

PD-ARB-179  
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UNCLASSIFIED

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY  
AGENCY FOR INTERNATIONAL DEVELOPMENT  
Washington, D. C. 20523

REGIONAL DEVELOPMENT OFFICE/CARIBBEAN

PROJECT PAPER

INFRASTRUCTURE EXPANSION & MAINTENANCE SYSTEM

Amendment No. 8

AID/LAC/P-489  
CR P-451 436 391 385  
368 356 328 284

Project Number: 538-0138  
Loan Number: 538-K-030

UNCLASSIFIED

**PROJECT DATA SHEET**

1. TRANSACTION CODE

C  
A = Add  
C = Change  
D = Delete

Amendment Number  
8

DOCUMENT CODE  
3

2. COUNTRY/ENTITY

Regional Development Office/Caribbean

3. PROJECT NUMBER

538-0138

4. BUREAU/OFFICE

LAC

05

5. PROJECT TITLE (maximum 40 characters)

Infrastructure Expansion & Maintenance System

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY  
09 30 94

7. ESTIMATED DATE OF OBLIGATION  
(Under 'B' below, enter 1, 2, 3, or 4)

A. Initial FY 86

B. Quarter 2

C. Final FY 90

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

A. FUNDING SOURCE	FIRST FY 86			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	( 1,100 )	( 100 )	( 1,200 )	( 15,500 )	( 4,000 )	( 19,500 )
(Loan)	( 1,800 )	( -0- )	( 1,800 )	( 14,500 )	( 6,000 )	( 20,500 )
Other U.S.						
1.						
2.						
Host Country					4,700	4,700
Other Donor(s)	2,900	100	3,000	30,000	14,700	44,700
<b>TOTALS</b>						

9. SCHEDULE OF AID FUNDING (\$000)

A. APPRO- PRIATION	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
(1) ESF	701	804		6,272	4,300	-0-	-0-	10,800	5,300
(2) DA				2,458	9,200	2,723	-0-	8,700	15,200
(3)									
(4)									
<b>TOTALS</b>				8,730	13,500	2,723	-0-	19,500	20,500

10. SECONDARY TECHNICAL CODES (maximum 5 codes of 3 positions each)

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To create an infrastructure environment that will stimulate investment and productive activity in the Eastern Caribbean.

14. SCHEDULED EVALUATIONS

Interim MM YY MM YY Final MM YY  
0 6 8 9 0 9 9 3

15. SOURCE/ORIGIN OF GOODS AND SERVICES Participating

Countries of the Eastern Caribbean

000  941  Local  Other (Specify)

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

The purpose of this PP supplement is to add \$2,723 million in DA Grant Funds to the Grenada Infrastructure Revitalization (IIR) Subproject (538-0138.02) for construction of a Sewer System; and to allocate \$1,023,058 in Grant funds from the Engineering and Technical Services component and \$1.7 million in grant funds from the Small Activities component under the IEMS authorization to subproject 538-0138.02.

Approval of Methods of Implementation/Finance:

Thomas Fallon, Controller

17. APPROVED BY

Signature

Title

James S. Holtaway  
Director

Date Signed

MM DD YY  
0 9 2 6 8 8

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION:

MM DD YY

**GRENADA INFRASTRUCTURE REVITALIZATION III  
(538-0138.02) AMENDMENT NUMBER TWO**

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**AMENDMENT NUMBER TWO TO PROJECT PAPER SUPPLEMENT**

**GRENADA INFRASTRUCTURE REVITALIZATION III SUBPROJECT NO. 538-0138.02**

**I. SUMMARY AND RECOMMENDATIONS**

**A. Recommendations**

RDO/C Grenada recommends authorization of an additional \$2,723,000 in grant funds to the Grenada Ministry of Public Works to further finance Grenada Infrastructure Revitalization III, a subproject included in the Infrastructure Expansion and Maintenance Systems (IEMS) Project 538-0138. The additional funds will be used to expand the scope of the original Grand Anse Sewerage component of the project, to permit disposal of raw sewage in lieu of treatment/disposal of septic tank effluents. The expanded scope of the sewerage system is necessary to meet environmental concerns and tourism needs.

**B. Amendment Description**

Grenada Infrastructure Revitalization III and Amendment Number One provided funding for: 1) Grand Anse Tourism Development; 2) Carenage and Fort Restoration; 3) Development of Frequente and Pearls industrial sites; and 4) road and bridge hazard reductions. Amendment Number Two will provide additional funding for the Grand Anse sewer system and contingency funds for the resulting sewerage system from the environmental assessment (due for completion in March, 1989), and for increased costs of the other components of the project.

This subproject amendment is ready for authorization and subsequent implementation. It is considered to be socially, financially, economically and technically sound and administratively feasible.

**C. Contributors to Amendment Design**

**1. USAID Contributors**

**a) Subproject Development Committee**

Douglas Chiriboga	-	PDO
Robert F. Fedel	-	Louis Berger International, Inc. (IEMS Core Contractor)
Peter R. Orr	-	AID Representative
Jerry D. Perry	-	PDO
Tyrone Watkins	-	Financial Analyst
Elson Harewood	-	Financial Analyst

**b) Project Review Committee**

Thomas Fallon	-	CONT
James D. Baird	-	C/INFRA
Kimberly A. Finan	-	C/PDO
Roy Grohs	-	Program Economist
Rodney Johnson	-	RLA
James S. Holtaway	-	DIR/RDO/C

## II. BACKGROUND AND PROGRESS TO DATE

The Grenada Infrastructure III IEMS Subproject was authorized in March, 1987. \$4.0 million in grant funds obligated under the Project Agreement was to be used to carry out infrastructure improvement activities intended to promote growth in the tourism, agricultural, and industrial sectors, thereby creating employment opportunities and increasing foreign exchange earnings.

The Project included the following subcomponents:

- (1) completion of the Frequente Industrial Estate, including the construction of three new factory shells providing 42,000 square feet of factory space, renovation of five existing buildings totalling 29,000 square feet, installation of utilities, and site grading, drainage, paving and fencing;
- (2) preliminary studies relating to the development of a new industrial park near Grenville in the northeastern part of the country;
- (3) rehabilitation of selected segments of roads to improve access to agricultural areas or to remove potentially dangerous road hazards;
- (4) improvements to the carenage area in St. George's and rehabilitation of Fort George, both of which serve as major tourist attractions; and
- (5) construction of a sewage collection and disposal system to serve the Grand Anse area, and grading and drainage improvements in Camerhogne Park adjacent to Grand Anse Beach.

Amendment Number 1 to the Project Agreement executed in August, 1987, added additional funds for internal partitions and rest room facilities in selected buildings at Frequente and renovation of an existing building to provide office space for IDC and other amenities.

In May, 1988, it became evident that (1) the sewerage element of the Project would be delayed pending completion of further studies; (2) disbursements for this component would not be made until FY 89; and (3) because of the need to redesign the sewerage system, funds originally allocated for this component would be inadequate. The Project budget was therefore revised under Implementation Letter No. 16 to utilize a portion of the funds reserved for the sewerage component to finance additional work on the carenage, site grading and drainage at the Pearls Industrial

Estate and further improvements at Frequente. The original project budget revised under Amendment No. 1, and the budget as revised in May, 1988, under Implementation Letter No. 16 are shown in Table No. 1.

Excepting the sewerage system, implementation of other elements of the project is proceeding as shown on the line diagram schedules in Attachment 1.

**TABLE 1**  
**SUMMARY OF PROJECT COSTS**

<b><u>COMPONENT</u></b>	<b><u>US\$ ORIGINAL BUDGET</u></b>	<b><u>US\$ BUDGET AS REVISED UNDER AMENDMENT NO. 1</u></b>	<b><u>US\$ CURRENT BUDGET AS REVISED UNDER IMPLEMENTATION LETTER NO. 16</u></b>
1. Grand Anse Tourism Development			
(a) Sewerage System	1,350,000	1,350,000	746,000
(b) Camerhogne Park	150,000	93,000	300,000
2. Carenage Improvements/Fort Restoration	300,000	300,000	350,000
3. Frequente Industrial Park	1,800,000	2,115,447	2,272,447
4. Pearls Industrial Park	50,000	50,000	240,000
5. Road/Bridge Hazard Reduction	300,000	300,000	300,000
6. Financial Oversight	40,000	40,000	40,000
7. Evaluation	<u>10,000</u>	<u>10,000</u>	<u>10,000</u>
<b><u>TOTALS</u></b>	<b><u>\$4,000,000</u></b>	<b><u>\$4,258,447</u></b>	<b><u>\$4,258,447</u></b>

**III. CIRCUMSTANCES RESULTING IN NEED FOR THIS AMENDMENT**

The original budget for the Grenada Infrastructure III Subproject included \$1.35 million for the Grand Anse sewerage system. The budget estimate was based on preliminary plans and cost estimates developed by the Tennessee Valley Authority (TVA) under a PASA Agreement with RDO/C. The system included a collection network to serve the Grand Anse area as shown in Attachment 2 and sewage treatment facilities. The treatment system envisioned at the time was an innovative artificial wetlands consisting of a marsh-pond-meadow system adequate to treat an average flow of 600,000 gallons per day. A plan and profile of the wetlands facility is shown in Attachment 3.

The facility proposed was intended to treat septic tank effluents and gray water (bath, kitchen, and laundry wastes) containing organics, nutrients and other biological organisms which adversely impact on marine life and public health. This partially treated sewage is currently being discharged into storm drains which subsequently empty into Grand Anse Bay.

Prior to disbursing funds for this component of the project, the ProAg required an environmental assessment which would identify adverse impacts and recommend methods of mitigating these impacts. In accordance with guidance from LAC/DR, the study was also to consider alternative treatment methods in addition to the artificial wetlands. A Work Order was issued to LBII under the core contract to carry out further preliminary engineering analyses and the environmental assessment. Barnard and Thomas, a subcontractor to LBII, conducted the assessment. Following further discussions between Barnard and Thomas and the GOG Ministries of Health and Works, and local consultants, a determination was made that the artificial wetlands method of treatment recommended by TVA was not appropriate for the following reasons:

- (1) only limited technical data regarding the efficiency of the system was available;
- (2) the system required approximately 28 acres of Government land which was not available and which the GOG was not in a position to purchase; and
- (3) the system was not intended for raw sewage and required pretreatment in septic tanks, which was deemed a major drawback in light of the fact that poorly designed and maintained septic tanks have contributed significantly to the existing pollution problem.

As a result of this decision, Barnard and Thomas focussed on four other alternative treatment systems: aerated lagoon, extended

aeration, and facultative lagoon, all with ocean outfall, and ocean outfall without treatment. The recommended alternative was the extended aeration system which produces a high quality effluent and requires less than one acre of land. Government-owned land adjacent to the Pt. Saline Airport runway was identified as a possible site for the treatment facility. The Berger report also recommended a 945-foot ocean outfall for disposal of plant effluent. The outfall length was based on data provided by Seatech, a Canadian consultant employed by CIDA to carry out current studies in conjunction with design of the St. Johns River outfall in St. George's. The Berger analysis was basically a facilities report and did not address environmental concerns; LBII's intent was to conduct an assessment of the alternative deemed most appropriate for the Grand Anse system.

In subsequent discussions with the Bureau environmental officer, further concern was expressed regarding the movement of sewage discharged through the proposed ocean outfall. LAC/DR recommended additional field studies which would define ocean current patterns at potential outfall sites and enable a determination to be made as to the impact of the outfall on the nearshore environment. Agreement was reached to employ the services of a physical oceanographer and marine biologist to conduct the required studies. RDO/C subsequently initiated negotiations with the Bellairs Research Institute in Barbados to carry out the current study and complete the environmental assessment. As a result of preliminary discussions with Drs. Wayne Hunte and Gillian Cambers from Bellairs, both of whom have had extensive experience with sewage disposal problems in the Eastern Caribbean, and further contacts with the Government of Grenada, a decision was made that pretreatment through the mechanical aeration system recommended by Barnard and Thomas was not warranted nor desirable in light of the GOG's maintenance capabilities. As a result, the scope of work for the current study requires Bellairs to focus on locating the most desirable site for and determining the approximate length of a sewage outfall for the system, with grit removal and screening to be carried out prior to discharge.

Bellairs commenced the environmental survey in August, 1988. Data gathered to date indicates that the most appropriate outfall site will likely lie off Pt. Saline and the maximum outfall length will be approximately 3,000 feet.

The additional technical studies described above have resulted in significant changes in the sewage disposal system planned for the Grand Anse area. To accommodate these changes, additional funds must be added through this Amendment to cover the increased capital cost.

#### **IV. MODIFICATIONS TO PROJECT RATIONALE AND DESCRIPTION**

##### **A. Project Purpose/Description**

The Project rationale, goal and purpose as presented in the original Project Paper Supplement remain valid.

Components of the Project as described in the original PP Supplement have not been altered. However, the sewage system envisioned earlier consisted of a collection system discharging into an "artificial wetlands" treatment facility. The system now planned consists of the following elements:

- (1) approximately 2,000 linear feet of 8" gravity sewer main, 4,800 linear feet of 10" gravity sewer main, and 3,300 linear feet of 12" gravity sewer main;
- (2) approximately 2,200 linear feet of 6" force main, 3,600 linear feet of 8" force main, and 11,800 linear feet of 12" force main;
- (3) three pumping stations with auxiliary power sources to be located in the vicinity of the Ramada Inn, Camerhogne Park and the Frequente Industrial Park, with design capacities of 250 gpm, 700 gpm, and 1,050 gpm, respectively; and
- (4) a discharge structure and 3,000-foot ocean outfall to be located at Point Saline adjacent to the International Airport.

The collection system will commence north of the Ramada Inn, loop the Camerhogne Park area adjacent to Grand Anse Beach, and follow the existing road to the discharge structure at Point Saline.

In addition to the sewage collection and disposal system, funds will be included under the Project for training personnel from the Central Water Commission (CWC) to properly operate and maintain the pumping facilities. This training will be carried out at a local technical training institute. Contingency funds will also be available for institutional support if necessary (see Section IV.C.), and for additional construction costs that may be necessary after completion of the environmental assessment.

##### **B. Economic Analysis**

The economic analysis included in the original Project Paper has been expanded to take into account the increased cost. An attempt has been made to quantify the adverse impact on the tourism industry if the sewer system was not constructed.

The Project Paper Supplement established that wastewater management in the Grand Anse area is directly related to the health of the population most influential in expansion of GRENADA'S Tourism sector. Groups affected include tourists visiting Grand Anse, the hoteliers who provide services and local employees who deliver the services. The project will mitigate the health hazards facing tourist bathers and the adverse odors created by poorly functioning septic tanks.

In the absence of measurable health benefits to be derived through construction of a sewer system to alleviate Grand Anse pollution and sanitation hazards, the health impact on tourism was calculated as follows:

The UNDP <sup>1/</sup>, in compiling data on tourism related to water supply needs, examined data and information prepared by the Ministry of Tourism which projected "tourism development in Grenada", Figure IV-1. Using projections of the most conservative growth formula, i.e. 10% annual growth in visitors to 1995 and 6% thereafter, visitor benefits to the Grenadian economy can be calculated by using a most conservative visitor expenditure of US\$71.47 <sup>2/</sup>. This spending is also low, considering the average length of stay of the tourist during the first six months of 1986 was 8 1/2 days.

To assess the impact on the Grenadian economy of benefits lost through visitor awareness of the Grand Anse beach pollution and potential health hazard, our calculations assume that 10% of the visitors will decline travel to Grenada. In calculating these cost benefits against the \$3.3 million cost of a sewer system, the Internal Rate of Return (IRR) calculation yields a 19.06% rate of return 10 years after sewer construction. The IRR calculations are noted in Table IV-2.

This simplified economic analysis utilized extremely conservative assumptions concerning the impact of beach pollution on only 10% of the tourists. It does not include economic benefits of improved health of the present and future local population served by the proposed sewer system. Such benefits would be additive to the system's economic viability. The calculation further demonstrates that if 9% is considered an acceptable rate of interest on investments in public services, the construction of the system will yield IRR of 9.61% in 7 years.

<sup>1/</sup> UNDP "Grenada Water Supply Sector Development Plan", August 1987.

<sup>2/</sup> Caribbean Tourism Research Center (CTRC) "Spending in the Caribbean 1986" - for Grenada in the high season US\$78.46 and low season US\$64.48 (average US\$71.47).

# Tourism development in Grenada

Number of visitors in Grenada, Carriacou and Petit Martinique.

T1 = tourism growth is 10 % until 1996 and 6 % until 2000

T2 = tourism growth is 15 % until 1996 and 9 % until 2000

T3 = tourism growth is 20 % until 1996 and 12 % until 2000

Year	1985	1990	1995	2000
T1	51,974	83,705	134,807	180,402
T2	51,974	104,538	210,264	323,517
T3	51,974	129,327	321,804	567,138

curve 1

curve 2

curve 3

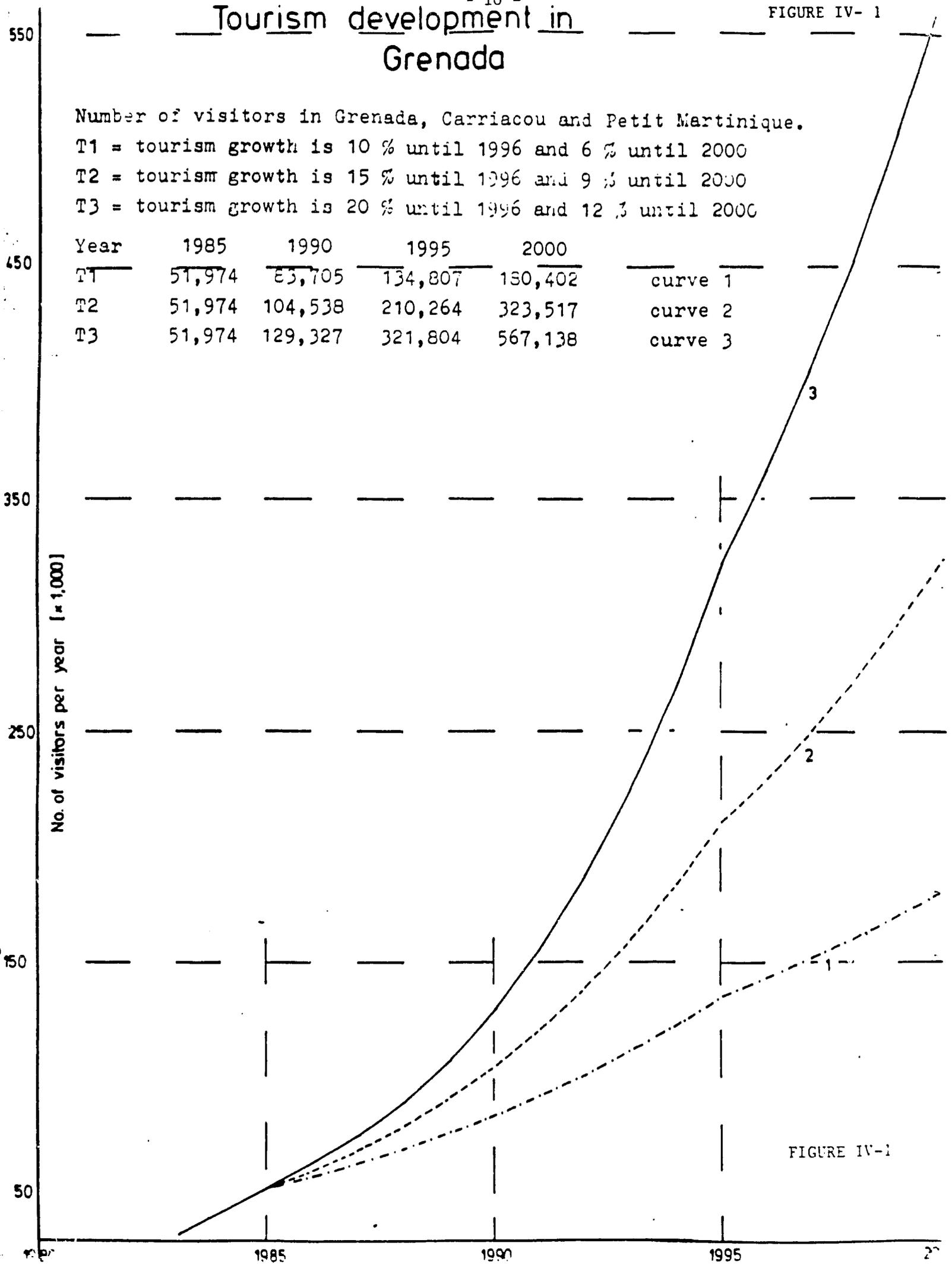


FIGURE IV-1

TABLE IV-2

Using T1 Assumptions from Figure IV-1

	<u>VISITORS</u>	<u>LOST BENEFITS OF 10% DROP</u>	<u>LOST BENEFIT</u>	<u>COST</u>
1989				3,300,000 MIL
1990	83,075	8,308 x US\$71.47 = US\$	593,773	
1991	92,076	9,208	658,096	
1992	101,284	10,128	723,848	
1993	111,412	11,141	796,247	
1994	122,553	12,255	875,865	
1995	134,807	13,481	963,487	
1996	142,895	14,290	1,021,306	
1997	151,469	15,147	1,082,556	
1998	160,557	16,056	1,147,522	

IRR

7 YRS	9.61%
8 YRS	13.90%
9 YRS	16.90%
10 YRS	19.06%

### **C. Institutional Analysis**

The implementation, operation and maintenance of water supplies in Grenada is the sole responsibility of the Central Water Commission (CWC). As with other Caribbean state governments, it is expected that Grenada's Central Water Commission will be responsible for the Grand Anse Sewer System operation and maintenance. Reportedly, legislation has already been drafted to consolidate the Ministry of Health staff concerned with monitoring and regulating the quality of water and sewage with the Central Water Commission and to make CWC responsible for design, construction and maintenance of both water and sewer systems in Grenada. A Condition Precedent to disbursement requiring passage of this legislation will be included in the Grant Agreement.

CWC is a statutory body with powers which include the raising of revenue from the sale of water, the employment of people as may be necessary, the acceptance of grants of any kind from any source, assessment of property as a basis for charging water rates, and is empowered with the necessary authority to operate as an autonomous agency.

In August, 1987, the UNDP completed a "Grenada Water Supply Sector Development Plan 1987-1998". That report noted that "CWC needs institutional strengthening and improvement of its managerial skills at the middle level. A well conceived organizational structure has been instituted, which if adhered to, could result in smooth management and operation. However, additional staff is needed to fill established posts, and available staff needs additional training." The UNDP prepared an organizational chart, Annex C, which represents the proposed structure of the CWC. A number of posts have not been filled.

To alleviate the current weaknesses, this project provides funding to finance training. We have also been informed by CIDA that they will provide institutional support for CWC, probably before system construction under this project is complete. If the CIDA funding for CWC institution building were not forthcoming, however, contingency funds included in this project could be used to expand the institutional component of the Project.

A review of the financial and administrative capacity of CWC was performed in order to assess its capability to implement and record related transactions and report on an AID funded project. Although CWC will be fully involved in the implementation of the project, it will not be necessary for that entity to disburse AID funds since direct payment and direct letters of commitment are to be used.

CWC will negotiate and sign a host country contract for the construction of the sewerage system. Since CWC's experience in this area is limited, as explained later in the analysis, advise and assistance will be provided by the core contractor. After completion of the project CWC will be responsible for the continued maintenance of the system and its financing.

### Background

CWC was established by an Act of Parliament in 1969 to regulate all matters relating to water supply in Grenada. The Commission is a state enterprise under the control of the Ministry of Works.

It has been determined that CWC is the appropriate agency to implement this project in Grenada. CWC has already implemented a component of an AID funded project in Grenada, the Infrastructure Revitalization Project, No. 543-0008, part of which is related to water supply improvements. CWC also implements projects financed by other AID donor agencies on behalf of GOG. The assessment concluded there were no material deficiencies in the financial management and control system in the CWC which would prevent that organization from carrying out its administrative responsibilities required under the project. Details of the assessment are as follow:

#### (a) Organizational Structure

The staffing structure at CWC comprises two broad divisions, the engineering division and the finance and administration division. Each division is further sub-divided into sections according to their appropriate function.

The finance and administration division is sub-divided into the accounting department and the personnel department. The accounting department consists of fifteen persons based at head office. There are also clerks based at each of the out parish stations. The department is headed by the Accountant, Mr. Francis Darius assisted by Mr. Belfon, Assistant Accountant. The personnel department is headed by the Personnel Officer and two other persons.

The engineering division is divided into operations and maintenance and planning, design and construction departments. This division is at present headed by Mr. Terrence Smith, Acting Chief Engineer, and has sixty permanent positions. There is also a large complement of casual staff involved in project type activities.

The heads of these divisions report to the Manager, Mr. Dennis Campbell, who reports to a Board of Commissioners of which he is an ex officio member.

**(b) Internal Controls**

The internal accounting control environment at the Central Water Commission (CWC) is generally strong. The various sections are adequately staffed with competent personnel and appear to be well managed. There are however, a few areas where the internal controls could be improved.

The accounting system is manual, employing day-books, subsidiary ledgers and a general ledger. There is also a separate project accounting ledger. At present CWC is in the process of procuring computer hardware for computerizing the system. There is no set date for completion of the change over but the staff is undergoing training.

There is no written procedures manual at CWC at present. The Accountant advised that such a manual is being considered as part of a technical assistance program with CIDA.

**(c) Procurements and Contracting**

CWC makes small value procurements locally and some larger value ones from overseas. The system at present appears to be functioning reasonably well but needs a few improvements. The major area of concern is the lack of a formal tendering procedure.

CWC is empowered under the Water Supply Act to contract for technical services.

**(d) Disbursements**

The disbursements system is functioning reasonably well but two areas of concern were noted during the review. The Commission has set a disbursing authority limit and this has been exceeded on occasions. It is however felt that the limit is low considering the size of disbursements envisaged should the project amendment be approved.

**(e) Budgetary Control**

At present CWC does not employ an adequate system of budgetary control. The Accountant and the Manager explained that while budgets are prepared they are not used as a tool to control expenditure levels. This results from several instantaneous decisions to execute projects out of expediency. Since CWC is in the process of replacing and maintaining the existing network of mains, the opportunity is taken to do this when a road is being repaired. As a result, reasonably large projects involving the laying of pipe are frequently thrust upon CWC because of another GOG agency decision to build or repair a road.

**(f) Billing**

All rates for household consumers are calculated on the CWC assessed rental value of the property, and for commercial and industrial consumers there is an assessed general rate as well as a metered rate. The rate structure for both private and commercial consumers is as follows:

1. Commercial Consumers

General rate - 10% per annum  
Metered rate - 1 cent per gallon

2. Household Consumers

Not metered and charged only on the assessed rental value of the property.

General rate - 10% per annum  
Septic Tank (if any) - 2-1/2% per annum  
Private - 5% per annum

Billing for all household consumers and the general rates for commercial consumers is done during the months of February and March and must be paid by the end of July. Metered rates for commercial consumers are billed on a monthly basis.

**(g) Arrears**

The CWC has no effective policy for handling arrears and there is therefore no current effective remedy for collecting such arrears.

General rates are due and payable by 31st July. If the rates are not paid in full by 31st July a fine of 5% is charged on the outstanding balance. The consumer is then given until November 30th to clear the arrears before a three-day disconnection notice is issued.

After disconnection, CWC continues to bill the consumer at the general rate as it is assumed that water is being used from another source, viz public stand pipe or neighbor, however, no further steps are taken to recover the arrears.

**(h) Financing**

The auditors of CWC opined that the current overdraft facility of EC\$270,000 is inadequate for CWC operations and at times results in failure to meet liabilities promptly, and our review substantiated this to some extent. This issue will not

be critical to implementation of this AID funded project. Nevertheless, Mr. Campbell advised that the board had not yet met to consider the suggestion of the auditors to increase the facility but will do so shortly.

(i) Inventory

While there is adequate separation of duties in the stores division, the system in existence is not adequate. The Bin card system currently in use will be replaced by a Kardex system. During our visit to the stores an inventory was in progress for the change over. Other proposed improvements include the strict adherence to stores requisitions and issues policy.

(j) Recurrent Cost Analysis

The operation and maintenance of the Grand Anse sewerage system will be the responsibility of the CWC after construction. It is therefore necessary that consideration be given to the projected cost of this activity over the next five years. In this regard, we have estimated that the recurrent cost for this operation will be approximately \$659,312 which is broken down as follows:

Manpower:

<u>Quantity</u>	<u>Particular</u>	<u>Cost for 1 Year</u>	<u>Cost for 5 Years</u>
1	Mech. Eng.	2,946	14,730
1	Mech. Eng. Asst.	3,571	17,855
1	Pump Supervisor	2,678	13,390
1	Electrical Eng.	1,607	8,035
2	Mech/Eng. Tech.	4,464	22,320
<u>2</u>	Unskilled	<u>2,321</u>	<u>11,605</u>
8		17,587	87,935

Electrical Power:

Electricity	80,351	401,755
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Equipment:

Tools	11,903	11,903
Spares (elect, pumps, panel)	26,782	133,913
Safety Equipment	1,487	7,439
Motor vehicles	<u>16,367</u>	<u>16,367</u>
	<u>56,539</u>	<u>169,622</u>

Total Estimated Recurring Costs	154,477	659,312
	=====	=====

It is expected that the operation and maintenance of the Grand Anse sewerage system will be self-financing, i.e. the CWC will generate enough revenue from the system to cover the above costs. However, this may not be possible in year one due to the delays in effecting initial connections to the system. It may therefore be necessary for approximately 75% and 25% of the first and second year costs respectively totaling almost \$150,000 be obtained from another source. Likely sources are the Government of Grenada (GOG) and the CWC water revenues.

Sources and Application of Funds

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Recurring Costs	<u>154,477</u>	<u>126,207</u>	<u>126,207</u>	<u>126,207</u>	<u>126,207</u>
GOG and CWC	115,858	31,552	0	0	0
Sewerage Revenues	<u>38,619</u>	<u>94,655</u>	<u>126,207</u>	<u>126,207</u>	<u>126,207</u>
	<u>154,477</u>	<u>126,207</u>	<u>126,207</u>	<u>126,207</u>	<u>126,207</u>
	=====	=====	=====	=====	=====

**V. TECHNICAL ANALYSIS**

The sewage collection/disposal system now planned for the Grand Anse area includes both gravity and force mains, three lift stations and a marine outfall. Technical design considerations and characteristics are discussed below.

**A. Pumping Stations**

**1. General**

Three major raw wastewater pumping stations are proposed for the Grand Anse system. The approximate location and the drainage area served by each is shown in Attachment 3. Preliminary locations were determined based upon the need to provide service to as much of the area surrounding Grand Anse as possible. The designation and capacity of each station is as follows:

<u>Name</u>	<u>Design Capacity (GPM)*</u>
Frequente	1,050
Camerhogne Park	700
Ramada Inn	250

Flows from the pumping stations will "cascade" from one station to the next and be discharged at the ocean outfall near Point Saline International Airport. Details of each pumping station are as follows:

**a) Ramada Inn Pumping Station**

This pumping station will be located near the Ramada Inn on Grand Anse Road. Sewage from this station will be pumped through approximately 2,200 linear feet of 6-inch diameter force main to the Camerhogne Park pumping station. This pumping station will serve areas along Grand Anse Road from Camerhogne Park to as far north as topography will permit.

**b) Camerhogne Park Pumping Station**

This pumping station will be located within the proposed Camerhogne Park development between Morne Rouge Road and Morne Rouge Stretch Road. Sewage from this station will be pumped through

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\*NOTE: Design capacity and subsequent pipe sizing has been determined utilizing the best available topographic map and engineering judgement. Precise requirements will be determined after further onsite engineering surveys are completed.

approximately 3,600 linear feet of 10-inch diameter force main to the Frequente pumping station. This pumping station will serve all the developments along Grand Anse Beach and the Morne Rouge Stretch Roads.

**c) Frequente Pumping Station**

This pumping station will be located on True Blue Road across from the outdoor cinema. Sewage from this station will be pumped through approximately 11,800 linear feet of 12-inch diameter force main to the proposed ocean outfall off Point Saline. The pumping station will serve all the developments along True Blue Road and from True Blue Roundabout to Sugar Mill Roundabout, including the newly developed Frequente Industrial Park.

**2. Pumping Station Characteristics**

Raw wastewater influent pumping stations will be wet well mounted stations utilizing vertical lift, non-clog sewage pumps. Each station will be provided with two (2) pumps as shown in Attachment 4. Each pump is capable of handling the maximum flow (2.5 x Average Flow) within the drainage area.

This type of pumping station was chosen for several reasons. The depth required for a wet well and the soil conditions expected to be encountered at this depth dictate a pit type of installation, thus limiting the choice to either submersible or vertical lift pumps. The vertical lift pump has a lower initial site preparation cost, lower capital cost, lower installation cost and results in substantial energy costs savings. The majority of the operating parts are above ground for ease of maintenance and reliability.

The three (3) pumping stations will experience low flows in the early years of operation until further development occurs. Ranges for pumping were developed using a velocity of 2 feet per second in the force main as the minimum allowable flow rate and the projected average flow multiplied by 2.5 as the maximum flow rate.

Discharge piping from the pumping units will be sized such that maximum velocities do not exceed 8 feet per second. Valves will be installed in the discharge lines of each pumping unit to allow removal and maintenance of individual pumps while permitting the station to remain functional.

Wet wells for the pumping stations have been sized in accordance with design practices recommended by the American Society of Civil Engineers and Water Pollution Control Federation Criteria. Sizing will be coordinated with pump selection to avoid

frequent on-off cycling of the motors. The lower flows expected during the early years of operation can be accommodated by staging pump operations with wet well water levels. The bottom of the wet well will be sloped to the suction bells to minimize solids accumulation and all wells will be vented. A coal tar epoxy paint will be applied to all concrete surfaces above the minimum water level to protect against attack from hydrogen sulfide.

### 3. Auxiliary Power Source

Auxiliary electric power will be supplied at each site through a permanently installed diesel engine driven generator housed in a weatherproof enclosure. Upon loss of utility company power, the diesel generator unit will automatically start and provide power to the pump motors through an automatic transfer switch. Upon restoration of utility company power, the switch will automatically transfer back to the main incoming line.

#### B. Force Main Characteristics

A system of raw wastewater force mains is proposed which will connect the pumping stations to the ocean outfall. Polyvinyl Chloride (PVC) and/or Polyethylene (PE) pipe will be utilized for the system. Over the past decade, these types of plastic material have gained universal acceptance for use in sewerage systems.

PVC pipe is available in sizes up to 24 inches. The American Water Works Association (AWWA) has set standards only for 12-inch and smaller sizes because these are the sizes presently manufactured in the U.S. PVC pipes between 14 and 24 inches in diameter are manufactured in Canada and conform to CSA Standard B137.3-M1981. Polyethylene is presently manufactured in sizes up to 48 inches. Both types of pipes are used for water lines and gas mains which normally experience significantly higher internal pressures than sewage force mains. PVC pipe is less expensive than PE pipe, and neither material requires coating because of its ability to withstand gaseous attack, commonly a problem in sewage force mains. Both types of pipe will require bedding and backfill material, such as volcanic gravel, which is found on the Island.

A minimum horizontal clearance of ten (10') feet will be maintained between sewage force mains and parallel water lines. A minimum vertical clearance of six (6") inches will be maintained between force mains and other intersecting utilities. The minimum cover over force mains will be thirty (30") inches except at utility intersections.

Automatic air release valves will be installed at high points to avoid a reduction in discharge capacity, operating efficiency, and initiation of water hammer.

### **C. Collection System Characteristics**

Septic tanks with soakaway systems (absorption fields) for disposed of effluent are currently being used for sewage treatment in the Grand Anse area. All septic tanks within the vicinity of the proposed collection system will be abandoned and sanitary sewage will be discharged directly to the gravity sewer collection system.

A system of raw wastewater gravity sewer mains will transport the sewage from the individual residences and commercial and industrial establishments to the pumping units. PVC and/or PE pipe will be used for the gravity sewer mains. Pipes have been sized in accordance with design practices recommended by the American Society of Civil Engineers and the Water Pollution Control Federation Criteria. Pipes will be sloped to maintain a minimum velocity of 2 feet per second to avoid settling of solids.

Fiberglass or coal tar epoxy-coated concrete manholes will be installed at not greater than 400-foot intervals within the gravity system. Manholes will also be installed at all changes in grade, changes in pipe size or alignment, and at the end of each line.

All gravity systems will be designed to take full advantage of the existing topography. No piping will be buried deeper than 8 feet because of soil conditions.

### **D. Ocean Outfall**

The force main will discharge the sewage into a lift station to be located at Point Saline adjacent to the International Airport. The pumping station will be designed to provide a minimum 20-foot hydraulic head and to maintain a minimum velocity of 2.5 feet per second in the outfall. The outfall will consist of 3,000 feet of #100, 16-inch diameter polyethylene pipe buried to a depth of approximately 6 feet.

Utilization of a properly designed and sited raw sewage outfall will have the following advantages:

- (1) no land other than that required by the discharge structure will be required;
- (2) maintenance and operating costs are minimal; and
- (3) all sewage solids are discharged and hence no sludge is produced.

### **E. Right-of-Way and Easements**

While most of the gravity sewer and force main will be installed within the existing road right-of-way, some right-of-way and/or easements will be required. Easements and right-of-way will be provided by the Central Water Commission as part of the GOG contribution to the Project and is the subject of one of the CP's in Section VII..

### **F. Maintenance and Operating Requirements**

The sewerage system as planned will minimize operating and maintenance costs and eliminate the need for highly skilled technicians required to operate a sophisticated mechanical treatment system. The critical element in the system is the pumping stations which must be inspected daily to insure proper operation and the removal of obstructions to flow. Periodic routine maintenance will also be required. Staff required to operate and maintain the pumping stations will consist of one supervisor and three pump technicians. One vehicle and miscellaneous tools and spare parts will also have to be procured. Annual operating and maintenance costs, including power costs, are estimated at \$150,000. The capacity for CWC to supply the funds needed for the operating and maintenance costs included as a government contribution is the subject of a condition precedent in Section VII and a cost analysis in Section V.G. Project funds have been budgeted to train CWC personnel at a local technical institute to insure proper operation of the system.

### **G. Operating Revenue and Expense Analysis**

#### **1. Introduction**

As pointed out in the TVA's preliminary engineering report for the Grand Anse Area Sewer System (December 1986), the Government of Grenada (GOG) needs to establish a financial system to support the operation and maintenance of a central sewage system. This section suggests tariff schedules which the GOG could adapt to meet operating and maintenance costs for the Grand Anse sewerage system.

#### **2. General Comments about the Analysis**

The major cost elements included in the analysis are, operating and maintenance expenses (labor, materials, supplies) and capital replacement (pumps, generators, and trucks). Other administrative costs are anticipated to be subsumed under CWC's normal budget. Furthermore, regarding connection costs, it is assumed that all the direct costs for connecting a user to the system will be paid for by the user. The only administrative charge

levied on the user is an initial "connection charge" associated with assessing and processing the connection request.

Regarding future capital expansion, this analysis does not specify future outlays for capital expansion. Only capital replacement to service the original target groups (950 homes, 2,300 hotel rooms and 600 restaurant seats) is included in the analysis.

For each of the scenarios presented, it should be remembered that the analysis seeks to provide "orders of magnitude" conclusions rather than specific recommendations. To develop a rational tariff structure, it will be necessary to do a more detailed cost-benefit analysis as well as sensitivity analyses. Specifically, such analyses should try to establish in greater detail a well-defined tradeoff between economic efficiency and financial viability. Furthermore, a future analysis should determine the effect that fluctuations in user charges would have on water consumption and revenue. Development of an operational plan, with rate schedules, will be required as a condition precedent in the Grant Agreement.

### 3. Proposed Tariff Structures

To provide policy-makers with a range of options, this financial analysis presents four different tariff structures or "scenarios" (see Tables for cash flow and key assumptions used). The first two scenarios (# 1-2) assume that the users will only be charged after they are connected to the sewage system. The last two scenarios (# 3 and 4) assume that in year 1, year 4 and year 7, one-third of the total target group of households along the line will be charged a base rate regardless of whether they are hooked up to the system. Under this scenarios 3 and 4 it would be possible for some households to pay two years of base charges before actually receiving the services. Below is a brief summary of each scenario:

#### a. Scenario #1

This scenario assumes that each serviced house (which is unmetered) would pay EC\$5.00 for connection and an EC\$225 base rate for sewage services per year. Meanwhile, the metered hotels and restaurants would pay an EC .25¢ (per seat or room) connection charge and an EC\$1 cent per gallon consumed. Under this scenario, it was assumed that the existing hotels and restaurants should not have to pay a unit cost (per gallon of water) that was higher than the current water charge of approximately 1 Ec cent per gallon. Similarly, it is assumed that each house should not have to pay more than 10% of the value of land and building for both water and sewage services. Surpluses should be sufficient to cover capital replacement expenditures in Years 11 and 21.

**b. Scenario #2**

In this scenario the overall service charges have been lowered. Instead of EC\$225 per house, the base rate is EC\$175. In the case of hotels and restaurants, the unit charge drops to about .65 EC cents per gallon.

With these decreases in revenue, the GOG might encounter an operating deficit during the first three years. Thereafter, the GOG would run a surplus which would sufficiently cover future capital replacement costs.

**c. Scenario #3**

In scenarios #-3 and 4 the objective would be to lower both the annual base charge and unit price. This could be done by assuming that the households along the central line will have to begin paying a base charge even though they may not be hooked up to the system. In both scenarios, it is assumed that the phasing in of connected households, hotels and restaurants will be the same as in the other scenarios (see "key Assumption sheet for specific details). The major difference would be that for years 1-3, 300 households would be charged a base rate (even though only 100 would be connected in year 1 and another 100 in year 2). For years 4-6, another 300 households along the line would be charged. Finally, by Year 7 all of the 950 targeted households would be charged a base rate.

Specifically, in scenario # 3, the "grouped" base rate charged to households is EC\$100 and the unit charge is .25 EC cents. Such a tariff structure would result in an operating deficit during the first three years.

**d. Scenario #4**

The primary objective in scenario #4 would be to establish the lowest possible unit costs for restaurants and hotels, while maintaining the household base rate at EC\$225 (same as in scenario #1). Assuming that the household base rate does not change, it would be possible to lower the unit charge to 0.16 EC cents per gallon.

**4. Conclusions**

These four scenarios provide policy makers with a range of tariff structures, or perhaps more accurately, some orders of magnitude with regards to developing a pricing structure. Scenarios # 1 and 2 are suitable if the GOG does not wish to charge households before they are connected. Regarding future expansion of sewage capacity, scenario # 1 provides the most operating surpluses that could be used for capital expansion.

Both scenarios #3 and #4 would allow the GOG to establish a lower base rate and unit rate. But this structure would also discriminate against those targeted households that have to pay before actually receiving services. While scenario # 3 establishes the lowest base rate (EC\$100) of all the scenarios, #4 seeks to minimize the cost to restaurants and hotels.

**Key Assumptions**

- a. A 25 year analysis period.
- b. Operation and Maintenance Costs Include:

Staffing:

1 Supervisor/Engineer technician	= \$25,000/yr
3 Foremen/Technicians	= \$45,000/yr
1 Mechanic	= \$20,000/yr

These costs are increased by 4% per year over the 25-year period.

Equipment:

Set shop tools	= \$15,000/yr
Miscellaneous Equipment and tools	= \$ 1,000/yr
Spare Parts for pumps and Standby power	= \$32,500/yr

These costs are also increased by 4% per year over the 25-year period.

Stations (Pumps and standby power)	= \$650,000
1 Pick-up truck	= \$ 15,000

The station equipment and pick-up truck are replaced every 10 years. It is assumed that by year 11 the cost of the pumps and truck will increase by 48% over the year 1 cost. By year 21, the costs are increased by 48% over the year 11 cost.

- c. Capital Replacement/Improvement

The only capital costs included are for the replacement of the pumps and pick-up truck. There are no specific costs allocated toward increasing capacity.

- d. Revenue Estimates (all revenues stated in US dollars)

- 1. Revenue is derived from two sources: a) service charges for using the sewage system and b) connection charges for new additions to the system.

2. It is assumed that the maximum capacity of the system will be reached by year 10 and will service the following end-users:

- a) 950 homes
- b) 2,300 hotel/tourist rooms
- c) 1,600 restaurant seats

For scenarios # 1-4 the phasing in of the target group beneficiaries is as follows: In year 1 the beginning number of users is 100 homes, 300 hotel rooms, and 160 restaurant seats. Thereafter, until year 10 the number of houses serviced increases by 200-300 each year, and the number of restaurant seats serviced increased by 160 year.

For scenario # 3 and 4 the number of houses charged a base rate are as follows: Years 1-3--300, Years 4-6--600, Years 7-25-- 950. The phasing of actual connected houses is the same as in scenarios # 1 & 2.

The service charge consist of a base rate for houses (ranging from a low of EC\$100 in scenario #3 to a high of EC\$225 in scenarios #3 and 4) and a volume unit charge for hotel rooms and restaurant seats, ranging from .18 cents to 1 cent (EC) per gallon or .049 cents to .364 cents (US) per gallon. The estimated water usage as presented in the TVA Preliminary Engineering Report for Grand Anse Area Sewerage System, December 1986 is: a) Hotel rooms :138.24 gallons per day, b) Restaurant seat: 35 gallons per day.

The administrative charge for connections consists of EC\$5 per house and EC .25 cents per restaurant seat and hotel room.

Unlike the costs streams which increase by 4% every year, it is assumed that because of political reasons, the Government of Grenada will only be able to raise the service and connection charges by 5% every five years.

SUMMARY OF COSTS AND REVENUE

SCENARIO #1

	YEARS				
	1-5	6-10	11-15	16-20	21-25
A. COSTS	683,916	813,838	1,996,559	1,204,680	2,955,149
1. Operations and Maintenance	683,916	813,838	1,012,359	1,204,680	1,498,533
2. Capital Replacement/Improvement	0	0	984,200	0	1,456,616
B. REVENUE	1,257,698	3,119,131	3,908,204	4,085,850	4,263,496
1. Service Charges	1,254,660	3,116,309	3,908,204	4,085,850	4,263,496
2. Connection Charges	3,038	2,822	0	0	0
C. OPERATION SURPLUS/DEFICIT	573,782	2,305,293	1,911,645	2,881,170	1,308,347

NOTE: ALL AMOUNTS ARE IN U.S. DOLLARS

SUMMARY OF COSTS AND REVENUE

SCENARIO #2

	YEARS				
	1-5	6-10	11-15	16-20	21-25
A. COSTS	683,916	813,838	1,996,559	1,204,680	2,955,149
	-----	-----	-----	-----	-----
1. Operations and Maintenance	683,916	813,838	1,012,359	1,204,680	1,498,533
2. Capital Replacement/Improvement	0	0	984,200	0	1,456,616
B. REVENUE	861,692	2,147,663	2,690,552	2,812,849	2,935,147
	-----	-----	-----	-----	-----
1. Service Charges	858,654	2,144,841	2,690,552	2,812,849	2,935,147
2. Connection Charges	3,038	2,822	0	0	0
C. OPERATION SURPLUS (DEFICIT)	177,776	1,333,825	693,993	1,608,169	(20,002)

NOTE: ALL AMOUNTS ARE IN U.S. DOLLARS

SUMMARY OF COSTS AND REVENUE

SCENARIO #3

	YEARS				
	1-5	6-10	11-15	16-20	21-25
A. COSTS	683,916	813,838	1,996,559	1,204,680	2,955,149
	-----	-----	-----	-----	-----
1. Operation and Maintenance	683,916	813,838	1,012,359	1,204,680	1,498,533
2. Capital Replacement/Improvement	0	0	984,200	0	1,456,616
B. REVENUE	900,908	2,102,029	2,571,935	2,688,841	2,805,747
	-----	-----	-----	-----	-----
1. Base Rate Charges	668,580	1,553,561	1,888,790	1,974,644	2,060,498
2. Unit Rate Charges (Hotels and Restaurants)	229,290	545,780	683,145	714,197	745,249
3. Connection Charges	3,038	2,688	0	0	0
C. OPERATION SURPLUS (DEFICIT)	216,992	1,288,191	575,376	1,484,161	( 149,402)

NOTE: ALL AMOUNTS ARE IN U.S. DOLLARS

SUMMARY OF COSTS AND REVENUE

SCENARIO #4

	YEARS				
	1-5	6-10	11-15	16-20	21-25
<b>A. COSTS</b>	683,916	813,838	1,996,559	1,204,680	2,955,149
	-----	-----	-----	-----	-----
2. Operation and Maintenance	683,916	813,838	1,012,359	1,204,680	1,498,533
3. Capital Replacement/Improvement	0	0	984,200	0	1,456,616
<b>B. REVENUE</b>	915,774	2,090,086	2,487,263	2,600,321	2,713,378
	-----	-----	-----	-----	-----
1. Base Rate Charges	765,990	1,738,099	2,050,050	2,143,235	2,236,419
2. Unit Rate Charges (Hotels and Restaurants)	146,746	349,299	437,213	457,086	476,959
3. Connection Charges	3,038	2,688	0	0	0
<b>C. OPERATION SURPLUS (DEFICIT)</b>	231,858	1,276,248	490,704	1,395,641	(241,771)

NOTE: ALL AMOUNTS ARE IN U.S. DOLLARS

**VI. REVISED FINANCIAL PLAN**

**A. Subproject Costs**

The revised estimated cost of the Grand Anse sewerage system as now planned is \$2,955,300. Of this amount, \$330,300 is for engineering and construction supervision services which will be financed under the IEMS core contract. In addition, an overall project contingency of \$644,058 will be available to accommodate increased costs resulting from unanticipated subsurface conditions at the outfall site and other activities which might be required to mitigate undesirable environmental impacts identified in the Bellairs study. A detailed cost estimate for the marine outfall is shown in Attachment 6. A detailed estimate for the collection system is shown in Attachment 7. A summary of the revised estimated cost of the sewerage system is shown in Table 2. Table 3 provides a revised budget for the Grenada Infrastructure III Subproject by component and source of funding.

**B. Methods of Implementation and Financing**

Construction services will be carried out under a fixed unit price host country contract with the Central Water Commission. Payments will be made directly to the Contractor under a Direct Letter of Commitment issued by the RDO/C Controller's Office. Construction supervision services, including certification of payment vouchers, will be provided by LBII under the core contract. Project officer responsibility will lie with the Mission's Office of Infrastructure. The following provides information concerning methods of implementation and financing for activities relating to the Grand Anse sewerage component of the Grenada Infrastructure III Subproject.

<u>ACTIVITY</u>	<u>METHOD OF IMPLEMENTATION</u>	<u>AMOUNT</u>
Current Study/ Environmental Assessment	Direct AID Contract <u>1/</u>	\$ 100,000
Engineering Design	Direct AID Contract <u>2/</u>	\$ 185,000
Construction Services	Host Country Fixed Unit Price Contract Direct Letter of Commitment	\$2,505,000
Training	Direct Reimbursement to Implementing Agency	\$ 20,000
Construction Supervision	Direct AID Contract <u>2/</u>	\$ 145,300

1/ Contract with Bellairs Research Institute - Work Underway - Subproject Funded.

2/ IEMS Core Contract - Louis Berger International, Inc.

**C. Disbursement Schedule**

Subproject funds for the Grand Anse sewerage component of Grenada Infrastructure III are expected to be disbursed as follows:

<u>FY 88</u>	<u>FY 89</u>	<u>FY 90</u>	<u>FY 91</u>
\$16,000 <u>1/</u>	\$385,000 <u>2/</u>	\$1,975,000 <u>3/</u>	\$249,000 <u>4/</u>

- 
- 1/ Bellairs Research Institute Contract.
  - 2/ Bellairs Contract and Construction Contractor Mobilization Payment.
  - 3/ Construction Services and Training.
  - 4/ Construction Services.

TABLE 2

SUMMARY OF REVISED COST OF GRAND ANSE SEWERAGE SYSTEM

<u>ELEMENT</u>	<u>US\$ USAID</u>	<u>US\$ GOG</u>
<b>1. <u>Engineering</u></b>		
A. Route Survey	20,000 <sup>1/</sup>	
B. Current Study/Environmental Assessment	100,000	
C. Development of Operating Maintenance Manual	10,000 <sup>1/</sup>	
D. Engineering Design, Including Subsurface Investigations	165,000 <sup>1/</sup>	
<b>2. <u>Construction</u></b>		
A. Collection System, Including Pumping Stations	1,114,000	50,000 <sup>2/</sup>
B. Marine Outfall, Including Discharge Structure	1,391,000	
C. Construction Supervision	135,300 <sup>1/</sup>	
<b>3. <u>Training</u></b>	<u>20,000</u>	<u>          </u>
<b><u>TOTALS</u></b>	<b><u>\$2,955,300</u></b>	<b><u>\$50,000</u></b>

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<sup>1/</sup> Costs to be financed under the LBII IEMS core contract.

<sup>2/</sup> Right-of-way, easements and project monitoring services.

TABLE 3  
SUMMARY OF REVISED PROJECT COSTS BY COMPONENT  
AND SOURCE OF FUNDING

<u>SUBPROJECT COMPONENT</u>	<u>Grant</u>	<u>US\$ USAID</u>	<u>Core Contract</u>	<u>US\$ GOG</u>
1. Grand Anse Tourism Development				
(a) Sewerage System	2,625,000		330,300	50,000 <sup>1/</sup>
(b) Camerhogne Park	300,000		-	-
2. Carenage/Fort Restoration	350,000		-	-
3. Frequente Industrial Park	2,550,000		-	-
4. Pearls Industrial Park	240,000		-	-
5. Road/Bridge Hazard Reduction	300,000		-	-
6. Financial Oversight	40,000		-	-
7. Evaluation	10,000		-	-
8. Contingency	<u>566,447</u>		<u>-</u>	<u>-</u>
<b>TOTAL</b>	<b>\$6,981,447</b>		<b>\$330,300</b>	<b>\$50,000</b>

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<sup>1/</sup> GOG contribution is for right-of-way, easements and project monitoring services.

**VII. CONDITIONS PRECEDENT TO DISBURSEMENT AND SPECIAL COVENANTS**

Prior to any disbursement or to the issuance by A.I.D. of any documentation pursuant to which disbursement will be made under the Project, the Grantee shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D., evidence of:

- A. For construction of the sewer system under the Grand Anse Area Development component:
  - (1) Legislative authority for the Central Water Commission (CWC) to (a) obtain necessary easements and right-of-ways, (b) set water rates for recovery of the costs of sewerage services, (c) require sewerage connections by intended beneficiaries, and (d) have authority to administer, manage, and control sewerage operations commensurate with CWC's authorities for water systems.
  - (2) An environmental assessment of the proposed sewer system.
  - (3) An operational and financial plan, with rate schedules, which will ensure that the cost of sewerage system operations and maintenance will be paid for by generated revenues, and which provides staffing and maintenance plans adequate to operate and maintain the system.
  
- B. For construction under the Camerhogne Park component of the Project:
  - (1) A plan for the development of the Camerhogne area for which A.I.D. funds will be expended.

## **VIII. REVISED IMPLEMENTATION PLAN/SCHEDULE**

### **A. Implementation Schedule**

The original implementation schedule for the Grand Anse sewerage component of the Grenada Infrastructure III Subproject was delayed due to the need to conduct further technical studies, including an expanded environmental assessment, and to consider alternative treatment/disposal methods. As a result of these studies, the sewerage system now planned differs markedly from the system envisioned earlier.

Bellairs Research Institute is presently conducting an environmental study which will permit a determination to be made as to the length and location of the marine outfall required for the system. Bellairs' initial findings will be available in early October. We anticipate those findings will identify the general location of the outfall and permit LBII to commence engineering design of the collection system under the IEMS core contract. Bellairs will collect additional current data in November, 1988, and January, 1989. The length of the marine outfall required to insure that sewage discharged is adequately diluted and dispersed and does not impact on the nearshore environment will be determined from this data. Upon completion of the Bellairs study, LBII will commence design of the outfall and discharge structure. Engineering design, including all required plans, technical specifications, and general terms and conditions of contract, will be completed in April, 1989. Bid documents will be issued to prequalified U.S. and Eastern Caribbean contractors in May, 1989. (The prequalification process, including advertisement in the CBD and local newspapers, and issuance, receipt and evaluation of questionnaires will be carried out during the period January to May, 1989.) A two-month bidding period is envisioned. LBII will assist the CWC in carrying out the prequalification process, issuing bid documents, and evaluating bids received in response to the IFB. The construction services contract will be awarded in August, 1989. A 16-month construction period will be allowed. The system should be completed in December, 1990. Figure 1 provides a line diagram of the implementation schedule.

### **B. Monitoring Plan**

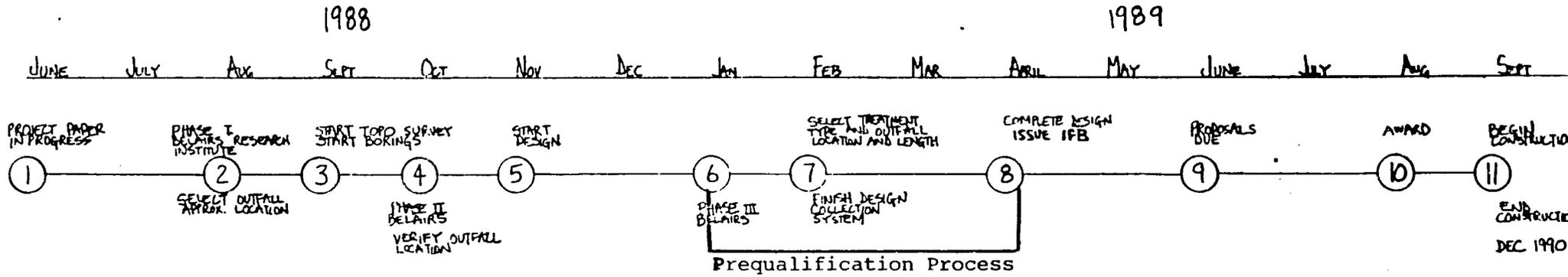
Personnel from Louis Berger International, Inc., will provide construction supervision services under the IEMS core contract. The long-term engineer currently assigned to Grenada will serve as the resident engineer. Construction inspectors and testing personnel will be provided by Keith Braveboy Associates, LBII's Grenadian subcontractor. The Consultant will be responsible for certifying that all work is carried out in accordance with previously approved plans and technical specifications and certifying monthly payment vouchers.

The Mission's Infrastructure Office will be assigned management responsibility for the project. The project officer will conduct periodic site visits to inspect construction activities, assist in resolving technical and other implementation problems which may arise during construction, prepare status reports, and approve payment vouchers. Personnel are currently available to perform this function. The RDO/C Controller's Office will monitor CWC's program in implementing the recommendations made in the recently completed capability assessment.

FIGURE 1

IMPLEMENTATION SCHEDULE

GRAND ANSE SEWER



**IX. ENVIRONMENTAL CONSIDERATIONS**

The Project Paper Supplement for the Grenada Infrastructure III Subproject required LAC/DR approval of an environmental assessment prior to the disbursement of funds for the Grand Anse sewerage component of the Project.

As a result of the preliminary engineering study conducted by LBII, a decision was made to eliminate consideration of the "artificial wetlands" treatment system proposed by TVA. Subsequently, the consultant focussed on alternative systems which would require disposal of partially treated effluent or raw sewage via a marine outfall. Preliminary selection of an outfall site was based on data generated by SEATECH, a Canadian consultant employed by CIDA to develop information on ocean currents for design of the St. Johns river outfall. Since the SEATECH data was deemed questionable, LAC/DR recommended that the environmental assessment be expanded to address issues related to the location and length of the outfall. The scope of work for the expanded environmental assessment was approved by LAC/DR in STATE 090983 dated March 24, 1988. RDO/C subsequently negotiated a contract with Bellairs Research Institute in Barbados to conduct the analysis. Work has commenced under the contract. The detailed scope of work for the environmental assessment is shown in Attachment 8. The assessment must still be reviewed and approved by the LAC Chief Environmental Officer prior to disbursement for this component of the Subproject. This requirement is stipulated as a Condition Precedent under the Grant Agreement.

**ATTACHMENT 1**

**LINE DIAGRAM SCHEDULES**

**FOR COMPLETING VARIOUS SUBCOMPONENTS**

**OF THE GRENADA INFRASTRUCTURE III SUBPROJECT**

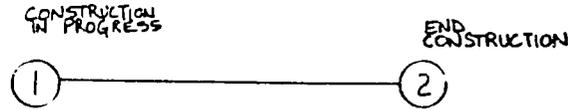
# FREQUENTE INDUSTRIAL PARK

1988

1989

MAY JUNE JULY AUGUST SEPT OCT NOV DEC JAN FEB MARCH

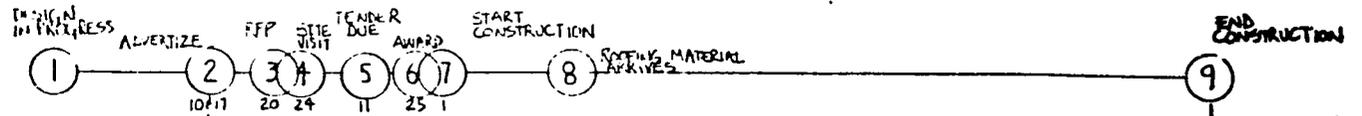
MAIN CONTRACT  
(J+J Eng)



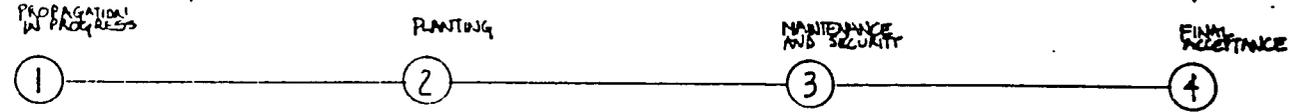
TOILETS  
(N. CONNAUGHT)



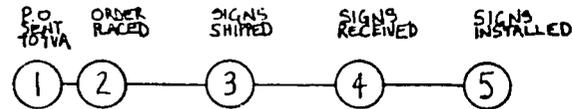
PARK CENTER



LANDSCAPING  
(BAT GARDENS)



FREQUENTE SIGNS  
(P SMITH SIGNS)



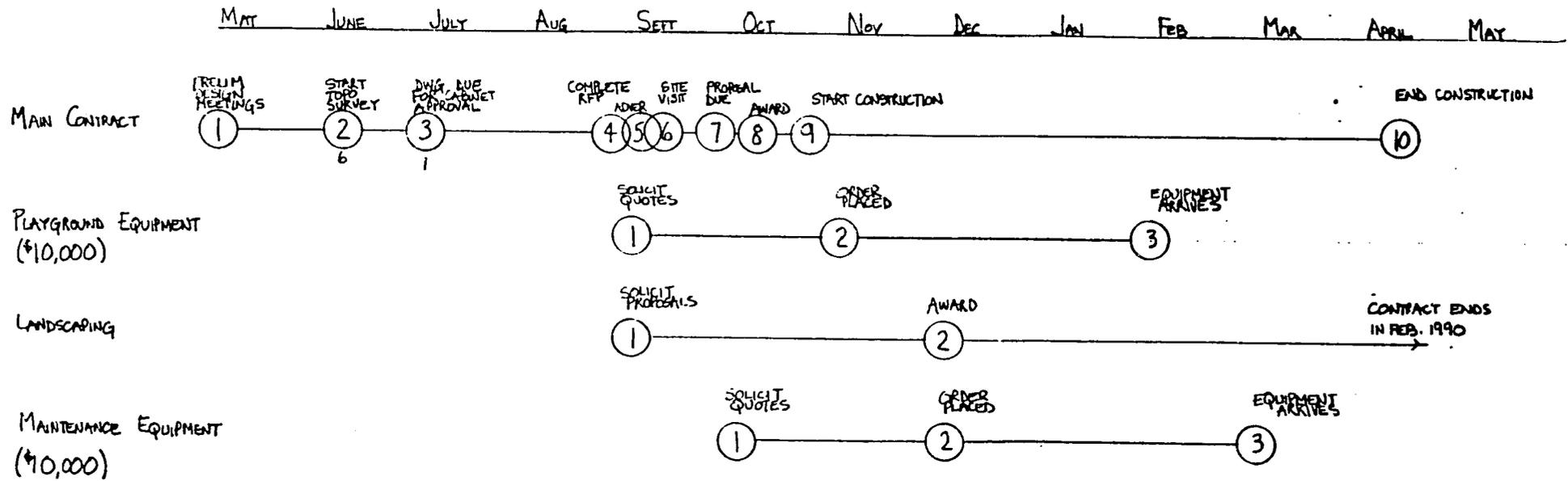
GRAND OPENING



# CAMERHOGNE PARK

1988

1989

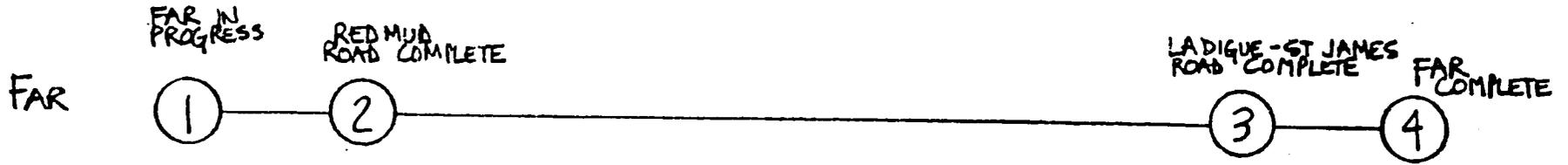


# ROAD HAZARD PROGRAM

1988

198

MAY JUNE JULY AUGUST SEPT OCT NOV DEC JAN

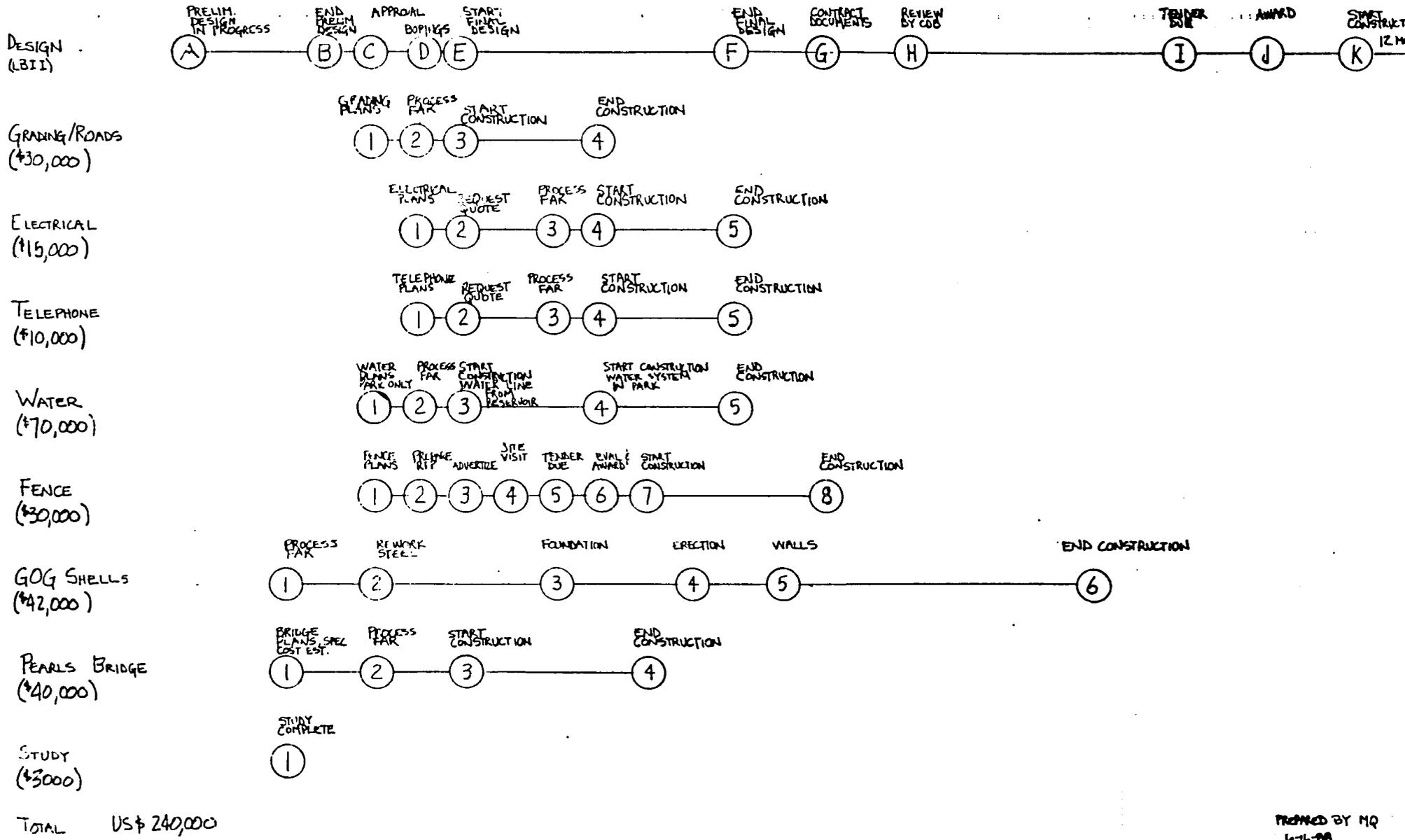


# PEARLS INDUSTRIAL PARK

1988

1989

JUNE JULY AUG SEPT OCT NOV DEC JAN FEB MARCH APRIL MAY JUNE JULY



PREPARED BY MQ  
6-16-88

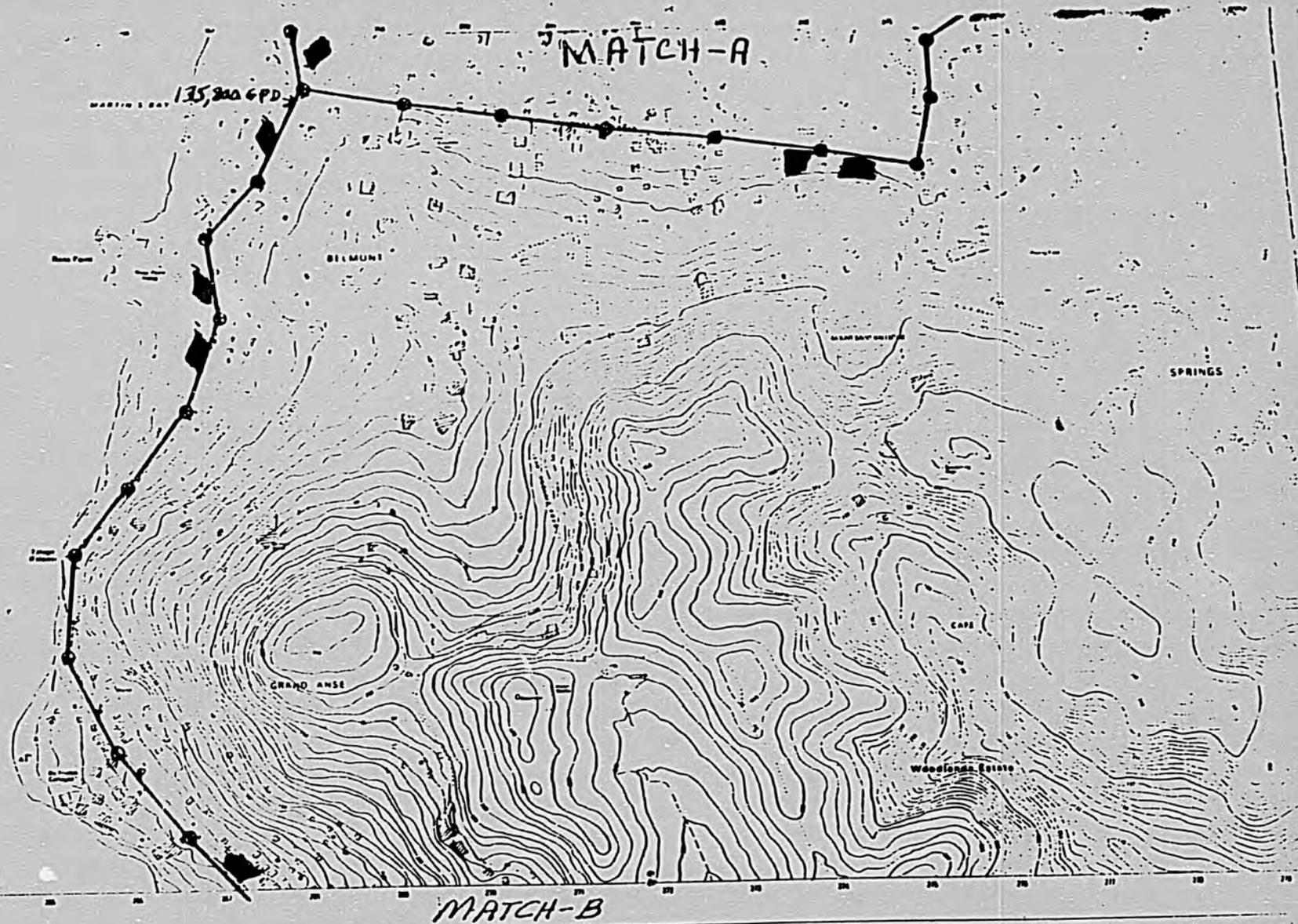
ATTACHMENT 2

SEWAGE COLLECTION SYSTEM

AS PLANNED BY TVA

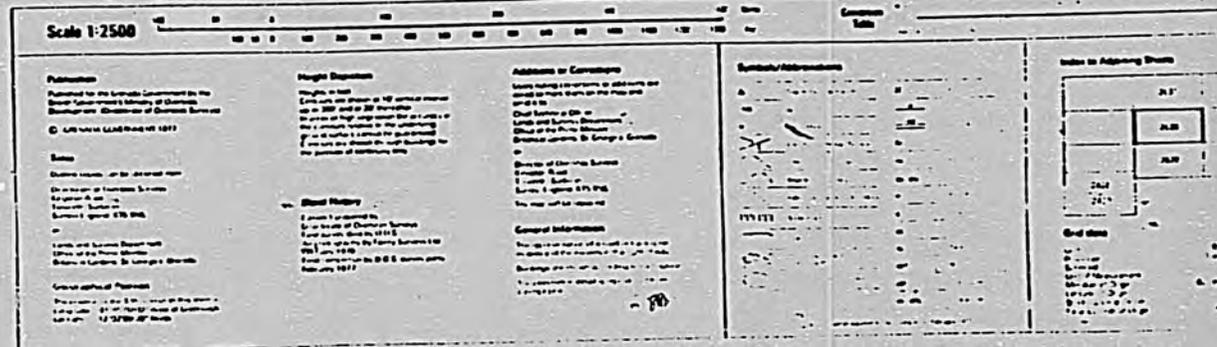


Figure A4. Wetlands Collection System



⊗ - MANHOLES

Figure A5. Wetlands Collection System



GRENADA 1:2500

PHOTOGRAMMETRIC PLOT

218,100 GPD MATCH-B  
GOLF COURSE

265,800 GPD

GRAND ANSE BAY

PALM BEACH

MOUNT PLEASANT

LA TERRE BEAU

MONT TOUT

291,700

MATCH-C

⊕ - MANHOLES

Scale 1:2500

Publication

Height Datum

Abbreviations or Corrections

Symbol Abbreviations

Notes

Sheet History

Control Information

Geographic Position

Figure A6. Wetlands Collection System

SP

Figure A6. Wetlands Collection System



Figure A7. Wetlands Collection System

# MORNE ROUGE

PHOTODIAGRAMMETRIC PLOT

⊕ - MANHOLES

GRAND ANSE BAY

MORNE ROUGE BAY

87900 GPD

65100

GRAND ANSE

22000 GPD

52600 GPD

103000 GPD

MATCH - F

MORNE ROUGE

Grand Anse Station

MATCH - G

Scale 1:2500

Scale 1:2500	North Arrow	Legend	Notes
		<ul style="list-style-type: none"> <li>Manhole</li> <li>Station</li> <li>Structure</li> <li>Proposed</li> <li>Existing</li> </ul>	<p>Notes:</p> <ul style="list-style-type: none"> <li>1. All structures to be constructed of concrete.</li> <li>2. All structures to be finished with a smooth interior.</li> <li>3. All structures to be finished with a smooth exterior.</li> </ul>



⊗ - MANHOLES

Figure 79. Wetlands and  
Priority 10.

Scale 1:2500

**Publication**  
 Date of Issue  
 Edition  
 C. 1:2500

**Project Description**  
 Name of Project  
 Location  
 Purpose  
 Authority

**Address or Coordinates**  
 Street Address  
 City  
 State  
 Zip  
 UTM Zone  
 UTM Easting  
 UTM Northing

**Special Information**  
 Remarks  
 Notes

**Scale to Neighboring Sheets**

10	11	12
09	10	11
08	09	10

**Other Data**  
 Date of Survey  
 Name of Surveyor  
 Name of Agency  
 Name of Project

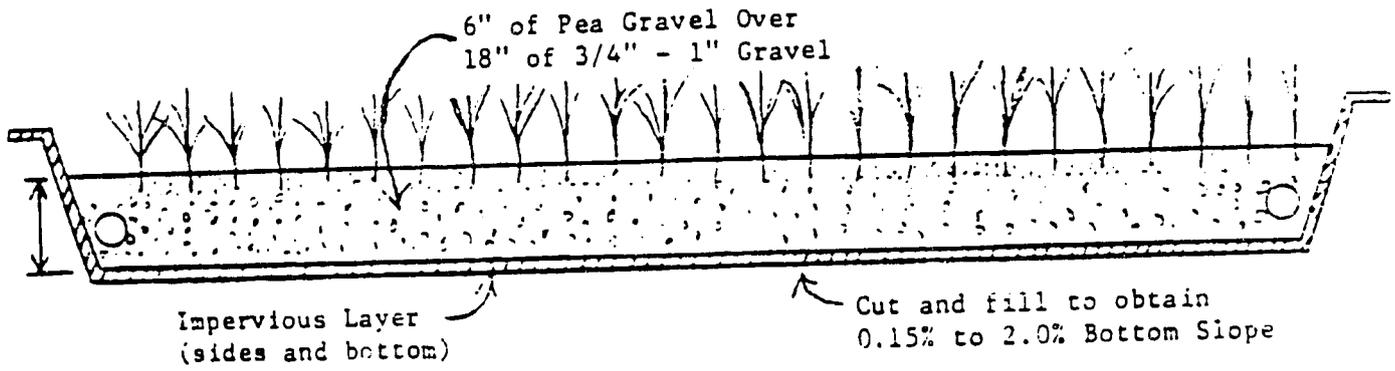
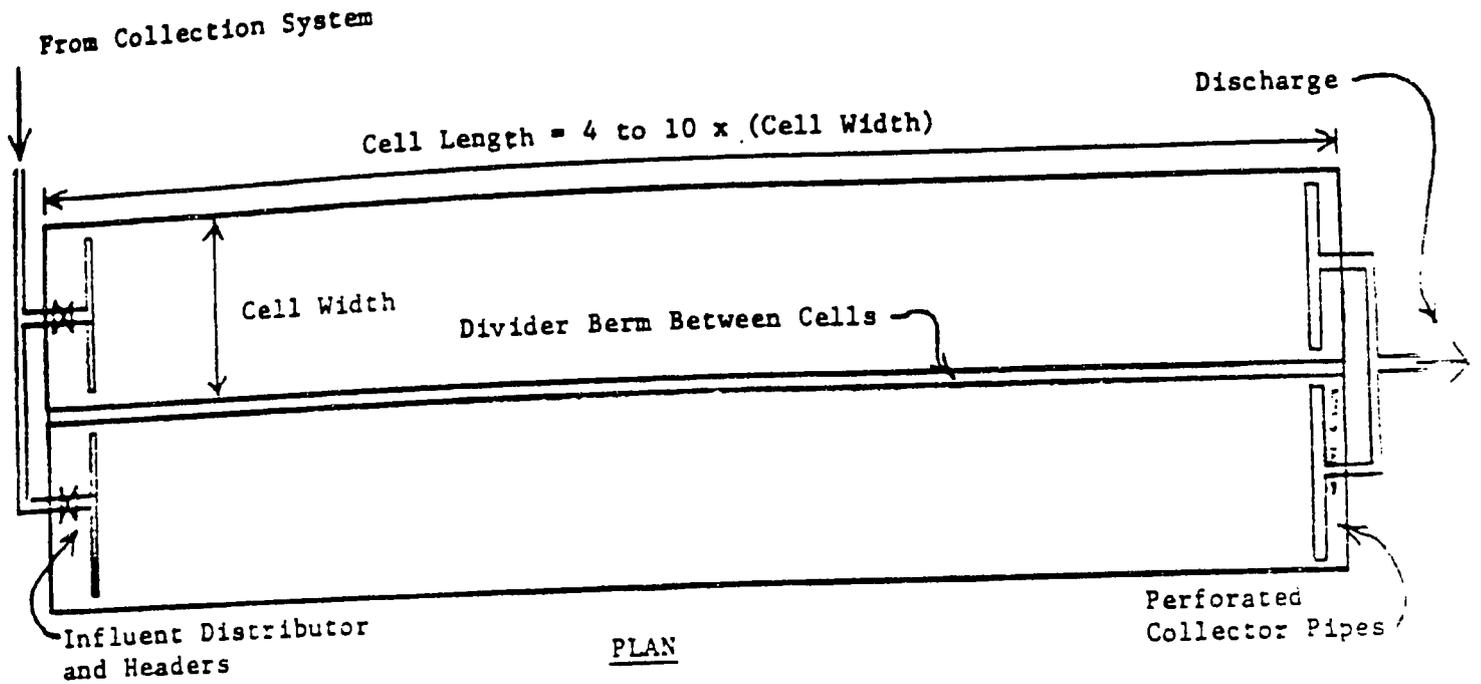
ATTACHMENT 3

PLAN AND SECTION OF  
ARTIFICIAL WETLANDS TREATMENT SYSTEM

PROPOSED BY TVA

16

SUBJECT Conceptual Manmade Wetlands Facility PROJECT Grenada-Grand Anse  
Gerald R. Steiner 12/86  
COMPUTED BY: DATE CHECKED BY DATE



NO SCALE

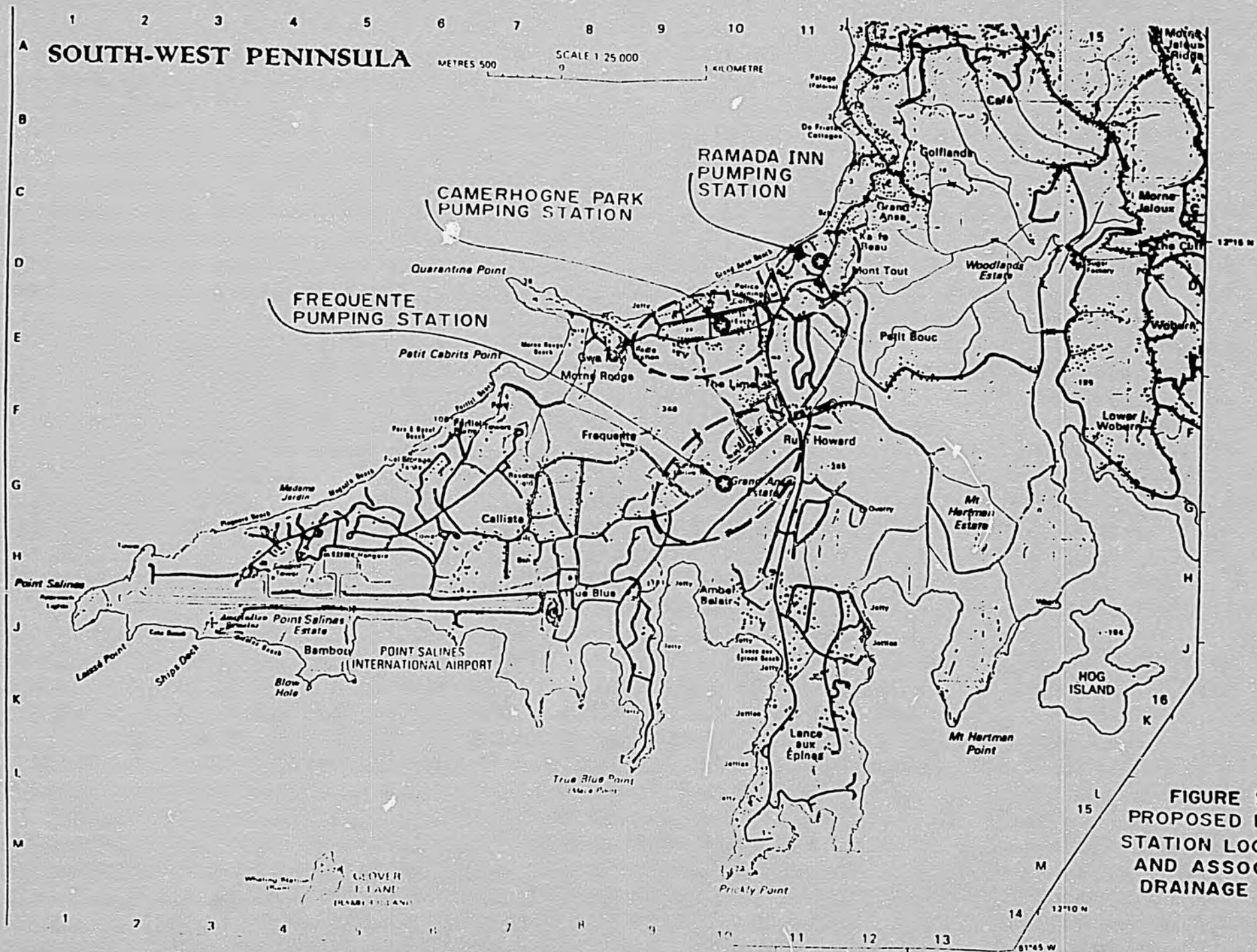
Figure A1

25

ATTACHMENT 4

LOCATION OF PUMPING STATIONS

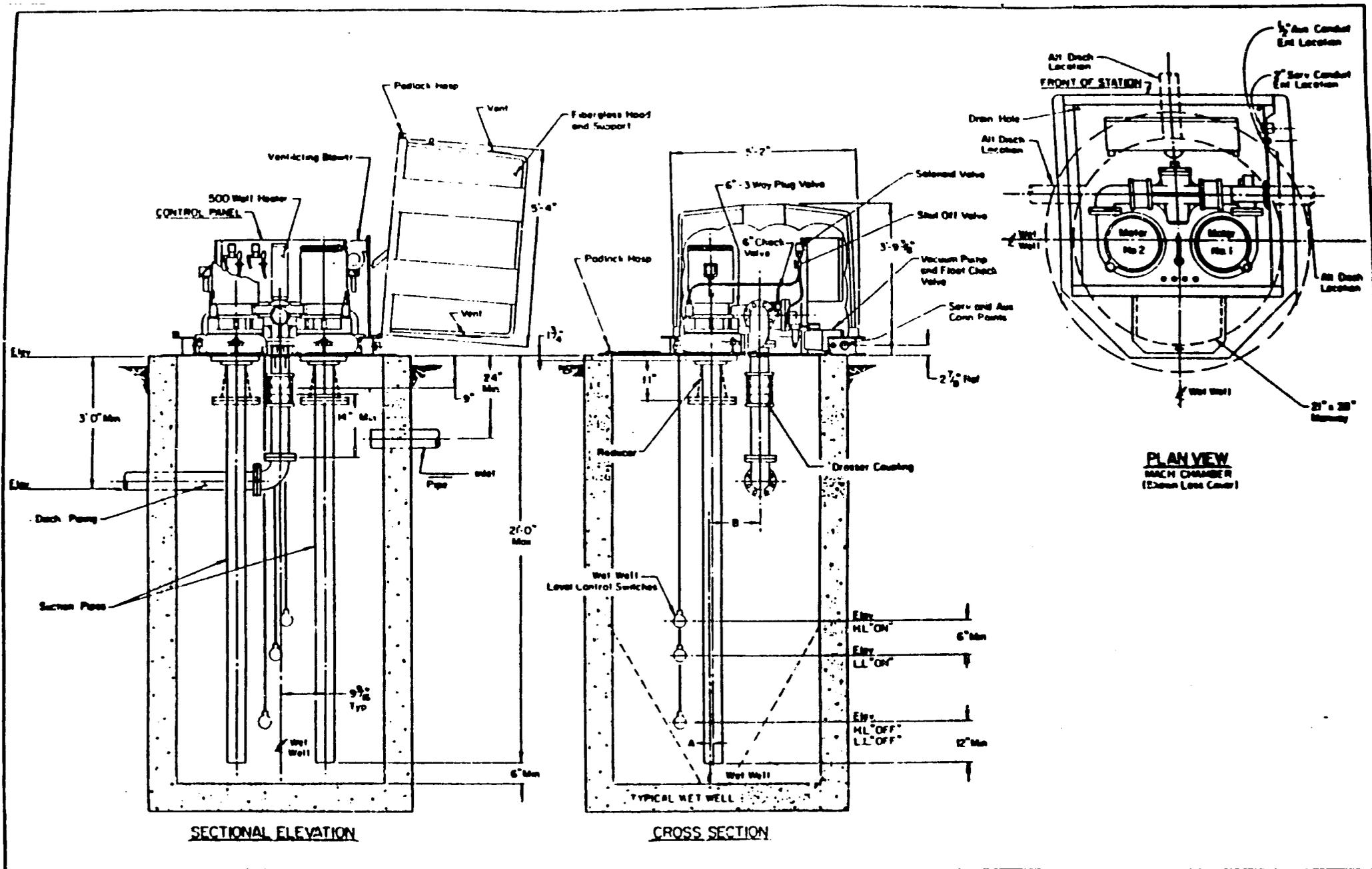
GRAND ANSE SEWERAGE SYSTEM



ATTACHMENT 5

PUMPING STATION DETAILS

GRAND ANSE SEWERAGE SYSTEM



**FIGURE 2**  
TYPICAL WET WELL  
MOUNTED PUMPING STATION

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ATTACHMENT 6

DETAILED COST ESTIMATE

3,000 FT. OCEAN OUTFALL

OFF POINT SALINE

## MARINE OUTFALL AT GRAND BAY, POINT SALINE

### Scope of work:

Supply three thousand (3000) linear feet of 100# polyethylene pipe, 16 inch diameter and lay it down on the sea bed in the Grand Bay area at Point Salines International Airport. Bury the pipeline in the sea bed to a depth of 6'. Construct a pump station on-shore at a location to be designated to pump 1,500,000 g.p.d. of raw sewage. Supply two electrically driven pumps and one standby diesel pump. House the pumps in a weather proof shelter including a wet well.

### Assumptions:

The following assumptions were used to estimate the cost of works:

- (a) Work to be carried out by a regional company i.e. Grenada, Barbados, Antigua, St. Vincent, St. Lucia, Dominica, St. Kitts, American Virgin Islands and Puerto Rico.
- (b) Sandy, sea bed with decomposed coral-no rock!
- (c) Pipe - 16" 100# Polyethylene pipe in 20' lengths - total length 3000 ft.
- (d) Anchorage of Pipe line - Use concrete collars and bury pipe to 6' depth.
- (e) Elevate the mouth of the outfall to 4' above sea bed.
- (f) Equipment
  - (1) Use a 1000 ton crane barge with 30 ton crane.
  - (2) Tug in attendance.
  - (3) 10" Suction dredger.
  - (4) Polyethylene pipe welding equipment.
  - (5) Air Compressor.
  - (6) Diving equipment.
  - (7) Misc. small tools and equipment.
  - (8) Clam shell.
- (g) Duration of works from order to commence - 100 working days.
- (h) Lift pump station to supply min. 20' hydraulic head (measured above M.S.L.).
- (i) Daily output - 1,500,000 gal.

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COST ESTIMATE

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Rate</u>	<u>Amount</u>
1.	Mobilization/Demobilize	LS	LS	LS	250,000.00
2.	Polyethylene Pipe-supply	ft	3,200	30	96,000.00
3.	Concrete Collars-supply	No	600	50	30,000.00
4.	Dredging	Cu Yd	4,000	50	200,000.00
5.	Lay Pipe with collars	ft	3,000	20	60,000.00
6.	Back fill	Cu Yd	5,000	50	<u>250,000.00</u>
					886,000.00
7.	LIFT STATION				
	(a) Housing 30'x20'	ft <sup>2</sup>	600	50	30,000.00
	(b) Wet well	gal.	30,000	1.00	30,000.00
	(c) Pumps	No.	3	20,000	60,000.00
	(d) Wiring	ft	4,000	16.00	<u>64,000.00</u>
	Sub Total)				184,000.00
	Total				1070,000.00
	Allow 30% Contingencies				321,000.00
	Grand Total (U.S.D.)				1391,000.00

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Notes on Cost Estimate

Item 1: Mobilization:-

This amount would be paid to the Contractor as soon as they arrived on site. This amount would cover their mobilization costs and provide sufficient money to see the Contractor through to their first payment.

2. Daily rates on Equipment.

Tug with crew: \$2,500 USD/day  
Crane : \$ 900 USD/day  
Barge (Dumb) : \$1,000 USD/day  
Dredger : \$2,000 USD/day  
Pipe welder : \$ 400 USD/day  
  
\$6,700 USD/day

Summary

Cost per linear foot w/o contingency = US \$357.

Cost per linear foot w/contingency = US \$464.

Cost of outfall built by Janin Const. = US \$354./LF.

**ATTACHMENT 7**

**DETAILED COST ESTIMATE**

**SEWAGE COLLECTION SYSTEM**

**FOR GRAND ANSE AREA**

**DETAILED COST ESTIMATE**

**SEWAGE COLLECTION SYSTEM - GRAND ANSE**

**RAMADA INN SERVICE AREA**

<u>ITEM</u>	<u>QUANTITY</u>	<u>US\$ UNIT PRICE</u>	<u>US\$ TOTAL</u>
8" Gravity PVC Sewer Pipe	2,000 L.F.	29.85	59,700
6" Gravity PVC Service Line	800 L.F.	16.00	12,800
Fiberglass Manholes with Metal Frames and Covers	10 Each	1,500.00	15,000
6" PVC Force Main	2,200 L.F.	16.14	35,500
Diesel Engine Generator	1 Each	20,000.00	20,000
Pumping Station (250 gpm)	1 Each	80,000.00	80,000
SUB-TOTAL			\$223,000

**CAMERHOGNE PARK SERVICE AREA**

<u>ITEM</u>	<u>QUANTITY</u>	<u>US\$ UNIT PRICE</u>	<u>US\$ TOTAL</u>
10" Gravity PVC Sewer Pipe	4,800 L.F.	29.79	143,000
6" Gravity PVC Service Line	1,200 L.F.	16.67	20,000
Fiberglass Manholes with Metal Frames and Covers	20 Each	1,500.00	30,000
8" PVC Force Main	3,600 L.F.	16.11	58,000
Diesel Engine Generator	1 Each	20,000.00	20,000
Pumping Station (700 gpm)	1 Each	110,000.00	110,000
SUB-TOTAL			\$381,000

**FREQUENTE SERVICE AREA**

<u>ITEM</u>	<u>QUANTITY</u>	<u>US\$ UNIT PRICE</u>	<u>US\$ TOTAL</u>
12" Gravity PVC Sewer Pipe	3,300 L.F.	30.30	100,000
6" Gravity PVC Service Line	1,500 L.F.	16.67	25,000
Fiberglass Manholes with Metal Frames and Covers	16 Each	1,500.00	24,000
12" PVC Force Main	11,800 L.F.	18.22	215,000
Diesel Engine Generator	1 Each	20,000.00	20,000
Pumping Station (1,050 gpm)	1 Each	126,000.00	126,000
SUB-TOTAL			\$510,000
GRAND TOTAL			<u>\$1,114,000</u>

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**ATTACHMENT 8**

**SCOPE OF WORK**

**FOR**

**ENVIRONMENTAL ASSESSMENT**

**GRAND ANSE SEWERAGE SYSTEM**

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ENVIRONMENTAL ASSESSMENT  
GRAND ANSE SEWERAGE SYSTEM

2. Scope of Work

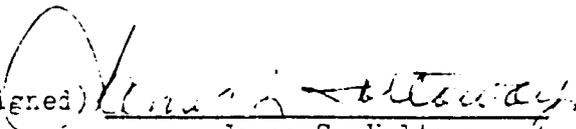
The consultant shall describe alternative project designs, techniques and methodologies examined; describe environmental problems associated with each alternative; discuss reasons for the methodology chosen and environmental protection measures recommended; and discuss the effect of special measures recommended on project costs. In conducting the analysis, the consultant shall consider the following:

- Existing setting including:
  - a) Current waste disposal systems.
  - b) Current pollution issues.
- Future setting with Development including waste disposal demands.
- Consequences if no action is taken.
- Wastewater treatment alternatives including:
  - a) Ocean outfall with no treatment.
  - b) Extended aeration with outfall.
- Outfall sites to be analyzed should include:
  - a) Grand Bay
  - b) Point Saline
  - c) Prickley Point
  - d) Long Point
- Provision for treatment or removal of industrial or toxic wastes.
- Operation/maintenance costs of alternatives.
- Reliability of waste treatment proposed.
- Probability of system overload, design features proposed to accommodate overload, and environmental consequences of overload.
- Vulnerability of treatment facility to hurricanes or other natural disasters.
- Level of technology required for treatment process proposed versus level of operational capability available.
- Training requirements for effective operation of the collection/treatment facility.
- Cost of waste water treatment system and outfall.

- Tradeoffs between length of outfall, treatment level and location of outfall should be analyzed in order to demonstrate which alternative best protects the environmentally fragile nearshore and reefs, grassbeds, mangroves and associated fisheries found in the area. Key issues include risks to these systems from nutrient and organic pollution. These analyses should be based on current and dilutional studies, and underwater transits which describe the extent of these ecosystems in the vicinity of the proposed outfall.
- The consequences of removing sewage from Grand Anse Bay should be discussed in parallel with St. George's outfall as to the likelihood of cleaning up pollution in Grand Anse Bay including:
  - a) Bacteriological pollution.
  - b) Nutrient pollution.
  - c) Organic pollution.
- Social consequences of plant siting, including:
  - a) Availability of land for future expansion of the treatment facility.
  - b) Health problems that may be created or exacerbated by transporting and concentrating sanitary wastes at new location.
  - c) Gases, odors, insects and other nuisance or disease vectors which may be generated or aggravated.
  - d) Positive/negative effects on traditional peoples (i.e., fishermen).
  - e) Positive/negative effect on tourism.
- Establishment of jurisdictional responsibility for operating the system in a manner that will protect the environment.
- Mitigative measures should be recommended and costed out, including a monitoring and surveillance program covering Grand Anse Bay, the St. George's outfall, and the Grand Anse outfall. Parameters to be considered for measurement should include but not be limited to:
  - a) Currents.
  - b) Dissolved oxygen (early morning, late afternoon).
  - c) Nutrients.
  - d) BOD.
  - e) Salinity.
  - f) Temperature.
  - g) Total Suspended Solids.
  - h) Total/Fecal Coliform.
  - i) Fecal Streptococcus.
  - j) Secchi Disc.
  - k) Periodic underwater surveys of outfall areas and Grand Anse Bay to determine the health of the coral reef/grass bed ecosystems.

CERTIFICATION PURSUANT TO SECTION 611(e) OF THE  
FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

I, James S. Holtaway, as Director of the Regional Development Office/Caribbean of the United States Agency for International Development, having taken into account the maintenance and utilization of projects in Grenada and the Caribbean region previously financed or assisted by the United States, do hereby certify that in my judgment Grenada has both the financial capacity and human resources capability to effectively utilize and maintain goods and services procured under the proposed capital assistance sub-project entitled Infrastructure Revitalization III. This judgement is based upon the implementation record of externally financed projects including AID-funded projects in Grenada, the commitments from the Government of Grenada, and the quality of the planning which has preceded this new project.

(Signed)   
James S. Holtaway  
Director, RDC/C

(Date) September 26, 1988

## APENDIX 5C - A.I.D. PROJECT STATUTORY CHECKLIST

Introduction

The statutory checklist is divided into three parts:  
5C(1) - Country Checklist; 5C(2) - Project Checklist; and  
5C(3) - Standard Item Checklist.

The Country Checklist. Composed of items of affecting the eligibility for foreign assistance of the country as a whole, is to be reviewed and completed by AID/W at the beginning of each fiscal year. In most cases responsibility for preparation of responses to the country checklist is assigned to the desk officers, who would work with the Assistant General Counsel for their region. The responsible officer should ensure that this part of the checklist is updated periodically. The checklist should be attached to the first PP of the first year and then referenced in subsequent PPs.

The Project Checklist focuses on statutory items that directly concern the project. Although the project checklist should be reviewed and completed in the field, information should be requested from Washington whenever necessary. A completed project checklist should be included with each PP; however, the list should also be reviewed at the time a PI is prepared so that legal issues that may bear on project design are identified early.

The Standard Item Checklist is intended as a working tool, rather than for inclusion in a project paper. It provides condensed coverage, in checklist form, of statutory matters routinely covered in the project agreement (e.g., 50/50 shipping). Items from this list should be noted in the PP or added to the project checklist when they warrant special treatment or concern.

The country and project checklists are organized according to categories of items relating to Development Assistance, the Economic Support Fund, or both.

These Checklists include the applicable statutory criteria from the Foreign Assistance Act of 1961, as amended ("FAA"), the International Security and Development Cooperation Act of 1981 ("ISDCA of 1981"), the International Security and Development Cooperation Act of 1985 ("ISDCA of 1985"), the Special Foreign Assistance Act of 1986, the Anti-Drug Abuse Act of 1986 ("Drug Act"), the FY 1988 Foreign Assistance Appropriations Act (enacted in the FY1988 Continuing Resolution ("FY 1988 Continuing Resolution")), and the Foreign Relations Authorization Act for FY 1988 and FY 1989 (the "State Authorization").

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These Checklists do not list every statutory provision that might be relevant, but are intended to provide a convenient reference for provisions of relatively great importance or general applicability.

Space has been provided at the right of the Checklist questions for responses and notes.

Extra copies of the appendix may be requisitioned from M/SER/IRM/PE for use in project development and drafting.

5C(1) - COUNTRY CHECKLIST

Listed below are statutory criteria applicable to: (A) FAA funds generally; (B) (1) Development Assistance funds only; or (B) (2) the Economic Support Fund only.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

1. FY 1988 Continuing Resolution Sec. 525. Has the President certified to the Congress that the government of the recipient country is failing to take adequate measures to prevent narcotic drugs or other controlled substances which are cultivated, produced or processed illicitly, in whole or in part, in such country or transported through such country, from being sold illegally within the jurisdiction of such country to United States Government personnel or their dependents or from entering the United States unlawfully? No
  
2. FAA Sec. 481(n) This provision applies to assistance of any kind provided by grant, sale, loan, lease, credit, guaranty, or insurance, except assistance from the Child Survival Fund or relating to international narcotics control, disaster and refugee relief, or the provision of food or medicine.) If the recipient is a "major illicit drug producing country" (defined as a country producing during fiscal year at least five metric tons of opium or 500 metric tons of coca or marijuana) or a "major drug-transit country" (defined as a country that is a significant direct source of illicit drugs significant affecting the United States, through which such drugs are transported, or through which significant sums of drug-related profits are laundered with the knowledge or complicity of the government), has the President in the March 1 International Narcotics Control Strategy Report (INCSR) determined and certified to the Congress (without Congressional enactment, within 30 days of continuous session, of a resolution N/A

disapproving such a certification), or has the President determined and certified to the Congress on any other date (with enactment by Congress of a resolution approving such certification), that (a) during the previous year the country has cooperated fully with the United States or taken adequate steps on its own to prevent illicit drugs produced or processed in or transported through such country from being transported into the United States, and to prevent and punish drug profit laundering in the country, or that (b) the vital national interests of the United States require the provision of such assistance?

3. Drug Act Sec. 2013. [This section applies to the same categories of assistance subject to the restrictions in FAA Sec. 431(h), above.] If recipient country is a "major" illicit drug producing country" or "major drug-transit country" (as defined for the purpose of FAA Sec 431(h)], has the President submitted a report to Congress listing such country as one (a) which, as a matter of government policy, encourages or facilitates the production or distribution of illicit drugs; (b) in which any senior official of the government engages in, encourages, or facilitates the production or distribution of illegal drugs; (c) in which any member of a U.S. Government agency has suffered or been threatened with violence inflicted by or with the complicity of any government officer; or (d) which fails to provide reasonable cooperation to lawful activities of U.S. drug enforcement agents, unless the President has provided the required certification to Congress pertaining to U.S. national interests and the drug control and criminal prosecution efforts of that country?

No

4. FAA Sec. 620(c). If assistance is to a government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) the debt is not denied or contested by such government?
  - a) No
  - b) No
  
5. FAA Sec. 620(e)(1). If assistance is to a government, has it (including any government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities? No
  
6. FAA Secs. 620(a), 620(f), 620D; FY 1988 Continuing Resolution Sec. 512. Is recipient country a Communist country? If so, has the President determined that assistance to the country is vital to the security of the United States, that the recipient country is not controlled by the international Communist conspiracy, and that such assistance will further promote the independence of the recipient country from international communism? Will assistance be provided directly to Angola, Cambodia, Cuba, Iraq, Libya, Vietnam, South Yemen, Iran or Syria? Will assistance be provided to Afghanistan without a certification? No
  
7. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, damage or destruction by mob action of U.S. property? No
  
8. FAA Sec. 620(l). Has the country failed to enter into an investment guaranty agreement with OPIC? No

9. FAA Sec. 620(o); Fishermen's Protective Act of 1967 (as amended) Sec. 5. (a) Yes  
Has the country seized, or imposed any penalty or sanction against, any U.S. fishing vessel because of fishing activities in international waters? (o) No  
If so, has any deduction required by the Fishermen's Protective Act been made?
10. FAA Sec. 620(q); FY 1988 Continuing Resolution Sec. 513. (a) a) No  
Has the government of the recipient country been in default for more than six months on interest or principal of any loan to the country under the FAA? (b) b) No  
Has the country been in default for more than one year on interest or principal on any U.S. loan under a program for which the FY 1988 Continuing Resolution appropriates funds?
11. FAA Sec. 620(s). Yes  
If contemplated assistance is development loan or to come from Economic Support Fund, has the Administrator taken into account the percentage of the country's foreign exchange or other resources spent on military equipment? (Reference may be made to the annual "Taking Into Consideration" memo: "Yes, taken into account by the Administrator at time of approval of Agency OYB." This approval by the Administrator of the Operational Year Budget can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstances occur).
12. FAA Sec. 620(t). No  
Has the country severed diplomatic relations with the United States? If so, have relations been resumed and have new bilateral assistance agreements been negotiated and entered into such resumption?

13. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the A.I.D. Administrator in determining the current A.I.D. Operational Year Budget? (Reference may be made to the Taking into Consideration memo). See  
Last PP
14. FAA Sec. 620A. Has the President determined that the recipient country grants sanctuary from prosecution to any individual or group which has committed an act of international terrorism or otherwise supports international terrorism? No
15. FY 1988 Continuing Resolution Sec. 575. Has the country been placed on the list provided for in Section 6(j) of the Export Administration Act of 1979 (currently Libya, Iran, South Yemen, Syria, Cuba, or North Korea)? No
16. ISDCA of 1988 Sec. 552(b). Has the Secretary of State determined that the country is a high terrorist threat country after the Secretary of Transportation has determined, pursuant to Section 1115(e)(2) of the Federal Aviation Act of 1958, that an airport in the country does not maintain and administer effective security measures? No
17. FAA Sec. 666(b). Does the country object, on the basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. who is present in such country to carry out economic development programs under the FAA? No
18. FAA Secs. 669, 670. Has the country, after August 3, 1977, delivered to any other country or received nuclear enrichment or reprocessing equipment, materials, or technology, without No

specified arrangements or safeguards, and without special certification by the President? Has it transferred a nuclear explosive device to a non-nuclear weapon state, or if such a state, either received or detonated a nuclear explosive device? (FAA Sec. 260E permits a special waiver of Sec. 669 for Pakistan.)

19. FAA Sec. 670. If the country is a non-nuclear weapon state, has it, on or after August 8, 1985, exported (or attempted to export) illegally from the United States any material, equipment, or technology which would contribute significantly to the ability of a country to manufacture a nuclear explosive device? No
20. ISDCA of 1981 Sec. 720. Was the country represented at the Meeting of Ministers of Foreign Affairs and Heads of Delegations of the Non-Aligned Countries to the 36th General Assembly of the U.N. on September 25 and 28, 1981, and did it fail to disassociate itself from the communique issued? If so, has the President taken it into account? (Reference may be made to the Taking into Consideration memo.) No
21. FY 1988 Continuing Resolution Sec. 523. Has the recipient country been determined by the President to have engaged in a consistent pattern of opposition to the foreign policy of the United States? No

22. FY 1988 Continuing Resolution Sec. 513. Has the duly elected Head of Government of the country been deposed by military coup or decree? If assistance has been terminated, has the President notified Congress that a democratically elected government has taken office prior to the resumption of assistance? No
23. FY 1988 Continuing Resolution Sec. 543. Does the recipient country fully cooperate with the international refugee assistance organizations, the United States, and other governments in facilitating lasting solutions to refugee situations, including resettlement without respect to race, sex, religion or national origin? Yes

B. FUNDING SOURCE CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria

FAA Sec. 116. Has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, can it be demonstrated that contemplated assistance will directly benefit the needy? No

FY 1988 Continuing Resolution Sec. 535. Has the President certified that use of DA funds by this country would violate any of the prohibitions against use of funds to pay for the performance of abortions as a method of family planning, to motivate or coerce any person to practice abortions, to pay for the performance of involuntary sterilization as a method of family planning, to coerce or provide any financial incentive to any person to undergo sterilizations, to pay for any biomedical research which relates, in whole or in part, to methods of, or the performance of, abortions or involuntary sterilization as a means of family planning? No

2. Economic Support Fund Country Criteria

FAA Sec. 502B. Has it been determined that the country has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, has the President found that the country made such significant improvement in its human rights record that furnishing such assistance is in the U.S. national interest?

N/A

FY 1983 Continuing Resolution Sec. 549. Has this country met its drug eradication targets or otherwise taken significant steps to halt illicit drug production or trafficking?

N/A

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; 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 1988 Continuing Resolution Sec. 523; FAA Sec. 634A. If money is sought to obligated for an activity not previously justified to Congress, or for an amount in excess of amount previously justified to Congress, has Congress been properly notified? N/A
  
2. FAA Sec. 611(a)(1). Prior to an obligation in excess of \$500,000, will there be (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? Yes
  
3. FAA Sec. 611(a)(2). If legislative action is required within recipient country, what is the basis for a reasonable expectation that such action will be completed in time to permit orderly accomplishment of the purpose of the assistance? *Legislative Act is required for Central Water Committee Authority over Sewerage and is expected to be enacted in time.*
  
4. FAA Sec. 611(b); FY 1988 Continuing Resolution Sec. 501. If project is for water or water-related land resource construction, have benefits and costs been computed to the extent practicable in accordance with the principles, standards, and procedures established pursuant to the Water Resources Planning Act (42 U.S.C. 1962, et seq.)? (See A.I.D. Handbook 3 for guidelines.) Yes

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and total U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability to maintain and utilize the project effectively? Yes  
(See Annex A)
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. Same as PP
7. FAA Sec. 601(a). Information and conclusions on whether projects will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, 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. Same
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). Same
9. FAA Secs. 612(b), 636(h). 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. Same
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. FY 1988 Continuing Resolution 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? N/A
12. FY 1988 Continuing Resolution Sec. 553. Will assistance (except for programs in Caribbean Basin Initiative countries under U.S. Tariff Schedule "Section 807," which allows reduced tariffs on articles assembled abroad from U.S.-made components) be used directly to procure feasibility studies, prefeasibility studies, or project profiles of potential investment in, or to assist the establishment of facilities specifically designed for, the manufacture for export to the United States or to third country markets in direct competition with U.S. exports, of textiles, apparel, footwear, handbags, flat goods (such as wallets or coin purses worn on the person, work gloves or leather wearing apparel)? No
13. FAA Sec. 119(g) (4)-(6). Will the assistance (a) support training and education efforts which improve the capacity of recipient countries to prevent loss of biological diversity; (b) be provided under a long-term agreement in which the recipient country agrees to protect ecosystems or other wildlife habitats; (c) support efforts to identify and survey ecosystems in recipient countries worthy of protection; or (d) by any direct or indirect means significantly degrade national parks or similar protected areas or introduce exotic plants or animals into such areas? a) No  
b) No  
c) Yes  
d) No
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 N/A

receipt and expenditure of project funds (either dollars or local currency generated therefrom)?

15. FY 1988 Continuing Resolution. If assistance is to be made to a United States PVO (other than a cooperative development organization), does it obtain at least 20 percent of its total annual funding for international activities from sources other than the United States Government? N/A
16. FY Continuing Resolution Sec. 541. If assistance is being made available to a PVO, has that organization provided upon timely request any document, file or record necessary to the auditing requirements of A.I.D., and is the PVO registered with A.I.D.? N/A
17. FY 1988 Continuing Resolution Sec. 514. If funds are being obligated under an appropriation account to which they were not appropriated, has prior approval of the Appropriations Committees of Congress been obtained? Yes
18. FY Continuing Resolution Sec. 515. If deob/reob authority is sought to be exercised in the provision of assistance, are the funds being obligated for the same general purpose, and for countries within the same general region as originally obligated, and have the Appropriations Committees of both Houses of Congress been properly notified? Yes
19. State Authorization Sec. 139 (as interpreted by conference report). Has confirmation of the date of signing of the project agreement, including the amount involved, been cabled to State L/T and A.I.D. Leg within 60 days of the agreement's entry into force with respect to the United States, and has the full text of the agreement been pouched to those same offices? (See Handbook 3, Appendix 6G for agreements covered by this provision). Yes

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

- a. FY 1988 Continuing Resolution Sec. 552 (as interpreted by conference report). If assistance is for agricultural development activities (specifically, any testing or breeding feasibility study, variety improvement or introduction, consultancy, publication, conference, or training), are such activities (a) specifically and principally designed to increase agricultural exports by the host country to a country other than the United States, where the export would lead to direct competition in that third country with exports of a similar commodity grown or produced in the United States, and can the activities reasonably be expected to cause substantial injury to U.S. exporters of a similar agricultural commodity; or (b) in support of research that is intended primarily to benefit U.S. producers? N/A
- b. FAA Secs. 102(b), 111, 113, 281(a). Describe 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, dispersing investment 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 appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward a better life, and a) N/A  
b) N/A

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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.

- c. FAA Secs. 103, 103A, 104, 105, 106, 120-21. Does the project fit the criteria for the source of funds (functional account) being used? Yes
- d. FAA Sec. 107. Is emphasis placed 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)? Yes
- e. FAA Sec. 110, 124(i). Will the recipient country provide at least 25 percent 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)? No
- f. FAA Sec. 128(b). If the activity attempts to increase the institutional capabilities of private organizations or the government of the country, or if it attempts to stimulate scientific and technological research, has it been designed and will it be monitored to ensure that the ultimate beneficiaries are the poor majority? N/A

- 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 institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government. *Project will facilitate better sanitary conditions and involve Government in improving sanitation conditions.*
- h. FY 1985 Continuing Resolution Sec. 538. Are any of the funds to be used for the performance of abortions as a method of family planning or to motivate or coerce any person to practice abortions? *No*
- Are any of the funds to be used to pay for the performance of involuntary sterilization as a method of family planning or to coerce or provide any financial incentive to any person to undergo sterilizations? *No*
- Are any of the funds to be used to pay for any biomedical research which relates, in whole or in part, to methods of, or the performance of, abortions or involuntary sterilization as a means of family planning? *No*

- i. FY 1988 Continuing Resolution. No  
Is the assistance being made available to any organization or program which has been determined to support or participate in the management of a program of coercive abortion or involuntary sterilization?
- If assistance is from the population functional account, are any of the funds to be made available to voluntary family planning projects which do not offer, either directly or through referral to or information about access to, a broad range of family planning methods and services? N/A
- j. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise? Yes
- k. FY 1988 Continuing Resolution. None in this Amendment Basic Project utilized 6A firm.  
What portion of the funds will be available only for activities of economically and socially disadvantaged enterprises, historically black colleges and universities, colleges and universities having a student body in which more than 20 percent of the students are Hispanic Americans, and private and voluntary organizations which are controlled by individuals who are black Americans, Hispanic Americans, or Native Americans, or who are economically or socially disadvantaged (including women)?
- l. FAA Sec. 113(c). Does the assistance comply with the environmental procedures set forth in A.I.D. Regulation 16? Yes  
Does the assistance place a

high priority on conservation and sustainable management of tropical forests? Specifically, does the assistance, to the fullest extent feasible:

(a) stress the importance of covering and sustainably managing forest resources;	a)	N/A
(b) support activities which offer employment and income alternatives to those who otherwise would cause destruction and loss of forests, and help countries identify and implement alternatives to colonizing forested areas;	b)	N/A
(c) support training programs, educational efforts and the establishment or strengthening of institutions to improve forest management;	c)	N/A
(d) help end destructive slash-and-burn agriculture by supporting stable and productive farming practices;	d)	N/A
(e) help conserve forests which have not yet been degraded by helping to increase production on lands already cleared or degraded;	e)	N/A
(f) conserve forested watersheds and rehabilitate those which have been deforested;	f)	N/A
(g) support training, research, and other actions which lead to sustainable and more environmentally sound practices for timber harvesting, removal, and processing;	g)	N/A
(h) support research to expand knowledge of tropical forests and identify alternatives which will prevent forest destruction, loss, or degradation;	h)	N/A
(i) conserve biological diversity in forest areas by supporting efforts to identify, establish, and maintain a representative network of protected tropical forest ecosystems on a worldwide basis, by making the establishment of protected areas a condition of support for activities involving forest clearance or degradation, and by helping to identify	i)	N/A

- tropical forest ecosystems and species in need of protection and establish and maintain appropriate protected areas; (j) seek to increase the awareness of U.S. government agencies and other donors of the immediate and long-term value of tropical forests; and (k) utilize the resources and abilities of all relevant U.S. government agencies?
- m. FAA Sec. 118(c) (13). If the assistance will support a program or project significantly affecting tropical forests (including projects involving the planting of exotic plant species), will the program or project (a) be based upon careful analysis of the alternatives available to achieve the best sustainable use of the land, and (b) take full account of the environmental impacts of the proposed activities on biological diversity?
- n. FAA Sec. 118(c) (14). Will assistance be used for (a) the procurement or use of logging equipment, unless an environmental assessment indicates that all timber harvesting operations involved will be conducted in an environmentally sound manner and that the proposed activity will produce positive economic benefits and sustainable forest management systems; or (b) actions which will significantly degrade national parks or similar protected areas which contain tropical forests, or introduce exotic plants or animals into such areas?
- o. FAA Sec. 118 (c) (15). Will assistance be used for (a) activities which would result in the conversion of forest lands to the rearing of livestock; (b) the
- |    |    |     |
|----|----|-----|
|    | j) | N/A |
|    | k) | N/A |
| a) |    | N/A |
| b) |    | N/A |
| a) |    | N/A |
| b) |    | N/A |
| a) |    | N/A |
| b) |    | N/A |

construction, upgrading, or maintenance of roads (including temporary haul roads for logging or other extractive industries) which pass through relatively undegraded forest lands; (c) the colonization of forest lands; or (d) the construction of dams or other water control structures which flood relatively undegraded forest lands, unless with respect to each such activity an environmental assessment indicates that the activity an environmental assessment indicates that the activity will contribute significantly and directly to improving the livelihood of the rural poor and will be conducted in an environmentally sound manner which supports sustainable development?

c) N/A

d) N/A

- p. FY 1988 Continuing Resolution.  
If assistance will come from the Sub-Saharan Africa DA account, is it (a) to be used to help the poor majority in Sub-Saharan Africa through a process of long-term development and economic growth that is equitable, participatory, environmentally sustainable, and self-reliant; (b) being provided in accordance with the policies contained in section 102 of the FAA; (c) being provided, when consistent with the objectives of such assistance, through Africa, United States and other PVOs that have demonstrated effectiveness in the promotion of local grassroots activities on behalf of long-term development, in Sub-Saharan Africa; (d) being used to help overcome shorter-term constraints to long-term development, to promote reform of sectoral economic policies, to support the critical sector priorities of agricultural production and natural resources, health, voluntary family planning services, education, and income generating opportunities, to bring about appropriate sectoral restructuring of the Sub-Saharan African economies, to support reform in public administration and finances and to establish a favorable environment for individual enterprise and self-sustaining development, and to take into account, in assisted policy reforms, the need to protect vulnerable groups; (e) being used to increase agricultural production in ways that protect and restore the natural resource base.
- |    |     |
|----|-----|
| a) | N/A |
| b) | N/A |
| c) | N/A |
| d) | N/A |
| e) | N/A |

especially food production, to maintain and improve basic transportation and communication networks, to maintain and restore the natural resource base in ways that increase agricultural production, to improve health conditions with special emphasis on meeting the health needs of mothers and children, including the establishment of self-sustaining primary health care systems that give priority to preventive care, to provide increased access to voluntary family planning services, to improve basic literacy and mathematics especially to those outside the formal educational system and to improve primary education, and to develop income-generating opportunities for the unemployed and underemployed in urban and rural areas?

2. Development Assistance Project  
Criteria (Loans Only)

- |    |   |     |
|----|---|-----|
| a. | <u>FAA Sec. 122(b).</u> Information and conclusion on capacity of the country to repay the loan at a reasonable rate of interest.   | Yes |
| b. | <u>FAA Sec. 620(d).</u> 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 percent of the enterprise's annual production during the life of the loan, or has the requirement to enter into such an agreement been waived by the President because of a national security interest? | N/A |
| c. | <u>FY 1968 Continuing Resolution.</u> If for a loan to a private sector institution from funds made available to carry out the provisions of FAA Sections 103   | N/A |

through 106, will loan be provided, to the maximum extent practicable, at or near the prevailing interest rate paid on Treasury obligations of similar maturity at the time of obligating such funds?

- d. FAA Sec. 122(b). Does the activity give reasonable promise of assisting long-range plans and programs designed to develop economic resources and increase productive capacities?

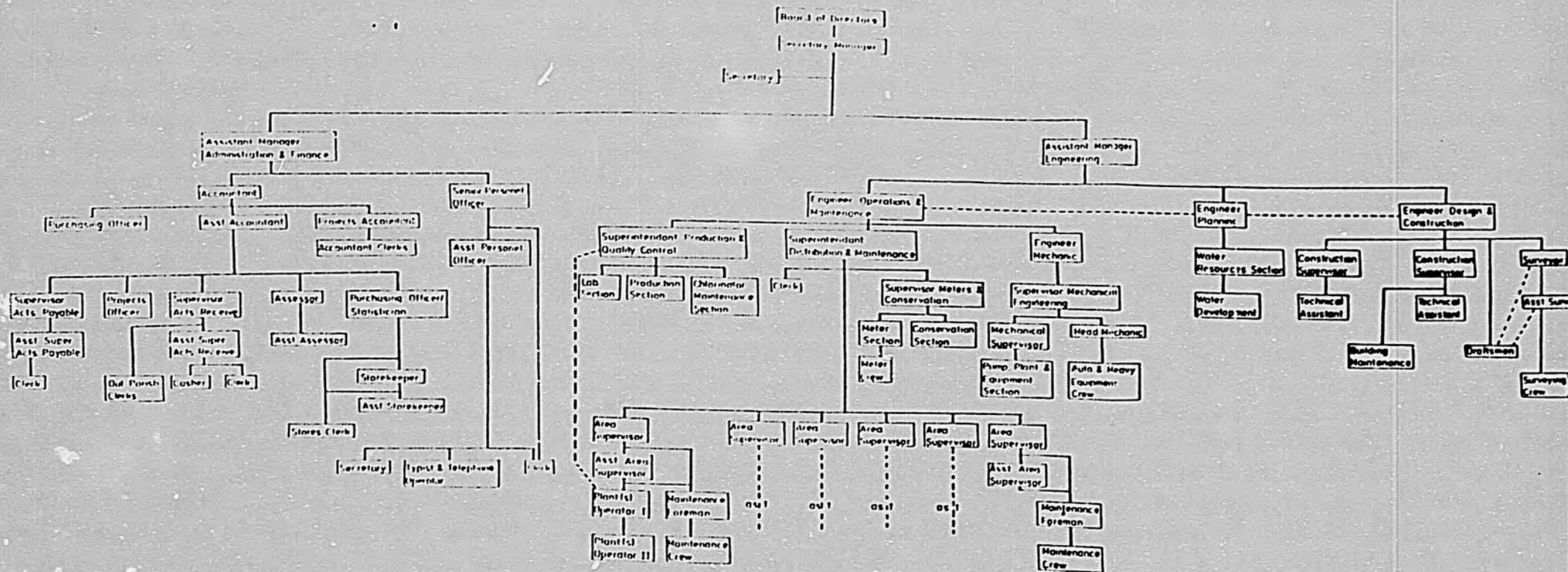
*Yes, in tourism sector*

3. Economic Support Fund Project Criteria

*N/A*

- a. FAA Sec. 531(a). Will this assistance promote economic and political stability? To the maximum extent feasible, is this assistance consistent with the policy directions, purposes, and programs of Part I of the FAA?
- b. FAA Sec. 531(e). Will this assistance be used for military or paramilitary purposes?
- c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

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ORGANIZATIONAL CHART OF THE GRENADA CENTRAL WATER COMMISSION  
(UNP SOURCE)

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*FINANCIAL STATEMENTS*

*FOR THE YEAR ENDED*

*31ST DECEMBER, 1987*

**PANNELL  
KERR  
FORSTER**

*Chartered Accountants*

CENTRAL WATER COMMISSION  
FINANCIAL STATEMENTS  
FOR THE YEAR ENDED 31ST DECEMBER, 1987

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Resident Partner: H. A. Joseph

**PANNELL  
KERR  
FORSTER**  
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REPORT OF THE AUDITORS TO THE MINISTER RESPONSIBLE  
FOR PUBLIC UTILITIES

We have examined the annexed Balance Sheet of the Central Water Commission at 31st December, 1987 and the related Statement of Income and Retained Earnings and Changes in Financial Position for the year then ended and report as follows:

As explained in note 2(c) to the Financial Statements the Commission has not provided for depreciation on buildings and production equipment which are stated in the Financial Statements at a valuation of \$9,577,000. Generally Accepted Accounting Principles require that depreciation be provided on all depreciable assets at rates sufficient to write off the cost or valuation of the relevant assets over their useful lives.

Subject to the effects of any adjustments which might have been necessary, in our opinion, the financial statements referred to above as set out on pages 3 to 11 are properly drawn up so as to exhibit a true and correct view of the state of the affairs of the Commission at 31st December, 1987 and to present fairly the results of its operations and changes in its financial position for the year then ended, according to the best of our information and explanations given to us and as shown by the books of the Commission.

GRENADA:

22nd June, 1988

*Pannell Kerr Forster*  
Chartered Accountants:

CENTRAL WATER COMMISSION

STATEMENT OF INCOME AND RETAINED EARNINGS  
FOR THE YEAR ENDED 31ST DECEMBER, 1987

INCOME	1987	1986
Water rates - unmetered	2,765,491	2,538,539
Water rates - metered	1,469,877	1,361,833
Water sales to ships	81,984	57,936
Service connections	191,733	133,173
Miscellaneous (Note 12)	8,784	11,878
Heavy equipment rental	<u>194,543</u>	<u>56,177</u>
	<u>4,712,412</u>	<u>4,159,536</u>
 <b>LESS: DIRECT EXPENSES</b>		
Planning and designing (Note 13)	50,625	35,448
Production and quality control (Note 13)	643,934	507,442
Transmission and distribution (Note 13)	1,463,786	1,496,115
Meter Reading (Note 13)	51,240	43,140
Heavy equipment expenses	<u>156,178</u>	<u>45,134</u>
	<u>2,365,763</u>	<u>2,125,279</u>
Gross Profit	2,346,649	2,034,257
 <b>Add: Other Income</b>		
Profit on contract	-	11,720
Gain on exchange	14,640	19,210
Gain/(Loss) on sale of Motor Vehicles	<u>50,055</u>	<u>( 16,044)</u>
Total Income	2,411,344	2,049,143
 Less: Administrative and general expenses (Note 14)	<u>1,570,354</u>	<u>1,491,384</u>
Net Income for the year	840,990	557,759
 Add: Liability to Ministry of Construction written off	<u>54,411</u>	<u>-</u>
	<u>895,401</u>	<u>557,759</u>
 <b>Accumulated Losses brought forward</b>		
As previously reported	( 524,859)	( 161,619)
Prior year adjustment (Note 15)	<u>6,135</u>	<u>( 914,864)</u>
As restated	<u>( 518,724)</u>	<u>(1,076,453)</u>
 Retained Earnings/(Accumulated Losses) carried forward	 \$ 376,677 =====	 \$( 518,724) =====

The notes on pages 6 to 11 form part of these financial statements

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CENTRAL WATER COMMISSION  
BALANCE SHEET AT 31ST DECEMBER, 1987

	Notes	1987	1986
<b>CURRENT ASSETS</b>			
Cash on hand and at bank		25,678	24,489
Accounts receivable and prepayments	3	2,006,374	1,888,014
Inventories	4	<u>616,708</u>	<u>379,091</u>
		<u>2,648,760</u>	<u>2,291,594</u>
<b>LESS: CURRENT LIABILITIES</b>			
Bank overdrafts (secured)	5	215,991	255,506
Accounts payable and accrued charges	6	1,995,553	1,550,624
Loan instalments due within one year	7	<u>260,427</u>	<u>249,149</u>
		<u>2,471,971</u>	<u>2,055,279</u>
<b>WORKING CAPITAL</b>		176,789	236,314
<b>FIXED ASSETS</b>	8	<u>20,031,752</u>	<u>18,587,111</u>
		\$20,208,541	\$18,823,435
		=====	=====
GOVERNMENT OF GRENADA - CAPITAL ACCOUNT	9	10,704,073	10,398,013
CAPITAL GRANTS	10	<u>4,497,351</u>	<u>4,094,778</u>
		15,201,424	14,492,791
RETAINED EARNINGS/(ACCUMULATED LOSSES)		<u>376,677</u>	<u>( 511,714 )</u>
		15,578,101	13,981,077
DEFERRED GAIN ON FOREIGN EXCHANGE		120,975	198,113
LONG TERM DEBT - Caribbean Development Bank	7	<u>4,509,465</u>	<u>4,716,345</u>
<b>CAPITAL EMPLOYED</b>		\$20,208,541	\$18,823,435
		=====	=====

The notes on pages 6 to 11 form part of these financial statements

:Secretary/Manager

:Director

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CENTRAL WATER COMMISSION

STATEMENT OF CHANGES IN FINANCIAL POSITION  
FOR THE YEAR ENDED 31ST DECEMBER, 1987

	1987	1986
<b>SOURCE OF FUNDS</b>		
Net income for the year	895,401	557,759
Adjustments for items not involving the movement of funds:		
Depreciation	390,280	398,490
(Gain)/Loss on disposal of fixed assets	( 50,055)	16,044
Liability written off	( 54,411)	<u>          -</u>
<b>FUNDS GENERATED FROM OPERATIONS</b>	<b>1,181,215</b>	<b>972,293</b>
Increase in creditors	499,340	275,920
Increase in capital grants	402,573	1,509,094
Disposal of fixed asset	65,750	33,599
Increase in Government contributions	366,050	326,434
Increase in bank loan instalments due within one year	<u>11,287</u>	<u>124,872</u>
<b>TOTAL FUNDS GENERATED</b>	<b><u>2,526,215</u></b>	<b><u>3,242,212</u></b>
<b>APPLICATION OF FUNDS</b>		
Decrease in deferred gain on exchange	72,038	11,190
Decrease in long term bank loans	206,880	333,539
Purchase of fixed assets	1,850,616	2,197,868
Increase in debtors	118,360	602,674
Increase in inventories	<u>237,617</u>	<u>48,757</u>
<b>TOTAL FUNDS APPLIED</b>	<b><u>2,485,511</u></b>	<b><u>3,194,028</u></b>
<b>INCREASE IN LIQUID RESOURCES</b>		
Net borrowings - at the beginning of the year	( <u>231,017</u> )	( <u>279,201</u> )
- at the end of the year	\$( <u>190,313</u> )	\$( <u>231,017</u> )
	=====	=====
<b>REPRESENTED BY:</b>		
Cash in hand and at bank	25,678	24,489
Bank overdrafts	( <u>215,991</u> )	( <u>255,506</u> )
	\$( <u>190,313</u> )	\$( <u>231,017</u> )
	=====	=====

The notes on pages 6 to 11 form part of these financial statements

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CENTRAL WATER COMMISSION

NOTES TO THE FINANCIAL STATEMENTS  
AT 31ST DECEMBER, 1987

1. PRINCIPAL ACTIVITY

The Commission was created by Act. No. 23 of 1969 with sole jurisdiction in all matters pertaining to the supplying of all potable water throughout Grenada.

2. SIGNIFICANT ACCOUNTING POLICIES

(a) Accounts receivable

A general provision for bad and doubtful debts is made, based on overall assessment of the ages of the respective debts and the chances of their recoverability.

(b) Inventories

Inventories are valued at cost, on a first-in, first-out basis, less an allowance for obsolescence

(c) Fixed Assets

As stated in note 8 below, some assets are stated at 1980 and 1981 valuations, while others are stated at historical cost. No depreciation is provided on buildings and equipment at 1981 valuation of \$9,577,000. Land is not depreciated. All other depreciable assets are depreciated on a straight line basis at varying rates, sufficient to write off their cost or valuation over their estimated useful lives. The rates used in providing for depreciation are as follows:

	Per Annum
Production equipment at cost	2.5%
Office equipment at cost and valuation	10%
Motor vehicles at cost and valuation	33 1/3%
Garage tools and equipment at cost	10%

3. ACCOUNTS RECEIVABLE AND PREPAYMENTS

	1987	1986
General consumers	1,957,126	1,882,042
Metered rate consumers	426,669	269,188
Sale of water to ships	<u>3,481</u>	<u>5,452</u>
	2,387,276	2,140,304
Less: Provision for doubtful debts	<u>510,803</u>	<u>325,000</u>
	1,876,473	1,815,304
Staff loans and advances	4,212	7,240
Prepaid expenses	17,528	15,470
Sundry debtors	7,900	40,000
Deposits	10,000	10,000
Rental of equipment debtors	<u>90,261</u>	<u>-</u>
	\$2,006,374	\$1,888,014
	=====	=====

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CENTRAL WATER COMMISSION

NOTES TO THE FINANCIAL STATEMENTS  
AT 31ST DECEMBER, 1987  
(continued)

	1987	1986
<b>4. INVENTORIES</b>		
Pipe fittings etc.	330,548	181,148
Laboratory spares	15,218	6,145
Motor vehicle spares	231,600	185,330
Stationery	3,587	5,450
Miscellaneous tools, chemicals and sundry items	<u>104,278</u>	<u>28,195</u>
	685,231	406,268
Less: Provision for obsolescence	<u>68,523</u>	<u>27,177</u>
	<u>\$616,708</u>	<u>\$379,091</u>
	=====	=====
<b>5. BANK OVERDRAFTS</b>		
Grenada Bank of Commerce Limited	195,281	206,940
National Commercial Bank of Grenada Limited	<u>20,710</u>	<u>48,566</u>
	\$215,991	\$255,506
	=====	=====
<p>The Grenada Bank of Commerce Limited overdraft bears interest at the rate of 12.5% per annum and is secured by the guarantee of the Government to the extent of \$270,000.</p> <p>The National Commercial Bank of Grenada Limited overdraft is unsecured and bears interest at the rate of 12.5% per annum.</p>		
<b>6. ACCOUNTS PAYABLE AND ACCRUED CHARGES</b>		
Trade Creditors	307,020	166,793
Sundry Creditors	744,724	479,725
Accrued Interest	22,247	6,574
Other Accruals	240,725	181,018
Provision for Pension	<u>680,837</u>	<u>716,511</u>
	<u>\$1,995,553</u>	<u>\$1,550,624</u>
	=====	=====
<b>7. LONG TERM DEBT</b>		
Caribbean Development Bank		
(a) 3/SFR-GR (TTCF) Water supply	30,276	34,010
(b) 3/SFR-GR (Orig.) Water supply	891,742	942,116
(c) 17/SFR-GR (Mama Cannes Project)	<u>3,847,874</u>	<u>3,989,359</u>
	4,769,892	4,965,485
Less: Instalments due within one year	<u>260,427</u>	<u>249,149</u>
<b>NET LONG TERM DEBT</b>	<u>\$4,509,465</u>	<u>\$4,716,345</u>
	=====	=====

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CENTRAL WATER COMMISSION

NOTES TO THE FINANCIAL STATEMENTS  
AT 31ST DECEMBER, 1987  
(continued)

7. LONG TERM DEBT - (continued)

Loans (a) and (b) are for a period of fifteen (15) years and are repayable by quarterly instalments of TT\$1,654.40 and CAN\$17,294.68 respectively, to include both principal and interest.

Loan (c) has been approved for a principal sum of EC\$4,222,000 all of which was received as of the Balance Sheet date. The loan is in two portions:

(i) The IDB portion (US\$861,608) is repayable in Seventy (70) instalments which commenced 15th April, 1984.

(ii) The IDA portion (US\$702,411) is repayable as follows:-

Twenty (20) instalments commencing 15th January 1990 to 15th July 1999  
Sixty (60) instalments from 2,000 to final settlement.

The interest on all loans is at the rate of 4% per annum except for the IDA portion which bears interest at a rate of 3/4% per annum.

The loans are to the state of Grenada, with the Commission as the Executing Agency.

8. FIXED ASSETS

	Cost or Valuation	Depreciation	Written Down Value 1987	1980
Land - cost	1,500	-	1,500	1,500
- at valuation	945,800	-	945,800	945,800
Building and production equipment - at valuation	9,577,000	-	9,577,000	9,577,000
Production equipment -at cost	6,203,546	579,521	5,624,025	5,790,639
Office equipment - at valuation	10,000	7,000	3,000	4,000
Office equipment - at cost	144,903	59,151	85,752	61,084
Motor vehicle - at valuation	217,000	162,241	54,759	3,437
- at cost	700,533	574,191	126,342	224,770
Garage tools and equipment	35,612	13,167	22,445	26,006
Mechanical equipment	43,625	10,375	33,250	37,612
Capital work in progress	<u>3,557,879</u>	<u>-</u>	<u>3,557,879</u>	<u>1,915,263</u>
	<u>\$21,437,398</u>	<u>\$1,405,646</u>	<u>\$20,031,752</u>	<u>\$18,587,111</u>
	=====	=====	=====	=====

Capital work in progress, motor vehicles, garage tools and equipment are stated at cost. Office equipment is stated at 1980 valuation with subsequent additions at cost. Land, buildings and production equipment are stated at 1981 valuation which was done by an official of the Government's Land and Surveys Department.

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CENTRAL WATER COMMISSION

NOTES TO THE FINANCIAL STATEMENTS  
AT 31ST DECEMBER, 1987  
(continued)

	1987	1986
<b>9. GOVERNMENT OF GRENADA - CAPITAL ACCOUNT</b>		
Balance at 1st January, 1987		
Add: Payments to Caribbean Development Bank on behalf of the Commission	10,338,023	10,011,589
	<u>366,050</u>	<u>326,434</u>
Balance at 31st December, 1987	\$10,704,073 =====	\$10,338,023 =====
<b>10 CAPITAL GRANTS</b>		
United Nations Development Program	79,556	79,556
British Development Division (BDD)	561,249	561,249
Organisation of American States (OAS)	20,000	20,000
Agency for Rural Transformation (A.R.T.)	36,000	36,000
United States Agency for International Development (U.S.A.I.D.)		
Canadian International Development Agency (CIDA)	3,116,295	2,939,692
Organisation of Oil Producing and Exporting Countries (O.P.E.C.)	237,000	237,000
Mission Administered Fund	70,606	70,606
National Housing Authority	123,714	91,550
Sundry Grants	65,580	59,185
	<u>187,351</u>	<u>607</u>
	\$4,497,351 =====	\$4,094,771 =====
<b>11. CONTINGENT LIABILITIES</b>		
Letters of Acceptance in favour of Peninsula Corporation amounting to US\$6,000 (EC\$17,249).		
Bonds in favour of the Government of Grenada valued at EC\$3,866.		
<b>12. MISCELLANEOUS INCOME</b>		
Sale of Material	8,197	6,635
Private Service -	<u>587</u>	<u>5,243</u>
	\$5,784 =====	\$11,878 =====

CENTRAL WATER COMMISSION

NOTES TO THE FINANCIAL STATEMENTS  
AT 31ST DECEMBER, 1987  
(continued)

13. DIRECT EXPENSES	1987	1986
<i>Planning and Design</i>		
Material supplied	128	204
Salaries and wages	44,163	25,058
Motor vehicle expenses	6,174	7,634
Miscellaneous	<u>160</u>	<u>552</u>
	\$50,625	\$33,448
	=====	=====
<i>Production and quality control</i>		
Salaries and wages	369,933	217,142
Travelling allowances	4,935	5,170
Chemicals	105,328	86,194
Fuel and oils	9,286	14,800
Electricity for pumps	126,764	156,720
Motor vehicle expenses	24,925	22,832
Miscellaneous	<u>2,763</u>	<u>4,584</u>
	\$643,934	\$507,442
	=====	=====
<i>Transmission and Distribution</i>		
Salaries and wages	962,659	912,062
Motor vehicle expenses	163,657	218,789
Travelling allowances	1,043	4,850
Maintenance of mains	200,529	208,398
Electricity	126,764	140,919
Miscellaneous	9,134	5,852
Tools	<u>-</u>	<u>5,215</u>
	\$1,463,786	\$1,496,115
	=====	=====
<i>Meter Reading</i>		
Salaries and wages	33,154	23,345
Motor vehicle expenses	16,707	17,673
Miscellaneous	<u>1,379</u>	<u>2,122</u>
	\$51,240	\$43,140
	=====	=====
<i>Heavy Equipment</i>		
Salaries and wages	79,651	29,418
Materials and fuel	<u>76,527</u>	<u>15,716</u>
	\$ 156,178	\$45,134
	=====	=====

CENTRAL WATER COMMISSION

NOTES TO THE FINANCIAL STATEMENTS  
AT 31ST DECEMBER, 1987  
(continued)

14 ADMINISTRATIVE AND GENERAL EXPENSES

	1987	1986
Salaries and wages	391,660	327,550
Travelling and other allowances	14,205	16,704
Consultant expenses	-	23,812
Group health	26,955	2,610
Security	26,400	16,878
Stationery and office supplies	32,478	23,755
Electricity	34,210	35,219
Telephone and cables	15,527	19,743
Depreciation	390,280	398,490
Repairs and maintenance	49,687	40,844
Motor vehicle expenses	22,533	22,312
Professional fees	13,065	10,345
Interest and bank charges	158,391	151,219
Death benefits	2,205	2,029
Rent	7,644	7,570
National Insurance contributions	100,200	97,640
Employees' training	5,347	12,199
Advertising	5,368	5,670
Uniforms	8,982	8,692
Directors' fees	24,350	13,600
Miscellaneous	2,332	5,168
Entertainment	21,918	13,260
Bad debts	110	1,850
Severance pay	6,457	9,870
Gratuity pay	1,564	68,015
Provision for bad debts	185,803	125,000
Workmen's compensation	11,754	9,060
Insurances	8,062	1,844
Provision for pension	2,867	20,416
	\$1,570,354	\$1,491,384
	=====	=====

15. PRIOR YEAR ADJUSTMENT

Correcting Opening Balances:

Trade Debtors	(87,344)
Other Debtors	1,067
Bank Balances	592
Insurance	1,718
N.I.S. outstanding	40,006
Gratuity provision	37,826
	\$( 6,135)
	=====