PD-AAP-907

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

PROJECT PAPER

SRI LANKA

WATER SUPPLY AND SANITATION SECTOR

383-0088

UNCLASSIFIED

PDAAP-907

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete)

Amendment Number:

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: Sri Lanka

3. PROJECT NUMBER: 383-0088

4. BUREAU/OFFICE: Asia 04

5. PROJECT TITLE (maximum 40 characters): Water Supply and Sanitation Sector

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM DD YY 08 31 89

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

A. Initial FY 84 B. Quarter 4 C. Final FY 87

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

A. FUNDING SOURCE	FIRST FY 84 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total			2,800	6,755	5,545	12,300
(Grant)	( )	( )	(500)	(4,450)	(550)	(5,000)
(Loan)	( )	( )	(2,300)	(2,350)	(4,995)	(7,300)
Other U.S. 1.						
Other U.S. 2.						
Host Country				700	6,600	7,300
Other Donor(s)						
TOTALS			2,800	7,455	12,145	19,600

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	C. PRIMARY TECH. CODE 2. Loan	D. OBLIGATIONS TO DATE 1. Grant	D. OBLIGATIONS TO DATE 2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	E. AMOUNT APPROVED THIS ACTION 2. Loan	F. LIFE OF PROJECT 1. Grant	F. LIFE OF PROJECT 2. Loan
(1) HE	500	540	540			500	7,300	5,000	7,300
(2)									
(3)									
(4)									
TOTALS						5,000	7,300	5,000	7,300

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)

545 | 544 | 541 | 549 | 569 | 530

11. SECONDARY PURPOSE CODE: 280

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

A. Code	BR	BU	DEL	PART	TNG	BWW	TECH
B. Amount							

13. PROJECT PURPOSE (maximum 480 characters)

To develop and improve the institutional capabilities of the National Water Supply and Drainage Board (NWSDB) to plan, design, rehabilitate/construct, operate and maintain water and sanitation systems throughout Sri Lanka; and to develop and improve national health education, rural sanitation services and community participation in water supply and sanitation.

14. SCHEDULED EVALUATIONS

Interim MM YY 06 87 | MM YY | Final MM YY 08 89

15. SOURCE/ORIGIN OF GOODS AND SERVICES

[X] 000 [X] 941 [X] Local [ ] Other (Specify)

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

17. APPROVED BY

Signature: Frank D. Correl (signed) F. Correl

Title: Director, USAID/Sri Lanka

Date Signed: MM DD YY 08 21 84

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

August 10, 1984

ACTION MEMORANDUM FOR THE USAID DIRECTOR

Thru : Ralph M. Singleton, Chief, PDSP

From : A. Shapleigh, PDSP

Subject : Water Supply and Sanitation Sector (383-0088)
Project Authorization
Approval of Project Paper

Problem: Your authorization is required for the Water Supply and Sanitation Sector Project (383-0088) in the amount of $12.3 million ($7.3 million loan and $5.0 million grant). Your approval of the Project Paper is also required, including approval of a vehicle procurement waiver (Annex G) and a FAA section 611 (e) certification (Annex E).

Discussion: The attached Project Paper contains a detailed description of the project, the cost estimate and financial plan, the implementation plan, monitoring and evaluation arrangements, proposed conditions and covenants, and the technical, economic, financial, social, administrative, energy and environmental project feasibility analyses. The Project Paper has been reviewed by the GSL and a formal GSL request for assistance has been received (Annex D). The Project Paper has been reviewed and cleared by the responsible USAID/Sri Lanka officers and is ready for signature.

The Project Authorization has been prepared in conjunction with the Regional Legal Advisor. The conditions precedent and covenants in Part VI of the Project Paper will be included in the Project Loan and Grant Agreement but not all are considered of sufficient importance for inclusion in the Project Authorization. The Congressional Notification waiting period expired on August 7, 1984.

Recommendation: That you sign the attached Project Authorization and approve the accompanying Project Paper, including the vehicle waiver and the FAA Section 611 (e) certification.

Approved: [signature]

Disapproved: _____

Date: Aug. 22nd 1984

Clearance:

KLeBlanc:CONT
ERLoken:MWRD
LPurifoy:C:MWRD
TAMuntsinger:LA
JGunning:PRO
RChamberlain:C:HPHR
LARoss:PRO
WJohnson:HPHR

AID:PDSP:AShapleigh:mg:8/10/84

AGENCY FOR INTERNATIONAL DEVELOPMENT

44, Galle Road, Colombo 3, Sri Lanka.

PROJECT AUTHORIZATION

SRI LANKA

Water Supply and Sanitation Sector
Project No. 383-0088
A.I.D. Loan No. 383-U-034

1. Pursuant to Section 104 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Water Supply and Sanitation Project for Sri Lanka involving planned obligations of not to exceed Seven Million Three Hundred Thousand Dollars ($7,300,000) in loan funds and Five Million Dollars ($5,000,000) in grant funds over a four-year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project. The planned life of the project is five years from the date of initial obligation.

2. The project will (a) develop and improve the institutional capabilities of the National Water Supply and Drainage Board (NWSDB) to plan, design, rehabilitate/construct, operate and maintain water and sanitation systems throughout Sri Lanka; and (b) develop and improve health education, rural sanitation services and community participation in the rehabilitation or construction of water supply schemes. NWSDB institutional development will include improvements in six organizational categories: management, commercial, human resource development, capital facilities management, operations and maintenance, and special services. The health education, sanitation, and community participation component of the project will include the establishment of a Rural Sanitation Unit within the NWSDB and an innovative health education and latrine construction program. Demonstration of improved operations in both components will be carried out through six subprojects comprised of construction of two new water supply schemes and the rehabilitation of four existing water supply schemes.

3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority, shall be subject to the following essential terms and conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

4. Interest Rate and Terms of Repayment.

Sri Lanka shall repay the Loan to A.I.D. in United States Dollars within forty (40) years from the date of first disbursement of the Loan, including a grace period of not to exceed ten (10) years. Sri Lanka shall pay to A.I.D. in

United States Dollars interest from the date of first disbursement of the Loan at the rate of two percent (2%) per annum during the first ten (10) years, and three percent (3%) per annum thereafter, on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

5. Source and Origin of Commodities and Nationality of Suppliers.

Except as otherwise provided in AID Handbook 10 in respect to participant training, and except as A.I.D. may otherwise agree in writing, commodities financed by A.I.D. shall have their source and origin, and the suppliers of commodities or services financed by A.I.D. shall have their place of nationality in countries included in A.I.D. Geographic Code 941 or Sri Lanka when loan financed and, except for ocean shipping, in the United States of America or Sri Lanka when grant financed. Ocean shipping when grant financed shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States of America.

6. Conditions Precedent to Disbursement.

a. Disbursement for NWSDB Institutional Development Activities. Prior to disbursement or the issuance by A.I.D. of documentation pursuant to which such disbursement will be made for NWSDB institutional development activities, the Cooperating Country will, 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 the adoption by the NWSDB of a planned program to reorganize and decentralize operations, to include a revised table of organization, preparation of job descriptions, and plans to staff all key central and regional positions.

b. Disbursement for Health Education,Sanitation and Subproject Construction/ Rehabilitation Activities. Prior to disbursement or the issuance by A.I.D. of documentation pursuant to which such disbursement will be made for health education, sanitation, and subproject construction/rehabilitation activities, the Cooperating Country will, except as A.I.D may otherwise agree in writing, furnish to A.I.D in a form and substance satisfactory to A.I.D.:

(1) Evidence of the formation by the NWSDB of a Rural Sanitation Unit, together with a plan to staff the unit and a description of its functions and operational responsibilities; and

(2) A Memorandum of Understanding signed by the NWSDB and the Ministry of Health which sets forth the coordinated management of the health education, sanitation and community participation element of the Project, to include specific procedures for management of Project funds, planning and implementation of activities, and a specific description of how coordination between the two agencies will be accomplished at both the national and regional levels.

7. Covenants

The Cooperating Country covenants to take the following actions to support the Project:

(a) Assure that sufficient budget allocations are made to meet the GSL-financed Project contributions and any other requirements provided by GSL regulations during each year of the Project;

(b) Assure that sufficient qualified professional and support staff are hired by the NWSDB in a timely manner to meet the requirements of the Project; and

(c) Prepare plans, specifications and sound cost estimates in a timely manner for all facilities and system construction/rehabilitation to be financed under the Project.

Signature _____

Frank D. Correl
Mission Director
USAID/Sri Lanka

August 21st 1984
Date

Clearances:	Date	Initial
TAMuntsinger, RCA	8/15/84	
RMSingleton, PDSP	8/10/84	
LPurifoy, MWRD	8/14/84	
JGunning, PRO		
ERLoken, MWRD	8/14/84	
RChamberlain:HPHR	8/16/84	
AShapleigh, PDSP	8/17/84	
KLeBlanc:CONT	8/14/84	

AID:PDSP:AShapleigh:mg:8/10/84

ACRONYMS

AGM	-	Assistant General Manager
APAC	-	Asia Project Advisory Committee
COP	-	Contractor Chief-of-Party
DDC	-	District Development Council
FAR	-	Fixed Amount Reimbursement
GSL	-	Government of Sri Lanka
GM	-	Gramodaya Mandalaya (Village Council)
IEE	-	Initial Environmental Examination
IRC	-	International Reference Center (World Health Organization)
LOP	-	Life-of-Project
MWRD		Mahaweli and Water Resources Development
MMS	-	Maintenance Management System
MF&P	-	Ministry of Finance and Planning
MOH	-	Ministry of Health
MLGHC	-	Ministry of Local Government, Housing and Construction
MC	-	Municipal Council
NWSDB	-	National Water Supply and Drainage Board
NGO	-	Non-Governmental Organization
OIC	-	Officer-In-Charge
O&M	-	Operations and Maintenance
PM	-	Pradeshiya Mandalaya (Divisional Council)
PSA	-	Procurement Services Agenct
PACD	-	Project Agreement Completion Date
PID	-	Project Identification Document
PP	-	Project Paper
PHI	-	Public Health Inspector
RCMO	-	Regional Commodity Management Officer
RM	-	Regional Manager
RSC	-	Regional Support Center
RFTP	-	Request for Technical Proposals
RSU	-	Rural Sanitation Unit
TA	-	Technical Assistance
UNICEF	-	United Nations Childrens Education Fund
UNDP	-	United Nations Development Programme
UC	-	Urban Council
USAID	-	U.S. Agency for International Development
VHW	-	Village Health Worker
WASH	-	Water and Sanitation for Health
W.H.O.	-	World Health Organization

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PART I: SUMMARY AND RECOMMENDATIONS

A. Recommendations

1. That a loan of $7,300,000 be authorized to the Government of Sri Lanka for a five-year Water Supply and Sanitation Project. Loan Terms: 40 years, 10 years grace period, 2% interest during grace period and 3% interest thereafter.

2. That a grant of $5,000,000 be authorized to the Government of Sri Lanka for the project.

3. That a procurement source/origin waiver be authorized from Geographic Code 000 (U.S. only) to Geographic Code 935 (Special Free World) to permit the procurement of six land vehicles.

4. That a training source/origin waiver be authorized from Geographic Code 941 (U.S. and developing countries) to Code 935 (Special Free World) to permit participation in international training workshops, seminars and conferences.

B. Summary Project Description

The basic rationale for the project is that safe, convenient water supplies and adequate sanitation are essential to improved health for the people of Sri Lanka, and this will ultimately lead to increased economic productivity and human well-being.

The Government of Sri Lanka (GSL) adopted in 1980 a long-term investment program (termed the Decade Plan) aimed at providing safe and adequate water supplies and sanitation facilities to at least 50% of the population by 1990 and to 100% of the population by 1995. These basic services, when installed, should have a direct, positive impact on health and well-being, reflected in reduced incidence of water-related disease and mortality and increased economic productivity. To reach these goals, a concerted effort is also necessary to improve health education which will require programs involving active community participation in the planning, design and implementation of individual water supply and sanitation subprojects.

The project has two elements. The first element is a comprehensive institution-building program for the National Water Supply and Drainage Board (NWSDB). The NWSDB is the lead agency in the sector and responsible for planning, design and construction of all urban water works and most of the rural, piped and non-piped water schemes in Sri Lanka. NWSDB also operates and maintains all facilities that are not transferred to local municipalities or communities. Since the NWSDB's creation in 1975, the number of water schemes it operates has risen from 96 to 161, and its staff has risen from 1,600 to more than 6,000. Although the NWSDB has made remarkable progress in constructing new schemes since the accelerated investment program began in 1980, it has matured very little as an institution and requires an all-encompassing package of technical assistance, training, commodities and improved facilities to increase operational efficiencies and more effectively carry out its work. The central theme of the NWSDB institution-building program is the decentralization of operations, which will include the establishment of three Regional Support Centers and increased support for five existing regional offices throughout the country.

The second element is an innovative program to improve health education and rural sanitation services through the integration of NWSDB activities with those of the Ministry of Health (MOH). The MOH is the GSL entity responsible for health education and rural sanitation, but at present there is little coordination with NWSDB water supply construction or rehabilitation work. As a result, potential health benefits from water subprojects are not being fully realized. More deliberate, joint planning between the two agencies will be promoted in the project aimed at increasing the recipient communities' awareness of the benefits of improved

health and sanitation practices at the same time that new or rehabilitated water supply systems are being put in place.

A Rural Sanitation Unit (RSU) supported by project-funded technical consultants will be established within the NWSDB. A primary responsibility of the RSU will be to provide social, environmental and public health inputs into all NWSDB planning, implementation and monitoring and evaluation processes. These inputs, which are currently largely lacking in NWSDB feasibility investigations, will be combined with NWSDB engineering and financial/economic assessments in selecting and designing future water projects. The RSU will also be responsible for coordinating NWSDB and MOH health education and sanitation (latrine construction) work at project sites.

A total of six subprojects will be directly supported with project funds (two newly constructed water schemes and four rehabilited schemes). The subprojects will serve as demonstration sites for testing implementation procedures in all facets of decentralized NWSDB operations and at the same time for testing the delivery of improved health education and sanitation services under the guidance of the RSU.

The total project cost is estimated at $19.6 million (see table below), of which AID will provide $12.3 million (63 percent) and the GSL $7.3 million (37 percent). The inputs consists of: technical assistance (380 pm long-term and 158 pm short-term); training (2 MA degrees, 43 pm short-term, in-country workshops and educational materials); commodities (office, training, laboratory, workshop warehouse equipment, in addition to project vehicles); facilities construction (offices, training centers, laboratories, maintenance workshops, warehouses and staff housing); water supply system construction and rehabilitation (2 new systems and 4 rehabilitated systems); latrine construction (approximately 15,000 latrines); research (8 technical and socio-economic research studies); and GSL recurrent costs. The GSL is committed to the project and no problems are anticipated in obtaining the required budgetary support.

Inputs	Magnitude/Source of Inputs ($000s)				
	AID			GSL	Project
	Grant	Loan	Total	Total	Total
Technical Assistance	3,810	-	3,810	-	3,810
Training	85	345	430	25	455
Research	55	-	55	-	55
Commodities	-	1,785	1,785	1,085	2,870
Facilities	-	1,340	1,340	1,085	2,425
Construction	-	1,390	1,390	925	2,315
Rehabilitation	-	600	600	400	1,000
Recurrent Costs	-	-	-	920	920
Inflation	660	1,300	1,690	2,420	4,380
Contingency	390	540	930	440	1,370
Total	5,000	7,300	12,300	7,300	19,600

Obligations of AID funds are planned over four fiscal years as follows ($ million):

	FY 84	FY 85	FY 86	Future Years	Total
Loan	2.3	4.1	0.9	-	7.3
Grant	0.5	1.0	1.0	2.5	5.0

The NWSDB will implement the project. Direction will be exercised by a Project Coordinating Committee chaired by the NWSDB General Manager and including a full-time

NWSDB Project Manager, staff directors of each NWSDB office or division, the Deputy Director of Public Health Services of the MOH, the USAID Project Officer, and the contractor Chief-of-Party. Technical assistance, training and commodity procurement will be arranged through a single direct AID contract, with most commodity procurement expected to be subcontracted to a Procurement Services Agent. All facilities construction will be by private host country contractors financed by direct reimbursement. The six construction/rehabilitation subprojects will be financed on a Fixed Amount Reimbursement (FAR) basis using private host country contractors. Latrine construction will be by trained, local NGO and/or community representatives financed by direct reimbursement. Research work will be performed by universities or private institutions.

Direct project beneficiaries include approximately 90,000 people in the target populations served by the six subprojects. Other direct beneficiaries are NWSDB, MOH, local government and NGO staff who will receive training at various points in the project. Indirect benefits should accrue to the country as a whole, i.e., a strengthened and more effective NWSDB together with improved programs for health education and rural sanitation should provide safe water supplies at an earlier date for a greater number of people, who in turn will have been better educated and trained to properly utilize and maintain the facilities.

At the end of the five-year project, the following conditions are expected:

1. A better functioning NWSDB through reorganizational consolidation, decentralization, and increased priority for operations and maintenance.

2. Established policies and operating procedures for the NWSDB's principal divisions: business management, planning, public relations, commercial, personnel, training, capital facilities management, operations and maintenance, information management, research and administration.

3. More effective NWSDB operations through better trained and motivated staff and improved facilities, equipment and logistical support.

4. More effective public health outreach through better trained peripheral health workers as facilitators of community health.

5. Active, integrated NWSDB water supply construction/rehabilitation and MOH community health education and latrine construction programs in up to six regions of the country.

C. Summary of Findings

Based on the analyses in Part VII and the detailed Project Design Report prepared in May 1984 by a 5-person team of U.S. consultants, the project has been determined to be technically, economically, financially, socially, administratively and environmentally feasible and ready for implementation. Project preparation work benefitted also from a team of AID consultants under the WASH project (Water and Sanitation for Health) which conducted investigations of the NWSDB's training, financial management, construction and rehabilitation, O&M and water quality surveillance capabilities in February 1984. The project meets all AID statutory criteria (Annex C) and Section 611 (e) certification requirements (Annex D).

D. APAC Issues

The Asia Project Advisory Committee (APAC) cable approving the project proposal (PID) and subsequent cable correspondence is in Annex A. The key issues of concern to the APAC are addressed below:

1. Construction and Rehabilitation: The APAC requested that the number of construction and rehabilitation subprojects funded by the project be kept to the minimum needed to

demonstrate institutional development, community participation and health education innovations. This has been done by reducing the proposed number of subprojects from 16 to 6. It is probable that additional construction/rehabilitation subprojects will be funded by the GSL with other donor assistance and that procedures and methodologies tested through the project will be applied to those subprojects as well.

2. Institutional and Policy Changes: All of the institutional and policy changes supported by the project are subsumed in the reorganization and decentralization of the NWSDB. These include the establishment of a strategic planning process, the formulation of an incentives package and promotion policies to attract talented staff to regional positions, the creation of the RSU, and many other changes outlined in the Project Paper. A semi-annual and annual review mechanism has been planned which will periodically examine progress toward these objectives.

3. Health Impact: This concern is directly addressed through the second element in the project. Coordination between the NWSDB and the MOH should enhance the health benefits associated with water supply subprojects.

4. Financial Analysis: The APAC raised two concerns: (a) the GSL's financial capability to sustain the high levels of capital investment and increases in recurrent costs required to achieve the Decade Plan's goals; (b) plans to assist the GSL through the project to meet a higher percentage of recurrent costs through revenues generated from water charges. The first concern is a fundamental strategic planning issue and will be addressed by the NWSDB Strategic Planning Committee which is to be established during the first six months of the project; financial analyses will be carried out and adjustments in capital and recurrent costs investments in the Decade Plan are likely to be recommended. The second concern is addressed directly by the billing and collection activity under the project; with technical assistance and other support it is anticipated that NWSDB revenues will substantially increase although not to the point where recurrent costs are balanced with revenues.

5. Monitoring and Evaluation: An innovative "rapid appraisal" information feedback system as recommended by the APAC has been incorporated in the project with AID/W evaluation design assistance. This system should provide a comprehensive and efficient mechanism for data collection and monitoring of project progress in achieving objectives. This system will be assisted by specially-designed socio-economic research studies.

6. Sanitation: Latrine construction and health education are the principal direct project sanitation activities. Other sanitation concerns such as waste water drainage and disposal will be addressed through improved system planning and design and training of community water-point caretakers.

7. Private Sector: Local private sector firms will be involved in the facilities construction/renovation work and water supply system construction/rehabilitation work funded by the project. Private local consultants and institutions will also be involved in research work, latrine construction and other project activities. In addition, assessments will examine expanded use of the private sector by the NWSDB in billing and collection, accounting, information management, equipment repair and maintenance, and provision of spare parts and supplies.

8. Beneficiaries: The rural poor, as members of beneficiary communities in the six subproject areas, will participate directly in the planning and construction of water and sanitation facilities. They will also benefit from improved health education training and delivery. Women will particularly benefit through their leading roles as water fetchers and the persons primarily responsible for family health and hygiene.

E. Project Contributors and Review Committee

The Project Paper reflects close AID/GSL collaboration and mutual understanding of the project's objectives, costs and plans for implementation. The following individuals are the principal contributors to the design of the project.

USAID/Sri Lanka Project Committee

Eric R. Loken, Project Officer and Chairman, Project Committee
Alexander W. Shapleigh, Assistant Project Development Officer
Lee Ann Ross, Economist
Kathleen LeBlanc, Financial Analyst
Anne Dammarell, Assistant Program Officer

AID/Washington

Sharon Pines, AID/W Asia Bureau Evaluation Officer
John Gunning, Acting USAID Program Officer
John Austin, AID/W S&T Bureau, Office of Health

Government of Sri Lanka

A. Paskaralingam, Secretary, MLGHC
H. Fernando, Senior Assistant Secretary, MLGHC
K. A. L. Premaratne, Deputy Director, National Planning, MF&P
N. D. Pieris, Chairman, NWSDB
T.B. Madurjalle, General Manager, NWSDB
Dr. M. Rodrigo, Deputy Director, Public Health Services, MOH

Project Design Team Consultants

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David R. Horsefield, Environmental Engineer
Daniel B. Edwards, Human Resources Development and Training Specialist
Raymond B. Isely, Public Health Specialist
Allen K. Jones, Social Scientist

WASH Consultants

Martin D. Lang, Financial Planning and Management Specialist
Harris F. Seidel, Environmental Engineer
James L. Jordan, Operations and Maintenance Specialist
James B. Tyler, Water Quality Surveillance Specialist

USAID Executive Project Review Committee

Frank D. Correl, Mission Director
William P. Schoux, Deputy Mission Director
Leroy Purifoy, Chief, Mahaweli and Water Resources Development Office
Robert Chamberlain, Chief, Health, Population and Human Resources Office
Ralph M. Singleton, Chief, Project Development and Special Programs Office
Arthur D. Schantz, Controller
Thomas A. Muntsinger, Legal Advisor

PART II: PROJECT RATIONALE AND DESCRIPTION

A. Project Rationale

The basic rationale for the project is that safe, convenient water supplies and adequate sanitation are essential to improved health for the people of Sri Lanka, and that this will ultimately lead to increased economic productivity and human well-being.

Although Sri Lanka ranks among the most favorable five percent of the less developed countries according to the Physical Quality of Life Index (infant mortality, life expectancy and adult literacy), this high standard has not been maintained in domestic water supply where it ranks among the bottom third of these countries. Of the 1981 population, only nine percent received piped water through house connections and a further ten percent used public taps. The remainder met its water needs from unprotected surface water sources or wells. With regard to waste disposal, only the capital city of Colombo has piped sewerage and this facility presently serves just 45 percent of the city's housing units. Of the 1981 population, five percent had flush toilets, 61 percent had some other form of latrine and 34 percent were without any excreta disposal facilities at all.

With respect to public health in Sri Lanka, there is a high incidence of disease resulting from poor environmental conditions. An estimated 40 percent of all hospital admissions are due to preventible communicable disease, over half of which are associated with unsafe drinking water and inadequate sanitation. In 1980, diarrheal diseases were the third highest cause of hospital morbidity, and intestinal helminthiasis was the fifth highest cause of hospital mortality. Gastroenteritis remains a major cause of infant and young child mortality. Diarrheal diseases in general, it is estimated, account for at least half of the acute wasting (deceleration in weight gain for height) and chronic stunting (deficient height for age) associated with under-nutrition.

To address these problems, the GSL endorsed in October 1980 a ten-year investment plan to upgrade substantially both the coverage and quality of the nation's water supply and sanitation programs. The total program (commonly known as the Decade Plan in recognition of the United Nations International Water and Sanitation Decade declared in 1976) calls for a capital investment of more than Rs.14,400 million ($572,000,000) in 1980 prices and has the following national objectives: to provide safe and adequate water supplies to 100 percent of the urban and estate populations and 50 percent of the rural population by 1990; to provide water supplies to the remaining 50% of the rural population during 1991-1995; and to provide approved sanitation facilities to 100 percent of the national population by 1990.

The National Water Supply and Drainage Board (NWSDB) was designated the principal implementing agency for the Decade Plan. In a little over three years, the NWSDB has made remarkable progress in constructing new water schemes. Approximately Rs.3,600 million of construction were completed by the end of 1983, and an additional Rs.2,000 million are scheduled for completion in the next two years. NWSDB staff has risen from 1,600 to more than 6,000 (including 3,000 casual employees) and the number of water schemes operated by NWSDB has risen from 96 to 161. In addition, because of managerial and fiscal weaknesses of local municipal authorities, the GSL has transferred operations and maintenance (O & M) responsibility to the NWSDB for a larger than anticipated number of schemes.

In spite of its new responsibilites, however, the NWSDB has matured very little as an institution. Many of its present operating procedures and policies were carried forward from its predecessor agency, the Department of Water Supply and Drainage within the Ministry of Local Government, Housing and Construction (MLGHC), and are inadequate for NWSDB's current widespread operations. O&M capabilities have not paralleled the growth in physical facilties. In essentially all areas of the country motors, pumps and gauges are broken, water quality testing is sporadic or non-existent, meters are broken or not installed, chemical feed equipment is defective, and filtration is poor. As a result, water quality and quantity is highly variable. Many schemes operate on an intermittent basis because the level of

maintenance is inadequate to maintain the design capacity of installed equipment. Lack of maintenance has prematurely aged many facilties and these facilties now require significant rehabilitation. Stores, spares and workshops are completely inadequate to serve NWSDB's national operations. Billing and collection of water tariffs are just being initiated, and the agency prepares very few meaningful management reports. Thus, although NWSDB has established itself as an action agency in the construction arena, it urgently needs an all-encompassing institution-building program if adequate quantities of wholesome water are to be produced routinely. This is the first of two principal elements in the project.

Simply installing or rehabilitating a piped water scheme will not assure lasting health, social and economic benefits for Sri Lanka's population. Health benefits require other inputs besides a source of clean water, no matter how well maintained a scheme may be. Human behavior frequently needs to be modified with regard to water drawing, water storage and water use if the cleanliness of water is to be preserved. Further, the fecal-oral transmission of diarrheal diseases cannot be broken unless personal hygiene and food handling and preparation are adequate, requiring both changed behavior and improved facilties for dishwashing, bathing, food storage and sanitation. Changing human behavior usually takes place more easily in the context of active community participation in government-sponsored projects and programs. GSL institutional responsibilities for health education and for installation of rural sanitation facilities lie with the Ministry of Health (MOH) and are currently outside the domain of the NWSDB. A deliberate effort is needed to coordinate these activities, as well as those of the communities themselves and a variety of non-government organizations (NGO's), with the NWSDB's water supply activities, which it is proposed be done through the creation of a Rural Sanitation Unit within the NWSDB. This is the second principal element of the project.

The GSL is committed to the Decade Plan and specifically to the objectives of this project. The most recent Public Investment Plan for 1984-88 includes an estimated expenditure of Rs.3,306 million ($132,000,000) for the water supply and sanitation sector during the next five years, which is consistent with the total estimated capital requirements of the Decade Plan. Specific GSL budget support for this project is detailed in the Financial Plan.

The project and its rationale are fully consistent with the USAID/Sri Lanka FY 1986 CDSS update, the Asia Bureau strategy, and underlying AID policy guidelines on domestic water and sanitation projects. The USAID/Sri Lanka CDSS justifies the Project on the basis of (1) its institution-building emphasis, where AID has a comparative advantage vis-a-vis other donors in providing needed technical assistance, and (2) its intended health impacts (reduction of morbidity and mortality), to be realized through a decrease in diarrheal and other water-borne diseases. Although the Asia Regional Strategic Plan (Revision No. 1, November 1983) determined that domestic water projects are generally less cost-effective than other health sector interventions, the Asia Bureau supports the project within the limits of the APAC guidance (see APAC cable correspondence in Annex A). Finally, the project satisfies the criteria in the AID Policy Paper on Domestic Water Supply and Sanitation (May 1982), where the principal concerns are:

(1) Evidence of need and effective demand for improved water and sanitation, including the consumers' willingness to support recurrent costs of O&M and to share some portion of investment costs associated with rehabilitation or new construction. In Sri Lanka a structure of water charges is now being introduced which has the objective, and the potential given additional outside technical assistance, to meet a high percentage of national O&M costs within a reasonable time frame. There will also be community participation and in-kind community contributions in the rehabilitation and new construction of water and sanitation systems.

(2) Evidence that the institutions responsible for water supply and sanitation can be strengthened to the point where they can assume responsibilities with only modest outside technical support. The NWSDB will achieve such capability during the period of the project.

Also, health education and rural sanitation capabilities, where primary responsibilities are with organizations other than the NWSDB, will be considerably strengthened in the Project through the creation of the Rural Sanitation Unit (RSU) within the NWSDB and its liaison function with other concerned institutions.

The activities of other donors involved in the sector will be coordinated with the project in several ways. The project will build upon several small-scale NWSDB institutional development activities already undertaken by the World Health Organization (W.H.O.), UNDP, IRC (Netherlands) and the World Bank. Once the institutional objectives of the project have begun to be realized, it is expected that major new water supply rehabilitation projects by the World Bank and Asian Development Bank will go forward on a foundation of sound NWSDB strategic planning and project development, implementation and O&M capabilities. Some fifteen ongoing bilateral water supply construction projects will also benefit through a strengthened NWSDB (among these is USAID's Market Town Water Supply Project (383-0063) in Jaffna). In addition, the project will complement ongoing W.H.O. and UNICEF activities in the introduction and commercialization of oral rehydration salts and training in oral rehydration therapy for effective diarrheal disease control.

B. Project Objectives

1. Project Goal

The goal of the project is to improve the health and well-being of the people of Sri Lanka. This will be measured by increases in the number of people throughout the country served by safe and reliable water supply systems and adequate sanitation facilities, and by reduced incidence of water-related morbidity and mortality.

2. Project Purpose

The purpose of the project is two-fold: (a) to develop and improve the institutional capabilities of the National Water Supply and Drainage Board (NWSDB) to plan, design, rehabilitate/construct, operate and maintain water and sanitation systems throughout Sri Lanka; and (b) to develop and improve national health education, rural sanitation services and community participation in water supply and sanitation.

The three major objectives in the NWSDB institutional development element of the project are the reorganizational consolidation and decentralization of NWSDB operations and increased emphasis on the proper operations and maintenance of water supply and sanitation facilities.

a. Consolidation: The current activities of NWSDB are divided into a "Project Area" and a "Non-Project Area". The "Project Area" consists of a narrow strip along the southwestern coast of Sri Lanka where recent urban water supply construction funded by World Bank assistance has occurred. The "Non-Project Area" consists of the rest of the country. An initial step will be to consolidate the "Project Area" and "Non-Project Area" into a single organization. A dual organization served NWSDB well during a period of rapid expansion of construction, both in providing focus and in meeting the stipulations for World Bank assistance. With the majority of this construction nearing completion, the most recent World Bank status report concedes that this geographical division of labor is no longer relevant. Other important consolidations include better integration of personnel and administration functions and the merging of the supplies and stores unit with the finance unit to form a single Commercial Department.

b. Decentralization: The NWSDB is now a highly centralized organization. All important decisions and a vast majority of routine decisions are made at the Central Office in Ratmalana. Many decisions reach the executive level because of the absence of firmly established operating procedures. Other decisions reach the executive level because local politicians, unsatisfied with answers or responses received at the local level, direct

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their requests to the MLGHC, which eventually lays the issue on the NWSDB Chairman's or General Manager's desk. Decentralization is thus a central theme of the project.

For meaningful decentralization to occur, regional staff must be significantly strengthened, both in their ability to manage people and resources and in their ability to deal effectively with their customers and local political representatives. Initially, it was assumed that the best means to decentralize would be to provide similarly designed regional maintenance workshops, training facilities, laboratories, stores and transport support in each NWSDB region, thereby enhancing each region's capacity for independent action. However, as the investigations continued, sharp differences in the needs of individual regions surfaced. In addition, the difficulties to be encountered in recruiting regional staff for all nine regions, particularly management and supervisory staff, became more fully appreciated. Transport problems, communications and accountability put limits on the amount of decentralization that would be feasible. Therefore, an incremental rather than a wholesale decentralization approach is planned. Four geographically spread regional offices will be strengthened to become Regional Support Centers (RSCs), one being the Central Office in Ratmalana. Each RSC will service two or more existing regions. Staffing and logistical support at the RSC will be strengthened to a far greater level than at the other regional offices, and considerably more authority will be delegated to the RSCs with accompanying responsibilities and accountability.

The current NWSDB organizational structure and the anticipated results of a consolidated and decentralized organization chart are depicted in Figures 1,2 and 3 and Table 1 of Annex F. It is cautioned that these are recommendations of the project design team and that the actual reorganization will emerge from a series of NWSDB workshops scheduled during the first six months of the project. It is also important to note that the decentralization objectives described above pertain to actions to be taken during the project. The ultimate aim of NWSDB decentralization, however, will be divestiture of system O&M responsibilities to the local authorities themselves. While the project will assist this long-range process through financial and managerial training opportunities for local officials, it is not expected that this goal can be reached during the life of the project.

c. O&M: Alongside consolidation and decentralization, the organizational structure, attitudes and actions at NWSDB are to be deliberately changed to emphasize that O&M of existing water schemes is the single most important mission of NWSDB. In the past five years, NWSDB has properly concerned itself with the construction of new water schemes. However, NWSDB's success in constructing new facilities now makes it critical that O&M, including rehabilitation where necessary, become the paramount sector activity. Organizational structure, promotional paths and special benefits must all emphasize the premier position of O&M to NWSDB and national long-term needs.

The overriding objective of the health education, sanitation and community participation element of the project is to insure, through direct coordination between the NWSDB and the MOH, participating NGOs and the beneficiary communities themselves, that health education and sanitation services are delivered to the communities simultaneously with the construction or rehabilitation of water schemes. This is to be accomplished through a new Rural Sanitation Unit (RSU) established within the NWSDB, and through specific programs managed by the RSU in concert with the MOH.

3. Project Outputs

The principal outputs under the NWSDB Institutional Development component of the project are:

a. Adoption by the NWSDB of a revised table of organization, including the consolidation of the NWSDB's current "Project Area" and "Non-Project Area" staff and a

planned program to decentralize through the establishment of Regional Support Centers;

b. Formation of a Strategic Planning Committee and the institutionalization of an annual strategic planning process;

c. Establishment of a NWSDB Public Relations Unit;

d. Design and implementation of a NWSDB Management Information System,

e. Improvement of billing and collection activities within a newly constituted NWSDB Commercial Department;

f. A comprehensive study of NWSDB accounting systems and implementation of the study's findings;

g. Institutionalization of a NWSDB annual financial planning process;

h. Improved supplies, stores, tendering and contracting capabilities, including decentralized stores at NWSDB Regional Support Centers, inventory controls, heavy transport support, and standard procurement procedures;

i. Reorganization and substantial expansion of the NWSDB Training Department, leading to the institutionalization of a structured, in-house skill training program;

j. Improvements in personnel management including a special incentive package for regional staff;

k. Improvements in capital facilities planning, design, construction and rehabilitation procedures, and the construction/rehabilitation of six water schemes (subprojects),

l. Operations and maintenance improvements through more effective process control, maintenance management systems and laboratory analysis of water quality; and

m. A strengthened NWSDB research group and the carrying out of eight technical and socio-economic research studies.

The principal outputs under the Health Education, Sanitation and Community Participation component of the project are:

a. Creation of a NWSDB Regional Sanitation Unit (RSU) responsible for social, environmental and public health inputs into NWSDB planning, implementation, and monitoring and evaluation processes;

b. An innovative health education program established by the RSU and managed at the field level by joint NWSDB/MOH Regional Sanitation Teams in conjunction with local government organizations, non-government organizations (NGOs), and the beneficiary communities themselves; this will be focused for demonstration purposes on the six water supply construction/rehabilitation subproject areas; and

c. An active latrine slab production capability and the installation of approximately 15,000 latrines in the six subproject areas.

4. End-of-Project Status:

At the end of five years, the combined activities in the project are expected to result in the following conditions:

a. A better functioning NWSDB through reorganizational consolidation,

decentralization and increased operation and maintenance priorities;

b. Established units, policies and operating procedures for NWSDB business management, planning, public relations, commercial, personnel, training, capital facilities management, operations and maintenance, information management, research and administrative areas;

c. More effective NWSDB operations through better trained and motivated staff and improved facilities, equipment and logistical support;

d. More effective public health outreach through better trained peripheral health workers as facilitators of community health;

e. Active, integrated NWSDB water supply construction/rehabilitation and Ministry of Health (MOH) community health and latrine construction programs in up to six regions of the country.

C. Project Elements

The project consists of two major elements: (a) NWSDB institutional development; and (b) health education, sanitation and community participation. Inputs to be provided within each of these areas include: technical assistance (long and short-term business management, commercial, training, personnel management, environmental engineering, supplies and stores management, water quality, operations and maintenance, public health, health education, social science and environmental sanitation expertise); training (long and short-term overseas training and study tours, participation in international workshops, seminars and conferences, and in-country workshops and health education support); commodities (office, training, laboratory, workshop and stores equipment and supplies, and project vehicles); facilities construction and renovation (office, training, laboratory, workshop and stores facilities, and staff quarters); water supply system construction and rehabilitation; latrine construction; technical and socio-economic research studies; and recurrent costs. Specific activities to be undertaken through the project in each major element are outlined in the following sections.

1. NWSDB Institutional Development

The project design team asessed NWSDB institutional development needs in six categories: management, commercial, human resource development, capital facilities management, operations and maintenance and special services. Planned actions, outputs and inputs for each category are briefly described below. Further descriptions of the problems to be addressed are in the Technical Analysis Summary and Annex A of the Project Design Report.

a. Management: There are five activity areas in this category: (a) organizational structure; (b) strategic planning; (c) policy; (d) public relations; and (e) management information system.

(1) Organizational Structure: Major organizational changes are to be accomplished within one year of the signing of the Project Agreement. These include the consolidation of NWSDB "Project Area" and "Non-Project Area" staffs and a planned program to decentralize. Actions/outputs include: (1) adoption of a revised table of organization, preparation of job descriptions, and staffing of all key central and regional positions; and (2) semi-annual team-building workshops to review the new organizational structure and job descriptions. The project will sponsor a workshop in December 1984 to help establish the initial reorganization, assist the semi-annual reviews of reorganizational progress over the life of the project, and provide a management/commercial advisor for a period of at least 40 months to counsel NWSDB senior executive staff. Short-term management training and participation in international seminars, workshops and

conferences will also be provided under this component of the project.

(2) Strategic Planning: Achievement of the Decade Plan will require an enormous capital investment. Fundamental priorities, e.g., new construction vs. rehabilitation, will have to be set and periodically reexamined in the context of national objectives, available resources, and NWSDB organizational capacities. Actions/outputs in this area are: (1) a Strategic Planning Committee to be established immediately and the first strategic plan (for 1985) produced not later than December 1984; and (2) institutionalization of a strategic planning process. The World Bank will provide technical assistance in preparing the first plan. The project will provide continuing assistance through the management/commercial advisor to help prepare the strategic plans for 1986 and 1987 and assist in formalizing the process.

(3) Policy: A problem unresolved by strategic planning and reorganization is NWSDB policy implementation once a policy has been established. The principal planned action is the preparation, annual review, and continuous updating of a NWSDB Business Policy Manual, to be accomplished with intermittent assistance by the management/commercial advisor and local consultant expertise.

(4) Public Relations: A NWSDB Public Relations Unit is to be established by January 1985 and will develop a comprehensive program to promote public understanding of NWSDB operations, water production and costs, health implications of water and sanitation practices and community participation. It will include a NWSDB corporate brochure, television newstrips, a speakers bureau, organized tours of NWSDB treatment plants and projects, newspaper articles, calendars, etc. The management/commercial advisor will assist in the establishment and initial planning and implementation of the unit. The GSL will provide funding for the preparation of a corporate brochure, newstrips and other public relations materials.

(5) Management Information System (MIS): A MIS provides the decision-maker with minimum information to make sound decisions in a timely manner. Specific planned actions are to design and implement a comprehensive NWSDB MIS, using a microcomputer and standard software packages to the maximum extent possible. Technical assistace will be provided to develop a MIS, train NWSDB management and staff in the use of the MIS, and procure the microcomputer and software.

b. Commercial: These are six activity areas in this category: (a) budgeting; (b) accounting; (c) financial planning; (d) billing and collection; (e) supplies, stores, tenders and contracts; and (f) fixed asset inventory.

(1) Budgeting: The budgeting process at NWSDB needs to be expanded to include capital and operating budgets for each operating unit and water scheme. All water schemes should be treated as profit centers and all other operating units as cost centers. Actions/outputs for this area are: (1) recruitment of an experienced, senior manager for a newly constituted Commercial Department; and (2) preparation of expanded budgets at the individual scheme, regional and Central levels. The management/commercial advisor will help design the process, prepare standard procedures and assist in staff training and trouble-shooting. The project will also provide a microcomputer system with appropriate software.

(2) Accounting: NWSDB needs a comprehensive upgrading of its accounting and stock control systems. Actions/outputs include: (1) aggressive recruitment for senior accountant positions at the Central Commercial Department and regional levels; and (2) a comprehensive study of NWSDB accounting systems. Technical assistance will be provided for the study and to implement the study's findings. The project will also provide two computer systems and software if, as is predicted, these are recommended.

(3) Financial Planning: NWSDB at present does not utilize financial

planning techniques. The annual NWSDB budgets serve as an approximate plan for expenditures, but the budget process has no clear procedure for amendment of budgets or the use of reserve funds. The planned output in this area is an annual financial planning process, starting with a financial plan for fiscal year 1985, containing comprehensive information on expenditure budgets, cash flow projections, implications of major anticipated (or unanticipated) events, and regular reports. The management/commercial advisor will assist in preparing the initial plan and establishing planning procedures on a routine annual basis.

(4) Billing and Collection: Most households have never paid for water and have viewed it as a free commodity. Since 1980, there has been an accelerated meter installation program for households in the major urban areas, representing the first time that urban households are being universally billed. Because collections from wholesale customers also have previously been poor, generally in the 30% range, an aggressive program is needed with these customers as well. Actions/outputs in this area include: (1) within the Central Office, the consolidation of all billing and collecting activities, including meter reading, into a single functional unit in the Commercial Department; (2) issuance of standard procedures for billing, collecting and customer complaints (the latter linked to the public information program explaining water production costs and tariffs); (3) setting of realistic targets for revenue receipts while maintaining an aggressive program to improve rates of collection (the ultimate goal is 90%); and (4) a one-year trial program to prepare and collect bills on a decentralized basis through the RSCs using microcomputers, followed by selection of a centralized or decentralized, manual or computerized, billing and collection program. The management/commercial advisor will assist in this process. The project will also provide up to eight microcomputers with software depending upon the outcome of the trial program.

(5) Supplies, Stores, Tenders and Contracts: This entire component needs substantial upgrading. Planned actions/outputs include: (1) recruitment of two competent, experienced supply managers to direct the NWSDB supplies and stores functions; (2) manuals that detail systems and procedures at the Central and regional stores centers; (3) preparation of a filing system on historic costs, vendor performance, manufacturer's catalogues and spare parts lists; (4) upgrading of the Central stores in Ratmalana; (5) construction of three warehouses at the RSCs and five warehouses in the remaining regions; and (6) improved heavy transportation capacity. Technical assistance and short-term training will be provided for supply managers. The consultants will also prepare the supplies and stores manual, and the project will finance some of the equipment for rehabilitating the Central Stores and the construction and equipping of all new stores. GSL or other donor financing will be used to purchase heavy duty transport vehicles and trucks and to rehabilitate existing Central stores facilities in Ratmalana.

(6) Fixed Asset Inventory: Fixed assets include land, buildings and installed equipment. The principal planned output is an upgraded fixed asset inventory providing scheme-level information. The management/commerical advisor will draft the standard procedures for valuing fixed assets and write guidelines on fixed asset identification and inventory for use in feasibility studies and construction projects.

c. Human Resource Development: There are three activity areas in this category: (a) training systems development; (b) skill training; and (c) personnel management.

(1) Training Systems Development: Needed improvements in NWSDB training capacities include: an increase in the number of trainers (there are currently only four full time training officers attempting to serve 3,000 permanent employees); expanded training skills among the training officers to include management and supervisory subjects (not currently a curriculum area) as well as technical subjects; advancement opportunities to ensure retention of quality training staff; more systematic training needs assessment and the formulation of long-range training plans; improvements in training methods and

training evaluation; and upgrading of training facilities and equipment. Planned actions/outputs through the project are: (1) the reorganization and substantial expansion of the current Training Department including the creation of 25 training officer positions, division of responsibility by functional area, and a new Training Support Unit; (2) a comprehensive training information, planning and evaluation system; (3) a certification program for skilled job categories; (4) a training-of-trainers program; (5) a core curriculum incorporating trainer's manuals and materials; and (6) a new central training facility in Ratmalana and two RSC training facilities. The project will provide a long-term human resource development advisor, short-term specialists, and funds for construction and equipping of the Central and regional facilities. The project will also provide short-term training for newly hired trainers. GSL or other donors will provide training vehicle support.

(2) Skill Training: Training to bring skills up to desired performance levels is needed at all points in the NWSDB organization. Once a reorganized Training Department is established, the planned output in this area is a structured skill training program, consisting of training workshops and supervised on-the-job training utilizing practical, experiential methods designed for five functional skill groups: O&M; capital facilities design and construction; commercial; management and supervision; and organizational development. It is anticipated that approximatley 3,100 person weeks of in-house training in these areas will be provided on an annual basis beginning from the third year of the project in addition to that provided to local government officials.

(3) Personnel Management: Needed improvements in this area include better staff understanding of personnel policies and procedures, more attention to career advancement paths and reward structures for good performance, a manpower planning process (none currently exists), and a thorough-going review of compensation rates and incentives for employees. The latter subject covers not only the overall salary structure (e.g., NWSDB salaries are significantly lower than in the private sector), but also the critical consideration of appropriate incentives to induce senior staff to work and live outside of Colombo. An incentives package for regional staff is a sine-qua-non for NWSDB decentralization and the success of the three RSCs outside Colombo. Planned actions/outputs are: (1) appointment of a special task force, consisting of expert consultants and temporarily assigned NWSDB staff who are respected and knowledgeable in the ways of the bureaucracy, which will submit a plan of action on all areas of needed improvement within 6 months of the start of the project; (2) creation of a special incentives package for regional staff incorporating housing, schooling, salary differential and career advancement considerations; (3) general incentive packages and career ladders for all staff geared to good performance; (4) a simplified, easy-to-read manual outlining personnel policies and procedures which is updated systematically; and (5) establishment of a Manpower Planning Unit within the Personnel Department. The project will provide local personnel consultants as required to assist the human resources development advisor, the special task force and the NWSDB in completing these actions. The GSL will provide housing facilities, salary supplements and other benefits as required for key regional staff.

d. Capital Facilities Mangement: There are three activity areas in this category: (a) facilities planning; (b) design; and (c) construction and rehabilitation.

(1) Facilities Planning: Planned actions/outputs in facilitiy planning are: (1) preparation of a draft manual on pre-feasibility studies for use in priority planning, the preparation of six model project pre-feasibility studies using the manual, and final issuance of the manual based on this experience; (2) research studies on the applicability of specific technologies or processes which may be appropriate (resource-saving) in the Sri Lankan context, and the utilization of research results as inputs in feasibility studies conducted for specific projects (to be undertaken by the Research Unit); (3) preparation of a draft manual on feasibility studies, use of this manual also in preparing six feasibility studies, and incorporating experience into a final manual; (4) establishment of a Rural Sanitation Unit within the Planning Unit to provide social and environmental inputs into

the project feasibility process (see Health Education, Sanitation and Community Participation Section); (5) written procedures for scheduling a nation-wide well-drilling program for groundwater resources; (6) a program to encourage engineers to participate in international professional societies (in addition to the training and incentives initiatives listed under Human Resources Development); and (7) assignment of all new projects to a single Project Director to achieve improved project management and reporting. The project will supply a long-term environmental engineering advisor to assist in the collective tasks listed above and will fund necessary computer software. The project will also provide short-term training and participation in international conferences, seminars and workshops.

(2) Design: Planned actions/outputs in facility design are: (1) preparation of a design manual describing standard specifications and procedures for facility design and design modification and review to be tested and finalized under the six construction/rehabilitation subprojects (see below); (2) establishment of a cost estimation section within the Planning and Design Branch, including a tested cost estimation manual and a complete library of relevant cost data; and (3) research studies on the availability and use of water treatment chemicals and spare parts supplies. The environmental engineer will assist in these actions as well as coordinating actions regarding consolidation, reorganization, engineer retention and project direction. The GSL will provide necessary drafting equipment and supplies.

(3) Construction and Rehabilitation: The ultimate measures of NWSDB's success in providing water supplies to Sri Lanka are the actual water schemes built (newly constructed or rehabilitated), followed by the efficient O&M of those schemes. Needs will be met in this area through: (1) reorganization actions (e.g., transfer of responsibility for rehabilitation of existing schemes from the O&M Branch to the Construction Branch); (2) adoption of a scheme rehabilitation priority list to be incorporated into the 1986 strategic plan; and (3) adoption of a strategy to meet staffing demands as part of the strategic planning process, including a determination if the NWSDB should get out of actual construction work and concentrate solely (or primarily) on construction supervision and field inspections. The project technical advisors will assist in these tasks.

In addition to the above institutional changes, the project will directly fund the complete planning, design and construction of four water supply rehabilitation subprojects and two new construction subprojects. This is considered the minimum number of subprojects to serve as demonstrations for the implementation of institutional development initiatives undertaken by the project. The six subprojects will be scheduled for no earlier than 1987 and will be selected to represent diversity in size and complexity as well as need throughout the different regions of the country. There is a strong likelihood that other donor contributions for rehabilitation or new scheme construction will be added at a future date, which will allow for additional demonstration of improved NWSDB institutional capabilities.

e. Operations and Maintenance: O&M has been identified as a top priority activity because of its direct and immediate impact on both the quantity and the quality of water made available to consumers. There are three activity areas in this category: (a) process control; (b) maintenance management; and (c) water qualtity.

(1) Process Control: This relates to the treatment of raw water from intake at the water source to distribution from the treatment plant. Technical problems amenable to planned process control improvement actions include: (1) aeration; (2) upflow basins;(3) filters; (4) coagulent preparation and dosing; (5) disinfection; (6) conservation of energy; and (7) distribution systems. The project will provide a process control specialist to assist in development of improved operating procedures and manuals for these areas.

(2) Maintenance Management: Maintenance activities in almost all water supply schemes have been extremely limited over a considerable length of time. Needed

improvements in maintenance management are grouped into five areas: systems and procedures; organization; workshops; transport; and communication. Planned actions/outputs are: (1) systems and procedures - development of a comprehensive maintenance management systems (MMS) covering all regions of the country and preparation of a MMS manual; (2) organization - integration of new MMS functions into a decentralized O&M organization; (3) workshops - rehabilitation of maintenance workshops in Ratmalana and construction of three workshops at the RSCs, five workshops in the remaining NWSDB regions, and equipping 50 workshops at the scheme level; (4) transport - provision of adequate vehicles for maintenance crews and transportation of equipment; and (5) communications - installation of 2-way radio equipment to assure instant communication between mobile maintenance crews, scheme-level OICs, regional workshops, and RSCs. The project will provide technical assistance in drafting and testing the MMS, funds for the design and construction of all workshops, and purchase of tools, workshop equipment, and radio equipment for all workshops and crews. Vehicles will be purchased by the GSL or other donors. The GSL will also provide funding for rehabilitation of existing Central workshop facilities in Ratmalana.

(3) Water Quality: Drinking water quality throughout Sri Lanka is poor. The means within NWSDB's control to improve water quality at the tap fall into three areas with planned actions/outputs as follows: (1) decentralization of laboratories - construction, equipping and staffing of a renovated laboratory in Ratmalana, three laboratories at the RSCs, five laboratories in the remaining NWSDB regions, and equipping 50 laboratories at the scheme level; this will include a decentralization plan for specified laboratory procedures, with the Ratmalana laboratory eventually concentrating on research, quality control and non-routine laboratory activity, the RSC laboratories equipped for a fairly extensive range of chemical and bacteriological tests, the other five laboratories to cover less sophisticated work, and the scheme-level facilities to concentrate on chlorine residual analysis; (2) supplies and equipment - establishment of rapid lines of re-supply of laboratory supplies and equipment, (through local vendors whenever possible), the construction of chemical storage facilities at Ratmalana and the three RSCs, and provision of sufficient vehicles at the regional level; and (3) sampling and analysis - preparation of a manual for sampling, laboratory analysis, supervisory control and reporting. For these combined activities, the project will provide technical assistance for laboratory decentralization and the preparation of manuals of procedures for laboratory work at all levels, and fund the design and construction of all laboratories. The project will also provide short-term training for selected O&M staff as its contribution to an enhanced regional O&M incentives program. Vehicles will be purchased by the GSL or other donors. The GSL will also provide funds for rehabilitating the Central laboratory facilities in Ratmalana.

f. Special Services: There are five activity areas within this category: (a) internal audit; (b) legal; (c) information management; (d) research; and (e) administration.

(1) Internal Audit: The NWSDB internal audit unit needs to be strengthened to provide an independent check on the accuracy of financial reporting and to aid management in identifying areas of potential improvement. The principal action/outputs are: (1) recruitment of an experienced accountant or auditor to direct the unit, supported by qualified staff or the services of a local accounting firm; and (2) establishment of standard procedures, objectives and priorities for the unit and initial implementation. The project will provide short term advisors as required to assist this activity and fund in-country workshops to facilitate this process.

(2) Legal: NWSDB does not presently have a legal officer. NWSDB needs to conduct routine legal reviews of all tenders and contracts, to examine potential legal claims as soon as they are identified, and to review employee claims to ensure their prudent disposition. The planned action is the recruitment of an experienced legal advisor and a reduction in reliance on external legal consulting services.

(3) Information Management: NWSDB has no data management or computer

capabilities at present, yet many of the institutional development activities include computerization. Essential additional outputs are therefore: (1) the preparation of a data processing plan that is keyed to a common integrated data base; and (2) a decision concerning an optimum data processing strategy, to be based on a comprehensive study investigating three distinct alternatives, each with persuasive agreements in its favor, viz. installation of a mainframe computer with terminals, decentralization of data management and use of microcomputers, or expanded use of external computer services. During the interim period, prior to a final decision on total NWSDB computer needs, action plans calling for the use of microcomputers to support decentralized data management will go forth. The project will provide short-term data processing consultants for the above tasks and fund in-country workshops to review, design and implement the final information management system.

(4) Research: A NWSDB research group was formed in 1983. It will be strengthened through: (1) preparation of annual plans for research activities geared to the priorities in the NWSDB strategic plan; and (2) additional funding for staff, research projects and study tours. The project will provide technical advisors to assist in preparing the first two annual research plans and funds for five research projects and five study tours. Priority research areas include appropriate technology and chemicals supply as discussed above.

(5) Administration: Administrative services are currently performed at NWSDB in a decentralized fashion. The principal planned output is the creation of a small Administrative Center at the Central Office. This center will contain word processors, reproduction facilities, postage and the official correspondence file room, and be led by a manager responsible for preparing and updating an administrative procedures manual and coordinating administrative workloads. An administrative advisor will be provided in addition to word processing and other office equipment. The GSL will provide some office equipment and funds for rehabilitating administrative center office space.

2. Health Education, Sanitation and Community Participation

As mentioned earlier, simply providing good quality water will not ensure lasting health, social and economic benefits. Such benefits will not be achieved or sustained without improvements in health education and sanitation, which must involve active community participation. Responsibility for these areas lies outside the NWSDB, principally within the MOH. At present, there is little effort to coordinate MOH health education and sanitation activities with NWSDB water supply and sewerage construction, with the result that potential health benefits are not being fully realized.

To address these problems, the project design team recommended a concerted health education, sanitation and community participation program focusing on three key areas: (a) improved coordination of NWSDB water supply construction activities with MOH health education and rural sanitation programs through the establishment of a Rural Sanitation Unit at the NWSDB; (b) improved delivery of health education training to beneficiary communities; and (c) increased emphasis on construction of improved sanitation facilities, especially in conjunction with water supply improvements. Specific activities to be undertaken by the project in each of these areas are outlined below. Details regarding the administrative capabilities of the various participants and the underlying strategy for this element of the project are provided in the Administrative Analysis Summary and Annex C of the Project Design Report.

a. Rural Sanitation Unit: The RSU will be created within the NWSDB Planning Unit. Its formation will be a Condition Precedent to disbursement of project funds. It will have three functional divisions: social science, public health/health education, and environmental sanitation. Staffing, with the exception of the last function where NWSDB engineers are already available within the organization, will rely initially on local consultants while permanent NWSDB staff is hired and trained. Two long-term (Master's

degree) candidates will be trained in the U.S., and the project will provide a long-term Public Health Specialist during the first three years of RSU operations.

The RSU will provide social, environmental, and public health inputs into all NWSDB planning, implementation, and monitoring and evaluation processes. At the planning stage, this will include environmental, health and social feasibility studies, which will be considered alongside NWSDB engineering and financial/economic feasibilities in determining new water subprojects to undertake. At the implementation stage, NWSDB/MOH multidisciplinary Regional Sanitation Teams, supervised by the RSU, and each composed of a NWSDB Regional Training Officer, a MOH Health Education Officer, and a MOH Senior Public Health Inspector, will be established at the field level to handle all aspects of training, local coordination and community participation both prior to and during subproject construction/rehabilitation. Finally, the RSU will be responsible for monitoring subproject progress and evaluating the long-term impacts of improvements in sanitation, sanitation-related behavior and health conditions in the target communities.

Liaison between the NWSDB and the MOH will be essential at several points. At the Ministerial level, a formal agreement will be concluded between the two agencies establishing the general management of the entire health education, sanitation and community participation component of the project. The agreement will address such project management questions as where project funds are to be allocated, how they are to be released and what types of decisions need to be made at different organizational levels. This agreement will be a Condition Precedent to disbursements. A second liaison at the national level, more operational in nature, will be between the RSU and the Health Education Bureau of the MOH. The latter has a well-developed staff with expertise in health education and community participation, a wide network of contacts with other government agencies, a sizeable field staff and a long record of succesful training and field activities. A third, field-level, point of coordination will be embodied in the Regional Sanitation Teams. The teams will be trained by the RSU in collaboration with the Health Education Bureau and the MOH Office of Environmental and Occupational Health in a multidisciplinary program designed to build effective teams and to prepare them for a leading role in the field-level implementation of health education and sanitation subprojects funded through the project. Figures 4 and 5 in Annex F depict the structure of the Regional Sanitation Teams and the overall coordination of activities in the component.

b. Health Education: Health education activities will focus on the communities served by the six subprojects chosen for rehabilitation or new construction under the project. The health education effort will be an innovative one involving for the first time the direct involvement of the NWSDB (through the RSU and the Regional Sanitation Teams). The RSU will be actively engaged in the identification of subprojects, which will be selected to a significant degree on the basis of RSU social feasibility work in the potential beneficiary communities, i.e., assessments of current health and sanitation conditions, the local presence and capabilities of MOH health workers, the current or potential involvement of NGOs, the strengths and weakness of village organizations, and community resources available for collecting data for use in monitoring and evaluating health improvements once a subproject is underway. After the subprojects are selected, extensive pre-implementation training and orientation will be conducted by the Regional Sanitation Teams over a one-year period for all agencies and community groups who will have a role in health education (MOH peripheral health workers, village health volunteers, water-point caretakers, NGOs, and local staff of other government agencies). Although training content will vary among these different groups, the common focus will be facilitation of community health through improved sanitation and personal hygiene. Training will also be provided in data collection and survey techniques to assist the RSU in its subsequent monitoring and evaluation activities. Following this extended preparation period, the reliabilition/construction work will be implemented. Health education work by the various trained groups will continue throughout the implementation phase and thereafter. The project will provide the local currency costs of training, educational materials, and administrative and logistical support.

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c. Sanitation: This activity will provide latrines to communities in the subproject areas. Latrine slab production will be accomplished locally by peripheral health workers, NGO staff and community representatives trained for this purpose (see above) and planned so that slabs are available at the subproject site when latrine construction begins. Latrine construction will be accomplished by the same trained manpower, in conjunction with individual householders, and under the guidance of the Regional Sanitation Teams. Project funds will provide for latrine slab materials, prefabrication of slabs and related transport and administrative costs. Individual householders will be responsible for pit construction and lining (if required) and construction of suitable latrine superstructures. Quantifiable outputs in this activity are: (1) an active latrine slab production capability established in up to six regions of the country; and (2) installation of about 15,000 latrines. The project will finance a portion of the latrine construction costs.

PART III: COST ESTIMATE AND FINANCIAL PLAN

A. Introduction

The total project cost is estimated at $19.6 million, of which AID will provide $12.3 million (63 percent) through a development grant of $5.0 million and a development loan of $7.3 million. The GSL contribution is estimated at $7.3 million or 37 percent of total project costs.

Major AID-funded inputs include technical assistance; training; commodities (office, laboratory, training, workshop and warehouse equipment and materials); facility construction and renovation (office, laboratory, training, workshop and warehouse facilities); water supply system construction and rehabilitation; latrine construction; and funds for technical and socio-economic research and support.

Major GSL-funded inputs include commodities (vehicles, office equipment and supplies, facility furnishings); facility construction and renovation (office, laboratory, workshop and warehouse renovation, staff quarters); water supply system construction and rehabilitation; latrine construction; and funds for project workshops and miscellaneous materials and support. Financial details are shown in Table 2 and Annex I-1.

As indicated in USAID/Sri Lanka's report to the Assistant to the Administrator for Management, "Mission Financing and Procedures" (March 31, 1984), GSL financial controls are generally good. Past USAID experience with the NWSDB, the GSL implementing agency, under our Market Town Water Supply Project-Jaffna (383-0063) also supports this conclusion. Table 1 shows proposed implementation and payment procedures for each input item in the project. The GSL has actively participated in formulating the project budget and is fully aware of and able to assume the estimated recurrent and capital cost burdens.

B. Costing of Project Inputs

1. Technical Assistance: The project provides for 380 pm of long-term and 158 pm of short-term technical assistance. The total estimated TA cost is $3.8 million. All TA will be financed through direct Letters of Commitment. Long and short-term expatriate advisor costs are based on estimates of $14,000 and $15,000 per person month of effort, respectively. Long-term local advisor costs are based on estimates of $1,500, $1,250 and $500 per person month of effort depending upon the type and level of services required. Short-term local advisor costs are based on an estimate of $1,000 per person month of effort. Details of the type, source, duration and costing of TA requirements are in Annex I-2. Costs for contractor vehicle fuel and maintenance ($2,000/vehicle/yr.) and secretarial support ($1,200/yr. each) are included in the TA base cost figures. A GSL contribution of some $260,000 for the TA consultant's local income taxes will also be required but is not included in the project budget.

2. Training: Project training inputs consist of 2 long-term Master's degrees, 43 pm of short-term overseas study and research tours, participation in 25 workshops, seminars and conferences and miscellaneous health educational support materials and supplies. Total project training costs are estimated at $455,000, of which amount $430,000 is funded by AID and $25,000 by the GSL. All USAID-funded training will be provided through the TA contract. GSL funds are to support in-country training and implementation workshops. Details of the type, source, duration and costing of training requirements are in Annex I-3.

3. Commodities: Total project commodity costs are estimated at $2.9 million. AID-funded commodity costs are estimated at $1.8 million of which $100,000 will be local procurement. GSL-funded commodity costs are estimated at $1.1 million of which $382,000 will be local procurement. U.S. source commodity items and unit costs were obtained from current U.S. suppliers' catalogues. Local source commodities were identified on the basis of their in-country availability and compatibility with local specifications and/or conditions. AID offshore procurement will be financed through direct Letters of Committment. All local procurement will be conducted on a direct cost reimbursable basis. An additional GSL contribution of some

$915,000 for import duties and taxes on foreign commodities will also be required which is not included in the project budget. Detailed commodity lists and cost estimates are in Annexes I-4 to I-8.

4. Facilities: Total project facility construction and renovation costs are estimated at $2.4 million. AID-funded facility costs are estimated at $1.3 million; GSL-funded facility costs are estimated at $1.1 million. All AID-funded facility construction/renovation will entail local currency expenditure with direct host country reimbursement. Facilites consruction/renovation cost estimates are based on current per square foot costs of building construction in Sri Lanka. Detailed facility construction/renovation cost estimates are in Annexes I-4 to I-7. All facility cost estimates include a ten percent provision for engineering and design.

5. Water Supply System Construction and Rehabilitation: Two new water supply systems will be constructed and four systems will be rehabilitated under the project. Total project system construction/rehabilitation costs are estimated at $2.6 million. The AID-funded share of system construction/rehabilitation costs is estimated at $1.6 million; GSL-funded component costs are estimated at $1.0 million. All system construction/rehabilitation will entail local currency expenditure financed by the FAR method with AID reimbursing 60% of agreed-upon costs. New system construction costs, amounting to $810,000 per system, are detailed in Annex I-9. System rehabilitation costs of $250,000 per system are detailed in Annex I-10. Subproject cost estimates are based on current per capita costs of new water supply system construction ($45) and system rehabilitation ($13) in Sri Lanka. A 25 percent provision for engineering and design and spare parts costs was included in rehabilitation subproject cost estimates. Construction subproject cost estimates include a 20 percent provision for engineering and design and spare parts. The discrepency between these figures (5%) allows for the increased engineering and design work required to "fit" system rehabilitation specifications with existing facilities designs. It should be noted that the figures cited above are for project cost estimation purposes only. It is expected that some of the subprojects selected for implementation will vary considerably with respect to each of the factors discussed above in an attempt to demonstrate to NWSDB staff as wide variety of construction/rehabilitation situations and techniques as possible.

6. Latrine Construction: A total of 15,000 latrines will be constructed under the project. Total project latrine construction costs are estimated at $695,000. AID-funded latrine construction costs are estimated at $418,000; GSL-funded component costs are estimated at $277,000. Costs per latrine, varying between $31 and $73, are detailed in Annex I-11. The figures presented in the Annex are current best estimates of the costs of materials and labor for latrine slab fabrication, pit excavation and superstructure construction for the various types of latrine to be constructed under the project. They are based on actual costs incurred in several recent similar latrine construction programs in Sri Lanka. The above estimates include an amount of some $18 per latrine to cover the costs of materials and tools, transport and administrative support. The project will finance the costs of latrine slab materials and fabrication plus transport and administrative expenses. Latrine pit excavation, lining (if required) and superstructure construction will be the responsibility of individual householders. All latrine construction will entail local currency expenditure with AID direct reimbursement for 60% of agreed-upon costs.

7. Research Studies: A total of 8 technical and socio-economic research studies are planned during the project. The estimated total project cost is $55,000, all of which will be in AID-funded local currency expenditure. Selected research studies will be financed by local host country contracts, with direct reimbursement by AID.

8. GSL Recurrent Costs: Total GSL project-generated recurrent costs are estimated at $920,000 in personnel salary, TA counterpart and facilities, and vehicles operations and maintenance costs. NWSDB personnel costs (salaries and allowances) are based on a projection of 67 new and upgraded technical and support staff positions calculated at existing NWSDB rates. Personnel costs also include provision for a 10% salary differential for some 50 key regional personnel as a part of a special regional incentives program. TA counterpart costs are

based on an estimate of 1.45 pm of NWSDB/MOH staff time per pm of project technical assistance. Facilities operations and maintenance costs are based on current best estimates of the costs of taxes, utilities, general maintenance and security and custodial personnel for new or upgraded project facilities. Vehicle operations and maintenance costs are based on a per vehicle estimate of $2,000/year, including fuel, maintenance and driver costs, where applicable. Details of GSL recurrent cost expenditures are presented in Annex I-12. The additive GSL recurrent budget for this project is shown in Table 1 of Annex I-12.

9. Inflation and Contingency: Total project inflation is estimated at $4.4 million. AID-funded inflation, amounting to $2.0 million, is based on 1984 cost estimates inflated annually over the LOP at an 8 percent compound rate. GSL-funded inflation, amounting to $2.4 million, is based on 1984 cost estimates inflated annually over the LOP at a 15 percent compound rate. Contingency cost estimates, amounting to $1.4 million, are all based on 10 percent of 1984 cost estimates. AID-funded contingency costs are estimated at $930,000. GSL-funded contingency costs are estimated at $440,000.

C. GSL Budget Analysis

The total 1984 NWSDB budget is estimated at $53.8 million, including $44.2 million in capital costs and $9.6 million in recurrent costs. The GSL capital budget for the project totals $5.7 million (see Table 1 and Annex I-1). Over the life-of-project, the estimated annual GSL contribution ranges between a low of $575,000 (1985) and a high of $1.4 million (1986), or between 1.3 and 3.2 percent of NWSDB's 1984 capital budget, respectively. The 1985 additive recurrent budget for the project amounts to $103,000 or 1.1 percent of NWSDB's 1984 recurrent cost budget. By the end of the project, new annual recurrent costs will amount to roughly $514,000, or 5.35 percent of 1984 recurrent costs. The 1985 NWSDB budget, now under preparation, is expected to reflect overall maintenance of 1984 levels despite significant general GSL budget cuts. The NWSDB does not anticipate any problems in obtaining the required budgetary support for this project. This conclusion is based on in-depth USAID dicussions with concerned, senior staff of the NWSDB, the MLGHC and the MF&P.

Table 1
Proposed AID-Funded Payment Procedures

Item	Method of Implementation	Method of Finance	Estimated Amount ($000s)
Technical Assistance (including Evaluation)	Direct AID Institutional Contract (s) and PSC(s)	Direct Letter of Commitment	4,810
		Direct Letter of Commitment	(included in TA)
Training	(Through TA contract)	Direct Letter of Commitment	570
Commodities			2,235
Foreign Exchange	(Through TA subcontract with PSA)	Direct Reimbursement	
Local Currency	HC Procurement	Direct Reimbursement	
Facilities	HC Contract	HC Reimbursement	1,700
Construction/ Rehabilitation	HC Contract	FAR (HC Reimbursement for Latrine Construction)	2,910
Research Studies	HC Contract	HC Reimbursement	75
	TOTAL		12,300

TABLE 2

SUMMARY COST ESTIMATE AND FINANCIAL PLAN ($000s)
WATER SUPPLY & SANITATION SECTOR PROJECT, 383-0088

Source/Item	AID			GSL			PROJECT TOTAL
	FX	LC	TOTAL	FX	LC	TOTAL	
Grant Funds:							
Technical Assistance	3,510	300	3,810	-	-	-	3,810
Training	-	85	85	-	-	-	85
Research Studies	-	55	55	-	-	-	55
Contingency	350	40	390	-	-	-	390
Inflation	590	70	660	-	-	-	660
Total Grant Funds	4,450	550	5,000	-	-	-	5,000
Loan Funds:							
Training	320	25	345	-	25	25	370
Commodities	1,685	100	1,785	700	385	1,085	2,870
Facilities	-	1,340	1,340	-	1,085	1,085	2,425
Construction	-	1,290	1,290	-	925	925	2,215
Rehabilitation	-	600	600	-	400	400	1,000
Recurrent Costs	-	-	-	-	920	920	920
Contingency	200	340	540	40	400	440	980
Inflation	500	800	1,300	220	2,200	2,420	3,720
Total Loan Funds	2,705	4,595	7,300	960	6,340	7,300	14,600
Total Project Funds	7,155	5,145	12,300	960	6,340	7,300	19,600

PART IV: IMPLEMENTATION PLAN

A. Procedures

The National Water Suply and Drainage Board (NWSDB) of the Ministry of Local Government, Housing and Construction (MLGHC) will implement the project. Direction will be exercised by a Project Coordinating Committee chaired by the NWSDB General Manager including the Deputy and Assistant General Managers of each NWSDB office or division, the Deputy Director of Public Health Services of the MOH, the NWSDB Project Manager, the USAID Project Officer and the contractor Chief-of-Party (COP). Day-to-day project management will be the responsibility of the full-time NWSDB Project Manager supported by technical, administrative or other counterpart staff as required. The contractor COP will work directly with the NWSDB Project Manager to assist overall project administration.

To facilitate coordination between the NWSDB and the MOH, a Memorandum of Understanding will be concluded with the MOH Department of Public Health Services to insure cooperation of MOH field personnel in project health education, latrine construction and associated monitoring and evaluation activities. A pre-implementation workshop for key GSL and USAID personnel will be held in November/December 1984 to define roles and working relationships, establish NWSDB reorganizational priorities and responsibilities and facilitate initial implementation of the project.

1. Technical Assistance and Training

Technical assistance (TA) and training under the project will be implemented through a direct AID contract. The NWSDB will be actively involved in preparation of the Request for Technical Proposals (RFTP), evaluation of proposals and selection of the contractor, and will be consulted as necessary during contract negotiations. The principal contractor will be responsible for the provision of all TA and commodity procurement under the project and for implementing, monitoring and updating the project training plan. The principal contractor is expected to be a private firm which may then subcontract as necessary with other firms, PSAs, etc.

a. Technical Assistance: Technical assistance is expected to continue through the five-year LOP, with most long-term TA concentrated in the first three years. The contractor COP is initially programmed for 40 months, with an option to extend pending the outcome of the mid-project evaluation. The contractor will be provided office space at NWSDB headquarters in Ratmalana. Office space renovation and small-item office equipment will be funded by the GSL. Large-item office equipment (a copier) will be funded by AID. Limited funds will be included in the contract for local procurement of office supplies directly by the contractor. Counterpart support staff for long and short-term TA will be provided by the NWSDB. The contractor will provide its own local secretarial support. Sufficient NWSDB vehicles financed by AID will be reserved for use by TA personnel for work-related transportation. The contract will include funds for international travel, R&R, housing, furnishings and utilities plus fuel and maintenance costs for vehicles assigned to the TA personnel.

b. Long-Term Training: The two long-term trainees under the project will both attend two-year Master's degree programs at U.S. universities. They will be selected through a rigorous screening process with the contractor responsible for arranging their placement and monitoring their performance. Both will begin their studies by late CY85, returning by end CY87. Both will be bonded, and expected to return to work for the NWSDB (Rural Sanitation Unit) on final receipt of their degrees.

c. Short-Term Training: Short-term training will consist of study and research tours and participation in international workshops, seminars and conferences and will continue throughout the LOP. Appropriate study programs and venues will be jointly identified by the USAID Project Officer, the Project Coordinating Committee and the contractor. Although most

overseas training will be conducted in the U.S. and other Code 941 countries, some international workshops are expected to be held in Code 935 countries. Thus, a waiver will be required to allow AID-funded participation at such workshops. Participants will be nominated by their respective NWSDB divisions, selected by the Project Coordinating Committee and programmed, monitored and funded by the contractor. Detailed project training plans will be prepared and updated annually by the contractor.

a. In-Country Workshops and Seminars: A total of 15 in-country workshops are planned under the project, including 10 annual and semi-annual project implementation reviews and 5 technical reviews (e.g, billing and collection, internal audit, accounting and information management areas). Participants will consist of NWSDB staff and local government officials selected on a need-to-know basis. All such workshops will be funded on a direct cost reimbursable basis and arranged and managed by the contractor in consultation with the GSL Project Manager.

e. Health Education Support: Training under this category will consist of an indeterminate number of in-country workshops and training exercises continuing throughout the first three years of the project. Funding will be provided for health education and training materials and participant transport and per diem and other administrative costs on a direct cost reimbursable basis. Participants will consist of MOH peripheral health workers (e.g., Health Education Officers, Medical Officers of Health, Public Health Inspectors, Public Health Nurses, Family Health Workers), other concerned GSL staff, members of non-governmental organizations (NGOs) and community representatives and volunteers (e.g., Village Health Workers, water-point caretakers and Grainodaya Mandalaya members). GSL and NGO participants will be selected on a regional-specific basis. Community participants will be selected according to their local influence, aptitude and willingness and availability to work under the project. Workshops will be arranged and conducted by the NWSDB Rural Sanitation Unit acting in consultation with the MOH Department of Public Health Services. Workshop funding will be managed by the contractor.

2. Commodities

General categories of offshore commodities to be procured under the project include vehicles and office, training, laboratory, workshop and warehouse equipment. Offshore commodities funded by AID will be procured by the contractor probably under a subcontract with a USAID-approved Procurement Services Agent (PSA). Three major offshore procurement actions are planned under the project; one each in early CY 85, 86 and 87. GSL offshore procurement, limited to vehicles, will be conducted either through the same TA subcontract or some alternative mechanism with other donor assistance. Major vehicle procurements are planned for early CY 86 and 87. Local procurement, largely office and training facilities equipment, furnishings and supplies, is also envisaged primarily during the first three years of the project. The NWSDB will retain title to all commodities purchased under the project, with the exception of household furnishings and appliances for long-term TA personnel which shall remain the property of USAID for use in other mutually-approved development projects. RMCO/Bangkok will be consulted and actively involved in all major procurement actions. Authorized source and origin for project commodities is Code 941 and host country. Waivers are required for procurement of vehicles (for long-term advisors only) and video training equipment from Code 935 countries. A source/origin vehicle procurement waiver is included in Annex G. Full procurement details are in the Commodity Procurement Plan, Annex H.

3. Facilities

Office, training, laboratory, workshop, warehouse and staff housing facilities will be newly constructed and renovated during the first three years of the project. New facility construction will be financed by AID on a direct reimbursement basis. Renovation of existing facilities and construction of staff quarters will be financed by the GSL. Preparation of facilities plans, specifications, tender documents and construction supervision will be the responsibility of the NWSDB. All facility construction and renovation will be by HC contract

with local private firms, competitively selected, with each firm responsible for all construction work at a single site. USAID engineers will review and approve all building and site plans prior to contracting.

4. Construction and Rehabilitation

a. Water Supply System Construction and Rehabilitation:

Two new water supply systems will be constructed and four existing systems will be rehabilitated under the project. All construction/rehabilitation subprojects will be funded on a FAR basis, with AID reimbursing 60% of preagreed costs. Preparation of scheme plans, specifications and contract tender documents and construction supervision will be the responsibility of the NWSDB. Subproject pre-feasibility, feasibility and design work will be completed during the first three years of the project, with construction activities commencing mid-CY 87 and continuing into the final year. Subproject construction/rehabilitation will be by HC contract with local private firms, competitively selected, with each firm responsible for all work in a single subproject. USAID engineers will review and approve all system plans and specifications prior to contracting.

b. Latrine Construction: Approximately 15,000 latrines will be constructed in system construction/rehabilitation subproject target communities under the project. Latrine construction will be financed on a direct AID reimbursement basis. Latrine planning, design and construction will proceed in tandem with water supply system construction/rehabilitation subproject development and implementation within a given community. Latrine construction will be by host country contracts with local NGO and community representives trained for this purpose. Latrine pit excavation, lining (if required) and superstructure will be the responsibility of individual householders. Latrine construction planning and management oversight will be the responsibility of the NWSDB.

5. Research Studies

A total of eight research studies (5 technical, 3 socio-economic) are planned under the project. Technical research studies will be designed and monitored by the NWSDB Research Unit in coordination with other concerned NWSDB offices. Socio-economic studies will be the responsibility of the NWSDB Rural Sanitation Unit in conjunction with its project impact monitoring/evaluation oversight responsibilities (see Monitoring and Evaluation Plan). Technical studies will be carried out during each of the first four years of the project. Socio-economic studies will be carried out during the second (baseline), fourth and final years. All research studies will be implemented through local HC contracts with universities or private institutions (e.g., Marga Institute) and subject to USAID review and approval.

B. Implementation Schedule

1984

August 15	- Project authorized
August 31	- Project agreement signed
September 15	- PIL #1 issued
September 24	- Request for Technical Proposals for TA, training and commodity procurement issued
October	- Central facilities designs completed
December	- Project pre-implementation workshop completed

1985

January	- All initial Conditions Precendent met; evaluation of TA proposals completed
February	- Long-term consultant vehicles ordered; TA contract signed

March	- Invitation for bids for Central facilities construction/renovation issued; TA contractor mobilization and orientation
March	- 1st annual project implementation workshop completed; 1985/86 project budgets finalized
April	- Initial commodity order forwarded to PSA
May	- Participants selected to begin long-term training in September 1985; Regional Support Centers construction designs approved; contracts for Central facilities construction/renovation awarded
June	- Participants selected for 1st year short-term training; scope of work for 1st technical research study completed; invitation for bids for Regional Support Centers construction issued
July	- 1985/86 Project Technical Workplan completed
August	- 1st year health education training completed; water supply and latrine construction/rehabilitation pre-feasibility work completed
September	- 1st semi-annual project implementation workshop completed
October	- Regional Support Centers construction contracts awarded
November	- Scope of work for subproject community baseline survey completed

1986

January	- 1st call for tenders for vehicles issued
February	- Regional facilities designs completed; initial commodity order received
March	- Finalize 1987 project budget; 2nd commodity order forwarded to PSA; 2nd annual project implementation workshop completed; invitation for bids for regional facilities construction issued
May	- Participants selected for 2nd year short-term training
June	- Scope of work for 2nd technical research study issued
July	- Subproject feasibility design work completed; regional facilities construction contracts awarded; 1987/88 Project Technical Workplan completed
August	- 2nd year health education training completed
September	- 2nd semi-annual project implementation workshop completed
December	- Final designs and cost estimates for construction/rehabilitation subprojects completed; 1st vehicle order received

1987

January	- 2nd call for tenders for vehicles issued
February	- Final commodity order placed; 2nd commodity order received; invitation for bids for construction/rehabilitation subprojects issued; 3rd annual project implementation workshop completed; 2 consultants depart
March	- 1988 project budget finalized
May	- Participants selected for 3rd year short-term training; mid-term project evaluation initiated
June	- Mid-term project evaluation completed; scope of work for 3rd technical research study completed
July	- Subproject construction/rehabilitation contracts awarded; 1988/89 Project Technical Workplan completed
August	- Final year health education training completed; subproject health education/latrine construction programs initiated; long-term trainees return
September	- 3rd semi-annual project implementation workshop completed; 5 consultants depart; change in USAID Project Officer
December	- Final commodity order received; 2nd vehicle order received

1988

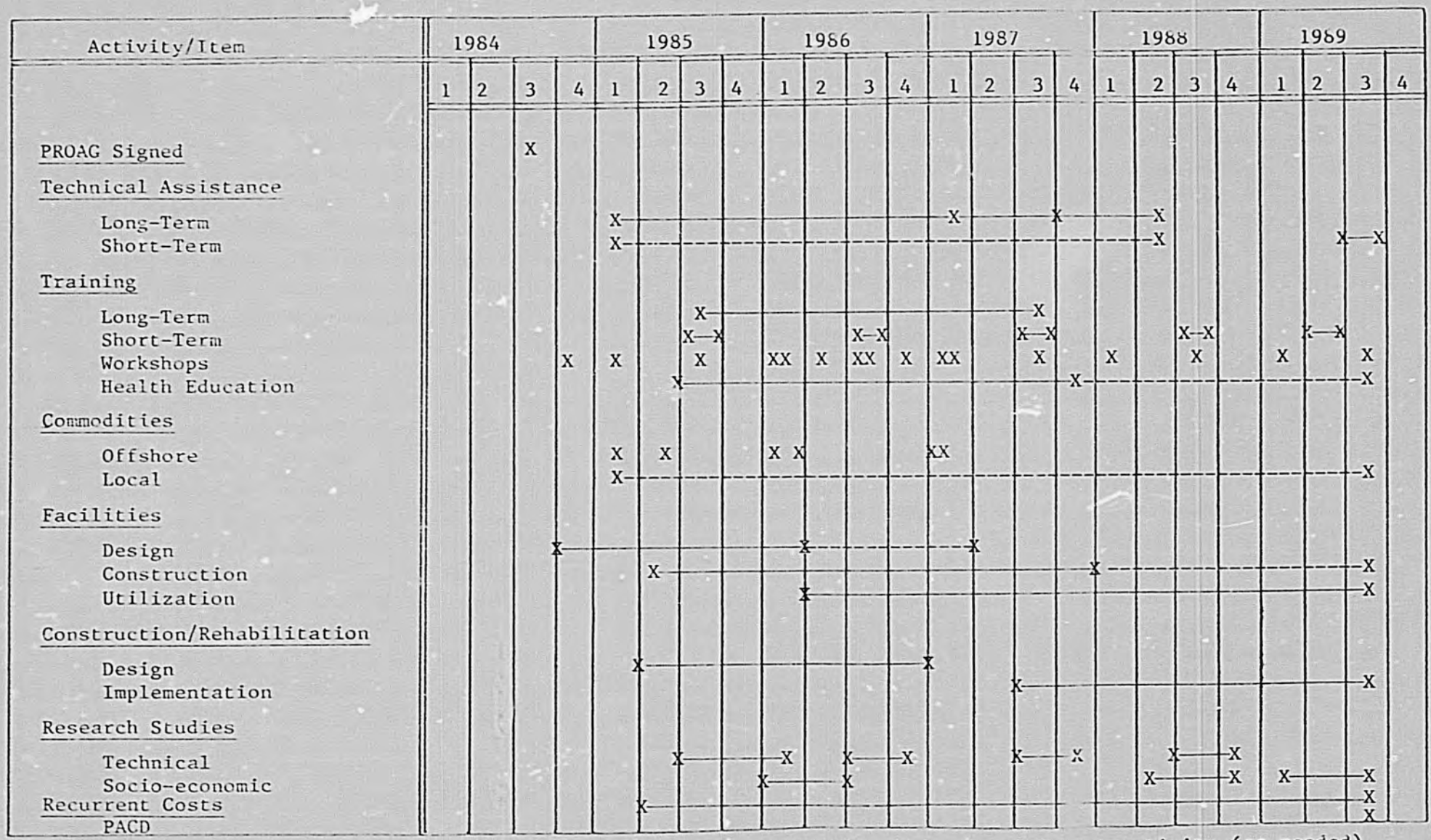
March	- 4th annual project implementation workshop completed; finalize 1989 project budget
April	- Scope of work for mid-term socio-economic study completed
May	- Participants selected for 4th and final years short-term training
June	- Finalize 1989 Project Technical Workplan; final 2 consultants depart
September	- 4th semi-annual project implementation workshop completed

1989

February	- Scope of work for final socio-economic study completed
March	- Final annual project implementation workshop completed
July/August	- Final semi-annual project implementation workshop completed; End-of-Project Impact evaluation completed
August 31	- PACD

Figure 1

Implementation Bar-Chart



X= Target Date; ——— = Continuous activity; - - - - = Intermittent activity (as needed)

PART V: MONITORING AND EVALUATION PLAN

A. Introduction

Project monitoring and evaluation plans rarely reflect an information system capable of assisting managers in making informed decisions and judgements while the project is being implemented. To ensure that monitoring and evaluation for this project goes beyond the usual audit function and provides a useful management tool, the approach used will be a rapid appraisal feedback system where senior managers will receive information on critical indicators (both process and outcome or impact) every six months. This type of design will allow for a continual analysis of trends toward achievement of project objectives over time to ensure that reasonable progress is taking place. In this way, problem areas can be identified and corrective actions initiated as they arise.

While monitoring and evaluation of performance is an important element of a project, it is also fundamental to any well-run institution. For this reason, the system described herein has been designed not only to meet project implementation requirements, but also to satisfy longer-term GSL needs regarding the monitoring and evaluation of overall sector performance in Sri Lanka. Thus, project monitoring and evaluation will to the greatest extent possible rely on existing NWSDB/MOH information monitoring and feedback systems operated by local personnel. In those areas where the existing information base is weak or non-existent, appropriate systems have been designed to the project as part of the overall institutional thrust. The intended output of this aspect of the project is establishment of a simple, cost-effective and rapid information collection and appraisal system capable of providing GSL decision-makers and community leaders with the minimal data required for effective sector management.

B. Critical Issues

Based on the goal and purposes of this project, the critical issues to address in the monitoring and evaluation system may be expressed as three general questions:

1. Has the institutional capability of the NWSDB to provide reliable sources of potable water to the people of Sri Lanka been strengthened?

2. Have appropriate links been established among the NWSDB, the Ministry of Health, local government authorities and NGOs to support a combined effort for safe water supply and improved sanitation practices?

3. What changes, if any, are occurring among the target beneficiaries at the community level that may be related to water and sanitation (e.g., incidence of diarrhea, parasitic infestation, home gardening and other income-generating activities)?

Annex J provides a breakdown of each of these critical issues into sub-questions; each with appropriate indicators, possible sources of data and recommendations for analysis. This listing should be considered representative of the types of questions and indicators to be used in the project monitoring and evaluation system. Once project activities and plans for their implementation become more concrete, it will provide a useful guideline in identifying the more critical and relevant questions meriting further examination.

C. Collection and Dissemination of Information

The information that will be collected and summarized on a semi-annual basis will fall into two general categories: (1) information related to the institutional strengthening of the NWSDB; and (2) information on community health education and sanitation activities.

1. NWSDB Institutional Development Information: Information within this category covers virtually all areas of NWSDB operations; including its public relations and policy, planning and

management, organizational, commercial, training, personnel, capital facilities management, operations and maintenance, research and administrative functions. In each of these areas, standard operating procedures, including information documentation, reporting and follow-up, will be developed and implemented under the project. Special emphasis will be placed on establishment of a Management Information System (MIS) for providing top NWSDB decision-makers with timely summary reports of critical operational data to assist in monitoring the organization's performance. It is foreseen that the MIS will provide much of the quantitative institutional information for the project's semi-annual implementation reviews, the primary mechanism for project monitoring and evaluation (see Implementation Plan and below).

Key personnel within each NWSDB operational unit will be responsible for gathering the required data pertaining to their respective areas of operations. Collection of more qualitative information will be assisted by the TA contract team through interviews of selected NWSDB staff and review of implementation progress and procedures up to that point in time. Based on this collection of information, six-month summary reports will be prepared and distributed to the Project Coordinating Committee and senior MLGHC/MOH managers for review and discussion at annual and semi-annual project implementation workshops. Representative questions and indicators for this category of information are included in Annex J.

2. Information on Community Health, Sanitation and Participation: Information within this category covers such areas as household sanitation, health and nutritional status and practices; the existence of potential water-related income generating activities; community participation and perception of facilities; efficiency of water supply system operation and maintenance; effectiveness of health education training and delivery; and level of interaction with relevant GSL and NGO field personnel. Target communities will include those selected for subproject construction and rehabilitation activities. Representative questions and indicators for this category of information are included in Annex J.

The NWSDB Rural Sanitation Unit (RSU) will have overall responsibility for compiling information on this component of the project. Regional Sanitation Teams, comprised of the NWSDB Regional Training Officer and the MOH Health Education Officers and Senior Public Health Inspectors for a given region, will coordinate data collection within their respective regions. Actual collection of community-level information will be performed by Village Health Workers (VHWs) and selected NGO and community representatives trained for this purpose under the health education component of the project. Collection techniques will include record reviews, interviews, observation and survey forms and questionnaires. Every six months, information collected will be compiled into summary reports for distribution to USAID, NWSDB, MOH, MLGHC and community representatives for review and discussion at annual and semi-annual project implementation workshops.

D. Monitoring Arrangements

The primary USAID responsibility for monitoring the project will lie with the USAID Project Officer, located in USAID/Sri Lanka's Office of Mahaweli and Water Resources Development(MWRD). The present Project Officer is an environmental engineer with experience in domestic water supply and sanitation, who is scheduled to remain in Sri Lanka throughout the first three years of the project. The Project Officer will be assisted by two FSN direct hire engineers and the rest of the MWRD office staff. MWRD at present has a professional staff of 5 USDH (4 engineers and 1 housing officer), 2 FSNDB engineers and support staff. In the near future, MWRD will be hiring two additional FSNDBs (1 engineer and 1 draftsman/technician).

In carrying out his responsibilities, the Project Officer will be assisted by a USAID Project Committee, first established in April 1983, composed of a financial analyst, program economist, evaluation officer, project development officer, and the Regional Legal Advisor, who is based in Colombo. All members of the Project Committee have been closely involved in project design and PP preparation. In addition, the Project Officer can draw, as needed, on

the services of the RCMO (Bangkok) and the Area Contracting Officer (New Delhi), both of whom have been consulted on implementation arrangements for the project.

The Project Officer will be one of approximately 15 members of the Project Coordinating Committee (for composition see Implementation Plan) which will meet at least once a quarter to review project progress and problems. Other monitoring mechanisms include site visits by the Project Officer and other USAID staff; review of quarterly USAID implementation status reports; regular Mission portfolio review meetings; quarterly contractor reports; GSL reports (e.g., semi-annual commodity receipt and utilization, shipping, construction progress); semi-annual and annual implementation reviews; the 1987 and 1989 evaluations; and audit reports.

Annual and semi-annual project implementation workshops are planned for Spring and Fall of each year of the project. For monitoring purposes, these reviews will serve to assess overall progress in implementing the project (focusing on inputs), identify and resolve implementation constraints and provide the bases for GSL budget preparation for the following year, and for preparation of annual project technical workplans each July. However, as described above, these workshops will also provide the format for semi-annual appraisals of the project's progress towards achievement of goal and purpose objectives. Through review and discussion of output summary reports (described above), project and GSL management will observe trends, identify problem areas and develop strategies for overcoming problems every six months to ensure that reasonable progress is being made towards purpose achievement throughout the LOP. Participants in the semi-annual reviews will include the Project Coordinating Committee, other concerned GSL officials, the TA contractor team and interested other donor representatives. Funds have also been programmed for limited short-term TA expertise as required to assist workshop reviews in dealing with particular identified areas of constraint.

E. Evaluation Arrangements

Two formal evaluations will be carried out during the life of the project; the first, or mid-term evaluation, scheduled for late FY 87; and the final impact evaluation at the project completion. Both will be conducted by joint teams of GSL, USAID and AID/W personnel assisted by short-term expatriate and/or local consultants as required. The Financial Plan includes $105,000 for evaluation assistance. Both evaluations will rely heavily on information obtained through the semi-annual project review process described above. This information will be supplemented by each team's own review of project records and files; discussions and interviews with key NWSDB, MOH and community representatives; and site visits and observations of selected NWSDB facilities and operations and subproject target communities. Community-level baseline information will be collected under the first socio-economic research study scheduled during the second year of the project (see Implementation Plan). Baseline data collection will focus on community and regional-specific information on health impact variables, economic impact variables, water supply characteristics, sanitary facilities and practices, diet and nutrition, socio-economic and household characteristics and degree of interaction with NWSDB, MOH and NGO representatives. Although the subject material of both evaluations will be the three critical issues listed above (see also Annex J), each will approach the material differently in accordance with their mid-point and end-point perspectives. The focus of the mid-term evaluation will be the following:

. summary of progress to date in each of the three critical areas (e.g., NWSBD institutional development, NWSDB/MOH/NGO coordination and community health education, sanitation and participation in sector activities)

. identification of major problems in achieving project goals and purposes

. assessment of the likelihood of the project achieving its goals and purposes by the PACD

. assessment of the project's effectiveness in addressing current AID policy objectives

. recommendations for modification of project activities and/or implementation procedures to overcome problems or otherwise facilitate progress

. recommendations on areas meriting special consideration (areas identified here will be the subject of the second socio-economic study tentatively scheduled for year four of the project; see Implementation Plan)

The final project impact evaluation will be preceded by the third and final socio-economic research study planned as an in-depth survey of changes in subproject target communities relative to the baseline conditions listed aove. The final evaluation will use this information and all available data regarding NWSDB institutional development to determine the following:

. final status of project progress in each of the three critical areas

. "lessons learned" and recommendations for their application to the planning and design of future, similar efforts

Upon completion, copies of each evaluation report will be distributed to USAID, AID/W, concerned GSL agencies and officials, participating NGOs and interested other donor representatives.

PART VI: CONDITIONS AND COVENANTS

A. Conditions Precedent to Disbursement

Conditions precedent to disbursements, in addition to the standard legal opinion and designation of authorized representatives, are recommended as follows:

1. Conditions Precedent to Disbursement for NWSDB Institutional Development Activities:

(a) Evidence of the adoption by the NWSDB of a planned program to reorganize and decentralize operations, to include a revised table of organization, preparation of job descriptions, and plans to staff all key central and regional positions;

(b) Evidence of the establishment by the NWSDB of a Strategic Planning Committee; and

(c) Evidence of appointment by the NWSDB of a special task force on personnel management to develop a plan of action on needed improvements in NWSDB personnel policies and procedures, to include such items as salary structures, special incentives for regional staff, and manpower planning.

2. Conditions Precedent to Disbursement for Health Education, Sanitation and Subproject Construction/Rehabilitation Activities:

(a) Evidence of the formation by the NWSDB of a Rural Sanitation Unit, together with a plan to staff the unit and a description of its functions and operational responsibilities; and

(b) Evidence of a Memorandum of Understanding signed by the NWSDB and the MOH which sets forth the coordinated management of the health education, sanitation and community participation element of the project, to include specific procedures for management of project funds, planning and implementation of activities, and a specific description of how coordination between the two agencies will be accomplished at both the national and regional levels.

3. Condition Precedent to Disbursement for Training Activities: Evidence of the reorganization and substantial expansion of the NWSDB Training Department, to include the creation of approximately 25 training officer positions and a new Training Support Unit.

B. Covenants

In addition to the standard covenant on evaluation, the GSL will covenant to take the following actions:

1. Assure that sufficient budget allocations are made to meet the GSL-financed requirements during each year of the project.

2. Assure that sufficient qualified professional and support staff are hired by the NWSDB in a timely manner to meet the requirements of the project.

3. Assure (a) that all participant training under the project financed by AID will be accomplished in accordance with the policies, allowances, and reporting requirements in AID Handbook 10, Participating Training; (b) that employment in a position relevant to the training received under the project will be available for each participant immediately upon completion of his or her training for a period of not less than one year, or not less than three times the length of training, whichever is longer; and, (c) that no action will be

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taken by the GSL to relax any post-training obligation or any participation without prior AID approval.

4. Prepare plans, specifications and sound cost estimates in a timely manner for all facilities and system construction/rehabilitation to be financed under the project.

5. Prepare annual work plans, including an updated training plan, for each year of implementation of the project for the subsequent calendar year.

6. Assure that the planned program for reorganization and decentralization of the NWSDB is carried out on a timely basis.

7. Assure that clearance through Customs of all imported commodities financed by the project will not be delayed due to non-payment of duties and taxes.

PART VII: PROJECT ANALYSES

A. Technical Analysis Summary

1. Background Information

Table 2 of Annex F contains a summary of current national health and nutrition data by district. Although sources for some of this data are questionnable (e.g., hospital morbitity and mortality figures), it remains the best available information on the public health situation in Sri Lanka and is considered to be sufficient for indicating major trends, general relationships and broad geographical distributions.

An examination of the data indicates that there is a high incidence of disease in Sri Lanka resulting from poor environmental conditions. Diarrheal diseases (gastro-enteritis and other diarrheas, colitis, bacillary dysentary, amoebiasis and typhoid, Shigella and Salmonella infections) are currently the third leading cause of death in the nation, accounting for some 48.5% of deaths in children under five years of age. The case fatality for hospitalized cases of diarreal disease is approximately 1.4 deaths per 100 admissions. However, only the more severe cases are admitted to hospitals, and it is expected there may be as many ten cases treated as outpatients for each patient admitted in addition to those who depend on home remedies or remain untreated. Among the diarrheal diseases, those labelled "gastro-enteritis and all other diarrhoeas" (probably consisting mainly of coliform bacterial infections) are the most prevalent, with other known etiologies occuring to a lesser extent except in certain specific regions of the country.

It is estimated by many that diarrheal diseases may account for half or more of the under-nutrition seen in developing countries, including both acute wasting (deceleration in weight gain for height) and chronic stunting (deficient height for age). The latter may result from frequent and/or prolonged diarrhea in the first two years of life. The anorexia associated with diarrhea appears to be the chief factor responsible for the caloric insufficiency occurring during diarrheal episodes. It is noteworthy, therefore, that infectious diseases rank third among infants and first among young children (ages 1-4) as causes of death in Sri Lanka, and that diarrheal disease is a leading infectious cause of death (>50%) in both age groups. It appears that children ages 6-23 months are the most susceptible to the adverse nutritional effects of diarrhea. Table 2 also presents stunting and wasting rates by district in Sri Lanka. Although the evidence is somewhat circumstantial, it is interesting to note that there is a considerable degree of correspondence between those areas of the island with high diarrheal disease prevalence and those with high rates of nutritional stunting and wasting.

Based upon all of these statistics, it appears that five districts of the country, i.e., Badulla, Kandy, Matale, Nuwara Eliya and Ratnapura, merit greater attention with regard to water supply and sanitation improvements. Table 3 presents a summary listing of current public health and nutritional statistics for each of these five districts.

Tables 4-7 of Annex F show recent trends in the coverage of water supply and sanitation facilities in the country by sector. Table 4 shows that, in both urban and rural areas, the percentage of units having access to piped water of any sort has risen only slightly in the decade between 1971 and 1981. The vast majority of housing units still obtains water from unprotected wells and, in fact, the proportion of the population that derives water from this source has actually risen in the past decade. In urban areas, piped water is slowly replacing wells as a source of supply but in rural areas the well remains the principal source of drinking water. Table 5 shows the percentage distribution of housing units by main source of drinking water by type and location for 1981. Among other patterns, this table indicates that of those in the urban areas who have access to piped water, only half have water supplies within the premises.

In the area of sanitation, Colombo is the only city in the island that has a sewerage

system. Approximately 45 percent of its housing units are connected. Its sewerage system, however, is old and the demands made on it are considerably greater than its capacity. At present, no treatment is provided. As shown in Table 6, of the total population, the number of persons with toilets for exclusive use has increased in the past decade, from 45.5 percent to 53.0 percent. The urban and rural sectors both show improvements in this respect while in the estate sector a slight decline is noted. The percentage of the total population without any toilet facilities shows a slight decline from 1971, largely due to improvements in urban and rural communities. However, in the estate sector, there has been almost a doubling of those without sanitation facilities. Table 7 shows the distribution of the type of toilet available in 1981 in the various sections of the country. This table indicates that the water seal type latrine predominates in urban areas while the pit type is more common in rural and estate areas.

To improve this situation, the GSL endorsed in October 1980 a ten-year investment plan to upgrade substantially both the coverage and quality of the nation's water supply and sanitation programs (commonly known as the Decade Plan). The National Water Supply and Drainage Board (NWSDB) was designated the principal implementing agency for the Decade Plan. Although the NWSDB has made remarkable progress in constructing new water schemes over the past three years, it has matured very little as an institution. Many of its present operating procedures and policies were carried forward from its predecessor agency, and are inadequate for NWSDB's current widespread operations. Thus, the NWSDB urgently needs an all-encompassing institution building program if adequate quantities of wholesome water are to be produced routinely.

Simply installing or rehabilitating a piped water scheme will not assure lasting health, social and economic benefits for Sri Lanka's population. Health benefits require other inputs besides a source of clean water, no matter how well maintained a scheme may be. GSL institutional responsibilities for health education related to water and sanitation and for rural sanitation lie with the Ministry of Health (MOH). At present, there is little effective coordination between NWSDB and MOH activities. As a result, potential health benefits are not being fully realized. Thus, a deliberate effort is needed to coordinate NWSDB water supply and MOH health education and rural sanitation programs, as well as those of concerned NGOs and the communities themselves.

2. Project Analysis

In 1983, USAID agreed to assist the GSL in addressing these problems through a development project aimed at: (a) strengthening the institutional capabilities of the NWSDB to provide safe and reliable water supplies throughout Sri Lanka; and (b) improving national health education and sanitation services through increased cooperation and more effective coordination among the NWSDB, MOH, other service organizations and beneficiary communities. Project development has spanned a period of several years of close involvement in sector activities in Sri Lanka. Results of several AID/W and USAID studies in water and sanitation and health in Sri Lanka as well as similar efforts by WHO, UNDP, UNICEF and the World Bank were all used in development of the project to ensure as comprehensive an assessment as possible of potential design issues and options. Concerned GSL officials in the MLGHC, NWSDB, MOH and Ministry of Finance and Planning were closely involved throughout each stage of the design process to ensure maximum practicality and relevance of final recommendations. The final project design team assessed NWSDB needs relative to a comprehensive concept of a mature, functioning institution (presented schematically in Figure 6, Annex F). Within each institutional subcategory, problem areas were identified, needs were assesed, alternatives were examined and planned actions were recommended according to a rigorous analytical methodology. Although to a somewhat lesser extent due to its less instrumental role in project implementation, similar analytical techniques were employed in assessing MOH capabilities in water and sanitation-related institutional areas. The results of this entire project development process are incorporated into the final Project Design Report. Annexes A and C of the Report, the Technical Analysis and Public Health Analysis and Strategy, respectively, contain most of

the team's findings and recommendations regarding the technical aspects of the project. This information is summarized in Table 8 of Annex F. Additional information regarding planned project actions, inputs and outputs is in the Project Description.

3. Technical Feasibility

a. Technical Assistance: The project calls for 380 pm of long-term (190 pm expatriate; 190 pm local) and 158 pm of short-term (58 pm expatriate; 100 pm local) technical assistance. Consultant expertise is required in the areas of planning and management, commercial services, supplies and stores, human resources development and training, personnel planning and management, environmental engineering, water quality surveillance, operations and maintenance, public health and health education, social science, evaluation and supportive printing and publication services. Detailed information on the type, duration, source and costing of project TA requirements is in Annex I-1. This is considered to be the minimal amount of TA required for successful project implementation. Preliminary contacts indicate several reputable, qualified U.S. firms are interested and available for this work. Similarly, sufficient qualified local consultants and firms are also available, several of whom have already performed satisfactorily on other NWSDB-related tasks.

b. Training: In accordance with the institutional development objectives of the project, the bulk of project training inputs are designed to establish a strong NWSDB in-house training capacity (see Project Description and above). However, certain additional specialized training activities were also recommended to complement in-house capabilities, broaden knowledge horizons and assist in implementation of the health education component of the project (currently outside of NWSDB training responsibilities). Special project training inputs consist of 2 long-term Master's degrees, 43 pm of short-term overseas study and research tours, participation in 25 workships, seminars and conferences and a variety of in-country health education training and support. The type, venue, duration and costing of project training requirements are in Annex I-2. All project training will be provided in close consultation with concerned USAID, AID/W, GSL and host institution officials as required.

(1) Overseas Training: Long-term overseas training will consist of two, two-year Master's degrees, one each in public health/health education and environmental sanitation, to meet staffing needs at the NWSDB Rural Sanitation Unit to be established under the project. This training is required as there are not suitable local institutions offering study programs in these specialized areas of expertise. There are many U.S. universities which can adequately meet these study needs. Short-term overseas study and research tours and workshops will be keyed to such areas as business management, commodity procurement, financial management, water and sanitation systems planning and design, systems operations and maintenance, application of appropriate technology and other specific areas of immediate research interest. Each training experience will be carefully designed based on participant and NWSDB needs and relevance to the host country situation. To the greatest extent possible, overseas training will be conducted in U.S. and other developing countries. It is anticipated, however, that some international workshops will be hosted in Code 935 countries and waivers will be required for AID-funded participation under the project.

(2) In-Country Training: In-country training will consist of 15 workshops and community health education training activities. The ten semi-annual and annual project implementation workshops are addressed in detail in the Monitoring and Evaluation Plan. Five other workshops will be conducted in key institutional areas (e.g., billing and collection, accounting, internal audit, information management, etc.) to acquaint concerned NWSDB staff and local government officials with new and/or revised procedures developed under the project. Suitable local facilities are available for this purpose.

Health education training will be conducted for various different groups of

people in each of the regions selected for demonstration water supply construction/rehabilitation subprojects. Tables 9-11 of Annex F list the different groups of participants, course content and duration and numbers of people to be trained under this component of the project. All health education training will be coordinated through the Regional Sanitation Teams (see Project Description for composition) acting under the guidance of the RSU. Project funds will be used to cover participant and instructor transportation and per diem costs, course lecture and educational materials development and dissemination, and miscellaneous adminstrative costs. To minimize costs and participant inconvenience, training will be conducted at suitable local NWSDB and/or community facilities located in close proximity to the participants' areas of residence. Careful siting of training activities will also assist in boosting course attendance and creating a more conducive training atmosphere. Suitable local facilities are available for this purpose.

c. Commodities: Project commodities consist of office, laboratory, workshop, training, warehouse and staff housing equipment, furnishings and supplies. Types and quantities of project commodity requirements are based on current best estimates of NWSDB needs by expatriate specialists in each of the respective areas of institutional development. Detailed commodity lists and prices are in Annexes I-4 to I-8, in association with their respective type and level of facility (see below). AID-funded offshore commodities are to be purchased through the TA contract. With assistance from the long-term supplies and stores advisor, this mechanism should greatly alleviate heavy procurement burdens during the first three years of the project. Local commodities will be purchased directly by the NWSDB and the contractor, depending upon the source of funds and the requesting party. Final selection of commodities to be ordered under the project will be based on in-depth, regional-specific assessments of NWSDB needs.

d. Facilities: Initially it was assumed that the best means to decentralize would be to provide similarly designed regional workshops, laboratories, stores and transport support in each NWSDB region, thereby enhancing each region's capacity for independent action. However, as the investigations continued, sharp differences in the needs of individual regions surfaced. In addition, the difficulties to be encountered in recruiting regional staff for all nine regions, particularly management and supervisory staff, became more fully appreciated. Transport problems, communications and accountability put limits on the amount of decentralization that would be feasible. Therefore, an incremental rather than a wholesale decentralization approach was proposed. The following is a brief description of the different types of facilities to be constructed/renovated under this incremental decentralization program.

There are approximately 65 buildings and structures to be constructed and/or renovated under the project. These facilities will be located at or around the NWSDB Central Office in Ratmalana, three Regional Support Centers and five regional offices throughout the country. Figure 7 of Annex F shows the general locations of the facilities to be constructed under the project. Final siting of facilities will be conducted during the first year of the project based on local land availability. Project facilities generally include: offices; water quality laboratories; training centers; electrical, mechanical, maintenance, meter and vehicle workshops; open and closed supplies and spare parts storage facilities; and group and individual staff quarters. Detailed construction/renovation cost estimates and preliminary floorplans for each type of facility are presented in Annexes I-4 to I-6. All cost estimates include provision for site preparation and yard paving, perimeter fencing and security sheds, and utilities installation and start-up. Budgeted costs figures (Annex I-1) include an additional 10% provision for facilities engineering and design costs.

Preparation of facilities plans and specifications and construction supervision will be the responsibility of the NWSDB Planning and Design Unit. This unit is staffed by a cadre of professional engineers, assisted by draftsmen and surveyors, who have had considerable experience in designing and constructing all types of buildings and facilities used by the NWSDB. Where additional outside expertise is required, sufficient funds have been programmed for this purpose. There are many small to medium-sized A&E firms in the

country available for such work.

Facilities construction work will be labor-intensive, performed by local private firms. Each firm will be responsible for all work at a given site. The widespread distribution of project facilities should facilitate such an arrangement. There are sufficient construction contractors throughout the country who are both experienced in and qualified for this type of work. Virtually all of the materials required for facilities construction/renovation are available in Sri Lanka. All items not available locally in the required quantity or quality will be purchased from the U.S. or other Code 941 countries. Construction equipment needs are minimal since most of the work will be by labor-intensive methods. The contractors selected for the work will be responsible for providing all required construction equipment. There are no special climatic or other conditions in Sri Lanka that would seriously constrain the facilities construction work.

Facilities operations and maintenance will be the responsibility of the NWSDB. Existing NWSDB facilities have sufficient maintenance personnel and conditions appear satisfactory. Project facilities O&M costs are detailed in Annex I-12. The facilities O&M cost estimates include the annual requirements for taxes, utilities, general maintenance and additional security and custodial personnel for each type of facility. Brief descriptions of each of the different levels of facilities to be constructed and renovated under the project follow:

(1) Central Office Facilities: This level of logistical support is designed to provide one-of-a kind equipment and facilities for a large, national institution. It will be provided only to the NWSDB Central Office in Ratmalana. Planned facilities include: renovated administrative offices (Administrative Unit, Rural Sanitation Unit and consultant offices); workshops (electrical, mechanical, maintenance, meter and vehicle workshops with four offices, three bathrooms, four tool cribs, and four new closed vehicle bays and four new open vehicle bays); air-conditioned, ventilated water quality laboratory facilities with built-in counters/cabinets and an office; open and closed storage facilities with built-in shelving/racks, two offices and a controlled climate room; and a new Central training facility with 27 offices, 6 classrooms, an auditorium, and graphics, storage, dormitory, kitchen, dining room and bathroom facilities, and outdoor training space. Detailed area requirements and cost estimates for each of these facilities are in Annex I-4.

(2) Regional Support Centers: This level of logistical support is designed to provide equipment and facilities for two or three regions of the country, or for those regional offices with unique circumstances such as geographical isolation or a large service population. The three RSCs will be located in Anuradhapura, Kandy and Galle. Planned facilities for each include: new administrative offices(6); workshops (electrical, mechanical, maintenance and vehicle workshops with an office, a tool crib, a bathroom and a lunch room, and two vehicle bays); air-conditioned, ventilated water quality laboratory facilities with built-in cabinets/counters and an office; open and closed storage facilities with built-in shelving/racks and an office; training facilities with four offices, two classrooms and training workshop, storage/library, dormitory, kitchen, dining room and bathroom facilities; and a fuel depot. Due to its relative proximity to Ratmalana, the Galle RSC will not be provided with training facilities. Detailed area requirements and cost estimates for each of these facilities are in Annex I-5.

(3) Regional Offices: This level of logistical support is designed to upgrade existing regional offices which are not to become RSCs. The five regional offices requiring this level of support are located in Jaffna, Amparai, Bandarawela, Matara and Ratnapura. Planned facilities for each include: one administrative office; mechanical and vehicle workshops with tools storage space; ventilated water quality laboratory facilities with built-in counters and cabinets; and open and closed storage facilities with built-in shelving and racks. The Jaffna regional office will not be provided with laboratory facilities as these are already being provided under USAID's Market Town Water Supply Project. Detailed area requirements and cost estimates for each of these facilities are in Annex I-6.

(4) Scheme-Level Facilities: This level of logistical support is designed to upgrade existing operations and maintenance capabilities at some 50 of the major water schemes throughout the country. Schemes to be included in this category will be selected by a thorough examination of existing conditions, population served and assessed needs. This level of support consists of supplying essential tools and water quality monitoring equipment and supplies to existing water schemes, and does not include any facilities construction/renovation work. Cost estimates for commodities to be supplied to this type of facility are in Annex I-7.

(5) Staff Quarters: Some 50 individual and group staff quarters will be provided as part of the GSL contribution to the project. They will be located at and around the eight NWSDB regional offices (including the three, new RSCs). They are required to help attract and retain key NWSDB regional staff (e.g., AGMs, RMs, Supplies and Stores Clerks, Chemists, Training Officers, Accountants and skilled mechanics) as part of a special regional incentives package to be provided under the project (also including salary differentials, education, health and other possible benefits). Final determination of the number and type of regional staff eligible for this incentives package will be through an NWSDB task force selected for this purpose, convening both prior to and during the first six months of the project.

e. Water Supply System Construction and Rehabilitation: Two new water supply schemes will be constructed and four schemes will be rehabilitated under the project. The estimated target population for each demonstration subproject is 15,000 people or 3,000 households. Selection of subproject sites will be based on a community's perceived needs and willingness to contribute time and resources in all phases of activity development (i.e., water supply planning and design, construction/rehabilitation and O&M and health education and latrine construction programs), and established GSL and local government priorities as evidenced through the national strategic planning process and the Annual District Development Plans (see Administrative Analysis Summary). Subproject engineering and design and construction supervision will be the responsibility of the NWSDB Planning and Design and Construction Units,respectively, in accordance with the project's key institutional development objectives.

Subproject construction/rehabilitation work will be labor-intensive, relying on local materials and labor contributions to the greatest extent possible. Individual subproject activities will be contracted to local private firms, with each firm responsible for all work at a given site. There are sufficient, qualified A&E firms in the country to meet these project requirements. As subproject systems design will focus on increased use of appropriate technology, locally available materials will be used to the maximum extent possible. All items not available locally in the required quantity or quality will be purchased from the U.S. or other Code 941 countries. The contractors selected for subproject implementation will be responsible for the provision of all required equipment. However, as labor-intensive practices are to be promoted under the community participation objectives of the project, equipment needs are expected to be minimal.

Primary responsibility for O&M of all systems constructed and rehabilitated under the project will rest with the respective beneficiary communities in an effort to foster continued community participation in sector activites. Selected community representatives will be trained for this purpose under the health education component of the project. They will be assisted in this task by the NWSDB regional O&M staff.

f. Latrine Construction: Approximately 15,000 latrines are planned for construction under the project. Latrine construction will proceed in tandem with water supply system construction/rehabilitation (see above) in each of the subproject beneficiary communities. Latrine construction activities will not begin until the third year of the project. Prior to this time, potential beneficiary householders will have begun to receive the results of the comprehensive health education training program described above. This

will ensure maximum receptivity of the target population to improved sanitation practices when the construction program begins. Householder selection will be based on interest in and receptivity to the health education program as reflected in an individual's willingness to commit time and resources to improved family hygiene (see below).

Latrine slab fabrication will be conducted under the coordination of the Regional Sanitation Teams by local peripheral health workers, and NGO and community representatives trained for this purpose under the health education component of the project. Fabrication sites will be selected as close as possible to target beneficiaries to minimize slab transport costs. As site requirements are minimal, ample space is available for this purpose. Latrine slab materials (concrete, sand, gravel and rebar) are all available locally in sufficient quantities. Other than transport vehicles, no equipment is required for latrine construction; manual tool requirement (picks, shovels, trowels, etc.) are all available locally and will be funded on an as-needed basis by the project.

Latrine construction, i.e., pit excavation and lining (if required) and superstructure construction, will be the responsibility of individual householders. They will be assisted in these activities by the same group of trained health workers and community volunteers described above. If so desired, a householder may contract this work out to local private masons, who are in ample supply throughout the country. Latrine siting will be assisted by qualified local personnel (PHIs) to ensure that proper environmental safeguards are met. Latrine construction materials, tools and labor requirements are minimal and readily available in most regions of the country. Choice of superstructure design and materials of construction will be left to the beneficiary householders according to individual tastes and economic circumstances. All beneficiaries will be trained in the proper techniques of latrine operation and maintenance under the health education project component.

g. Research Studies: A total of eight research studies will be funded by the project (5 technical and 3 socio-economic studies). The subjects and timing of the socio-economic research studies have already been described in depth in the Monitoring and Evaluation Plan. The technical studies, covering such critical NWSDB areas as local availability of chemical and spare parts supplies, local equipment repair capabilities, potential energy-saving measures, and application of locally appropriate technologies and practices, will be conducted during the first four years of the project. They will be designed and managed by the newly-created NWSDB Research Unit in consultation with other concerned NWSDB divisions and with the assistance of TA contractor. They will be implemented by suitable local universities and/or private firms, several of which are available who have already performed satisfactorily on other NWSDB-related tasks.

4. Conclusions

The above information clearly demonstrates that the project is urgently needed, thoughtfully designed and technically feasible to implement in Sri Lanka. Given continued favorable GSL policy and resource committments and local government and community contributions as required, the project should prove successful in achieving its goals and objectives. It is recommended, therefore, that the project be implemented as designed.

B. Economic Analysis

1. Introduction

The benefits of institution-building, although quite tangible, are often difficult to quantify. Factors such as increased staff morale, staff retention, improved skill levels and sound decision-making cannot be readily measured even though they may have dramatic effects on an agency's performance. This project is designed to produce these benefits. There are, however, some project benefits that are more easily quantified, such as reduced operating and capital costs brought about by a more efficient and effective NWSDB.

Tables 12 and 13 of Annex F summarize the projected NWSDB capital and operating costs, and underlying economic assumptions, for the period 1984 to 1995. It should be noted that these costs are only estimates; the accuracy of the projections is limited. This is primarily due to the inherent difficulties in attempting to predict costs five and ten years into the future. For this reason, the following analysis should be considered to be an order-of-magnitude estimate only. It is also important to note that some of the benefits described below will continue beyond the eleven-year period shown.

2. Economic Benefits

The economic benefits of NWSDB capital and operating cost savings to be derived from the project are described below.

a. Capital Cost Savings: Table 12 (Annex F) indicates that substantial capital investments are planned in water and sanitation in Sri Lanka during the next seven years. In an effort to accelerate construction, present NWSDB planning and design techniques tend to rely on the relatively high-technology "turn-key" system designs proposed by the substantial bilateral donor community currently assisting sectoral development in the country. This has resulted increasingly in investments which are not only more costly but also more difficult to operate and maintain. The project plans to improve NWSDB planning, design and construction activities through technical assistance, training and demonstration system construction/rehabilitation activities, each placing an emphasis on the increased use of appropriate technology for more cost-effective system designs. Possible areas of improvement include: gravity-feed vs. pumping; slow-sand vs. pressurized filtration; use of locally available materials (e.g.,coconut husk charcoal) vs. costly imported supplies; and increased reliance on manual vs. automated plant operation techniques (water treatment dosing, mixing and flocculation; measurement of water production rates; water quality monitoring; treatment plant maintenance and operations; etc.). Through more appropriate systems planning and design, it is anticipated that the project will effect significant annual savings in NWSDB capital costs in each of the following areas:

- 10% decrease in rural schemes
- 7% decrease in sanitation
- 10% decrease in system rehabilitation
- 8% decrease in debt service as a result of all of the above capital savings

In certain instances, particularly in new urban schemes, initial costs may actually be higher as a result of the increased engineering and design and materials requirements associated with the application of appropriate technology to local situations. Thus, the cost of new urban systems is actually expected to increase by a net 3% due to the increased costs of appropriate technological solutions in systems rehabilitation design.

b. Operating Cost Savings: NWSDB's projected annual operating budget is presented in Table 13 (Annex F). Recent limited improvements in NWSDB operations and maintenance procedures have already begun to demonstrate operating cost savings. Substantial project inputs of technical assistance, training and facilities, equipment, supplies and transport to create an integrated and effective NWSDB regional O&M network will result in greater reductions in operating costs. These savings will be augmented by the increased application of appropriate technologies in system design noted above, with its relatively lower O&M resource requirements. Thus, significant cost savings are expected in each of the following operational areas:

- 10% decrease in electricity charges
- 15% decrease in labor costs
- 10% decrease in establishment costs
- 10% decrease in general administration costs

The rationale behind these estimated savings is briefly described below along with

offsetting cost assumptions for the operational areas of chemical supplies and maintenance management.

Electrical cost savings will result from reduced demand charges (5%), and improved water pump efficiencies (5%). Demand charges, based on the highest monthly demand for power, will be reduced through more efficient plant operation and improved maintenance techniques resulting in more continuous plant operation and less fluctuations in power demand. Pump efficiencies will be improved through rigorous monitoring of water production rates (not presently done) and improved pump maintenance. As remedies in this area are of an operational rather than investment nature, it is expected that savings in electrical costs will occur relatively quickly, with 50% of total savings occuring in 1985 and 1986, 75% in 1987 and 100% by 1988. Electricity costs are based on 1984 rates in these calculations as it is believed there will be little change in rates throughout this period, despite the imminent commissioning of the Victoria Hydropower Project of the Accelerated Mahaeweli Program.

NWSDB staffing appears quite high when compared to the total amount of water it produces; however, it is only slightly above the average for other similar agencies in LDCs. With 3,000 permanent employees, a total reduction of 15% in labor costs appears realistic to assume through improved skills training, careful personnel planning and increased job motivation and accountability. While an actual reduction in the number of staff is not likely, more effective use of existing personnel will occur resulting in reduced future staffing requirements. In short, the NWSDB will do more with fewer people incurring reduced labor costs. These labor savings are phased in at a rate of 20% a year over the LOP.

A ten percent annual LOP savings is estimated for both establishment and administrative costs such as supplies, transportation, per diem, utilities, printing, etc. These savings will be effected through new and improved equipment and techniques (electronic vs. manual), better accountability and a decentralized operational network. This latter mechanism will greatly reduce NWSDB transportation and per diem costs through construction of regional personnel accommodations and through reduced travel to the Central Office in Ratmalana.

Improved system source selection and process control combined with more effective water quality monitoring techniques can easily reduce chemical supply costs by 10%. However, since NWSDB water schemes are not now receiving adequate chemical dosages, additional chemical costs will be required. Thus, although the quality of water produced is expected to improve, no real savings in chemical costs are anticipated.

At present, NWSDB performs little preventive maintenance. Establishment of such a program will, therefore, require additional labor and supplies. These costs, however, are expected to be more than offset by a decrease in the costs of equipment repairs and system "down-time" by effective maintenance management operations to be developed under the project. Thus, no real change is foreseen in NWSDB maintenance cost requirements.

3. Project Costs

Project capital costs including technical assistance, training, commodities and equipment, facilities, water system construction and rehabilitation, latrine construction and research studies, are detailed in the Financial Plan and Annex I. Table 1 of Annex I presents this information according to expenditures by fiscal year. The additive recurrent GSL costs from the project including labor, TA counterpart costs, and facilities and vehicles operations and maintenance costs, are detailed in Annex I-12. Table 1 of Annex I-12 presents this information according to expenditures by fiscal year. Total project costs are estimated at $19.6 million.

Using the standard analytical technique of comparing costs with and without the

project, only the difference between these two situations (i.e., USAID and GSL contributions and GSL additional recurrent costs) are counted as project costs.

A. Conclusions

Table 14 of Annex F details the projected costs and benefits of the project, using constant 1984 prices. The rate of return is estimated to be 17%. Thus, it appears that the planned capital and recurrent project investments are economically justified by the potential NWSDB capital and operating cost savings to be derived through the project.

The NWSDB has recently completed an extensive profitability analysis conducted by Messrs. Ernst and Whinney, Chartered Accountants. This analysis established differential inflation rates for different NWSDB costs based on past experience in Sri Lanka. Using the figures provided by Ernst and Whinney (Table 13.1, Annex F), a second benefit/cost analysis was completed which includes inflation. The IRR for this analysis was 25%.

The foregoing analysis clearly demonstrates the project's economic viability, especially with respect to its institutional development thrust. However, there are also other economic benefits to be derived from the project worthy of mention here. These benefits are socio-economic in nature, resulting from the public's increased access to safe water supply and sanitation facilities and a greater awareness of the importance of personal hygiene. Such benefits would include: reduced water-related morbidity and mortality and a resultant increased economic productivity in those served by improved facilities; reduced MOH recurrent cost burdens through improved public health; less time and energy spent in fetching household water and thus more time for other possibly more productive engagements, and an increased opportunity for water-related income-generating or nutrition-building activities such as backyard family gardening. Although these latter project benefits will directly accrue only to those communities selected for subproject demonstration activities, it may be assumed that if project objectives are met a majority of Sri Lankans will benefit from being served by strengthened national water supply and public health institutions. Although not readily amenable to measurement, these latter benefits could ultimately prove the most significant for Sri Lanka.

C. Financial Analysis

As the NWSDB is essentially a financially dependent entity, the financial analysis must emphasize how well it succeeds in keeping the GSL subsidy requirements to a minimum. Total capital and operating costs for 1984 are estimated at Rs.1,105 million and Rs.239 million, respectively (see Tables 12 and 13, Annex F). NWSDB revenue from water charges will amount to Rs.77 million in 1984, for a total deficit of 94% (68% of operating expenses).

Sources of NWSDB revenue come from two categories, viz., commercial/industrial users and individual domestic consumers. Although commercial water users have been charged for water for quite some time, until recently most domestic consumers have never received a water bill. In January 1984, as part of an effort to generate additional revenues, the GSL instituted a new policy of charging all urban domestic consumers for water supplies, reversing a long-standing policy of providing services free to the consuming public. Prior to this date, the GSL's principal attempt to generate revenues was through property taxes collected by local government authorities, a portion of which was to be returned to the central government for water-related expenses. However, steadily increasing local government deficits and decreasing returns to the central government (see Administrative Analysis) led to the new policy to bill domestic consumers directly. To underscore this commitment, in March 1984 the GSL enacted legislation enabling the NWSDB to take over billing and collection for water charges in local distribution systems where the local authorities have been delinquent in remunerating the central government.

Disposable income in Sri Lanka is very low. In rural areas, it will be some time before incomes rise to the point where water charges could be introduced with a reasonable prospect of collection. Urban incomes are also low, but the the GSL realizes that the principle and the attitude of paying for water must now begin if deficits are to remain manageable. The charges will initially be reasonably low and with more efficient billing and collection, education of the public through the planned NWSDB Public Relations Unit, and project training, an increasing proportion of urban consumers can be expected to pay. These payments, combined with an aggressive program to increase collections from commercial/industrial users, should result in substantially increased revenues in future years.

The projected forecast of increased revenues and reduced operating expenses (the latter are detailed in the Economic Analysis) during the next ten years are shown in Table 15 of Annex F. Although the figures must be regarded as order-of-magnitude estimates only, the anticipated end result is a substantial decrease in the percentage of the operating expense deficit, from 68% in 1984 to 18% in 1995 (depreciation and debt service not included). Even if the actual revenues are one-third less and actual costs one-third more than those projected in the Tables, the deficit (%) on operating expenses would still be lower than in 1984.

Ultimately, the viability of the NWSDB depends on the GSL's continued willingness and ability to provide annual funding for not only the operational deficit but for all capital costs needed for new construction and rehabilitation of depreciated assets. Projected annual capital investment is generally two to three times as high as annual operating expenses and is not offset at all by NWSDB revenues. The GSL may not be able to maintain the high levels of forecasted expenditure. This will be closely examined through the NWSDB Strategic Planning process. However, regardless of the actual levels, the burden will be reduced to the extent that the operational deficit declines as a result of the project.

D. Social Soundness Analysis Summary

The complete Social Soundness Analysis is in Annex D of the Project Design Report. It addresses in depth the questions of direct project beneficiaries, impact through spread effects, socio-cultural constraints, and the participation of beneficiaries in the project.

1. Target Group/Direct Beneficiaries: The primary project beneficiary group will be the members of the communities where subprojects are implemented; these individuals will benefit both from training in health education, sanitation and community participation and from improved water supply and sanitation facilities. For this group, the direct target population served by the six subprojects will number approximately 18,000 households (90,000 people) assuming an average of 3,000 households served per subproject. Secondary project beneficiaries will be representatives of the NWSDB, MOH and NGOs who receive various types of training under the project. The Central and regional NWSDB staff will benefit through skills development, an enhanced ability to perform their responsibilities, and (in the case of designated regional positions) the special incentive program designed to attract and retain staff in the field. MOH staff at national, regional and local levels will benefit in a similar way through training and increased ability to carry out MOH programs effectively. Finally, members of NGOs at both the national and local levels will benefit through training, and cash grants provided through the project, enhancing their ability to provide services and through the support they receive from their membership and the communities they serve.

2. Spread Effects: As this is an institutional development project of an entity providing a vital service to the entire national population, there should over time be significant indirect benefits from the project. Broad general benefits affecting the country as a whole, derived from a strengthened and more effective NWSDB, will be a greater number of safe water supply and sanitation facilities serving greater numbers of people, resulting in better health conditions (especially reduced diarrheal morbidity and mortality), a higher overall rate of national productivity, and improved living standards. Reinforcing

this result are the positive effects to be derived from greater coordination among and effective use of the resources of government agencies, foreign donors, NGOs and beneficiary communities. An additional category of indirect project benefits relates to increased resource availability for sector investments resulting from more cost-effective system designs (through increased application of appropriate technological principles and practices). Increased resource availability will enable expanded coverage and, hence, improved access to safe and reliable water supplies for all of the people of Sri Lanka.

3. Socio-Cultural Feasibility: The Social Soundness Analysis identifies numerous socio-cultural constraints to project success, including those of an institutional nature as well as those related to the conditions, attitudes and practices of intended beneficiaries. It concludes that all constraints can be overcome through technical assistance or other activities planned in the project. At the institutional level, the key constraints are: (a) the unpopularity of regional postings (to be addressed by the special incentives plan), (b) lack of interagency coordination (see Administrative Analysis Summary); (c) the professional bias of NWSDB staff toward engineering (to be mitigated through new organizational emphases including career promotion paths for non-engineering staff); and (d) bureaucratic inertia which will make NWSDB decentralization difficult to attain (to be overcome by a continuous commitment to change through the semi-annual reorganization reviews and regional staff training). The principal constraints at the beneficiary level are:(a) willingness to change traditional water use and sanitation practices (to be addressed through health education and community participation); (b) a pervasive, passive community attitude toward government services and the community's willingness to commit its time and resources to development projects (to be addressed by early involvement and education of the community through a comprehensive subproject planning, design and implementation process).

4. Participation: The beneficiary communities will participate directly in several phases of the six subprojects planned in the project. This includes planning and design preparations prior to the initiation of the subprojects, in-kind contributions during implementation , and assistance in data collection and monitoring activities to measure impacts after subproject completion. The staffs of the NWSDB and the MOH who have been involved in designing the project are familiar with the community participation approach and are capable, with assistance, to implement the subprojects accordingly.

5. Role of Women: Women are cited as a group that plays a critical role with respect to water use and sanitation practice. They are primarily responsible for family hygiene, particularly for the young, and will be a primary audience for training and education activities at the community level. Women have also traditionaly been the primary water fetchers for household consumption. If the the project results in more easily accessible water sources, women should benefit by the additional time and energy made available for other activities.

E. Administrative Analysis Summary

The Project Loan and Grant Agreement will be signed by the GSL. The GSL will, in turn, assign implementation responsibility to the NWSDB, a semi-autonomous agency within the MLGHC. The MLGHC will have a general oversight responsibility on behalf of the GSL, but primary responsibilities of project management, procurement, progress reporting and evaluation will fall to the NWSDB. The NWSDB will be assisted in project implementation by the MOH and concerned representatives of NGOs, other agencies and the communities themselves in the regions where subprojects take place. Brief analyses of each of these entities are presented below.

1. National Water Supply and Drainage Board (NWSDB): A complete Administrative Analysis of the NWSDB is in Annex E of the Project Design Report. It reviews in detail the NWSDB's legal status, its cash management, accounting and disbursement procedures, the experience and capability of its management team, its projected workloads and staffing during the period of the project, its ability to develop the interagency and community

relationships that will be essential in the project, and its prior experience in administering other large donor-assisted projects. Despite several areas of weakness, the Report concludes that the NWSDB is prepared to carry out the project, stating:

- . NWSDB possess the legal authority to implement the project.
- . NWSDB has sufficient financial resources to finance the project activities. NWSDB financial systems need upgrading, an upgrading that is an integral part of the project.However, even the existing financial systems are considered to be adequate to maintain the requisite financial control.
- . The use of an off-shore porocurement agency and a direct reimbursement contract will reduce the burdens on NWSDB's financial systems.
- . NWSDB has been delegated sufficient administrative authority to implement the project. The project will assist NWSDB to further delegate authority within the agency so that all levels of the agency benefit from the project while maintaining appropriate levels of accountability.
- . NWSDB managers are experienced and capable of managing the project. Existing management capabilities will be further strengthened by specially designed project training programs.
- . NWSDB staffing is adequate to administer the project although some functions have difficulty in maintaining a sufficient number of qualified staff. The project will undertake special incentives programs to strengthen the perceived staff weaknesses.
- . NWSDB's workload from other programs will be at an unprecedented high during the project. The project will use elements of these other programs as a tool for institution-building in order to reduce the burdens of the project. The various analyses conducted by the design team demonstrate that NWSDB is unlikely to meet its current obligations unless this institution-building project proceeds immediately and in parallel with other programs.
- . NWSDB's inter - and intra-agency and community relationships are critical to the success of the project. The project design has incorporated numerous activities to ensure that these essential relationships are developed early in the project and thereafter maintained. These will be reinforced by an extensive project training program.

2. Ministry of Health (MOH): There are currently four functional areas within the MOH which relate to water and sanitation activities: health education; environmental sanitation; primary health care outreach; and diarrheal disease control. All of these are under the jurisdiction of the Deputy Director for Public Health Services (see Figure 3,Annex F). Health education activities are the responsibility of the Health Education Bureau. They consist of some 40 divisional Health Education Officers who are responsible for training a substantial field network of peripheral health workers as facilitators of community health programs. Environmental sanitation activities fall under the jurisdiction of the Department of Environmental and Occupational Health. Department services are currently centered on a corps of 962 Public Health Inspectors (PHIs) spread over the 24

national MOH districts. Current PHI duties include sanitation (via a subsidized latrine construction program), school health, food inspection and maternal and child health care practices. Primary health care outreach is the responsibility of the Family Health Bureau. Family health outreach services are administered through an extensive network of 2,296 Family Health Workers (FHWs) who are primarily responsible for village maternal and child health care through a combination of clinics and home visitation programs. Diarrheal disease control activities are vested in the Epidemiology Unit of the MOH Medical Research Institute. Existing programs are focused on the production and dissemination of oral rehydration salts and training health workers and private clinicians in the use of oral rehydration therapy. Both of these latter programs are only just getting underway with UNICEF (and possibly USAID) assistance. All of these programs share common operational problems, including limited financial resources, limited mobility of field personnel, insufficient training and/or staff motivation, shortages of personnel and an excessive workload for certain categories of staff. In addition, there is a lack of coordination between the various programs resulting in an overall reduced health impact. Annex C of the Project Design Report provides a more detailed analysis of existing MOH capabilities in sector operations.

The MOH is prepared to participate with the RSU to coordinate health education and sanitation efforts at the field level. The MOH has sufficient staff for this work, with the exception of Health Education Officers, who are to be members of the Regional Sanitation Teams. To meet this deficiency,some 20 additional HEO's will be trained in the first year of the project of whom a number will be assigned to the teams. It is expected that the experience gained in the six subproject demonstration sites will be mutually beneficial to the two agencies and that the two agencies can and will cooperate. A Memorandum of Understanding between the NWSDB and the MOH will formalize the necessary interagency coordination needed to establish the RSU and carry out the health education, sanitation and community participation activities in the project.

3. District and Local Authorities : The Social Soundness Analysis in Annex D of the Project Design Report contains a detailed description of the various district and local authorities, and their institutional linkages, who are currently active in water supply and sanitation activities in Sri Lanka. This information is presented in diagrammatic form in Figure 9 of Annex F.

In urban areas (the focus of subproject water supply rehabilitation activities), the primary authorities are the 12 Municipal Councils (MCs), in the largest urban areas, and the 38 Urban Councils (UCs). MCs and UCs are responsible for the production and distribution of water, and drainage, sanitation and solid waste collection and disposal within their respective jurisdictions. However, due to reducing central government subsidies and poor planning and management, these responsibilities are increasingly having to be assumed by central government instititutions, such as the NWSDB and the MOH, placing increased financial and operational burdens on already overtaxed resources. This problem is especially critical for the financial viability of sector activities because, at present, only the MCs and UCs are empowered to raise revenues for services provided (see Financial Analysis).

In rural areas (the focus of subproject water supply construction activities), the primary authorities are the District Development Councils (DDCs), Pradeshiya Mandalayas (PMs) and Gramodaya Mandalayas (GMs) extending from the district to local levels of the rural population, respectively. With respect to water supply and sanitation, it is the responsibility of the GMs to draft development proposals which are then screened through the PMs for incorporation into Annual District Development Plans prepared by the DDCs. Although the DDCs are empowered to collect some revenues (e.g., taxes, license fees, etc.), the poor financial position of most of their constituents forces them to rely heavily on central government grants and direct expenditures by Ministries. As a result, the majority of their contributions to sector activities are "in-kind", consisting of labor and materials for construction, and operations and maintenance personnel.

Both urban and rural authorities are assisted in their duties by district and local-level representatives of central government agencies and line Ministries (e.g., MLGHC, MOH and Ministries of National Planning, Home Affairs, Rural Development, Plantation Industries, etc.) serving in both elected and advisory roles. Despite this elaborate framework, problems persist in coordination both between the various organizational levels and among the different agencies involved. Reasons for this lack of coordination stem from the technical, regional and socio-cultural biases of the different entities and the bureaucratic syndrome of each individual seeking to satisfy his immediate superior to the exclusion of all others.

The project will address these constraints through individual and group training. Individual training will be provided to key local officials in such areas as financial planning and management, water system planning and design, accounting and billing/collection and operations and maintenance at new NWSDB training facilities in conjunction with its own in-house manpower development program. Group training of local health, NGO, other agency and community participants in team-building workshops will emphasize the importance of increased cooperation in health education, latrine construction and water system design, construction and operation and maintenance. All training will be based on a careful assessment of existing manpower needs and constraints conducted on a regional basis in conjunction with the feasibility design process for each of the subproject construction/rehabilitation activities.

4. Non-Governmental Organizations (NGOs): The NGOs, as a group, form a fourth entity that will be involved in project implementation and may be divided into two general groups. The first group is composed of all those organizations at the most local level of the population. The leaders of this type of NGO, in many cases, form the Gramodaya Mandalaya, the lowest level of government in Sri Lanka (see above). Among these organizations are the Rural Development Societies, Cultivation Committees, Agricultural Productivity Committees, School Development Societies, Young Farmers Clubs, Temple Committees, Women's Societies, Death Donation Societies, Ambulance Societies and other less formal organizations. These organizations generally do not affiliate with each other in large national orgnaizations. They are a potent force at the local level, however, and through the Gramodaya Mandalaya will exercise a strong influence on the success of the health education/sanitation component of the project. The second type of NGO is composed of those that have a national association. These NGOs may or may not have chapters at local levels. There are over 60 such organizations registered with the NGO Council of Sri Lanka. Of the latter, some 24 are active in the NGO Decade Service Committee which was organized in March, 1983 with UNDP assistance. The Decade Service was formed to serve as an information clearinghouse and coordination body for NGOs involved in water supply and sanitation work. To date, Service accomplishments have been limited to organizational matters and assisting in the implementation of a few schemes in southwestern Sri Lanka. The organizations that make up the Decade Service Committee and who are active in water supply, health education, sanitation and community participation programs include Sarvodaya Shramadana Sangamaya, the Marga Institute, the U.S. Save the Children Federation and other Sri Lankan and international groups.

The project will seek to enlist various NGOs at some or all of the subprojects sites. Their potential role in the subprojects is outlined in the Project Description. The strengths of the NGOs active in the various target communities will be assessed by the Rural Sanitation Teams during the subproject planning phase and one or more may be selected to participate in training and implementation. In some cases, cash grants may be considered to assist the NGOs in carrying out their facilitative roles.

F. Energy Analysis

Current NWSDB energy costs are high, amounting to some 60% of total operating expenses, exclusive of vehicle fuel costs. Thus, if meaningful improvement is to be made in NWSDB's financial position, reducing energy costs must be considered a high priority. The project will address this issue in the following ways:

1. Reorganizational Decentralization: The NWSDB is presently a highly centralized organization. Current delegations of authority and facilities-at-hand require most regional offices to rely on the Central Office in Ratmalana for most of their operational needs. An examination of the geographical distribution of regional offices throughout the island (Figure 7, Annex F) readily demonstrates the excessive amount of time and energy required to comply with these conditions. To alleviate this situation, the project will assist in creating a strengthened, decentralized regional operations network consisting of office, laboratory, training, maintenance and warehouse facilities with equipment and vehicular support in three RSCs and 5 regional offices located throughout the country. The network will also be strengthened by improved training of personnel and increased delegations of authority allowing regional managers to handle more of their own operational problems without travelling to Ratmalana. Although some 65 additional vehicles will be required to support this decentralized network, it is believed that overall NWSDB vehicle fuel requirements will be significantly reduced.

2. Water System Planning and Design: Water system pumping electrical requirements are the NWSDB's highest operating costs, amounting to some 66% percent of water system operating expenditures. Reduction in electrical power usage is, therefore, of paramount importance. Application of appropriate technology to water system planning and design will greatly alleviate this problem. Design innovations in such areas as gravity feed, operational head, aeration, filtration, automation and source of supply will each be closely examined through literature reviews and research studies and tours to determine the best available options in low-energy water system design. Results will be incorported into feasibility and design manuals and assessed through the subproject construction/rehabilitation activities. Manuals will be regularly updated by periodic literature reviews performed by the NWSDB Research Unit to keep staff abreast of the latest technological developments in sector design and operations. The combination of these actions should result in significant savings in NWSDB electrical energy costs (see also Economic Analysis).

3. Operations and Maintenance: The current status of NWSDB O&M is poor, resulting in frequent system breakdowns, excessive operational fluctuations and reduced efficiency of pumps and motors. Each of these areas, in turn, adds greatly to the NWSDB's energy demand and consumptive cost burdens. Through establishment of an effective maintenance management system, including preventive as well as corrective maintenance facilities, procedures and support, the NWSDB can expect to achieve significant improvements in system maintenance and, hence reduced operating costs.

G. Environmental Analysis

The Initial Environmental Examination (IEE) included in the PID, which recommended a negative threshhold determination, was approved by the Asia Bureau on December 14, 1983 (See APAC Review Cable Annex A-1). Although negative environmental impacts are anticipated from project construction and rehabilitation activities, these will be both short-term and localized and should not prove environmentally significant. The project will result in significant positive environmental effects in each of the following areas:

1. System Planning and Design : Inclusion of environmental considerations into national water supply system planning and design will result in improved operations and reduced environmental hazards in each step of the water production and distribution process. Special emphasis will be placed on appropriate engineering solutions to waste water drainage and disposal to minimize potential health risks. This will be accomplished through the incorporation of environmental health and sanitation expertise in the newly established RSU and application of these skills in the development and testing of comprehensive NWSDB planning, feasibility and design manuals. In addition, training of community water-point caretakers under the project will ensure that "as-built" environmental design standards are maintained throughout the life of a system.

2. Water Quality Surveillance : The project will establish a national water quality surveillance system including: laboratory facilities, equipment, supplies and logistical support; water quality sampling, analysis, reporting and follow-up procedures and trained, motivated personnel at the Central laboratory in Ratmalana and in each of the eight regions of the country. Less extensive monitoring equipment will also be provided to some 50 of the larger water treatment plants currently in operation. This will be the first comprehensive water quality monitoring system in Sri Lanka and should accomplish much towards overcoming existing GSL constraints in this area. Efforts will also be made to ensure coordination of NWSDB water quality surveillance activities with actions of other concerned GSL agencies (e.g., Central Environmental Authority, Ministry of Health, etc.) for improved regulatory enforcement.

3. Process Control : Project technical assistance will develop improved procedures with manuals for water treatment plant operation and control. When combined with trained, motivated operators and effective information feedback from the surveillance system described above, this will result in increased consumption of adequately treated, safe domestic water supplies throughout the island.

4. Maintenance Management : Improved NWSDB maintenance management is a priority objective of the project. Project inputs will include technical assistance, training, facilities, equipment and supplies and logistical support. The expected output is the establishment of a comprehensive maintenance management system for all domestic water supplies in the nation; including workshops, improved preventive and corrective maintenance procedures and trained, motivated staff. From an environmental perspective, this will result in fewer system breakdowns, more reliable operation and less health risk for the consuming public.

5. Health Education, Sanitation and Community Participation : This aspect of the project has been described in detail in several sections of the paper and will not be repeated here. The substantial direct environmental benefits of improved community health education and sanitation practices have been well documented throughout the world. When considered in relation to the persistent high prevalence of water-related disease in Sri Lanka (see Technical Analysis Summary), this project component could easily result in the most significant long-term positive environmental effects of all.

PART VIII

ANNEXES

ANNEX A

PID APPROVAL MESSAGES

3

UNCLASSIFIED

TELEGRAM

R 141318Z DEC 83
FM SECSTATE WASHDC
TO AMEMBASSY COLOMBO 0137
BT
UNCLAS SECTION 01 OF 02 STATE 354

AIDAC

E.O. 12356: N/A
TAGS: ABLD
SUBJECT: WATER SUPPLY AND SANITATION PID (383-0088)

ACTION	
INFO	
AMB	✓
CHARGE	
DCM	✓
POL	
ECON	✓
LAB	
COMM	
CONS	
ADMIN	
SSO	
I+P	
ER	
IPU	
HLD	
ACOIC	
CU	
AO	
GS	
AO	
IO	
F	
LEX	
MILROOM	
O	
IRON	✓
TOTAL	8

1. SUMMARY. BASED ON APAC DISCUSSIONS, AA/ASIA HAS DECIDED THAT LEVEL OF FUNDING FOR CONSTRUCTION AS PRESENTED IN PID IS INCONSISTENT WITH BUREAU STRATEGY. BUREAU ENDORSES PRIMARY OBJECTIVES OF INSTITUTIONAL AND POLICY CHANGES, COMMUNITY PARTICIPATION, AND HEALTH EDUCATION AND EXPANDING HEALTH IMPROVEMENTS AND ENCOURAGES MISSION TO DEVELOP THESE PROJECT COMPONENTS. CONSTRUCTION AND REHABILITATION COMPONENTS, HOWEVER, SHOULD BE REDUCED TO MINIMUM LEVEL REQUIRED TO SUPPORT THE PRIMARY PROJECT OBJECTIVES. WE FEEL THAT LOP FUNDING LEVEL OF DOLS. 5-6 MILLION IS SUFFICIENT TO ACHIEVE PRIMARY PROJECT OBJECTIVES. END SUMMARY.

2. ASIA BUREAU STRATEGY. BUREAU STRATEGY IN HEALTH SECTOR CALLS FOR REDUCING INFANT AND CHILD MORTALITY. THE MOST COST EFFECTIVE MEANS OF ACHIEVING THIS IS THROUGH SELECTIVE PRIMARY CARE. REVISION NO. 1 OF OUR STRATEGY STATES THAT WE WILL NOT BE SUPPORTING CONSTRUCTION IN THE HEALTH, POPULATION AND NUTRITION SECTORS BUT WILL BE HEAVILY INVOLVED IN TECHNICAL

ASSISTANCE, TRAINING AND RESEARCH. POTABLE WATER PROJECTS ARE NOT PART OF THE BASIC PACKAGE OF APPROPRIATE HEALTH INTERVENTIONS BECAUSE THEY ARE GENERALLY A LESS COST-EFFECTIVE APPROACH TO OUR HEALTH SECTOR OBJECTIVES. HOWEVER, INVOLVEMENT IN WATER AND SANITATION ACTIVITY IS DEFENSIBLE IN THIS CASE, BECAUSE SIGNIFICANT CHANGES ARE POSSIBLE IN SRI LANKA: THE GSL HAS EMBARKED ON A MAJOR WATER PROGRAM; OTHER DONORS ARE CONTRIBUTING SUBSTANTIALLY TO WATER SYSTEM CONSTRUCTION AND REHABILITATION; AND GSL IS WILLING TO UNDERTAKE MAJOR POLICY AND INSTITUTIONAL CHANGES TO IMPROVE HEALTH IMPACT FROM WATER SUPPLY PROJECT, COMMUNITY PARTICIPATION, OPERATIONS AND MAINTENANCE, ETC. NEVERTHELESS, FROM AID'S PERSPECTIVE, CONSTRUCTION AND REHABILITATION ACTIVITIES ARE APPROPRIATE ONLY TO THE EXTENT THAT THEY ARE NOT A MAJOR FUNDING COMPONENT AND DIRECTLY SUPPORT OUR PRIMARY INSTITUTIONAL AND POLICY OBJECTIVES.

3. CONSTRUCTION AND REHABILITATION. IN VIEW OF BUREAU STRATEGY AS SUMMARIZED ABOVE, APAC VIEW IS THAT THIS COMPONENT IS FUNDED AT A MUCH HIGHER LEVEL THAN NECESSARY TO ACHIEVE OUR PRIMARY OBJECTIVES. WE REQUEST MISSION, THEREFORE, TO REDUCE AID FUNDS FOR CONSTRUCTION AND REHABILITATION ACTIVITIES. OUR VIEW IS THAT LOP FUNDING RANGE OF DOLS 5-6 MILLION IS SUFFICIENT TO ACHIEVE INSTITUTIONAL DEVELOPMENT OBJECTIVES. HOWEVER, WE UNDERSTAND THAT THERE MAY BE A NEED TO UNDERTAKE SOME LEVEL OF CONSTRUCTION AND REHABILITATION OF WATER SUPPLY SYSTEMS TO DEVELOP, TEST AND MODIFY INSTITUTIONAL AND POLICY OBJECTIVES, COMMUNITY PARTICIPATION, AND HEALTH

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INTERVENTIONS. WE EXPECT THAT MISSION WILL DRAW ON THESE SUBSTANTIAL PROJECTED CONTRIBUTIONS FROM OTHER BILATERAL AND MULTILATERAL DONORS AND IDENTIFY WAYS TO COORDINATE THESE RESOURCES AND INTEGRATE THEM WITH OUR PROJECT OBJECTIVES. REQUEST MISSION CABLE REVISIONS IN PROJECT DESCRIPTION, ESTIMATED COSTS, DESIGN STRATEGY, LOG FRAME, FACESHEET AND OTHER PID ELEMENTS FOR OUR REVIEW. ADDITIONAL COMMENTS AND SUGGESTIONS FROM APAC PRIMARILY FOR PP DESIGN FOLLOW FOR YOUR USE AFTER APAC APPROVAL OF PID.

(2) INSTITUTIONAL AND POLICY CHANGES. REQUEST MISSION EXPLAIN IN PP, THE INSTITUTIONAL AND POLICY OBJECTIVES THAT WILL BE ADDRESSED AND SHOW WHAT MINIMUM INVESTMENT IN WATER SUPPLY SYSTEMS IS NEEDED TO SUPPORT THESE OBJECTIVES. FOR SOME INSTITUTIONAL AND POLICY OBJECTIVES MISSION MIGHT WISH TO IDENTIFY BENCHMARKS, OPERATIONAL PLANS AND INDICATE HOW PROGRESS WILL BE MEASURED AND MONITORED. FOR OTHERS, MISSION MAY WISH TO SPELL OUT PROCESS FOR ANALYZING PROBLEMS RATHER THAN SPECIFIC OBJECTIVES SINCE THESE MAY BE DIFFICULT TO IDENTIFY WITHOUT IMPLEMENTATION EXPERIENCE. SINCE OTHER DONOR INVESTMENTS WILL ALSO HAVE A SIGNIFICANT ROLE IN IMPLEMENTING POLICY AND INSTITUTIONAL CHANGES, MISSION SHOULD EXPLAIN HOW THESE CONTRIBUTIONS WILL BE COORDINATED AND INTEGRATED WITH AID'S PRIMARY PROJECT OBJECTIVES. PROJECT AND PROGRAM REVIEWS SHOULD BE BUILT INTO PROJECT TO ASSESS PROGRESS, MAKE MID-COURSE CORRECTIONS IN PROJECT DESIGNS, PLANS AND IMPLEMENTATION ARRANGEMENTS.

(3) HEALTH IMPACT. APAC CONCURRED WITH MISSION EMPHASIS ON HEALTH EDUCATION AND STRONGLY ENCOURAGES ANALYSIS AND PROJECT LINKAGE TO HEALTH MINISTRY. WE ALSO ENCOURAGE MISSION TO EXPLORE ADDITIONAL HEALTH INTERVENTIONS THAT MAY BE APPROPRIATE FOR COMMUNITY AND NON GOVERNMENT ORGANIZATION (NGO) ASSISTANCE. RESEARCH SHOWS THAT HEALTH IMPACT OF WATER RELATED PROJECTS CAN BE INCREASED SUBSTANTIALLY IF PROJECT CONTAINS HEALTH, EDUCATION AND SANITATION COMPONENTS. ENCOURAGE MISSION TO SET OUT OBJECTIVES IN ESTABLISHING INSTITUTIONAL RESPONSIBILITIES AND CAPABILITIES FOR IDENTIFYING HEALTH PROBLEMS, DEVELOPING SOLUTIONS FOR IMPLEMENTING THESE ACTIVITIES AND MONITORING PROGRESS. IT WAS OUR VIEW THAT THIS WOULD ENTAIL SUBSTANTIAL COORDINATION AND INTEGRATION OF PROJECT ACTIVITIES FROM NWSD, MINISTRY OF HEALTH, NGOS AND COMMUNITY GROUPS.

(4) FINANCIAL ANALYSES. THERE WAS SUBSTANTIAL DISCUSSION AT APAC ABOUT GOL FINANCIAL CAPABILITY TO SUSTAIN LEVEL OF INVESTMENTS INDICATED FROM THE WATER DECADE PLAN, HIGH LEVEL OF CAPITAL FUNDING, AND SUBSTANTIAL RECURRING COST IMPLICATIONS FOR OUR FUNDING WILL BE DIFFICULT TO ATTAIN GIVEN UNBALANCED GOL PUBLIC INVESTMENT BUDGET EVEN AFTER CURRENT ACCELERATED CAPITAL PROGRAM INVESTMENT PHASE IS PAST. REQUEST MISSION IDENTIFY IN PP, PLANS TO ASSIST GOL WITH FINANCIAL ANALYSES FOR OVERALL PROGRAM AND INDIVIDUAL PROJECTS INCLUDING RECURRING COST IMPLICATIONS AT BOTH NATIONAL AND PROJECT LEVEL WHICH WILL HELP SORT OUT PROBLEMS AND PRIORITIES. REQUEST MISSION ALSO DESCRIBE PLANS FOR MEETING RECURRING COSTS AT BOTH WATER SYSTEM PROGRAM LEVELS AND ESTABLISHING WATER USER FEES.

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(7.) MONITORING AND EVALUATION PLANS. APAC STRONGLY RECOMMENDED TECHNICAL ASSISTANCE DURING PP DESIGN STAGE TO DEVELOP A COMPREHENSIVE PLAN FOR DATA GATHERING, MONITORING AND EVALUATION, WITH EMPHASIS ON RAPID APPRAISAL TO IDENTIFY PROBLEMS AND ASSESS PROGRESS IN A TIMELY MANNER FOR DECISION MAKING. BUREAU OF CENSUS (BUCEN) MAY BE ONE OF A NUMBER OF ORGANIZATIONS AVAILABLE TO ASSIST IN DEVELOPING RAPID APPRAISAL METHODS, MONITORING, DATA COLLECTION, AND RAPID APPRAISAL REPORTS SHOULD FOCUS MORE IN INTERMEDIATE VARIABLES SUCH AS ACCESSIBILITY, QUALITY AND QUANTITY OF WATER USED, ECONOMIC EFFECTS AND BEHAVIORAL CHANGES. WHILE ULTIMATE GOAL OF PROJECT IS TO IMPROVE HEALTH, WE RECOGNIZE THIS WORK IS DIFFICULT TO MEASURE. PP SHOULD DESCRIBE: (A) COMPREHENSIVE PLANS FOR PROJECT DATA COLLECTION, MONITORING AND EVALUATION WHICH SPELL OUT HOW PROGRESS IN ACHIEVING PRIMARY PROJECT OBJECTIVES WILL BE MEASURED; (B) PLANS FOR TECHNICAL ASSISTANCE TO DEVELOP INSTITUTIONAL CAPABILITY IN APPROPRIATE ORGANIZATIONS FOR DATA COLLECTION, MONITORING, AND EVALUATION. EMPHASIS SHOULD BE ON DATA GATHERING AND RAPID APPRAISAL TO ADDRESS IMMEDIATE AND LONGER TERM DECISION MAKING NEEDS. AID/W STAFF (DP/E, PD, TR) AVAILABLE TO MEET WITH PP DESIGN TEAM TO DISCUSS THIS ASPECT OF THE PROJECT.

(8.) SANITATION. CONCUR WITH MISSION FOCUS ON SANITATION/LATRINE CONSTRUCTION ACTIVITIES. ALSO REQUEST MISSION ADDRESS OTHER SANITATION PROBLEMS SUCH AS WASTE WATER DISPOSAL, DRAINAGE, AND RELATED HEALTH PROBLEMS IN PP.

(9.) PRIVATE SECTOR. REQUEST MISSION ASSESS AREAS IN ADDITION TO DESIGN AND CONSTRUCTION OF WATER SYSTEMS WHERE PRIVATE SECTOR MIGHT PARTICIPATE IN PROJECT. SOME AREAS WHERE PRIVATE SECTOR PARTICIPATION MIGHT BE EXPLORED ARE TRAINING, OPERATIONS AND MAINTENANCE, PARTS, AND SUPPLIES. MISSION SHOULD IDENTIFY INCENTIVES FOR PRIVATE SECTOR PARTICIPATION AND POLICY, REGULATORY AND OTHER CONSTRAINTS THAT WILL BE ADDRESSED IN THE PP TO ENCOURAGE THEIR PARTICIPATION.

(10.) INITIAL ENVIRONMENTAL EXAMINATION. NEGATIVE DETERMINATION APPROVED. REQUEST MISSION INCLUDE IN PP PLANS TO ADDRESS POTENTIAL ENVIRONMENTAL PROBLEMS THROUGH APPROPRIATE DESIGN OF THE WATER SUPPLY SYSTEMS. TRAINING SHOULD ALSO BE PROVIDED TO DESIGN ENGINEERS, OPERATIONS PERSONNEL AND COMMUNITY REPRESENTATIVES TO MITIGATE ENVIRONMENTAL PROBLEMS. MONITORING OF WATER SYSTEMS IMPACT ON ENVIRONMENT SHOULD BE INCLUDED IN THE DESIGN OF THE PROJECT AND IN TRAINING ACTIVITIES. DESCRIPTION OF THESE ELEMENTS SHOULD BE PROVIDED IN ENVIRONMENTAL ANALYSIS SECTION OF PP.

(11.) TECHNOLOGIES. REQUEST MISSION DESCRIBE IN PP HOW MISSION WILL ENCOURAGE PARTICIPATION OF RURAL POOR GROUPS IN PROJECT ACTIVITIES AND HOW PROJECT BENEFITS FOR RURAL POOR WILL BE MAXIMIZED. SHULTZ

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ANNEX A-2

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TELEGRAM

ACTION	INFO
DIR	✓
AD	✓
LA	
PA	
PRO	
PDSP	✓
CONT	
MWRD	X
HPHR	
ARD	
Due	1/19
Action Taken	

ACTION: [illegible]

INFO: AMB, CHARGE, DCM, POL, ECON, E/LAB, COMM, CONS, ADMIN, GSO, B+F, PER, CPU, MED, NCOIC, ICP, AID, USIS, USAO, PAO, R/F, [illegible], MAILROOM, [illegible], CHRON

TOTAL 7

AMERICAN EMBASSY COLOMBO

P 130929Z JAN 84
FM SECSTATE WASHDC
TO AMEMBASSY COLOMBO PRIORITY 0496
BT
UNCLAS STATE 010594

AIDAC

E.O. 12356: N/A
TAGS: ABLD
SUBJECT: WATER SUPPLY AND SANITATION SECTOR PID 383-0088

REF: A) COLOMBO 8579 B) STATE 354230

1. SUMMARY. WE APPRECIATE CONSTRUCTIVE MISSION EFFORT IN REDUCING AID LOP FUNDING AND AID'S CONTRIBUTIONS TO CAPITAL COSTS. A/AA/ASIA APPROVES REVISED PID PER REFTEL A. MISSION IS AUTHORIZED TO DEVELOP AND APPROVE PP. MISSION IS REQUESTED TO IDENTIFY WAYS TO REDUCE PROJECT COSTS FURTHER AS PROJECT DESIGN PROGRESSES. ALSO REQUEST MISSION CONSULT WITH AID/W ON ISSUES DESCRIBED BELOW. END SUMMARY.

2. BUREAU CONTINUES TO HAVE TWO MAJOR CONCERNS WHICH MUST BE ADDRESSED DURING PP DEVELOPMENT:

A) AID SUPPORT FOR CAPITAL COSTS REMAINS HIGH IN PROPORTION TO OVERALL PROJECT COSTS. WE SUGGEST THEREFORE, THAT MISSION AND GSL ACTIVELY SEEK SUPPORT FROM OTHER DONORS FOR THE BUILDING COSTS ATTRIBUTED TO AID IN REFTEL A, PARA 5, BUDGET ITEM 4A. WITH SUCH SUPPORT, WE BELIEVE AID CAPITAL COSTS COULD BE REDUCED AFTER ACCOUNTING FOR INFLATION AND CONTINGENCY BY ALMOST $2 MILLION.

B) WITH REDUCED AID CONTRIBUTION, OTHER DONORS AND GSL MAY NOT BE ABLE TO FINANCE ADDITIONAL COSTS ALLOCATED TO THEM BECAUSE OF REDUCED AID PROJECT INPUTS. IF SO, PROGRAM MAY NOT BE FEASIBLE AS ORIGINALLY DESCRIBED. OF PARTICULAR CONCERN IS THAT THE GSL MAY NOT BE ABLE TO FINANCE THE $7 MILLION FOR CONSTRUCTION PER REFTEL A, PARA 5, BUDGET ITEM 4C. IN THAT CASE, EITHER SCOPE OF CONSTRUCTION WILL NEED TO BE REDUCED, OR FINANCIAL PLAN MUST BE REVISED, OR A COMBINATION OF BOTH SOLUTIONS SHOULD BE EXPLORED. IN OUR VIEW, A PLAUSIBLE CASE CAN BE MADE FOR CONCENTRATING AID, GSL AND OTHER DONOR RESOURCES IN FEWER REGIONS, THUS REDUCING PROJECT COSTS FURTHER. PLEASE ADDRESS THIS ISSUE IN PP.

3. BUREAU REMAINS VERY INTERESTED IN STEPS THAT WILL BE TAKEN DURING PROJECT DESIGN TO DEVELOP A MONITORING, DATA COLLECTION AND EVALUATION [illegible] FOR KEY INDICATORS [illegible] REF. [illegible] WOULD APPRECIATE BEING INFORMED OF MISSION VIEWS AND PLANNED ACTIVITIES IN THIS AREA.

4. BUREAU REQUESTS MISSION KEEP US INFORMED ABOUT THESE AND OTHER [illegible] AS PP IS DEVELOPED. [illegible] MISSION SUBMIT PP FINANCIAL PLAN TO BUREAU, INCLUDING OTHER DONOR FINANCIAL SUPPORT PLANS AND PROJECT BUDGET, FOR OUR REVIEW AND COMMENT PRIOR TO MISSION AUTHORIZATION OF PROJECT. SHULTZ

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ANNEX A-3

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TELEGRAM

AMERICAN EMBASSY COLOMBO

ACTION	
AID	
INFO	
AMB	1
CHARGE	
DCM	1
POL	
ECON	
E/LAB	
COMM	
CONS	
ADMIN	
GSO	
RSO	
PER	
CPU	
MED	
NCOIC	
TCU	
AID	
USIS	
DAO	
FBO	
R/F	
TELEX	
MAILROOM	
BIO	
CHRON	1
TOTAL	7

JUL 23 1984

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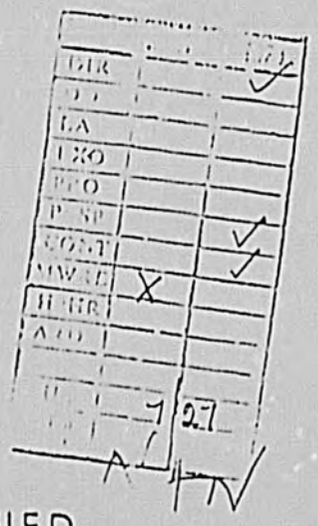
PP RUMJGM
DE RUEHC #4768 2030441
ZNR UUUUU ZZH
P 212025Z JUL 84
FM SECSTATE WASHDC
TO AMEMBASSY COLOMBO PRIORITY 3206
BT
UNCLAS STATE 214768

AIDAC

E.O. 12356: N/A
TAGS:
SUBJECT: WATER SUPPLY AND SANITATION PROJECT 83-0088
REF: A. COLOMBO 4423 B. COLOMBO 4750

BUREAU CONCURS WITH PROPOSED PROJECT FINANCIAL PLAN. MISSION IS AUTHORIZED TO APPROVE PROJECT. CN-SUBMITTED REF B NOW BEING REVIEWED WITHIN BUREAU. SEPTEL WILL - ADVISE DATE SUBMITTED TO CONGRESS AND EXPIRATION OF - WAITING PERIOD. SHULTZ
BT
#4768



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ANNEX B
PROJECT DESIGN SUMMARY
LOGFRAME MATRIX

Life of Project: FY 86 through FY 89
Total U.S. Funding: $12.3 million
Date Prepared: July 20, 1986

Project Name & Number: Water Supply and Sanitation Sector, 383-0088

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Goal: To improve the health and well-being of all of the people of Sri Lanka	Measures of Goal Achievement: 1. Increased number of people served by safe and reliable water supply systems. 2. Increased number of people served by adequate sanitation facilities. 3. Reduced incidence of water related morbidity and mortality in Sri Lanka.	1. Housing census and statistics data. 2. GSL and other donor health and water supply and sanitation sector assessments. 3. MOH morbidity and mortality reports and data.	1. Continued political stability and economic growth. 2. Continued favorable GSL policies and resource commitments to carry out Decade Plan on a timely basis. 3. Other donor and community contributions received as required towards Decade Plan achievement. 4. Effective preventive health programs being implemented by GSL and other donor organizations.
Project Purpose: To develop the institutional capability to provide safe and reliable water supply and sanitation facilities and to educate the public in health and sanitation	Measures of Purpose Achievement (EOPS): 1. Better functioning NWSDB through reorganizational consolidation, decentralization and increased operations and maintenance priority. 2. Established units, policies and operating procedures for NWSDB business management, planning, public relations, commercial, personnel, training, capital facilities management, operations and maintenance, information management, research and administrative areas. 3. More effective NWSDB operations through better trained and motivated staff and improved facilities, equipment and logistical support. 4. More effective public health outreach through better trained peripheral health workers as facilitators of community health. 5. Active, integrated NWSDB water supply construction/rehabilitation and MOH community health education and latrine construction programs in most regions of the country.	1. Project monitoring and evaluation reports. 2. Project and GSL records, including contractor reports. 3. GSL planning documents and progress reports. 4. Site visits, observations and interviews. 5. Project and other donor assessments and studies.	1. GSL, NGO and community groups have and continue to make available sufficient resources to implement sector programs on a timely basis. 2. GSL, NGO and community groups are able to retain qualified, trained personnel. 3. Trained personnel apply their newly acquired skills.
Outputs: 1. Consolidated, decentralized NWSDB placing increased emphasis on water supply system O&M. 2. Functional NWSDB units in each of the following areas: a. Management-strategic planning, policy making, public relations, Management Information System. b. Commercial-budgeting, accounting, financial planning, billing and collection, supplies and stores, tenders and contracts, fixed asset inventory. c. Human Resources Development-training systems development, skills training, personnel administration. d. Capital Facilities Management-facilities planning, design, construction and rehabilitation. e. Operations and Maintenance-process control, maintenance management, water quality. f. Special Services-internal audit, legal, information management, research, administration. 3. A functioning Rural Sanitation Unit at the NWSDB. 4. Subproject [illegible] development and construction [illegible] NWSDB [illegible] for [illegible] sanitation [illegible] and [illegible] health education and sanitation [illegible] the PSU.	Magnitude of Outputs: 1. New or renovated office, training, laboratory, workshop, warehouse and staff housing facilities with equipment, supplies and logistical support at the NWSDB Central Office, and 3 Regional Support Centers and 5 regional offices located throughout the country. 2a. Established, tested operating plans, procedures and manuals for each area of NWSDB operations. 2b. Trained and motivated staff in all NWSDB units (± 3000 permanent staff). 2c. 2 long-term trainees, 36 short-term overseas trainees, 15 in-country workshops. 2d. 5 technical research studies completed. 3a. PSU at NWSDB Central Office. 3b. Regional Sanitation Teams in the field. 4a. Two new water supply system construction subprojects. 4b. Four water supply system rehabilitation subprojects. 4c. ± 15,000 latrines constructed in 6 subproject areas. 4d. Intensive health education training delivered to 6 subproject areas. 4e. 3 socioeconomic research studies completed.	1. GSL planning and investment documents. 2. NWSDB MIS reports. 3. NWSDB training reports; trainee reports and interviews and degrees/certificates awarded. 4. NWSDB manuals and office records. 5. Planning, feasibility and design reports and contract documents. 6. Project files and quarterly, semi-annual and annual implementation progress reports. 7. Contractor consultant reports. 8. Project audits, evaluations and monitoring reports. 9. Site visits and inspections. 10. Technical and socioeconomic studies.	1. Timing and quality of inputs to specifications. 2. NWSDB/MOH able to recruit required qualified personnel.
Inputs:	Magnitude/Source of Inputs ($000s): (see table below)	1. NWSDB budgets. 2. Project records and reports. 3. Project audits.	1. NWSDB budgets forthcoming as planned. 2. Suitable consultants available.

Inputs	AID Grant	AID Loan	AID Total	GSL Total	Project Total
1. Technical Assistance	3,410	-	3,410	-	3,510
2. Training	85	345	430	25	455
3. Research Studies	55	-	55	-	55
4. Commodities	-	1,785	1,785	1,085	2,870
5. Facilities	-	1,350	1,340	1,095	2,475
6. Construction	-	1,370	1,390	925	2,315
7. Rehabilitation	-	600	600	[illegible]	1,000
8. Recurrent Costs	-	-	-	370	370
9. Sanitation	160	1,300	1,460	2,625	4,090
10. Contingency	390	550	930	455	1,370
TOTAL	5,000	7,300	12,300	7,300	19,600

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5C(1) - COUNTRY CHECKLIST

Listed below are statutory criteria applicable generally to FAA funds, and criteria applicable to individual fund sources: Development Assistance and Economic Support Fund.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

1. FAA Sec. 481; FY 1984 Continuing Resolution
Has it been determined or certified to the Congress by the President that the government of the recipient country has failed to take adequate measures or steps to prevent narcotic and pyschotropic drugs or other controlle substances (as listed in the schedules in section 202 of the Comprehensive Drug Abuse and Prevention Control Act of 1971) 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. 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?

Not to the best of Mission knowledge.

3.	FAA Sec. 620(e)(1). If assistance is to a government, has it (including 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.
4.	FAA Sec. 532(c), 620(a), 620(f), 620D; FY 1982 Appropriation Act Secs. 512 and 513. Is recipient country a Communist country? Will assistance be provided to Angola, Cambodia, Cuba, Laos, Vietnam, Syria, Libya, Iraq, or South Yemen? Will assistance be provided to Afghanistan or Mozambique without a waiver?	No.
5.	ISDCA of 1981 Secs. 724, 727 and 730. For specific restrictions on assistance to Nicaragua, see Sec. 724 of the ISDCA of 1981. For specific restrictions on assistance to El Salvador, see Secs. 727 and 730 of the ISDCA of 1981.	Not applicable.
6.	FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property?	No.

7.	FAA Sec. 620(l). Has the country failed to enter into an agreement with OPIC?	No.
8.	FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. (a) Has the country seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters?	No.
	(b) If so, has any deduction required by the Fishermen's Protective Act been made?	
9.	FAA Sec. 620(q); FY 1982 Appropriation Act Sec. 517. (a) Has the government of the recipient country been in default for more than six months on interest or principal of any AID loan to the country? (b) 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 appropriation bill appropriates funds?	No.
10.	FAA Sec. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the amount of foreign exchange or other resources which the country has spent on military equipment? (Reference may be made to the annual "Taking into	Yes.

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.)

11. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption? — No.

12. 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 AID Administrator in determining the current AID Operational Year Budget? (Reference may be made to the Taking into Consideration memo.) — The GSL is current.

13. FAA Sec. 620A; FY 1982 Appropriation Act Sec. 520. Has the country aided or abetted, by granting sanctuary from prosecution to, any individual or group which has committed an act of international terrorism? Has the country aided or — No.

	abetted, by granting sanctuary from prosecution to, any individual or group which has committed a war crime?	
14.	FAA Sec. 666. 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.
15.	FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? 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, after August 3, 1977? (FAA Sec. 620E permits a special waiver of Sec. 669 for Pakistan.)	No.
16.	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 Session of the General Assembly of the U.N. of Sept. 25 and 28, 1981, and failed	Sri Lanka was not represented at the meeting when the communique was adopted,, and it entered written reservations subsequently.

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.)

17. ISDCA of 1981 Sec. 721. See special requirements for assistance to Haiti. — Not applicable.

18. FY 1984 Continuing Resolution. 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.

B. FUNDING SOURCE CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria

a. 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.

2. Economic Support Fund Country Criteria

a. 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 country made such significant improvements in its human rights record that furnishing such assistance is in the national interest? — Not applicable.

b. ISDCA of 1981, Sec. 725(b). If ESF is to be furnished to Argentina, has the President certified that (1) the Govt. of Argentina has made significant progress in human rights; and (2) that the provision of such assistance is in the national interests of the U.S.?	Not applicable.
c. ISDCA of 1981, Sec. 726(b). If ESF assistance is to be furnished to Chile, has the President certified that (1) the Govt. of Chile has made significant progress in human rights; (2) it is in the national interest of the U.S.; and (3) the Govt. of Chile is not aiding international terrorism and has taken steps to bring to justice those indicted in connection with the murder of Orlando Letelier?	Not applicable.

5C(2) PROJECT CHECKLIST

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

CROSS REFERENCES:	IS COUNTRY CHECKLIST UP TO DATE? HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?	Yes - An updated country checklist is included in the Project Paper Yes.

A. GENERAL CRITERIA FOR PROJECT

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

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

   (a) By Congressional Notification.

   (b) The assistance exceeds the amount included in the FY 1985 Congressional Presentation. However, the Congress will be notified of the proposed increase in project funding o/a July 23, 1984.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,00, will there be

   (a) Yes

   (b) Yes

	(a) engineering, financial or other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?	
3.	FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?	No legislative action is required.
4.	FAA Sec. 611(b); FY 1982 Appropriation Act Sec. 501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973? (See AID Handbook 3 for new guidelines.)	Yes.
5.	FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?	Yes.

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.

No. However, other donors are financing activities related to the project and the project will be closely coordinated with these areas.

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

(a) No
(b) Yes.
(c) No.
(d) No
(e) Yes.
(f) No.

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).

All technical assistance and the majority of training financed by the project will be provided through a contract with a U.S. firm. In addition, the major share of project-financed commodities and equipment will be procured from U.S. firms utilizing the services of a private U.S. procurement services agent.

9.	FAA Sec. 612(b), 636(h); FY 1982 Appropriation Act Sec. 507. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.	An estimated 37 percent of project costs will be met by the GSL. No U.S. - owned Sri Lanka rupees are available for project use.
10.	FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?	No.
11.	FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?	Yes.
12.	FY 1982 Appropriation Act Sec. 521. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?	Not applicable.
13.	FAA 118(c) and (d). (a) Does the project comply with the environmental procedures set forth in AID Regulation 16? (b) Does	(a) Yes. (b) No

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

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

Not applicable.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

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

(a) Approximately 90,000 people living in communities served by the six subprojects will be directly involved in the water supply construction/rehabilitiation, health education and latrine construction efforts carried out in their communities.

(b) The project does not involve cooperatives. However, it will strengthen democratic private institutions at the local level in the context of the group decision-making and community participation planned in the selection and implementation of the subprojects.

(c) The communities are already actively engaged in self-help activities and these will be further strengthened through training and orientation work under the guidance of the Rural Sanitation Teams.

(d) Women will be directly involved in the subprojects and be among the primary beneficiaries of improved access to water and improved health education.

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?	(e) The project includes study tours to the Philippines, Malaysia and Thailand to examine ways in which similar projects have been implemented in those countries.
b. FAA Sec. 103, 103A, 104, 105, 106. Does the project fit the criteria for the type of funds (functional account) being used?	Yes
c. FAA Sec. 107. Is emphasis on use of appropriate technology (relatively smaller, cost-saving, labor-using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor)?	Yes. The project will emphasize low-cost production technologies appropriate to water projects.
d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activitiy 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)?	Yes. The GSL will contribute an estimated 37 percent of total project costs.

e. FAA Sec. 110(b) Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? M.O. 1232.1 defined a capital project as "the construction, expansion, equipping or alteration of a physical facility or facilities financed by AID dollar assistance of not less than $100,000, including related advisory, managerial and training services, and not undertaken as part of a project of a predominantly technical assistance character."	Not applicable.
f. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?	The project is aimed at improving water supply, health and sanitation. Indirectly, these improvements will lead to increases in human productivity.
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	The project responds to people's needs for improved water supply, health and sanitation, and will involve active community participation in subproject activity stimulated by community education and training programs. The project is essentially an institutional building effort designed to strengthen the capability of the National Water Supply and Drainage Board to provide water supply and sanitation services to the country; the skills of the NWSDB staff will be strengthened to carry out its programs.

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

Development Assistance Project Criteria (Loans Only)

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest.

The Government of Sri Lanka is current on its international obligations, and no problem is anticipated in regard to repayment of this loan.

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

Not applicable.

c. ISDCA of 1981, Sec. 724 (c) and (d). If for Nicaragua, does the loan agreement require that the funds be used to the maximum extent possible for the private sector? Does the project provide for monitoring under FAA Sec. 624(g)?

Not applicable.

3. Economic Support Fund Project Criteria

Not applicable.

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

stability? To the extent possible, does it reflect the policy directions of FAA Section 102?	
b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities?	Not applicable.
c. FAA Sec. 534. Will ESF funds be used to finance the construction of the operation or maintenance of, or the supplying of fuel for, a nuclear facility? If so, has the President certified that such use of funds is indispensable to nonproliferation objectives?	Not applicable.
d. 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?	Not applicable.

ANNEX D

දුරකථනය
தொலைபேசி
Telephone } 24183

විදුලි පණිවුඩ
தந்தி
Telegrams } විදෙස්
FORAID

ටෙලෙක්ස්
Telex } FORAID
Colombo
1232

විදේශ සම්පත් දෙපාර්තමේන්තුව
මුදල් හා සම්පාදන අමාත්‍යාංශය
வெளிநாட்டு வள திணைக்களம்
DEPARTMENT OF EXTERNAL RESOURCES
Ministry of Finance and Planning

මගේ අංකය
எனது இல.
My No. } CA 9/9/105 B 7

ඔබේ අංකය
உமது இல.
Your No. }

අභ්‍යන්තර ආදායම් ගොඩනැගිල්ල (15 වන මහල)
உள்நாட்டிறைவரித் திணைக்களம், (15வது மாடி,)
Inland Revenue Building (15th Floor)
තැ. පෙ. 277, කොළඹ 2
தபா பெ. 277, கொழும்பு 2
P. O. Box 277, Colombo 2

OFFICIAL FILE COPY

30 August, 1984.

By Hand

REFERENCE NO 84/1022
DATE RECEIVED 8-22-84
ACTION

Mr. Frank D. Correl,
Director USAID,
American Embassy,
Colombo 3.

Dear Mr. Correl,

Re: Water Supply & Sanitation Project

On behalf of the Government of Sri Lanka we wish to make a formal request for USAID assistance for a Water Supply & Sanitation Project to be implemented through the National Water Supply & Drainage Board (NWSDB).

The main focus of the project as jointly identified by the Sri Lanka authorities and USAID are to; (a) develop the institutional capabilities of the NWSDB to plan, design, construct, operate and maintain water supply and sanitation systems throughout Sri Lanka; and (b) to improve national health education & sanitation services through co-operation and effective co-ordination among the NWSDB, other service organisations and the beneficiary communities.

As regards the first objective the project is expected to result in more effective NWSDB operations through better trained and motivated staff, improved facilities, equipment and logistical support. The principal outputs under the second objective will be the creation of a Rural Sanitation Unit (RSU) responsible for social, environmental and public health inputs into NWSDB planning, implementation and monitoring process at the regional level. The project is intended to co-ordinate NWSDB water supply construction and rehabilitation activities with the Ministry of Health's public health outreach and latrine construction programmes. In the course of implementing these principal objectives the project will also provide for the construction of two new water supply schemes, the rehabilitation of four existing schemes and the construction of approximately 15,000 latrines.

	INFO
DIR	✓
D/D	
LA	
EXO	✓
PRO	✓
PDSP	✓
CONT	✓
MWSD	X
HEHR	
	8/29

.../2

The total cost of the project is estimated at around $ 19.6 million, of which USAID is requested to provide a sum of US $ 12.3 million. Of the USAID contribution a sum of $ 7.3 million is requested as a soft loan and the balance $ 5.0 million as an outright grant. It is anticipated that the USAID funds will be made available in instalments over the approved life of the project.

The balance funds required for the project will be made available by the Government of Sri Lanka. Every effort will be made to provide these funds in a timely manner in accordance with the resources available to the Government.

We shall be grateful if you would obtain the formal concurrence of your authorities for the authorization of USAID support requested for the project.

Sincerely Yours,

(M.A. Mohamed)
Director of External
Resources.

1/

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UNITED STATES OF AMERICA

AGENCY FOR INTERNATIONAL DEVELOPMENT

44, Galle Road, Colombo 3, Sri Lanka.

Certification Pursuant to Section 611 (e) of
the Foreign Assistance Act of 1961, as amended

I, Frank D. Correl, Director of the Agency for International Development in Sri Lanka, having taken into account, among other things, the capacity of the Sri Lanka Government and its agencies to properly utilize and maintain the facilities to be constructed and the commodities to be imported under this project as well as the technical assistance and training to be funded, do hereby certify that, in my judgement, Sri Lanka has both the financial capability and adequate human resources to effectively utilize the inputs provided by this project.

This judgement is based upon the project analyses presented in the Water Supply and Sanitation Project Paper and is subject to the conditions imposed therein.

F. Correl

Frank D. Correl
Mission Director

Date: August 23rd 1984

A N N E X F

TABLE AND FIGURES

TABLE 1

Recommended Organizational Changes

National Water Supply and Drainage Board

Organizational Unit	Primary Functions	Justification or Change
Public Relations	Direct the public information and customer relations activities of NWSDB.	A new unit devoted entirely to public relations is needed particularly in light of new efforts to bill and collect, to involve local communities in water programs and to encourage local communities to accept full responsibility for water schemes.
Legal	Advise NWSDB on contracting contract disputes, labor disputes and other legal matters.	Volume of contract- and NWSDB's autonomous status (lack of governmental immunity) justify legal services.
Strategic Planning and Management Information	Supports the strategic planning committee and prepares and distributes management reports.	Additional emphasis is needed. Should staff with most senior, experienced and qualified employees.
Research	Provides an annual review of appropriate technology and investigates special problems that arise. Provides technical input into strategic planning.	Needed to ensure that most cost effective and appropriate technology is applied and that special problems are given deserved attention.
Additional General Manager-Operations	Manages all O/M, planning design and construction activities.	Both ADGM positions are needed to remove the day to day decisions/responsibilities from the General Manager and Chairman. Two ADGM's are recommended because of the difference in skills required by operations and support services.
Additional General Manager - Support Service	Manages all support activities including commercial, personnel administration, manpower development and training and administration.	

TABLE 1

Recommended Organizational Changes

National Water Supply and Drainage Board

Organizational Unit	Primary Functions	Justification for change
DGM - Personel Administration	Manages personnel, administration and general administrative functions. Prepares reviews of personnel.	Personnel planning need to be conducted as a concerted activity. Administration is included to reduce span of control.
AGM - Manpower Development and Training	Manages all personnel training and development needs and prepares annual manpower plans.	Position needs to be upgraded to ensure that training and personnel development receive sufficient emphasis during the critical institutional building years.
DGM - Commercial	Manages management and financial accounting, budgeting, fixed asset inventory, cash flow, supplies, stores and tenders and contracts.	Financial activities are becoming an important function of NWSDB, and will need senior level management. Supplies and Stores are closely linked to financial accounting and both require skills that are generally possessed by non-engineering personnel. Stores, supplies, tenders and contracts need a single focus especially if stores
DGM-Operations	Manages all regional operations, regional support centers, the central laboratory and the central workshop.	Operations and maintenance must become the single most important mission of NWSDB. This position should be on the promotional ladder for ADGM - Operations and General Manager. A senior level position must be provided to ensure the full cooperation of support services and commercial activities.

TABLE 1

Recommended Organizational Changes

National Water Supply and Drainage Board

Organizational Component	Primary Functions	Justification for change
DGM- Planning and Design	Manages all planning and design for rehabilitation and new construction including groundwater development for the entire country. Directs the activities of the rural sanitation unit.	Need to consolidate Project Area and Non - Project Area activities and to curtail planning or design performed by the regions or construction groups to ensure consistent compliance with NWSDB priorities and policies. Well drilling should remain under the direction of groundwater engineers because of the unique skills required.
DGM - Construction	Manages all construction throughout the country except groundwater development	Provides a single, consolidated focus for all construction activities.
AGM - Operations	Serves as the DGM-O/M's senior advisor for process control and water quality. Manages the Colombo Area water schemes and the central laboratory.	Provides a senior expert to advise the DGM - O/M on nationwide process control and water quality programs.
CE - Maintenance	Serves as a senior advisor to the DGM-O/M on all maintenance matters and directs the central workshop.	Provides a senior expert to advise the DGM on nationwide maintenance programs and to provide high level coordination with supplies and stores.
AGM - Regional Support Centers	Directs the activities of two or more regions. Manages the regional support centers including level 2 workshops, laboratories, training facilities and transport.	Provides additional management to strengthen the regions. Emphasizes the importance of regional and local water scheme activities. Permits increased levels of stores, equipment and facilities to be housed in the regions while maintaining proper accountability. Permits increased administrative and financial skills and responsibility to be allocated to the regions.
Rural Sanitation Unit	Coordinate rural water supply programs with the Ministry of Health's sanitation and health education programs.	An improvement in health required a coordinated water supply, sanitation and community involvement program Because these two programs are split between two ministries, special measures are needed to ensure coordination.
Special Committees - Strategic Planning	Select committees of NWSDB staff to provide oversight in areas of critical interest. The The committes may contain honorary members from other ministries or agencies but these members should be advisory only.	Committees have and are serving an excellent oversight function by reviewing the existing policies and identifying need for new policies or programs.

Table 2

WATER SANITATION RELATED HEALTH CONDITIONS BY DISTRICT
SRI LANKA

DISTRICT	ESTIMATED MID YEAR POPULATION x 1000 1981 [1]	POPULATION DENSITY Persons Per KM 1981 [2]	CRUDE BIRTH RATE 1981 [2]	CRUDE DEATH RATE 1981 [2]	INFANT MORTALITY RATE 1979 [3]
Colombo	1,498	2,403	27.7	9.0	41
Gampaha	1,389	993.4	26.7	6.3	NA
Kalutara	827	514.9	27.2	5.5	34
Kandy	1,126	522.0	25.6	6.9	60
Matale	357	179.1	30.3	5.2	31
Nuwara Eliya	522	363.4	27.9	7.0	79
Galle	815	486.7	24.0	6.0	38
Matara	644	516.9	29.0	5.6	36
Hambantota	424	1,635	30.8	4.5	24
Jaffna	831	401.1	27.9	5.2	18
Mannar	106	53.4	40.4	5.9	25
Vavuniya	96	36.3	45.1	5.2	26
Mullativu	78	39.4	32.6	2.9	NA
Batticaloa	331	134.3	34.7	8.0	35
Amparai	388	85.6	30.6	4.7	24
Trincomalee	257	98.1	36.4	4.1	19
Kurunegala	1,213	254.1	26.4	5.4	37
Puttalam	493	165.7	32.8	5.5	22
Anuradhapura	588	82.5	36.7	4.9	21
Polonnaruwa	263	77.2	35.1	4.8	18
Badulla	643	228.1	26.0	5.9	57
Moneragala	280	50.1	38.7	3.5	22
Ratnapura	796	245.9	33.2	6.1	55
Kegalle	682	410.4	22.7	5.2	34

1/ Source: Annual Health Bulletin (1982)
2/ Source: Annual Health Bulletin (1982)
3/ Source: Pollack and Immerwehr (1983)
4/ Includes cholera, typhoid fever, other salmonella infections, bacillary and amoebic dysentry, and other unspecified causes
5/ Data from Registrar General's records
6/ Data from hospital discharge records
7/ Data from Sahn (1983)
NA = figures not available

TABLE 2 (contd).

DISTRICT	4/ 5/ MORTALITY (PER 100,000) DUE TO DIARRHEAL DISEASES 1979	5/ MORTALITY DUE TO BACILLARY DYSENTRY AND AMOEBIASIS (PER 100,000) 1979	5/ MORTALITY (PER 100,000) DUE TO ENTERITIS AND other diarrhoeas 1979 Registrar General	Hospital Records	5/ MORTALITY (PER 100,000) DUE TO TYPHOID FEVER 1979	5/ MORTALITY (PER 10000 DUE TO INTESTINAL HELMINTHIASIS 5 1979
Colombo	26.5	0.67	25.5	14.4	0.27	1.4
Gampaha	NA	NA	NA	NA	NA	NA
Kalutara	19.5	0.12	18.8	6.8	0.62	3.1
Kandy	43.1	5.28	36.6	5.8	1.23	3.4
Matale	38.4	0.87	36.3	4.9	1.15	2.0
Nuwara Eliya	32.7	0.20	32.5	12.2	0.00	4.5
Galle	19.5	0.00	19.4	1.9	0.13	1.6
Matara	16.2	1.43	14.6	9.2	0.16	2.4
Hambantota	24.9	0.75	24.1	NA	0.00	0.3
Jaffna	21.4	0.12	20.6	4.2	0.62	0.4
Mannar	43.5	0.00	42.6	NA	0.97	0.0
Vavuniya	13.3	0.00	13.3	17.4	0.00	0.7
Mullativu	NA	NA	NA	NA	NA	NA
Batticaloa	117.6	0.00	116.3	1.8	1.28	3.2
Amparai	85.7	0.00	85.7	NA	0.00	2.2
Trincomalee	27.2	0.00	24.3	NA	2.93	0.8
Kurunegala	20.3	0.09	20.2	6.0	0.00	7.0
Puttalam	40.1	0.56	36.9	17.5	2.15	6.9
Anuradhapura	31.6	1.08	29.8	8.7	1.31	1.9
Polonnaruwa	16.8	0.00	16.8	NA	0.00	3.0
Badulla	41.5	2.02	37.7	8.0	1.42	1.3
Moneragala	36.0	1.16	29.8	NA	5.03	1.2
Ratnapura	36.4	1.18	34.7	12.7	0.52	4.5
Kegalle	16.3	0.44	15.9	1.6	0.00	2.8

TABLE 2 (Contd.)

DISTRICT	6/ MORBIDITY DUE TO GASTRO ENTERITIS AND OTHER DIARRHOEA 1979	7/ % OF CHILDREN STUNTED	7/ % OF CHILDREN WASTED	7/ % OF CHILDREN CONCURRENTLY WASTED & STUNTED
Colombo	757.6	26.0	11.2	4.1
Gampaha	NA	26.5	11.6	3.4
Kalutara	476.0	30.0	12.2	4.8
Kandy	741.9	45.2	12.6	5.8
Matale	566.9	43.7	12.3	6.4
Nuwara Eliya	568.9	64.5	12.7	8.4
Galle	396.7	32.3	12.7	4.6
Matara	664.7	NA	NA	NA
Jaffna	492.1	38.7	8.9	3.4
Mannar	NA	45.7	12.9	6.6
Vavuniya	893.5	39.3	14.3	6.0
Mullativu	NA	39.5	6.7	1.5
Batticaloa	359.4	46.9	17.7	9.5
Amparai	NA	44.4	13.8	7.0
Trincomalee	NA	42.3	15.2	5.8
Kurunegala	797.1	35.0	16.7	6.7
Puttalam	601.0	33.8	18.3	7.1
Anuradhapura	478.7	35.7	14.7	5.8
Polonnaruwa	NA	32.5	12.0	5.2
Badulla	668.8	46.9	12.5	6.3
Moneragala	NA	38.3	15.3	6.8
Ratnapura	805.8	40.1	13.3	5.2
Kegalle	364.5	40.8	11.8	5.3

TABLE 3

DISTRICTS DEMONSTRATING CONCURRENT HIGH LEVELS OF RELEVANT HEALTH INDICATORS

DISTRICT	IMR (1979) > 40/1000	DIARRHEAL DISEASE MORTALITY (1979) > 35/1000	MORBIDITY DUE TO GASTRO ENTERITIS (1979) >500/1000	% OF CHILDREN STUNTED > 40
Badullas	57	117.6	668.8	46.9
Kandy	60	43.1	741.9	45.2
Ratnapura	55	36.4	805.8	40.1
Matale	-	38.4	566.9	43.7
Nuwara Eliya	79	-	568.9	54.5

Table 4

PERCENTAGE DISTRIBUTION OF OCCUPIED HOUSING UNITS BY SOURCE OF WATER SUUPLY & DRAINAGE - 1971 AND 1981

Source	All Sectors		Urban Sector		Rural Sector		Estate Sector	
	1971	1981	1971	1981	1971	1981	1971	1981
Piped water on tap	20.1	17.3	45.3	46.5	4.8	5.1	74.7	65.6
Well	68.8	73.1	50.5	48.7	81.9	84.5	15.4	20.4
River, Tank or Other source	8.9	7.0	2.0	1.1	11.0	8.5	7.3	5.6
Not Stated	2.3	2.7	2.1	3.7	2.3	1.9	2.1	8.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source - 1981 Housing Census, Dept. of Census and Statistics

Table 5

PERCENTAGE DISTRIBUTION OF HOUSING UNITS BY MAIN SOURCE OF DRINKING WATER BY TYPE AND LOCATION - 1981

Source	All Sectors	Urban Sector	Rural Sector	Estate Sector
Piped Water on Tap				
Within Premises	8.0	24.4	1.8	28.8
Outside Premises	9.3	22.1	3.3	36.8
Protected Well				
Within Premises	25.8	27.7	26.7	12.6
Outside Premises	26.5	16.1	31.4	3.4
Unprotected Well	20.8	4.9	26.4	4.1
River, Tank or Other Source	7.0	1.1	8.5	5.8
Not Stated	2.7	3.7	1.9	8.1
Total	100.0	100.0	100.0	100.0

Source : 1981 Housing Census, Dept. of Census and Statistics

Table 6

PERCENTAGE DISTRIBUTION OF HOUSING UNITS BY TOILET FACILITIES BY SECTORS - 1971 AND 1981

Sector	Total	Toilet for Exclusive Use		Shared Toilet		No Toilet (Including Not Stated)	
		1971	1981	1971	1981	1971	1981
All Sectors	100.0	45.5	53.0	19.0	13.6	35.5	33.4
Urban Sector	100.0	49.9	56.8	30.7	23.5	20.4	19.8
Rural Sector	100.0	48.5	55.5	9.0	7.9	42.5	36.5
Estate Sector	100.0	20.5	18.4	63.9	45.1	15.6	36.6

Source : 1981 Housing Census, Dept. of Census and Statistics

Table 7

PERCENTAGE DISTRIBUTION OF OCCUPIED HOUSING UNITS BY TYPE OF TOILET BY SECTORS - 1971 AND 1981

Type of Toilet	All Sectors		Urban Sector		Rural Sector		Estate Sector	
	1971	1981	1971	1981	1971	1981	1971	1981
Flush Toilet	6.7	4.3	22.8	15.6	2.2	2.1	8.2	4.9
Water Seal	14.3	21.9	19.2	38.9	9.9	17.5	33.9	24.22
Pit Type	38.8	37.9	18.3	17.0	44.4	43.5	38.2	32.3
Bucket Type	4.8	2.0	19.4	8.8	1.0	0.3	4.1	2.1
None	34.3	30.9	19.1	16.4	41.5	34.8	13.4	28.1
Unspecified	1.2	2.5	11.3	3.4	1.8	1.7	2.2	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source : 1981 Housing Census, Dept. of Census and Statistics

TABLE 8

SUMMARY OF DESIGN TEAM FINDINGS AND RECOMMENDATIONS

Organizational Component	Findings	Recommendations	Proposed Input	Implementation	Planned Output
NWSDB INSTITUTIONAL DEVELOPMENT					
1. Management:					
a. Organizational Structure	. Highly centralized	. Decentralize O&M	. Revised Table of Organization	.NWSDB accept new TO and staff key positions	. Decentralized Organization with Job Descriptions
	. Split between Projects and Non-Projects	. Consolidate Project and Non-Project areas	. Technical Assistance . Workshops	.Workshop to revise job descriptions	
	. Excessive span of control	. Consolidate and add two Additional General Managers		.Management advisor to guide decentralization	. Consolidated operations
b. Strategic Planning	. None exists	. Prepare plan and initiate annual updates (Mar-June)	. Technical Assistance	.World Bank Consultant assistance with first plan .Formalize process and assist with 1986 and 1987 plans	. Strategic Planning Process
c. Policy Making	. Good use of committees but policies not widely distributed	. Prepare business policy manual, SOP's and distribute widely	. Technical Assistance	.Review policies and circulars; prepare business policy manual and distribute	. Widespread knowledge of policy
d. Public Relations	. Actions are minimal and defensive	. Create separate unit, prepare materials, conduct aggressive program	. Technical Assistance . PR materials	.Develop policy and procedures; conduct initial programs	. Aggressive Public Relations Program
e. Management Information System	. Good reports have just been initiated	. Expand number and type of reports and distribute to those with need to know	. Technical Assistance	.Design and implement initial MIS; upgrade MIS thereafter as required	. Improved MIS
2. COMMERCIAL:					
a. Budgeting	. Budget process exists with two new variance reports but not to scheme level detail	. Extend budgets to scheme level and expand budget reports	. Technical Assistance . 1 Microcomputer with software	.Improve budgeting detail and forecasting	. Improved budget process
b. Accounting	. Accounting records weak because of regional input and lack of internal control	. Strengthen regional accounts and modify procedures; evaluate decentralized accounting	. Technical Assistance . 2 computers with software	.Review procedures to enhance auditability .Evaluate merits of using microcomputer .Training for regional accountants	. Improved and Auditable Accounting System

Organizational Component	Findings	Recommendations	Proposed Input	Planned Action	Planned Output
c. Financial Planning	. Not performed	. Initiate annual plans	. Technical Assistance	.Develop annual plans	. Established Financial Planning Process
d. Billing and collection	. In its infancy stages; present intent is to centralize	. Attempt decentralized billing and collection in 4 regions for one year using micro-computers	. Technical Assistance . 4 microcomputers . Add 4 microcomputers . is proven satisfactory	.Use Micro's in regions on a 1 year trial basis .Evaluate merits of decentralized billing and collection .Expand to other regions	. Decentralized and Upgraded Billing and Collection System
e. Supplies, Stores, Tenders and Contracts	. All aspects need substantial upgrading	. Prepare manual for Supplies and Stores . Provide Stores at Regional Support Centers . Recruit Supplies/Stores staff and conduct intensive training	. Technical Assistance . Construct Regional Stores . Upgrade Central Stores	. Prepare Manual .Construct Stores .Provide Training and Advisory Services	. Effective procurement and delivery of materials . Enhanced storage capability . Rigorous control control of inventory
f. Fixed Asset Inventory	. Incomplete and lack of detail needed to audit	. Upgrade inventory as part of feasibility study for rehabilitation; identify and tag facilities	. Microcomputer software	. Upgrade physical inventory	. Auditable Fixed Asset Inventory
3. PERSONNEL AND TRAINING					
a. Training Systems Development	. Structure and staffing of training needs upgrading	. Reorganize and expand department; add trainers, training support, regional capability, upgrade positions	. Technical Assistance	. Reorganize and Staff MD&T	. Upgraded training capability completely within NWSDB
	. Training information and planning is very limited	. Install needs assessment mechanism and planning system; develop and maintain training data	. Technical Assistance	. Design and install needs assessment, planning and information systems	. Increased effectiveness and relevance of training
	. Trainers skills, methods and training effectiveness need upgrading	. Upgrade staff skills, introduce experience-based and practical skills methods	. Technical Assistance	. Training-of-Trainers Program	. Increased training effectiveness in transferring skills
	. Training material and curricula need expansion	. Develop written trainer's manuals using up-to-date methods; establish core curriculum; expand and revamp current curriculum	. Technical Assistance	. Develop 20 Trainer's manuals and expand	. Improved technical quantity of training; broadened scope of training subjects

Organizational Component	Findings	Recommendations	Proposed Input	Planned Action	Planned Output
	.Training evaluations are limited	.Establish training evaluation systems	.Technical Assistance	.Develop performance standards for major job categories; gather pre- and post-performance data and performance indicators	.Measurability of training outputs increased
	.Performance standards and certification do not exist	.Develop certification program for major job categories	.Technical Assistance	.Install certification program	.Improved work standards
	.Training facilities and equipment are very limited	.Build and equip central training facility; add regional training space to Regional Support Centers	.Technical Assistance	.Design and construct Training Centers	.Improved Skill Training Resources/ facilities
b. Skill Training	.Technical skills need broad coverage in training	.Conduct on-going techn'l training in all skill areas using experiental training methods combined with practical on-the-job training strategies	.Technical Assistance .Workshops	.Skills training workshops and on-the-job training	.Enhanced skills levels
	.Managerial and supervisory skills need intensive training	.Develop and carry out management and supervisory training for all managers and supervisors, include training of subordinate skills		.Management and supervisory training	.Enhanced management capability
	.Organizational development skills needed to support changes	.Develop and carry out on-going program of team-building, organizational problem solving, inter-unit communications training .Develop and carry out senior executive management development program		.Team-building workshops	.Effective reorganization
c. Personal Administration	.Staff incentives and motivation needed	.Develop staff incentives packages	.Technical Assistance	.Develop special incentive package for regions	.More qualified staff in regions
	.Staff development program needs to be designed	.Develop career development job rotation scheme	.Incentive package (trips, awards, special training, housing)	.Provide rewards for outstanding O&M	.Institutional priority for decentralized O&M
	.Personnel allocation and assignment plan needs to be prepared	.Implement recommendations of NIBM report on management development in O&M; expand study to all areas in the organization	.Technical Assistance	.Prepare manpower plan and procedures	.Increased job effectiveness

Organizational Component	Findings	Recommendations	Proposed Input	Planned Action	Planned Output
	.Manpower planning needs to be conducted annually	.Set up a manpower planning unit in personnel; gather manpower data; develop a manpower plan	.Technical Assistance	.Prepare personnel policy manual	.Optimum staffing levels and assignments
	.Salaries are low for the talent and experience needed	.Conduct a staff classification and salary scale review; upgrade salaries or salary supplements to be more competitive	.Technical Assistance	.Prepare job descriptions and career paths	.Motivated staff
4. CAPITAL FACILITIES MANAGEMENT:					
a. Facilities Planning	.Priority planning is political and limited in scope	.Establish implementation priorities based on project need, affordability, initial feasibility, cost/benefit and health needs	.Technical Assistance	.Prepare planning manual reflecting scheme size with sections for rehabilitation	.Organized approach to facilities expansion and rehabilitation
	.Use of appropriate technology spotty	.Require use on all projects	.Technical Assistance	.Apply appropriate technology	.More cost effective and appropriate schem
	.Feasibility studies are inadequate	.Expand scope and detail; provide manual	.Library materials	.Prepare feasibility manual	.Improved relations with local communitie
	.Project management from beginning to end does not exist	.Provide continuous Project Directors		.Prepare feasibility studies .Assign continuous Project managers	.Effective project implementation
	.Planning of rehabilitation projects not performed by P&D Branch	.Consolidate construction/rehabilitation planning		.Consolidate planning functions	.Consolidated planning function
b. Design	.Design standards are not up to date and reviews are inadequate	.Update standards and create Technical Review Committee; prepare SOP	.Technical Assistance .Library materials .Drafting materials	.Develop SOP's for plans/specifications .Develop SOP for institution building at new/rehabilitated schemes	.More cost-effective design and relevant systems .More cost-effective and appropriate schemes
		.Establish cost estimate section		.Prepare plans/specifications and plans for implementation	.Reduced system O&M requirements
	.Design changes in field are not seen by designers	.Develop review and approval system; as-builts to be prepared by design team, not by construction branch		.Develop formal design modification review process	.Easier O&M
	.Cost estimating data base not up-to-date	.Establish system to feed back actual project costs			
c. Construction and Rehabilitation	.Most existing water supply schemes need rehabilitation	.Rehabilitate them	.Technical assistance	.Develop SOP for construction and facilities start-up	.Expedited construction
	.O&M Branch now handles rehabilitation	.Planning and Design Construction should handle	.Construction/Rehab. materials	.Construct/rehabilitate facilities	.Aggressive Rehabilitation Program
	.No direction for construction managers and resident engineers	.Prepare construction supervision manuals	.Technical Assistance	.Implement manuals	.Improved construction supervision

izational Component	Findings	Recommendations	Proposed Input	Planned Action	Planned Output
PERATIONS & MAINTENANCE					
. Process Control	.Essentially non-existent with no central focus	.Designate AGM (Operations) .Upgrade control of plant processes	.Technical Assistance	.Staff positions; train operators	.Improved operations functions
	.Chemical supplies are not assured	.Determine chemicals availability and prepare report on alternatives as part of feasibility studies	.Research studies	.Conduct research studies	.Improved chemical supplies
	.No consistent procedures followed	.Prepare SOP	.Technical Assistance	.Prepare initial SOP; finalize SOP	.Improved quality and quantity of water .Reduced cost of operations
	.Inadequate transport	.Acquire transport	.Vehicles	.Purchase transport vehicles	.Improved mobility
	.Energy conservation not practiced, except by default	.Institute energy conservation and meet with CEB on rate concessions	.Research studies	.Discuss, study, evaluate and implement recommendations	.Reduced energy costs
b. Maintenance Management	.Forms now being introduced in two regions but no firm accountability	.Prepare SOP .Adopt full maintenance management system, with emphasis on PM	.Technical Assistance	.Prepare 1st draft maint. SOP; finalize maint. SOP .Training of maint. personnel	.Improved equipment status .Sustained supply of water
	.Workshops inadequate	.Construct and equip new workshops	.Workshop facilities and equipment	.Construct and outfit maintenance workshops	.Enhanced O&M capability/ resources
	.Insufficient transport .Maintenance now plans rehabilitation projects	.Acquire vehicles .P&D Branch plan rehab. projects	.Vehicles .Technical Assistance	.Purchase transport .Consolidate planning functions	.Improved mobility .Consolidated planning functions
c. Water Quality	.No centralized control	.Designate AGM (Operations); prepare SOP	.Technical Assistance	.Staff positions; prepare SOPs for national water quality control	.Acceptable water quality continuous
	.Laboratories inadequate	.Construct, staff and equip new labs	.Construct and furnish labs	.Construct and furnish labs	.Improved water quality monitoring capability/resources
	.Inadequate supplies	.Purchase supplies	.Laboratory supplies	.Purchase supplies	
	.Inadequate transport .No enforcement of water quality standards	.Purchase vehicles .Encourage cooperation with national environmental authorities	.Vehicles	.Purchase transport .Initiate dialogue with national environmental authorities	.Improved mobility .Improved enforcement of standards

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Institutional Component	Findings	Recommendations	Planned Input	Planned Action	Planned Output
SPECIAL SERVICES					
a. Internal Audit	.Limited review of cash records is the only activity; senior position is not staffed	.Staff senior position; develop audit procedures and priorities; expand to Fixed Assets and Stores	.Technical Assistance .Workshops	.Prepare SOP .Perform audits	.Aggressive internal audit program
b. Legal	.Minimal Use	.Expand use	.Technical Assistance	.Review tender and contract documents; review construction plans and specifications for strengthening	.Strengthen legal relationships
c. Information Management	.No computerized data processing in-house; service bureaus prepare bills and payroll	.Delay purchase of main-frame computer; prepare study of data processing needs in 1-2 years; use service bureaus and microcomputers in interim	.Technical Assistance .Microcomputers with software	.Prepare analysis of data management needs	.Improved and appropriate data management
d. Research	.Little, meaningful activity	.Assign to strategic planning and initiate review of appropriate technology and special problems	.Technical Assistance .Library materials .Research studies	.Prepare SOP .Perform 1st annual review of appropriate technology	.Continuous search for appropriate technology .Problem solving capability .Study of chemical availability, energy conservation, local repair costs, etc
e. Administration	.Few standard procedures and no use of electronic word processing equipment	.Develop SOP's and purchase equipment	.Technical Assistance .Word processors, copiers and typewriters	.Prepare SOP's for administration .Train clerks, typists, secretaries	.Improved administrative capability/resources
HEALTH EDUCATION, SANITATION AND COMMUNITY PARTICIPATION					
1. COOPERATION	.Existing relationship of NWSDB with MOH is cordial and functional but not sufficient to support an active program in the field	.Establish Rural Sanitation Unit within NWSDB .Establish close liaison with Health Education Bureau and Director of Env. and Occupational Health	.Technical Assistance	.Establish Rural Sanitation Unit within NWSDB with environmental health, social science and health education specialists in place	.Rural Sanitation Unit established and functioning

izational Component	Findings	Recommendations	Planned Input	Planned Action	Planned Output
HEALTH EDUCATION	.Health personnel are preoccupied with other functions; insufficiency of staff in some positions; lack of logistical support	.Train Regional Sanitation Teams .Train peripheral health and other workers .Train community level volunteers, caretakers and leaders	.Training materials .Field guidebooks .Transport and per diem	.Train additional Health Education Officers .Train Regional Sanitation Teams .Train peripheral health workers .Train other peripheral workers for supportive ideas .Train community volunteers, WS&S committee members and water point caretakers for community level action	.Trained additional Health Education Officers .Trained Regional Sanitation Teams .Trained health and other peripheral workers .Trained community volunteers committee members and caretakers
SANITATION	.High prevelence of diarrheal diseases .Traditional resistence to improved sanitation practices	.Health education training; construct latrines	.Latrine construction materials, labor and logistical support .Health educational materials	.Construct latrines; educate beneficiaries	.±15,000 latrines constructed and maintained; improved sanitation practices
COMMUNITY PARTICIPATION	.Significant tradition of community participation	.Involve communities in water supply and sanitation planning, design, implementation and O&M; educate the public	.Socio-economic studies	.Continued action, support, supervision and follow-up for community participation	.Effective community participation in all phases of sector operations

TABLE 9

TRAINING OF PERIPHERAL HEALTH WORKERS

Category	Period of Training	Content	No. to be Trained 1/
PHI	4 weeks	Sanitation technology Community health education Community participation	6
FHW	3 weeks	Domestic & personal hygiene Home visitation Group work	30
PHN	3 weeks	Community health education Community participation Domestic and personal hygiene	6
	1 week	Supervision	
ALL	2 weeks	Training as trainers	42
PHI & FHW	2 weeks	Survey, monitoring & data collection and management	36

1/ based on an assumption of 1 PHI, 5 FHW and 1 PHN per subproject area.

TABLE 10

TRAINING OF PERIPHERAL WORKERS OF OTHER AGENCIES

Category	Period of Training	Content	Number[1/]
Agricultural Extension Workers	2 weeks	Orientation Sensitization	6
Rural Development Officers	"	Support of Project Activities	6
Community Development Officers	"	"	6
Circuit Education Officers	"	"	6
Divisional Development Officers	"	"	6
Assistant Directors Maternal Youth Service Councils	"	"	6
Divisional Officers of Agrarian Services	"	"	6

1/ Based on an assumption of one of each worker per subproject area

TABLE 11

Target Group[1/]	Number	Content	Trainer	Period of Training
A. Village Health Volunteers[2/]	700	Health Personal and domestic hygiene Home visitation Personal counselling Group Work Survey & Data management Latrine construction Fundamental accounting & financial management Motivation & promotion of participation.	Volunteers assisted by PHIs & FHWs	3 weeks
and Health/WS&S Subcommittee Members	150			Subcommittees only: 2 days per month for a year
B. Water point caretakers	300	Technical training in repair, maintenance & care of sanitary surrounding of standpipe, tap, well or pump.	PHI assisted by NWSDB Regional Training Officer	1 week
C. School Teachers[3/]	30	Orientation to support trainees in Group A	PHI/PHN	2 weeks
NGO Members of Gramodaya Mandalaya	240			
Village & Religious Leaders	90	"	"	"
Cultivation Officers	30	"	"	"
Grama Sevaka	30	"	"	"
Special Services Officer	30	"	"	"

1/ Assumes 30 communities per project area, 100 households per community and 125 volunteers/ 5 Gramodaya Mandalayas per scheme. Assumes one standpipe or well for 250 persons or 50 households.

2/ Exceptions to the above tentative plans should probably be made for Village Health Volunteers who could better profit from an extended training period beyond 2-3 weeks, since they are for the most part unemployed youth. They should still participate, however, in the monthly training sessions as a means of supporting the training of the subcommittees.

3/ School teachers should probably receive some additional training in water supply and sanitation with a particular focus on organizing students and their parents to bring about improvements in the water and excreta disposal facilities of the schools. Teacher training should also include general cleanliness of the schools, light, space and personal hygiene of students.

Table 12

EXTENDED FORECAST OF CAPITAL INVESTMENT

National Water Supply and Drainage Board
(Rs x 1,000,000)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
CAPITAL INVESTMENT													
Urban Water	557	430	350	350	350	350	350	-	-	-	-	-	2,737
Rural Water	16	20	30	75	120	210	300	400	500	500	500	450	3,121
Sanitation	521	250	30	50	70	70	110	150	200	250	250	230	2,181
Rehabilitation	8	35	70	125	170	170	93	50	50	50	50	50	921
Other Support	3	50	75	75	75	50	30	25	25	25	25	25	483
Total	1,105	785	555	675	785	850	883	625	775	825	825	755	9,443
ANTICIPATED FOREIGN ASSISTANCE	485	320	234	282	327	341	335	217	267	287	287	264	3,646
LOCAL GOVERNMENT ASSISTANCE	620	465	321	393	458	509	548	408	508	538	538	491	5,797

Assumptions

1. The goals of the Sri Lanka Water Decade as updated in November, 1983 will be met except for sanitation which was assumed to extend only to Colombo and parts of 2-3 other cities.

2. Prices reflect the estimates contained in the Decade Plan update except that the costs of rehabilitation were added. Rehabilitation costs include the costs of upgrading the spare parts inventory.

3. Other support costs include institution building, training, laboratories, workships, computers, etc.

4. Foreign assistance is 70-85% of total project costs per GSL government policy. Because only 50% of the projects receive foreign assistance, average foreign assistance has been 40-45%. Future assistance was assumed as follows:

Urban Water - 40%	Sanitation - 40%	Other Support - 50%
Rural Water - 30%	Rehabilitation - 50%	

TABLE 13.1

Extended Forecast of Operating Budget

National Water Supply and Drainage Board

ASSUMPTIONS

1. A modest tariff increase of five percent per year was assumed.

2. Revenue projections reflect urban and peri-urban areas only. Total consumption increased to reflect the new schemes being added or expanded plus an assumed 1% per year increase in per capita consumption. Commercial and industrial growth was assumed to increase 3% per year in Colombo and 1% elsewhere. Revenues assumed that the Decade Plan will be met.

3. Bad debts were assumed as follows:

1984 - 60%	1986 - 40%	1988 - 20%
1985 - 50%	1987 - 30%	1989-1995 - 10%

4. Operating expenses used the 1984 budget as a baseline and were increased to reflect expanded service and inflation. Inflation factors used were:

	1984-87	1988-95		1984-87	1988-95
Labor	8%	6%	Maint./ Repair	10%	10%
Chemicals	12%	8%	Establish-ment	11%	5%
Electricity	15%	7%	General Ad-ministration	11%	5%

Maintenance costs were assumed to increase an additional 10% in 1985-1989. General administration costs include the central workshop.

5. Depreciation is estimated using current fixed asset inventory plus actual construction cost of new inventory. Existing inventory was depreciated at 4 1/2% + or - per year. New inventory was depreciated at 2%+ or - per year.

6. Debt service for existing credits are as shown in the Ernst & Whinney Profitability Analysis Annex 28. New credit, assumed to be 90% of anticipated foreign assistance, was assumed to be a 9%, 20 year loan with a 5 year grace period.

TABLE 13

Extended Forecast of Operating Budget

National Water Supply and Drainage Board

(Rs x 1,000,000)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
ANTICIPATED REVENUES	193	242	277	281	317	323	366	373	420	432	490	500
BAD DEBTS	116	121	111	84	63	32	37	37	42	43	49	50
NET INCOME	77	121	166	197	254	291	329	336	378	389	441	450
OPERATING EXPENSES												
Labor	54	59	64	68	73	77	82	86	91	97	103	109
Chemicals	28	33	38	43	46	49	53	57	60	65	69	74
Electricity	117	135	155	178	191	204	218	234	250	268	286	306
Maint./Repair	11	14	18	23	29	31	34	37	39	43	46	50
Establishment	6	6	7	8	8	9	9	10	10	11	11	12
TOTAL DIRECT COSTS	216	247	282	320	347	370	396	424	450	484	515	551
General Administration	23	25	28	31	33	35	37	39	41	44	46	49
TOTAL EXPENDITURES	239	272	310	351	380	405	433	463	491	528	561	600
OPERATING PROFIT/ (LOSS)	(162)	(151)	(144)	(154)	(126)	(114)	(104)	(127)	(113)	(139)	(120)	(150)
DEPRECIATION	55	67	73	85	99	115	133	140	152	164	176	186
DEBT SERVICE	24	30	225	225	225	266	296	318	351	390	430	467

Assumptions - See Table No. 13.1

TABLE 14

Economic Analysis
(Constant 1984 prices)

Year	Operating Cost 1/ Savings	Capital Cost 2/ Savings	Total Savings	Project 3/ Costs	Net Benefits
1985	416	0	416	3315	- 2899
1986	480	400	880	3660	- 2780
1987	664	590	1254	3445	- 2191
1988	844	995	1839	2050	- 211
1989	908	1300	2208	1380	828
1990	908	1690	2598	245	2353
1991	908	2520	3428	245	3183
1992	908	3160	4068	245	3823
1993	908	3430	4338	245	4093
1994	908	3560	4468	245	4223
1995	908	3410	4318	245	4073

IRR = 17%

1/ Based on Table 13, less the inflation rates indicated in the footnotes to Table 13.1. Benefits phased in at rates described Section 2b of the Economic Analysis.

2/ Based on Table 12. Savings per rates described Section 2a of the Economic Analysis.
Urban savings phased in 75% in 1987 and 1988, 100% in 1989.
Rural water savings realized 100% in 1986.
Sanitation savings realized 75% in 1987 and 1988, 100% thereafter.
Rehabilitation savings realized 100% in 1986.
Debt service savings based on new debt service incurred after 1985. Assuming grace period of 5 years, first savings realized in 1990.

3/ Project costs per Table 1, Annex I-1.

TABLE 15

Extended Forecast of Operating Budget

National Water Supply and Drainage Board

NET OF ESTIMATED PROJECT SAVINGS

(Rs. x 1,000,000)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
ANTICIPATED REVENUES	193	242	277	281	317	323	366	373	420	432	490	500
BAD DEBTS	116	121	111	84	63	32	37	37	42	43	49	50
NET INCOME	77	121	166	197	254	291	329	336	378	389	441	450
OPERATING EXPENSES												
Labor	54	57	60	62	64	65	70	73	77	82	88	93
Chemicals	26	33	38	43	46	49	53	57	60	65	69	74
Electricity	117	128	147	165	172	184	198	211	225	241	257	275
Main./Repair	11	14	18	23	29	31	34	37	39	43	46	50
Establishment	6	5	6	7	7	8	8	9	9	10	10	11
TOTAL DIRECT COSTS	216	237	269	300	318	337	363	387	410	441	470	503
General Administration	23	23	25	28	30	32	33	35	37	40	41	44
TOTAL EXPENDITURES	239	260	294	328	348	369	396	422	447	481	511	547
OPERATING PROFIT/ (LOSS)	(162)	(139)	(128)	(131)	(94)	(78)	(67)	(86)	(69)	(92)	(70)	(97)
DEPRECIATION	5[illegible]	67	73	85	99	115	133	140	152	164	176	186
DEBT SERVICE	24	30	225	225	225	266	290	310	341	377	413	448

Assumptions - See Table No. 13.1

Reference - See Table No. 13

FIGURE 1

EXISTING TABLE OF ORGANIZATION

OF THE

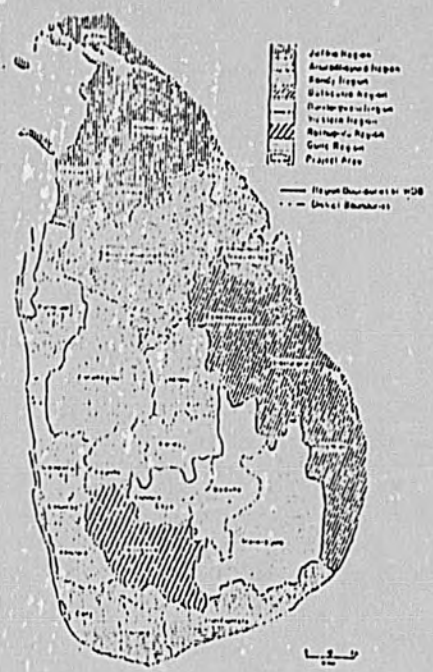
NATIONAL WATER SUPPLY AND DRAINAGE BOARD

FIGURE 2

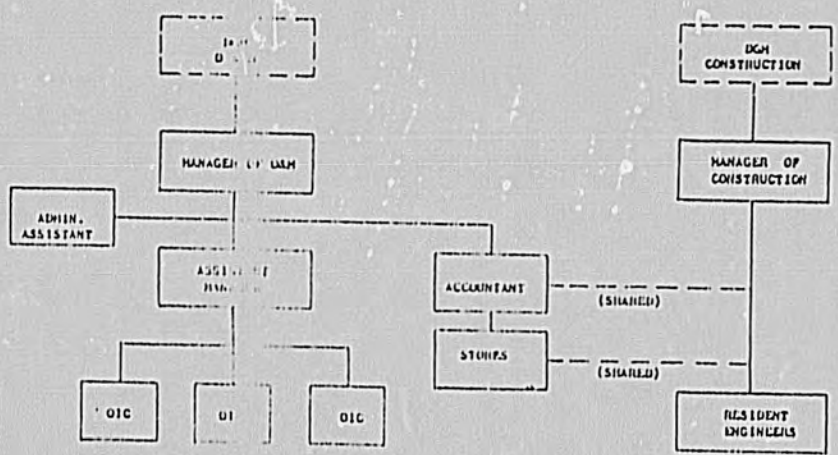
EXISTING REGIONAL OFFICE STRUCTURE

NATIONAL WATER SUPPLY AND DRAINAGE BOARD

EXISTING REGIONS



TYPICAL REGIONAL ORGANIZATION



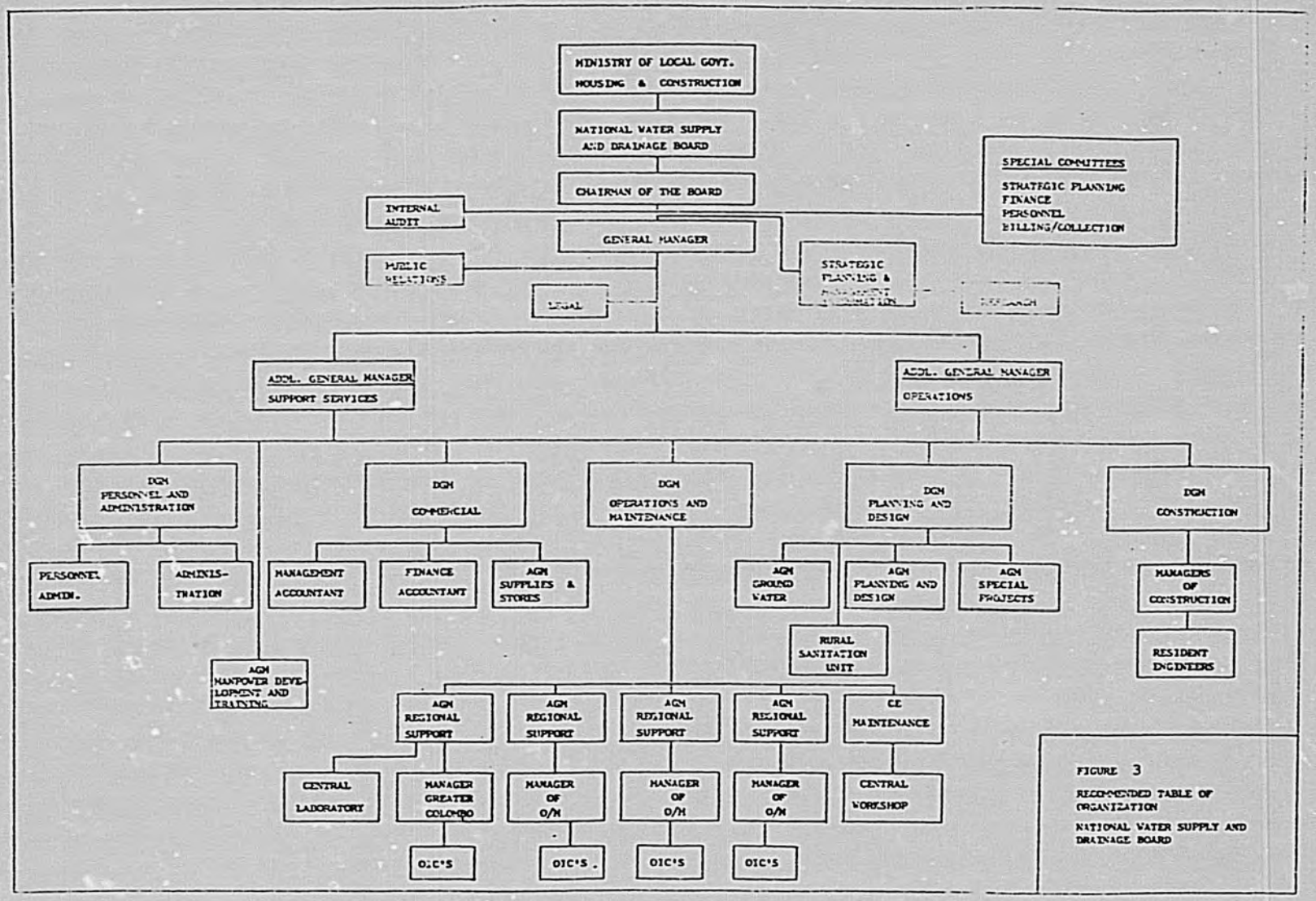


FIGURE 3

RECOMMENDED TABLE OF ORGANIZATION

NATIONAL WATER SUPPLY AND DRAINAGE BOARD

FIGURE 4 ORGANIZATION

OF REGIONAL TEAMS

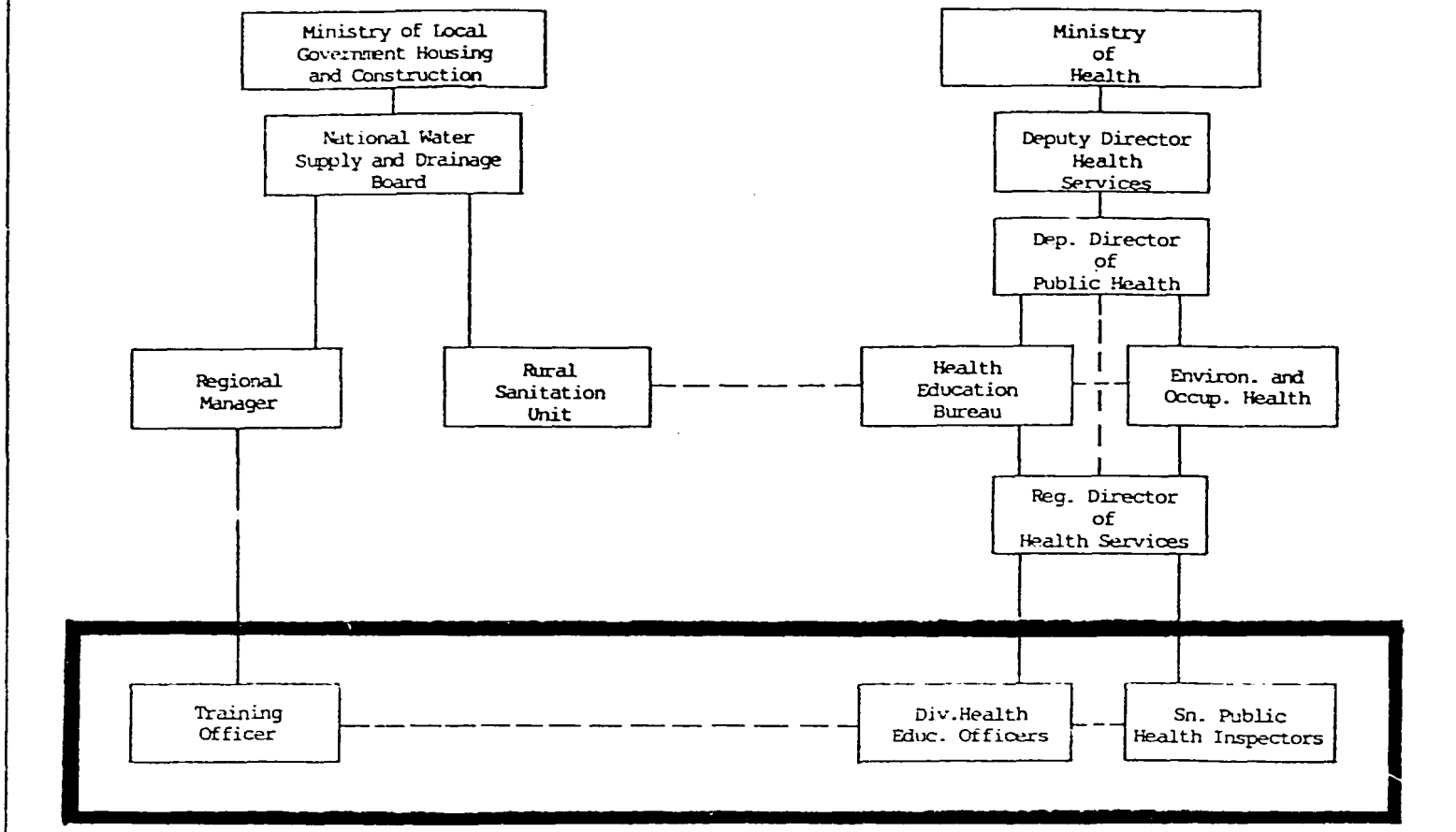


FIGURE 5

SUGGESTED ORGANIZATIONAL CHART FOR THE HEALTH EDUCATION, SANITATION AND COMMUNITY PARTICIPATION PROGRAM

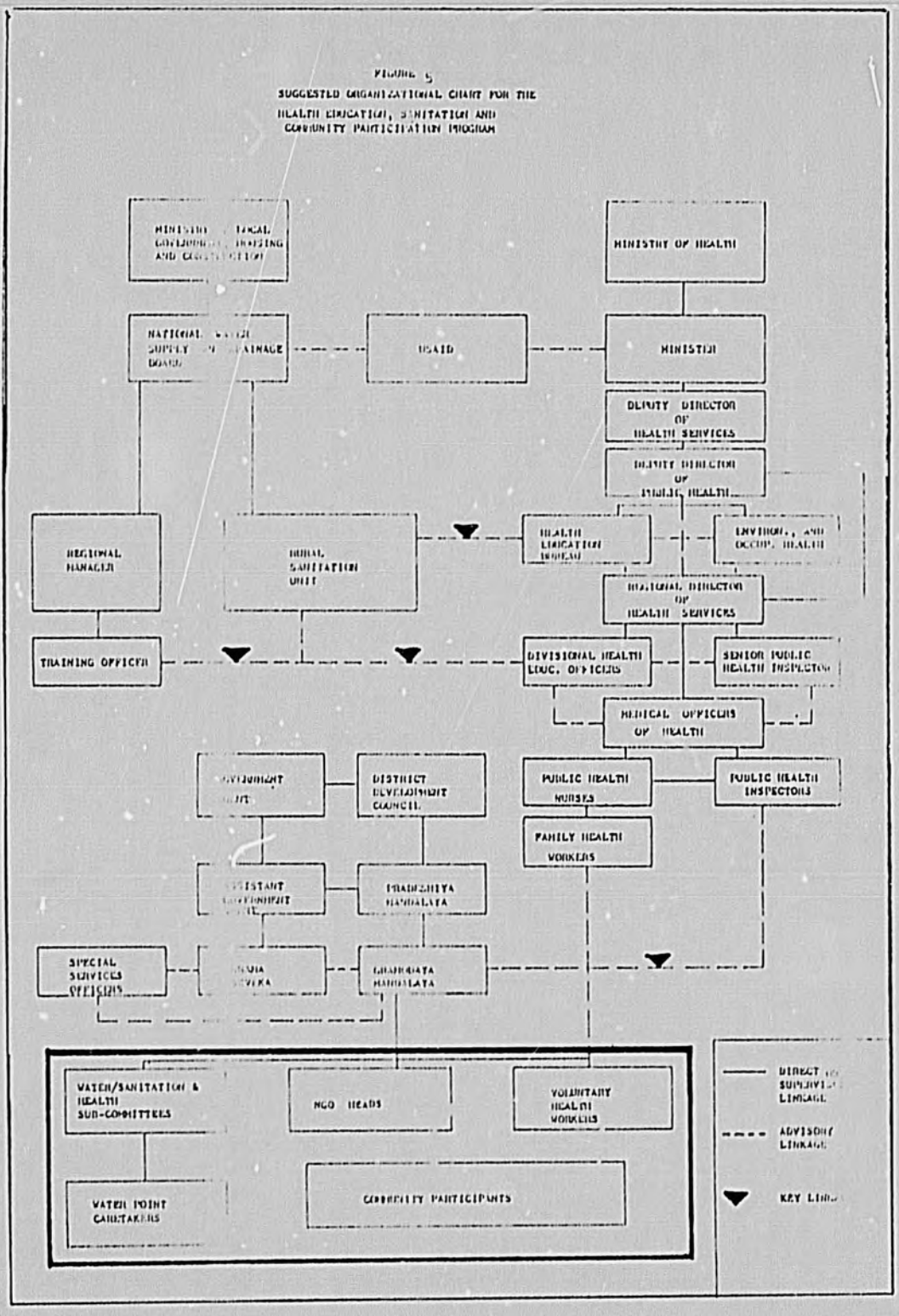


FIGURE 6

ESSENTIAL COMPONENTS OF A MATURE INSTITUTION

MANAGEMENT

Organizational Structure
Strategic Planning
Policy Making
Public Relations
Management Information System

HUMAN RESOURCES

Personnel Administration
Training Systems
Skills Training
Motivation Programs
Manpower Planning

COMMERCIAL ACTIVITIES

Budgeting
Accounting
Financial Planning
Supplies and Stores
Fixed Asset Inventory

SPECIAL SERVICES

Audit
Legal
Information Management
Administration
Public Health Liaison
Research

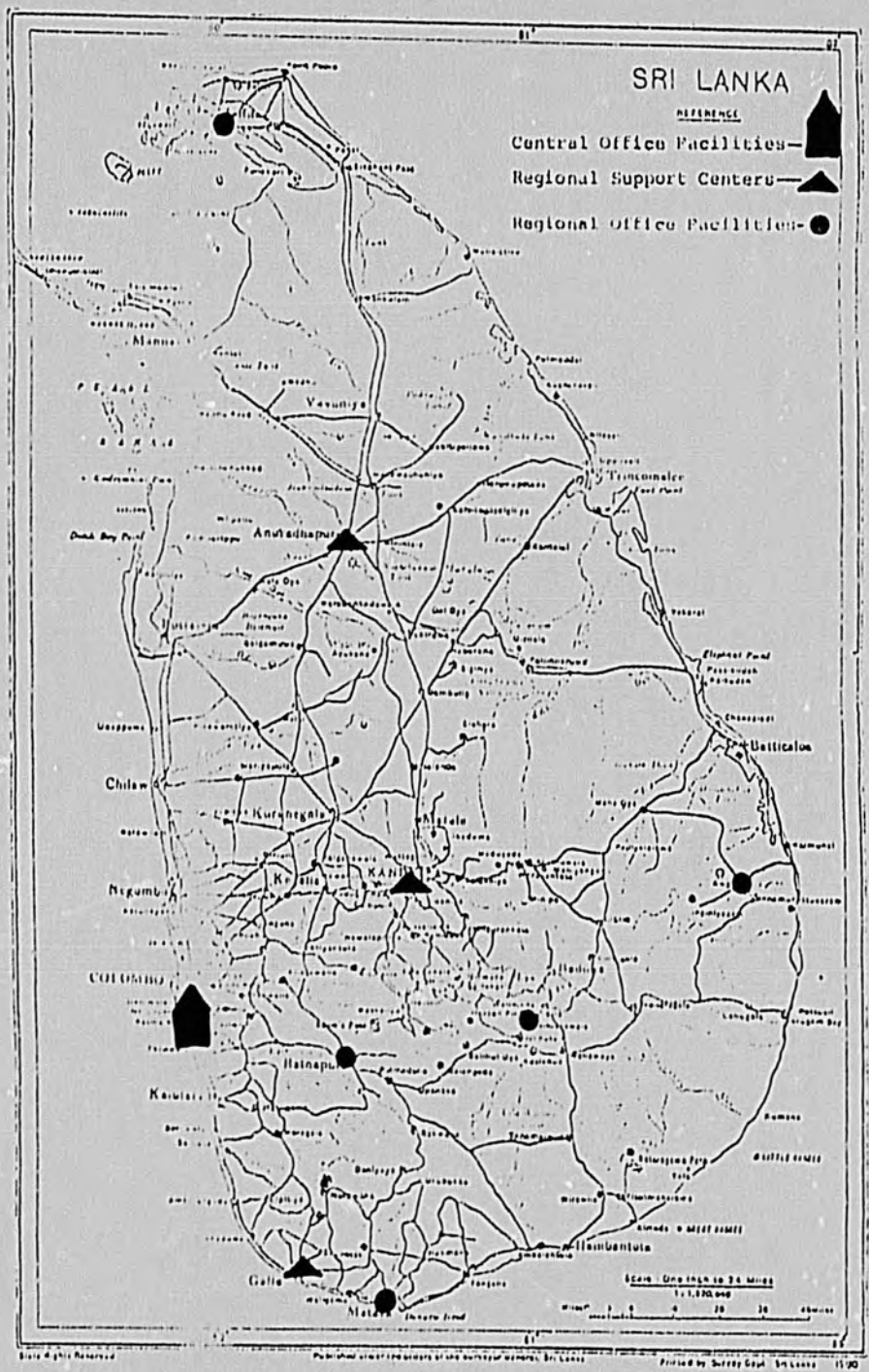
CAPITAL FACILITIES MANAGEMENT

Planning
Design
Construction
Rehabilitation

OPERATIONS AND MAINTENANCE

Process Control
Maintenance Management
Water Quality

Figure 7


SRI LANKA
REFERENCE
Central Office Facilities
Regional Support Centers
Regional Office Facilities
Mannar
Vavuniya
Trincomalee
Batticaloa
Chilaw
Kurunegala
Negumbo
Ratnapura
Kalutara
Galle
Matara

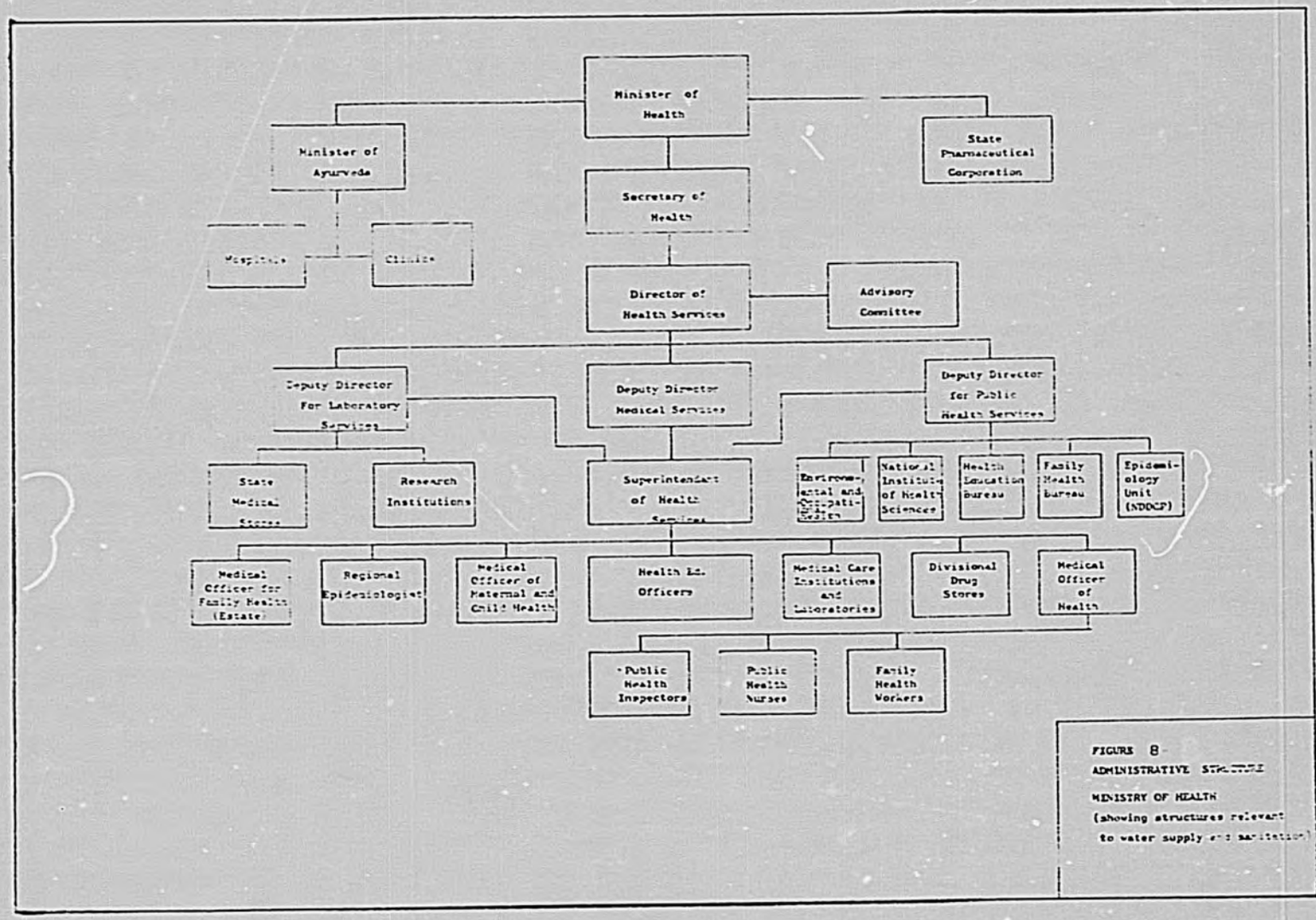


FIGURE 8

ADMINISTRATIVE STRUCTURE

MINISTRY OF HEALTH

(showing structures relevant to water supply and sanitation)

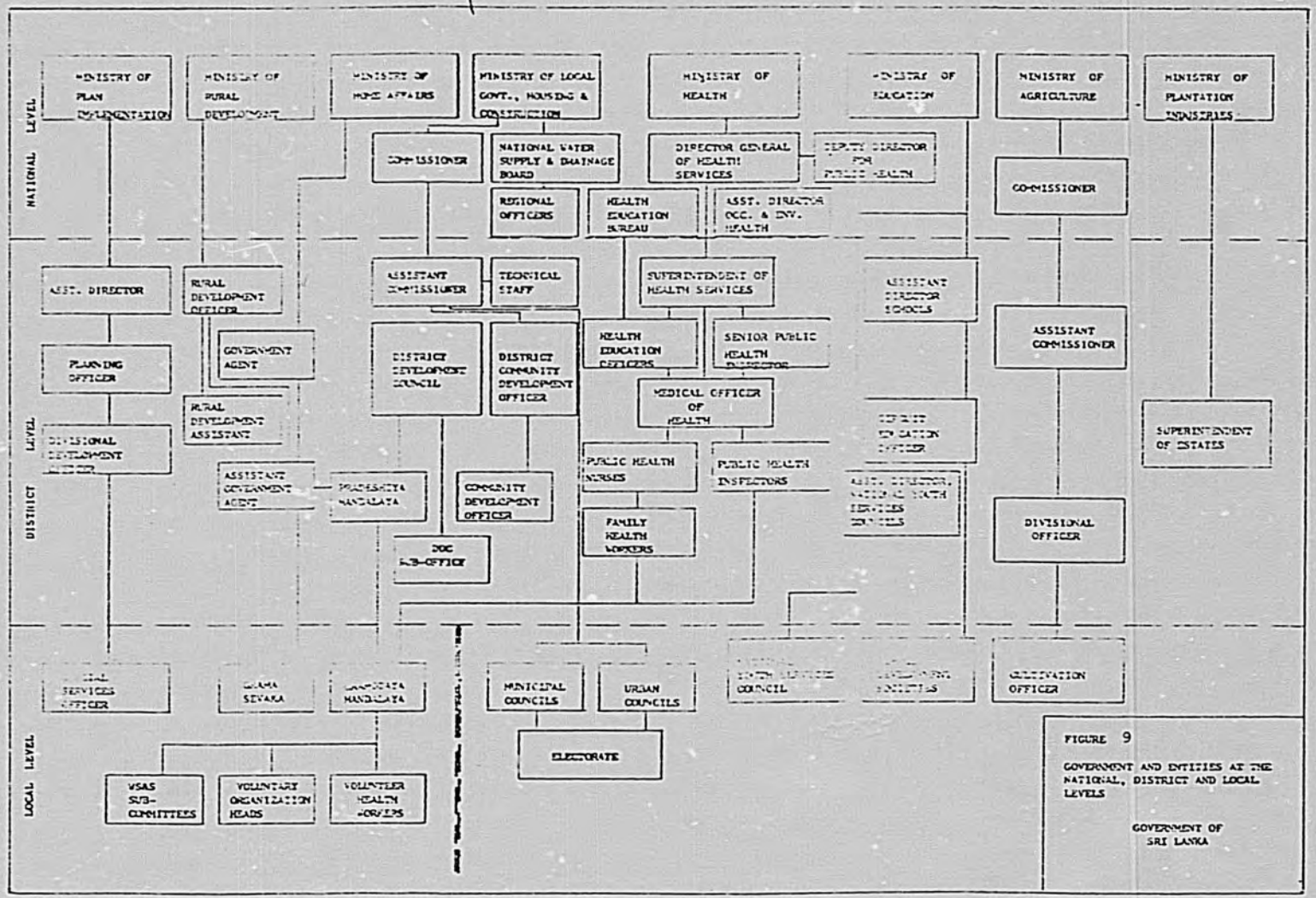


FIGURE 9

GOVERNMENT AND ENTITIES AT THE NATIONAL, DISTRICT AND LOCAL LEVELS

GOVERNMENT OF SRI LANKA

Annex G

Waiver Control No.

ACTION MEMORANDUM FOR THE DIRECTOR

THROUGH: Mr. Leroy Purifoy, Chief, MWRD

FROM : Eric R. Loken, Project Officer, MWRD

SUBJECT: Vehicle Waiver Request - Water Supply and Sanitation Project (383-0088)

PROBLEM: Your approval is required to waive restrictions of Section 636(i) of the Foreign Assistance Act of 1961, as amended (the Act), and to authorize a source/origin waiver from Code 000 (U.S.only) to Code 935 (Special Free World) allowing the purchase of six four-wheel drive land vehicles for use in the subject project. Under delegation of authority 40.10 (revised), and subject to the limitations in HB 1B, Chapter 4.C.2.d, you have authority to waive requirements of manufacture in the United States of AID-financed project vehicles up to $50,000 per transaction, exclusive of transportation costs.

(A) Cooperating Country:	Sri Lanka
(B) Project:	Water Supply and Sanitation Project (383-0088)
(C) Nature of Funding:	Loan (Section 104)
(D) Description of Goods:	6 Four-Wheel Drive Land Vehicles(diesel)
(E) Approximate Value:	$48,000
(F) Probable Source and Origin:	Japan

DISCUSSION: The vehicles in question will be purchased by the National Water Supply and Drainage Board (NWSDB) of the Ministry of Local Government Housing and Construction (MLGHC) and reserved initially for use by long and short-term TA contractor personnel for the duration of their project work in Sri Lanka ($\pm$ 3 years). Thereafter, the vehicles will become part of the NWSDB transportation pool for use in normal day-to-day operations.

Title to all of the vehicles will be held by the NWSDB. Vehicle fuel and maintenance costs for the duration of their use under the project will be funded by AID through the technical assistance contract.

All of the vehicles will be used to transport personnel materials and equipment between central NWSDB/MOH headquarters in and around Colombo and the various Regional Support Centers and regional and sub-regional offices scattered throughout the country. Vehicle support is also required for monitoring progress in the six construction/rehabilitation subproject communities. In each of these areas, monitoring implementation progress is considered critical to the institutional development effort and, therefore, overall project success. Land vehicles are required due to their more sturdy construction (vs. sedans) allowing accessibility to off-road areas and performance under a wide variety of roadway conditions.

JUSTIFICATION FOR WAIVER: The waiver is justified on the basis of inadequate servicing and spare parts facilities in Sri Lanka for comparable right-hand drive land vehicles

manufactured in the U.S. A vehicle meeting the specifications - right-hand drive, minimum six-person carrying capacity, diesel powered, with four-wheel drive - is manufactured in the U.S. by American Motors Corporation. However, there is a demonstrated lack of spare parts and servicing capability for AMC vehicles in Sri Lanka; AMC spare parts are virtually unobtainable in country and the local dealer representative, United Motors, has been unable to service adequately the AMC vehicles now in country, resulting in lengthy downtime and project delays. In addition, the land vehicles in question are compatible with the existing NWSDB fleet so that they can be integrated into ongoing maintenance programs.

RECOMMENDATION: Based upon the justification presented above, it is recommended that you approve the required source/origin waiver from AID Geographic Code 000 to AID Geographic Code 935 to permit the procurement of the four vehicles. Your approval of the waiver will constitute your certification that, "Exclusion of procurement from Free World countries other than the cooperating country and countries included in Code 941 would seriously impede attainment of U.S. foreign policy objectives and objectives of the foreign assistance program".

Approved : _____

Disapproved : _____

Date : August 22, 1984

COMMODITY PROCUREMENT PLAN

A. Procurement Responsibilities

All AID-funded procurement under the project will be the responsibility of the prime technical assistance contractor, with assistance as needed from the USAID Commodity Procurement Specialist and the Regional Commodities Management Office (RCMO) in Bangkok. In view of the large and varied amount of anticipated purchases in the U.S., it is expected that the TA contractor will select a professional U.S. Procurement Services Agent (PSA) to undertake off-shore procurements. In such event, the contractor will negotiate and conclude, subject to USAID/RCMO approval, a procurement services contract with the selected PSA to be signed as soon as possible following signature of the TA contract. The contractor will be made aware of AID procedural regulations governing the PSA selection process. Primary responsibility for monitoring the PSA contract will lie with the contractor, with every reasonable assistance extended by USAID.

GSN-funded project procurement, all local with the exception of vehicles, will be the responsibility of the newly consolidated Supplies, Stores, Tenders and Contracts Unit in the NWSDB Commercial Division. Newly recruited, professional, Central Office Supplies and Stores Clerks will assume primary NWSDB procurement responsibility, under the initial guidance of the long-term supplies and stores advisor (24 pm) and with assistance from USAID/RCMO personnel as required.

B. NWSDB Procurement Capability

A review of NWSDB Supplies, Stores, Tenders and Contracts activities found that these critical activities need considerable strengthening (see Annex A, Project Design Report). NWSDB, at its creation, adopted the procurement procedures of its predecessor agency which used standard government procedures. NWSDB has outgrown many of these procedures and an excessive staff turnover rate has resulted in a serious deterioration in the systems used to procure and warehouse commodities.

NWSDB has demonstrated that it is capable of adequate procurement when tenders are required, particularly for off-shore procurement. NWSDB's tender procedures are sound and are consistent with government and AID procedures. The weakness of the tender process is NWDSB's ability to draft comprehensive specifications supporting the tender documents, particularly if the tenders require input from several of NWSDB's operating divisions. The Office of Tender and Contracts has no technical expertise and must rely on the operating divisions to prepare the supporting documentation. However, in spite of these difficulties, NWSDB has demonstrated on several occasions that is capable of procuring required technical assistance and commodities.

Supplies, the local purchase of materials costing less than Rs.200,000 ($8,000), appears to have even more operational difficulty than tenders, in spite of the fact that local suppliers are used. The problems appear to be two-fold, materials identification and staffing. The supplies function, like tenders, relies almost exclusively on the requesting unit to prepare a description of the material needed. Such identification is made difficult because of a lack of manufacturer's catalogues and parts lists. Frequently, the regions

must transport the broken part to Colombo to locate a replacement or substitute. The difficulties in stores described below, in particular the absence of minimum inventory levels for highly consumable items, aggravate procurement problems and necessitate frequent emergency procurement.

Many of the supplies and stores positions are viewed as technical in nature and thus are staffed with engineers. Most of these engineers have little experience or acumen for supplies management. Many perceive that the positions are not career enhancing and a high rate of turnover has occurred. The senior management position in Supplies (Chief Engineer, Supplies) has had an excessively high turnover rate in the past three years.

Stores, the receiving, warehousing and distribution of goods, is also in need of considerable strengthening. The documentation accompanying goods received, inspection and testing of goods received, stock inventory control, storage space and distribution procedures all need upgrading. The warehouse inventory needs a complete turnover to remove obsolete or deteriorated goods.

The initial years of this project are expected to place a very significant demand on the supplies and stores capabilities of NWSDB. A large quantity of facilities equipment and furnishings, construction and rehabilitation materials, increased quantities of chemicals and a high turnover of existing inventory must occur in the first three years if the project is to be successful. Therefore, the project design has incorporated several special actions to strengthen these activities during the initial years (see Project Description). A long-term technical advisor, an expert in procurement systems and warehousing, will be provided to design and assist in the implementation of improved supplies and stores systems. Existing Central warehouse facilities will be upgraded and secure warehouse space will be constructed at three, geographically-spread Regional Support Centers and five regional offices. Additional transport vehicles will be purchased to expedite the delivery of materials. NWSDB will be encouraged to recruit or train staff desirous of pursuing careers in supply management. The special actions proposed by the project will permit NWSDB to carry out its critical supplies and stores responsibilities throughout the life of the project and beyond.

C. Commodity List

Estimated project equipment and commodity needs are listed in association with their respective facilities in Annexes I-4 to I-8. As soon as is practical following contractor mobilization, the contractor and NWSDB will prepare detailed listings of commodities to be procured during the project, including a breakdown of annual requirements, probable source of purchases, estimated costs and plans for utilization. All such lists of AID-funded commodities will be subject to USAID review and approval prior to ordering.

D. Source/Origin of Procurements

The authorized sources of procurement for this project are Code 941 and host country. It is anticipated that most purchases can be made in these countries, with the exception of vehicles and video training equipment and accessories to be purchased from Code 935 countries (probably Japan). A waiver is included in Annex G for AID-funded consultant vehicles for the project. A waiver for video training equipment (not available in Code 941 countries) will be prepared at the time of purchase following a more detailed examination of project needs. Other Code 935 procurements, although not foreseen at present, will be made on a case-by-case basis, only if authorized by USAID and in accordance with Agency waiver requirements.

B. Method of Procurement

Procurements will be the responsibility of the prime contractor, who will insure that they are accomplished in accordance with A.I.D. regulations and good commercial practices. As a matter of procedure, it is recommended that the following guidelines be observed:

a) Selection of PSA:

- The contractor will submit, together with his T/A proposal, the name, qualifications, and experience of the PSA which he wishes to employ. It is recommended that his proposed selection be based on offers solicited from qualified firms. (RCMO is available to provide a short list of such firms).

- Award for PSA services will be effected by a contract between the selected contractor and the PSA, approved by USAID and the NWSDB. (The RCMO will be available, if needed, to assist in the selection process and the preparation of the PSA contract.)

- It is understood that some contractors have procurement capabilities within their own organizations and may wish to act as their own PSAs. In such event, the contractors should submit a detailed statement of experience and qualifications to do procurement work under AID regulations.

B) Purchasing:

- On the basis of the approved detailed equipment lists, NWSDB and the contractor will prepare instructions to cover procurements to be made by the PSA, with assistance from USAID.

- Instructions to the PSA will be issued, on behalf of the NWSDB, by the contractor to initiate the procurement flow, subject to USAID review and approval.

- As most of the needed equipment will be procured largely on the basis of performance specifications, AID will authorize procurement through informal competitive negotiations in such cases rather than formal invitation for bids.

- All formal procurements not purchased through the PSA and having their source and origin in code 899 countries will be executed through formal tender procedures. The NWSDB and the contractor will prepare and execute such documents with USAID's prior approval. The evaluation of bids and issue of awards arising from such tenders will be made by the NWSDB with USAID and contractor concurrence.

- Off-shore small value purchases will be executed using USAID's standard Purchase Order document, completed by the contractor. Such purchase orders will be issued after informal quotations have been evaluated and the

lowest, most responsive bidder has been identified.

- In the case of local source and shelf-item procurements, the NWSDB or contractor will conduct the procurement, subject to advance USAID approval and waiver requirements, in accordance with GSL procurement rules and AID policy.

- When required, advertising of anticipated procurements will be handled by the selected PSA. For local and/or international procurement not handled by the PSA, advertising will be handled by the NWSDB and the contractor in accordance with GSL procedures, subject to approval of USAID.

- Evaluation of offers will be submitted by the PSA to the NWSDB, the contractor and USAID.

- Awards of procurement contracts for all U.S. source purchases will be made within 30 calender days of receipt of the PSA's evaluations, subject to subsequent USAID and NWSDB approval.

- The NWSDB will be responsible for proper receipt, port clearances, inland transport, and expeditious utilization of items purchased.

E. Payment

Responsibility for payments will be with the Controller, USAID/Colombo. The Controller will periodically establish Direct Letters of Commitment through which all U.S. source purchases and the PSA's fee will be paid. Payments for all non-U.S. purchases, except as noted below, will also be made by the Controller as follows:

a) In cases of local procurement, upon presentation of seller's invoice; showing items, price and origin, with acknowledgement of receipt and NWSDB's stock book number, signed by the NWSDB's commodity procurement officer, and countersigned by the contractor.

b) In cases of other non-U.S. procurement, upon presentation of:

- pre-paid, on-board bill of lading;
- copy of packing list;
- copy of supplier's invoice;
- certificate of source and origin;
- insurance certificate;
- supplier's certificate and agreement with A.I.D. for project commodities (AID Form 1450-4); and
- voucher (Standard Form 1034).

F. Delivery

All goods ordered by the PSA will be on the basis of FOB/FAS port of exit. Shipping, in accordance with A.I.D. regulations, will be arranged by the PSA. The PSA will be required to obtain "all risk" warehouse-to-warehouse marine insurance in the amount of

[20% of the C&F cost of the goods. Air freight shipments, when needed and/or more economical, will be approved in advance by USAID.

4. Marking

The NWSDB is aware of A.I.D's marking requirements and will instruct the prime contractor to enforce them in all procurement actions.

5. Receipt and Utilization

The NWSDB will be responsible for monitoring arrivals and clearing goods from Customs. Goods will be received at Central NWSDB stores in Ratmalana, and inspected, distributed and inventoried in accordance with improved NWSDB procedures developed through the project. The designated NWSDB procurement officer(s) will be responsible for inspection of arrivals and the preparation of receiving reports. Reports of shortages or damages will be forwarded to the PSA to file insurance claims, within 30 days of arrival in country. The NWSDB will insure prompt and proper utilization including adequate storage if needed, and will prepare and submit to USAID semi-annual utilization reports, which would also reflect inventory numbers and location.

6. Procurement Schedule

It is anticipated that off-shore procurement will be effected in three major installments, one in each of the first three years of the project as shown in the Implementation Plan. Target dates are keyed to date of approval of the Project Paper.

ANNEX I

DETAILED COST ESTIMATES

EXPENDITURES BY FISCAL YEAR ($000s)
WATER SUPPLY & SANITATION SECTOR PROJECT - 383-0088

Item/Source	1985		1986		1987		1988		1989		TOTAL		PROJECT TOTAL
	AID	GSL	AID	GSL	AID	GSL	AID	GSL	AID	GSL	AID	GSL	
Grant Funds:													
Technical Asst.													
Long-Term	1,074		1,074		623		69		-		2,840		2,840
Short-Term	448		200.5		179		81.5		61		970		970
Subtotal	1,522		1,274.5		802		150.5		61		3,810		3,810
Training													
Health Education Support	15		17.5		23		16.5		10		85		85
Research Studies	10		18		5		13		9		55		55
Total Before Contingency & Inflation	1,550		1,310		830		180		80		3,950		3,950
Contingency (10%)	154		130		82		17		7		390		390
Inflation (8% compounded)	125		215		215		65		40		660		660
Total Grant Expenditures	1,829		1,655		1,127		262		127		5,000		5,000
Loan Funds:													
Training													
Long-Term	30		40		10						80		80
Short-Term	45		55		55		55				210		210
Workshops, Seminars, etc.													
. U.S. and 3rd Country	-		10		10		10				30		30
. In-Country	5	5	5	7.5	5	7.5	5	2.5	5	2.5	25	25	50
Commodities	781	162	502	702.5	494	207.5	8	9.5	-	3.5	1,785	1,085	2,870
Facilities	359	293	608	290	331	270	42	192	-	40	1,340	1,085	2,425
Construction	-	-	-	-	425	280	540	366	425	279	1,390	925	2,315
Rehabilitation	-	-	-	-	200	100	200	200	200	100	600	400	1,000
Recurrent Costs		85		130		220		240		245		920	920
Total Before Contingency & Inflation	1,220	545	1,220	1,130	1,530	1,085	860	1,010	630	670	5,460	4,440	9,900
Contingency (10%)	120	53	120	112	153	108	84	100	63	67	540	440	980
Inflation*	97	80	200	360	397	560	310	750	296	670	1,300	2,420	3,720
Total Loan Exp.	1,437	678	1,540	1,602	2,080	1,753	1,254	1,860	989	1,407	7,300	7,300	14,600
Total Project Exp.	3,266	678	3,195	1,602	3,207	1,753	1,516	1,860	1,116	1,407	12,300	7,300	19,600

*AID inflation calculated at 8% annual compound rate; GSL inflation calculated at 15% annual compound rate.

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PROJECT EXPENDITURES BY FISCAL YEAR ($000s)
WATER SUPPLY & SANITATION SECTOR PROJECT - 383-0088

Fiscal Year	A I D			GSL Total	Project Total
	Grant	Loan	Total		
1985	1,550	1,220	2,770	545	3,315
1986	1,310	1,220	2,530	1,130	3,660
1987	830	1,530	2,360	1,085	3,445
1988	180	860	1,040	1,010	2,050
1989	80	630	710	670	1,380
Contingency	390	540	930	440	1,370
Inflation	660	1,300	1,960	2,420	4,380
Total	5,000	7,300	12,300	7,300	19,600

COSTING OF PROJECT OUTPUTS/INPUTS ($000s)

WATER SUPPLY AND SANITATION SECTOR PROJECT - 383-0088

Source/Use	Institutional Development	Health Education, Sanitation & Community Participation	Monitoring & Evaluation	Project Total
AID Grant Funds				
Technical Assistance	3,[illegible].5	398	289.5	3,810
Training	-	85	-	85
Research Studies	25	-	30	55
Subtotal	3,147.5	483	319.5	3,950
Contingency	310.5	47.5	32	390
Inflation	526	80.5	53.5	660
Total AID Grant Funds	3,984	611	405	5,000
AID Loan Funds				
Training	265	80	-	345
Commodities	1,693	37	55	1,785
Facilities	1,337	-	3	1,340
Construction	972	418	-	1,390
Rehabilitation	600	-	-	600
Subtotal	4,867	535	58	5,460
Contingency	481	53	6	540
Inflation	1,158	127	15	1,300
Total AID Loan Funds	6,506	715	79	7,300
TOTAL AID FUNDS	10,490	1,326	484	12,300
GSL Funds				
Training	25	-	-	25
Commodities	1,059.5	9.5	16	1,085
Facilities	1,070	5	10	1,085
Construction	648	277	-	925
Rehabilitation	400	-	-	400
Recurrent Costs	840.5	68.5	11	920
Subtotal	4,043	360	37	4,440
Contingency	400	36	4	440
Inflation	2,204	196	20	2,420
TOTAL GSL FUNDS	6,647	592	61	7,300
TOTAL PROJECT FUNDS	17,137	1,918	545	19,600
% OF PROJECT FUNDS	87	10	3	100

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ANNEX I-2

Technical Assistance Cost Summary

1. Long-Term Expatriate Advisors:

- Management/Commercial Advisor	-	40 pm	
- Human Resources Development and Training Advisor	-	36 pm	
- Environmental Engineer	-	36 pm	
- Supplies & Stores Specialist	-	24 pm	
- Operations & Maintenance/Water Quality Advisor	-	24 pm	
- Public Health Specialist	-	30 pm	
Total		190 pm	
@ $14,000/pm	=		$2,660,000

2. Long-Term Local Advisors:

- Operations & Maintenance Specialist	-	40 pm	
@ $1,500/pm	=		$60,000
- Public Health/Health Education Specialist	-	30 pm	
@ $1,250/pm	=		$37,500
- Social Scientist	-	30 pm	
@ $2,250/pm	=		$37,500
- 3 Technical Assistants (Health/Social Science Expertise)	-	90 pm	
@ $500/pm	=		$45,000
Total			$ 180,000

3. Short-term Expatriate Consultants:

- Short-term expertise in management, commercial, human resources development and training, environmental engineering, operations and maintenance, water quality surveillance, public health/health education and evaluation areas	-	58 pm total	
@ $15,000/pm	=		$ 870,000

4. Short-term Local Consultants:

- Short-term expertise in management, commercial human resources development and training, evaluation and publication areas	-	100 pm total	
@ $1,000/pm	=		$ 100,000

Technical Assistance Cost Summary

1.	Long-term Expatriate Advisors	2,660,000
2.	Long-term Local Advisors	180,000
3.	Short-term Expatriate Consultants	870,000
4.	Short-term Local Consultants	100,000
		$3,810,000

Technical Assistance Total

Note: Figures include costs of secretarial support, vehicle fuel and maintenance.

ANNEX I-3

Training Cost Summary

1. Long-Term Training:

   - 2 master's degree candidates (2 years each)-
     23± months x $1,700/month = $40,000 each.
     2 candidates x $40,000 each = $80,000
     Subtotal $80,000

2. Short-Term Training:

   - 19 Study tours (U.S. and 3rd country; 2± months each)-
     2 months x $5,000/month = $10,000 each
     19 tours x $10,000 each = $190,000
   - 5 Research tours (U.S. and 3rd country; 1± month each)-
     1 month x $4,000/month = $4,000 each
     5 tours x $4,000 each = $20,000
     Subtotal $210,000

3. Workshops, Seminars and Conferences

   - 10 U.S. and 3rd country @ $3,000 each = $30,000
   - 10 In-country @ $2,500 each = $25,000
   - 5 In-country @ $5,000 each = $25,000
     Subtotal $ 80,000

4. Health Education Support:

   - Miscellaneous materials, per diem, transport and other direct costs for in-country health education, sanitation and community participation training (see Project Design Report, Annex C, Table C-11).
     = $ 85,000

Training Cost Summary

1.	Long-Term Training	$80,000
2.	Short-Term Training	$210,000
3.	Workshops, Seminars & Conferences	$80,000
4.	Health Education Support	$85,000
	Training Total	$455,000

Note: Figures include tuition, fees, living allowance and/or per diem and transportation costs, where applicable.

ANNEX 1-4

Central Office Facilities & Equipment

Summary of Costs

Item	Estimated Cost (US$)	Detail on Page No.
Workshops	313,260	2
Laboratory	132,160	4
Training Facilities	417,755	6
Offices and Stores	73,840	8
Transport	208,000	8
Yard and Utilities	61,040	8
Total Cost	1,206,055	

EQUIPMENT LIST - _____ WORKSHOP

Item	Qty.	Costs ($)
A. Electrical Shop Equipment		
Volt-ohm-ammeter	4	500
Wattmeter-clipon	4	400
Soldering gun, 240/425W	4	300
Soldering gun, 150W	4	200
Lifting Crane	2	2,000
Power factor meter, clipon	2	200
Bench vises	6	600
Tool set, master electrician	4	2,000
Drill press, with bits	3	1,200
Grinder, bench	2	300
Insulation tester, 500V	3	600
Parts cleaner manual	1	100
Tachometer, digitel hand	2	100
Welder, portable 230V	1	1,200
Welding Protective gear set	2	200
Misc. equipment	-	500
Rewinding Machine	2	19,000
Coating Vat.	2	1,200
Baking Oven	3	2,700
Ladders, Protective gear	4	800
Portable Generator, Wheel mounted	2	9,000
Initial Outfitting Allowance	-	9,000
T O T A L		52,000

WORKSHOP COST SUMMARY

Workshop Construction

- No new construction. Rehabilitate 5 Bldgs. @ 1800 sq. ft. each 5 x 1800 x $5	45,000
- Construct 4 new vehicle bays (closed) 4 x 16 x 24 x $20	30,720
- Construct 4 new vehicle bays (open) 4 x 16 x 24 x $10	15,360
- Construct 4 tool cribs 4 x 16 x 15 x $10	9,600
- Construct 3 washrooms/restrooms 3 x 12 x 16 x $20	11,520
- Construct 4 offices 4 x 12 x 12 x $10	5,760
- Office Furnishings 4 x $500	2,000
Total Building Costs	$ 119,960

Equipment Costs - see next sheets

Electrical Shop	$ 52,000
Mechanical Shop	$ 81,000
Mobile Maintenance Shop	$ 16,500
Vehicle Shop	$ 30,900
Meter Shop	$ 13,000
Total Equipment Costs	$ 193,300
Total Workshops Costs	$ 313,260

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Item	Qty.	Costs ($)
B. Mechanical Shop Facility Set (Lamp/Welding)		
Electric Hoist	-	1,800
Pipe Stand	-	1,100
Monorail	3	7,200
Welder 230 amp	2	2,400
Welder, Gas with torches & hose	3	2,400
Lathe, with accessories	1	3,000
Tool set, master mechanic, Metric	8	4,800
Tool set, machine shop, English	1	500
Tool set, Carpenters	1	200
Welding protective gear set	4	300
Grinder, pedestal	3	1,200
Grinder, bench	2	300
Clamps, assorted set	6	300
Cutting torch	2	800
Bench vise	5	500
Milling machine, small	1	1,400
Drill press, with bits	3	1,400
Hydraulic press, 10 ton	1	3,500
Hydraulic press, 40 ton	1	8,000
Lifting crane	4	4,000
Parts cleaner	2	300
Pipe threaders	2	1,600
Chain vice, portable	2	300
Blower, portable electric	2	250
Puller set, master	2	400
Extension ladder	4	400
Paint Sprayer	3	400
Step ladder	2	750
Lever hoist, 3/4 ton	1	200
Chain fall, 2 ton	3	600
Pipe wrenches, set	4	1,200
Cables, wire rope, set	2	1,100
Level, calipers, shacteles	2	300
Air compressor, 2 stage	1	2,400
Portable Grinders	2	300
Initial Outfitting-Allowance	1	15,000
Vibration Analyzer	1	2,400
Impeller Repair	-	8,500
T O T A L		81,500

Item	Qty.	Costs ($)
C. Mobile Maintenance Shop		
Tool set, Portable	2	1,000
Portable Generator	1	1,800
Tool set, electrical, portable	2	500
Welder, Portable, 240 amp	1	1,200
Welder, gas with torches and hose	1	800
Welding, Protective gear set	4	300
Grinder, portable	2	300
Clamps, assorted set	2	100
Cutting torch	2	250
Drill, portable, electric	2	200
Chain fall, 2 ton	2	800
Parts cleaner, manual	2	150
Pipe threader	2	1,600
Chain vice, portable	2	200
Extension ladder	2	200
Step ladder	2	200
Pipe wrenches, set	2	400
Cables, wire rope, set	2	300
Level, calipers, shackles, set	2	300
Air compressor, portable	2	2,000
Miscellaneous Equipment	-	1,500
Initial Outfitting Allowance	-	2,500
T O T A L		16,600

Item	Qty.	Costs ($)
D. Vehicle Shop Equipment		
Tool set, auto service, metric	8	3,600
Puller Set, auto	2	400
Parts cleaner, manual	2	200
Strobe light, ignition timing	4	600
Floor jack, 10 ton	4	1,600
Floor jack, 5 ton	4	800
Valve spring compressor	4	600
Drill electric, with bits	2	200
Cooling system tester	2	400
Battery tester	4	100
Tool set, auto body repair	2	500
Spray gun, industrial grade	4	400
Air compressor, 2 stage	2	4,200
Piston ring expanders	4	400
Piston ring compressors	4	800
Piston groove cleaner cutter	2	700
Portable ramps	4	3,200
Tire racks	6	1,600
Vehicle Wash Rack	-	2,200
Paint Sprayer	4	1,000
Initial Outfitting Allowance	-	6,000
Miscellaneous Equipment	-	1,200
T O T A L		30,500

E. Meter Shop

		$
Tool Set, Mechanic	3	1,800
Soldering Set	3	200
Bench Vises	6	500
Drill Press	3	1,200
Air Compressor	1	1,400
Benches	6	1,200
Threader	1	800
Calibration Tank	1	1,800
Bench Grinder	1	150
Misc. Tools, Clamps	-	1,750
Initial Outfitting Allowance	-	3,000
T o t a l		$ 13,800

LABORATORY COST SUMMARY

Laboratory Rehabilitation

Lab Space - 40' x 70' x $ 12 1 sq. ft.	=	$ 33,600
Counters/Cabinets	=	$ 9,000
Special Ventilation	=	$ 4,000
Airconditioning	=	$ 8,000
Office - 3' x 12' x 15 x $ 15	=	$ 8,100
Office Furnishings (Includes typewriter and copier)	=	$ 4,000
Total Building Cost		$ 66,700
Laboratory Equipment (see next sheet) Total		$ 65,460
Total Laboratory Cost		$ 132,160

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EQUIPMENT LIST - LABORATORY

I T E M	Qty.	Costs(US$)
Water Distillation unit 3 gph	3	2,400
Storage carboys, plastic, 5 gal	6	300
Autoclave	1	2,000
Bact. Incubator, 37	1	1,800
BOD Incubator	1	1,600
Refrigerator	1	2,000
Racks, tubes, caps, set	6	600
Dehydrated media, containers	3	300
Water analysis pipets & storage cans, sets	20	1,600
Bottle-gas burner, transfer loops	2	100
Mixing vessels, 2 qt	4	200
Balance, 0.1 mg sensitivity	2	3,000
Burets, holders	8	200
Assorted beakers, flasks	100	2,000
Hot-plate	4	200
Assorted chemicals, lot	1	6,000
Solution bottles, 500 ml	40	600
Assorted volumetric glassware	200	2,000
Assorted volumetric pipets	40	200
Turbidity meter	4	300
pH meter & buffer solutions	2	2,200
Conductivity meter	4	600
Funnels & filter paper, set	20	300
Assorted measuring cylinders	50	500
Glassware cleaning brushes,sets	12	200
Lab aprons or coats	20	80
Safety goggles, pair	6	80
Fire-extinguisher	4	400
First-aid kit	3	150
Fume hood	2	4,000
Drying oven	1	600
Dessicators	2	500
Colorimeter	1	100
Misc ring-stands	10	300
Water-bath incubator, 44.5	1	400
Small muffle furnance	1	950
Porcelain ware, tongs, set	10	200
Electric steam bath	1	500
Microscope & accessories	2	3,200
Petri dishes, set	20	1,000
Innoculating needles, set	10	600
Dehydrated media for SPC, container	6	600
Petri dish racks & cans, set	20	1,000
Chlorine residual analyzers	4	1,000
Spectrophotometers	1	900
6 - place distillation unit	1	600
4 - place titration bench	1	4,500
Steam bath	1	2,000
Reference weight set	1	200
Centrifuge	1	1,400
Dissolved oxygen probe	1	600
Vacuum pump	1	1,200
Miscellaneous allowance	-	7,000
T O T A L		$65,460

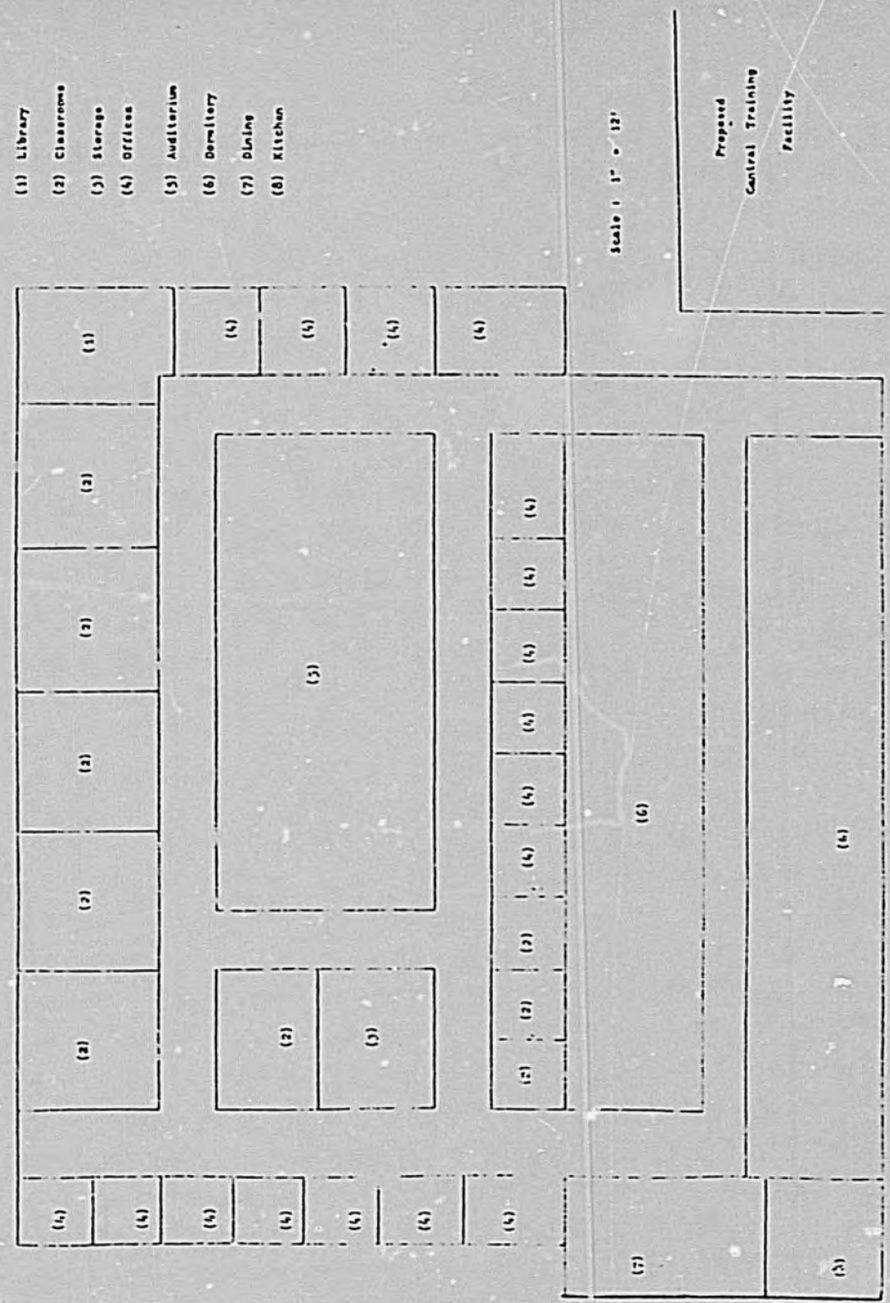
TRAINING FACILITIES

Training Building Construction

Offices - AGM	-	12'x15'	= 180	
- HRD Spec	-	12'x12'	= 144	
- Instructors	-	5'x12'x12'	= 720	
- Instructors	-	20'x10'x10'	=2000	
			3044 x $20	= $ 60,880
Classroom 6 - 16 x 20			=1920 x $20	= $ 38,400
Library 1 - 16 x 20			= 320 x $20	= $ 6,400
Graphics 1 - 16 x 20			= 320 x $20	= $ 6,400
Storage 1 - 20 x 20			= 400 x $20	= $ 8,000
Auditorium 100 @ 20 sq.ft.			=2000 x $20	= $ 40,000
Dormitory 60 @ 65			=3900 x $20	= $ 78,000
Kitchen 1 - 20 x 20			= 400 x $40	= $ 16,000
Dining 1 x 60 x 12			= 720 x $20	= $ 14,400
Restroom 10 x 30			= 300 x $30	= $ 9,000
		Total Building Cost		$ 277,480

Equipment and Furnishings
(see next sheet) 140,275

Total Costs Training 417,755



Video Equipment

Color Camera	3 @ $800	= $	2,400
Tripod	3 @ $100	= $	300
Rolling Table	3 @ $100	= $	300
Video Recorder	3 @ $800	= $	2,400
Extension Cables	3 @ $ 50	= $	150
Transformer	3 @ $ 25	= $	75
Color TV - 27"	3 @ $700	= $	2,100
		$	7,725

Audio-Virual Training Aids

Camera and Lens	2 @ $700	= $	1,400
Slide Copier	2 @ $750	= $	1,500
Overhead Copier	5 @ $450	= $	2,250
Slide Projector	4 @ $600	= $	2,400
16mm Projector	3 @ $900	= $	2,700
Portable Screen	5 @ $300	= $	1,500
Easels	12 @ $ 75	= $	900
White Board-rollers	10 @ $200	= $	2,000
Sound System	3 @ $2500	= $	7,500
		$	22,150

Library

Films, subscriptions, books		= $	12,000
		= $	12,000

Workshops

Cutaway Pumps		= $	12,000
Packing Glands		= $	2,500
Pump Shafts		= $	1,500
Plant Models		= $	6,000
Filter cutaways		= $	3,500
Distribution System Model		= $	6,000
Pipe Sections and Fittings		= $	1,200
Electric Circuit boards		= $	2,400
Electric Motors and cutaways		= $	5,400
Miscellaneous allowance		= $	8,500
		$	49,000

Furnishings

Offices	- Furniture	27 x $300	= $	8,100
	Typewriters	10 x $1500	= $	6,000
	Copier	30 x $3800	= $	11,400
	Drafting Table	3 x $800	= $	2,400
	Binder and Punch	2 x $600	= $	1,200
Classroom		80 sets x $40	= $	3,200
Storage/Library	Shelves, tables, chairs		= $	1,500
Dormitory		60 x $80	= $	4,800
Kitchen	Equipment		= $	5,000
Dining Room		60 people x $30	= $	1,800
Auditorium		100 x $40	= $	4,000
				======
		Total Furnishings	= $	49,400

Total Equipment and Furnishings -$ 140,275

STORES COST SUMMARY

Rehabilitation			
- Bldg.	- 3200 x $ 5	=	$ 16,000
- Open Space	- 4000 x $ 3	=	$ 12,000
- Controlled Climate	- 1 - 20x32x $20	=	$ 12,800
New Construction			
Office	- 12x12x $20	=	$ 2,880
Dock/Fork Office	- 12x12x $15	=	$ 2,160
Racks, bins, etc.		=	$ 6,000
Equipment			
5 - mechanical hoists x $ 1,600		=	$ 8,000
Tools		=	$ 1,500
Office Furnishings		=	$ 500
Initial Outfitting Allowance		=	$ 12,000
Total Stores Costs		=	$ 73,840

YARD AND UTILITY COSTS

Site Preparation			
- Training Facility		=	$ 5,000
Yard Paving			
Shops, Stores and Training Facility			
5 x 20 x 20	= 2,000		
5 x 20 x 20	= 4,000		
1 x 60 x 80	= 4,800		
1 x 20 x 40	= 800		
Misc.	= 2,000		
	13,600 ft.		
	1,510 sq.yd.x$4		$ 6,040
Emergency Generator			
2 - @ $ 25,000		=	$ 50,000
Total Yard and Utility Costs			$ 61,040

TRANSPORT COST SUMMARY

Vehicles			
Light Trucks, double cab			
- Mobile Maintenance	2		
- Training	1		
- Stores	2		
- Workshops	2		
	7 x $ 10,000	=	$ 70,000
Jeeps			
- Lab	2 x $ 9,000	=	$ 18,000
Vans			
- Training	2 x $ 12,000	=	$ 24,000
Heavy Duty Trucks			
- Stores	2 x $ 21,000	=	$ 42,000
Stores w/lifting crane	2 x $ 27,000	=	$ 54,000
			$ 208,000

Regional Support Center
Facilities & Equipment

Summary of Costs*

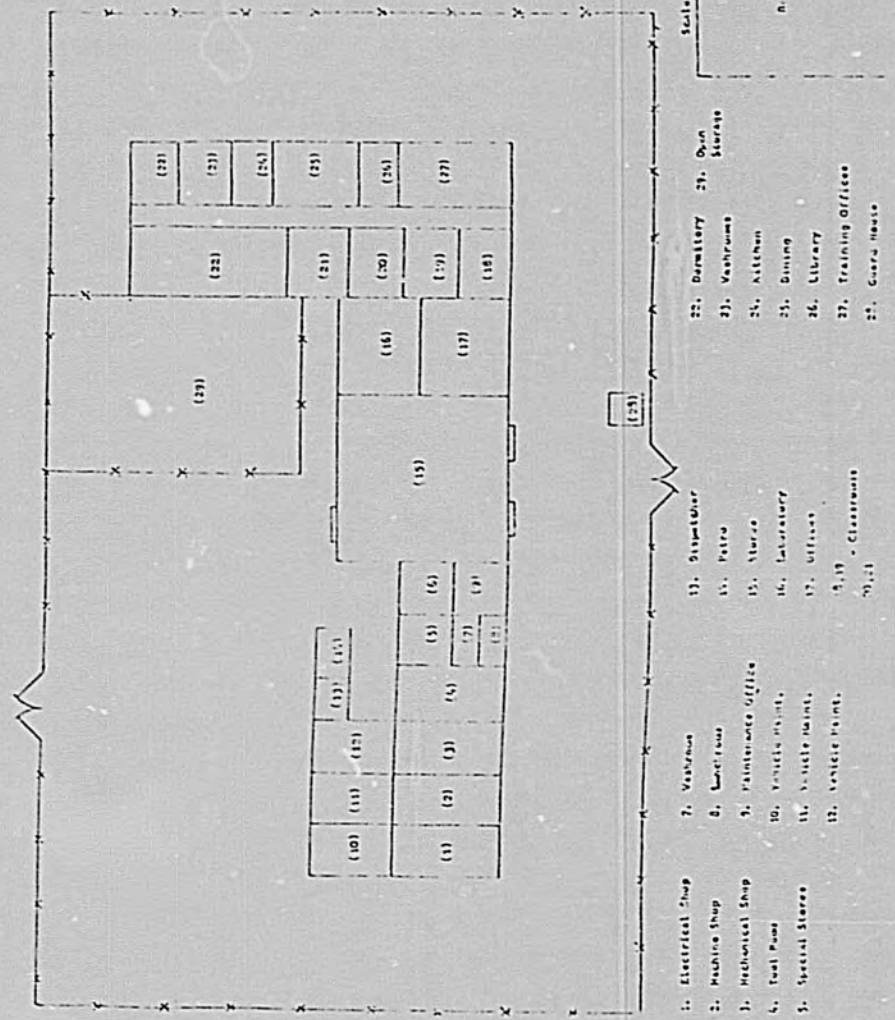
Item	Estimated Cost (US$)	Detail on Page No.
Workshops	178,130	2
Laboratory	58,600	4
Training Facilities	192,245	5
Offices and Stores	74,600	6
Transport	141,700	7
Yard and Utilities	80,300	8
Total Cost	724,075	

Note: One regional center will not have a training facility.

Costs for this center are:

Workshops	178,130
Laboratory	58,600
Training Facilities	-
Offices and Stores	74,600
Transport	119,700
Yard and Utilities	7,000
Total Cost	438,030

* Costs shown are for one RSC facility.



WORKSHOP COST SUMMARY

Workshop Construction - 14 ft. posted building

			Ft. 2		
Electrical	16' x 32'	=	512		
Mechanical	16' x 32'	=	512		
Mechanical	16' x 32'	=	512		
Vehicle	16' x 24'	=	384		
Machine	16' x 24'	=	384		
			2304	x $ 20	= $46,080
Vehicle Bays	2'x16'x24'	=	768		
			768	x $ 10	= $ 7,680
Maintenance Office	16' x 15'	=	240		
Tool Crib	16' x 15'	=	240		
Work Room	8' x 16'	=	128		
Lunch Room	8' x 16'	=	128		
			736	x $ 10	= $14,720
Total Building Costs (Workshops)					= $68,480

Equipment Costs - see next sheets

Electrical Shop	$	36,350
Mechanical Shop	$	41,250
Mobile Maintenance Shop	$	16,500
Vehicle Shop	$	15,450
Total Equipment Costs (Workshops)	$	109,650
Total Workshops Costs	$	178,130

EQUIPMENT LIST - ELECTRICAL WORKSHOP

Item	Qty.	Costs ($)
A. Electrical Shop Equipment		
Volt-ohm-ammeter	2	250
Wattmeter-clipon	2	200
Soldering gun, 240/325W	2	150
Soldering gun, 150W	2	100
Lifting Crane	1	1,000
Power factor meter, clipon	2	200
Bench vises	3	250
Tool set, master electrician	2	1,000
Rail press, with bits	1	400
Grinder, bench	2	300
Insulation tester, 500V	1	200
Parts cleaner manual	1	100
Tachometer, digital hand	2	100
Welder, portable 230V	1	1,200
Welding Protective Gear set	2	200
Misc. equipment	-	3,000
Rewinding Machine	1	9,500
Coating Vat.	1	600
Baking Oven	2	1,800
Ladders, Protective gear	4	800
Portable Generator, Wheel mounted	2	9,000
Initial Outfitting Allowance	-	6,000
T O T A L		36,350

Item	Qty.	Costs ($)
B. Mechanical Shop(2) Equipment (Pit, Welding)		
Electric Hacksaw	-	1,800
Floor Drills	2	1,100
Hoist	1	4,800
Welder 250 amp.		1,200
Welder, Gas with torches & hose	1	800
Lathe, with accessories	1	3,000
Tool set, Master Mechanic, Metric	3	1,800
Tool set, Master mechanic, English	1	500
Tool set, Carpenters	1	200
Welding protective gear set	4	300
Grinder, pedestal	1	400
Grinder, bench	1	150
Clamps, assorted set	2	100
Cutting torch	2	800
Bench vise	6	500
Milling machine, small	1	1,400
Drill press, with bits	1	450
Hydraulic press, 10 ton	1	3,500
Lifting crane	2	2,000
Parts cleaner	2	300
Pipe threaders	2	1,600
Chain vice, portable	2	300
Blower, portable electric	2	250
Puller set, Master	1	200
Extension ladder	4	400
Paint Sprayer	3	750
Step ladder	2	200
Lever hoist, 3/4 ton	1	600
Chain fall, 2 ton	1	400
Pipe wrenches, set	2	550
Cables, wire rope, set	2	300
Level, calipers, shackeles	2	300
Air compressor, 2 stage	1	1,000
Portable Grinders	2	300
Initial Outfitting Allowance	-	9,000
T O T A L		41,250

Item	Qty.	Costs ($)
C. Mobile Maintenance Shop		
Tool set, Portable	2	1,000
Portable generator	1	1,800
Tool set, electrical, portable	2	500
Welder, portable, 250 amp	1	1,200
Welder, gas with torches and hose	1	800
Welding Protective gear set	4	300
Grinder, portable	2	300
Clamps, assorted set	2	100
Cutting torch	2	250
Drill, portable, electric	2	200
Chain fall, 2 ton	2	800
Parts cleaner, manual	2	150
Pipe threader	2	1,600
Chain vice, portable	2	200
Extension ladder	2	200
Step ladder	2	200
Pipe wrenches, set	2	400
Cables, wire rope, set	2	300
Level, calipers, shackles, set	2	300
Air compressor, portable	2	2,000
Miscellaneous equipment	-	1,500
Initial Outfitting Allowance	-	2,500
T O T A L		15,600

Item	Qty.	Costs ($)
D. Vehicle Shop Equipment		
Tool set, auto service, metric	4	1,800
Puller set, auto	1	200
Parts cleaner, manual	1	100
Strobe light, ignition timing	2	300
Floor jack, 10 ton	2	900
Floor jack, 5 ton	2	400
Valve spring compressor	2	300
Drill electric, with bits	1	100
Cooling system tester	1	200
Battery tester	2	50
Tool set, auto body repair	1	250
Spray gun, industrial grade	2	200
Air compressor, 2 stage	1	2,100
Piston ring expanders	2	200
Piston ring compressors	2	400
Piston groove cleaner cutter	1	350
Portable ramps	2	1,600
Tire racks	2	800
Vehicle wash Rack	-	1,100
Paint Sprayer	2	500
Miscellaneous equipment	-	600
Initial Outfitting Allowance	-	3,000
T O T A L		15,450

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LABORATORY COST SUMMARY

Laboratory Construction

Lab Space - 24' x 20' = 480 x $ 30	= $	14,400
Counters/Cabinets	= $	3,000
Special Ventilation	= $	1,500
Airconditioning	= $	1,200
Office - 10' x 12' = 240 x $ 20	= $	4,800
Office Furniture	= $	600
T o t a l	$	25,500
Laboratory Equipment (see next sheet) Total	$	33,100
Total Laboratory Cost	$	58,600

EQUIPMENT LIST - LABORATORY

I T E M	Qty.	Costs(US$)
Water Distillation unit 3 gph	1	800
Storage carbuoys, plastic, 5 gal	3	50
Autoclave	1	2,000
Bact. Incubator, 37°C	1	1,800
Refrigerator	1	2,000
Racks, tubes, caps, set	6	600
Dehydrated media, containers	3	300
Water analysis pipets & storage cans, sets	20	1,600
Bottle gas burner, transfer loops	2	100
Mixing vessels, 2 qt	4	200
Balance, 0.1 mg sensitivity	1	1,500
Burets, holders	8	200
Assorted beakers, flasks	100	2,000
Hot-plate	4	200
Assorted chemicals, lot	1	3,500
Solution bottles, 500 ml	20	300
Assorted volumetric glassware	100	1,000
Assorted volumetric pipets	20	200
Turbidity meter	4	300
pH meter & buffer solutions	2	2,200
Conductivity meter	4	600
Funnels & Filter paper, set	20	300
Assorted measuring cylinders	50	500
Glassware cleaning brushes,sets	12	200
Lab aprons or coats	10	400
Safety goggles, pair	4	50
Fire-extinguisher	2	200
First-aid kit	1	50
Fume hood	1	2,000
Drying oven	1	600
Dessicators	2	500
Colorimeter	1	100
Misc ring stands	6	200
Water-bath incubator, 44.5°C	1	400
Small muffle furnance	1	950
Porcelain ware, tongs, set	10	200
Electric steam bath	1	500
Microscope & accessories	1	1,600
Petri dishes, set	10	500
Innoculating needles, set	10	600
Dehydrated media for SPC, container	3	300
Petri dish racks & cans, set	10	500
Chlorine residual analyzers	4	1,000
T O T A L		33,100

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Training Building Construction

Manpower Offices -				
Chief Training Officer	10'x15'	= 150 x $20	= $	3,000
Instructors	2'x10'x10'	= 200 x $20	= $	4,000
Support	1'x16'x16'	= 256 x $20	= $	5,120
Classrooms 2 - 16 x 20 w/ collapsing center wall	2 x16 x20	= 640 x $20	= $	12,800
Classrooms 1 workshop	16 x20	= 320 x $20	= $	6,400
Storage/library	20 x15	= 300 x $20	= $	6,000
Dormitory 25 people @ 65 ft2	25 x65	=1625 x $20	= $	32,500
Kitchen 40 spaces @ 5 ft2	40 x 5	= 200 x $40	= $	8,000
Dining 40 spaces @ 12 ft2	40 x12	= 480 x $20	= $	9,600
Restrooms 10 spaces @ 30 ft2	10 x30	= 300 x $25	= $	7,500
		Total Building Cost		$ 94,920
Equipment and Furnishings (see next sheets)				$ 97,325
		Total Costs - Training		$ 192,245

TRAINING FACILITIES

Video Equipment				
Color Camera	2 @ $900	=	$	1,600
Tripod	2 @ $100	=	$	200
Rolling Table	2 @ $100	=	$	200
Video Recorder	2 @ $600	=	$	1,600
Extension Cables	3 @ $ 50	=	$	150
Transformer	3 @ $ 25	=	$	75
Color TV - 27"	2 @ $700	=	$	1,400
			$	5,225
Audio Visual Training Aids				
Camera and Lens	1 @ $700	=	$	700
Slide Copier	1 @ $750	=	$	750
Overhead Copier	3 @ $450	=	$	1,350
Slide Projector	2 @ $600	=	$	1,200
16mm Projector	2 @ $900	=	$	1,800
Portable Screen	2 @ $300	=	$	600
Easels	12 @ $ 75	=	$	900
White Board-rollers	6 @ $200	=	$	1,200
Sound System	2 @ $2500	=	$	5,000
			$	13,500
Library				
Films, subscriptions, books		=	$	7,000
			$	7,000
Workshops				
Cutaway Pumps		=	$	12,000
Packing Glands		=	$	2,500
Pump Shafts		=	$	1,500
Plant Models		=	$	6,000
Filter cutaways		=	$	3,500
Distribution System Model		=	$	6,000
Pipe Sections and Fittings		=	$	1,200
Electric Circuit boards		=	$	2,400
Electric Motors and cutaways		=	$	5,400
Miscellaneous allowance		=	$	5,500
			$	49,000

TRAINING FACILITIES

Furnishings				
Offices	- Furniture	4 x $500	= $	2,000
	- Typewriters	2 x $1500	= $	3,000
	- Copier	2 x $3800	= $	7,600
	- Drafting Table	1 x $800	= $	800
	- Binder and Punch	1 x $600	= $	600
Classroom	40 sets x $ 40		= $	1,600
Storage/Library	Shelves, tables, chairs		= $	800
Dormitory	25 x $ 80		= $	2,000
Kitchen	Equipment		= $	3,000
Dining Room	40 people x $ 30		= $	1,200
	Total Furnishings		$	22,600
Total Equipment and Furnishings			$	97,325

OFFICE STORES COST SUMMARY

Storage Construction (General)			
Stores Bldg.	48 x 50 + 16x16		
2400 sq. ft. @15/ s.f.		= $	36,000
256 sq. ft. @25/ s.f.		= $	6,400
Shelving & Racks, built in allow		= $	5,400
Mechanical Hoists	2 x $1600	= $	3,200
Office Construction (AGM + 5)			
1 office	15 x 12 = 180		
5 offices	12 x 10 = 600		
	780 s.f.@$20	= $	15,600
Air conditioning	6 @ $500	= $	3,000
		$	18,600
Vehicle Dispatch Office			
10' x 10' = 100' @ $20		= $	2,000
		$	2,000
Office Furnishings			
6 x $ 500		= $	3,000
		$	3,000
Total Costs - Stores and Office		$	74,600

TRANSPORT COST SUMMARY

Vehicles			
Light Trucks, double cab			
Mobile Maintenance	- 2		
Regional Support Center	- 2		
Training	- 1		
Laboratory	- 2		
	7 x $10,000 =	$	70,000
Heavy Duty Truck - Stores	2 x $21,000 =	$	42,000
Vans - Training	1 x $12,000 =	$	12,000
Total		$	124,000
Communications Equipment			
Mobile 2 way radios	11 @ $600 =	$	6,600
Base Station - dispatch	1 @ $3700 =	$	3,700
Total		$	10,300
Fuel Depot			
Allowance for tanks, pumps, drainage		$	7,400
Total		$	7,400
Total Transport Cost		$	141,700

YARD AND UTILITY COSTS

Site Preparation		$	10,000
		$	10,000
Yard Paving	80' x 200 = 16,00 s.f.		
	1,800 s.y. @ $4 s.y.	$	7,200
		$	7,200
Guard House	(Furnished) 10x10 = 100 s.f. @ $15+$500	$	2,000
		$	2,000
Perimeter Fencing --			
	1100 l.f. @ $10	$	11,000
Electrical - Special			
	Power Service	$	5,000
	Wiring	$	5,000
	Lighting	$	5,000
	Standby Generator	$	25,000
		$	40,000
Plumbing			
	2 lavatories @ $1,000	$	2,000
	1 Kitchen @ $3,000	$	3,000
		$	5,000
Water			
	Connections	$	2,000
Telephone	Connections and 15 phones	$	3,600
	Total Cost - Yard and Utility	$	80,800

Regional Office Facilities & Equipment

Summary of Costs*

Item	Estimated Cost (US$)	Detail in Table No.
Buildings	46,750	2
Equipment	12,400	3
Transport Facilities	-	3
Office Furniture	24,480	3
Transport	43,700	3
Yard Installations	6,500	3
Total Cost	126,730	

* Costs shown are for one Regional Office Facility

Scale 1" = 12'

Proposed Regional Office Workshop

ANNEX I-6
Page 1 of 3

MECHANICAL WORKSHOP

Workshop Construction

- 16 x 32 = 512 x $ 20 = $ 10,240

Stores Tools Construction

- 16 x 24 = 384 x $ 20 = $ 7,680

Equipment

Voltmeter	1	$ 250
Wattmeter	1	200
Soldering gun	1	150
Lifting crane	1	1,000
Power factor meter	1	100
Welders	2	600
Welder	1	1,200
Tool set	2	1,200
Welding gear	2	150
Grinder	1	400
Cutting torch	1	400
Vise	2	200
Drill Press	1	450
Pipe threader	1	800
Pipe branch set	1	300
Air compressor	1	3,000
Portable grinder	1	150
Initial Outfitting Allowance		4,000
TOTAL Equipment		$ 14,350 = $ 14,350

Total Mechanical Workshop = $ 32,270

VEHICLE WORKSHOP

Workshop Construction

- 16 x 24 = 384 x $ 20 = $ 7,680

Fuel Depot

- Allowance = $ 2,000

Equipment

Tool set	2	$ 900
Parts Cleaner	1	100
Strobe light	1	500
Floor jack	2	400
Drill, Electric	1	100
Battery charge	1	50
Portable ramps	1	800
Tire Rack	1	400
Tool set,body repair	1	250
Initial Outfitting Allowance	-	1,500
TOTAL Equipment		$ 4,800 = $ 4,800

Total Vehicle Workshop = $ 14,480

LABORATORY

Laboratory Construction			
Lab space 12 x 10 = 120 x $ 20			= $ 2,400
Counter, cabinets			= 800
Special Ventilation			= 900
T O T A L			= $ 4,100
Laboratory Equipment			
Distillation unit	1	$ 600	
Storage carbuoys	3	50	
Refrigerator	1	500	
Racks, tubes	3	300	
Pipets	5	400	
Bottle gas burner	1	50	
Balance	1	1,500	
Assorted glassware	-	500	
Assorted chemicals	-	600	
pH test kits	10	500	
Color test kits	10	500	
Cl test kits	40	1,600	
Aprons, goggles	2	50	
Fire extinguisher	1	100	
Tongs	2	50	
Soluble metal test kits	6	600	
T O T A L		$ 8,300	= $ 8,300
Total Laboratory Costs			= $ 12,400

OFFICE / STORES

Office / Stores Construction		
Stores Building 20 x 32 = 640 x $ 20		= $ 12,800
Office 16 x 24 = 384 x $ 20		= $ 7,680
Furnishing		
Stores - racks, shelves		= $ 1,300
Mechanical hoist, tools		= $ 2,200
Office -		= $ 800
TOTAL Office / Stores Costs		= $ 24,980

TRANSPORT

Vehicles		
Light truck, double cab 2 - @ $10,000		= $ 20,000
Jeep		= $ 9,000
Communications		
Mobile 2 way radios 5 - @ $ 600		= $ 3,000
Base station 1 - @ $ 3,700		= $ 3,700
TOTAL Transport Costs		= $ 35,700

YARD AND UTILITY COSTS

Site Preparation	= $ 2,000
Paving 2400 sqft. = 267 sq yds. x $ 4	= $ 1,100
Fencing 480 l.f. x $ 10	= $ 4,600
TOTAL Yard and Utility Cost	= $ 6,900

Scheme-Level Facilities & Equipment

SUMMARY OF COSTS *

Item	Estimated Cost (US$)
Workshops	$1,000
Laboratory	900
Training Facilities	-
Office, Stores	-
Transport	-
Yard and Utilities	-
Total Cost	$1,900

Costs are shown for one Scheme-Level Facility

Workshops

Equipment

Tool kits	1	$400
Soldering gun	1	100
Portable drill	1	150
Pipe wrenches	1	200
Portable grinder	1	150
		$1,000

Laboratory

Equipment

Test kits

- Chlorine	$400
- Color	100
- Turbidity	100
- Iron	100
- Manganese	100
- pH	100
	$900

ANNEX I-8

Miscellaneous Commodities*

Quantity/Description	Unit Cost	Total Cost
Consultant Vehicles		
3 Utility vehicles	$9,000	$27,000
4 Land Passenger vehicles	$9,000	$36,000
Office Equipment and Supplies		
1 Minicomputer	$46,000	$46,000
10 Microcomputers	$24,000	$240,000
Misc. Computer Accessories and Software	$10,000	$10,000
4 Word Processors	$16,000	$56,000
1 Large copier	$40,000	$40,000
6 Small copiers	$4,000	$24,000
22 Typewriters	$1,500	$33,000
Misc. Draffing Equipment	$9,000	$9,000
Misc. Office Equipment & Supplies	$35,000	$35,000
20 sets Office Furnishings	$1,000	$20,000
Misc. Public Relations Materials	$33,000	$33,000
Misc. Manufacturing Catalogues	$10,000	$10,000
	Total	$619,000

*Includes those items not included in Level 1 to Level 4 facilities (Annexes I-4 to I-7).

System Construction Cost Estimate

Table 1 (below) presents recent NWSDB cost estimates for a representative sample of 10 new water supply system construction projects, exclusive of land, engineering and spare parts costs. Although there is some variation evident in the figures, they are felt to be sufficient for project cost estimating purposes with the understanding that each new construction subproject will be carefully examined prior to the final decision on whether or not to proceed (see Facilities Planning and Design, Project Description).

The table indicates that the average cost per capita for water supply system construction in Sri Lanka is about $45.00. Assuming an average subproject target population of about 15,000 inhabitants yields an average base construction cost of about $675,000. Allowing 10 percent for engineering costs and an additional 10 percent for spare parts results in a total per system construction cost of $810,000. It is felt that this figure represents a reasonable cost estimate as it is specifically intended to select as representative a sample of subprojects as possible to better demonstrate the array of new construction possibilities to NWSDB staff.

TABLE 1

System Construction Cost Estimate

Name of System	Design* Population (000s)	Estimated#* Cost (Rs. 000s)	Estimated+ Cost ($000s)	Per Capita Cost ($)
Ambalangoda/Balapitiya	61.5	88,000	3,520	57.24
Kirindi Oya Settlements	46.3	40,000	1,600	34.56
Mannar	35.5	56,000	2,240	63.10
Vavuniya	20	18,000	720	36
Pussella	2.35	2,400	96	52.63
Divitodawela	5.3	7,000	280	52.83
Haldumulla	2.03	2,400	96	47.29
Padaviya	2.16	2,100	84	38.89
Vijayabahukanda	2.78	2,000	80	28.78
Point Pedro/Chavakachcheri	67	95,500	3,820	48.95
TOTAL				448.49
Mean				44.85

*Based on 1983/84 NWSDB estimates.
#Exclusive of land, engineering and spare parts costs.
+ U.S. $1.00 = S.L. Rs. 25.00

ANNEX I-10

System Rehabilitation Cost Estimate

NWSDB has recently (1984) completed a preliminary survey of national water supply system rehabilitation needs. Results of this survey are presented in Attachment A-17 of the Project Design Team Report. Table 1 presents a representative sample of 35 systems selected from this listing for use in calculating a per system rehabilitation cost estimate for the project. As can be seen from the table, there is a great amount of variability in rehabilitation costs depending on such factors as, population size, geographic location and configuration, water source and type and magnitude of rehabilitation needs for a given system. Due to the relatively new status of water supply rehabilitation in Sri Lanka, more accurate cost estimates will not be possible until more detailed feasibility studies are undertaken as a part of the project (see Project Description, Capital Facilities Management). However, the figures in Table 1 are felt to be sufficient for project costing purposes with the understanding that each rehabilitation subproject will be carefully examined prior to the final decision on whether or not to proceed.

The table indicates that the average cost per capita for water supply system rehabilitation in Sri Lanka is about $13.00. Assuming an average project target size of between 10 and 20 thousand inhabitants, this yields an average base rehabilitation cost of between $130 and $260 thousand. Allowing 15 percent for engineering costs (which are usually slightly higher in rehabilitation vs. new construction efforts due to the need to appropriately "fit" with the existing system) and an additional 10 percent for spare parts results in a total per system cost of between $162,500 and $325,000. An average of these two figures yields an average rehabilitation subproject cost of about $250,000. It is felt this figure represents a reasonable cost estimate as it is specifically intended to select as representative a sample of subprojects as possible to better demonstrate the array of rehabilitation possibilities to NWSDB staff.

TABLE 1

System Rehabilitation Cost Estimates

Name of System	Population* Served (000s)	Estimated+ Cost (Rs.000s)	Estimated* Cost ($000s)	Per Capita ($)
Anuradhapura	40	24,650	984	24.6
Horawapathana	2	300	12	6
Medawachchiya	7	145	5.8	0.83
Bandarawela	6	500	20	3.33
Diyatalawa	6	325	13	2.17
Hali-Ela	1.2	1,550	62	51.67
Maskeliya	3	850	34	11.33
Nuwara Eliya	20	1,200	48	2.4
Amparai	17	20,000	800	47.06
Hingurakgoda	10	3,500	140	14
Polonnaruwa	12	24,500	980	81.67
Naipuddimunai	8	1,400	56	7
Inginiyagala	4	1,300	52	13
Hikkaduwa	8	400	16	2
Weligama	18	1,200	48	2.67
Matara	40	530	21.2	0.53
Akuressa	6.2	750	30	4.84
Tangalle	5	3,000	120	24
Kayts	5	6,000	240	48
Karaveddy	12	2,000	80	6.67
Mannar	15.5	400	16	1.03
Vankalai	3.5	350	14	4
Erukulampiddy	4.4	700	28	6.36
Gampola	20	2,000	88	4.4
Nawalapitiya	12	3,000	120	10
Wattegama	7	1,500	60	8.57
Kegalle	15	5,365	214.6	14.31
Dambulla	4	2,300	92	23
Avissawela	15	550	22	1.47
Ratnapura	35	3,550	142	4.06
Udawela	6	250	10	1.67
Balangoda	20	670	26.8	1.34
Pelmadulla	10	400	16	1.6
Gampaha	16	1,750	70	4.38
Giriulla	3	800	32	10.67
TOTAL				450.63
Mean (x)				12.875

+ Based on 1984 NWSDB preliminary cost estimates (see Project Design Report, Attachment A-17).

* Based on 1983 NWSDB figures (see Project Design Report, Attachment A-15).

* U.S. $1.00 = S.L. Rs. 25.00

ANNEX I-11

Latrine Construction Cost Estimate

Table C-9 of Annex C of the Project Design Report (reproduced here) presents cost estimates of four types of latrines to be constructed under the project (e.g., simple direct pit, ventilated pit, pour flush offset double pit and pour flush direct discharge). Assuming an average subproject target population of about 15,000 persons and an average family size of 5 people, yields a figure of 3,000 latrines per subproject community. Further, assuming about 15 percent of the community is either disinterested in sanitation or already has adequate facilities available (an assumption especially applicable to rehabilitation subprojects), leaves a final number of 2,500 latrines to be constructed per subproject community. As the project proposes 6 total subproject activities (4 rehabilitation, 2 new construction) this yields a total of 15,000 latrines to be constructed under the Project.

Assuming 50 percent of these are simple pit type latrines, 20 percent are pour flush offset, 20 percent are pour flush direct and 10 percent are ventilated pit latrines, yields the following costs to the Project:

. 7,500	simple pit type	@ $13.40 each	= $100,500
. 3,000	pour flush offset type	@ $37.50 each	= $112,500
. 3,000	pour flush direct type	@ $44.25 each	= $132,750
. 1,500	ventilation pit type	@ $55.50 each	= $ 83,250
15,000	latrines	@	$429,000

Assuming a materials, transportation and administrative cost per latrine of $17.80 (see Table C-9) yields the following total Project cost for latrine construction activities:

15,000 x $17.80	= $267,000
Total Project Cost	= $696,000

As can be seen from the table, this figure does not include labor (pit excavation and lining, if required) and latrine superstructure construction costs. These inputs will be provided either directly or contracted by the individual householders and are not, therefore, included in project costs.

TABLE C-9

PROJECT & HOUSEHOLDER ESTIMATED COSTS OF FOUR TYPES OF LATRINES

Latrine Type	Costs (in US$) to Project Max per latrine		Costs(in US$) to Householder	
	Item	Cost	Item	Cost
Simple direct pit	Materials	13.40	Heavy super-structure	
	Labor (if precast)	6.00	Materials	65.00
	Transport & administration	17.80	Labor	11.25
		37.20	Light super-structure	
			Materials	13.20
			Labor	11.25
Ventilated Pit	Materials	55.50	Heavy super-structure	76.25
	Labor (if precast)	6.00		
	Transport & administration	17.80	Light super-structure	24.4
		78.80		
Pour flush offset Double Pit	Materials	37.50	Indoor heavy super-structure	54.15
	Labor	6.00	for outdoor	72.9
	Transport & administration	17.80	Light super-structure	24.25
		61.30		
Pour flush direct discharge	Materials	44.25	Thatch walls	4.0
	Labor	7.00	Light super-structure	28.3
	Transport & administration	17.80	Heavy super-structure	72.90
		69.05		

ANNEX I-12

Additional (Project-Genera ed) Recurrent Costs

A. Personnel Costs

1. Personnel Salaries

a) New Positions:

. 2 Additional General Managers @ $2,760/yr. ea. = $5,520/yr.

. 3 Regional Assistant General Managers @ $2,400/yr. ea. = $7,200/yr.

. 3 Rural Sanitation Unit professional staff (Public Health, Social Science, Environmental Sanitation expertise) @ $2,160/yr. ea. = $6,480/yr.

. 10 Training Officers @ $1,680/yr. ea. = $16,800/yr.

. 10 Assn't Training Officers @ $1,344/yr. ea. = $13,440/yr.

. 3 Regional Training Officers @ $1,344/yr. ea. = $4,032/yr.

. 1 Legal Advisor (25% part-time) @ $3,000/yr.

. 20 Technical Assn't @ $960/yr. ea. = $19,200/yr.

. 10 Secretaries @ $600/yr. ea. = $6,000/yr.

b) Upgraded Positions

. 2 Assistant General Managers (P&D, Finance)→Deputy General Managers (P&D , Commercial) @ + $240/yr. ea. = + $480/yr.

. 3 Chief Engineers (Training, Groundwater, Supplies→Stores)→Assistant General Managers (same) @ + $240/yr. ea. = + $720/yr.

Note: The above personnel recruitment/reorganization listing should be considered a best estimate of position and salary changes resulting from the project. Final positions and corresponding salary scales will be determined through a pre-implementation project workshop (November/December, 1984) held for this purpose and for determining reorganizational roles and responsibilities and associated job descriptions. No new or upgraded MOH positions are contemplated under the project.

c) Regional Incentives Program: Under this program, it is estimated that about 53 key regional positions (e.g., 3 AGMs, 15 Regional and Assistant Regional Managers, 8 Accountants, 8 Chemists, 6 Supplies & Stores Clerks, 3 Regional Training Officers and 6 Workshop Foremen) will receive a 10% salary differential as part of a special regional incentives package. This amounts to some $10,000/yr. for all positions listed above. This figure, however, should also be considered a best estimate as it is believed actual positions eligible for such a differential and the differential amount will vary among regions. Final determinations regarding the overall regional incentives package (e.g., housing, salary, education, health and other allowances and staff rotation and career progression programs) will be made via a special personnel task force created for this purpose convening both prior to and during the first six months of the project.

2. Technical Assistance Counterpart Costs: These costs are estimated at 1.45 person months (pm) of NWSDB/MOH staff time per 1.0 pm of technical assistance. This amounts to some $200/pm of NWSDB/MOH staff time per pm of technical assistance.

B. Facilities Costs

1. Level 1 Facilities (1)

a) Training Center - $3,000/yr.

b) Upgraded central office, workshop, laboratory and warehouse facilities - + $500/yr.

2. Level 2 Facilities (3)

a) New training facilities and upgraded office, laboratory, workshop, and warehouse facilities - + $1,500/yr. ea. = + $4,500/yr.

3. Level 3 Facilities (5)

a) Upgraded office, workshop, laboratory and warehouse facilities - + $300/yr. each = + $1,500/yr.

4. Regional Staff Quarters (50±)

a) New housing and staff quarter facilities for key regional staff - $200/yr. ea. = $10,000/yr.

Note: The estimated number of regional housing facilities is subject to same conditions specified above (see Regional Incentives Program). All above facilities costs include provision for annual taxes, utilities, general maintenance and custodial and security personnel costs, where applicable.

C. Vehicles (58)

Costs for vehicle fuel, operations and maintenance are estimated at $2,000/yr. each. These costs include provision for vehicle drivers, where applicable.

D. Per Diem

Per diem costs for project-related NWSDB staff travel have not been included as an additional recurrent cost under the project as it is expected that all such costs will be more than offset by the construction of central and regional dormitory and kitchen facilities within the respective training facilities. MOH staff per diem and transportation costs have been included in the project (see Training; Health Education Support).

TABLE 1

NEW (PROJECT-GENERATED) GSL RECURRENT COSTS
($000s)

Item	Year					Total
	1985	1986	1987	1988	1989	
Personnel						
Salaries	38.5	69	89	90	93	379.5
T.A. Counterpart Costs	46.5	37.5	22	5	1	112
Operations & Maintenance						
Facilities	-	0.5	11	17	21	49.5
Vehicles	-	23	98	128	130	379
Total Before Contingency & Inflation	85	130	220	240	245	920
Inflation (15% Compounded)	10	40	115	180	245	590
Contingency (10%)	8	13	22	23	24	90
Total New Recurrent Costs	103	183	357	443	514	1,600

ANNEX J

Critical Questions, Key Indicators, Data Collection and Analysis for Monitoring and Evaluation Plan

A. Institutional Strengthening of the NWSDB

1. Overall Organizational Structure

a. Has the revised Table of Organization been established and key positions staffed?

Indicators: Existence of a revised Table of Organization; percent of key positions staffed

Data Collection: Examination of records kept in Personnel/Administration Unit

Analysis: Simple determination of whether or not the Table of Organization has been revised during the 6 month period under study. Once accomplished, this indicator will be dropped from the system. Percentage of key positions staffed should be followed until 100% of the positions are filled. Comparisons should be made between actual and expected positions filled during a specified time period. If vacancies at this level are a problem, this indicator may be kept for the life of the project.

b. Have job descriptions been prepared? Have they been used to recruit quality staff?

Indicators: Existence of written job descriptions for each staff classification type; percent of new personnel meeting minimum requirements listed in the job description

Data Collection: Examination of records kept in Personnel/Administration unit

Analysis: Determination of whether or not job descriptions for all staff classifications have been established and written during the 6 month period under study. Once accomplished this indicator will be dropped from the system. Percent of new personnel meeting minimum requirements should be followed throughout the life of the project to ensure that a reasonable percent of the staff at any given time have adequate skills and that the trends indicate at least gradual increases.

c. Are NWSDB units being established and staffed as planned?

Indicators: A listing of those NWSDB units which have been established; percent of positions staffed in each unit established

Data Collection: Examination of records kept in Personnel/Administration Unit

Analysis: Progress in establishing each of the units planned under the revised Table of Organization should be followed closely until all units are established to ensure that there is a commitment to the reorganization. Percent of positions staffed in each unit should be followed throughout the life of the project to ensure that at least the minimum percent of staff necessary to accomplish the work are in place. The percent of positions staffed may also be helpful in explaining minimal or negligible progress made in some project

activities.

d. Is there a move towards consolidation of Project and Non-Project Areas?

Indicators: Established job descriptions reflect consolidation of Project and Non-Project Area activities; records maintained and actual employee duties reflect in consolidation

Data Collection: Examination of job descriptions kept in Personnel/Administration unit; examination of records maintained at key units; interviews with a small sample of employees in key units

Analysis: Determination of whether or not job descriptions reflect the desired consolidation of activities. If they do, this indicator can be dropped. If not, this may signal a problem of commitment to NWSDB consolidation or difficulty in creating job descriptions that are consistent with policy in which case the indicator should be kept until consistency exists. Determination of whether records for Project and Non-Project Area activities have been consolidated. When this has been accomplished, the indicator can be dropped. Determination of whether actual duties reflect consolidation of activities. Until transition is accomplished, this indicator can be retained to signal a need for further help in this area.

e. Are improvements being made to facilitate communication and coordination?

Indicators: Business Policy Manual prepared and distributed; preparation and distribution of circulars for all major policy updates; average frequency of meetings held among management staff (Central and regional)

Data Collection: Examination of manual and circulars kept at the Office Strategic Planning and Management Information; interviews with the Chairman and management staff; minutes of meetings (if available)

Analysis: Determination of whether or not the business policy manual has been established and if all relevant personnel received a copy. Determination of whether or not circulars have been prepared for all major policy updates and distributed to all relevant personnel during a given six month period. Monitoring of this indicator will also give feedback regarding the completion of distribution lists. Analysis of the number of meetings held during a given six month period should involve a comparison with some pre-conceived notion of the number that seems adequate for improving communication and coordination in the agency. Determination should also be made of whether or not all relevant staff attend these meetings.

2. Decentralization

a. Has a special regional incentives package been developed and put into effect?

Indicator: Existence of an established regional incentives package that is included in the terms of employment

Data Collection: Examination of employee contracts (if available) or interviews with new recruits

Analysis: Determine whether or not a regional incentives package has been put into effect and offered to all new recruits. Once a trend indicative of an incentives package is in place and consistently offered to recruit quality regional staff, this indicator can be dropped.

b. Is the number and quality of NWSDB personnel at the regional offices increasing?

Indicators: Percent of established regional positions staffed; percent of personnel performing above average on-the-job

Data Collection: Examination of staffing records at regional offices; examination of performance evaluations and/or interviews with supervisory personnel

Analysis: Percent of positions staffed should be monitored throughout the life-of-the-project so that management is made aware of vacancies and staffing levels under which a regional office must operate. Comparison can also be made to what was expected in a given period of time. Percent of personnel performing above average on-the-job should be monitored throughout the life-of-the-project to ensure that an upward trend in recruiting quality staff is evident. If movement is not as rapid as expected, this may signal a need to reassess the adequacy of the incentives package. These levels may also be used to explain significant progress, or lack thereof, in particular project activities.

c. Once recruited and assigned to regional offices, is NWSDB able to retain staff? How can the special incentives package be improved to increase retention?

Indicators: Turnover rate; reasons for leaving positions

Data Collection: Records at regional offices; interviews with departing staff and/or examination of personnel records

Analysis: Turnover rates should be monitored closely throughout the life of the project. If turnover rate is increasing or at a level considered disruptive to on-going activities, there may be a need to reassess the adequacy of the incentives packages. Thus, for this purpose, it will be important to monitor reasons for leaving to see if any commonalities exist that may suggest areas of weakness in the incentives package.

d. Has substantive authority been delegated to the regional office? Have regional authorities exercised the authority given to them? Is there a reduction in the number of decisions referred to the Central Office that concern regional matters?

Indicators: Written policies delineating responsibilities; decision-making authority and functions of a substantive nature delegated to the regional levels; fewer regional decisions referred to Central Office; more substantive decisions being made at regional level without Central level input

Data Collection: Examination of Business Policy Manual to review policies; interview relevant personnel at both Central and regional levels (data collected will be qualitative in nature unless MIS involves tracking the number of decisions made at various levels)

Analysis: Determine whether or not responsibilities, decisions and functions delegated to regional levels are, in fact, substantive in nature.

Once such policies are established, it will be important to track the other indicators to determine if authority is actually delegated as planned and whether regional offices are exercising the authority given to them. By tracking progress made over time, comparisons can be made to ensure movement in the proper direction. If adequate progress is not being made, this will signal a need to further explore the obstacles (e.g., lack of committment or belief in the need for decentralization, inability of current level and/or quality of regional staff to effectively manage their operations, etc.) and take appropriate action.

e. Are local representatives beginning to direct more of their requests to the regional staff rather than directly to the NWSDB Chairman or General Manager?

Indicators: Fewer requests coming in at Central level; local representatives making requests to regional level

Data Collection: Interviews with the Chairman, General Manager and local representatives

Analysis: Indicators should be tracked over time to determine if steady progress is being made towards the shifting of responsibilities associated with local concerns to the regional offices. If reasonable progress is not being made, this could signal a need for the Public Relations Unit to engage in additional activities that would educate local representatives about the functions of the regional offices and enhance the image of these regional offices. It may also signal a need for further training at the regional level to further develop technical or personal communication skills.

3. Strategic Planning

Has a strategic plan been established and is it being followed?

Indicators: Existence of an established updated written plan; activities undertaken by NWSDB reflect the strategies and priorities set out in in the plan

Data Collection: Examination of written plan kept in the Office of Strategic Planning; interview senior managers and generate qualitative information on whether activities are reflective of the plan

Analysis: Determination of whether or not a plan was established. Since the plan is to be updated annually, this indicator should be retained over the LOP. Qualitative information generated from discussions with senior managers should be tracked over time to see if planned activities become more closely aligned with the current strategy.

4. Management Information Systems

What progress has been made in designing and implementing the Management Information System?

Indicators: A listing of those parts of the system which have been designed and implemented; of those being implemented, which ones are generating reports manually or by computer?

Data Collection: Examine documentation of MIS procedures at the NWSDB units responsible for operating the MIS; examine reports generated

Analysis: Track progress made in designing and implementing the systems until all are in place and generating the kind of reports needed.

5. Supplies, Stores, Tenders and Contracts

a. Are improvements in efficiency of tender preparation and evaluation and sub-contract management occuring?

Indicators: Increased authority given to regional offices with respect to tender and sub-contract management; time required for contract tendering process

Data Collection: Time required to complete procurement process; examination of Central and regional records and interviews with appropriate staff

Analysis: Determination as to whether or not increased authority has been given to regional offices. If it has, the average amounts of time required to complete the procurement process should be tracked to ensure that the time period is decreasing. Determination of improved contracting and procurement procedures at Central office.

b. Has a manual for supplies and stores been developed?

Indicators: Existence of a written manual

Data Collection: Examination of the manual

Analysis: Simple determination of whether or not the manual has been prepared during the six month period under study. Once accomplished, this indicator will be dropped from the system.

c. Have the regional stores been constructed and stocked?

Indicator: A listing of those regional stores established and in operation

Data Collection: Observation of actual store and its operation

Analysis: Progress in constructing the stores and in putting them into operation should be followed until all stores are completed. Actual progress in a given time period should be compared to expected progress.

d. Are the regional stores continuing to function over time?

Indicator: Stores physically maintained; good inventory records kept; stores are adequately stocked; stores are adequately staffed

Data Collection: Examination of records kept at each of the stores; observation of each of the stores; interviews with staff located at each store

Analysis: Prior to data collection, a standardized but simple rating system could be set up (e.g., Outstanding, Satisfactory, Unsatisfactory) with each category operationally defined. Each indicator could be rated accordingly and during analysis, a summary rating for each store could be derived and compared over time to ensure that stores

eventually become well-functioning entities. This summary indicator would be adequate in simply flagging problem areas that need further attention. This should be tracked throughout the life of the project.

e. Are stores serving NWSDB's operations more efficiently?

Indicators: Number and percent of requests filled; average number of days to fill a request

Data Collection: Examination of records kept at the stores; interviews with staff members who would be responsible for making requests

Analysis: Over the life of the project, these indicators should be tracked to ensure that the percentage of requests filled is increasing over time while the average number of days to fill a request is decreasing. This would flag problems in supplies and stores operations, and may help to explain unacceptable progres of O&M activities.

6. Personnel

a. Has a personnel policy manual been developed?

Indicator: Existence of a written manual

Data Collection: Examination of records at the Personnel/Administration Unit

Analysis: Determination of whether or not the manual has been developed during six month period under study. Once accomplished, this indicator will be dropped from the system unless annual updates are expected.

b. Has a manpower plan and procedures manual been developed? Is this reviewed and revised on a regular basis using existing manpower data?

Indicator: Existence of the manual; existence of a manpower data base; manpower data base used to make decisions about staffing; review of the manpower plan conducted during the six month period under study

Data Collection: Examination of records and database in the Personnel/Administration Unit; discussions with staff of the Personnel/Administration Unit

Analysis: Determination of whether or not a manual and a manpower database have been developed during the six-month period under study. Once accomplished, the "existence of the manual" and "existence of a manpower database" indicators can be dropped from the system. For the other indicators, track whether staffing decisions are increasingly based on the manpower data and whether the manpower plan is being reviewed at least once every six months.

c. What percentage of persons in managerial positions have administrative/managerial backgrounds as opposed to strictly engineering backgrounds?

Indicators: Percentage of persons in managerial positions with administrative/managerial background as opposed to strictly engineering background

Data Collection: Examination of records at the Personnel/Administrative Unit

Analysis: Continue tracking over time to see if this percentage is increasing. There should be a trend toward persons with managerial/ administrative backgrounds holding appropriate positions.

d. Has NWSDB reviewed salary scales and upgraded salaries or established salary supplements to be more competitive?

Indicators: Salary scale and salary supplements (where appropriate) established for each job description; percent of staff leaving to obtain higher salary elsewhere

Data Collection: Examination of records at Personnel/Administration Unit

Analysis: For the first indicator, determination of whether or not this has been completed during the six month period under study. Once accomplished, this indicator can be droped from the system. The second indicator should be tracked over time for the life-of-the-project to see if the percentage is decreasing. If not, this may indicate need to re-evaluate the current salary scale and supplements.

7. Training

a. Are training plans based on the assessment of needs?

Indicators: Data on current skill levels of employees are maintained and used; data on skill levels are updated as employees are trained; data on current skill levels is compared to skills required by positions in order to plan training

Data Collection: Examination of records maintained at the Manpower Development and Training Unit; interviews with staff of the Manpower Development and Training Unit

Analysis: Track these indicators over the life-of-the-project to ensure that data needed to effectively plan training programs is being maintained and is, in fact, being used to plan the training program.

b. Has a core curriculum been developed and put into operation? Has the current curriculum been expanded and revamped?

Indicators: Core curriculum has been designed and put into effect; number of new courses developed during the last six months by training area (e.g., management and supervisory skills, organizational development skills, technical skills, etc.)

Data Collection: Examination of records maintained at the Manpower Development and Training Unit; interviews with staff of the Manpower Development and Training Unit

Analysis: Determination that a core curriculum has been developed and put into effect. Once achieved, this indicator can be droped from the system. The number of new courses by area should be tracked over the life-of-the-project to indicate areas where training needs are being identified and more training opportunities exist.

c. Is the size of the training staff adequate to meet the training needs of NWSDB?

Indicators: Average number of trainees per trainer in courses conducted over the last six months; ratio of trainees to employees; number of courses given, by area, during the last six months; percent of employees who have taken at least one course, with percentages disaggregated by old employees and new employees

Data Collection: Examination of records maintained at the Manpower Development and Training Unit

Analysis: Track these indicators over the life-of-the-project to make sure that the ratios of trainers to trainees and to total employees are approaching optimal levels and that number of courses given over six-month periods are increasing. If these changes are not occurring, this signals that inadequacies in staff size exist and that ways to resolve the problems must be explored. The indicator on percent of employees who have taken at least one course can also be used to signal inadequacies of training staff size. When disaggregated by old and new staff, it can also indicate whether either of these groups is being given priorities in the training program at the cost of the other group.

d. Have trainers' skills been upgraded and are they applying new methodologies?

Indicators: Percent of trainers who have attended at least one training-of-trainers course; percent of trainers who have attended refresher trainer courses during the last six months; percent of courses conducted during the last six months that contained an experiential component; percent of courses in the curriculum for which standard training manuals have been developed

Data Collection: Review of staff records maintained at the Manpower Development and Training Unit; review of curriculum and training manuals

Analysis: Track these indicators over the life-of-the-project to make sure that training staff skills are being upgraded and maintained and that there is a movement toward increased use of standard training manuals and experiential training techniques.

e. Are trained employees applying the skills they acquired during training? Has this resulted in improved job performance?

Indicators: Established training evaluation systems that can reliably answer questions regarding pre-and post-training performance; percent of trainees demonstrating observable improvements in job performance as measured by the training evaluation system

Data Collection: Examine the documented procedures for performing training evaluation; examination of training evaluation results

Analysis: Determination of whether or not the training evaluation system has been established will be tracked until accomplished, and then dropped as an indicator from the system. During each six-month period, an assessment should be made of the acceptability of the percentage of trained employees showing improved job performance. If the percentage is unacceptable, this will signal a need for further examination of why skill acquisition and improved job performance are not taking place.

f. Has the skill certification program been developed and installed?

Indicator: Existence of a document describing the details of the skill certification program

Data Collection: Review of document kept at the Manpower Training and Development Unit

Analysis: Determination of whether or not the program has been installed. Once accomplished, the indicator can be dropped from the system.

g. What progress has been made in building and equipping the Central training facility? What progress has been made in adding regional training space to Regional Support Centers?

Indicators: A listing of major tasks completed toward the building and equipping of the Central training facility by the end of the six month period; a listing by region of the major tasks completed toward adding regional training space to Regional Support Centers by the end of the six month period

Data Collection: Observation of work completed and examination of records maintained at Central and regional offices

Analysis: Track these indicators over time and compare to implementation schedule.

8. Capital Facilities

a. Is an organized approach being taken in planning for expansion and rehabilitation of facilities?

Indicator: For each activity planned, selection was based on project need, affordability, initial feasibility, cost benefit, and health needs

Data Collection: Interviews with facilities planning staff regarding the process followed in determining details of construction and rehabilitation activities

Analysis: Track throughout the life-of-the-project to make sure that these factors begin and continue to be considered in planning construction and rehabilitation activities.

b. Is there an increase in the number of water facilities being constructed or rehabilitated and serving as on-the-job training models for NWSDB staff?

Indicators: Number of systems that have been rehabilitated; number of systems that have been constructed; of those systems rehabilitated, percent urban piped, percent rural piped, percent urban groundwater, percent rural groundwater; of those systems constructed, percent urban piped, percent rural piped, percent urban groundwater, percent rural groundwater; percent of these systems that have accompanying health education and sanitation component; percent of these systems that are being used for on-the-job training

Data Collection: Track number of facilities constructed and rehabilitated to see that

progress is being made over time and generally within the time frame anticipated. Track percentage of systems with related health education and sanitation components to see to what extent development of these components is still needed. Track percentage of systems used for on-the-job training over time to see how this compares to what was planned.

c. What progress has been made in extending coverage to the population of Sri Lanka?

Indicator: Percent of population that has obtained access to potable water through these construction and rehabilitation activities

Data Collection: Review of best available estimates maintained at Central and regional offices

Analysis: Determine percent of population obtaining access to potable water through this project's activities. This figure will not give an estimate of actual percentage of total population with access, but will at least show the percent change in the total population with access.

9. Operations and Maintenance

a. What progress has been made in building and equipping the regional labs?

Indicator: A listing of major tasks completed toward the building and equipping of each of the regional labs by the end of the six month period

Data Collection: Observation of work completed and examination of records maintained at Central and regional offices

Analysis: Track over time and compare to implementation schedule.

b. Is there a shift in workload occuring from the Central to the regional labs to allow the Central lab to focus more on other areas?

Indicator: Number of routine analyses performed at the Central lab during the six month period; number of routine analyses performed at the regional labs during the six month period

Data Collection: Review of records maintained at Central and regional labs

Analysis: Trends over time should indicate a decrease in routine analyses at the Central lab and an increase in routine analyses at the regional labs if the project is proceeding as desired. These indicators will also be useful in examining increased interest in water quality testing.

c. Is a preventive maintaince program established and operating?

Indicator: Schedule for preventive maintenance is established for each scheme and is being followed

Data Collection: Review of the schedule for preventive maintenance and records of actual preventive maintenance activities during the six month period

Analysis: Track this indicator over the life-of-the-project to see that

preventive maintenance schedules are being followed. If not, determine what actions should be taken.

d. Is there evidence that NWSDB is providing more reliable water service and safer water to its customers?

Indicator: Total number of breakdowns during the six month period; average number of days of each breakdown; average number of days that schemes function without a breakdown during the six month period; average number of water quality tests conducted per scheme during the six month period; percent of tests conducted that indicated acceptable water quality

Data Collection: Review of records maintained at the labs and by the caretakers or village water and sanitation committees

Analysis: All of these indicators should be tracked throughout the life-of-the project to ensure that there is a steady movement toward reliability and safer water.

e. Is there a special awards program for excellence in O&M? If so, how many such awards have been given, and how are they distributed over the regions?

Indicators: Existence of a special awards program; number of awards given over the last six months, by region

Data Collection: Review of records at regional or Central level

Analysis: Track whether or not a special awards program has been established. When accomplished, drop that indicator from the system. Then begin tracking, throughout the life-of-the-project, the number of awards given. Looking at these numbers by region may give some indication of extent of efforts made in the regions to motivate O&M personnel and may also give an indication of actual quality of O&M work performed by regions.

10. Financial Viability

a. Is NWSDB's ability to pay for its own operations increasing?

Indicators: Percent of customers that are being billed regularly; of the customers being billed, percent of bills that are collected, by region; percent of operational costs covered by collection during the last six months, by region; percent of maintenance costs covered by collection during the last six months, by region

Data Collection: Review of NWSDB's accounting records

Analysis: Indicators should be tracked throughout the life-of-the-project to see if succes in bill collection is improving at a reasonable pace, and if bill collection seems to be sufficient for covering operations and maintenance costs. Tracking of these indicators will also be useful to the Public Relations Unit in flagging regions where more effective PR is needed.

B. Health Education, Sanitation, and Community Participation

1. Relationship/Coordination of MOH with NWSDB

a. To what extent does collaboration between MOH and NWSDB exist at the community level?

Indicators: Number of Regional Sanitation Teams established and functioning; percent of Regional Sanitation Teams that have all three organizations actively participating; joint participation of the HEB and the RSU in the formulation of an overall plan for sanitation and health education in the project

Data Collection: Review of records maintained at the RSU; interviews with Regional Sanitation Team members; interviews with HEB staff and RSU staff

Analysis: These indicators should be tracked over the life-of-the-project to see that there is a continuation of active coordination between the MOH and NWSDB.

b. Do the PHI's activities reflect an increased role in environmental health?

Indicators: Percent of PHIs who spent an average of three days per week on environmental sanitation activities during the last six months; average number of visits made by the PHIs to the community level water sources constructed by NWSDB during the last six months

Data Collection: First indicator, from discussions with PHIs; second indicator, from interviews with caretakers

Analysis: These indicators should be tracked over the life-of-the-project to determine if PHIs are placing appropriate levels of emphasis on environmental health activities.

2. Community and Local Government Participation in the Various Aspects of Obtaining and Using Safe Water

a. What is the balance of projects emanating from the Gramodaya Mandalaya with those from higher levels of Government?

Indicators: Number of projects initiated by the Gramodaya Mandalaya within the last six months; number of projects initiated by higher levels of government within the last six months

Data Collection: Review of records maintained by the District Development Council (DDC); interview with Chairman of the DDC

Analysis: Track over the life-of-the-project to see if more projects are being initiated by the community than by Central government.

b. Is the level of participation of Municipal, Urban and District Development councils in the operations, maintenance and payment for systems increasing?

Indicators: Percent of systems for which the Municipal, Urban or District Development Council has responsibility for operations and maintenance; percent of systems for which the Municipal, Urban, or

District Development Council has fiscal responsibility

Data Collection: Review of records maintained by the Municipal, Urban and District Development Councils; review of NWSDB records

Analysis: These indicators should be tracked throughout the life-of-the-project to see if the community organizations are taking on increasingly greater responsibilities.

3. Sanitation Practices, Health Changes and Water-Related Income-Generating Activities

a. Are sanitation practices changing at the household level?

Indicators: Percent of households with latrines; of households with latrines, percent that actually use them; percent of households with soap; percent of households that use the project's water source for drinking water

Data Collection: Volunteer Health Worker will collect this information every six months through household interviews and observations

Analysis: These should be tracked over the life-of-the-project to see that an increasing number of households are improving their sanitation practices. If changes in a positive direction are not occurring, perhaps improvements in sanitation education are needed.

b. Is there a decrease in the incidence of water-related diseases?

Indicators: Number of treated cases of diarrhea in children less than five during the last six months; number of treated cases of intestinal helminthiasis during the last six months

Data Collection: Review and compilation of Volunteer Health Worker records

Analysis: These indicators should be tracked over the life-of-the-project to see if incidence of these diseases is decreasing. If not, this may trigger the need for increased or higher quality health and sanitation education.

4. Water-Related Income-Generating Activities

a. Since the project's provision of an improved water source have any water-related income-generating activities developed?

Indicators: Number of existing vegetable gardens; percent of those vegetable gardens used for income-generation; listing of any other water-related income-generating activities observed

Data Collection: Review of Volunteer Health Worker records which are based on interviews and observation

Analysis: These indicators should be tracked over the life-of-the-project to see if benefits of water projects include income-generating activities.