

Chapter 3 Implementation Plan

Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Concept

The implementation concept are made in order to ensure smooth procurement, installation, and transfer of the equipment, considering that the Project is implemented with the Japanese Grant Aid.

Considering that the Project will accompany the enforcement of the Law No.4, we shall give enough explanation on the implementation content, method, and schedule to obtain understanding from those who are responsible and in charge of CCC and each RBO at the time of delivery and installation of the equipment. We shall also cooperate overall with the Egyptian side for the necessary measures to be taken by them for the Project implementation.

The implementation concept is described below:

- (1) Aiming at smooth implementation within a limited time, persons in charge from the procurement company and engineers from the equipment makers and their agents will be dispatched during the period from procurement to handover. Such personnel include a process supervisor, a facilities specialist and engineers from each equipment maker will be engaged in steady technical transfers of installation, test operation and adjustment, and training how to use the equipment.
- (2) It is confirmed that the Branches Affairs Central Department of EEAA should take charge of all aspects as the responsible organ on the Egyptian side throughout the period of the execution work in the Project, and CCC takes responsibility in the technical aspect.
- (3) Since the Project is implemented in two periods, the implementation plans for each period should correlate sufficiently with each other to secure smooth operation after the transfer of the equipment.

3-1-2 Implementation Conditions

In implementing the Project, the following points should be noted:

- (1) Since the facilities where the equipment is installed will be built while utility installation and construction work are done, sufficient coordination of work schedule shall be made with those, and the required conditions to install equipment properly in the building with other facilities shall be checked.
- (2) Scope of works should be clarified in the work of utility and other facilities on the Egyptian side and equipment installation on the Japanese side to facilitate efficient and smooth progress of work.
- (3) Technical support from the agents in Egypt will be effectively used at the time of implementation to create a system of technical service for EEAA by the agents after the handover of the equipment.

3-1-3 Scope of Works

For the implementation of the Project the scopes of work assigned to Egypt and Japan are described on the following Table 3-1.

Table 3-1 Major Undertaking to be taken by Each Government

Contents of Work	Responsibility of Japanese side	Responsibility by Egyptian side
1. Equipment		
- Procurement	○	
- Installation work	○	
- Performance test	○	
- Operational instructions and Maintenance training	○	
2. Facilities Provision		
- Construction and remodeling of Laboratory		○
- Utility within the site		○
- Drop wiring and internal wiring	○	
- Air conditioning and ventilation work		○
3. To secure the room for the equipment		○
4. Transportation and custom clearance		
- Internal transportation from the port of disembarkation to the project site	○	
- Tax exemption and custom clearance of the products at the port of disembarkation	○	
- Tax exemption measures		○
5. Banking arrangement and Payment of commission		○
6. To accord Japanese nationals whose service may be required in connection of the Project under the verified contact such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		○ ○
7. To maintain and use properly and effectively the equipment procured under the Grant		○
8. Permission procedures necessary for the project implementation		○
9. To bear all expenses, other than those to be borne by the Grant, necessary for construction of facilities as well as the transportation and installation of the equipment.		○

3-1-4 Consultant Supervision

In supervising the implementation of the Project, a concrete plan of consultant supervision shall be formulated, based on sufficient discussion of detail with EEAA and the equipment procurement dealer, concerning the implementation period and contents of work as well as the layout plan of the equipment. We shall match the layout plan of the equipment properly with the contents and schedule of the construction work of the facilities at each RBO (ALX, TNT, MSR, SEZ).

The consultant in charge of facilities will make a field survey prior to the installation to check if the equipment layout agrees with the developing facilities, in line with the progress of the construction work of the facilities. In addition, at the time of equipment installation, consultants in charge of equipment procurement will put concentrated supervision to confirm the work progress and handover.

3-1-5 Procurement Plan

The need for a system of equipment makers to supply maintenance service as well as spare parts and expendables locally in Egypt should be sufficiently examined to make an effective use of the procured equipment. Particularly for the operation of the procured equipment, the superiority of the after sales service should be compared and evaluated among Japanese, local, and third countries equipment makers on the equipment planning stage.

It has been confirmed that some Japanese makers have their agencies in Egypt which can provide proper service, and there are no problems with the service system in operation by the local agencies of the makers of third countries. Under these circumstances, we have judged that good enough service will be provided locally by the makers for the equipment procured from Japan and the third countries.

The Project equipment will be procured from the Japanese makers and the third countries (US, UK, Germany and Switzerland) who have their agencies in Egypt.

3-1-6 Implementation schedule

The Project will be implemented, separated into two periods. The implementation schedule of each period is shown on the following Table 3-2.

Table 3-2 Implementation Schedule

Phase	Months	1	2	3	4	5	6	7	8	9	10	11	12
Phase I	Detailed Design												
	Supply and Installation												

3-1-7 Obligations of recipient country

The obligations of Egypt in the Project are described below:

(1) Tax exemption measures

To take tax exemption measures concerning the tariff on imported equipment that are procured from Japan and third countries.

(2) Banking Arrangement and Authorization to Pay

To take necessary steps to open a bank account and issue Authorization to Pay, and bear the necessary expenses.

(3) Facilitation of the procures at entry into/stay in/departure from Egypt of personnel related to the Project

To facilitate the permission and shorter the procedure necessary for entry into/stay in/departure from Egypt for consultants and procurement dealers at work for the Project.

(4) Bearing expenses not included in the Grant Aid, but related to the Project

To bear the expenses, not included in the grant, for the construction work of the facilities and installation as well as procurement or purchase of related equipment like furniture.

3-2 Project Cost Estimation

3-2-1 Project Cost Estimation

(1) Cost shared by Egypt

In 1996/97 and 1997/98 budget years the Government of Egypt will bear the cost required for obtaining or building each facility and purchasing the equipment.

- | | |
|--|-------------------|
| 1) Obtaining facilities and interior
finish work for CCC and GC-RBO | 29.0 million L.E. |
| 2) Construction work for RBO's at
ALX, TNT, MSR | 12.8 million L.E. |
| 3) Other costs | 1.9 million L.E. |

43.7 million L.E.

(2) Conditions of addition of Cost

- 1) Time of addition: Dec. 1996
- 2) Exchange rate: 1 US\$ = JPY110.00
- 3) Implementation period: Divided into two periods. Shown in table 3-2, the table for Implementation Schedule.
- 4) Others: This Project is to implemented in accordance with the Grant Aid system of the Government of Japan.

3-2-2 Operation and Maintenance Costs

(1) Maintenance system

The maintenance system on the Egyptian side concerning the Project is in most parts yet on a planning stage. It is planned that the employment of all staff will be completed at CCC in the second quarter of 1998, and at RBO's in the third quarter of 1998 to prepare for the time when the Law No.4 becomes effective in February 1998. At CCC, a director and three management staff and thirteen technical staff will be deployed. The number of staff of each RBO is about 25 in total, including 12 technical staff in each mini laboratory which directly relates to the Project.

The personal plan presented by EEAA at the Field Survey of the Basic Design

showed that the numbers of staff would not reach the one sufficient for the proper operation of the Egyptian plan. With an advice given by the study team for EEAA on the remake of the personnel plan, EEAA increased the planned staff and have assured of more increase if a need requires. Therefore it can be judged that there will not exist any big organizational hindrance, supported by the prospect that the Project-type Technical Cooperation will start by the second quarter when the operation begins on the Egyptian side.

(2) Maintenance cost

The maintenance cost consists of personnel expenses, operational costs such as electricity, water, fuels, etc., expenses to purchase spare parts and expendable, maintenance/repair costs, etc.

1) Personnel expenses

CCC:	Director	15,000 L.E./year × 1	=	15,000 L.E./year
	Secretary	6,000 L.E./year × 1	=	6,000 L.E./year
	Clerk	2,000 L.E./year × 1	=	2,000 L.E./year
	Driver	4,000 L.E./year × 1	=	4,000 L.E./year
	Chief engineer	8,000 L.E./year × 1	=	8,000 L.E./year
	Engineer	6,000 L.E./year × 8	=	48,000 L.E./year
	Technician	4,000 L.E./year × 4	=	16,000 L.E./year

Total = 99,000 L.E./year

RBO:	Manager	9,000 L.E./year × 1	=	9,000 L.E./year
	Chief engineer	8,000 L.E./year × 1	=	8,000 L.E./year
	Engineer	6,000 L.E./year × 6	=	36,000 L.E./year
	Technician	4,000 L.E./year × 4	=	16,000 L.E./year

Total = 69,000 L.E./year

The total amount of the personnel expenses will be 444,000 L.E./year covering the staff at CCC and five RBO's (69,000 L.E./year × 5 = 345,000 L.E./year).

2) Operational costs

Electricity	≈ 90,900 L.E./year
Water	≈ 7,800 L.E./year
Gas	≈ 6,500 L.E./year
Gasoline	≈ 17,000 L.E./year

Total	122,200 L.E./year
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(3) Spare parts and expendable purchase expenses

It is estimated that the expenses to purchase spare parts and expendables will be approximately 816,500 L.E./year on a stage when the local operation is at full throttle after the Project equipment procurement.

(4) Maintenance and repairs cost

After the handover of the equipment, one year of a warranty period will be provided for the equipment. The cost necessary for maintenance and repairs after that period should be borne by the Egyptian side. The cost is estimated at about 466,600 L.E./year.

Accordingly, the maintenance cost borne by the Government of Egypt is estimated to be as below, which EEAA confirmed the study team to secure the budget for.

Personnel expenses	444,000 L.E./year
Operational costs	122,200 L.E./year
Spare parts and purchase expenses	816,500 L.E./year
Maintenance and repairs costs	466,600 L.E./year

1,849,300 L.E./year

Chapter 4 Project Evaluation and Recommendation

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4-1 Project Effect

This environmental monitoring network plan is regarded as one of the Egyptian environmental programs to collect and appraise data for achieving the environmental standards stated in Law No.4 in 1994, Law No. 48 in 1982, and Decrees No.8 and No.9 for Law No. 48. Law No. 4 gives provisions on the standards for substances from pollution sources the ones for industries, the ones for hazardous substances, the regulatory limits on carcinogenic substances, the standards for working conditions, the ones for waste disposal into seawater, etc. Law No.48 and its Decrees give provisions on the standards for disposal of industrial wastewater into freshwater channels, surface water, and underground water, provisions on water quality standards, potable water quality standards, etc. The equipment to be procured in the Project will enable the monitoring of the pollution sources and the ambient environments concerning these standards and the analysis of measured data.

"Environmental Map of Egypt", which was formed by the Technical Cooperation Office for the Environment of EEAA in March 1995, shows lists of pollution sources (air, water) by major industry, sources of industrial wastewater by governorate, and energy consumption by major industry. This clarifies the status of exhausts and consumption of major factories in cities including the five covered by the Project located in the region north of the Nile delta and Sinai region. The Project equipment used for pollution sources measurement meets basic conditions to conduct an on-the-spot inspection of such pollution sources as described in Law No.4.

This basic design study confirmed that there was no duplication with the scopes of works covered by the projects of other donors. Specifically, this confirmation has been done by the field survey, together with the review of the activities of existing environmental monitoring networks and Environmental Institutes described in "Directory of Environmental Monitoring in Egypt", which was also formed by the above-mentioned office of EEAA. The survey and the review have indicated that this environmental monitoring network has appropriate and valid objects to be monitored. The water quality monitoring of the Nile by MOH and the ambient air monitoring at representative points conducted by either MOH or DANIDA seem on monitoring maps to overlap some ambient environmental measurement area in this regional environment monitoring network. The law indicates, however, that their monitoring functions will be transferred to EEAA before long. Furthermore, as mentioned before, there are no other plans on monitoring pollution sources.

Therefore, the implementation of the Project will agree with the goals of the legal provisions on the environmental laws of Egypt and the sector's basic plans, and meet the needs of Egypt in terms of the project scope. Accordingly, it is considered that the Project is viable to be implemented.

Considering the incremental benefits, it is first pointed out that with the Plan EEAA will have the ability in hardware necessary for monitoring of the ambient environment and the inspection of pollution source at 5 major cities in the northern part of Egypt. In line with the Project, EEAA engineers who will operate the equipment are expected to be trained in the Project-type Technical Cooperation by JICA. Given the success of the both, EEAA become able in collecting the scientific data to be significant for key environmental standards. In other words, the implementation of the Project means that EEAA will obtain the fundamental condition and ability, which should be the first in Egypt, to bring inspection and regulation into pollution sources of major industries at major cities that have long apparently polluted the surroundings but not been regulated. This should improve the environmental administration and measure in the local districts in jurisdiction of the concerned RBO's, which we can naturally expect as a good result of the Project.

On the other hand, the current state of the Environment recognized with concrete data which are to be obtained in this Egyptian plan will become an important component of the annual report on the environmental state of Egypt, which is prepared by Environmental Quality Sector of EEAA, facilitating the environmental awareness of the nation through the report to the (national) Assembly. From this point of view, the Project will take effects on environmental administration both at local districts directly in the Project and at all over Egypt giving benefits on not only the residential area of the concerned RBO's but also indirectly the whole nation in the future.

Finally, in the environmental sector including MOH and MPW/WR, there have been several projects of equipment procurement by donors of other countries or organs where occasionally laboratories and institutions fail to operate steadily after the procurement. This presents the difficulty of maintenance in this sector as a task to be overcome. But, at a time, it shows it should be a quite significant accomplishment in the cooperation with Egypt in the environmental field to bring about a steadily and continuously working laboratory.

4-2 Recommendation

It is necessary to secure a required number of engineers in EEAA who can use the equipment effectively so that the equipment procured by the Project will be efficiently utilized. Though law clarifies the objects to be monitored, skills and plans will be required for properly selecting measurement points and necessary numbers of samples and managing the whole process in order to carry out specific monitoring work. Furthermore, it is necessary to overcome the difficulties in maintenance after procurement on the experiences of equipment procurements by other donors.

In order to overcome these issues, Project-type Technical Cooperation is essential. The achievements of the Project will not be effective without a success of Project-type Technical Cooperation that supports EEAA to carry out technical training programs and strengthen the organization itself. Particularly, for sampling of pollutants at the air pollution source and operation of the general-purpose equipment for laboratories, it is quite necessary to have the sound technical transfers by experts.

Also, for the purpose of upgrading the environmental data, the steady and continued monitoring activity is a prerequisite. Therefore it will be important to prepare for repairs and replacement of parts and keep maintaining the facilities. With respect to this point, it has been confirmed that the agents for manufacturers in Egypt have sufficient capability and personnel to cope with the equipment procured by the Project. It is very recommendable, however, to make opportunities regularly for technical exchange between the engineers of the manufacturers and the staffs of the monitoring network (e.g. training of staffs for maintenance skills at a regular inspection by suppliers, dispatch of trainees to manufacturers, etc.).

Appendices

- 1 Member List of the Survey Team**
- 2 Survey Schedule**
- 3 List of Party Concerned in the Recipient Country**
- 4 Minutes of Discussion**
- 5 The Layout Drawing of the Project Equipment**

1. The first step in the process of the
2. The second step is to determine the
3. The third step is to determine the
4. The fourth step is to determine the

Appendix 1 Member List of the Survey Team

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1-1 Field Study of the Basic Design Study

Mr. Hiromi CHIHARA	Leader	Senior Development Specialist, Institute for International Cooperation, JICA
Mr. Tadashi KOSHIMIZU	Technical Adviser I	Environment Agency
Mr. Yasuyuki HATA	Technical Adviser II	Ministry of Health and Welfare
Mr. Tatsuhide HAMASAKI	Coordinator	First Project Study Division, Grant Aid Project Study Department, JICA
Mr. Hideki NARUSE	Chief Consultant/ Management, Operation & Maintenance Plan	GREEN BLUE CORPORATION
Mr. Soichi TAKAI	Equipment Planner I/ Procurement Planner	INTEM Consulting, Inc.
Mr. Tsuyoshi SASAKA	Equipment Planner II	GREEN BLUE CORPORATION
Mr. Koichi YOSHIDA	Facilities Planner	INTEM Consulting, Inc.

1-2 Briefing of Draft Basic Design Report

Mr. Hiromi CHIHARA	Leader	Senior Development Specialist, Institute for International Cooperation, JICA
Mr. Tadashi KOSHIMIZU	Technical Adviser I	Environment Agency
Mr. Tatsuhide HAMASAKI	Coordinator	First Project Study Division, Grant Aid Project Study Department, JICA
Mr. Hideki NARUSE	Chief Consultant/ Management, Operation & Maintenance Plan	GREEN BLUE CORPORATION
Mr. Soichi TAKAI	Equipment Planner I/ Procurement Planner	INTEM Consulting, Inc.

Appendix 2 Survey Schedule

Appendix 2 Itinerary of the Field Survey

2-1 Itinerary of Field Survey of the Basic Design Study (From Oct 18 to Nov 7, 1996: 21 days)

Number of Day	Date	Contents of the Survey
1	Oct 18 (Thu)	Cairo (Arrival of consultant team)
2	19 (Sat)	Survey on the facilities and existing equipment of CCC
3	20 (Sun)	Visited JICA Office in Cairo, Held a meeting Meeting survey on itinerary, Briefing of I/R, Distribution of Questionnaire, Confirmation of the request contents (at EEAA)
4	21 (Mon)	Confirmation & discussion of the request contents, Confirmation of related laws & regulations (at CCC)
5	22 (Tue)	Confirmation & discussion of use & purpose of requested equipment, Discussion on equipment layout (at CCC) Confirmation of current state of air monitoring (at EEAA)
6	23 (Wed)	Confirmation of budget & personnel plan, Discussion on measurement methods (at EEAA) Review of collected materials
7	24 (Thu)	Confirmation & discussion on the request contents (at CCC) Q & A on monitoring related information (at EEAA)
8	25 (Fri)	Review of collected materials, Meeting in team
9	26 (Sat)	Moved to Tanta, Courtesy calls at Tanta local government office & Governor, Site inspection Moved to ALX, Site inspection (stayed in ALX)
10	27 (Sun)	Moved to MSR, Courtesy calls at MSR local government office & Governor, Meeting with RBO Director, Site inspection, Moved to Cairo
11	28 (Mon)	Discussion on the request contents & construction sites (at JICA Office) Moved to SEZ, Site inspection
12	29 (Tue)	Discussion on construction plan (at Arab Design Office) Discussion on equipment (at CCC) Arrival of official members in Cairo
13	30 (Wed)	Visited JICA Office in Cairo, Meeting Courtesy call at Embassy, Courtesy call at EEAA Visited Nile Research Institute Site inspection (CCC & GC-RBO)
14	31 (Thu)	Briefing on Japanese grant aid system, Discussion on M/D (at EEAA) Visited GTZ, Visited CIDA
15	Nov 1 (Fri)	Review of collected materials, Meeting in team
16	2 (Sat)	Site inspection (ALX), Visited MOH Discussion on Questionnaire (at EEAA)
17	3 (Sun)	Discussion on M/D & personnel plan (at EEAA) Discussion on construction plan (at Arab Design Office) Visit to agents
18	4 (Mon)	Discussion on draft M/D (at EEAA) Site inspection, Discussion on equipment (at CCC & GC-RBO)

Number of Day	Date	Contents of the Survey
19	5 (Tue)	Visits to agents Signed M/D (at EEAA)
20	6 (Wed)	Report at Embassy Report at JICA Office & Embassy, Confirmation & discussion on wastes treatment methods
21	7 (Thu)	Visited MPW/WR Left Egypt

2-2 Itinerary of the Briefing of the Draft Basic Design Report
(From Dec 14 to Dec 23, 1996: 10 days)

Number of Day	Date	Contents of the Survey
1	Dec 14 (Sat)	Arrived in Cairo
2	15 (Sun)	Visited JICA Office in Cairo, Held a meeting Courtesy call at Embassy, Courtesy call at MOIC
3	16 (Mon)	Courtesy call at EEAA, Briefing of D-B/D, Discussion Discussion on construction plan (at Arab Design Office) Discussion on basic design (at EEAA) Moved to SEZ, Courtesy call at SEZ local government office, Site inspection
4	17 (Tue)	Discussion on equipment (at CCC) Site inspection
5	18 (Wed)	Discussion on draft M/D, Signed M/D (at EEAA)
6	19 (Thu)	Report at Embassy, Report at JICA Office
7	20 (Fri)	Material review, Meeting in team Three official members left Egypt
8	21 (Sat)	Briefing on layout drawing, Discussion (at Arab Design Office) Inquiry in budget & organization (at EEAA)
9	22 (Sun)	Discussion on equipment (at CCC) Report at JICA Office
10	23 (Mon)	Left Egypt

Appendix 3 List of Party Concerned in the Recipient Country

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Egyptian Environmental Affairs Agency (EEAA)

Mr. Salah Hafez	Chief Executive Officer
Mr. El-Sayed El-Sharkawy	C.D.C. Branches Affairs
Dr. Mawaheb A. Aboul Azin	Director of CCC
Mr. Ihab Iman Ragab	Civil Engineer of CCC
Ms. Schmoh Sbdou	Secretary of CCC
Dr. Mohamed El Zarka	Head of Environmental Quality Sector
Mr. Nashat Rafat	Programmer
Mr. Monar Mohamed	Computer Center Operator
Mr. Issam Shiley	Engineer
Mr. Ahmed Hamza	Senior Technical Advisor
Mr. Medhat Massoud	Program Officer
Mr. Khadiga Mohamed Kassla	Chemist of CCC
Dr. Magdy Bahgat	Director of Suez Branch
Dr. Magdy Allam	Director of Greater Cairo Branch

Ministry of International Cooperation (MOIC)

Mr. Ahmed Ragae

Ministry of Health (MOH)

Dr. Seham M. H. Hendy	General Director of Environmental Monitoring & Occupational Health Center
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Ministry of Public Works and Water Resources (MPW/WR)

Gelad Hassen	Director
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The Arab Bureau for Design & Technical Consultations

Mr. Adel M. Hossny	Architect, Chief Design
Ms. Ahmed Farag Ahmed	Architect, Director
Mr. Ahmed Nassim	Architect
Mr. Gauhara Soliman	Architect
Eng. Ahmed Mohamed Muhmoud	Surveying Engineer
Mr. Atef M. Moustafa	General Adm. for Planning & Control Construction Project Management

Nile Research Institute (NRI)

Prof. Mohamed R. Abdelbary	Director
Prof. Mohamed El Moattassem	Professor Emeritus
Mr. Mohamed Heikal	Director of Water Quality Lab.
Dr. Amal El Sherbini	Head of Water Quality Division

Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ)

Ms. Barbara Hatour Satow Programme Officer

Canadian International Development Agency (CIDA)

Mr. Nicole Chartrand-Tresch First Secretary

Alexandria Governorate

Dr. Fatty haman Director of Environmental Office
Mr. Mansaur Sohima Director of Organizer to Government
Mr. Yoary Abd El Zaher Director of Organizer to Government
Dr. Fatma Mohamed Abou Shouk Assistant Manager of Environmental Affairs Office

Suez Governorate

General. Yahya El Bahnasay Governor
General. Mohsen Sadak General Secretary
Mr. Samir Abed El Sadat Director of M & US
Mr. Suid Solemra Abiu Engineer of Planning & Development Department
Mr. Moustfw Ahmed Director to Water project

Tanta Governorate

Mr. Maher El Gendi Governor
Mr. Gamal El Din El Touni General Secretary
Ms. Morsy Kassim Assistant Secretary General
Mr. Sheikar Engineer of Office Project
Mr. MI Shaban El Bacrawi Translator

Dakhaleya Governorate

General. Fakhr El Din Khaled Governor
Mr. Talaat El Shihab El Din General Secretary
Mr. Morsy Kassim Assistant Secretary General
Dr. Khaled Toulan Head of EMU
Mr. Shei Kar Engineer of Office Project

United Scientific Co. (USCO)

Dr. Hazem Tolba General Manager
Mr. Mohamed Tarek Tolba Engineer / General Manager

Egyptian Computer Systems

Mr. Ashraf Galal Sector Manager – Sales Development

Appendix 4 Minutes of Discussion

MINUTES OF DISCUSSIONS
BASIC DESIGN STUDY
ON
THE PROJECT FOR SUPPLY
FOR THE REGIONAL ENVIRONMENTAL MONITORING NETWORK
IN
THE ARAB REPUBLIC OF EGYPT

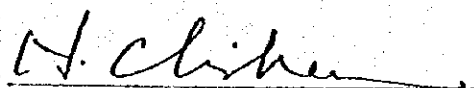
In response to a request from the Government of the Arab Republic of Egypt, the Government of Japan decided to conduct a Basic Design Study on the Project for Supply for the Regional Environmental Monitoring Network in the Arab Republic of Egypt (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Egypt a study team which is headed by Mr. Hiromi CHIHARA, Development Specialist, Institute for International Cooperation, JICA, and is scheduled to stay in the country from October 18 to November 7, 1996.

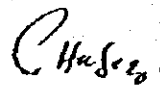
The team held discussions with the officials concerned of the Government of the Arab Republic of Egypt and conducted a field survey at the study area.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets. The team will proceed to further works and prepare the Basic Design Study Report.

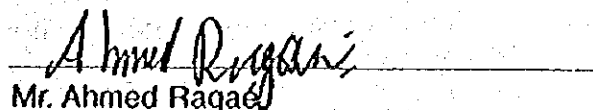
Cairo, November 5, 1996



Mr. Hiromi Chihara
Leader,
Basic Design Study Team,
Japan International
Cooperation Agency,
Japan



Mr. Salah Hafez
Chief Executive Officer,
Egyptian Environmental Affairs
Agency,
The Arab Republic of Egypt



Witnessed by: Mr. Ahmed Ragaei
First Undersecretary,
Ministry of Economy and International Cooperation,
The Arab Republic of Egypt

ATTACHEMENT

1. Project Title

The title of the Project is "The Project for Supply for the Regional Environmental Monitoring Network in the Arab Republic of Egypt".

2. Objectives

The objective of the Project is to procure the equipment necessary for the mini-laboratories to establish the Regional Environmental Monitoring Network in the Arab Republic of Egypt.

3. Project Sites

Cairo Central Center(CCC), Greater Cairo Regional Branch Office(GC RBO), Alexandria Regional Branch Office(ALX RBO), Tanta Regional Branch Office(TNT RBO), Mansura Regional Branch Office(MSR RBO) and Suez Regional Branch Office(SEZ RBO) (see ANNEX-I)

4. Responsible and Executing Agency

The Egyptian Environmental Affairs Agency (see ANNEX-II).

5. Items Requested by the Government of the Arab Republic of Egypt

After discussions with the Basic Design Study Team, the items shown in ANNEX-III were finally requested by the Egyptian side, which is to reflect the latest requirements replacing all the past lists. Further, each item of the equipment and materials have been rated in order of priority for necessity considering such factors as;

- affinity with the activity of each mini-labolatory at the respective Regional Branch Office,
- costs of operation and maintenance,
- any specific technical reasons such as space requirements and staff recruitment.

The rating has been "tentatively" made for the major equipment by classifying each item as follows:

Priority A : minimum requirements for monitoring basic environmental parameters and pollutants sources

Priority B : required for monitoring environmental parameters and pollutants sources with importance next to Priority A

Priority C : advanced application for monitoring a variety of environmental parameters

Priority D : sophisticated or state of art application of environmental measurement techniques

The equipment of functions which deem much duplicated with the equipment already supplied under the individual equipment grant aid system were also classified as Priority D.

Handwritten signatures and initials.

However, the final decision of equipment of the Project will be made after further studies.

6. Japan's Grant Aid System

- (1) The Government of the Arab Republic of Egypt has understood the system of Japan's Grant Aid explained by the team, as described in ANNEX-IV.
- (2) The Government of the Arab Republic of Egypt will take necessary measures, described in Annex-V for smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is Extended to the Project.

7. Schedule of the Study

- (1) Based upon the Minutes of Discussions and further studies, JICA will prepare the Draft Basic Design Report in English and dispatch a mission to the Arab Republic of Egypt around mid December, 1996, in order to explain its contents.
- (2) In case that the contents of the Draft Basic Design Report are accepted in principle by the Government of the Arab Republic of Egypt, JICA will complete the Final Report and send it to the Government of Egypt by the end of February, 1997.

8. Other Relevant Issues

- (1) Discussion on the list of equipment (refer to ANNEX-III)

The Egyptian side informed that the equipment with "※" corresponds to the items at CCC and GC RBO under discussion with the Project-type Technical Cooperation for the Environmental Monitoring Training Project and may desirably be considered as such, if not covered under this Grant Aid Project. The Japanese side took note of it and transfer this information to the Government of Japan.

- (2) Schedule of construction of mini-laboratory buildings

The mile-stone schedules for each mini-laboratory building are shown in ANNEX-VI.

- (3) Floor plans of the mini-laboratories and the equipment layout

In order for enabling the Japanese side to study the equipment layout at each laboratory, the Egyptian side submitted the basic drawings of the relevant floor plans of the buildings. Especially, regarding the layout of the equipment of CCC and GC RBO, it was confirmed that the whole space of mezzanine floor would be left open for locating the equipment of CCC and GC RBO in a flexible manner for space economic reasons.

- Environmental considerations

The Egyptian side ensured that an adequate disposal of the laboratory wastes such as those bearing hazardous liquid and solid substances should be maintained by applying a sound waste management practice and/or installing an appropriate treatment facility as required, so that any adverse environmental impact due to the operation of the laboratories must be avoided.

(4) Staffing plan of laboratory

The Egyptian side informed of their tentative plan of the staff assignments to CCC and RBOs including their mini-laboratories as shown in ANNEX-VII.

Further, the Egyptian side explained that in about three(3) months a recommendation of the organizational structure of the RBO, functions and staff requirements with their job description will be expected as one of the outcome of the DANIDA's technical cooperation project "Organization Support Program".

(5) Inland transportation of the rquipment (refer to the paragraph (6), d) of ANNEX-IV)

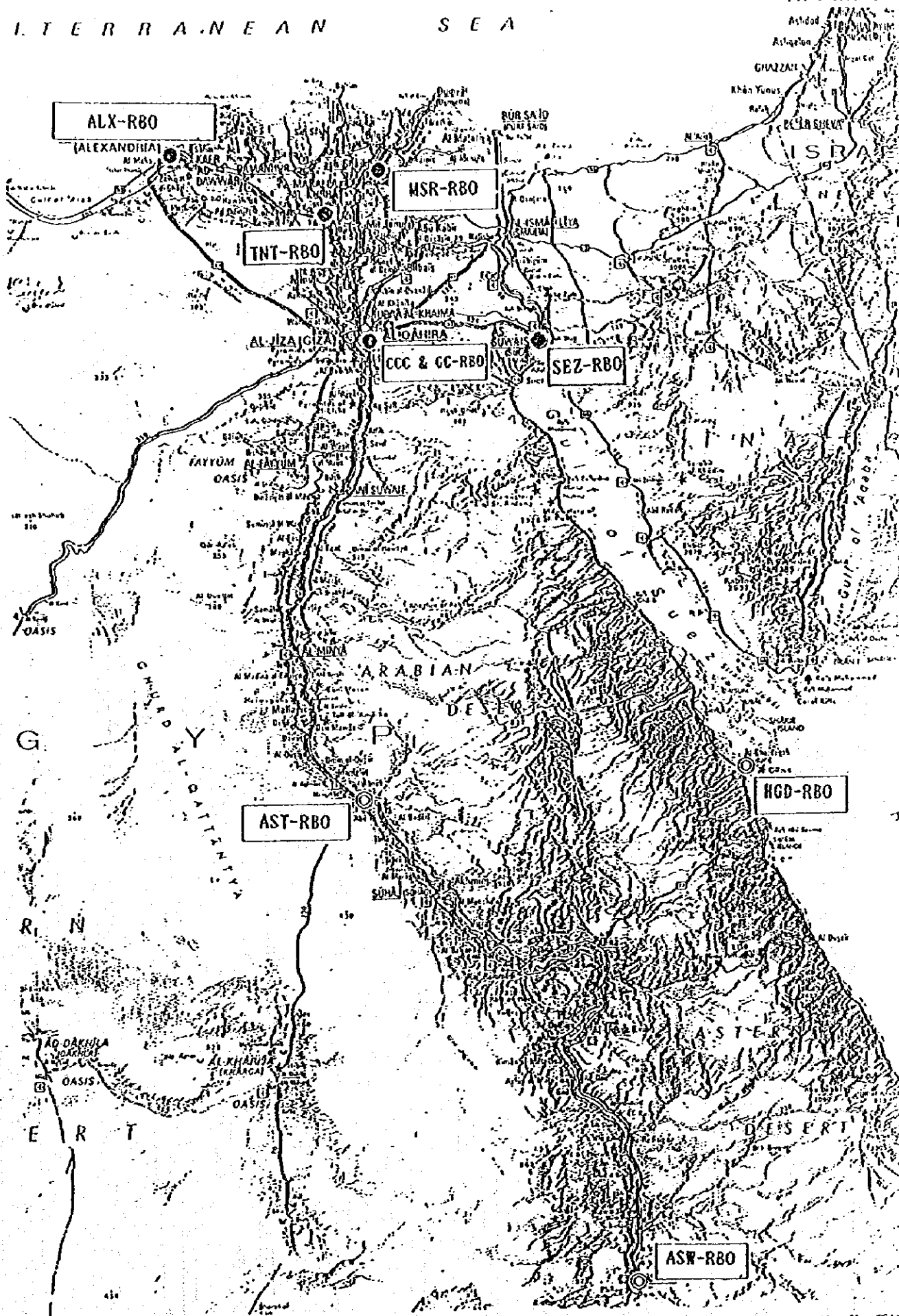
Since the installation and test operation of the equipment is necessary and to be done by the Japanese side, the Egyptian side requested that the inland transportation as well should better be covered under the Japan's Grant Aid System in order to keep a single responsibility all the way.

(6) Referring to the original request made in August, 1995, concerning "Application for Japanese Grant Aid for Mini-Laboratory Network " which included three (3) RBOs (Assuit, Hurghada and Aswan), the Egyptian side inquired consideration for further cooperation.

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SITE-MAP of CCC and RBO's

- Objects of this mission of Basic Design ⊙ Objects of the project to be studied

**Cabinet Presidency
EEAA
Organization Structure**

رئاسة مجلس الوزراء
جهاز شئون البيئة
الهيكل التنظيمي الرئيسي

وزير الدولة لشئون البيئة
رئيس مجلس الإدارة
MSEA - Chairman
(Dr. Atef Ebid)

مجلس الإدارة
الرئيس التنفيذي لجهاز شئون البيئة
نائب رئيس مجلس الإدارة
CEO - Deputy Chairman
(Mr. Salah Hafez)

مكتب رئيس الجهاز	CD	أم
أمانة مجلس الإدارة	أم	أم
الأمن	GD	أم
خدمة المواطنين	D	أم
العلاقات العامة	D	أم
التنظيم والإدارة	D	أم
الشؤون القانونية	D	أم

مركز المعلومات وأخبار الآلي Information & Computer Center	أم	CD
التخطيط والمتابعة Planning & Follow - up	أم	GD
الدعم الفني وإدارة الكوارث البيئية Technical Support & Env. Disasters Management	أم	CD

(Dr. Tarek Ginina)

صندوق حماية البيئة
Env. Protection Fund

CD	أم	CD	أم	CD	أم	S	ق	S	ق	CD	أم
الشؤون المالية والإدارية Fin. & Admin. Affairs	(Mrs. Ensaef Zaki)	شئون الفروع Branches Affairs	(Mr. El Sayed)	الأعلام والتوعية البيئية Env. Information & Public Awareness	Dr. Magdi Allam	نوعية البيئة Env. Quality	(Dr. M. El-Zarka)	الإدارة البيئية Env. Management	(Dr. M. Fawzy)	حماية الطبيعة Nature Protection	(Dr. Essam El Badry)

Organization Structure
Branches Affairs
Central Department

رئيس الجهاز
CEO

(Mr. Salah Hafez)

رئيس الإدارة المركزية لشئون القروء
Branches Affairs C.D.C.

(Mr. El Sayed El Sharkawy)

ممثل التجايل المركزي
القاهرة - المعادي
C.C.C. - Maadi

(Dr. Mowahib Abu Al Azm)

مدير عام فرع منطقة شمال الصعيد D.G Upper Eg. Southern Zone Branch	أسوان Asswan
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مدير عام فرع منطقة شرق الدلتا D.G Delta-Eastern Zone Branch	المنصورة Mansura
--	---------------------

مدير عام فرع منطقة البحر الأحمر D.G Red Sea Gov. Branch	الغردقة Hurghada
--	---------------------

مدير عام فرع منطقة الإسكندرية D.G Alexandria Zone Branch	الإسكندرية Alexandria
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مدير عام فرع منطقة القاهرة الكبرى D.G Grater Cairo Zone Branch	المعادي Maadi
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مدير عام فرع منطقة وسط الدلتا D.G Delta-Middle Zone Branch	طنطا Tanta
---	---------------

مدير عام فرع منطقة شمال الصعيد D.G Upper Eg. North Area Zone Branch	أسيوط Asiout
---	-----------------

مدير عام فرع منطقة القناة D.G Canal Zone Branch	السويس Suez
--	----------------

(Dr. Magdi Bahgat)

(Dr. Magdi Allam)

ممثل فرعي
Mini Lab

مدير الإعلام والتوعية البيئية
Information & Env.
Awareness Dept.

مدير متابعة نوعية البيئة
Env. Quality Dept.

مدير التنمية البيئية
Env. Development
Dept.

الشئون المالية والإدارية
Fin. & Admin. Affairs

Dr. Mowahib

EQUIPMENT LIST

Equipment and Materials			Division of Use										Priority			
No.	Item	Qty	OC	CC	ALX	TNT	MSR	AST	ASM	HCD	SFZ	A	B	C	D	
C. Common Analytical Equipment																
C-1	X-Ray Fluorescence Spectrophotometer	1	1												1	
C-2	FT-IR Spectrophotometer	1	1													
C-3	A.A.S. (Flame type)	1	※1													
C-4	A.A.S. (Graphite Furnace w/auto-sampler)	4	*	1	1	1	1									
C-5	UV/VIS Spectrophotometer (Single Beam)	6	1	1	1	1	1				1	6				
C-6	UV/VIS Spectrophotometer (Double Beam)	2	1	1												
C-7	Gas Chromatograph-Mass Spectrometer	1	1													
C-8	FID/FPD Gas Chromatograph	2	※1		1											
C-9	FID/FPD Gas Chromatograph	2	※1		1											
C-10	ECD Gas Chromatograph	2	※1		1											
C-11	High Performance Liquid Chromatograph	2	※1		1											
C-12	Ion Chromatograph	1	1													
C-13	Stereoscopic Microscope	6	※1	1	1	1	1					6				
C-14	Microscope	3	1	1	1											
C-15	Handy Type pH Meter	6	※1	1	1	1	1									
C-16	Laboratory pH Meter	6	※1	1	1	1	1									
C-17	High Precision pH Meter	3	※1	1	1											
C-18	Mercury Analyzer	6	※1	1	1	1	1									
C-19	Glass Wares Set	6	※1	1	1	1	1									
C-20	Reagents (w/standard samples)	6	※1	1	1	1	1									
G. General Laboratory Equipment																
G-1	Semi-Micro Analysis Balance	6	※1	1	1	1	1					6				
G-2	Micro Analysis Balance	6	1	1	1	1	1									
G-3	High Speed Centrifuge	6	1	1	1	1	1									
G-4	Tabletop Type Centrifuge	6	1	1	1	1	1									
G-5	Tabletop Type High Speed Centrifuge	6	1	1	1	1	1									
G-6	Muffle Furnace (for Organic)	6	1	1	1	1	1									
G-7	Vacuum Type Constant Temperature Oven	6	※1	1	1	1	1									
G-8	Constant Temperature Oven	6	1	1	1	1	1									
G-9	Middle Temperature Oven	6	1	1	1	1	1									
G-10	High Temperature Oven	6	1	1	1	1	1									
G-11	Oven for Glass Wares	6	※1	1	1	1	1									
G-12	Autoclave (Vertical type)	6	1	1	1	1	1									
G-13	Incubator	6	※1	1	1	1	1									
G-14	Low Temperature Incubator	6	1	1	1	1	1									
G-15	Rotary Evaporator	6	1	1	1	1	1									
G-16	Centrifuging Type Test Tube Evaporator	6	1	1	1	1	1									
G-17	Test Tube Evaporator	6	※1	1	1	1	1									
G-18	Fraction Collector	6	※1	1	1	1	1									
G-19	Fraction Collector (Simple Type)	6	※1	1	1	1	1									

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EQUIPMENT LIST

Equipment and Materials			Division of Use										Priority			
No.	Item	Q'ty	DOC	OC	ALA	TNT	MSR	AST	ASW	HCD	SEZ	A	B	C	D	
G-20	Shaker (Middle)	6	1	1	1	1	1				1	6				
G-21	Shaker (Large)	6	1	1	1	1	1				1		6			
G-22	Reciprocating Shaker	12	2	2	2	2	2				2	5	6		1	
G-23	Mixer	6	※1	1	1	1	1				1	6				
G-24	High Speed Homogenizer	6	※1	1	1	1	1				1	6				
G-25	Hot Plate (Small)	12	2	2	2	2	2				2	6	6			
G-26	Magnetic Stirrer (w/Hot Plate)	12	※2	2	2	2	2				2	6	6			
G-27	Multi Magnetic Stirrer	6	※1	1	1	1	1				1	6				
G-28	Constant Temperature Water Bath	6	1	1	1	1	1				1	5			1	
G-29	Rotary Vacuum Pump	6	1	1	1	1	1				1	6				
G-30	Mini Pump	6	※1	1	1	1	1				1	6				
G-31	Roller Pump	6	1	1	1	1	1				1		6			
G-32	Water Bath	12	※2	2	2	2	2				2	5	6		1	
G-33	Cooling Unit	6	1	1	1	1	1				1	6				
G-34	Ultrasonic Cleaner	6	1	1	1	1	1				1	6				
G-35	Separate Type Ultrasonic Generator	6	1	1	1	1	1				1			6		
G-36	Small Power Ultrasonic Cleaner	6	1	1	1	1	1				1			6		
G-37	Ultrasonic Pipette Cleaner	6	1	1	1	1	1				1	5			1	
G-38	Ion Exchanger	6	※1	1	1	1	1				1		5		1	
G-39	Water Distillation Unit	6	※1	1	1	1	1				1	6				
G-40	Clean Bench	6	1	1	1	1	1				1	3	3			
G-41	Draft Chamber with Gas Cleaning Device	5	1		1	1	1				1		5			
G-42	Draft Chamber	4	*		1	1	1				1	4				
G-43	AC Stabilizer	14	3	3	3	2	2				1	9	5			
G-44	Cold Storage Chamber (Pre-fabricated)	6	※1	1	1	1	1				1	3	3			
G-45	Frozen Storage Chamber (Pre-fabricated)	1	※1												1	
G-46	Refrigerator	6	1	1	1	1	1				1	6				
G-47	Freezer	6	1	1	1	1	1				1		6			
G-48	Ice Maker (Cube Ice)	6	※1	1	1	1	1				1	6				
G-49	Copy Machine	6	※1	1	1	1	1				1	1	5			
G-50	Monitoring Car (one box type)	5		1	1	1	1				1	5				
G-51	Tool Set	6	1	1	1	1	1				1	6				
G-52	Drafting Set	6	1	1	1	1	1				1		6			
G-53	Locker for Reagents	7	2	1	1	1	1				1	7				
G-54	Mini Bus (20 persons)	1	※1												1	
G-55	Balance (6Kg)	6	※1	1	1	1	1				1	6				
G-56	Infrared Heater	6	1	1	1	1	1				1		6			
G-57	Colony Counter	3	1	1	1									3		
G-58	Personal Computer (Alabic/English)	6	※1	※1	1	1	1				1		6			
G-59	Video Camera w/ Video Monitor Unit (31")	6	※1	※1	1	1	1				1		6			
G-60	Camera	6	※1	※1	1	1	1				1		6			
G-61	Over Head Projector (w/screen)	6	※1	※1	1	1	1				1		6			

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EQUIPMENT LIST

Equipment and Materials			Division of Use										Priority			
No.	Item	Qty	CCC	CC	ALA	TNT	MSR	AST	ASW	HGD	SEZ	A	B	C	D	
K. Water Quality Monitoring Equipment																
K-1	Total Organic Carbon Analyzer	2	*		1	1							2			
K-2	Handy Type DO Meter	6	1	1	1	1	1				1	6				
K-3	Laboratory Type DO Meter	6	※1	1	1	1	1				1	5				1
K-4	Total Nitrogen Analyzer	3	1		1	1							3			
K-5	Total Phosphate Analyzer	3	1		1	1							3			
K-6	Tint Meter	6	1	1	1	1	1				1	6				
K-7	Turbidity Meter	6	1	1	1	1	1				1	6				
K-8	Handy Type Conductivity / Temp. Meter	6	1	1	1	1	1				1	6				
K-9	Conductivity Meter	6	1	1	1	1	1				1	5				1
K-10	Salt Meter (Na Ion Meter)	6	1	1	1	1	1				1	5				1
K-11	Water Sampler	12	※2	2	2	2	2				2	6	6			
K-12	Automatic Water Sampler	6	※1	1	1	1	1				1			5	1	
K-13	Ekman Barge Grab Sampler	6	※1	1	1	1	1				1	6				
K-14	Plankton Net	3	1		1						1	3				
K-15	Jar Tester	5	*	1	1	1	1				1		5			
K-16	Oil Content Meter	6	1	1	1	1	1				1	5				1
K-17	BOD Meter	6	※1	1	1	1	1				1	5				1
K-18	BOD Analyzer	6	※1	1	1	1	1				1		5			1
K-19	COD Analyzer (Gr)	6	※1	1	1	1	1				1		2	3	1	
K-20	COD Analyzer (Hh)	6	※1	1	1	1	1				1	2	3		1	
K-21	Active Sludge Treatment Equipment (BOD)	5	*	1	1	1	1				1				5	
K-22	Wastewater Treatment Equipment (1. Effluent containing heavy metals, 2. Ferri-cyanide)	5	*	1	1	1	1				1		5			
K-23	Portable Waste Water Chest (180 ℓ)	5	※3	1	1							3	2			
K-24	Portable Waste Water Chest (50 ℓ)	14	※3	3	3	2	2				1	9	5			
K-25	Separation type Sink for Lab. (W.W)	6	1	1	1	1	1				1					6
K-26	Water Quality Analysis (Temperature, pH, Conductivity, Turbidity, Dissolved Oxygen)	6	※1	1	1	1	1				1	6				
K-27	Boat for Monitoring (inland type)	4	※1	1		1	1						4			
K-28	Boat for Monitoring (sea type)	2			1						1		2			
K-29	Water Proof Camera	6	1	1	1	1	1				1		6			
K-30	Automatic Titrator	6	1	1	1	1	1				1		6			
K-31	Ion Analyzer	6	1	1	1	1	1				1		6			
K-32	Portable Water Quality Test Kit	6	1	1	1	1	1				1		6			
K-33	Vacuum Filter (Membrane)	6	1	1	1	1	1				1	6				
A. Air Quality Monitoring Equipment																
A-1	Mobile Unit	6	※1	1	1	1	1				1	4	2			
1A	- SO ₂ Monitor (UV-Fluorescence method)															
1B	- NO _x Monitor (Chemiluminescence method)															
1C	- CO Monitor (Non-dispersive IR Spectro)															

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EQUIPMENT LIST

Equipment and Materials			Division of Use										Priority			
No.	Item	Q'ty	OC	CC	ALX	TNT	MSR	AST	AGM	ICD	SEZ	A	B	C	D	
1D	- Ozone Monitor (UV-absorption method)															
1E	- Hydro-carbon Monitor (FID-OC method)															
1F	- Dust Monitor (Infrared absorption)															
1G	- Combined Wind Vane															
1H	- Thermo-hygrometer															
1I	- Anemometer															
1J	- Solar Radiation meter															
1K	- Data Logger															
1L	- Standard Voltage Generator															
1M	- Transport Vehicle															
A-2	Ultra-Violet Meter	1	1												1	
A-3	Portable Black Smoke Monitor	6	※1	1	1	1	1				1	6				
A-4	Orsat Analyzer	6	※1	1	1	1	1				1	6				
A-5	Wet Type Gas Collector	6	※1	1	1	1	1				1	6				
A-6	Gas Sampler (Detector tube)	6	※1	1	1	1	1				1	6				
A-7	Zero Gas Generator	6	※1	1	1	1	1				1	6				
A-8	Span Gas Dilutor	6	※1	1	1	1	1				1	6				
A-9	Stack Gas Sampler (for dust)	6	※1	1	1	1	1				1	6				
A-10	Portable Stack Gas Sampler (SO ₂ , NO _x ,)	6	※1	1	1	1	1				1	6				
A-11	Gas Meter	6	※1	1	1	1	1				1	6				
A-12	Rotor Meter	6	※1	1	1	1	1				1	6				
A-13	Mass Flow Meter	6	※1	1	1	1	1				1	6				
A-14	Air Purifier	6	※1	1	1	1	1				1			3	3	
A-15	Auto-Dry Desiccator	6	※1	1	1	1	1				1	6				
A-16	Handy Type Oxygen Meter	6	※1	1	1	1	1				1			3	3	
A-17	Portable HC/CO Analyzer for Stack Gas	6	※1	1	1	1	1				1	6				
A-18	Portable Auto.SO _x Analyzer for Stack Gas	6	※1	1	1	1	1				1	6				
A-19	Portable Auto.NO _x Analyzer for Stack Gas	6	※1	1	1	1	1				1	6				
A-20	High-volume Air Sampler	13	※2	4	4	1	1				1	9	4			
A-21	Low-volume Air Sampler	13	※2	4	4	1	1				1	9	4			
A-22	Deposit Gauge	6	※1	1	1	1	1				1	6				
A-23	Andersen Gas Sampler	6	※1	1	1	1	1				1	6				
A-24	Sulfur Content Analyzer in Fuel Oil	6	1	1	1	1	1				1	6				
A-25	Standard Gas w/cylinder & regulator (SO ₂ , NO, CO, O ₂)	6	1	1	1	1	1				1	6				
A-26	Air Bacteria Sampler (2-stage)	3	1	1	1							1	2			

Note

※ : The equipment were requested for the Project-type Technical Cooperation.

* : The equipment are not requested under this Project, because they were already supplied under the Individual Equipment Supply.

• : The equipment are categorized as "Priority D", because they are duplicated with the existing equipment at OOC.

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ON JAPAN'S GRANT AID PROGRAM

1. Japan's Grant Aid Procedures

- (1) The Japan's Grant Aid Program is executed by the following procedures.
- Application (request made by a recipient country)
 - Study (Basic Design Study conducted by JICA)
 - Appraisal & Approval (Appraisal by the Government of Japan and Approval by the Cabinet of Japan)
 - Determination of Implementation (Exchange of Notes between both Governments)
 - Implementation (Implementation of the Project)
- (2) Firstly, an application or a request for a project made by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to see whether or not it is suitable for Japan's Grant Aid. If the request is deemed suitable, the Government of Japan entrusts a study on the request to JICA (Japan International Cooperation Agency).

Secondly, JICA conducts the Study (Basic Design Study), using a Japanese consulting firm. If the background and objective of the requested project are not clear, a Preliminary Study is conducted prior to a Basic Design Study.

Thirdly, the Government of Japan appraises to see whether or not the Project is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA and the results are then submitted for approval by the Cabinet of Japan.

Fourthly, the Project approved by the Cabinet becomes official when pledged by the Exchange of Notes signed by both Governments.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Contents of the Study

(1) Contents of the Study

The purpose of the Study (Preliminary Study / Basic Design Study) conducted on a project requested by JICA is to provide a basic document necessary for appraisal of the project by the Japanese Government. The contents of the Study are as follows:

- a) to confirm background, objectives, benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for project implementation,

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- b) to evaluate appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
- c) to confirm items agreed on by both parties concerning a basic concept of the project,
- d) to prepare a basic design of the project,
- e) to estimate cost involved in the project.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request.

Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on Exchange of Notes.

(2) Selecting (a) Consulting Firm(s)

For smooth implementation of the study, JICA uses (a) consulting firm(s) registered. JICA selects (a) firm(s) through proposals submitted by firms which are interested. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference made by JICA.

The consulting firm(s) used for the study is(are) recommended by JICA to a recipient country after Exchange of Notes, in order to maintain technical consistency and also to avoid possible undue delay in implementation caused if a new selection process is repeated.

3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non reimbursable funds needed to procure facilities, equipment and services for economic and social development of the country under the following principles in accordance with relevant laws and regulations of Japan. The Grant Aid is not in a form of donation or such.

(2) Exchange of Notes (E/N)

The Japan's Grant Aid is extended in accordance with the Exchange of Notes by both Governments, in which the objectives of the Project, period of execution, conditions and amount of the Grant, etc. are confirmed.

- (3) "The period of the Grant Aid" means one Japanese fiscal year (commencing from 1st April ending on 31st of March) which the Cabinet approves the Project for. Within the fiscal year, all procedure such as Exchange of Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

- (4) Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country origin.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means Japanese physical persons or Japanese juridical persons controlled by Japanese physical persons.)

(5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude into contracts in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid, the recipient country is required to undertake necessary measures such as the following:

- a) to secure land necessary for the sites of the project and to clear and level the land prior to commencement of the construction work,
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
- c) to secure buildings prior to the installation work in case the Project is providing equipment,
- d) to ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
- e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for their operation and maintenance as well as to bear all expenses other than those to be borne by the Grant Aid.

(8) Re-- export

The products purchased under the Grant Aid shall not be re--exported from the recipient country.

(9) Banking Arrangement (B/A)

- a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country in an authorized

foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the contracts verified.

- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to pay issued by the Government of the recipient country or its designated authority.

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Necessary measures to be taken by the Government of the Arab Republic of Egypt in case Japan's Grant Aid is executed.

1. To provide a temporary Project office, warehouse and stockyard during the implementation of the Project.
2. To provide necessary facilities for the Project such as electricity and other incidental facilities.
3.
 - (1) To secure the site for the Project.
 - (2) To clear, level and reclaim the site prior to commencement of the construction.
 - (3) To undertake incidental outdoor works such as gardening, fencing, gates and exterior lighting in and around the site.
4. To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement.
 - (a) Advising commission of Authorization to Pay
 - (b) Payment Commission
5. To exempt taxes and to take necessary measures for customs clearance of the materials and equipment brought for the Project at the port of disembarkation.
6. To maintain and use the equipment procured under the Grant properly and effectively.
7. To bear all expenses other than those to be borne by the Grant, necessary for the Execution of the Project.
8. To ensure the necessary budget and personnel for the proper and effective implementation of the Project, including operation and maintenance of the equipment procured under the Grant.

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STAFFING PLAN

☐ Staffing Schedule for CCC

Staffing		1995		1996				1997				1998				1999	
		3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
Administrative Staff	Director																
	Secretary																
	Clerk																
	Driver																
Staff Numbers			1	1	2	2	3	4	4	4	4	4	4	4	4	4	4
Technical Staff	Chief Engineer																
	Engineer (Chemist)																
	Engineer (Chemist)																
	Engineer (Civil)																
	Engineer (Biologist)																
	Technician (Chemist)																
	Technician (Biologist)																
Staff Numbers					3	3	4	4	4	7	7	7	7	7	7	7	7
Total Staff Numbers			1	1	5	5	7	8	8	11	11	11	11	11	11	11	11

☐ Staffing Schedule for RBOs

Staffing		1995		1996				1997				1998				1999	
		3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
Administrative and Technical Staff	Manager																
	Chief Engineer																
	Engineer (Chemist)																
	Engineer (Civil)																
	Engineer (Biologist)																
	Technician (Chemist)																
	Technician (Biologist)																
Total Staff Numbers												4	7	7	7	7	7

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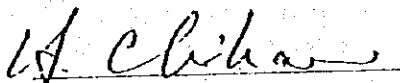
MINUTES OF DISCUSSIONS
THE PROJECT
FOR
SUPPLY OF EQUIPMENT
FOR
THE REGIONAL ENVIRONMENTAL MONITORING NETWORK
IN
THE ARAB REPUBLIC OF EGYPT
(CONSULTATION ON DRAFT REPORT)

In November 1996, the Japan International Cooperation Agency (JICA) dispatched a Basic Design Study Team on the Project for Supply of Equipment for the Regional Environmental Monitoring Network in the Arab Republic of Egypt (hereinafter referred to as "the Project") to the Arab Republic of Egypt. The Basic Design Study Team has prepared the draft report of the study through discussions, field survey, and technical examination of the results in Japan.

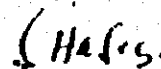
In order to explain and to consult with the Arab Republic of Egypt on the components of draft report, JICA sent to the Arab Republic of Egypt a draft report explanation team (hereinafter referred to as "the Team") , which is headed by Mr. Hiromi Chihara, Development Specialist, Institute for International Cooperation, JICA, and is scheduled to stay in the country from December 14 to December 20, 1996.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

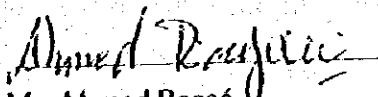
Cairo, December 18, 1996



Mr. Hiromi Chihara
Leader,
Draft Report Explanation Team,
Japan International Cooperation Agency,
Japan



Mr. Salah Hafez
Chief Executive Officer,
Egyptian Environmental Affairs Agency,
The Arab Republic of Egypt



Witnessed by Mr. Ahmed Ragae

First Undersecretary,
Ministry of Economy and International Cooperation,
The Arab Republic of Egypt

ATTACHMENT

1. Components of the Draft Report

The Government of the Arab Republic of Egypt has agreed and accepted in principle the components of the Draft Report proposed by the Team.

2. Japan's Grant Aid System

(1) The Government of the Arab Republic of Egypt has understood the system of Japan's Grant Aid Scheme explained by the Team as described in ANNEX-I.

(2) The Government of the Arab Republic of Egypt will take necessary measures described in ANNEX-II for smooth implementation of the Project, on condition that the Grant Aid by the Government of Japan is extended to the Project.

3. Further Schedule

The Team will make the Final Report in accordance with the confirmed items, and send it to the Government of the Arab Republic of Egypt by the end of February 1997.

4. Other Relevant Issues

4.1 Supply of equipment

(1) Manner of supply of equipment

The equipment will be expected to be delivered time-phased to each relevant site according to the supply plan shown in ANNEX-III. The Phase-I equipment is delivered as priority basis only to CCC(Cairo Central Center) and GCRBO (Greater Cairo Regional Branch Office).

The delivery of the Phase-II equipment is discussed only when the conditions of readiness for accepting the equipment at each RBO is considered appropriate by the Government of Japan.

(2) Mobile unit at GCRBO

Egyptian side strongly requested that one mobile unit to be assigned to GCRBO is of a one box type vehicle, so that an efficiency in mobility inside Cairo city should be well coordinated and secured.

The Team will consider this specific request for inclusion in the Final Report.

(3) Additional equipment and materials at CCC and RBOs

In light of the mini-laboratory training and operation programs most recently under investigation, the Egyptian side requested if some items of the equipment and materials which have been

classified as lower priority of the Grant Aid, would possibly be reconsidered under the Project-Type Technical Cooperation being much relevant to the Project. The Team will transfer this request to the Government of Japan.

4.2 Reinforcing staffing at CCC and RBOs

Considering the nature and quantity of the equipment and materials eventually to be delivered to CCC and RBOs, it is safely expected to consider in advance a phased augmentation of staffing based on the Japanese experiences of a similar laboratory operation. The Japanese advice regarding numbers and functions of each technical staff was explained to the Egyptian side. Egyptian side agreed that laboratories of CCC and RBOs will increase technical staff for effective usage of equipment procured by Japanese Grant at the time full operation. The new staffing plan is shown as ANNEX-IV.

4.3 Local budget for operation and maintenance

The Team explained the cost necessary for operation and maintenance of the equipment under the Project. The Egyptian side understood this explanation, and promised that the yearly budget allocation for securing a full sustainability of the laboratories operation be maintained.

ANNEX-I. JAPAN'S GRANT AID SCHEME

1. Japan's Grant Aid Procedures

(1) The Japan's Grant Aid Program is executed by the following procedures.

- Application (Request made by a recipient country)
- Study (Basic Design Study conducted by JICA)
- Appraisal & Approval (Appraisal by the Government of Japan and Approval by the Cabinet of Japan)
- Determination of Implementation (Exchange of Notes between both Governments)
- Implementation (Implementation of the Project)

(2) Firstly, an application or a request for a project made by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to see whether or not it is suitable for Japan's Grant Aid. If the request is deemed suitable, the Government of Japan entrusts a study on the request to JICA (Japan International Cooperation Agency).

Secondly, JICA conducts the Study (Basic Design Study), using a Japanese consulting firm.

Thirdly, the Government of Japan appraises to see whether or not the Project is suitable for Japan's Grant Aid Program, based on the Basic Design Study report prepared by JICA and the results are then submitted for approval by the Cabinet of Japan.

Fourthly, the Project approved by the Cabinet becomes official when pledged by the Exchange of Notes signed by both Governments.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

2. Contents of the Study

(1) Contents of the Study

The purpose of the Study (Basic Design Study) conducted on a project requested by JICA is to provide a basic document necessary for appraisal of the project by the Japanese Government. The contents of the Study are as follows:

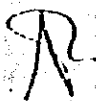
- a) to confirm background, objectives, benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for project implementation,
- b) to evaluate appropriateness of the Project for the Grant Aid Scheme from a technical, social and economical point of view,
- c) to confirm items agreed on by both parties concerning a basic concept of the project,
- d) to prepare a basic design of the project,
- e) to estimate cost involved in the project.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request.

Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on Exchange of Notes.

(2) Selecting (a) Consulting Firm(s)

For smooth implementation of the study, JICA uses (a) consulting firm(s) registered. JICA selects (a) firm(s) through proposals submitted by firms which are interested. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference made by



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JICA.

The consulting firm(s) used for the study is(are) recommended by JICA to a recipient country after Exchange of Notes, in order to maintain technical consistency and also to avoid possible undue delay in implementation caused if a new selection process is repeated.

3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non reimbursable funds needed to procure facilities, equipment and services for economic and social development of the country under the following principles in accordance with relevant laws and regulations of Japan. The Grant Aid is not in a form of donation or such.

(2) Exchange of Notes (E/N)

The Japan's Grant Aid is extended in accordance with the Exchange of Notes by both Governments, in which the objectives of the Project, period of execution, conditions and amount of the Grant, etc. are confirmed.

(3) "The period of the Grant Aid" means one Japanese fiscal year (commencing from 1st of April ending on 31st of March) which the Cabinet approves the Project for. Within the fiscal year, all procedure such as Exchange of Notes, concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

(4) Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country origin.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited

to "Japanese nationals". (The term "Japanese nationals" means Japanese physical persons or Japanese juridical persons controlled by Japanese physical persons.)

(5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude into contracts in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid, the recipient country is required to undertake necessary measures such as the following:

- a) to secure land necessary for the sites of the project and to clear and level the land prior to commencement of the construction work,
- b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
- c) to secure buildings prior to the installation work in case the Project is providing equipment,
- d) to ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
- e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,
- f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for

their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for their operation and maintenance as well as to bear all expenses other than those to be borne by the Grant Aid.

(8) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(9) Banking Arrangement (B/A)

- a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country or its designated authority in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the contracts verified.
- b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to pay issued by the Government of the recipient country or its designated authority.

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ANNEX-II. NECESSARY MEASURES TO BE TAKEN BY THE GOVERNMENT OF
EGYPT IN CASE JAPAN'S GRANT AID IS EXECUTED

1. To provide a temporary Project office, warehouse and stockyard during the implementation of the Project.
2. To provide necessary facilities for the Project such as electricity and other incidental facilities.
3. To bear the following commissions to the Japanese foreign exchange bank for the banking services based upon the Banking Arrangement:
 - (a) Advising commission of Authorization to Pay
 - (b) Payment Commission
4. To exempt materials and equipment brought into Egypt for the Project from the payment of taxes and take necessary measures for customs clearance at the port of disembarkation.
5. To accord Japanese nationals whose services may be required in connection with the supply of products and the services under the Verified Contracts such facilities as may be necessary for their entry into Egypt and stay therein for the performance of their work.
6. To maintain and use the equipment procured under the Grant properly and effectively.
7. To bear all expenses other than those to be borne by the Grant, necessary for the execution of the Project.
8. To ensure the necessary budget and personnel for the proper and effective implementation of the Project, including operation and maintenance of the equipment procured under the Grant.

EQUIPMENT LIST

Equipment and Materials		1st phase			2nd phase							Total
No.	Item	Q'ty	CCC	CC	Q'ty	CCC	CC	ALX	INT	MSR	SEZ	Q'ty
C. Common Analytical Equipment												
C-1	X-Ray Fluorescence Spectrophotometer				1	1						1
C-2	FT-IR Spectrophotometer				1							1
C-3	A.A.S. (Flame type)	1	1									1
C-4	A.A.S. (Graphite Furnace v/auto-sampler)				4		1	1	1	1		4
C-5	UV/VIS Spectrophotometer (Single Beam)	2	1	1	4			1	1	1	1	6
C-6	UV/VIS Spectrophotometer (Double Beam)				1		1					1
C-7	Gas Chromatograph-Mass Spectrometer				1	1						1
C-8	FID/FID Gas Chromatograph	1	1		1			1				2
C-9	FID/FID Gas Chromatograph	1	1		1			1				2
C-10	GC Gas Chromatograph				2	1		1				2
C-11	High Performance Liquid Chromatograph	1	1		1			1				2
C-12	Ion Chromatograph				1	1						1
C-13	Stereoscopic Microscope	2	1	1	4			1	1	1	1	6
C-14	Microscope	1		1	1			1				2
C-15	Handy Type pH Meter	2	1	1	4			1	1	1	1	6
C-16	Laboratory pH Meter	2	1	1	4			1	1	1	1	6
C-17	High Precision pH Meter											
C-18	Mercury Analyzer				5		1	1	1	1	1	5
C-19	Glass Vares Set	2	1	1	4			1	1	1	1	6
C-20	Reagents (v/standard samples)	2	1	1	4			1	1	1	1	6
G. General Laboratory Equipment												
G-1	Semi-Micro Analysis Balance	2	1	1	4			1	1	1	1	6
G-2	Micro Analysis Balance	2	1	1	4			1	1	1	1	6
G-3	High Speed Centrifuge	1	1		5		1	1	1	1	1	6
G-4	Tabletop Type Centrifuge	1		1	4			1	1	1	1	5
G-5	Tabletop Type High Speed Centrifuge											
G-6	Muffle Furnace (for Organic)	1		1	4			1	1	1	1	5
G-7	Vacuum Type Constant Temperature Oven	2	1	1	4			1	1	1	1	6
G-8	Constant Temperature Oven	2	1	1	4			1	1	1	1	6
G-9	Middle Temperature Oven	1		1	1			1				2
G-10	High Temperature Oven											
G-11	Oven for Glass Vares	2	1	1	4			1	1	1	1	6
G-12	Autoclave (Vertical type)	2	1	1	4			1	1	1	1	6
G-13	Incubator	1		1	4			1	1	1	1	5
G-14	Low Temperature Incubator	2	1	1	4			1	1	1	1	6
G-15	Rotary Evaporator	1		1	4			1	1	1	1	5
G-16	Centrifuging Type Test Tube Evaporator											
G-17	Test Tube Evaporator											
G-18	Fraction Collector	2	1	1	4			1	1	1	1	6
G-19	Fraction Collector (Single Type)											
G-20	Slaker (Riddle)	2	1	1	4			1	1	1	1	6
G-21	Slaker (Large)	2	1	1	4			1	1	1	1	6
G-22	Reciprocating Shaker	3	1	2	8			2	2	2	2	11
G-23	Mixer	2	1	1	4			1	1	1	1	6
G-24	High Speed Homogenizer	2	1	1	4			1	1	1	1	6
G-25	Hot Plate (Small)	4	2	2	8			2	2	2	2	12
G-26	Magnetic Stirrer (v/Hot Plate)	4	2	2	8			2	2	2	2	12
G-27	Multi Magnetic Stirrer	2	1	1	4			1	1	1	1	6
G-28	Constant Temperature Water Bath	1		1	4			1	1	1	1	5
G-29	Rotary Vacuum Pump	2	1	1	4			1	1	1	1	6
G-30	Mini Pump	2	1	1	4			1	1	1	1	6
G-31	Roller Pump	2	1	1	4			1	1	1	1	6

EQUIPMENT LIST

Equipment and Materials		1st phase			2nd phase							Total
No.	Item	Q'ty	CCC	CC	Q'ty	CCC	CC	ALX	TNT	MSR	SEZ	Q'ty
G-32	Water Bath	3	1	2	8			2	2	2	2	11
G-33	Cooling Unit	2	1	1	4			1	1	1	1	6
G-34	Ultrasonic Cleaner	2	1	1	4			1	1	1	1	6
G-35	Separate Type Ultrasonic Generator											
G-36	Small Power Ultrasonic Cleaner											
G-37	Ultrasonic Pipette Cleaner	1		1	4			1	1	1	1	5
G-38	Ion Exchanger	1		1	4			1	1	1	1	5
G-39	Water Distillation Unit	2	1	1	4			1	1	1	1	6
G-40	Clean Bench	1	1		5		1	1	1	1	1	6
G-41	Draft Chamber with Gas Cleaning Device	1	1		4			1	1	1	1	5
G-42	Draft Chamber				4			1	1	1	1	4
G-43	AC Stabilizer	6	3	3	8			3	2	2	1	14
G-44	Cold Storage Chamber (Pre-fabricated)	1	1		5		1	1	1	1	1	6
G-45	Freezed Storage Chamber (Pre-fabricated)											
G-46	Refrigerator	2	1	1	4			1	1	1	1	6
G-47	Freezer	2	1	1	4			1	1	1	1	6
G-48	Ice Maker (Cube Ice)	2	1	1	4			1	1	1	1	6
G-49	Copy Machine	2	1	1	4			1	1	1	1	6
G-50	Monitoring Car (one box type)	1		1	4			1	1	1	1	5
G-51	Tool Set	2	1	1	4			1	1	1	1	6
G-52	Drafting Set	2	1	1	4			1	1	1	1	6
G-53	Locker for Reagents	3	2	1	4			1	1	1	1	7
G-54	Mini Bus (20 persons)											
G-55	Balance (0Kg)	2	1	1	4			1	1	1	1	6
G-56	Infrared Heater	2	1	1	4			1	1	1	1	6
G-57	Colony Counter	2	1	1	1			1				3
G-58	Personal Computer (Alabic/English)	2	1	1	4			1	1	1	1	6
G-59	Video Camera w/ Video Monitor Unit (37")	1	1		5		1	1	1	1	1	6
G-60	Camera	2	1	1	4			1	1	1	1	6
G-61	Over Head Projector (w/screen)	2	1	1	4			1	1	1	1	6
W. Water Quality Monitoring Equipment												
W- 1	Total Organic Carbon Analyzer				2			1	1			2
W- 2	Handy Type DO Meter	2	1	1	4			1	1	1	1	6
W- 3	Laboratory Type DO Meter	1		1	4			1	1	1	1	5
W- 4	Total Nitrogen Analyzer	1	1		2			1	1			3
W- 5	Total Phosphate Analyzer	1	1		2			1	1			3
W- 6	Tint Meter	2	1	1	4			1	1	1	1	6
W- 7	Turbidity Meter	2	1	1	4			1	1	1	1	6
W- 8	Handy Type Conductivity / Temp. Meter	2	1	1	4			1	1	1	1	6
W- 9	Conductivity Meter	1		1	4			1	1	1	1	5
W-10	Salt Meter (Na Ion Meter)	1		1	4			1	1	1	1	5
W-11	Water Sampler	4	2	2	8			2	2	2	2	12
W-12	Automatic Water Sampler											
W-13	Ekman Barge Grab Sampler	2	1	1	4			1	1	1	1	6
W-14	Plankton Net	1	1		2			1			1	3
W-15	Jar Tester	1		1	4			1	1	1	1	5
W-16	Oil Content Meter	1		1	4			1	1	1	1	5
W-17	BOD Meter	1		1	4			1	1	1	1	5
W-18	BOD Analyzer	1		1	4			1	1	1	1	5
W-19	COD Analyzer (Cr)	1		1	1			1				2
W-20	COD Analyzer (Mn)	1		1	4			1	1	1	1	5
W-21	Active Sludge Treatment Equipment (DOO)											
W-22	Wastewater Treatment Equipment (1. Effluent containing heavy metals, 2. Ferricyanide)				5		1	1	1	1	1	5

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EQUIPMENT LIST

Equipment and Materials		1st phase			2nd phase							Total
No.	Item	Q'ty	OC	GC	Q'ty	OC	GC	AUX	TNT	MSR	SEZ	Q'ty
W-23	Portable Waste Water Chest (180 l)	2	2		3	1	1	1				5
W-24	Portable Waste Water Chest (50 l)	3	2	1	8	1	2	3	2	2	1	14
W-25	Separation type Sink for lab. (W.W)											
W-26	Water Quality Analysis (Temperature, pH, Conductivity, Turbidity, Dissolved Oxygen)	2	1	1	4			1	1	1	1	6
W-27	Boat for Monitoring (Inland type)	1	1		3		1		1	1		4
W-28	Boat for Monitoring (sea type)				2			1			1	2
W-29	Water Proof Camera	2	1	1	4			1	1	1	1	6
W-30	Autosettle Titrator	1	1		5		1	1	1	1	1	6
W-31	Ion Analyzer	1	1		5		1	1	1	1	1	6
W-32	Portable Water Quality Test Kit	2	1	1	4			1	1	1	1	6
W-33	Vacuum Filter (Membrane)	2	1	1	4			1	1	1	1	6
A. Air Quality Monitoring Equipment												
A-1	Mobile Unit	1	1		5		1	1	1	1	1	6
1A	- SO ₂ Monitor (UV-Fluorescence method)											
1B	- NO _x Monitor (Chemiluminescence method)											
1C	- CO Monitor (Non-dispersive IR Spectro)											
1D	- Ozone Monitor (UV-absorption method)											
1E	- Hydro-carbon Monitor (FID GC method)											
1F	- Dust Monitor (beta-ray absorption)											
1G	- Combined Wind Vane											
1H	- Thermo-hygrometer											
1I	- Anemometer											
1J	- Solar Radiation meter											
1K	- Data Logger											
1L	- Standard Voltage Generator											
1M	- Trailer w/ Cabin											
A-2	Ultra-Violet Meter											
A-3	Portable Black Fume Monitor	2	1	1	4			1	1	1	1	6
A-4	Orsat Analyzer	2	1	1	4			1	1	1	1	6
A-5	Wet Type Gas Collector	2	1	1	4			1	1	1	1	6
A-6	Gas Sampler (Detector tube)	2	1	1	4			1	1	1	1	6
A-7	Zero Gas Generator	1	1		5		1	1	1	1	1	6
A-8	Span Gas Dilutor	1	1		5		1	1	1	1	1	6
A-9	Stack Gas Sampler (for dust)	1	1		5		1	1	1	1	1	6
A-10	Portable Stack Gas Sampler (SO ₂ , NO _x ,)	1	1		5		1	1	1	1	1	6
A-11	Gas Meter	2	1	1	4			1	1	1	1	6
A-12	Rotar Meter	2	1	1	4			1	1	1	1	6
A-13	Mass Flow Meter	2	1	1	4			1	1	1	1	6
A-14	Air Purifier											
A-15	Auto-Dry Desiccator	2	1	1	4			1	1	1	1	6
A-16	Handy Type Oxygen Meter											
A-17	Portable IC/OD Analyzer for Stack Gas	1	1		5		1	1	1	1	1	6
A-18	Portable Auto.SO ₂ Analyzer for Stack Gas	1	1		5		1	1	1	1	1	6
A-19	Portable Auto.NO _x Analyzer for Stack Gas	1	1		5		1	1	1	1	1	6
A-20	High-volume Air Sampler	6	2	4	9			4	1	1	1	13
A-21	Low-volume Air Sampler	6	2	4	9			4	1	1	1	13
A-22	Dupont Gauge	2	1	1	4			1	1	1	1	6
A-23	Andersen Gas Sampler	1	1		5		1	1	1	1	1	6
A-24	Sulfur Content Analyzer In Fuel Oil	1	1		5		1	1	1	1	1	6
A-25	Standard Gas w/cylinder & regulator (SO ₂ , NO _x , CO, O ₂)	2	1	1	1			1				(3
A-26	Air Bacteria Sampler (2-stage)	1	1		2		1	1				3
A-27	Tractor for Mobile Unit	1	1		2			1			1	3

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STAFFING PLAN

☐ Staffing Schedule for COC

Staffing		1995		1996				1997				1998				1999			
		3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Administrative Staff	Director																		
	Secretary																		
	Clerk																		
	Driver																		
Staff Numbers		1	1	2	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4
Technical Staff	Chief Engineer																		
	Engineer (Chemist)																		
	Engineer (Chemist)																		
	Engineer (Chemist)																		
	Engineer (Chemist)																		
	Engineer (Civil)																		
	Engineer (Civil)																		
	Engineer (Biologist)																		
	Engineer (Biologist)																		
	Technician (Chemist)																		
	Technician (Chemist)																		
	Technician (Biologist)																		
	Technician (Biologist)																		
Staff Numbers				3	3	4	4	4	7	7	7	13	13	13	13	13	13	13	13
Total Staff Numbers		1	1	5	5	7	8	8	11	11	11	17	17	17	17	17	17	17	17

☐ Staffing Schedule for Mini-labo of RBOs

Staffing		1995		1996				1997				1998				1999			
		3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Administrative and Technical Staff	Manager																		
	Chief Engineer																		
	Engineer (Chemist)																		
	Engineer (Chemist)																		
	Engineer (Civil)																		
	Engineer (Civil)																		
	Engineer (Biologist)																		
	Engineer (Biologist)																		
	Technician (Chemist)																		
	Technician (Chemist)																		
	Technician (Biologist)																		
	Technician (Biologist)																		
Total Staff Numbers											4	7	7	12	12	12	12	12	12

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C. A. Li

