

## 2. S/W 及び M/M



添付資料 2 S/W

SCOPE OF WORK  
FOR  
THE STUDY  
ON  
URBAN DRAINAGE AND WASTEWATER DISPOSAL SYSTEMS IN HANOI CITY  
IN  
THE SOCIALIST REPUBLIC OF VIET NAM  
AGREED UPON BETWEEN  
HANOI PEOPLE'S COMMITTEE  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY

JUNE 10, 1993  
HANOI, VIET NAM

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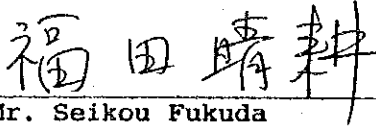
Prof. Nguen Ngoc Le  
Vice Chairman  
Hanoi People's Committee



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Mr. Pham Hai  
Director  
Capital Construction Dept.  
State Planning Committee



  
Mr. Seikou Fukuda  
Leader  
Preparatory Study Team  
Japan International  
Cooperation Agency

## 1. INTRODUCTION

In response to the request of the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "Viet Nam"), the Government of Japan has decided to conduct the Study on Urban Drainage and Wastewater Disposal Systems in Hanoi City (hereinafter referred to as "the Study") in accordance with the relevant laws and regulations in force in Japan.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"); the official agency responsible for the implementation of technical cooperation programs of the Government of Japan, will undertake the Study, in close cooperation with the authorities concerned of Viet Nam.

The present document sets forth the Scope of Work with regard to the Study.

## 2. OBJECTIVES OF THE STUDY

The objectives of the Study are:

- 1) To formulate a master plan of urban drainage and wastewater disposal systems including its phased implementation program; and
- 2) To conduct a feasibility study on urban drainage and/or wastewater systems for the prioritized project selected in the master plan

## 3. STUDY AREA


The study area shall cover the urban area of Hanoi City as shown in the attached Location Map.

## 4. SCOPE OF THE STUDY

The Study shall include the following;

(Phase I) Master Plan Study

(1) Data collection and analysis

- a) Socio-economic conditions
  - b) Urban development plan
  - c) Population and its density
  - d) Industry
  - e) Land use and topographical maps
  - f) Meteorology and hydrology
  - g) Soil and geological conditions
  - h) Situation and possibility of ground subsidence
  - h) Environment and water quality
- 

- i) Flood records
  - j) Existing drainage and wastewater system, and related facilities
- (2) Review of previous/on-going studies and existing projects
- a) Urban plan for Hanoi City
  - b) Flood management plans for the Red River and the Nhue River including plan of the Yen So pump station
  - c) Improvement plans for To Lich, Lu, Set and Kim Nguu River
  - d) Others
- (3) Field survey and investigation
- a) Topography survey
  - b) Longitudinal and cross-sectional survey for drainage canals and rivers
  - c) Geological survey
  - d) Hydrological survey
  - e) Water quality
  - f) Survey for initial environmental examination
  - g) Socio-economics
- (4) Evaluation for existing facilities
- a) Drainage facilities
  - b) Wastewater facilities
- (5) Planning policy and design criteria
- a) Estimation of population
  - b) Land use
  - c) Target year
  - d) Estimation of design flood water level and design rainfall
- (6) Preparation of flood simulation model
- (7) Formulation of a master plan
- a) Preparation of alternatives
  - b) Facility plan including telecommunication system
  - c) Non-structural measures
  - d) Estimation of costs for construction, operation, and maintenance
  - e) Estimation of project benefit
  - f) Initial environmental examination
  - g) Organization and management plan
  - h) Implementation program
  - i) Selection of a project for the feasibility study
  - j) Proposal of a urgent project

(Phase II) Feasibility Study

- (1) Necessary supplemental surveys and data collection
- (2) Facility plan
- (3) Environmental impact assessment, if necessary
- (4) Construction plan
- (5) Organization, operation and maintenance plan including institutional framework
- (6) Cost estimation
  - a) Construction
  - b) Operation and maintenance
- (7) Project evaluation
- (8) Project implementation program

5. STUDY SCHEDULE

The schedule will be executed in accordance with the attached tentative schedule.

6. REPORTS

JICA will prepare and submit the following reports in English to the Government of Viet Nam.

- (1) Inception Report  
Thirty (30) copies at the commencement of the Study in Viet Nam.
- (2) Progress Report (1)  
Thirty (30) copies within five (5) months after the commencement of the Study.
- (3) Interim Report (Draft Master Plan Report)  
Thirty (30) copies within eight (8) months after the commencement of the Study.
- (4) Progress Report (2)  
Thirty (30) copies within thirteen (13) months after the commencement of the Study.
- (5) Draft Final Report  
Thirty (30) copies within sixteen (16) months after the commencement of the Study.

(6) Final Report

Fifty (50) copies within two (2) months after the receipt of the written comments on the Draft Final report from the Government of Viet Nam, while these comments are expected to be delivered to JICA within one (1) month after the submission of the Draft Final Report.

7. UNDERTAKING OF THE GOVERNMENT OF VIET NAM

(1) The Government of Viet Nam shall facilitate the carrying out of the Study in accordance with the prevailing laws and regulations stipulated by the Vietnamese State, as below:

- 1) To secure the safety of the Study Team
- 2) To permit the members of the Study Team to enter, leave and stay in Viet Nam for duration of their assignment therein, and exempt them from foreign registration requirements and consular fees;
- 3) To exempt the members of the Study Team from taxes, duties and other charges on equipments, machinery, and other materials brought into and out of Viet Nam for the conduct of the Study;
- 4) To exempt the members of the Study Team from income taxes and other charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the implementation of the Study;
- 5) To provide necessary facilities to the Study Team for remittance as well as utilizations of the funds introduced into Viet Nam from Japanese in connections with the implementation of the Study;
- 6) To obtain permission for entry into special area for the purpose of implementing the Study;
- 7) To secure permission which is considered and issued by the relevant authorities for Japanese Study Team to take out all data and documents including maps and photographs related to the Study out of Viet Nam to Japan; and
- 8) To provide medical services as needed and its expense will be chargeable on the members of the Japanese Study Team.

(2) The Government of Viet Nam shall bear claims, if any arises against members of the Study Team resulting from; occurring in the course of or otherwise connected with, the discharge of their duties in the implementation of

the Study, except when such claims arises from gross negligence or willful misconduct on the part of the members of the Study Team.

- (3) Hanoi People's Committee (hereinafter referred as to "HPC") shall act as a counterpart agency to the Japanese Study Team and also coordinating body in relation with other governmental and non-governmental organizations concerned such as the State Planning Committee, the Ministry of Finance, the Ministry of Construction, the Ministry of Water Resources, the Ministry of Transport and Communications and the Ministry of Science, Technology and Environment for the smooth implementation of the Study.
- (4) HPC shall, at its own expense, provide the Study Team with the following, in cooperation with other organizations concerned.
  - 1) Available data and information related to the Study;
  - 2) Necessary number of counterpart personnel including project coordinator throughout the Study period;
  - 3) Credentials or identification cards;
  - 4) Suitable office space for JICA Study Team and the Counterpart Team with necessary equipment and clerical services in Hanoi; and
  - 5) Appropriate number of vehicles with driver(s) during the Study in Viet Nam.

#### 8. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures.

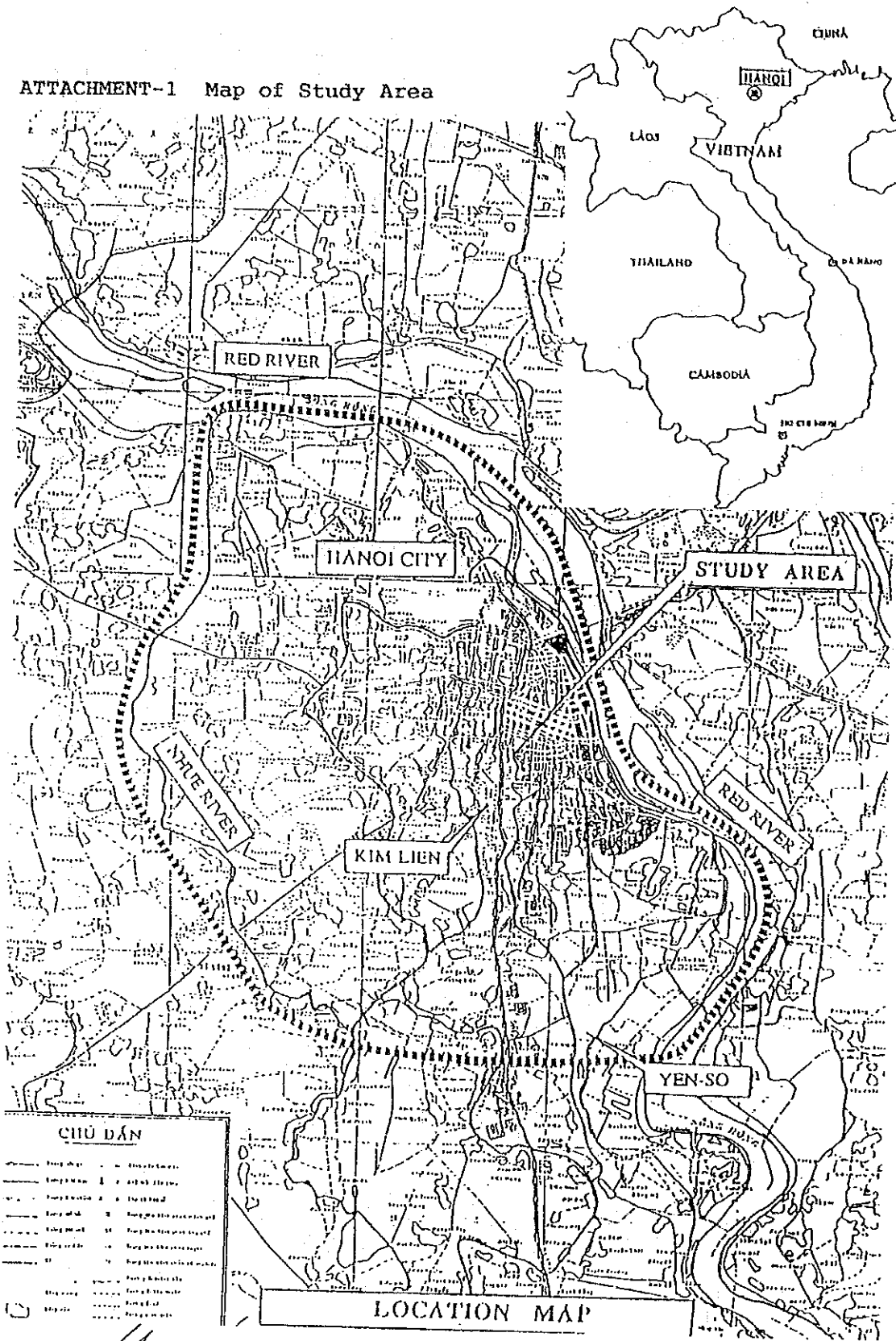
- (1) To dispatch, at its own expense, the Study Team to Viet Nam; and
- (2) To pursue technology transfer to the Viet Nam counterpart personnel in the course of the Study.

#### 9. OTHERS

JICA and HPC shall consult with each other in respect of any matter that may arise from or in connection with the Study.



ATTACHMENT-1 Map of Study Area



ATTACHMENT-2 Tentative Work Schedule

Tentative Work Schedule

| Items/Mon.         | 1    | 2  | 3  | 4  | 5      | 6  | 7  | 8    | 9  | 10 | 11 | 12 | 13 | 14     | 15 | 16 | 17   | 18  |
|--------------------|------|----|----|----|--------|----|----|------|----|----|----|----|----|--------|----|----|------|-----|
| Work in Viet Nam   | *    | ** | ** | ** | *      |    |    | **   | ** | ** | ** | ** | ** |        |    |    |      | *   |
| Work in Japan      | *    |    |    |    | *      | ** | ** |      |    |    |    |    |    | **     | ** | ** |      |     |
| Report Preparation | IC/R |    |    |    | P/R(1) |    |    | IT/R |    |    |    |    |    | P/R(2) |    |    | DF/R | F/R |

Note:

- IC/R : Inception Report
- P/R : Progress Report
- IT/R : Interim Report (Draft Master Plan Report)
- DF/R : Draft Final Report
- F/R : Final Report

*3*

*[Signature]*

M/M

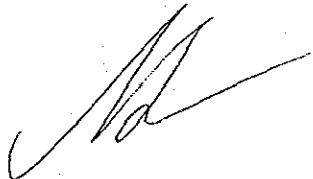
MINUTES OF MEETINGS  
ON  
SCOPE OF WORK  
FOR  
THE STUDY  
ON  
URBAN DRAINAGE AND WASTEWATER DISPOSAL SYSTEMS IN HANOI CITY  
IN  
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JUNE 10, 1993  
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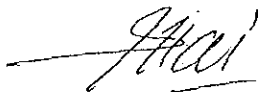
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Prof. Nguen Ngoc Le  
Vice Chairman  
Hanoi People's Committee



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Mr. Pham Hai  
Director  
Capital Construction Dept.  
State Planning Committee



福田靖耕

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Mr. Seikou Fukuda  
Leader  
Preparatory Study Team  
Japan International  
Cooperation Agency

In response to the request of the Government of the Socialist Republic of Viet Nam (hereinafter referred to as "Viet Nam"), the Government of Japan dispatched the Preparatory Study Team (herein after referred to as "the Team"), headed by Mr. Seikou FUKUDA and organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA"), from May 30 to June 18, to conduct a preparatory study for the Study on Urban Drainage and Wastewater Disposal Systems in Hanoi City (hereinafter referred to as "the Study").

The Team carried out the field reconnaissance on the study area and had a series of discussions with the officials of the Hanoi People's Committee (counterpart agency of Viet Nam side, herein after referred to as "HPC") and the other organizations concerned. The meetings were held on June 9 and 10 at the office of the Hanoi People's Committee. The list of attendants is attached in the Appendix.

Through those discussions, the Team and HPC agreed on the Scope of Work. The main points discussed and agreed by both sides in the meetings are as follows:

- (1) The Team explained the following basic policy of Japanese side for the Study and HPC understood the explanation.
  - 1) The Study shall be done under the cooperation between HPC and JICA.
  - 2) The contents of the Study comprise the formulation of the master plan and the execution of feasibility study on the high priority projects selected in the master plan.
- (2) In preparation of the Master Plan in the Study, the current plans such as the Urban Development Plan for Hanoi City and the Nhue River Flood Control Plan should be reflected on the drainage plan for the Hanoi City. HPC will coordinate the technical and social problems with the organizations concerned. To support this coordination for the Study, Viet Nam side will establish the Steering Board including the representatives from the ministries and organizations concerned.
- (3) The Team requested HPC to organize the counterpart team of about 10 members corresponding to the JICA Study Team to execute the Study jointly and to achieve the effective technical transfer. HPC agreed to assign the necessary counterpart personnel including the staff of the related organizations.
- (4) HPC requested the Team that JICA would conduct the technology transfer to the counter personnel in Japan as well as on the job training and that JICA would provide necessary transport facilities for the Study. The Team replied that these requests would be delivered to JICA Tokyo.

(5) The Team requested HPC to prepare the office in Hanoi for the JICA Study Team. The office should be equipped with desks & chairs, telephone etc. HPC accepted the request of the Team.

(6) Concerning the field survey and investigation programmed in the Study, the following execution plans were agreed by the Team and HPC:

1) Topographical Survey and Geotechnical Survey

HPC requested the Team that JICA would undertake a) the topographical survey on the project sites for structures and longitudinal & cross-sectional survey for drainage canals and rivers, and b) the geotechnical survey on soil materials and ground foundation. The Team replied to HPC that this request would be delivered to JICA Tokyo.

2) Hydrological Survey and Water Quality Survey

HPC requested the Team that JICA will provide equipment for hydrological observation and water quality analysis. HPC will construct the stations and carry out hydrological observation and water quality survey under the guidance of the Study Team. The Team replied to HPC that this request would be delivered to JICA Tokyo.

3) Survey on Environment and Socio-economics

The survey on environment and socio-economics will be carried out by the JICA experts with joint cooperation of Viet Nam side counterpart

(7) The IEE (Initial Environmental Examination) should be done because it is clarified through the screening that some important environment components might be affected by the implementation of the plans formulated in the Master Plan. The judgment for the execution of the detailed EIA (Environment Impact Assessment) in the Feasibility Study should be given on the basis of the results of the IEE.

LIST OF ATTENDANTS

<<< Japan Side (Preparatory Study Team) >>>

|                       |                              |
|-----------------------|------------------------------|
| Mr. Seikou FUKUDA     | Leader / Urban Drainage Plan |
| Mr. Hiromi NAGAO      | Sewerage Planning            |
| Mr. Masato WATANABE   | Task Manager                 |
| Mr. Masatomo WATANABE | Drainage Facility            |
| Mr. Noboru FUJISAKI   | Environmental Assessment     |

<<< Viet Nam Side >>>

[ Hanoi People's Committee ]

|                       |   |
|-----------------------|---|
| Prof. Nguyen Ngoc Le  | Vice Chairman<br>People's Committee of Hanoi                              |
| Mr. Nguyen Thanh Binh | General Director<br>Hanoi Transportation and<br>Urban Public Work Service |
| Mr. Le Minh Chau      | Director<br>Hanoi Sewerage and Drainage Company                           |
| Mr. Dam Hong          | Deputy Director<br>Hanoi Planning Committee                               |

[ Ministry of Foreign Affairs ]

|                   |   |
|-------------------|---|
| Mr. Le Van Cu     | Director<br>North East Asia Department                    |
| Mr. Le Quang Cong | Expert of Japanese Division<br>North East Asia Department |

[ State Planning Committee ]

|              |   |
|--------------|---|
| Mr. Pham Hai | Director<br>Capital Construction Department |
|--------------|---|

[ Ministry of Construction ]

|                   |  |
|-------------------|--|
| Mr. Pham Si Liem  | Vice Minister<br>Ministry of Construction        |
| Mr. Le Doan Phach | Director<br>International Cooperation Department |
| Mr. Vu Kim Quyen  | Director<br>Urban & Rural Management Department  |

[ Ministry of Water Resources ]

|                       |  |
|-----------------------|--|
| Mr. Nguyen Trong Sinh | Deputy Director<br>Institute of Water Resources<br>Planning and Management |
|-----------------------|--|



### 3. 質問状





QUESTIONNAIRE  
FOR  
THE STUDY  
ON  
URBAN DRAINAGE AND WASTEWATER DISPOSAL SYSTEM  
IN HANOI CITY  
IN SOCIALIST REPUBLIC OF VIET NAM

JUNE, 1993

PREPARATORY STUDY TEAM  
JAPAN INTERNATIONAL COOPERATION AGENCY  
(JICA)

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3. URBAN DRAINAGE AND WASTEWATER DISPOSAL SYSTEM ..... ( 2 )  
IN STUDY AREA

4. ENVIRONMENT..... ( 3 )

5. UNIT COST AND OTHERS ..... ( 4 )

## CHAPTER 1 GENERAL MATTERS

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### 1.1 Census and Statistical Data in the Past 5 Years including:

- (1) Population by district, age, sex, race, religion etc.
- (2) Occupational breakdown of population
- (3) Number of household
- (4) Production in agriculture, industry, mining, trade service etc. by district
- (5) Gross national product and national income per capita
- (6) Balance of international payment and national budget
- (7) Amount of Import/Export
- (8) Consumer price index and whole sale price index
- (9) Exchange Rate

### 1.2 Population Density Map

### 1.3 Administrative District Division Map

### 1.4 Current Long Term National Development Plan

### 1.5 Current Five Year National Development Plan

### 1.6 Current Five Year Regional Development Plan for the Study Areas

### 1.7 Other Related Data and Information

## CHAPTER 2 BASIC DATA FOR THE STUDY AREA

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### 2.1 Topographical maps and photos showing scale, covering area and date

- (1) Topographical maps
- (2) Aerial-photos
- (3) Satellite imageries

### 2.2 Land Use Maps

- (1) Present situation maps
- (2) Future planning maps including descriptions of plan

### 2.3 Meteorological Data

- (1) Location maps of observation stations
- (2) List of stations including: location, name, observation items and period etc.
- (3) Observation data obtained at several typical stations regarding: temperature, relative humidity, evaporation, wind speed, sunshine hour etc.

## 2.4 Rainfall Data

- (1) Location map of observation stations
- (2) List of stations including: location, name, type of gauge and recorder, observation items and period etc.
- (3) Isohyetal map showing annual mean , seasonal mean, maximum year, minimum year
- (4) Monthly/daily data obtained at several typical stations
- (5) Rainfall intensity-duration curves of typical stations
- (6) Study reports on rainfall in the Study Areas

## 2.5 Runoff Data

- (1) Location maps of observation stations
- (2) List of Station including: location, name, type of gauge and recorder, observation items and period, availability of rating curves etc.
- (3) Runoff data obtained at several typical stations including: annual runoff volume, maximum/mean/minimum discharge and daily/monthly discharge
- (4) Method of discharge measurement and formulation of rating curve

## 2.6 Availability of Data Bank System on Meteorological and Hydrological Data

## 2.7 Current Regional Development Plan for the Study Area

## 2.8 Population Forecast

## 2.9 Other Related Data and Information

# CHAPTER 3 URBAN DRAINAGE AND WASTEWATER DISPOSAL SYSTEM IN THE STUDY AREA

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## 3.1 Existing Drainage System including

- (1) System maps showing drainage area, channels and related facilities
- (2) Capability of each channel and related facilities
- (3) Design criteria for existing facilities
  - Drainage area
  - Design Discharge

## 3.2 Existing Sewer and Wastewater Disposal System

- (1) System maps showing sewer net work, wastewater disposal facilities etc.
- (2) Capability of sewer transport and wasterwater disposal facilities

- (3) Design criteria for existing facilities
  - Served area and population
  - Design discharge of sewer net
  - Design discharge of wastewater disposal
- 3.3 Future Improvement Plan for Drainage System including Foreign Aid Program, if available
- 3.4 Future Improvement Plan for Wastewater Disposal System including Foreign Aid Program, if available
- 3.5 Past Problematic Issues regarding Drainage and Wastewater Disposal System

#### CHAPTER 4 ENVIRONMENT

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##### 4.1 Organization

- (1) Government agent responsible for the environmental protection
- (2) Responsibility of the implementing agency

##### 4.2 Affiliation with Environmental Conventions including International and Bilateral

##### 4.3 Legislation

- (1) Law or other regulation on:
  - 1) Environmental protection
  - 2) Environmental quality standard
- (2) Guideline on:
  - 1) Environmental protection
  - 2) Environmental impact assessment

##### 4.4 Socioeconomic Environment in Study Area

- (1) Past problem for resettlement of inhabitants, moving facilities, disintegration of communities, etc. due to water resources development
- (2) Important and characteristic products of agriculture and industry in the study area
- (3) Important facilities such as road, railroad, station, bus-stop, hospital, church, school, public office, merchant place etc.
- (4) Existence of villages which are solely dependent on the insufficient water resources in the study area
- (5) Existence of inhabitants who resist against the conveyance of water from their territories
- (6) Important ruins and cultural assets
- (7) Water right, fishing right etc. and these rightful claimant
- (8) Damage from disease and harmful insects related with river, lake and marsh
- (9) Disease due to poor quality of surface water or groundwater

- (10) Utilization of river water, ground water and river itself, for example: city water, water for agriculture and industrial use, human life, recreation etc.
- (11) Past and present problems related to socioeconomic environment

#### 4.5 Natural Environment in Study Area

- (1) Present and expected environmental problem related with topography and geology such as hillside collapse, landslide and soil erosion/loss etc.
- (2) Present and expected environmental problem related with groundwater and surface water development such as water pollution(eg.salinization), land subsidence, shortage of water and deterioration of natural environment
- (3) Present and expected environmental problem related with sediment transportation such as river bed variation, river bank erosion, sedimentation in river bed and etc.
- (4) Conserved and important wild life, fish, insect, Vegetation
- (5) Worthy and Conservation Landscape

#### 4.6 Probable Environmental Problems Related to the Project to be Proposed in the Study, if any in this Stage

#### 4.7 Precedent Instance of Environmental Problem with Similar Project

#### 4.8 Other Related Data and Information

- (1) Location maps of national park and game reserve
- (2) National forestry plan
- (3) Previous study report on environmental matters
- (4) Conservation plan on natural environment

### CHAPTER 5 UNIT COST AND OTHERS

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#### 5.1 Unit Cost of Survey and Investigation

- (1) Survey
  - 1) Topographical survey including triangular survey or traverse survey, leveling and mapping
  - 2) Leveling survey
  - 3) River longitudinal survey
  - 4) Cross sectional survey of river channel
  - 5) Aerophoto survey including aerophotographing and mapping
- (2) Geotechnical Investigation
  - 1) Drilling
    - a. Exploratory drilling of soil and rock
    - b. Standard penetration test
    - c. Permeability test (Constant head)
    - d. Permeability test (Lugeon test)
  - 2) Geophysical survey

- a. Seismic survey
- b. Electrical resistivity test
- 3) Soil test
  - a. Moisture content
  - b. Specific gravity
  - c. Gradation test
  - d. Density test
  - e. Liquid/plastic limit
  - f. Compaction test
  - g. Permeability test
  - h. Direct Shear test
  - i. Uniaxial compression
  - j. Triaxial compression

#### 5.2 Unit Cost of Construction

- 1) Construction of Water Level Recording Station
- 2) Construction of Rainfall Recording Station
- 3) Construction of Water Level Gauge
- 5) Excavation of soil and rock
- 6) Embankment
- 7) Concrete (1:2:4) and (1:3:6)
- 8) Reinforcement concrete
- 9) others

#### 5.3 Unit Cost of Man Power

- 1) Senior engineer
- 2) Engineer
- 3) Assistant engineer
- 4) Technician
- 5) Draftsman
- 6) Surveyor
- 7) Assistant surveyor
- 8) Office manager
- 9) Office clerk
- 10) Secretary
- 11) Typist
- 12) Office boy/girl
- 13) Driver
- 14) Foreman
- 15) Common labor
- 16) Carpenter
- 17) Mason
- 18) Mechanics
- 19) Electrician
- 20) Construction equipment operator
- 21) Drilling engineer
- 22) Translator and interpreter

#### 5.4 Unit Cost of Material

- 1) Cement
- 2) Course aggregate (gravel)
- 3) Fine aggregate (sand)
- 4) Reinforcing steel bar
- 5) Steel
- 6) Wood

- 7) Gasoline
- 8) Diesel oil
- 9) Concrete pipe
- 10) Steel pipe
- 11) Conduit pipe

#### 5.5 Unit Cost of Miscellaneous Items

- 1) Rent a car
  - 4-wheel drive type
  - Sedan type
- 2) Taxi charge
- 3) Hotel accommodation
  - High
  - Middle
- 4) Office rental
- 5) Residence rental
- 6) Copy charge (A-4, A-3, B-4)

#### 5.6 OTHERS

- (1) Organization of government and municipality
- (2) Organization responsible for urban drainage and wastewater disposal in national and municipal level
- (3) Current law, regulation and local rules relating to urban drainage and wastewater disposal
- (4) National budget in the past 5 years in the sectoral of urban drainage and wastewater disposal
- (5) Current law, regulation and local rules relating to land use
- (6) National and local transport maps including Present Network and Future Plan
- (7) List of representative, semi-governmental and commercial companies with name, mail address, telephone, fax, name of person in charge, dealing with the following items:
  - 1) Drilling works
  - 2) Topographical survey
  - 3) Geophysical survey
  - 4) Soil mechanics
  - 5) Water quality test
  - 6) Engineering & consulting
  - 7) Construction (general contractor)
  - 8) Procurement of equipment such as:
    - 4WD vehicle
    - Hydrological observation equipment including rain gauge, automatic rainfall recorder and current meter
    - Topographic survey equipment including lightwave distancer, theodolite and auto-level
    - Micro computer
    - Electric typewriter
    - Copy machine
    - Transceiver



#### 4. 面談者リスト



添付資料 4 面談者リスト

<在ヴェトナム 日本大使館>

小井沼紀芳 参事官  
佐々木隆宏 書記官

<ハノイ人民委員会(Hanoi People's Committee)>

Prof. Nguyen Ngoc Le 人民委員会副議長  
Mr. Phan Manh Chinh 対外経済協力部 総括部長  
Mr. Le Van Vien 対外経済協力部 部長  
Mr. Dam Hong ハノイ市計画委員会 副委員長  
Mr. Vu Nam 国際協力・援助課 課長

<外務省(Ministry of Foreign Affairs)>

Mr. Le Van Cu 北東アジア部 部長  
Mr. Le uang Cong 北東アジア部 日本担当

<国家計画委員会(SPC: State Planning Committee)>

Mr. Pham Hai 首都建設部 部長  
Mr. Duong Duc Ung 経済・対外関係部 部長代理  
Mr. Bui Liem 777局 副局長補佐

<建設省(Ministry of Construction)>

Prof. Dr. Nguyen Manh Kien 副大臣  
Mr. Pham Si Liem 副大臣  
Mr. Le Doan Phach 対外協力部 部長  
Mr. Vu Kim Quyen 住宅管理部 副部長  
Mr. Nguen Sinh Hy 対外協力部 技師

<水利省(Ministry of Water Resources)>

Dr. Le Van Minh 国際協力部 副部長  
Mr. Nguyen Trong Sinh 水資源計画・管理研究所 副所長

<TUPS(Hanoi Transportation and Urban Public Works Service)>

Mr. Nguen Thanh Binh General Manager (人民委員会メソハ-兼任)  
Dr. Le Van Minh 技師長

<ハノイ排水下水公社(Hanoi Sewerage and Drainage Company)>

Mr. Le Minh Chau Director  
Mr. Pham Van Cuong Vice Director  
Mr. Do Ngoc Hoang 技術・対外協力部技師

<UNDP(Unated Nations Development Programme)>

Ms. Jo Ann Schop Assistant Representative  
Mr. Nguyen The Dzung National Program Officer



## 5. 収集資料リスト



添付資料 5 収集資料リスト

【下水・排水関連基準】

- (1) 下水・排水システム設計基準 (1989, Ministry of Construction)
- (2) ハノイ市下水・排水システム管理規定(案) (1993, Hanoi Sewerage & Drainage Company)

【下水・排水の現況】

- (3) ハノイ市排水システムの現状 (Hanoi S & D Co)
- (4) ハノイ市内の主要河川、湖沼の諸元および河川区域での活動制約事項

【既往観測データ】

- (5) ハノイ市内下水道水質検査結果 (Hanoi Sewerage & Drainage Company)
- (6) ハノイ市内降雨量(月別、日最大) (1985~1992)
- (7) ハノイ市地下水消費量事業所別リスト (1992, Hanoi S & D Co)

【カウンターパート関連資料】

- (8) ハノイ市交通公共事業局(TUPWS:Transport and Urban Public Works Service)の組織図
- (9) ハノイ市下水・排水公社の活動概要 (1992, Hanoi S & D Company)
- (10) ハノイ市下水・排水公社の収支決算動向 (1992, Hanoi S & D Company)
- (11) ハノイ市下水・排水公社の開発戦略概要 (Mr. Chau, Director of S & D Co)

【ハノイ市将来予測】

- (12) ハノイ市土地利用の将来予測 (1990, Hanoi Peoples Committee)
- (13) ハノイ市人口分類の将来予測 (同上)
- (14) ハノイ市工業地区の開発予測 (同上)
- (15) ハノイ市都市計画図(西暦2000年, S=1:12, 500, Hanoi S & D Co)

【他プロジェクト関連】

- (16) ハノイ上水計画[Phase-3]報告書 (1992, FINNIDA)
- (17) ハノイ市排水システム改良計画[イエソポンプ場] フィージビリティ報告書 (1990, Centro Ricerche Geologiche S.P.A[Italy])
- (18) キムリエン地区下水処理計画関連報告書[2冊] (1990, United Nation Development Programme)

【ヴェトナム国およびハノイ市の社会事情関連】

- (19) ハノイ市生活基盤施設の整備状況 (Hanoi Peoples Committee)
- (20) ヴェトナム国の社会事情概要 (1992, UNDP)
- (21) 外地駐在調整官による年次報告書 (1992, United Nation)
- (22) ヴェトナム国の人口調査 (1989, Central Census Steering Committee)

【環境関連】

- (23) ハノイ市環境衛生基準 (1990, Hanoi Environment Committee)
- (24) 水質基準 (建設省, 1984)
- (25) ハノイ市環境委員会活動概要 (Hanoi Environment Committee)

【その他】

- (26) ヴェトナム国の行政機関組織図 (Hanoi S & D Co)
- (27) 測量、設計業者一覧 (Hanoi S & D Co)





## 6. 現地調査経費資料



添付資料 6 現地調査経費資料

単価 外貨交換率：1 US\$ = 10,500 Dong (1993/6)現在

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| 区 分 | 項 目 | 単 位 | 単 価 | 備 考 |
|-----|-----|-----|-----|-----|
|-----|-----|-----|-----|-----|

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(A)人件費 社会主義国家のウイトナムでは、現在変わりつつあるが、ウイトナム人はいずれかの団体に所属する公務員である。調査団がウイトナム人を雇用する場合、彼が所属する団体の許可を得て休職し、かつ彼の給料の50%-70%を所属団体に納めなければならない。公務員の平均給与が40US\$/月程度であるが、外国人企業で働く場合は、仕事が厳しいので、実入りが2-3倍ないと実際的には雇用できないようである。下記の人件費単価は、これらの条件を考慮して、質問書の回答としてウイトナム側から提示されたものである。

|                       |        |     |  |
|-----------------------|--------|-----|--|
| 1) Senior Engineer    | US\$/月 | 600 |  |
| 2) Engineer           | US\$/月 | 500 |  |
| 3) Assistant Engineer | US\$/月 | 400 |  |
| 4) Technician         | US\$/月 | 300 |  |
| 5) Typist             | US\$/月 | 200 |  |

(B)材料費

|                    |          |         |      |
|--------------------|----------|---------|------|
| 1) セメント            | US\$/ton | 65      |      |
| 2) 粗骨材             | US\$/ton | 8       |      |
| 3) 細骨材             | US\$/ton | 5       |      |
| 4) 鉄筋              | US\$/ton | 45-50   |      |
| 5) 鋼材              |          |         |      |
| - L 鋼              | US\$/ton | 430-500 |      |
| - 鉄板               | US\$/ton | 450-900 |      |
| - 丸鋼               | US\$/ton | 440-550 |      |
| 6) 木材              |          |         |      |
| - 上質               | US\$/m3  | 300     |      |
| - 中質               | US\$/m3  | 140-170 |      |
| - 低質               | US\$/m3  | 48-60   |      |
| 7) カソリン・ディーゼル油     | US\$/lit | 2.8     | 同一値段 |
| 8) 鋼管φ17°(500mm)   | US\$/m   | 21      |      |
| 9) PVC管φ17°(100mm) | US\$/m   | 13      |      |

(C)その他

|                    |            |         |               |
|--------------------|------------|---------|---------------|
| 1) タクシー料金          |            |         |               |
| - 市内→空港            | US\$/回     | 35      |               |
| - 貸切(市内)           | US\$/ton   | 35      | AM8:00-PM5:00 |
| - 貸切(郊外)           | US\$/100km | 35      |               |
| - 時間貸              | US\$/時間    | 5       |               |
| 2) ホテル(ツグ料、10%Tax) |            |         |               |
| - S. メトロール         | US\$/泊     | 134-269 |               |
| - サロン              | US\$/泊     | 60-110  |               |
| - ホビソン(和平)         | US\$/泊     | 45-74   |               |
| - 政府迎賓館            | US\$/泊     | 40-50   |               |

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