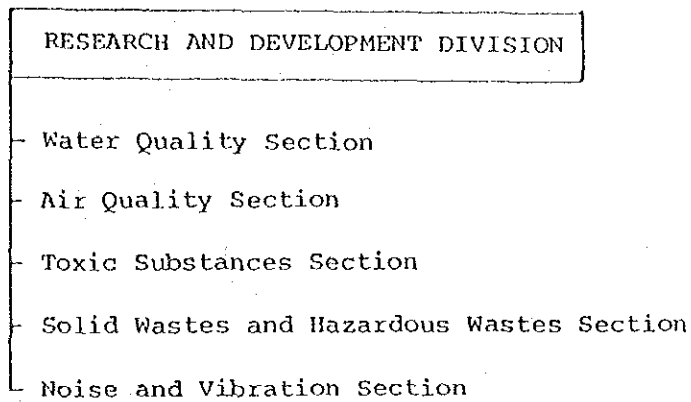


### 3. タイ側追加資料



3-1 ERTC 組織表



Functions & Responsibilities

- Initiate and draft R & D plans,
- Draft the national monitoring plan,
- Design the research methodologies,
- Implement the research works,
- Carry out field-works of the monitoring programs and notify need of immediate attentions,
- Present and propose results of research works for applications.

ANALYTICAL SERVICE DIVISION

- Water Quality Section
- Air Quality Section
- Toxic Substances Section
- Solid Wastes and Hazardous Wastes Section

Functions & Responsibilities

- Analytical services for samples from the monitoring works,
- Laboratory & analytical services for business in environmental field,
- Prepare standard/reference samples for Intercalibration System,
- Manage all laboratory works of the Centre.

ENVIRONMENTAL TECHNOLOGY TRAINING DIVISION

- Planning and Training Section
- Evaluation Section
- Technical and Scientific equipment Section

Functions & Responsibilities

- Initiate and formulate the training programs,
- Establish curriculum of the training courses,
- Manage to hold and evaluate the training courses including periodical seminar, workshop and conference,
- Follow-up the trainee,
- Manage all the audio visual aids and training facilities including demonstrate the facilities' operation,
- Take care of routine operation & maintenance of all the Centre's facilities, instruments including making physical models for experimental researchs.

INFORMATION AND DOCUMENTARY SERVICE DIVISION

- Computer Section
- Information and Extension Section
- Intercalibration Section

Functions & Responsibilities

- Manage to serve all technical documents and library for research and analytical works,
- Provide statistical advise and computer services,
- Manage the National Environmental Lab Intercalibration System,
- Responsible for international affairs,
- Manage to issue the Centre's journal, newsletter, and all publications.

ADMINISTRATIVE SECTION

Functions & Responsibilities

- Filing the government documents,
- Typing,
- Financial arrangement,
- Management of the vehicles,
- Other administrative works according to the government's rules & regulations.

3-2 研修コース暫定実施スケジュール

Tentative Training Course Schedule

1. Preparation stage during ERTC construction

Month	1	2	3	4	5	6	7	8	9	10	11	12
Activities												
1. Signing the Record of Discussion ( R/D )												
2. Survey of baseline information for curriculum ( from expected trainee )												
3. Curriculum development by ONEB + JICA experts												
4. Preparation of training documents and materials ( for introduction courses )												

2. First Year of ERTC Operation

Training Courses	Month												Number of trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
1. Water Pollution I	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20
2. Air Pollution I	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20
3. Noise Pollution	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20
4. Solid Waste I	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20
5. Toxic Substances I	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20
6. Environmental Administration I	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20
7. Environmental Impact Assessment	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	15
8. Environmental Data Processing	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20
9. Nightsoil Management	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	20

----- preparation period

----- training period



2. Continued

Training Courses	Month												Number of Trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
10. Solid Waste 2														15
* Seminar / Workshop														
* Evaluation Course														
Revision and Preparation of Training Documents for Intensive Courses in 2 Year														

3. Second Year of ERTC Operation

Traing Courses	Month												Number of Trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
1. Water Pollution 1	---	---	---	---	---	---	---	---	---	---	---	---	---	20
2. Water Pollution 2	---	---	---	---	---	---	---	---	---	---	---	---	---	15
3. Air Pollution 1	---	---	---	---	---	---	---	---	---	---	---	---	---	20
4. Air Pollution 2	---	---	---	---	---	---	---	---	---	---	---	---	---	15
5. Noise Pollution	---	---	---	---	---	---	---	---	---	---	---	---	---	20
6. Noise Control Technology	---	---	---	---	---	---	---	---	---	---	---	---	---	15
7. Solid Waste 1	---	---	---	---	---	---	---	---	---	---	---	---	---	20
8. SOLID Waste 2	---	---	---	---	---	---	---	---	---	---	---	---	---	15
9. Toxic Substances 1	---	---	---	---	---	---	---	---	---	---	---	---	---	20
10. Toxic Substances 2	---	---	---	---	---	---	---	---	---	---	---	---	---	15
11. Environmental Admin1	---	---	---	---	---	---	---	---	---	---	---	---	---	20
12. Environmental Admin2	---	---	---	---	---	---	---	---	---	---	---	---	---	10
13. Environmental Assessment	---	---	---	---	---	---	---	---	---	---	---	---	---	15
14. Hazardous Waste Mgt.	---	---	---	---	---	---	---	---	---	---	---	---	---	10

3. Second Year of ERIC Operation ( continued )

Training Courses	Month												Number of Trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
15. Nightsoil Management														20
16. Water Recycling Technology														20
17. Environmental Data Processing														20
* Seminar/Workshop														
* Evaluation, Course Revising, Follow-up, Preparation for next year program														

----- preparation period      ----- training period

4. Third Year of ERTC Operation

Training Courses	Month												Number of Trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
1. Water Pollution I														20
2. Water Pollution II														15
3. Water Pollution III														10
4. Air Pollution I														20
5. Air Pollution II														15
6. Air Pollution III														10
7. Noise Pollution														20
8. Noise Control Technology														15
9. Toxic Substance I														20
10. Toxic Substance II														15
11. Hazardous Waste Mgt.														10
12. Solid Wastes I														20
13. Solid Wastes II														15
14. Environmental Admin. I														20
15. Environmental Admin. II														10
16. Environmental Impact Assessment														15
17. Nightsoil Management														20

4. Continued

Training Courses	Month												Number of trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
18. Waste Recycling technology														20
19. Environmental data processing														20
20. Environmental Education														20
21. Coastal Resource Mgt.														15
22. Erosion Effect&Control														20
*Seminar/Workshop/Conference														
*Evaluation, Course Revision, Follow-up, Preparation for next year programme														

----- preparation period ----- training period

5. Forth Year of ERTC Operation

Training Courses	Month												Number of Trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
1. Water Pollution I														20
2. Water Pollution II														30
3. Water Pollution III														10
4. Air Pollution I														20
5. Air Pollution II														15
6. Air Pollution III														10
7. Noise Pollution														20
8. Noise Control Technology														15
9. Toxic Substance I														20
10. Toxic Substance II														30
11. Hazardous Waste Mgt.														20
12. Solid Wastes I														20
13. Solid Wastes II														30
14. Environmental Admin. I														20
15. Environmental Admin. II														10
16. Environmental Impact Assessment														15
17. Nightsoil Management														20

5. Continued

Training Courses	Month												Number of Trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
18. Waste Recycling technology														40
19. Environmental data processing														20
20. Environmental Education														20
21. Coastal Resource Mgt.														15
22. Erosion Effect&Control														20
*Seminar/Workshop/Conference														
*Evaluation, Course Revision, Follow-up, Preparation for next year programme														

--- preparation period

----- training period

6. Fifth Year of ERTC Operation

Training Courses	Month												Number of Trainees	
	1	2	3	4	5	6	7	8	9	10	11	12		
1. Water Pollution I														20
2. Water Pollution II														15
3. Water Pollution III														20
4. Air Pollution I														20
5. Air Pollution II														30
6. Air Pollution III														10
7. Noise Pollution														20
8. Noise Control Technology														15
9. Toxic Substance I														20
10. Toxic Substance II														30
11. Hazardous Waste Mgt.														20
12. Solid Wastes I														20
13. Solid Wastes II														15
14. Environmental Admin. I														20
15. Environmental Admin. II														10
16. Environmental Impact Assessment														30
17. Nightsoil Management														20
18. Waste Recycling technology														40



6. Continued

Training Courses	Month												Number of Trainee	
	1	2	3	4	5	6	7	8	9	10	11	12		
19. Environmental data processing														20
20. Environmental Education														20
21. Coastal Resource Mgt.														15
22. Erosion Effect&Control														20
23. Risk & Emergency Mgt.														20
24. Pollution Control for Aquaculture & Farming														15

--- preparation period

— training period

## 3-3 客員研究員・講師候補者見込み

## List of expected researcher and lecturer for ERTC

Organization	Number of person
1) <u>Ministry of University Affairs</u>	192
Chulalongkorn University	
Faculty of Science	10
Faculty of Engineering	10
Institute of Environmental Research	6
Kasetsart University	
Faculty of Agriculture	5
Faculty of Science	8
Faculty of Engineering	7
Faculty of Forestry	8
Faculty of Fisheries	5
Khon Kaen University	
Faculty of Agriculture	4
Faculty of science	5
Faculty of Engineering	5
Faculty of Public Health	6
Chiang Mai University	
Faculty of Agriculture	5
Faculty of Science	8
Faculty of Engineering	8
Thammasat University	
Faculty of Science	10
Mahidol University	
Faculty of Science	8
Faculty of Environment and Resource Studies	10
Faculty of Public Health	7
Ramkhamhaeng University	
Faculty of Science	8
Silpakorn University	
Faculty of Science	7

Organization	Number of person
Srinakharinwirot University	
Faculty of Science	5
Prince of Songkhla University	
Faculty of Science	7
Faculty of Engineering	6
Faculty of Natural Resources	8
Sukhothaihammathirat open University	
School of Health Science	4
King Mongkut's Institute of Technology	
Faculty of Engineering	5
Faculty of Industrial Education and Sciences	4
Faculty of Agricultural Technology	3
2) <u>Ministry of Industry</u>	20
Thai Industrial Standard Institute	
Standardization Division	3
Department of Mineral Resources	
Ground Water Division	5
Mining Technology Division	5
Department of Industrial Works	
Industrial Environment Division	7
3) <u>Ministry of Public Health</u>	26
Department of Health	
Environmental Health Division	4
Department of Medical Sciences	
Division of Toxicology	4
Division of Health	5
Division of Food Analysis	4
The Food and Drug Administration	
Food Control Division	4
Technical Division	5

Organization	Number of person
4) <u>Ministry of Science, Technology and Energy</u>	47
Department of Science Service	
Research Division	6
Chemistry Division	5
Physics and Engineering Division	5
Biological Science Division	5
The National Research Council	
Research Promotion Division	5
The National Energy Administration	
Energy Research and Development Division	5
Energy Development and Promotion Division	5
Office of Atomic Energy for Peace	
Biological Science Division	4
Physics Division	3
Chemistry Division	4
Waste Disposal Division	5
5) <u>Ministry of Agriculture and Cooperatives</u>	63
Department of Livestock Development	
Division of Veterinary Research	4
Department of Fisheries	
Marine Fisheries Division	4
Fresh Water Fisheries Division	5
National Inland Fishery Institute	5
Brackish Water Fisheries Division	5
National Institute of Coastal Aquaculture	3
Phuket Marine Biological Center	6
Exploration Fishing Division	3
The Land Development Department	
Office of the Coastal Zone Development	3
Soil Analysis Division	3

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Organization	Number of person
Department of Agriculture	
Agriculture Chemistry Division	4
Agriculture Toxic Substance Division	4
Department of Royal Irrigation	
Division of Research and Laboratory	4
Division of Hydrology	3
The Royal Forest Department	
Watershed Management Division	5
National Park Division	2
<u>6) Ministry of Communications</u>	33
Department of Land Transport	
Transport Engineering Division	4
Department of Aviation	
Technical Division	4
The Harbour Department	
Ship Survey Division	3
Registration and Licence Division	2
Technical Division	2
The Department of Highways	
Highways Environmental Division	4
The Meteorological Department	
Meteorological Observations Division	4
Weather Forecast Division	4
Agrometeorology Division	3
Climatology Division	3
<u>7) Ministry of Interior</u>	24
The Police Department	
Technical Service Division	2
Traffic Police Division	3
Department of Public Works	
Provincial Water Works Division	4

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Organization	Number of person
Department of Labour	
Labour Studies and Planning Division	3
The National Institute for Improvement of Working Conditions and Environment	5
Department of Town and Country Planning	
Project Planning Division	2
Office of Policy and Planning	
Public Utility and Environment Bureau	3
Office of the Committee for the Management of Road Traffic	2
8) <u>Bangkok Metropolitan Administration (BMA)</u>	22
City Planning Division	2
Environmental Health Division	3
Department of Drainage and Sewerage Waste water Treatment Division	5
Department of Public Cleansing	
Public Cleansing Service Division	4
Nightsoil Collection and Disposal Division	4
Garbage Disposal Division	4
9) <u>State Enterprises</u>	54
Thailand Institute of Scientific and Technological Research	5
The Offshore Mining Organization	3
Mines Organization	
Electricity Generating Authority of Thailand	5
The National Petroleum Authority	5
Metropolitan Water Works Authority	5
Provincial Water Works Authority	5
The Industrial Estate Authority of Thailand	5

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Organization	Number of person
The Airports Authority of Thailand	5
The Port Authority of Thailand	5
The Expressway and Rapid Transit Authority of Thailand	5
The Tourism Authority of Thailand	3
The National Housing Authority	3

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#### 4. Minutes of Discussions



MINUTES OF DISCUSSIONS  
ON  
THE PRELIMINARY STUDY  
FOR  
THE ENVIRONMENTAL RESEARCH AND TRAINING CENTER PROJECT  
IN  
THE KINGDOM OF THAILAND

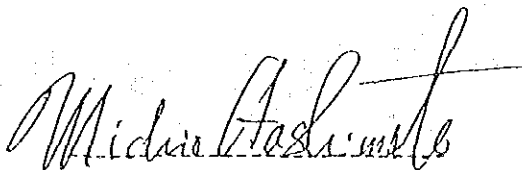
In response to the request of the Government of the Kingdom of Thailand, the Government of Japan has decided to conduct a preliminary study on the Project for the establishment of the Environmental Research and Training Center ( hereinafter referred to as "the Project"). The Japan International Cooperation Agency, as instructed by the Government of Japan, has organized and sent a joint study team for technical cooperation and grant aid programme headed by Dr. Michio Hashimoto to conduct a preliminary study for 13 days from July 25, 1988.

The team had a series of discussions and exchanged views with the officials concerned of the Government of the Kingdom of Thailand and conducted the proposed site survey.

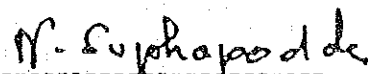
As the result of the discussions and the survey, both sides confirmed the items which are described in the attached sheets.

August 4, 1988

Bangkok, The Kingdom of Thailand



Dr. Michio Hashimoto  
Leader,  
Joint Preliminary Study Team,  
for Technical Cooperation and  
Grant Aid,  
Japan International Cooperation  
Agency



Mr. Arthorn Suphapodok  
Deputy Secretary General,  
National Environment Board  
For  
Mr. Pravit Ruyabhorn  
Secretary General,  
National Environment Board

THE ATTACHED DOCUMENT

1. The objectives of the Project

The Kingdom of Thailand has made a number of efforts to conserve her environment particularly since the establishment of the Office of the National Environment Board ( ONEB ) in 1975.

However the ONEB and other concerned agencies have not fully responded to the emerging and serious environmental problems particularly related to the pollution control due to lack of the sophisticated equipments, trained manpowers and budgetary resources.

The ONEB has projected to establish the Environmental Research and Training Center ( hereinafter referred to as "the Center" ) which undertakes practical research programmes and training courses for the staffs of agencies concerned. The ONEB expects the Grant Aid and the Project-type technical cooperation for the Government of Japan to upgrade the quality of environmental research and training programmes mainly in the field of pollution control.

The expected cooperation of the Government of Japan are as follows:

- 1) To assist in strengthening the ONEB's coordinating and catalytic role among agencies concerned,
- 2) To improve the technical capability and knowledge of the Center staff through technical guidance and/or joint research based on the Japanese Technical Cooperation Scheme,
- 3) To provide necessary buildings, facilities and equipment for the establishment of the Center.

2. Executing Agency

The Office of the National Environment Board, Ministry of Science, Technology and Energy.

*B. S. Phapodde*

1

*M. Hachimoto*

### 3. Project site

The Center will be established at the Chulabhorn Science Complex, Khlong 5, Amphoe Khlong Luang, Changwat Pathum thani, which appears in annexed map. The approximately eleven hectares of lands will be allotted for the Center, and its land development has already started.

### 4. Preparation made by the Government of the Kingdom of Thailand

- 1) Ninety eight permanent staffs at least will be appointed to the Center when it is opened. In addition, efforts to increase the number of staffs up to two hundred and thirty will be made by the end of the 7th National Economic and Social Development Plan.
- 2) The budget, one million Baht in fiscal 1987 and four million Baht in fiscal 1988 for this project has been obtained.

### 5. Technical Cooperation

- 1) The duration of the Japanese Technical Cooperation will be five years from the date designated by the Record of Discussions.
- 2) The ONEB is expected to receive Japanese long-term experts in the fields as follows, during the Technical cooperation period mentioned above.
  - a. Team Leader
  - b. Coordinator
  - c. Water Pollution
  - d. Air Pollution
  - e. Noise and Vibration
  - f. Solid Waste
  - g. Toxic Substances

Those experts provide assistance to both Research and training activities in the Center.

- 3) The ONEB also looks forward to accepting the Japanese short-term experts so as to carry out the activities which the long-term experts will not cover. The number and fields of the Japanese short-term experts will be specified on Annual Work Plan after the consultation

*W. Suphapolde*

*M. Haskins*

between both sides.

- 4) The fields of Training are as follows;
  - a. Water Pollution
  - b. Air Pollution
  - c. Noise and Vibration
  - d. Solid Waste
  - e. Toxic Substances
  - f. Environmental Administration
  - g. Environmental Impact Assessment
  - h. Environmental Data Processing
  - i. Environmental Education
- 5) The fields of Research are as follows;
  - a. Water Pollution
  - b. Air Pollution
  - c. Noise and Vibration
  - d. Solid Waste
  - e. Toxic Substances
- 6) Some of counterpart personnels will be trained in Japan.
- 7) The Expert-term Survey Team will be dispatched to the ONEB to work out the details contents on the Research and Training programmes for the Center, when necessary.

#### 6. Grant Aid

- 1) The Government of the Kingdom of Thailand has understood the system of Japanese Grant Aid explained by the Team based on the attached booklet on the Japanese Grant Aid programme, which includes a principle of the use of a Japanese consultant and a Japanese firm for the execution of the Project.
- 2) The Government of the Kingdom of Thailand and the Government of Japan will cooperate each other for smooth implementation of the Project under the scheme and system of the Government of Japan on condition that the Grant Aid would be extended to the Project.
- 3) The Government of the Kingdom of Thailand will obtain the necessary budget and personnel for the proper and effective operation and maintenance of facilities and equipment provided under the Grant Aid.
- 4) The scope of cooperation to be covered by Grant Aid from the Government

*M. S. S. S. S. S.*

3

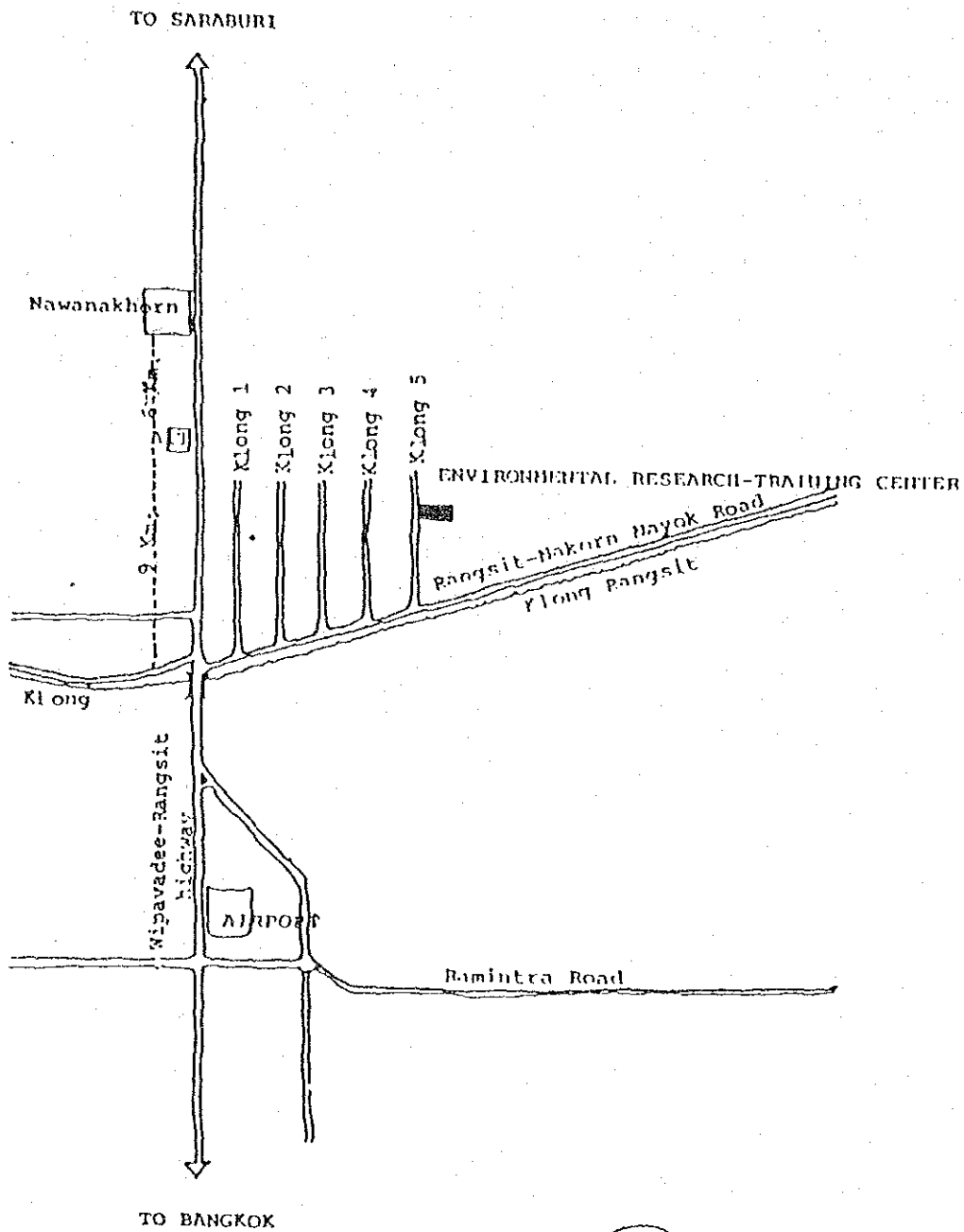
*M. Hashimoto*

of Japan will be studied and clarified by the following Basic Design Study Team dispatched by JICA after the feasibility of the Project is confirmed by the Government of Japan.

*D. Pappasopoulos*

4

*M. Hashimoto*



Location of ENVIRONMENTAL RESEARCH-TRAINING CENTER









JICA