are covered at all, they will be covered by government subsidies.

7.05 The situation is even more serious in terms of economic costs, obtained by shadow pricing both energy-related inputs to operation and maintenance (O & M) costs and the foreign currency component of the gross assets base for depreciation. As shown in Annex Tables F.5.1 through F.5.4, the deficits will be considerably larger if economic costs are taken into consideration.

7.06 Our calculation of the monthly user charges per household required to cover the household sector share of current costs only and current costs plus a 5 percent allowance for expansion, at both financial and at economic prices, is summarized in Table 7.2.

7.07 At present (1982) tariff rates, the rate of return on gross assets for the water system in 1985 would be negative: -9.5 percent at financial prices and -24.2 percent at economic prices; for the wastewater system it would be -5.1 percent at financial prices and -6.4 percent at economic prices. (See Annex Tables F.5.1 through F.5.4 for the set of financial and economic cost estimates of user fee charges per household associated with different rates of cost recovery.)

7.08 Whether revenues are derived from budget subsidies or from direct user charges may be regarded as a social decision.^{1/} The real issue is whether the government will come up with the financing to cover the required subsidy if user charges are not sufficient - or whether the systems will again be permitted to deteriorate because of other claims on tight public funds. An increase in user charges is probably the only way to ensure adequate future funding for the water and wastewater systems.

^{1/} See Cairo Sewerage Project Paper, Amendment No. 1, July 16, 1981, P. 46.

TABLE 7.2

CANAL CITIES WATER AND SEWERAGE PROJECT: MONTHLY USER
CHARGES PER HOUSEHOLD REQUIRED TO COVER
HOUSEHOLD SECTOR SHARE OF CURRENT COSTS,
1985 AND 1990

(LE PER HOUSEHOLD)

<u>Project and Extent of Cost Coverage</u>	1985		1990	
	<u>Financial Cost</u>	<u>Economic Cost</u>	<u>Financial Cost</u>	<u>Economic Cost</u>
<u>Water Project:</u>				
Current costs (O & M <u>plus</u> depreciation)	4.14	10.70	5.02	11.9
Current costs <u>plus</u> 5% allowance for expansion	5.97	12.78	8.07	15.3
<u>Wastewater Project:</u>				
Current costs (O & M <u>plus</u> depreciation)	3.11	4.53	3.62	5.2
Current costs <u>plus</u> 5% allowance for expansion	6.17	8.08	7.72	9.8
<u>Water and Wastewater Combined:</u>				
Current costs (O & M <u>plus</u> depreciation)	7.25	15.23	8.64	17.1
Current costs <u>plus</u> 5% allowance for expansion	12.14	20.85	15.79	25.1

Source: Annex Tables F.5.1 through F.5.4.

7.09 The impact on household budgets of user charges at the levels cited in Table 7.2 may be judged by reference to the distribution of households by total expenditure level shown in Table 7.3. Unless our estimate of income (total expenditure) levels is too low, a major implication is that the impact would be too severe for the lowest income brackets, while even for the best off 50 percent of households water and wastewater user charges to cover current costs could come to between 5 and 11 percent of total household expenditure in 1985. User charges would come to between 11 and 16 percent of total expenditure for the lower middle income category. It is most unlikely that user charges would actually be raised to levels high enough to cover current economic costs.

7.10 The GOE has published a five year plan which the Mission is in the process of evaluating. One area of analysis will be the government's sources of actual revenue versus uses. From these figures a judgement can be made of the GOE ability to subsidize the various systems. It is our perception that in the past the central government has not been able to provide adequate funding so the governorates patched the system as best they could. An improvement in this situation is necessary throughout the country and will be a major concern of the planned sector assessment.

TABLE 7.3

CANAL CITIES: HYPOTHETICAL USER CHARGES TO COVER
ECONOMIC COST OF WATER AND SEWERAGE SYSTEMS
(IN 1982 PRICES) RELATIVE TO TOTAL
HOUSEHOLD EXPENDITURES, 1985

(1) Expenditure Bracket (LE per month)	(2) Proportion or Urban Households (%)	(3) User Charges Covering Current Costs <u>1/</u> (LE 15.23 per Month) as % of Total Expenditure	(4) User Charges Covering Current Costs <u>1/</u> plus 5% Allowance for Capital Expansion (LE 20.85 per Month) as % of Total Expenditure
1) Lowest: LE 0-69	11.6	22.1 +	30.2 +
2) Next to lowest: LE 70-97	15.0	15.7-22.1	21.5-30.2
3) Lower middle: LE 98-139	23.7	11.0-15.7	15.0-21.5
4) Upper middle: LE 140-223	28.5	6.8-11.0	9.3-15.0
5) Highest: LE 224 +	21.2	Less than 6.8	Less than 9.3
All households (average): LE 163	100.0	9.4	12.8

1/ Current costs include O & M costs plus depreciation.

Sources:

Cols (1) and (2): Table F.6.

Col (3): LE 15.23 (see Table 7.2) divided by Col. (1).

Col (4): LE 20.85 (see Table 7.2) divided by Col. (1).

VIII SOCIAL ANALYSIS

8.01 The social analysis presented in the original Project Paper remains unchanged and is still valid.

IX IMPLEMENTATION

A. Contracting Procedures and Scheduling

9.01 The project consulting engineer, CCC, has essentially completed the engineering designs for both the water and wastewater systems for the three Canal Cities. Construction tenders for SCA's water projects are divided into two packages. The first package includes treatment plants and pump stations. Bids for these projects were opened in December 1982. The second package includes the distribution system work for which bids will be opened in early 1983. Construction is scheduled to start in mid 1983 and be completed in by the end of 1985. (A more detailed construction schedule is outlined in Table 9.1. As mentioned previously all construction costs on the water project will be financed by SCA.) CCC's current contract with SCA for engineering services expired in December of 1982 and must be amended in order for CCC to provide appropriate engineering and supervision services during construction of the SCA projects.

9.02 For the sewerage projects, the work by U.S. contractors is to be tendered as a single contract. The single package for construction in all three Cities will be large enough in volume to attract bids from qualified U.S. contractors. The local area collector sewer construction will be advertised for construction in a number of separate packages to enable participation of smaller but qualified Egyptian contractors.

9.03 U.S. contractors were invited to express their interest in the wastewater projects and to submit pre-qualification information in late 1982. Upon project amendment authorization and funds being made available, construction tender documents will be issued in early 1983. A pre-bid conference of interested pre-qualified bidders will be held on site in mid-March, 1983 with bids scheduled for opening in July of 1983. With a construction contract awarded by Sept. 1983 construction can be completed by the end of 1985. The construction schedule for the wastewater projects is outlined in Table 9.1 in more detail.

TABLE 9.1

CANAL CITIES WATER AND SEWERAGE
CONSTRUCTION SCHEDULE

	<u>WATER (SCA FINANCED)</u>		<u>SEWERAGE (U.S. FINANCED)</u>
	<u>TREATMENT PLANT AND PUMP STATIONS</u>	<u>DISTRIBUTION SYSTEMS</u>	<u>FORCE MAINS, INTERCEPTORS AND NEW PUMP STATIONS</u>
Construction Tender Document Completed	Aug. 1982	Sept. 1982	Nov. 1982
Prequalification Notice for Contractors	Nov. 1981	Nov. 1981	Nov. 1982
Prequalification Information Received	Jan. 1982	Jan. 1982	Jan. 1983
Prequalification List Established	July 1982	July 1982	Feb. 1983
Prebid Conference	Sept. 1982	Nov. 1982	Mar. 1983
Construction Tender Documents Issued	Aug. 1982	Nov. 1982	Mar. 1983
Construction Tenders Opened	Dec. 1982	Jan. 1983	July 1983
Contract Signed	Feb. 1983	April 1983	Sept. 1983
L/Comm Opened	-	-	Oct. 1983
L/Credit Opened	-	-	Nov. 1983
Mobilization Begins	Feb. 1983	April 1983	Nov. 1983
Mobilization Completed	April 1983	June 1983	Jan. 1984
Construction Begins	April 1983	June 1983	Jan. 1984
Construction Ends	April 1985	June 1985	Dec. 1985

9.04 Egyptian contractors will be responsible for existing pump station rehabilitation and the smaller collector sewers. Work orders will likely be issued by NOPWASD to a number of public sector contractors. The work will proceed concurrently with the work of the U.S. contractor and is scheduled for completion at the end of 1985.

B. Construction Supervision

9.05 CCC will provide comprehensive engineering services to NOPWASD during construction. It has performed design work and provided technical assistance to NOPWASD for the wastewater rehabilitation activities currently underway by NOPWASD with budgeted GOE local currency, locally available materials, and with construction assigned by work order to Mokhtar Ibrahim, a state-owned and operated Egyptian contractor. CCC and NOPWASD have negotiated a preliminary scope of work for construction engineering and supervision services to be used as a basis for amending the current contract, which expires at the end of this year. The scope of CCC services includes approving shop drawings, field testing, and contractors' progress payment requests; preparing minor design revisions because of field or changed conditions, making construction inspections and in general acting as NOPWASD's resident engineer at the construction site. This will include authority to issue stop work orders, which is important to prevent faulty or incorrect construction. CCC will also provide NOPWASD and the Governorates with record or "as-built" drawings of their completed facilities.

9.06 A similar scope of services will be negotiated between SCA and CCC to assure that the water projects will be constructed properly and on schedule.

C. Training

9.07 As part of the engineering services provided to NOPWASD, CCC will continue its training program which is aimed at both NOPWASD and governorate employees. Governorate personnel will be further trained in collection system operation and maintenance including sewer cleaning and pump station operation. Treatment plant personnel will be trained on site. NOPWASD engineering personnel will be trained both at the High Institute of Public Health in Alexandria and in the U.S. Training manuals will be prepared for all facilities constructed under this project. The training program will begin in early 1983 and continue through construction.

D. Conditions Precedent

9.08 We recommend that no funds provided under this project amendment be made available to the respective implementing entities for equipment or construction procurement prior to Canal Cities Consultant's contracts with the entities being amended to include construction supervision services.

E. Project Assistance Completion Date.

9.09 The Project Assistance Completion Date will be extended from the present expiration date of July 1, 1983 to January 1, 1986.

F. 611(e) Certification

9.10 The USAID Director's Section 611(e) Certification is included as Annex C. Although we conclude that SCA, NOPWASD and the Governorates have the capability to implement and maintain this project, such capabilities will be fortified with the assistance of engineering consultant who will provide design, training and construction supervision services and the U.S. contractor which will construct the complex portions of the wastewater project.

X. Recommendation, Conditions and Covenants

A. Recommendations

10.01 Subject to the conditions and covenants listed below, we recommend that AID authorize an additional grant of \$87.0 million to fund the foreign exchange and local currency costs of the Canal Cities Water and Sewerage Project Amendment. These funds will be used for engineering services, equipment and construction on the water and wastewater projects. Due to the critical importance of proceeding with the project at the earliest possible date, and to the fact that bid documents are about to be issued we recommend that conditions precedent be limited to those proposed by the Mission. We further recommend that the \$87.0 million be regranted to NOPWASD and SCA. All goods and services financed by AID will have their source, origin and nationality in the United States and Egypt. The draft amendment to the project authorization is included as Annex B. The Project Checklist is included as Annex E.

B. Conditions Precedent to Disbursement

10.02 We recommend as a Condition Precedent to Disbursement that no funds provided under this project amendment be made available to the respective implementing entities for equipment or construction prior to Canal Cities Consultants Contract with that entity being amended to include a level of construction supervision services satisfactory to AID.

C. Covenants

10.03 Decennial Liability: The GOE will be required to covenant that contractors, architects, consultants, and subcontractors, regardless of nationality, working on this project shall be exempted from the application of Articles 651 through 654 of the Egyptian Civil Code and from the application of Law 106 of 1976 until such time as NOPWASD and SCA purchase adequate insurance coverage required by the above cited Egyptian Codes and Law. Such contractors, architects, consultants, or subcontractors shall not be relieved of their duty to exercise sound judgment, in accordance with the standards of their respective professions, to ensure the safety and fitness of the works for the purposes for which they are designed and erected.

10.04 No other covenants are recommended in this Project Paper Amendment. Essentially the covenants in the original Project Paper apply. We do not intend to covenant any specific dates for tariff increases or to covenant any specific return on assets for either the water or sewerage utilities. As stated in Chapter VI, the tariff question will continue to be discussed at high levels within the GOE.

DRAFT OF LETTER FROM MIIC

Dear Mr. Stone:

In 1978 and 1979 the Government of Egypt entered into an agreement with the Government of the United States to undertake the Canal Cities Water and Sewerage Project. The initial project included a loan of \$60 million in 1978 (263-K-050) followed by a grant of \$36 million in 1979 (263-0048). Since that time designs have been completed, equipment ordered and received and rehabilitation work undertaken.

Experience to date in the Canal Cities has shown that the wastewater projects will be constructed under extremely difficult conditions and that the work of a U.S. construction contractor is necessary on the larger, more difficult to construct components of the wastewater collection system. Additional equipment and the services of a U.S. engineering firm for construction supervision are also required to complete the project.

To complete this project, we are requesting an AID grant of \$87.0 million dollars beyond the \$96 million already provided. \$80.6 million of the new financing will be for the National Organization for Potable Water and Sanitary Drainage and \$6.4 million for the Suez Canal Authority. This raises the total U.S. commitment to the Canal Cities Water and Sewerage program to \$183 million. Against this total the Government of Egypt will provide local currency financing of LE 95.2 million.

Sincerely yours,

Ahmed Abdel Salam Zaki
Administrator of the Department for
Economic Cooperation with U.S.A.

DRAFT
FIRST AMENDMENT
TO
PROJECT AUTHORIZATION

Name of Country: Arab Republic of Egypt Name of Project : Canal Cities' Water and Sewerage
Number of Project: 263-0048

1. Pursuant to Section 532 of the Foreign Assistance Act of 1961, as amended (the "Act"), the Canal Cities' Water and Sewerage Project for Egypt was authorized on September 29, 1978 ("Project Authorization"). I hereby authorize for the Project, in addition to amounts previously authorized and obligated, funding of an amount not to exceed Eighty-seven Million United States Dollars (\$87,000,000) in grant funds over a one-year period from the date of this Amendment, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing the foreign exchange and local currency costs of goods and services required for the Project.

2. The Project Grant Agreement Amendment, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and delegations of authority, shall be subject to

the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate:

Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the Project shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Project shall, except as A.I.D. may otherwise agree in writing, be financed on flag vessels of the United States.

3. The "Conditions Precedent to Initial Disbursement," the "Additional Conditions Precedent," and the "Covenants" set forth in the Project Authorization are hereby deleted in their entirety.

4. The Project Authorization remains in force except as hereby amended.

Administrator

Date

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UNITED STATES AGENCY for INTERNATIONAL DEVELOPMENT

CAIRO. EGYPT

ANNEX C

CERTIFICATION PURSUANT TO SECTION
611 (e) of FAA 1961 AS AMENDED

I, M.P.W. Stone, Director, the principal officer of the Agency for International Development in Egypt, having taken into account among other things, the maintenance and utilization of projects in Egypt previously financed or assisted by the United States, do hereby certify that in my judgment Egypt has both the financial capability and the human resources to effectively install, maintain and utilize the capital assistance to be provided for the rehabilitation and expansion of the Canal Cities Water and Sewerage Project.

This judgment is based upon general consideration discussed in the project paper to which this certification is to be attached.

M.P.W. Stone

M.P.W. Stone

1-21-83

Date

ANNEX D

SUEZ CANAL AUTHORITY
PREQUALIFICATION LIST

<u>Company</u>	<u>Country</u>
<u>Water Treatment Plant/Pump Station/Pipeline</u>	
1. Paul N. Howard Co.	U.S.A.
2. Collavino Brother Construction Co. Inc.	Canada
3. Contrajet-Egiteco in association with SOMECO, SA	Egypt - France
4. MAK Construction Co.	Egypt - Kuwait
5. Egyptian Contracting Company in association with Marples Ridgeway	Egypt - England
6. Arab Contractors in association with Sadelmi Cogepi	Egypt - Italy
7. Societe Egyptienne D'Enterprises	Egypt
8. J.A. Jones - Harbert Const. Co.	U.S.A.
<u>Water Treatment Plant / Pump Station Only</u>	
9. Allam Jarvis	Egypt - England
10. Contractors West Germany	Rogge General
<u>Pipeline Only</u>	
11. Hassan M. Allam & Sons	Egypt

5C(2) PROJECT CHECKLIST

Listed below are statutory criteria applicable to projects. This section is divided into two parts. Part A. includes criteria applicable to all projects. Part B. applies to projects funded from specific sources only: B.1. applies to all projects funded with Development Assistance Funds, B.2. applies to projects funded with Development Assistance loans, and B.3. applies to projects funded from ESF.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

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

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

An "Advice of Program Change" has been prepared for transmittal to the appropriate Committees of Congress in accordance with standard Agency procedures. The intended obligation is within the level of funds appropriated for Egypt for FY 1983.

2. FAA Sec. 511(a)(1). Prior to obligation in excess of \$100,00, will there be
- a) Yes
b) Yes

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(a) engineering, financial or other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

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

No further legislative action is required to implement the project.

4. FAA Sec. 611(b); FY 1982 Appropriation Act Sec. 501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973? (See AID Handbook 3 for new guidelines.)

Yes

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?

The Mission Director has so certified - See Annex C.

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6. FAA Sec. 209. Is project susceptible to execution as part of regional or multilateral project? If so, why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.

The project is not susceptible of execution as part of a regional or multilateral project.

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

The project is designed to improve the water treatment and distribution and wastewater collection systems in the Canal Cities. It will not have a noticeable impact on items a thru f.

8. FAA Sec. 601(b). Information and conclusions on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

It is anticipated that all funds expended will be for goods and services from private U.S. firms.

9. FAA Sec. 612(b), 636(h);
FY 1982 Appropriation
Act Sec. 507. Describe
steps taken to assure
that, to the maximum
extent possible, the
country is contributing
local currencies to meet
the cost of contractual
and other services, and
foreign currencies owned
by the U.S. are utilized
in lieu of dollars.
- The agreement will require the Grantee
to contribute local currencies in
addition to the Grant necessary
to meet project objectives. No
U.S.-owned foreign currencies are
available for the project.
10. FAA Sec. 612(d). Does
the U.S. own excess
foreign currency of the
country and, if so, what
arrangements have been
made for its release?
- No
11. FAA Sec. 601(e). Will
the project utilize
competitive selection
procedures for the
awarding of contracts,
except where applicable
procurement rules allow
otherwise?
- Yes
12. FY 1982 Appropriation Act
Sec. 521. If assistance
is for the production of
any commodity for export,
is the commodity likely
to be in surplus on world
markets at the time the
resulting productive
capacity becomes
operative, and is such
assistance likely to
cause substantial injury
to U.S. producers of the
same, similar or
competing commodity?
- The assistance is not for commodities
for export.
13. FAA 118(c) and (d).
Does the project comply
with the environmental
procedures set forth in
AID Regulation 16? Does
- a) Yes
b) Not applicable

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the project or program take into consideration the problem of the destruction of tropical forests?

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

Not applicable

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

Not applicable

a. FAA Sec. 102(b), 111, 113, 281(a). Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and

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otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

b. FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used? -

c. FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)?

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or is the latter cost-sharing requirement being waived for a "relatively least developed" country)?

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e. FAA Sec. 110(b).
Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? (M.O. 1232.1 defined a capital project as "the construction, expansion, equipping or alteration of a physical facility or facilities financed by AID dollar assistance of not less than \$100,000, including related advisory, managerial and training services, and not undertaken as part of a project of a predominantly technical assistance character."

f. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?

g. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage

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institutional development;
and supports civil
education and training in
skills required for
effective participation in
governmental processes
essential to self-government.

2. Development Assistance Project
Criteria (Loans Only)

Not applicable

- a. FAA Sec. 122(b).
Information and conclusion
on capacity of the country
to repay the loan, at a
reasonable rate of interest.
- b. FAA Sec. 620(d). If
assistance is for any
productive enterprise which
will compete with U.S.
enterprises, is there an
agreement by the recipient
country to prevent export
to the U.S. of more than
20% of the enterprise's
annual production during
the life of the loan?
- c. ISDCA of 1981, Sec. 724
(c) and (d). If for
Nicaragua, does the loan
agreement require that the
funds be used to the
maximum extent possible for
the private sector? Does
the project provide for
monitoring under FAA Sec.
624(g)?

3. Economic Support Fund
Project Criteria

- a. FAA Sec. 531(a). Will
this assistance promote
economic or political

This assistance will result in improved
water distribution and wastewater
collection in the canal cities. Many
of the benefits will be felt by the poor
in those cities who otherwise receive
substandard or no services. Therefore
economic and political stability will
be enhanced.

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stability? To the extent possible, does it reflect the policy directions of FAA Section 102?

- b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities? No

- c. FAA Sec. 534. Will ESF funds be used to finance the construction of the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such use of funds is indispensable to nonproliferation objectives? No

- d. FAA Sec. 609. If ~~any~~ commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made? Not applicable

5C(3) - STANDARD ITEM CHECKLIST

Listed below are the statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed?

Procurement of goods and services will be pursuant to standard AID regulation

2. FAA Sec. 604(a). Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him?

Yes

3. FAA Sec. 604(d). If the cooperating country discriminates against marine insurance companies authorized to do business in the U.S., will commodities be insured in the United States against marine risk with such a company?

Yes

4. FAA Sec. 604(e); ISDCA of 1980 Sec. 705(a). If offshore procurement of agricultural commodity or product is to be

There will be no such procurement

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financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not reasonably be procured in U.S.)

5. FAA Sec. 604(g). Will construction or engineering services be procured from firms of countries otherwise eligible under Code 941, but which have attained a competitive capability in international markets in one or these areas?

Yes, engineering and construction services will be eligible under Code 000

6. FAA Sec. 603. Is the shipping excluded from compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S. flag commercial vessels to the extent that such vessels are available at fair and reasonable rates?

No

7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished by private enterprise on a contract basis to the fullest extent practicable? If the facilities of other

Technical assistance, to the greatest extent practicable, will be from private enterprise on a contract basis.



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Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will U.S. carriers be used to the extent such service is available?

Yes

9. FY 1982 Appropriation Act Sec. 504. If the U.S. Government is a party to a contract for procurement, does the contract contain a provision authorizing termination of such contract for the convenience of the United States?

No direct contracts are contemplated. However, host country contracts will provide for termination at the convenience of the contracting agency.

B. Construction

1. FAA Sec. 601(d). If capital (e.g., construction) project, will U.S. engineering and professional services to be used?

Yes

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

Yes

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3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million (except for productive enterprises in Egypt that were described in the CP)?
- Not applicable

C. Other Restrictions

1. FAA Sec. 122(b). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?
- Not applicable
2. FAA SEC. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?
- Not applicable
3. FAA Sec. 620(h). Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-bloc countries?
- The Agreement will so stipulate
4. Will arrangements preclude use of financing:
- a. FAA Sec. 104(f); FY 1982 Appropriation Act Sec. 525: (1) To pay for performance of abortions as a method of family
- Yes

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planning or to motivate or coerce persons to practice abortions; (2) to pay for performance of involuntary sterilization as method of family planning, or to coerce or provide financial incentive to any person to undergo sterilization; (3) to pay for any biomedical research which relates, in whole or part, to methods or the performance of abortions or involuntary sterilizations as a means of family planning; (4) to lobby for abortion?

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

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

d. FAA Sec. 662. For CIA activities? Yes

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

f. FY 1982 Appropriation Act, Sec. 503. To pay pensions, annuities, retirement pay, or Yes

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adjusted service
compensation for military
personnel?

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

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

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

j. FY 1982 Appropriation
Act, Sec. 511. Will
assistance be provided
for the purpose of aiding
the efforts of the
government of such
country to repress the
legitimate rights of the
population of such
country contrary to the
Universal Declaration of
Human Rights? Assistance will not be provided for
such purpose.

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

Financial and Economic Costs

F.01 This annex sets out the data for 1985 and 1990 from which Table 7.2 was derived. Value data are in 1982 prices. Two adjustments are made to estimates at financial prices or costs to arrive at estimates at economic prices or costs: (a) foreign currency components of investment costs (and therefore depreciation) are adjusted using a shadow rate of \$ 1 = LE 1.10 rather than the official rate of \$ 1 = LE 0.83; and (b) fuel - related inputs in operations and maintenance (O & M) costs are adjusted to the estimated world price level by applying an inflation factor of 5. Table F.1 presents the population estimates for the three Canal cities (Ismailia, Port Said, and Suez) underlying the calculations, the projected number of persons and households connected to the Canal cities water and wastewater systems, and the share of costs allocated to households in the projections.

F.02 Tables F.2.1 and F.2.2 set out the financial and economic cost estimates of gross and net fixed assets for the Canal cities water project; Tables F.2.3 and F.2.4 set out these data for the Canal cities wastewater project. The financial cost estimates convert foreign currency (dollar) component at the official exchange rate of \$ 1 = LE 0.83. The economic cost estimates convert the foreign currency (dollar) component at an estimated 1982 own-exchange market exchange rate of \$ 1 = LE 1.10 taken as a proxy for a shadow exchange rate. The base year figures for gross and net fixed assets are those estimated for end-1978 in the Black and Veatch et al reports on utility tariffs ^{1/} assuming no additions in 1979, 1980, or 1981. Since the base amounts are so small relative to the new additions, no attempt was made to revalue the base year figures to 1982 prices. Estimated water project investment expenditures through 1985 of \$49 million and LE 42 million and wastewater project investment expenditures through 1985 of \$113 million and LE 70 million (see Table 6.1) have been added to the base year estimates to arrive at the figures for 1985. The 1985 figures have been projected to 1990 taking account of estimated Phase II project expenditures.

1/ EVI-ATK Associates with Sabbour Associates, Water Utility Tariffs, Final Report, Vol 2, PP. III-9, IV-9, V-9; and Sewerage Utility Tariffs, Final Report, Vol. 2, PP. III-7, IV-9, V-9.

F.03 Tables F.3.1 and F.3.2 set out the income and expenditure estimates for 1985 and 1990 at financial and economic prices for the Canal cities water project; Tables F.3.3 and F.3.4 set out the same data for the Canal cities wastewater project. In addition to the estimated current deficit (income less O&M costs and depreciation), the table includes estimates of allowances for capital expansion of 5 percent and 10 percent derived from the gross assets estimates in Tables F.2.1 through F.2.4. The economic cost estimates make two adjustments to the financial cost figures: (a) fuel related inputs in O&M costs are shadow priced by using an inflation factor of 5 to approximate world prices, and (b) depreciation is re-estimated using the adjusted figures for depreciation at economic cost from Tables F.2.1 through F.2.4.

F.04 Tables F.4.1 and F.4.2 (water) and Tables F.4.3 and F.4.4 (wastewater) estimate the monthly aggregates for the household share of receipts and expenditures (70 percent of total), and then convert these to monthly income and expenditure per household using the population figures of Table F.1. The monthly figures per household are used in the calculations of user tariffs required for cost recovery in Table F.5.1 through F.5.4.

F.05 Tables F.5.1 and F.5.2 (water) and Tables F.5.3 and F.5.4 (wastewater) specify the monthly user fee charges required per household to cover the household sector share of the several elements of current costs, and the rate of return on gross assets implied by the corresponding level of hypothetical user fee revenues. The calculation is made both at financial prices and at economic prices as defined in this paper. An explanation of the method of calculation is given in the note on sources at the end of the table.

F.06 Table F.6 presents an estimate of the distribution of urban households by household total expenditure bracket in 1979 and 1982, both extrapolated from the CAPMAS 1974/75 household budget survey data by an estimated rate of growth of GNP per capita. The household expenditure is used as a proxy for household income.

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TABLE F.1

CANAL CITIES WATER AND WASTEWATER PROJECTS:
POPULATION AND HOUSEHOLDS CONNECTED TO THE SYSTEM,
1985 AND 1990

<u>Item</u>	<u>1985</u>	<u>1990</u>
1. Population in project area <u>1/</u> ('000)	1,190	1,562
2. Population connected <u>2/</u> ('000)	655	1,170
3. Population connected as proportion of total population (%) (line 2 <u>divided by</u> line 1)	55	75
4. No. of persons per household	5.5	5.5
5. Households connected ('000) (line 2 <u>divided by</u> line 4)	119	213

6. Share of costs allocated to households (%)	70	70

1/ Population by city ('000):

Ismailia	325	383
Port Said	390	487
Suez	473	692
Total	1,190	1,562

2/ Although the estimated numbers of persons connected to the water and wastewater systems are the same, the individuals connected to the water system are not necessarily the same as those connected to the wastewater system.

Sources:

Lines 1 and 2: Based on Port Said, Suez, and Ismailia Master Plans prepared by Hazen and Sawyer, Pirnie-Harris, and Metcalf and Eddy respectively in 1979.

Line 4: USAID/Cairo, Egypt's Food and Energy Subsidies in 1979, FY CDSS, Annex XIII, Table F.1 cites a figure of 5.6 persons per household. Here we use 5.5.

Line 6: Based on BVI-ATK/Sabbour, Sewerage Utility Tariffs, Final Report, Vol. 2, pp. III-19, IV-19, V-19.

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TABLE F.2.1

CANAL CITIES WATER PROJECT: GROSS AND NET FIXED ASSETS,
AT FINANCIAL AND ECONOMIC PRICES, 1985

Item	(1)	(2)	(3)	(4)	(5)	(6)
	Local Currency Cost (LE'000)	\$'000	\$ - Cost LE'000 (at \$1 = LE 0.83)	LE'000 (at \$1 = LE 1.10)	Total Financial Cost (LE'000) [(1)+(3)]	Total Economic Cost (LE'000) [(1)+(4)]
1. Gross Fixed Assets (beginning of year)	43,463	37,500	31,125	41,250	74,588	84,713
2. Net Fixed Assets (beginning of year)	40,000	35,000	29,050	38,500	69,050	78,500
3. Additions (Gross)	5,613	6,155	5,109	6,770	10,722	12,383
4. Gross Fixed Assets (end of year) [line 1 + line 3]	49,076	43,655	36,234	48,020	85,310	97,096
5. Depreciation [0.033 x line 4]	1,435	1,238	1,028	1,362	2,463	2,797
6. Additions net of Depreciation [line 3 - line 5]	4,178	4,917	4,081	5,409	8,259	9,587
7. Net Fixed Assets (end of year) [line 2 + line 6]	44,178	39,917	33,131	43,909	77,309	88,087

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TABLE F.2.2

CANAL CITIES WATER PROJECT: GROSS AND NET FIXED ASSETS,
AT FINANCIAL AND ECONOMIC PRICES, 1990

Item	(1) Local Currency Cost (LE'000)	(2) \$'000	(3) \$ - Cost LE'000 (at \$1 = LE 0.83)	(4) LE'000 (at \$1 = LE 1.10)	(5) Total Financial Cost (LE'000) [(1)+(3)]	(6) Total Economic Cost (LE'000) [(1)+(4)]
1. Gross Fixed Assets (beginning of year)	132,296	108,970	90,445	119,867	222,741	252,163
2. Net Fixed Assets (beginning of year)	107,510	98,198	81,504	108,018	189,014	215,528
3. Additions (Gross)	17,767	16,610	13,786	18,271	31,553	36,038
4. Gross Fixed Assets (end of year) [line 1 + line 3]	150,063	125,580	104,231	138,138	254,294	288,201
5. Depreciation [0.033 x line 1]	4,365	3,596	2,985	3,956	7,350	8,321
6. Additions net of Depreciation [line 3 - line 5]	13,402	13,014	10,802	14,315	24,204	27,717
7. Net Fixed Assets (end of year) [line 2 + line 6]	120,912	111,212	92,306	122,333	213,218	243,245

TABLE F.2.3

CANAL CITIES WASTEWATER PROJECT: GROSS AND NET FIXED ASSETS,
AT FINANCIAL AND ECONOMIC PRICES, 1985

Item	(1)	(2)	(3)	(4)	(5)	(6)
	Local Currency Cost (LE'000)	\$'000	\$ - Cost LE'000 (at \$1 = LE 0.83)	LE'000 (at \$1 = LE 1.10)	Total Financial Cost (LE'000) [(1)+(3)]	Total Economic Cost (LE'000) [(1)+(4)]
1. Gross Fixed Assets (beginning of year)	62,500	75,000	62,250	82,500	124,750	145,000
2. Net Fixed Assets (beginning of year)	56,500	63,000	52,290	69,300	108,790	125,800
3. Additions (Gross)	15,000	15,000	12,450	16,500	27,450	31,500
4. Gross Fixed Assets (end of year) [line 1 + line 3]	77,500	90,000	74,700	99,000	152,200	176,500
5. Depreciation [0.033 x line 1]	2,060	2,475	2,054	2,722	4,114	4,782
6. Additions net of Depreciation [line 3 - line 5]	12,940	12,525	10,396	13,778	23,336	26,718
7. Net Fixed Assets (end of year) [line 2 + line 6]	69,440	75,525	62,686	83,078	132,126	152,518

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TABLE F.2.4

CANAL CITIES WASTEWATER PROJECT: GROSS AND NET FIXED ASSETS,
AT FINANCIAL AND ECONOMIC PRICES, 1990

Item	(1)	(2)	(3)	(4)	(5)	(6)
	Local Currency Cost (LE'000)	\$'000	\$ - Cost LE'000 (at \$1 = LE 0.83)	LE'000 (at \$1 = LE 1.10)	Total Financial Cost (LE'000) [(1)+(3)]	Total Economic Cost (LE'000) [(1)+(4)]
1. Gross Fixed Assets (beginning of year)	187,360	134,800	111,884	148,280	299,244	335,640
2. Net Fixed Assets (beginning of year)	168,000	136,577	113,359	150,235	281,359	318,235
3. Additions (Gross)	30,340	15,200	12,616	16,720	42,956	47,060
4. Gross Fixed Assets (end of year) [line 1 + line 3]	217,700	150,000	124,500	165,000	342,200	382,700
5. Depreciation [0.033 x line 1]	5,542	4,507	3,741	4,958	9,283	10,500
6. Additions net of Depreciation [line 3 - line 5]	24,798	45,073	37,411	49,580	62,209	74,378
7. Net Fixed Assets (end of year) [line 2 + line 6]	192,745	147,270	122,234	161,997	314,979	354,742

TABLE F.3.1

CANAL CITIES WATER PROJECT: INCOME AND EXPENDITURE PROJECTIONS,
1985 and 1990, AT FINANCIAL AND ECONOMIC PRICES
(LE'000)

<u>Item</u>	1985		1990	
	<u>Financial Cost Estimate</u>	<u>Economic Cost Estimate</u>	<u>Financial Cost Estimate</u>	<u>Economic Cost Estimate</u>
Income:				
Connection fees	-	-	-	-
User charges	1,349	1,349	1,955	1,955
Expenditure:				
Operation and maintenance (O & M):				
Wages and supplement	1,514	1,514	2,746	2,746
Fuel related inputs	3,263	16,315	6,045	30,225
Other ^{1/}	1,213	1,213	2,186	2,186
Sub-Total: O & M	5,990	19,042	10,977	35,157
Depreciation ^{2/}	2,463	2,797	7,350	8,321
Surplus:				
Income <u>less</u> O & M and depreciation (- = deficit)	(-7,104)	(-20,490)	(-16,372)	(-41,523)
Allowance for capital expansion:				
5% expansion	3,729	4,236	11,137	12,608
10% expansion	7,459	8,472	22,274	25,216
Surplus (- = deficit) after allowance for capital expansion:				
5% expansion	(-10,833)	(-24,726)	(27,509)	(-54,131)
10% expansion	(-14,563)	(-28,962)	(-38,646)	(-66,739)

^{1/} Other O & M costs include: commodities, services, central office expense, billing expense, and miscellaneous.

^{2/} Depreciation is estimated at 3.3 percent of gross fixed assets (see Table F.2) at the beginning of the year.

TABLE F.3.2

CANAL CITIES WASTEWATER PROJECT: INCOME AND EXPENDITURE PROJECTIONS,
1985 and 1990, AT FINANCIAL AND ECONOMIC PRICES
(LE'000)

Item	1985		1990	
	Financial Cost Estimate	Economic Cost Estimate	Financial Cost Estimate	Economic Cost Estimate
Income:				
Connection fees	21	21	30	30
User charges	-	-	-	-
Expenditure:				
Operation and maintenance (O & M):				
Wages and supplement	1,124	1,124	1,900	1,900
Fuel related inputs	561	2,805	1,145	5,725
Other ^{1/}	559	559	926	926
Sub-Total: O & M	2,244	4,488	3,971	8,551
Depreciation ^{2/}	4,114	4,782	9,283	10,500
Surplus:				
Income less O & M and depreciation (- = deficit)	(-6,337)	(-9,249)	(-13,224)	(-19,021)
Allowance for capital expansion:				
5% expansion	6,237	7,250	14,962	16,782
10% expansion	12,474	14,500	29,924	33,564
Surplus (- = deficit) after allowance for capital expansion:				
5% expansion	(-12,574)	(-16,499)	(28,186)	(-35,803)
10% expansion	(-18,811)	(-23,749)	(-43,148)	(-52,585)

^{1/} Other O & M costs include: commodities, services, central office expense, billing expense, and miscellaneous.

^{2/} Depreciation is estimated at 3.3 percent of gross fixed assets (see Table F.2) at the beginning of the year.

TABLE F.4.1

CANAL CITIES WATER PROJECT: INCOME AND EXPENDITURE PROJECTIONS,
HOUSEHOLD SHARE ONLY, MONTHLY RATES,
AGGREGATE AND PER HOUSEHOLD, 1985

Item	Monthly Aggregate ^{1/} (LE'000)		Monthly per Household ^{2/} (LE)	
	Financial Cost Estimate (1)	Economic Cost Estimate (2)	Financial Cost Estimate (3)	Economic Cost Estimate (4)
Income:				
Connection fees	-	-	-	-
1982-rate user charges	78.68	78.68	0.66 ^{3/}	0.66 ^{3/}
Expenditure:				
O & M	349.39	1,110.72	2.93	9.33
Depreciation	143.67	163.15	1.21	1.37
Surplus (- = deficit)	(-414.38)	(-1,195.18)	(-3.48)	(-10.04)
Allowance for capital expansion:				
5% expansion	217.51	247.08	1.83	2.08
10% expansion	435.02	494.17	3.66	4.15
Surplus (- = deficit) after allowance for capital expansion:				
5% expansion	(-631.89)	(-1,442.27)	(-5.31)	(-12.12)
10% expansion	(-849.46)	(-1,689.35)	(-7.14)	(-14.19)

^{1/} Items from Table F.3.1 multiplied by (0.05833 = 0.7 divided by 12).

^{2/} Aggregate [cols. (1) and (2)] divided by No. of households (119 thousand).

^{3/} Consumption of 30 cubic meters per month per household at the 1982 rate of 18 millimetres per cubic meter would come out to LE 0.54 per month, as in Table F.4.2.

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TABLE F.4.2

CANAL CITIES WATER PROJECT: INCOME AND EXPENDITURE PROJECTIONS,
HOUSEHOLD SHARE ONLY, MONTHLY RATES,
AGGREGATE AND PER HOUSEHOLD, 1990

Item	Monthly Aggregate ^{1/} (LE'000)		Monthly per Household ^{2/} (LE)	
	Financial Cost Estimate (1)	Economic Cost Estimate (2)	Financial Cost Estimate (3)	Economic Cost Estimate (4)
Income:				
Connection fees	-	-	-	-
1982-rate user charges	114.04	114.04	0.54 ^{3/}	0.54 ^{3/}
Expenditure:				
O & M	640.29	2,050.71	3.01	9.63
Depreciation	428.72	485.36	2.01	2.28
Surplus (- = deficit)	(-954.98)	(-2,422.04)	(-4.48)	(-11.37)
Allowance for capital expansion:				
5% expansion	649.62	735.42	3.05	3.45
10% expansion	1,299.24	1470.85	6.10	6.90
Surplus (- = deficit) after allowance for capital expansion:				
5% expansion	(-1,604.60)	(-3,157.46)	(-7.53)	(-14.82)
10% expansion	(-2,245.22)	(-3,892.88)	(-10.58)	(-18.27)

^{1/} Items from Table F.3.1 multiplied by (0.05833 = 0.7 divided by 12).

^{2/} Aggregate [cols. (1) and (2)] divided by No. of households (213 thousand).

^{3/} Corresponds to 30 cubic meters per month per household at 18 milliemes per cubic meter.

TABLE F.4.3

CANAL CITIES WASTEWATER PROJECT: INCOME AND EXPENDITURE PROJECTIONS,
HOUSEHOLD SHARE ONLY, MONTHLY RATES,
AGGREGATE AND PER HOUSEHOLD, 1985

Item	Monthly Aggregate ^{1/} (LE'000)		Monthly per Household ^{2/} (LE)	
	Financial Cost Estimate (1)	Economic Cost Estimate (2)	Financial Cost Estimate (3)	Economic Cost Estimate (4)
Income:				
Connection Fees	1.22	1.22	0.01	0.01
1982-rate user charges	-	-	-	-
Expenditure:				
O & M	130.89	261.78	1.10	2.20
Depreciation	239.97	278.93	2.02	2.34
Surplus (- = deficit)	(-369.64)	(-539.49)	(-3.11)	(-4.53)
Allowance for capital expansion:				
5% expansion	363.80	422.89	3.06	3.55
10% expansion	727.60	845.78	6.11	7.11
Surplus (- = deficit) after allowance for capital expansion:				
5% expansion	(-733.44)	(-962.39)	(-6.17)	(-8.09)
- 10% expansion	(-1,097.24)	(-1,385.28)	(-9.22)	(-11.64)

1/ Items from Table F.3.2 multiplied by (0.05833 = 0.7 divided by 12).

2/ Aggregate [cols. (1) and (2)] divided by No. of households (119 thousand).

TABLE F.4.4

CANAL CITIES WASTEWATER PROJECT: INCOME AND EXPENDITURE PROJECTIONS,
HOUSEHOLD SHARE ONLY, MONTHLY RATES,
AGGREGATE AND PER HOUSEHOLD, 1990

Item	Monthly Aggregate ^{1/} (LE'000)		Monthly per Household ^{2/} (LE)	
	Financial Cost Estimate (1)	Economic Cost Estimate (2)	Financial Cost Estimate (3)	Economic Cost Estimate (4)
Income:				
Connection Fees	1.75	1.75	0.01	0.01
1982-rate user charges	-	-	-	-
Expenditure:				
O & M	231.63	498.78	1.09	2.34
Depreciation	541.48	612.46	2.54	2.88
Surplus (- = deficit)	(-771.36)	(-1,109.49)	(-3.62)	(-5.21)
Allowance for capital expansion:				
5% expansion	872.73	978.89	4.10	4.60
10% expansion	1,745.46	1,957.79	8.20	9.19
Surplus (- = deficit) after allowance for capital expansion:				
5% expansion	(-1,644.09)	(-2,088.39)	(-7.72)	(-9.81)
10% expansion	(-2,516.82)	(-3,067.28)	(-11.82)	(-14.40)

1/ Items from Table F.3.2 multiplied by (0.05833 = 0.7 divided by 12).

2/ Aggregate [cols. (1) and (2)] divided by No. of households (213 thousand).

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TABLE F.5.1

CANAL CITIES WATER PROJECT: USER FEE CHARGES
PER HOUSEHOLD ASSOCIATED WITH DIFFERENT RATES OF COST RECOVERY,
FINANCIAL AND ECONOMIC COST ESTIMATES, 1985 ^{1/}

<u>Cost Coverage</u>	<u>Financial Cost Estimate</u>		<u>Economic Cost Estimate ^{2/}</u>	
	Corresponding Monthly User Fee Charge per Household ^{3/} (LE) (1)	Rate of Return ^{4/} Implicit in Corresponding User Fee Revenues (%) (2)	Corresponding Monthly User Fee Charge Per Household (LE) (3)	Rate to Return ^{5/} Implicit in Corresponding User Fee Revenue (%) (4)
Present (1982) Rate ^{6/}	0.66	(-9.5)	0.66	(-24.2)
0 & M Costs but not Depreciation	2.93	(-3.3)	9.33	(-3.3)
Depreciation but not 0 & M Costs	1.21	(-8.0)	1.37	(-22.4)
0 & M and Depreciation	4.14	0.0	10.70	0.0
0 & M and Depreciation + 5% for Capital Expansion	5.97	5.0	12.78	5.0
0 & M and Depreciation + 10% for Capital Expansion	7.80	10.0	14.85	10.0

^{1/} At 1982 prices.

^{2/} Economic costs shadow priced using estimated 1982 own-exchange LE/\$ conversion (LE 1.10/\$1.00) and adjustment factor of 5 for energy related inputs.

^{3/} Household sector share only. Assumes equivalent rates are charged to other users as well.

^{4/} Rate of return on gross assets of LE 74.6 millions (financial cost estimate) at the beginning of 1985 (- = negative rate).

^{5/} Rate of return on gross assets of LE 84.7 millions (economic cost estimate) at the beginning of 1985 (- = negative rate).

^{6/} Consumption of 30 cubic meters per month per household at the 1982 rate of 18 millimetres per cubic meter would come out to LE 0.54 per month rather than LE 0.66.

TABLE F.5.2

CANAL CITIES WATER PROJECT: USER FEE CHARGES
PER HOUSEHOLD ASSOCIATED WITH DIFFERENT RATES OF COST RECOVERY,
FINANCIAL AND ECONOMIC COST ESTIMATES, 1990 ^{1/}

Cost Coverage	Financial Cost Estimate		Economic Cost Estimate ^{2/}	
	Corresponding Monthly User Fee Charge per Household ^{3/} (LE) (1)	Rate of Return ^{4/} Implicit in Corresponding User Fee Revenues (%) (2)	Corresponding Monthly User Fee Charge Per Household (LE) (3)	Rate to Return Implicit in Corresponding User Fee Reven (%) (4)
Present (1982) Rate	0.54	(-7.3)	0.54	(-16.5)
O & M Costs but not Depreciation	3.01	(-3.3)	9.63	(-3.3)
Depreciation but not O & M Costs	2.01	(-4.9)	2.28	(-13.9)
O & M and Depreciation	5.02	0.0	11.91	0.0
O & M and Depreciation + 5% for Capital Expansion	8.07	5.0	15.36	5.0
O & M and Depreciation + 10% for Capital Expansion	11.12	10.0	18.81	10.0

^{1/} At 1982 prices.

^{2/} Economic costs shadow priced using estimated 1982 own-exchange LE/\$ conversion (LE 1.10/\$1.00) and adjustment factor of 5 for energy related inputs.

^{3/} Household sector share only. Assumes equivalent rates are charged to other users as well.

^{4/} Rate of return on gross assets of LE 222.7 millions (financial cost estimate) at the beginning of 1990 (- = negative rate).

^{5/} Rate of return on gross assets of LE 252.2 millions (economic cost estimate) at the beginning of 1990 (- = negative rate).

TABLE F.5.3

CANAL CITIES WASTEWATER PROJECT: USER FEE CHARGES
PER HOUSEHOLD ASSOCIATED WITH DIFFERENT RATES OF COST RECOVERY,
FINANCIAL AND ECONOMIC COST ESTIMATES, 1985 ^{1/}

Cost Coverage	Financial Cost Estimate		Economic Cost Estimate ^{2/}	
	Corresponding Monthly User Fee Charge per Household ^{3/} (LE) (1)	Rate of Return ^{4/} Implicit in Corresponding User Fee Revenues (%) (2)	Corresponding Monthly User Fee Charge Per Household (LE) (3)	Rate to Return ^{5/} Implicit in Corresponding User Fee Revenues (%) (4)
Present (1982) Rate	-	(-5.1)	-	(-6.4)
O & M Costs but not Depreciation	1.09	(-3.3)	2.19	(-3.3)
Depreciation but not O & M costs	2.01	(-1.8)	2.33	(-3.1)
O & M and Depreciation	3.11	0.0	4.53	0.0
O & M and Depreciation + 5% for Capital Expansion	6.17	5.0	8.08	5.0
O & M and Depreciation + 10% for Capital Expansion	9.22	10.0	11.64	10.0

^{1/} At 1982 prices.

^{2/} Economic costs shadow priced using estimated 1982 own-exchange LE/\$ conversion (LE 1.10/\$1.00) and adjustment factor of 5 for energy related inputs.

^{3/} Household sector share only. Assumes equivalent rates are charged to other users as well.

^{4/} Rate of return on gross assets of LE 124.8 millions (financial cost estimate) at the beginning of 1985 (- = negative rate).

^{5/} Rate of return on gross assets of LE 145.0 millions (economic cost estimate) at the beginning of 1985 (- = negative rate).

TABLE F.5.4

CANAL CITIES WASTEWATER PROJECT: USER FEE CHARGES
PER HOUSEHOLD ASSOCIATED WITH DIFFERENT RATES OF COST RECOVERY,
FINANCIAL AND ECONOMIC COST ESTIMATES, 1990 ^{1/}

<u>Cost Coverage</u>	<u>Financial Cost Estimate</u>		<u>Economic Cost Estimate 2/</u>	
	Corresponding Monthly User Fee Charge per Household ^{3/} (LE) (1)	Rate of Return ^{4/} Implicit in Corresponding User Fee Revenues (%) (2)	Corresponding Monthly User Fee Charge Per Household (LE) (3)	Rate to Return ^{5/} Implicit in Corresponding User Fee Revenues (%) (4)
Present (1982) Rate	-	(-4.4)	-	(-5.7)
O & M Costs but not Depreciation	1.08	(-3.1)	2.33	(-3.1)
Depreciation but not O & M costs	2.53	(-1.3)	2.87	(-2.6)
O & M and Depreciation	3.62	0.0	5.21	0.0
O & M and Depreciation + 5% for Capital Expansion	7.72	5.0	9.81	5.0
O & M and Depreciation + 10% for Capital Expansion	11.82	10.0	14.40	10.0

^{1/} At 1982 prices.

^{2/} Economic costs shadow priced using estimated 1982 own-exchange LE/\$ conversion (i.e. 1.10/\$1.00) and adjustment factor of 5 for energy related inputs.

^{3/} Household sector share only. Assumes equivalent rates are charged to other users as well.

^{4/} Rate of return on gross assets of LE 299.2 millions (financial cost estimate) at the beginning of 1990 (- = negative rate).

^{5/} Rate of return on gross assets of LE 335.6 millions (economic cost estimate) at the beginning of 1990 (- = negative rate).

Sources to Table F.5

Cols (1) and (3): Monthly user fee charge per household: Derived from Table F.4 (which was in turn derived from the relevant annual items of projected income and expenditure in Table F.3, multiplied by 0.7 as the relative share of costs allocated to households, divided by 12, and then divided by the number of household connected to the respective systems from Table F.1).

Cols (2) and (4): Rate of return implicit in corresponding user fee revenues: Relevant item from income and expenditure Table F.3 divided by gross assets at beginning of year as shown in Tables F.2; eg. for water project, the 1985 calculations of user cost coverage would run as follows;

Original deficit	(- 7,104)
divided by Gross assets	74,588
<u>equals</u> Rate or return	(- 0.0952) = (-9.5%)

Deficit with receipts	
equivalent to O & M	(- 2,463)
divided by Gross assets	74,588
<u>equals</u> Rate of return	(- 0.0330) = (-3.3%)

Etc.

dp

TABLE F.6

ESTIMATED DISTRIBUTION OF URBAN HOUSEHOLDS
BY AGGREGATE EXPENDITURE BRACKET,
1979 and 1982

Category	Urban Household Expenditure Bracket (Amounts in LE)			Proportion of Urban Households (%)
	Annual		Monthly, 1982	
	1979	1982 a/		
1) Lowest	0-555	0-833	0-69	11.6
2) Next to lowest	556-778	834-1167	70-97	15.0
3) Lower middle	779-1113	1168-1670	98-139	23.7
4) Upper middle	1114-1782	1671-2673	140-223	28.5
5) Highest	<u>1783 +</u>	<u>2674 +</u>	<u>224 +</u>	<u>21.1</u>
All households	1305	1958	163	100.0

a/ 1982 expenditure brackets = 1979 expenditure brackets x 1.5.

Source:

1979 expenditure brackets: USAID/Cairo 1983 CDSS Annex XIII, "Egypt's Food and Energy Subsidies", Table F.1 derived in turn from the CAPMAS household expenditure survey of 1974/75 by applying the intervening percentage increase in per capita GNP at current market prices to the upper limit value of each bracket.

1982 expenditure brackets: 1979 expenditure brackets raised by an estimated 3-year increase in per capita GNP at current market prices of 50%: 28% from 1979 to 1980/81 (according to estimates reported by the IMF) and an additional 17% from 1980/81 to 1982. This procedure depends on an assumption that the relative distribution of households remains the same as aggregate income and expenditure rise.

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CLASS: UNCLASSIFIED
CHRG: AID 7/27/82
APPRV: A/AD/DRPS:TAS
DRFTD: A/AD/DRPS:TAS
CLEAR: 1, UAD: HREDMAN
DISTR: AID-6 AME DCM
EGON ICA CHRON
11/AO

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F.O. 12065:N/A
SUBJECT: CANAL CITIES PROJECT

1. FDR AA/NE.

2. THE CANAL CITIES PROJECT HAS REACHED AN IMPORTANT IMPLEMENTATION JUNCTURE. BECAUSE DESIGN AND MATERIALS AND EQUIPMENT PROCUREMENT DECISIONS HAVE BEEN ESSENTIALLY COMPLETED, THE FOCUS OF THE PROJECT HAS TURNED TO CONSTRUCTION AND TO A REASSESSMENT OF WHAT IS REQUIRED AND WHAT IS AVAILABLE FOR THE INSTALLATION OF U.S.-FURNISHED EQUIPMENT AND MATERIALS. SERIOUS PROBLEMS HAVE BECOME INCREASINGLY APPARENT AS THE CONCERNED EGYPTIAN AGENCIES REEVALUATE THEIR OWN CAPACITIES TO MANAGE THE REQUIRED CONSTRUCTION RESPONSIBILITIES.

3. THE RESPONSIBILITIES FOR WATER AND FOR SEWERAGE IN THE CANAL CITIES IS SPLIT BETWEEN THE SUEZ CANAL AUTHORITY (SCA) FOR WATER, AND THE NATIONAL ORGANIZATION FOR POTABLE WATER AND SANITARY DRAINAGE (NOPWASD) FOR SEWERAGE. UNDER THE EXISTING PROJECT AGREEMENT, THESE TWO ORGANIZATIONS ARE RESPONSIBLE FOR ALL CONSTRUCTION AND EQUIPMENT INSTALLATION. THE FIRST, SCA, HAS REVIEWED ITS WATER RESPONSIBILITIES AND HAS CONCLUDED THAT IT WILL RECEIVE CONSTRUCTION BIDS FROM INTERNATIONAL COMPANIES ALONE OR IN JOINT VENTURE WITH EGYPTIAN CONTRACTORS. ALTHOUGH SCA IS WIDELY KNOWN FOR ITS MANAGEMENT CAPABILITIES, IT HAS CONCLUDED THAT A HIGHER LEVEL OF TECHNICAL AND ORGANIZATIONAL CAPACITY IS REQUIRED FOR WATER SYSTEM INSTALLATION THAN IS PREDICTABLY AVAILABLE FROM EGYPTIAN CONTRACTORS ALONE. FULL COSTS OF SUCH CONTRACTING WILL BE BORNE BY SCA.

4. NOPWASD FACES AN EVEN MORE DIFFICULT SITUATION THAN SCA. FOR, AS PROBLEMATIC AS IS INSTALLATION OF WATER FACILITIES IN THE THREE CANAL CITIES, THE INSTALLATION OF SEWER PIPE, COLLECTION AND PUMPING FACILITIES POSES PROBLEMS OF A SUBSTANTIALLY GREATER MAGNITUDE. THE MOST IMPORTANT PROBLEM AND INHERENT CHALLENGE IS THE FACT THAT SEWERAGE WORK MUST BE CARRIED ON AT LEVELS UP TO 10 METERS BELOW GROUND LEVEL (2 METERS IS TYPICAL FOR WATER PIPE) AND IN ALL THREE CANAL CITIES THAT IS AT LEAST 20 FEET BELOW EXISTING GROUND WATER LEVELS. CLEARLY, SUCH HIGH GROUND WATER LEVELS CREATE MAJOR CONSTRUCTION DIFFICULTIES REQUIRING SPECIAL SKILL AND SPECIAL EQUIPMENT. NOPWASD

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PERFORM CONSTRUCTION SERVICES WITHIN A QUALITY AND TIME FRAMEWORK ACCEPTABLE TO THE PROJECT. AND, SINCE SEWERAGE FACILITIES MUST PARALLEL NEW WATER FACILITIES, THERE IS AN ADDED CRITICALITY TO TIMING COMPLETION OF SEWERAGE FACILITIES WITH COMPLETION OF THE WATER FACILITIES BY SCA.

5. USAID HAS REVIEWED THE ISSUES WITH NOPWASD AND WITH ITS U.S. CONSULTING ENGINEER AND HAS CONCLUDED THAT ASSISTANCE SHOULD BE PROVIDED TO NOPWASD TO OBTAIN A U.S. CONTRACTOR TO HANDLE THIS CRITICALLY IMPORTANT TASK. FROM OUR PRESENT VIEW, TO LEAVE CONSTRUCTION RESPONSIBILITIES TO LOCAL COMPANIES WOULD BE CREATING POTENTIAL DELAYS AND TECHNICAL PROJECT PROBLEMS OF ENORMOUS MAGNITUDE. WE HAVE THUS FAR CONCLUDED THAT THIS PROJECT IS TOO LARGE AND TOO IMPORTANT TO BE THREATENED BY SUCH DIFFICULTIES WHEN ALTERNATIVE SOLUTIONS ARE AVAILABLE.

6. THEREFORE, USAID IS BEGINNING TO PLAN FOR A PROJECT PAPER AMENDMENT, EARLY IN FY 83, WHICH WOULD REQUEST ADDITIONAL DOLLAR ALLOCATIONS TO THIS PROJECT FOR THE PURPOSE OF CONTRACTING WITH AN AMERICAN CONTRACTOR TO HANDLE THE MAJOR AND MOST CRITICAL SEGMENTS OF THE SEWERAGE SYSTEMS INSTALLATION IN ALL THREE CITIES. THE FX REQUIREMENTS WILL NOT BE INSUBSTANTIAL; EARLY HIGH-SIDE ESTIMATES ARE DOLS 45 MILLION. (APPROXIMATELY DOLS 9.0 MILLION WILL ALSO BE REQUIRED FOR CONTINUING A/E SERVICES WHICH WILL BE NEEDED IN ANY CASE.) HOWEVER, WE BELIEVE THAT FIGURE REPRESENTS A REASONABLE INVESTMENT TO SUBSTANTIALLY INCREASE THE LIKELIHOOD OF MEETING THE PROJECT'S PHYSICAL GOALS AND ITS TIME GOALS. WE FIND IT EQUALLY COMPELLING TO MEET THE GOALS OF CLEAN WATER AND A HEALTHY ENVIRONMENT IN THESE THREE IMPORTANT CITIES.

7. ACTING DIRECTOR CYLKE CAN AMPLIFY. WE WOULD APPRECIATE AID/W COMMENTS AS WE PROCEED ON THIS REDESIGN EFFORT. PRECHT

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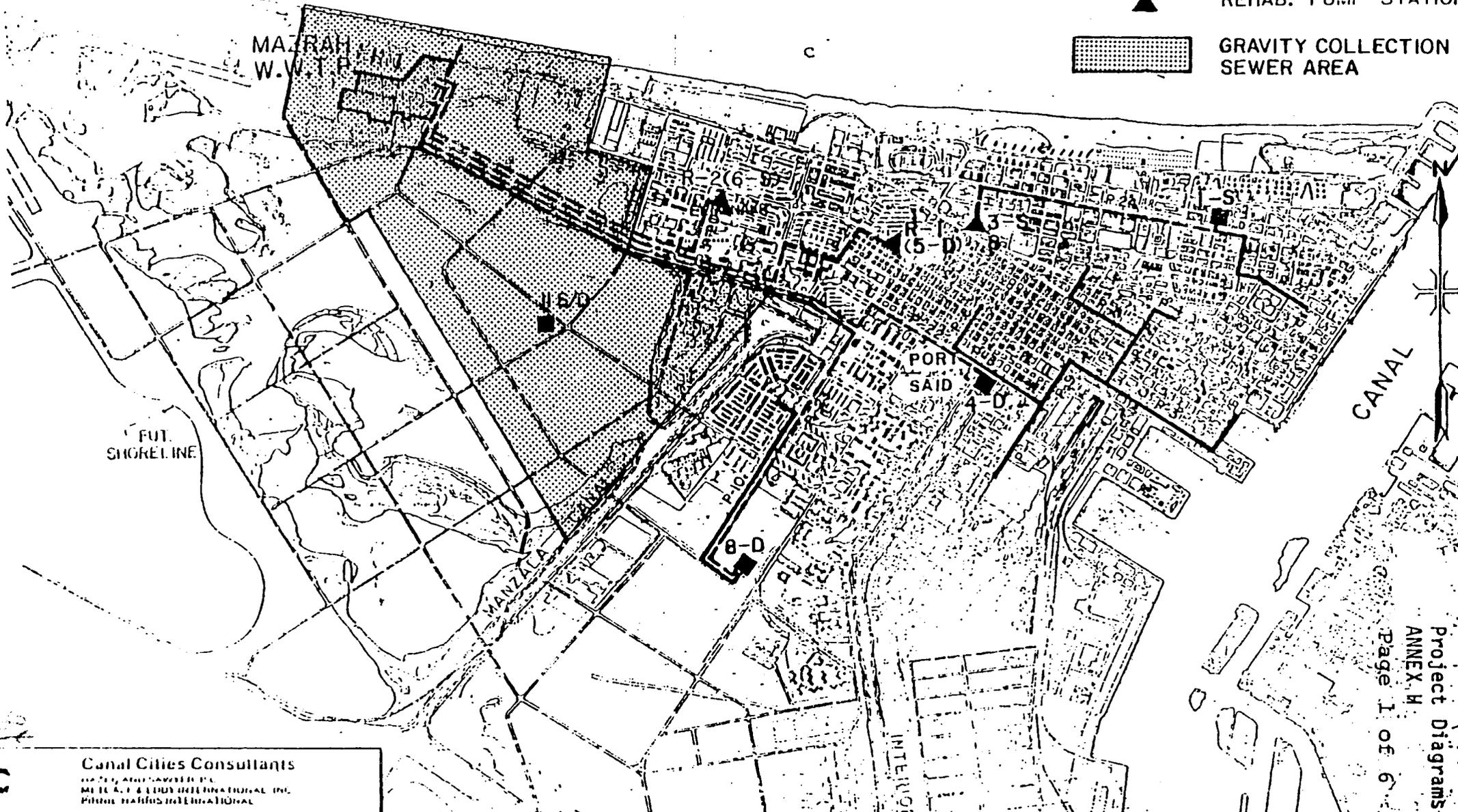
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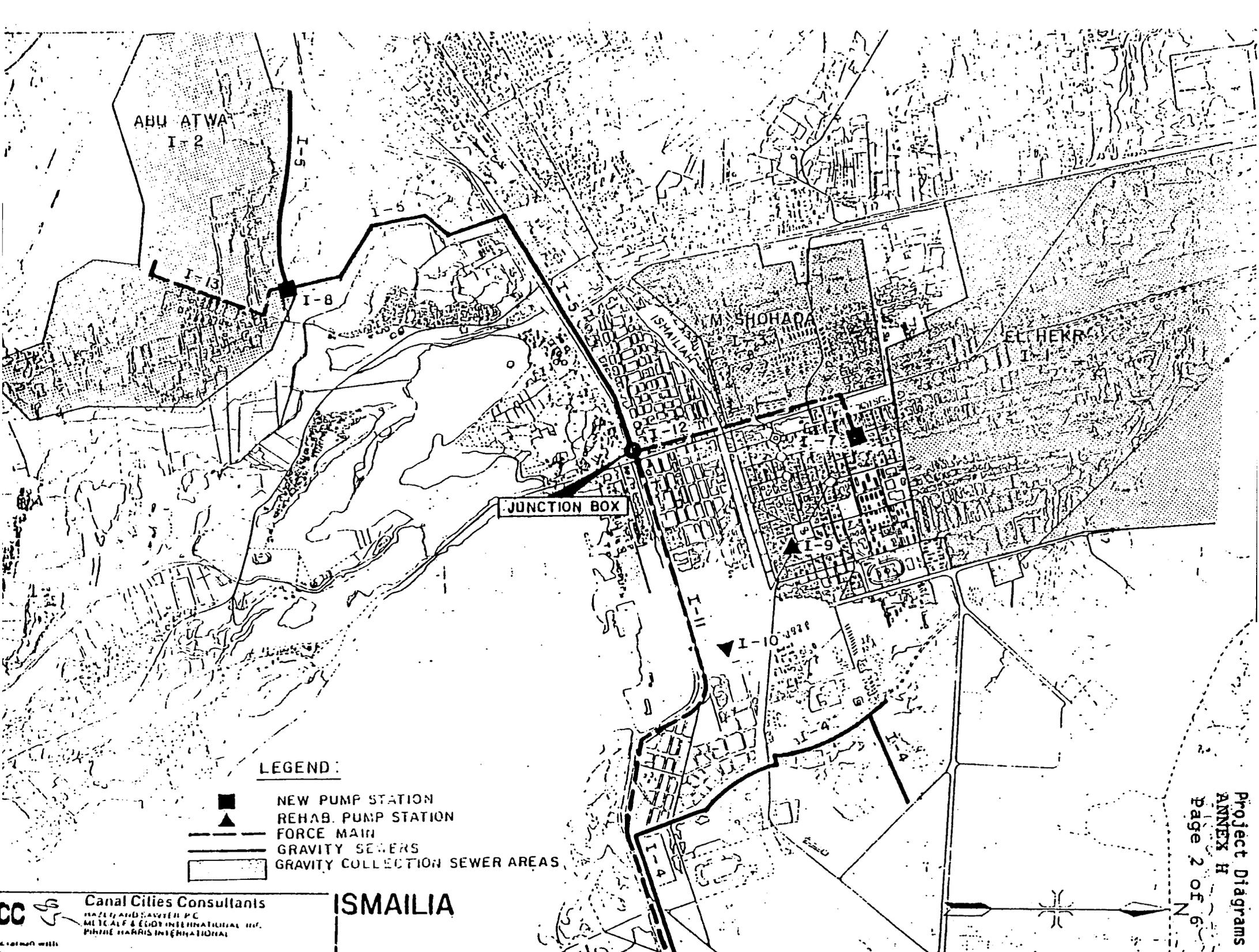
87

PORT SAID

MEDITERRANEAN SEA

- FORCE MAINS
- GRAVITY SEWERS
- NEW PUMP STATIONS
- ▲ REHAB. PUMP STATION
- ▨ GRAVITY COLLECTION SEWER AREA





LEGEND:

- NEW PUMP STATION
- ▲ REHAB. PUMP STATION
- FORCE MAIN
- GRAVITY SEWERS
- ▭ GRAVITY COLLECTION SEWER AREAS

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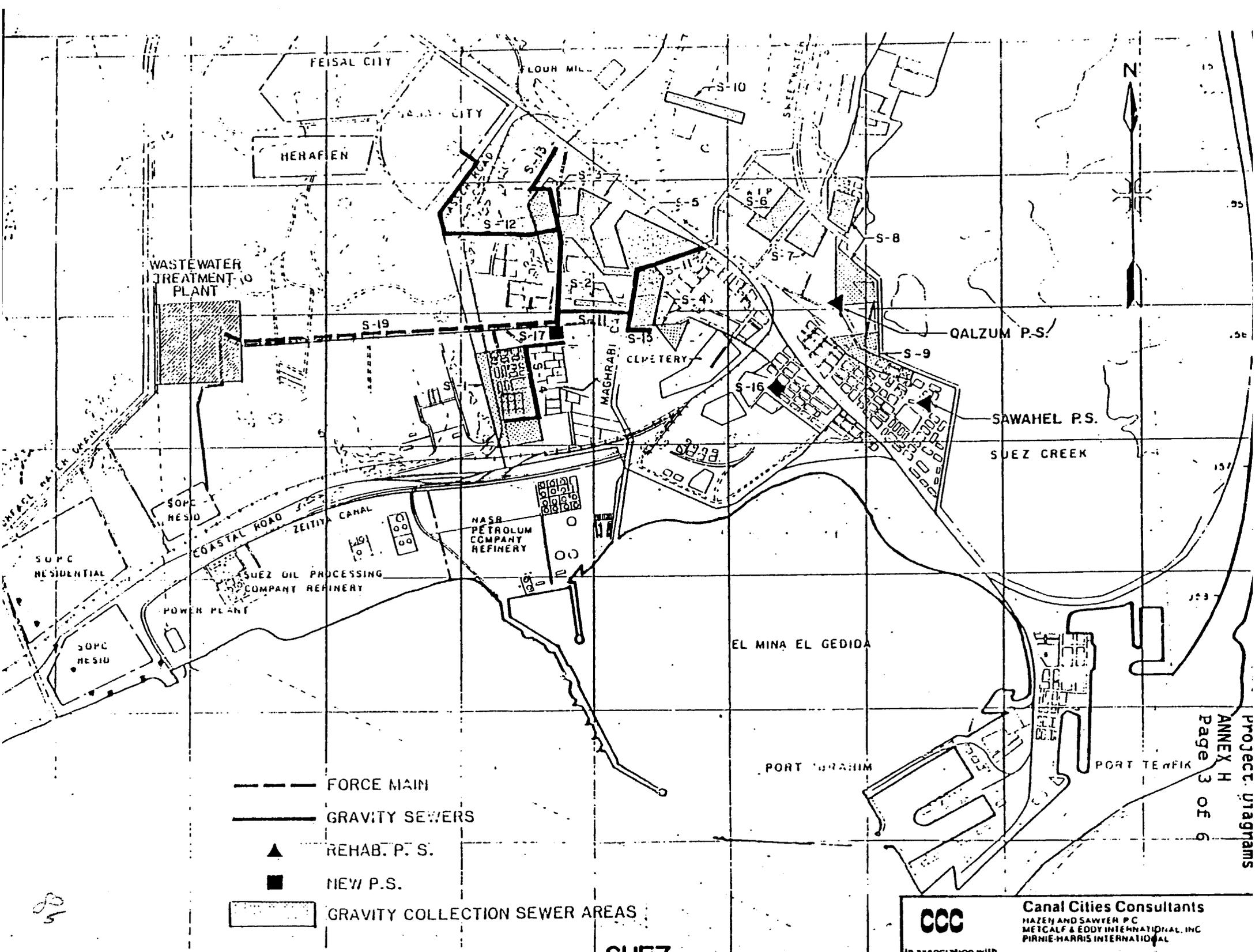
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ISMAILIA



- FORCE MAIN
- GRAVITY SEWERS
- ▲ REHAB. P. S.
- NEW P. S.
- ▨ GRAVITY COLLECTION SEWER AREAS

Cost Analysis

Port Said Gravity Interceptors and Collectors

Size (mm)	Length (M)	Unit Price		Total Price	
		\$ (000)	L.E.	\$ (000)	L.E.
150	560	613	219	343	123
500	2912	735	262	2140	763
600	485	757	270	367	131
700	591	903	322	534	190
800	457	956	341	437	156
900	485	995	355	483	172
1000	478	998	356	477	170
Total				4781	1705

Ismailia Gravity Interceptors and Collectors

Size (mm)	Length (M)	Unit Price		Total Price	
		\$ (000)	L.E.	\$ (000)	L.E.
300	197	639	228	126	45
450	995	730	261	726	260
500	2115	735	262	1555	554
600	1074	757	270	813	290
700	618	903	322	558	199
750	170	910	325	155	55
1000	877	998	356	875	312
1200	2479	1174	419	2910	1039
1400	3150	1190	425	3749	1339
				11,467	4093

Suez Gravity Interceptors and Collectors

Size (mm)	Length (M)	Unit Price		Total Price	
		\$ (000)	L.E.	\$ (000)	L.E.
450	599	730	261	437	156
500	862	735	262	634	226
600	648	757	270	491	175
700	1203	903	322	1086	387
750	2079	910	325	1892	676
1000	551	998	356	550	196
1250	245	1176	420	288	103
Total				5378	1919

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Port Said Force Mains

Size (mm)	Length (M)	Unit Price		Total Price	
		\$ (000)	L.E.	\$ (000)	L.E.
400	6260	352	125	2201	781
700	7040	358	127	2518	895
			TOTAL	4719	1676

Ismailia Force Mains

Size (mm)	Length (M)	Unit Price		Total Price	
		\$ (000)	L.E.	\$ (000)	L.E.
600	1448	353	126	511	182
700	3400	358	127	1216	432
900	950	370	132	352	126
			Total	2079	740

Suez Force Mains

Size (mm)	Length (M)	Unit Price		Total Price	
		\$ (000)	L.E.	\$ (000)	L.E.
800	2500	360	128	900	322
			TOTAL	900	322

APPURTENANCES

	NO	UNIT PRICE		TOTAL PRICE	
		\$ (000)	L.E.	\$ (000)	L.E.
Manholes	658	8900	3615	5856	2379
Air Valve	36	2365	837	85	30
Blow Offs	35	5880	2099	206	73
Gate Valve Chambers	11	18060	4513	199	50
			TOTAL	6346	2532

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PUMP STATIONS

Station	Materials \$ (000)	Labor	Equipment	Total
Port Said 8D	718	453	65	1236
Port Said 4D	965	311	13	1289
Port Said 15				296
Ismailia Abu Rakham	516	423	53	992
Ismailia, Port Said	613	292	16	921
Ismailia, Abu Atwa	528	1916	18	2462
Suez, Zarb	657	308	16	981
Suez Zarier	525	301	13	839
		Total		9016

Continental freight, ocean freight, port Clearance
handling, subcontractor and general contractor
overhead and profit, contingencies

9016
\$18,032

Assuming 70% vs. 30% split \$vs. L.E. and .833 exchange rate per
\$1 total equals
\$12,621 and LE 4506

Prices include 20% per year for inflation and 20% for
contingencies.