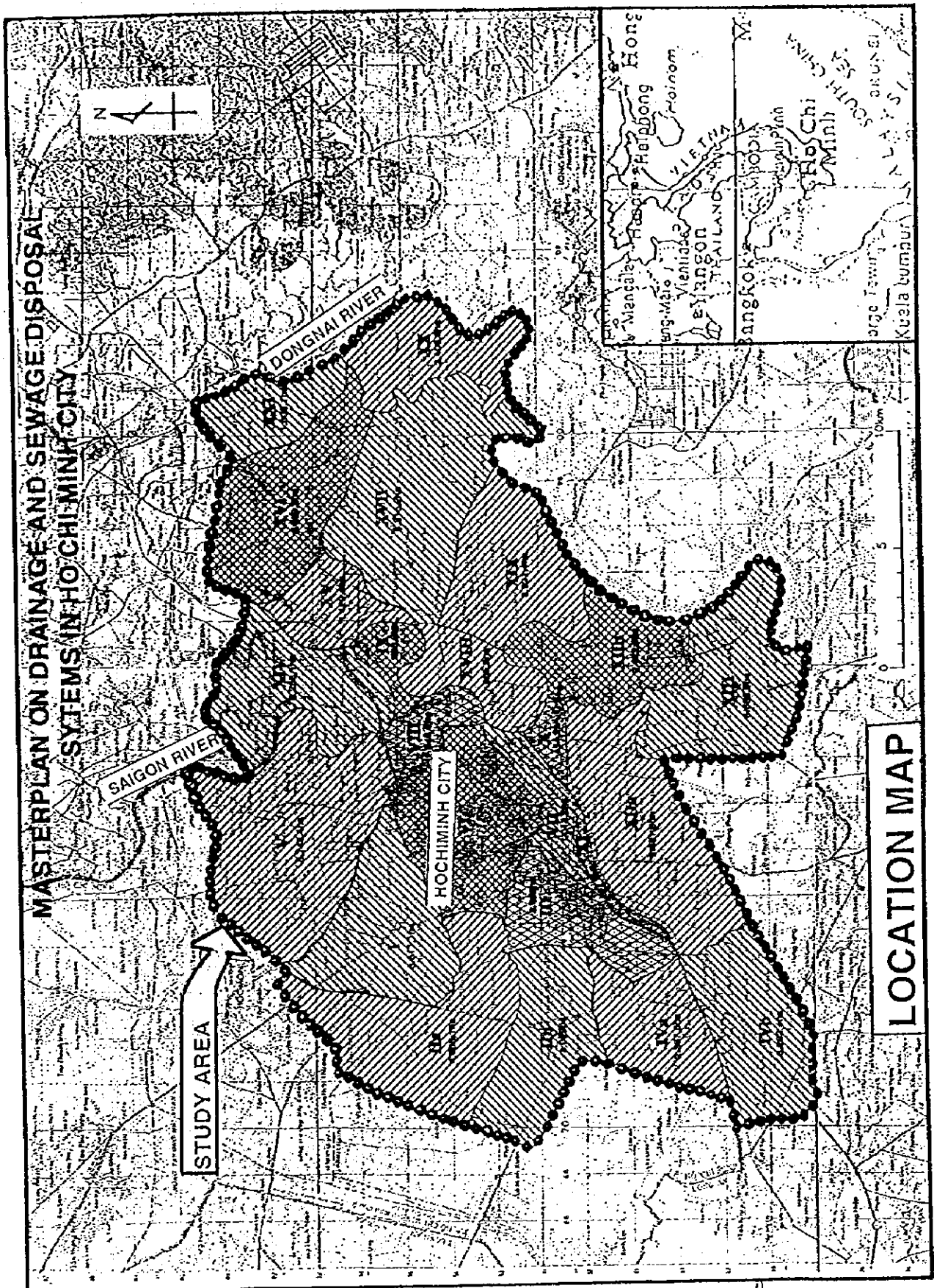


Appendix 1 Study Area

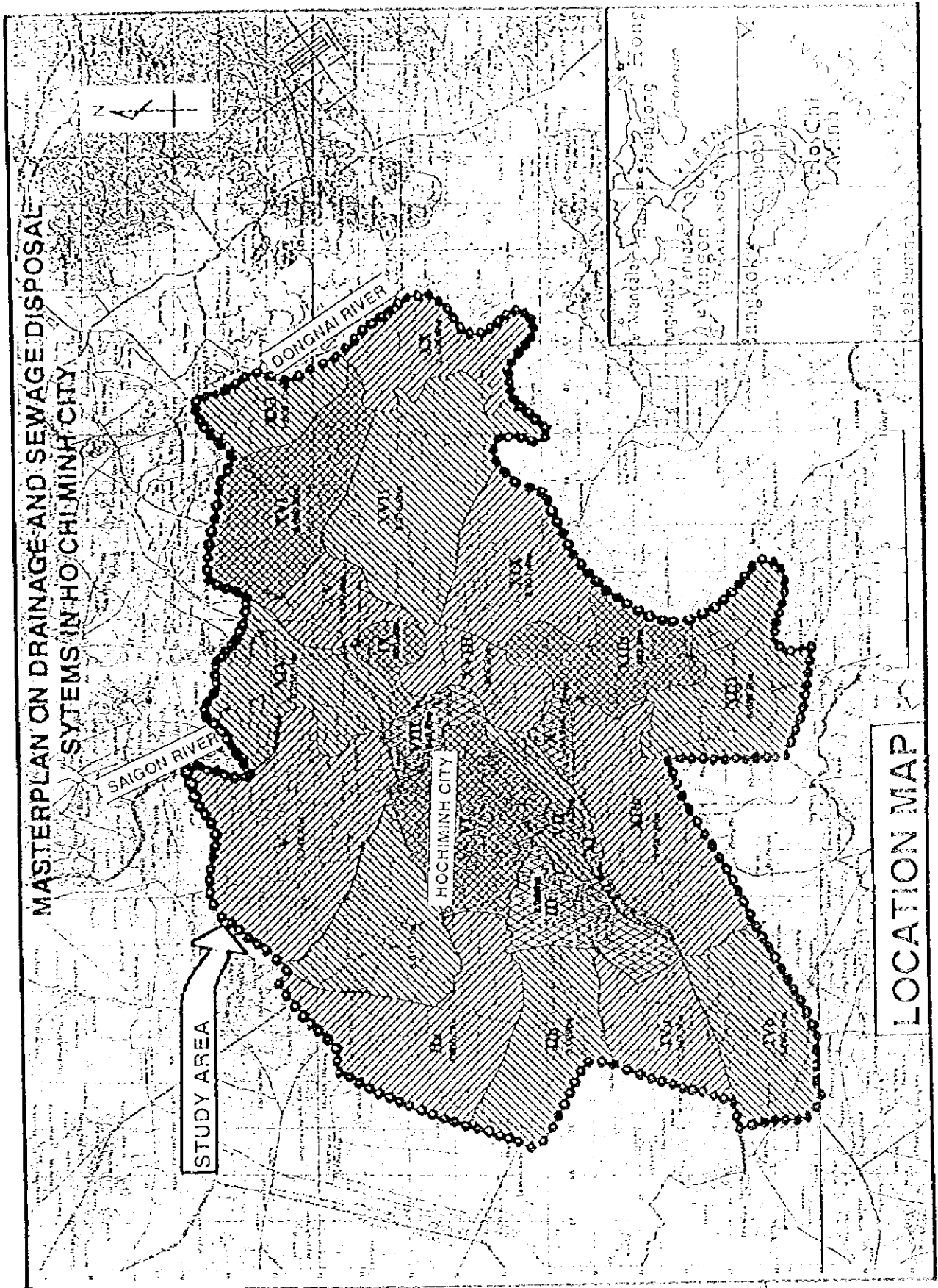


100

dy

11

Appendix 1 Study Area



(14)

*du*

*u*

APPENDIX 2

TENTATIVE SCHEDULE

MONTH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
DESCRIPTION:																							
WORK IN VIET NAM																							
WORK IN JAPAN																							
PHASE OF THE STUDY						PIHASE I												PIHASE 2					
REPORT PRESENTATION									PIR(1)					PIR							DFR		FR

□ : JICA Study Team's Work in Viet Nam  
 [ ] : JICA Study Team's Work in Japan

ICR : Inception Report    DFR : Draft Final Report  
 PR : Progress Report    FR : Final Report

(Handwritten mark)

dy

(Handwritten signature)

付屬資料3 MINUTES OF MEETINGS

MINUTES OF MEETINGS  
ON  
SCOPE OF WORK  
FOR  
THE STUDY  
ON  
URBAN DRAINAGE  
AND  
SEWERAGE SYSTEM  
IN  
HO CHI MINH CITY  
IN  
THE SOCIALIST REPUBLIC OF VIET NAM

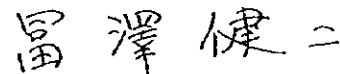
AGREED UPON BETWEEN  
THE PEOPLE'S COMMITTEE OF HO CHI MINH CITY  
AND  
THE JAPAN INTERNATIONAL COOPERATION AGENCY

Ho Chi Minh City, January 19, 1998



---

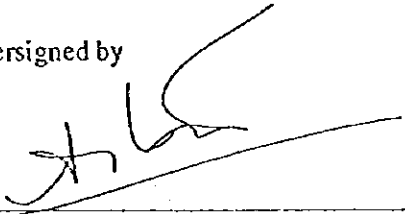
Mr. Vu Hung Viet  
Vice chairman,  
People's Committee of Ho Chi Minh City



---

Mr. Kenji Tomizawa  
Leader of the Preparatory Study Team,  
Japan International Cooperation  
Agency (JICA)

countersigned by



---

Ms. Truong Thi Ngoc Lan  
Deputy General Director of Infrastructure  
Department,  
Ministry of Planning and Investment

## 1. Introduction

In response to the request of the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "the Government of Viet Nam"), the Preparatory Study Team (hereinafter referred to as "the Team") of Japan International Cooperation Agency (hereinafter referred to as "JICA") visited Viet Nam from January 7 to January 25, 1998 to discuss the Scope of Work (hereinafter referred to as "S/W") for the Study on Urban Drainage and Sewerage System for Ho Chi Minh City in the Socialist Republic of Viet Nam (hereinafter referred to as "the Study").

The Team carried out field surveys of the study area and held a series of discussions with the authorities concerned of People's Committee of Ho Chi Minh City (hereinafter referred to as "the PCHCM") and other organizations.

The list of attendants is mentioned in the Appendix 1.

The Minutes of Meetings have been prepared for the better understanding of S/W agreed upon between the PCHCM and the Team on January 19, 1998, summarizing main points of the discussions made in the course of the preparation of S/W.

## 2. Objectives of the Study

The PCHCM requested the Study on Sewerage system should be included in the objectives of the Study. The Team recognized the necessity to implement the Study on Sewerage System through the series of discussions with the Viet Nam side and the field study carried out by the Team. Both sides agreed that the Sewerage system should be included in the objectives of the Study.

## 3. Study Title

Both sides agreed that the title of the Study would be "the Study on Urban Drainage and Sewerage System for Ho Chi Minh City in the Socialist Republic of Viet Nam" as described in S/W.

## 4. Target Year

Both sides agreed that the target year for the Study would be set in the year of 2020.

## 5. Counterpart Agencies

The PCHCM shall act as the counterpart agency as described in the S/W. The PCHCM will also establish the Project Management Unit (hereinafter referred to as "the PMU") which shall act as the technical and implementing counterpart. Both sides agreed that the PMU would be organized at the commencement of the Study. The PCHCM agreed to have the responsibility for establishing the PMU after signing of S/W and M/M.

## 6. Coordination with Other Ministries and Organizations

(1) Both sides agreed that the PCHCM would coordinate other ministries and organizations concerned to get maximum cooperation from these organizations as well as to avoid any duplicated works. Both sides also agreed that the PCHCM would establish a Steering Committee to achieve the above mentioned coordination and invite representatives from relevant ministries and organizations such as Ministry of Planning and Investment. The Team requested the PCHCM invite representatives from relevant ministries and organizations such as Ministry of Construction, Ministry of Agriculture and Rural Development, Ministry of Science, Technology and Environment, and etc... for the smooth implementation of the Study. Besides, the PCHCM agreed that Vice Chairman of the PCHCM would be the Chairman of the Steering Committee.



*dy*

*Al*

- (2) The PCHCM would coordinate international organizations concerned such as World Bank (WB), Asia Development Bank (ADB) and the Belgium Administration for Development Co-operation to exchange views and information with these organizations as well as to avoid any duplicated works.

#### 7. Undertakings of the Government of Viet Nam

- (1) It was confirmed that the PCHCM would secure the full support and participation of organizations concerned in the course of the Study.

- (2) It was confirmed that the PCHCM would assign the appropriate number of counterpart personnel to the JICA Study Team with the following fields. The numbers and fields of counterpart personnel will, however, be finalized by the PCHCM and the JICA Study Team in discussions at the commencement of the Study.

- a. Supervision
- b. Urban drainage plan
- c. Sewerage plan
- d. Waste water treatment facility
- e. Sewer system
- f. Design of drainage and sewerage facility, including cost estimation and construction plan
- g. Urban drainage and sewerage management plan
- h. Hydrology
- i. Urban development plan
- j. Environment
- k. Public hygiene
- l. Economic/ financial analysis
- m. Surveying
- n. Coordination for the JICA Study Team
- o. Others

- (3) The Team requested that the PCHCM would provide suitable office space with necessary equipment in Ho Chi Minh City, and sufficient numbers of vehicles with drivers for the Study. The PCHCM accepted to provide suitable office space with necessary furniture (desk, chairs, filing cabinets, and other appropriate office furniture), electricity and telephones, but The PCHCM expressed concern that, due to budgetary constraints, it would be difficult to provide office equipment (necessary number of facsimiles, photocopy machines and personnel computers), and vehicles with drivers. The Team promised to convey the request to JICA H.Q. for consideration.

#### 8. Counterpart Training

The PCHCM requested JICA conduct counterpart training in Japan, in addition to on-the-job-training, for the purpose of the smooth transfer of technology during the Study. The Team agreed to convey the request to JICA H.Q. for consideration.

#### 9. Technology Transfer Seminars and Workshops

The PCHCM requested JICA hold seminars and workshops as a part of the technology transfer in the course of the Study. The Team recognized the necessity and promised to convey the request to JICA H.Q. for consideration.



*dx*

*ll*

#### 10. Technology Transfer

The PCHCM expressed a strong wish of technology transfer relevant to urban drainage and sewerage such as the planning methods, regulations and management systems through the implementation of the Study.

#### 11. Reports

As for the Study reports, the PCHCM agreed to make them open to the public in order to achieve maximum use of the Study results.

The PCHCM requested JICA provide reports in Vietnamese for better understanding of the Study results. The Team recognized the necessity and promised to convey the request to JICA H.Q. for consideration.

#### 12. JICA's Development Study Program

The Team explained JICA's Development Study Program and the PCHCM fully understood the program.

(10/8)

dy

W

## APPENDIX 1

### LIST OF ATTENDANTS

(Vietnamese side)

#### Urban Planning Institute

Mr. Pham Duc Hiep	Vice Director
Ms. Pham Thi Thanh Hai	Head of Sewerage & Environmental Planning Subject
Ms. Phan Hoang Ho	Head of Drainage Planning
Ms. Nguyen Kim Thoa	Expert of Urban Drainage Division
Ms. Nguyen Thi Ngoc Phuong	Expert of General Planning Division

#### People's Committee of HCMC

Ms. Huynh Thu Ha	Officer
------------------	---------

#### Chief Architect's Office

Mr. Vo Kim Cuong	Vice Chief
Mr. Ton That Liem	Assistant to City Chief Architect

#### Department of Communications and Public Works

Mr. Tran Minh Dung	Vice Director
--------------------	---------------

#### Department of Planning and Investment

Mr. Phan Xuan Hoa	Vice Director
Mr. Trang Trung Son	Expert of Cooperation and Investment Promotion Division
Mr. Nguyen Hao Hiep	Expert of Infrastructure Planning Division

#### Urban Drainage Company HCM City

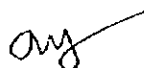
Ms. Le Thi Anh Hong	Vice Director
Ms. Dang Thi Minh Nguyet	Engineer

#### Department of Rural and Agriculture Development

Mr. Nguyen Chanh Hoa	Expert
----------------------	--------

#### Department of Housing

Ms. Tran Chi Thao	Expert
-------------------	--------





(Japanese side)

JICA Vietnam Office

Mr. Hiroshi Tsujino

Assistant Representative

Preparatory Study Team

Mr. Kenji Tomizawa

Leader

Mr. Minoru Okada

Member

Mr. Kimimasa Kato

Member

Mr. Katsuyoshi Saito

Member

Mr. Shouhei Sata

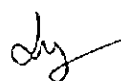
Member

Mr. Yuji Hatakeyama

Member

Ms. Ran Nagai

Member



QUESTIONNAIRE

OF

JICA PREPARATORY STUDY TEAM

FOR

THE STUDY OF URBAN DRAINAGE IMPROVEMENT

IN

HO CHI MINH CITY

DECEMBER 1997

JAPAN INTERNATIONAL COOPERATION AGENCY

This questionnaire is prepared by the Japanese Preparatory Study Team for the STUDY ON URBAN DRAINAGE IMPROVEMENT (Hereinafter referred to as the Study) so as to obtain basic data and information required for the Study.

Please answer to all the questions and attached materials in the questionnaire. Answers need not to be too much in detail but should be brief and precise.

Thank you for your cooperation.

NOTE: - Please write 'Y' in the "Availability" for the Data/Item available.

- Please write 'N' in the "Availability" for the Data/Item not available.

- If attached materials are not written in English, please write down notes in English on materials for understanding of the JICA Mission.

Kindly provide us the following information, items of which are described in some detail in the attached tables:

1. General
2. Reports and documents
3. Basic data
4. Existing project facilities
5. Drawings of facilities
6. Local consultants
7. Tariff/user charge for drainage, sewerage and sanitation facilities.
8. Costs for investigations and survey
9. Law, acts and regulations.
10. Environmental issues.
11. Flood damage

1. GENERAL

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Background The relationship between (1) National development plan and the Project, the study on flood control, drainage improvement, including the priority of the Project in the national development plan. (2) The national policy and the Project, including the priority Of the Project in the national Policy. (3) The regional/provincial Development plan and the Project.		Yes		
2. Outline of the Project	<ol style="list-style-type: none"> <li>1) Area</li> <li>2) Target year</li> <li>3) Population</li> <li>4) Drainage /sewerage/sanitation plan</li> <li>5) Flood and inundation control plan</li> <li>6) River improvement plan</li> <li>7) City plan and land use plan, including land settlement plan</li> <li>8) Water supply system plan</li> <li>9) Road and railway development plan</li> <li>10) Agriculture, fisheries and navigation</li> <li>11) Majority of citizen's opinion and idea to the Project</li> <li>12) Effectiveness of the plan</li> <li>13) Prospective funding source</li> </ol>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>No</p> <p>Yes</p>	<p>Urban Planning Institute (UPI)</p> <p>- ditto -</p> <p>- ditto -</p> <p>Dept. of Communications &amp; Public Works (CPW)</p> <p>- ditto -</p> <p>CPW + UPI</p> <p>Urban Planning Institute</p> <p>UPI, Water Supply Company</p> <p>UPI, Transport Development in the South (TDSI South)</p> <p>Agriculture &amp; Rural Development Department(ARD)</p> <p>City's Budget + BOT Loan</p>	

1. GENERAL (2)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
3. Institution or Agency (1) Institution or agency that will directly be responsible for the study (2) Organization chart for institution or agency (3) Institution or agency that will be responsible for the implementation, construction, operation and maintenance of the Project. (4) Organization that is responsible for the urban development. (5) Other organizations that are Related to the Project.		Yes	Urban Drainage Company (UDC) Urban Planning Institute	
		Yes	- ditto -	
		Yes	Urban Drainage Company	
		Yes	Urban Planning Institute	
		Yes		
4. Present Conditions of Urban Drainage and Sewerage System in the Project Area. (1) Outline of drainage and sewerage system in the project area. (2) Present problems as to inundation and flood damage. (3) Government subsidies to the drainage and sewerage system construction, operation and maintenance. (4) Tariff, user charges, etc. (5) Operation and maintenance cost (6) Sewerage groups or organization and their functions, numbers, size, etc.		Yes	Urban Drainage Company, Urban Planning Institute, 12 Districts in the Urban City Area - ditto -	
		Yes	Public Drainage Company in District Level	
		No		
		Yes		
		Yes	Urban Planning Institute	

1. GENERAL (3)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
(7) Present and future conditions of the water supply system in the project area.		No		
(8) Present and future power supply conditions in the project area.		Yes		
(9) Foreign assistance programs.		Yes		

2. REPORTS AND DOCUMENTS

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
(1) Latest Annual Reports on Economy and Financial .		Yes	Statistics Bureau	
(2) Latest Reports on Flood and Inundation in the Area,		Yes	Agriculture & Rural Development	
(3) Technical Reports on Drainage, Sewerage and Sanitation		No		
(4) Year Book of Vietnam		Yes	Statistics Bureau	
(5) Statistics of Vietnam.		Yes	- ditto -	

3. BASIC DATA (1)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
1. Maps	<ol style="list-style-type: none"> <li>1) Topographic maps (scales of 1:50,000, 1:10,000, 1:5,000, etc.)</li> <li>2) Land use maps</li> <li>3) Geological maps</li> <li>4) Hydrological maps</li> <li>5) Drainage/sewage maps (including canal/conduits, gates, pipe sizes, manhole locations.</li> <li>6) Flood/inundation maps</li> <li>7) General maps of roads, railways, bridges, ponds, embankments, etc.</li> <li>8) General maps of proposed water supply, drainage and sewerage.</li> <li>9) Maps of borings and test pits for determining subsurface and water conditions.</li> </ol>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Topography Bureau</p> <p>Urban Planning Institute + Land Bureau</p> <p>Meteorological &amp; Hydrological Institute</p> <p>- ditto -</p> <p>UPI + UDC</p> <p>UPI + UDC</p> <p>Topography Bureau</p> <p>Water Supply Company + Urban Drainage Company</p> <p>Geology Group No. 8</p>	
2. Meteorological	<ol style="list-style-type: none"> <li>1) Location of meteorological stations and observatories.</li> <li>2) Temperatures, high, low, etc.</li> <li>3) Humidities</li> <li>4) Wind directions, velocities.</li> <li>5) Evaporations.</li> <li>6) Solar radiation</li> <li>7) Rainfall intensities and durations, daily, hourly, 30 minutes, etc.</li> <li>8) Seismological data.</li> </ol>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Meteorological &amp; Hydrological Institute</p> <p>- ditto -</p> <p>- ditto -</p> <p>- ditto -</p> <p>- ditto -</p> <p>- ditto -</p> <p>- ditto -</p> <p>- ditto -</p> <p>- ditto -</p> <p>Geology Group No.8</p> <p>- ditto -</p> <p>- ditto -</p>	
3. Hydrological, hydraulic, geological Hydrogeological data and records	<ol style="list-style-type: none"> <li>1) Water levels and discharges of Canals and rivers.</li> <li>2) Groundwater elevations, flow Directions, and extraction amount.</li> <li>3) Geological profiles and maps of dis-Tribution.</li> </ol>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>		



3. BASIC DATA (2)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
4. Natural Disaster	4) Water and wastewater qualities.	Yes	ENCO (Environmental Committee) Environmental Company	
	5) Distribution, quantity and quality of solid wastes.	Yes		
	6) History of damages by river and Canal overflows.	Yes		
	1) Earthquake	No		
	2) Strong winds	Yes		
	3) Flooding	Yes		
	4) Land slide	No		
	5) Inundation	No		
	6) Slope failure	No		
	7) Debris flow	Yes		
5. Others	8) Ground subsidence	Yes	Urban Drainage Company (UDC) + Public Drainage Company in district level.	
	9) Wind erosion	Yes		
	1) Staff organizations and members of the concerned authorities.	Yes		
	2) Management of drainage/sewage Systems.	Yes		

4. EXISTING PROJECT FACILITIES

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Location of Facilities (1) History of drainage and sewerage facilities. (2) Locations of drainage and Sewerage conduits, manholes, outfalls, pump stations, etc.		Yes	Urban Planning Institute	
2. Hydraulic Conditions (1) Present conditions of pipes, gates, valves, manholes, outfalls, connection pipes, street catch basins, etc. (2) Hydraulic conditions of canals Rivers and channels. (3) Catchment areas and Boundaries of rivers, canals, drains, ponds, etc. (4) Pump stations.		Yes	Urban Drainage Company, Agriculture and Rural Development Department	
3. Functions of Facilities (1) Dimensions and capacities of existing canals, drains, gates, valves, manholes, outfalls, pump stations. (2) Present functions of the above Facilities. (3) Extent of damage of the above Facilities. (4) Items and specifications of Rehabilitation works of the Existing facilities.		Yes No Yes	Agriculture and Rural Development Department	

4. EXISTING PROJECT FACILITIES (2)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
4. Operation and Maintenance (1) Operation and maintenance works for the existing drainage and sewerage facilities. (2) Record of operation and maintenance of facilities.		Yes	Urban Drainage Company. Rural Development Department	
		No		

5. DRAWINGS OF FACILITIES

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
1. Sections and Profiles of Facilities (1) Existing sewers (3) Storm water drains, canals and Rivers.		Yes	Urban Drainage Company	
		Yes		
2. Standard Drawings of Drainage And Sewerage Systems (1) Combined sewers (2) Sanitary sewers (3) Stormwater drains (4) Pump stations (5) Canals and rivers		Yes	Urban Drainage Company	
		No		
		Yes		
		No		
		Yes		

6. LOCAL CONSULTANTS

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL-ABILITY	PLACE OF DATA AVAILABLE	
1. Names of Consultants who have Work experience in drainage and Sewerage facilities planning and design. 2. Names of consultants for ground survey, investigation, etc. 3. Institution or organization who conducts water quality survey.		Yes	Urban Drainage Company(UDC) Communications & Public Works Consultant Co. belonging to Department of CPW	
		Yes	- ditto -	
		Yes	Environmental Protection Centre (EPC)	

7. TARIFF/USER CHARGE FOR DRAINAGE/SEWERAGE/SANITATION FACILITIES

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL-ABILITY	PLACE OF DATA AVAILABLE	
1. Sewer User Charge 2. Septic Tank Desludging Charge 3. Drain User Charge 4. Solid Waste Collection and Disposal Charge 5. Water Supply Charge		No		
		No		
		No		
		Yes	Urban Drainage Company	
		Yes	Water Supply Company	

8. COSTS FOR INVESTIGATIONS AND SURVEYS

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Vertical Profiles (US\$/km) 2. Plane Table Survey (US\$/m <sup>2</sup> ) 3. Topographic Surveys(US\$/ha) 4. Scale of 1:1,000, 1:500 5. Cross Sectional Survey of Water Ways 6. Test borings (US\$/m) φ 66 mm φ 88 mm 7. Penetration Tests (US\$/m) 8. Soil Laboratory Tests Physical tests, including triaxial Compression test. 9. Water Quality Tests (US\$/sample) pH, Temperature, COD, DO, SS and Coliform number.	Questionnaire に対する直接 の回答はなかったが、別個 にヒアリングを行い収集した			

9. LAWS, ACTS AND REGULATIONS

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
1. Water Laws 2. Land Laws 3. Design Standards/Guidelines 4. Laws Relative to Constructions 5. Consultants and Contractors		Yes Yes Yes Yes Yes		

10. ENVIRONMENTAL ISSUES

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAILABILITY	PLACE OF DATA AVAILABLE	
<p>1. Legislation Related to Environmental Policies and Standards</p> <p>(1) Responsible ministry or Agency .</p> <p>(2) Laws/regulations/guidelines</p> <p>(3) Environmental quality standards including emission/effluent standards</p> <p>-standard values and penalties</p> <p>-monitoring system and its responsible agency.</p> <p>(4) Laws/guidelines related to environmental impact assessment (EIA)</p>	<p>1) air pollution</p> <p>2) water pollution</p> <p>3) soil pollution</p> <p>4) noise</p> <p>5) vibration</p> <p>6) offensive odor</p> <p>1) type/size of activities for EIA</p> <p>2) procedures</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>		
<p>2. International Conventions on Environmental Conservation</p>	<p>1) Affiliation to bilateral or multilateral conventions</p> <p>2) Names of conventions and the date of affiliation, if any</p>	<p>Yes</p>	<p>Department of Housing</p>	
<p>3. Present situation of the Proposed Project Sites</p> <p>(1) Socio-economic environment</p>	<p>1) Plan of resettlement, if any (number of people to be resettled, composition)</p> <p>2) Experience of resettlement in previous projects, if any</p> <p>3) Main industry or source of income of residents</p> <p>4) Distribution of schools, hospitals, Other public facilities</p> <p>5) Cultural property or archaeological Sites</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>		

10. ENVIRONMENTAL ISSUES (2)

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
(2) Natural Environment	<p>6) History of epidemic diseases</p> <p>7) Solid wastes collection/disposal System and wastewater treatment System</p> <p>1) Location of particular areas officially protected such as national parks and natural parks</p> <p>2) Location of environmentally vulnerable areas such as mangrove forest and wetland</p> <p>3) Species of precious animals and Plants in the area</p> <p>4) Distribution of important historical Spots, landscape and scenery</p> <p>1) Present conditions of air quality, Water quality, soil contamination, Noise and vibration</p> <p>2) Number of pollution grievances</p> <p>3) Environmental education</p>			
(3) Quality of Life	<p>1) Environmental survey</p> <p>2) Hydrographic survey</p> <p>1) Environmental survey (water Quality, noise , etc.)</p> <p>2) Hydrographic survey</p> <p>1) Environmental specialist</p> <p>2) Hydrographic specialist</p>			
4. Consultants and Surveyors	<p>(1) List of registered consulting Firms and actual results in Terms of .....</p> <p>(2) Cost of investigation and Survey</p> <p>(3) Bidding rates for consultants</p>			

**11. FLOOD DAMAGE**

ITEM	DESCRIPTION	AVAILABILITY		NAME OF MATERIALS
		AVAIL- ABILITY	PLACE OF DATA AVAILABLE	
(1) Locations of Frequently Inundated Areas		Yes	Urban Drainage Company (UDC)	
(2) Clogged or Damaged Canals, Pipes Gates, Manholes, etc.		Yes		
(3) Most Severely Suffered Areas with Inundation		Yes		
(4) Sewer Outfall Pipes and Gates		No		
(5) Depth of Pondings		No		
(6) Contents of Solid Wastes in the Stormwater		Yes	Medical Centre	
(7) Incidence of Water-Related Diseases		Yes	Ho Chi Minh City Flood Prevention Committee	
(8) Property Damage by Inundation		Yes		
(9) Economic Loss by Inundation		Yes		



付属資料5 主要面会者リスト

ベルギー大使館

Mr. Paul Verle Head of Development Cooperation Division

アジア開発銀行

Mr. Ho Le Phong Program / Implementation Officer

UNDP

Mr. Gordon Johnson Unit Head, Environment and Natural Resources Management

世界銀行

Mr. Nguyen Cong Thanh Country Program Manager

ホーチミン市人民委員会表敬

Mr. Vu Hung Viet Vice chairman, People's Committee of Ho Chi Minh City  
Mr. Pham Duc Hiep Deputy director, Institute Urban Planning of Ho Chi Minh City  
Mr. Trang Trung Son Cooperation and Investment Division, UPI  
Mr. Tran Minh Dung Vice director, Department of communications and Public Works  
Ms. Huynh Thi Thu Ha Officer, Science Technology and Environment, People's Committee of HCMC  
Ms. Doan Thi Toi Chief of Executive Office, Environmental Committee of Ho Chi Minh

S/W meeting at UPI's office

Mr. Pham Duc Hiep Vice director of UPI  
Mr. Vo Kim Cuong Vice chief architect HCMC  
Mr. Tran Minh Dung Vice director of Communications and Public Works  
Mr. Phan Xuan Hoa Vice director of DPI-HCMC  
Mr. Trang Trung Son Expert of DPI  
Mr. Nguyen Hao Hiep Expert of DPI  
Ms. Tran Chi Thao Expert of Housing Department  
Ms. Pham Thi Thanh Hai Head of Sewerage & Environment Planning Subject of UPI

Ms. Nguyen Kim Thoa	Expert of Urban Drainage Division, UPI
Ms. Nguyen Ngoc Phuong	Expert of General Planning Division, UPI
Ms. Phan Hoang Ho	Head of Drainage Planning
Ms. Huynh Thu Ha	Expert of People's Committee of Ho Chi Minh City on Environmental Management
Mr. Nguyen Chanh Hoa	Expert of Agriculture and Rural Development department
Ms. Le Thi Anh Hong	Vice Director of Urban Drainage Company
Ms. Dang Thi Minh Nguyet	Engineer of Urban Drainage Company
Mr. Ton That Liem	Assistant to City Chief Architect of Ho Chi Minh City Chief Architect's Bureau

#### 現地踏査同行者

Mr. Trang Trung Son	Expert of DPI
Ms. Nguyen Kim Thoa	Expert of Urban Drainage Division, UPI
Ms. Nguyen Ngoc Phuong	Expert of General Planning Division, UPI
Ms. Huynh Thu Ha	Expert of People's Committee of Ho Chi Minh City on Environmental Management

#### 都市排水公社 (Urban Drainage Company)

Ms. Le Thi Anh Hong	Vice Director
Ms. Dang Thi Minh Nguyet	Engineer

#### 南部交通開発研究センター (Transport Development Study Center in the South(TDSI SOUTH))

Dr. Prof. Le Qua	Director
------------------	----------

#### 環境技術センター (CEFINEA-Center for Environmental Technology)

Prof. Dr. Lam Minh Triet	Director
Mr. Tran Van Thinh	Deputy director

#### 環境保全センター (EPC-Environmental Protection Center)

Dr. Le Trinh	Director
Mr. Vuong Quang Viet	Engineer

ホーチミン市環境委員会 (ENCO-Environmental Committee of Ho Chi Minh City)

Ms. Doan Thi Toi                      Chief of Executive Office

Mr. Phan Van Minh                    Senior Expert

付属資料6 ローカルコンサルタントのリスト

1. 一般土木設計・測量等業務

1-1 Survey Company No.4-US

所在地 : 65B Mac Dinh Chi Street, Ho Chi Minh City

電話番号 : 8291756

ファックス番号 : 84-4-8245708

責任者 : Dr. To Van Nhu

業務分野・経歴等 : 土質調査、基礎工学、ボーリング、上水道水資源調査、パッケージ  
上水道施設計画・設計・建設、地形測量と地図作製 (縮尺1:5000から1:500程度)。

1-2 Mapping Company No.3 (General Department of Land Administration)

所在地 : Binh An Ward, District 2, Ho Chi Minh City

電話番号 : 8870006

ファックス番号 : 8990538

責任者 : Mr. Gian Van Lenh

関連官公庁 : Ministry of Construction

業務分野・経歴等 : ヴィエトナム南部の地図作成業務担当機関である。

1-3 Centre for Training, Research and Practice of Hydraulic Technology in Southern Vietnam

所在地 : 145 To Hien Thanh, District 10, Ho Chi Minh City

電話番号 : 8642541

ファックス番号 : 8625310

責任者 : Dr. Pham Cao Long

関連官公庁 : Water Resources University, Ministry of Agriculture Construction  
and Rural Development.

業務分野・経歴等 : ホーチミン市下水道施設の設計、工業廃水処理計画、水質汚濁解析、  
施設の水理解析と設計、メコンデルタ洪水制御関連計画、河川堤防  
防御計画、中部、高地ヴィエトナム、海岸地域の各都市で水理関連  
事業に従事。

1-4 Sudewat Consultant Company

所在地 : 302 Nguyen Cong Tru, District 1, Ho Chi Minh City

電話番号 : 8213937

ファックス番号 : 8211042

責任者 : Dr. Le Thang Cang

関連官公庁 : Ministry of Transport and Communication

業務分野・経歴等 : 公共施設と通信分野投資に係る調査、計画、資材検査、技術検討  
(プロジェクト施設設計、技術基準策定、評価を含む)、通信・土木・工業関連施設の計画・設計と費用積算、入札・経済などの評価、実施設計図面照査等施工監理業務。

1-5 Viet Nam Consultancy Company on Water Supply, Sanitation and Environment  
(VIWASE)

所在地 : 179 Dinh Tien Hoang, District 1, Ho Chi Minh City

電話番号 : 8231326

ファックス番号 : -

責任者 : Vice Director, Mr. Tam

関連官公庁 : The Ministry of Construction

業務分野・経歴等 : 上水道、衛生施設に係る各種調査、計画、設計、施工監理、測量、  
環境保全、土質・水質調査等の業務。一般土木、工業関係構造物の  
計画・設計業務。

1-6 Construction Consultant Company-General Construction Corporation No.4

所在地 : 79/5 Xo viet Nghe Tinh, Binh Thanh District, Ho Chi Minh City

電話番号 : 8998733

ファックス番号 : 89811012

責任者 : Mr. Duc

関連官公庁 : Ministry of Agriculture & Rural Development

業務分野・経歴等 : 一般土木関連コンサルタント業務。

1-7 Water Supply and Sewerage Consultant Company

所在地 : 10 Pho Quang, District Tan Binh, Ho Chi Minh City

電話番号 : 8231326

ファックス番号 : -

責任者 : Vice Director, Mr. Lai

関連官公庁 : The Ministry of Construction

業務分野・経歴等 : 上下水道関連設計・調査業務。

1-8 Transport Development Study Centre in the South (TDSI South)

所在地 : 92 Nam Ky Khoi Nghla Street, District 1, Ho Chi Minh City

電話番号 : 8290258 - 8211117

ファックス番号 : 8211167

責任者 : Dr. Prof. Le Qua

関連官公庁 : The Ministry of Transport Communication

業務分野・経歴等 : ヴィエトナム国南部地域、ホーチミン市の交通に係る調査、開発計画、通信事業に従事。ホーチミン市内の運河・水路・河川網と水運計画の策定。鉄道網計画の調査・計画。その他、地形測量、地図手配、各種資料・情報の提供。環境調査については再委託による。

#### 1-9 National Institute for Urban and Rural Planning (NIURP)

所在地 : 37 Le Dai Hanh Street, Hanoi

電話番号 : 8.258691

ファックス番号 : 8.264339

責任者 : Associate Prof. Dr. Le Hong Ke.

関連官公庁 : Ministry of Construction

業務分野・経歴等 : 都市開発計画、都市・地方開発計画、都市・地方環境整備計画、開発計画評価、地形・地質測量調査等の実績。

#### 1-10 Center for Human Settlements Planning and Development

所在地 : 243 A De La Thanh Street, Cau Glay Townlet, Hanoi

電話番号 : 8.347057 - 8344358 - 8343249

ファックス番号 : 84-48344020

責任者 : Director: Dr. Nguyen Van Than

関連官公庁 : Center for Rural Planning and Development-Mekong Delta

Center for Rural Planning and Development-Midland

Managing Office of National Program for Rural Water Supply and Sanitation

業務分野・経歴等 : 上水道計画、衛生施設計画、道路計画、社会基盤施設の計画・設計、プロジェクト監理・運營業務等。

#### 1-11 Information Centre for Construction Science & Technology (ICCST)

所在地 : 37 Le Dai Hanh Street, Hanoi

電話番号 : 8215137 - 8215138

責任者 : Mr. Vu Duy Tu

関連官公庁 : Ministry of Construction

業務分野・経歴等：技術情報収集・提供、データベースの作成・提供、技術会議・セミナー等の企画・運営。

1-12 Consultants, Designers & Constructors Corporation (CDC)

所在地：5th Floor 57 Quang Trung Street, Hanoi

電話番号：(84-4)8266935 - 8225302

ファックス番号：(84-4)8258122

責任者：Mr.Nguyen Dang Can, M.Sc.

関連官公庁：The Ministry of Construction

業務分野・経歴等：一般土木、建築、電気、機械関連の測量、調査、計画、設計業務、土質調査、施工監理業務等。プロジェクト実施に外国企業へのサポートと提携業務。

1-13 Ho Chi Minh City Chief Architect Office

所在地：60 Truong Dinh Street, District 3, Ho Chi Minh City

電話番号：8242126 - 8294434

ファックス番号：84-8-8243987

責任者：Chief Architect Le Van Nam

関連官公庁：The Ministry of Construction

業務分野・経歴等：ホーチミン市の本部には65人のスタッフを擁し、市街地開発計画に係る調査、計画・監理、法律文書の作成等の業務を行う。

1-14 Hydraulic Engineering Consultants Corporation No.2 (HEC-2)

所在地：169 Tran Quoc Thao, District 3, Ho Chi Minh City

電話番号：0-8-8441753 - 0-8-8443637

ファックス番号：84-8-8444958

責任者：-

関連官公庁：The Ministry of Agriculture and Rural Development

業務分野・経歴等：投資計画準備、河川水理解析、河川・水力発電施設計画・設計、建設の品質管理、入札書類作成、地質、地形調査・測量、構造物基礎工法の調査・計画、水理モデルの製作と解析。多くの灌漑、排水、塩分遡上、上水道、発電所等の事業を行っている。

## 2. 環境/資源 調査・評価・分析関連機関

### 2-1 Environmental Protection Centre

所在地 : 56 Truong Quoc Dung, Phunhuan, Ho Chi Minh City  
電話番号 : 84.8.8446262 - 84.8.8424524  
ファックス番号 : 84.8.8454263  
責任者 : Director, Dr. Le Trinh  
関連官公庁 : Institute for Tropical Technology and Environmental Protection of Vietnam

業務分野・経歴等 : 環境科学と技術開発に係る国立機関で、ダナンより南の地域の環境モニタリングを行う。ホーチミン市内ニューロック、サイゴン、ドンナイ川のモニタリング結果等多くの資料を保有し、また、公共事業、セメント工場、自動車、石油、肥料工場など多くの事業のEIAを実施した。本格調査時点での環境資料の提供と環境アセスメントに協力が可能である。人材育成のための研修10コースを実施している。

### 2-2 Environment Committee, People's Committee of Ho Chi Minh City(ENCO)

所在地 : 244 Dien Bien Phu Street, District 3, Ho Chi Minh City  
電話番号 : (84.8)8242709 - 8242710 - 8200299  
ファックス番号 : (84.8)8242711 - 8242710  
責任者 : Chief Executive Office, Ms. Doan Thi Toi  
関連官公庁 : DOSTE

業務分野・経歴等 : ホーチミン市の環境監理を目的とし設置された。各22区毎に設置のENCO事務所が区内の環境監理を行っている。環境に係るM/PやF/Sを照査、必要な勧告等を行う。大気、排水基準、環境モニタリング等の資料を保持し、本格調査時に有料あるいは無料で提供する。フィールド調査は、CEFINEAやEPCに委託することになる。

### 2-3 Centre for Environmental Technology and Management (CEFINEA)

所在地 : 142 To Hien Thanh Street, District 10, Ho Chi Minh City  
電話番号 : 8651132 - 8652597  
ファックス番号 : 84.8.8655670  
責任者 : Director; Prof. Dr. Lam Minh Triet, Deputy Director; Mr. Tran Van Thinh.



関連官公庁 : Ho Chi Minh City University of Technology (HUT); Environmental Monitoring Station (EMS) the Ministry of Science, Technology & Environment

業務分野・経歴等 : 工業団地、自然環境保全に係る調査を目的とし、職員は48人、内4名が博士号、16名が修士、残りも全員大学卒で、全員が環境保全分野の専門家である。特に、廃水、上水道関連の専門家が多い。企業・官公庁からの委託を受け、環境モニタリング、汚水処理方式の基礎調査研究、EIAの作成等を行う。実績としては、サイゴン川、ニューロック、ティグ等の水質・環境調査を実施し、多くの環境関連資料を持っている。環境技術センターでは人材育成のための研修も行っている。

#### 2-4 Urban Drainage Company, Ho Chi Minh City

所在地 : 8 Bis Pham Ngoc Thach Street, District 3, Ho Chi Minh City

電話番号 : 8295653 - 8230800

ファックス番号 : (84-8)8295653

責任者 : Deputy Director, Ms. Le Thi Anh Hong

関連官公庁 : Department of Transport and Public Works  
Drainage Enterprise-Saigon Area, 252 Co Bac Street, District 1  
Drainage Enterprise-Giadinh Area, 42 Bach Dang Street, Binh Than District

業務分野・経歴等 : 運輸・公共事業省に属する国営会社で運営費も同省予算によるが、建設業者選定は入札方式で決定し、ホーチミン市の予算により執行する。同社は、ホーチミン市の汚水・雨水排水施設の建設・維持管理の責を負い、現在、技術者80人、作業員600人のスタッフを擁している。既存下水道施設平面図（縮尺1:5000、1:10,000 約80枚）等、ホーチミン市下水道施設の関連資料を持ち、現在、既設施設のデータベース化を行っている。

#### 2-5 Sub-Institute for Water Resources Planning and Management (SIWRPM)

所在地 : 253A An Duong Vuong Street, Ward 3, District 5, Ho Chi Minh City

電話番号 : (84-8) 8350850, (84-8) 8354218

ファックス番号 : (84-8) 8351721

責任者 : Director of the SIWRPM (Deputy Director of the Institute); M. Sc. To Van Truong. Deputy Directors; Dr. Hoang Tho Dien, Nguyen Duy Thue

関連官公庁 : The Ministry of Agriculture and Rural Development

業務分野・経歴等 : メコンデルタとドンナイ流域担当の2局があり、河川・利水・水環境等に関連する水理・水文調査、解析、水質分析、水資源開発計画等を行う。現在102人のスタッフを擁している。

#### 2-6 Centre of Analytical Services and Experimentation (CASE)

所在地 : 2 Nguyen van Thu, District 1, Ho Chi Minh City

電話番号 : 8241086

ファックス番号 : 8293087

責任者 : Prof. Chu Pham Ngoc Son

関連官公庁 : The Service of Science-Technology and Environment of Ho Chi Minh City

業務分野・経歴等 : 工業、水資源開発、環境関連業務。飲料水、汚水、工業廃水、表流水、地下水、海水、等の調査・分析。健康関連の調査、人材の研修業務。

付属資料7 収集資料リスト

収集資料リスト(1)	資料の名称	発行年	地域	言語	形態	版型	ページ数	オリジナル・コピーの別	部数	収集先名称又は発行機関	寄贈・購入の別	備考
1	The Canal Tan Hoa - Lo Gom Sanitation & Urban Upgrading Project in Ho Chi Minh City	1997	HCM市	英語	書籍コピー	A4	52	コピー	1	ヘルキ-大皮面	寄贈	Environment Management of Ho Chi Minh City
2	United Nations Development Programme - Project of the Government of the Socialist Republic of Vietnam	1997	HCM市	英語	書籍コピー	A4	32	コピー	2	UNDP	寄贈	
3	Country Profile - Socialist Republic of Viet Nam	1997	全国	英語	書籍	A4	61	オリジナル	1	ADB	寄贈	
4	HCMC Water Supply & Sanitation 関係資料	1997	HCM市	英語	書籍コピー	A4	8	コピー	1	ADB	寄贈	プロジェクト情報
5	Ho Chi Minh City Environmental Improvement 関係資料	1997	HCM市	英語	書籍コピー	A4	3	コピー	1	ADB	寄贈	プロジェクト情報
6	Urban Planning Institute of Ho Chi Minh City	1997	-	ウイット語 英語	書籍	B5	20	コピー	7	UPI	寄贈	UPI概要
7	Location Map	1998	HCM市	英語	図面	A3	1	コピー	7	UPI	寄贈	M/P.F/S調査範囲図
8	Tourist Map - Ho Chi Minh City	1998	HCM市	ウイット語 英語	図面	A2	1	オリジナル	7	UPI	寄贈	1:26,000, 1:100,000
9	Spatial Development Direction 2010-2020	1997	HCM市	英語	図面	A2	1	オリジナル	4	UPI	寄贈	1:50,000
10	Master Plan on Drainage and Sewage Disposal Systems in HCMC	1997	HCM市	ウイット語 英語	図面	A1	1	オリジナル	2	UPI	寄贈	1:100,000
11	Presentation on the research - Development Institutions	1996	全国	ウイット語 英語	書籍	A4	126	オリジナル	1	TDSC South	寄贈	全国の研究開発55機関の紹介
12	Urban Drainage Company, Ho Chi Minh City	1998	-	英語	書籍コピー	A4	3	コピー	1	Urban Drainage Co.	寄贈	公社概要
13	Concept Plan Outline on Industrial Development Soveracze=Environmental Hygiene	1996	HCM市	ウイット語 英語	図面	AO	1	コピー	1	UPI	寄贈	
14	現地調査レポート	1998	HCM市	ウイット語	図面	A1	1	オリジナル	1	UPI	寄贈	98年1月13日、14日現地調査実施
15	CEFINEA	1997	-	ウイット語 英語	書籍	A4	18	オリジナル	1	CEFINEA	寄贈	センター概要
16	EPC-Environmental Protection Center	1997	-	ウイット語 英語	書籍	B5	8	オリジナル	3	EPC	寄贈	センター概要
17	Environmental Protection Center 1987-1997	1997	-	英語	書籍	A4	21	オリジナル	3	EPC	寄贈	概要、実績等
18	Environmental Protection Activities in Ho Chi Minh City	1997	HCM市	ウイット語 英語	書籍	B5	19	オリジナル	3	ENCO	寄贈	活動状況
19	Air Quality Standards	1995	全国	英語	書籍コピー	A4	12	コピー	1	ENCO	寄贈	大気排出基準、大気環境基準
20	Water Quality Standards	1995	全国	ウイット語	書籍コピー	A4	4	コピー	1	ENCO	寄贈	排水基準、水質環境基準
21	Law on Environmental Protection	1994	全国	英語	書籍コピー	A4	13	コピー	1	ENCO	寄贈	

## 付属資料8 現地踏査結果の概要

### ○ 視察ルート (図-1 参照)

\*一日目は船上から河川および運河の水質および吐き口などの状況を視察した。

Song Sai Gon → Rach Tra →→ Kinh Cau An Ha → Kinh Xang → Song Cho Dem → Rach Lo Gom  
→ Kinh Ben Nghe → Kinh Ngang So 1 → Kinh Doi → Rach Ong Lon → Rach Phu Xuna  
→ Song Nha Be → Song Sai Gon → Song Vam Thuat → Song Sai Gon → Rach Thi Nghe  
→ Song Sai Gon

\*二日目は船上から視察を開始し、その後、上陸して管きよの状態、工業地帯周辺の水質状況、処理場予定地周辺の状況などを確認した。

Song Sai Gon → Rach Thi Nghe → 上陸 → Rach Nhieu Loc (Box Culvert)  
→ Tran Binh Trong 通の埋設管きよおよび Kinh Tau Hu への吐き口  
→ Linh Trung 地区の工業地帯 → Cat Lai 地区の処理場予定地

### ○ 視察所見

HCMC 郊外の河川・水路の水質状況は比較的良好な状態にあり、現在は河川・水路による自浄作用が十分に機能しているものと考えられる。しかし、これらの区域も住宅開発が進むにつれ、水質の悪化が予想される事は否定できないと思われる。また、Rach Tra では一部区域において硫酸性水質となっている区間があると説明された。

郊外の河川・水路から Kinh Xang → Song Cho Dem → Rach Lo Gom → Kinh Ben Nghe、Rach Thi Nghe と移動するにつれ、水質の状況は悪化し、市の中心部、特に Rach Lo Gom では、水路の不法占拠家屋 (写-3) がたくさんあり、これらは、周辺的生活環境を悪化させており、更に、水路の水は真っ黒であり、底泥は嫌気状態であると予想される事から、かなり強いメタンガスなどによる臭気も発生し、また、生物の生息は見られなかった。これは、HCMC 中心部のどの水路についても言える事であり、下水道施設の必要性を強く感じた。特に、人力で掘られた水路については、現場を見た時間の違いがあるかもしれないが、自然に出来た川と違って自ら流れる能力が低い (流速が遅い) 事から、水質汚濁も激しく、優先順位としては高くなるのではないかという印象を受けた。

Song Vam Thuat は工業地域を上流に持ち、かなり水質の悪化が進んでいる状況であり、早急に除害施設などの対策を取る必要性が感じられた。幸いにも、下流域ではまだ宅地開発が進んでおらず、生活排水による汚濁は少ないものと予想される。

Rach Nhieu Loc が Box Culvert となっている所では浸水の跡が残っており、約30cm程度の浸水が生じるようである。また、水路に浮いている様に、ゴミの投棄が問題となっている。

Tran Binh Trong 通に埋設されている管きよは比較的健康的な状態であり、十分使用に耐えるものと見受けられたが、吐き口の中には、土砂の流入により閉塞しているものもあると予想される。

処理場予定地付近は、現在、空き地となっており、施設建設には支障が無いと思われる。

全体的に、HCMC はどの水路も干満の影響を受け水位の変動が激しく、満潮時には吐き口が水没していることから、遮集管を埋設する際には、十分な逆流対策が必要である。また、都市排水を考えた場合、強制排水となる区域がほとんどであろうと予想されるが、Song Sai Gon のように大きな河川でも堤防があるところは限られていることから、強制排水する事で新たな浸水被害が生じる可能性があるかもしれない事には十分注意する必要がある。

今後、干満の影響がある事や、河川の流域が明確でない事から、水路の水の動き方について念入りに調査を行い、適切な排水について検討する必要があると感じた。

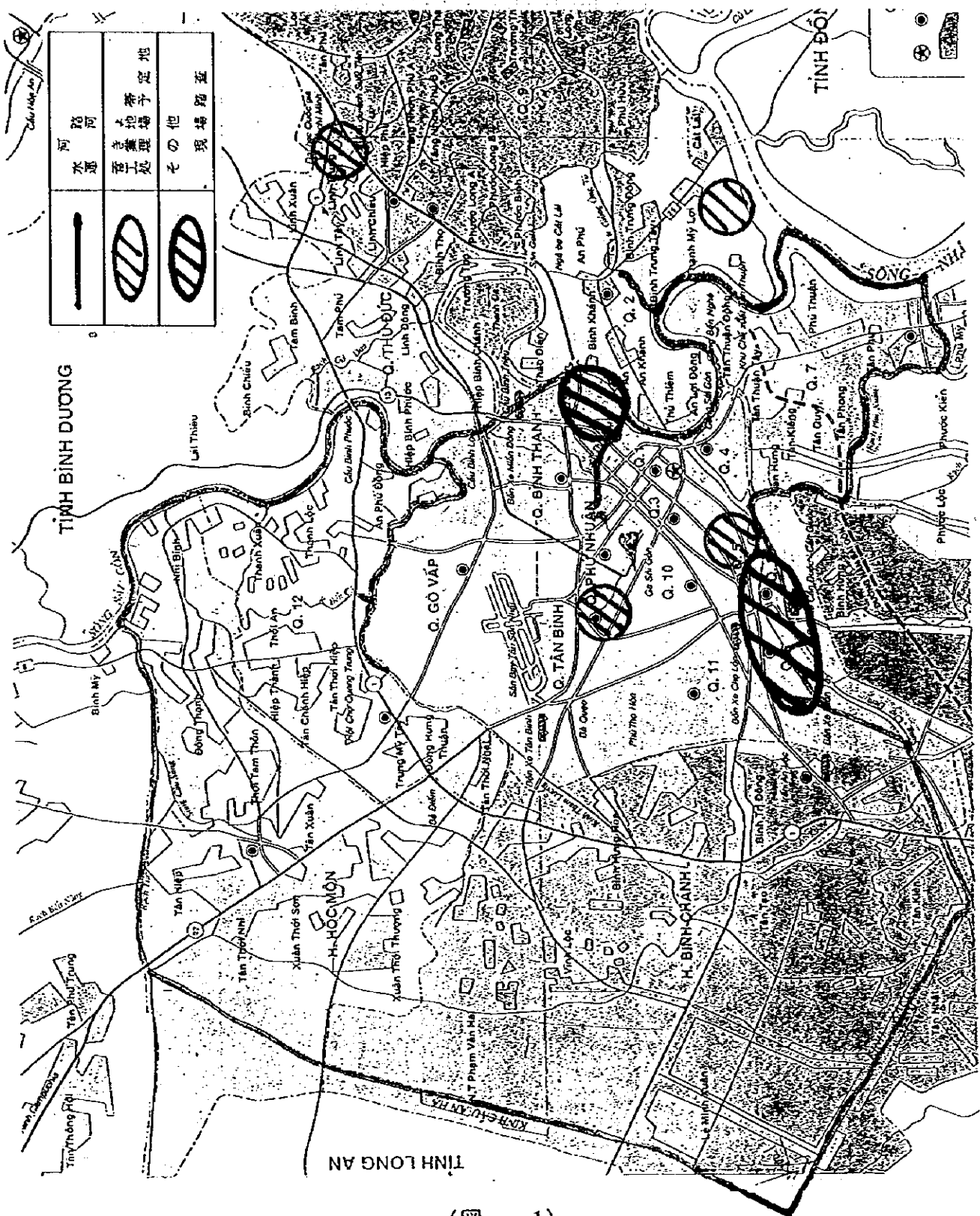
#### ○ その他

調査団は、HCMC 入りした日に事前に現場踏査を行った。そのルートは以下の通りである。

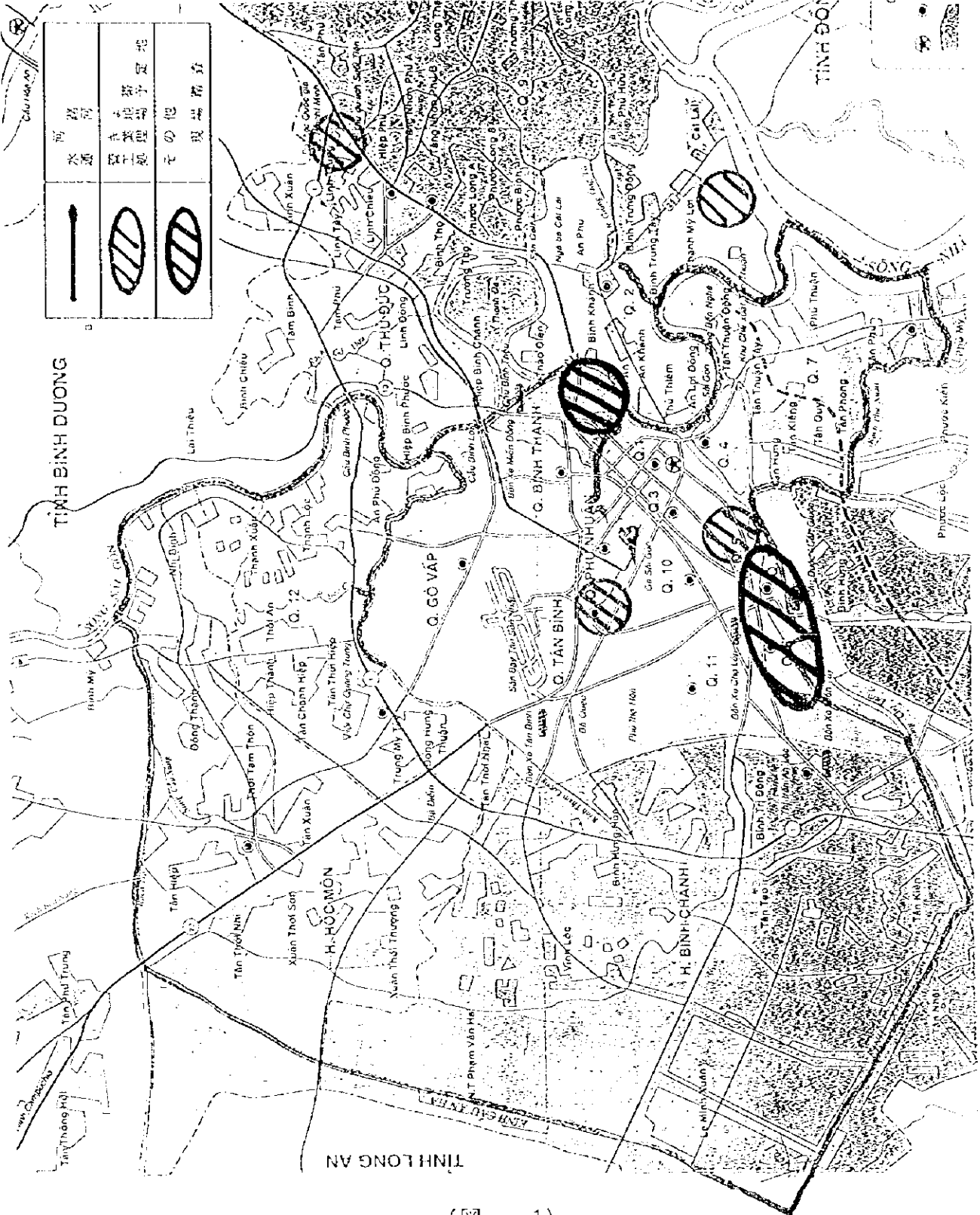
Rach Thi Nghe (Thi Nghe 地区) → Rach Ben Nghe 左岸 → Kinh Tau Hu 左岸 (Cho Lon 地区) → Kinh Ben Nghe 左岸 → Rach Lo Gum 左岸 (図-1 参照)

Rach Thi Nghe (Thi Nghe 地区) では、世界銀行が水路および環境整備のプロジェクトを行っており、その中の一つである水路上生活者のアパートへの移転がかなり進んでいた。その反面、未だ整備されていない区域については、ゴミの投棄問題や水路の水質悪化など生活・衛生環境面においてひどいものがあった。また、Rach Lo Gum 周辺地区でも同様の問題を含んでおり、都市内の水路は、水路上にある住宅の生活・衛生環境の悪化、水質の悪化および臭気問題など、生活環境は改善すべきであるという印象を受けた。

Rach Ben Nghe 左岸 → Kinh Tau Hu 左岸 (Cho Lon 地区) → Kinh Ben Nghe 左岸についても水質の悪化は見られたが、舟運のための運河として活用されていることから、水路上生活者は少なく、生活環境は他の場所と比べて比較的よいと感じられた。



(一) (☒)



	高 路
	水 運
	地 區
	現 場 現 狀

(圖 一 一)











JICA