

2. 討議議事録覚書 (Minutes of Discussions : M/D)

MINUTES OF DISCUSSIONS
BETWEEN JAPANESE IMPLEMENTATION STUDY TEAM
AND AUTHORITIES CONCERNED OF THE GOVERNMENT OF
THE KINGDOM OF THAILAND
ON JAPANESE TECHNICAL COOPERATION FOR THE PROJECT
ON THE INDUSTRIAL WATER TECHNOLOGY INSTITUTE PHASE 2
IN THE KINGDOM OF THAILAND


The Japanese Implementation Study Team (hereinafter referred to as "the Team") organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Shunichi Mizuochi, visited the Kingdom of Thailand from April 2 to 5, 2000 for the purpose of working out details of the technical cooperation program concerning the Project on the Industrial Water Technology Institute Phase 2 (hereinafter referred to as "the Project") in the Kingdom of Thailand.

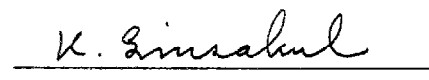
During its stay in the Kingdom of Thailand, the Team and JICA Thailand Office exchanged views and had a series of discussions with the authorities concerned of the Government of the Kingdom of Thailand.

As a result of the discussions, JICA Thailand Office and the Department of Industrial Works (hereinafter referred to as "DIW"), Ministry of Industry, signed the Record of Discussions (hereinafter referred to as "the R/D") on Japanese Technical Cooperation for the Project.

The document attached hereto is intended to record the common understanding reached between both sides in regard to the provisions stipulated in the R/D.

Bangkok, April 5, 2000


Mr. Kenji Iwaguchi
Resident Representative
Thailand Office
Japan International Cooperation Agency
Japan


Ms. Kanya Sinsakul
Director-General
Department of Industrial Works
Ministry of Industry
Kingdom of Thailand

ATTACHED DOCUMENT FOR THE PROJECT
ON THE INDUSTRIAL WATER TECHNOLOGY INSTITUTE PHASE 2

I Name of the Project

Both sides agreed to use "The Project on the Industrial Water Technology Institute Phase 2" as the name of the Project.

II Implementing Agency of the Project

DIW will bear overall responsibility for the implementation of the Project. The organization chart of DIW is as shown in ANNEX 1-1.

The Project will be implemented at the Industrial Water Technology Institute (hereinafter referred to as "IWTI"), DIW. As IWTI is not recognized as one division of DIW by the Civil Service Commission, Bureau of Industrial Environment Technology (hereinafter referred to as "BIET"), DIW will bear responsibility for the routine management of the IWTI. The organization charts of BIET and IWTI are as shown in ANNEX 1-2 and ANNEX 1-3.

Both sides confirmed that IWTI will not be privatized during the period of technical cooperation for the Project by the Government of Japan, and that DIW will consult with the Japanese side in advance should the status of IWTI change, even after the period of technical cooperation.

III Administration of the Project

In accordance with Article IV of the R/D, the organization chart for the administration of the Project is as shown in ANNEX 2.

IV Site of the Project

The Project will be implemented at IWTI in Bangkok. The present location and the layout of IWTI are as shown in ANNEX 3-1 and ANNEX 3-2. The Address and the telephone / facsimile numbers are as follows:

Address : 57 Phra Sumen Rd., Phranakorn District, Bangkok, 10200

Phone : 281-2770

Fax. : 281-6349

V Master Plan of the Project

In accordance with Annex I of the R/D, both sides confirmed the Master Plan of the Project as shown in ANNEX 4, in which the activities of the Project were elaborated to fulfill the Project outputs.

VI Fields of Technology Transfer

Both sides confirmed that technology transfer from the Japanese experts to the Thai counterpart personnel (hereinafter referred to as "C/P") would be made in the following fields:

1. Industrial Water and Wastewater Treatment Process
2. Industrial Water and Wastewater Treatment Experiments
3. Industrial Water Quality Control / Effective Use of Water

The details of the fields of technology transfer are described in ANNEX 5.

VI Measures to be taken by the Japanese side

In accordance with Article II of the R/D, the Project will be carried out under the framework of Project-Type Technical Cooperation which is a combination of the following three (3) components:

1. Dispatch of Japanese Experts
(Long-term Experts)

The application form (Form A-1) for the long-term experts referred to in Annex II of the R/D should be submitted to the Government of Japan by the Thai side at least two (2) months prior to their scheduled arrival in the Kingdom of Thailand.

(Short-term Experts)

Both sides agreed that short-term experts would be dispatched in specific fields related to technology transfer as necessity arises.

The Thai side should submit Form A-1 for the short-term experts to the Government of Japan not later than three (3) months prior to their assignment.

Both sides reconfirmed that experts in the following fields are expected to be dispatched:

- (1) Industrial water and wastewater treatment (Advanced / specialized technology)
- (2) Pollution Control Supervisor System
- (3) Industrial water supply and effective use of water (Unit processes / operation)

- (4) Industrial water supply and effective use of water (Food industry)
- (5) Industrial water supply and effective use of water (Textile industry)
- (6) Industrial water supply and effective use of water (Pulp and paper industry)
- (7) Industrial water supply and effective use of water (Other types of industry)
- (8) Industrial water supply and effective use of water (Advanced / specialized technology)
- (9) Information Management
- (10) System Engineering (Database)
- (11) Management of Institutions

2. Training of C/P in Japan

The Team stated and the Thai side understood that a certain number of C/P would be accepted for training in Japan during the period of Japanese technical cooperation, according to the following program:

- (1) Number : About one (1) or two (2) yearly
- (2) Term : About a few weeks, depending upon the field as well as C/P dispatched to Japan.
- (3) Fields (provisional): Institution Management, Training Service, Consulting Service
Information Service (provisional)

Furthermore, the Team requested the Thai side and the latter agreed that, as a matter of course, the C/P may apply to other training courses conducted by JICA, however, sufficient consultation should be held between the Japanese experts and the C/P before such application to avoid impeding the smooth implementation of the Project.

The application form (Form A2A3) for the training program in Japan should be submitted to the Government of Japan by the Thai side at least two (2) months prior to their scheduled arrival in Japan.

3. Provision of Machinery and Equipment

In accordance with Annex III of the R/D, the Thai side made a request to the Japanese side for provision of the machinery, equipment, and other materials (hereinafter referred to as "the Equipment") which are listed as No.1 to No.29 in ANNEX 6.

The Team agreed to convey the request of the Thai side to the Japanese authorities concerned, stating that the actual provision would be subject to budget appropriation by the Government of Japan.

The Team explained and the Thai side agreed that the cost and responsibility necessary for domestic transport, installation, adjustment, maintenance and repair of the Equipment should be

borne by the Thai side.

The application form (Form A-4) for the request of the Equipment to be provided by the Government of Japan should be submitted to the Government of Japan by the Thai side immediately after the R/D has been signed.

VII Measures to be taken by the Thai side

In accordance with Article III of the R/D, the Thai side will take the following measures:

a. Buildings and Facilities for the Project

The Thai side will prepare the buildings and facilities of IWTI for the implementation of the Project.

Office space for the Japanese experts which is equipped properly with office equipment such as phones and desks, and which have one (1) telephone extension line for each Japanese expert, one (1) international telephone line and electric wiring will be prepared before the commencement of the Project.

b. Machinery, Equipment and Materials

The Thai side will supply or replace at its own expense machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project, including the Equipment listed as No.30 and No.31 in ANNEX 6, and excluding that provided by the Government of Japan through JICA.

The list of existing machinery and equipment in DIW, which can be used for the Project, is as shown in ANNEX 7.

c. Assignment of C/P and Administrative Personnel

In accordance with ANNEX IV of the R/D, the Thai side will provide the full-time services of the C/P and administrative personnel as listed in ANNEX 8 for the successful implementation of the Project. Furthermore, both sides confirmed that the Thai side would provide technicians to operate the equipment when necessity arises.

Should the allocation of C/P and the administrative personnel be changed due to either personnel or administrative reasons, the Thai side will immediately take necessary measures to assign an appropriate number of persons for the Project.

4. Local Costs

It is indispensable for the successful implementation of the Project that the Thai side allocates the proper amount of funding and shoulder the local costs and / or operating expenses for the Project.

The Thai side presented the tentative budget plan for the Project and its basis of estimation are as shown in ANNEX 9-1 and ANNEX 9-2.

VIII Project Cycle Management

1. Application of Project Cycle Management Method

Both sides confirmed that the project planning, monitoring and evaluating method entitled Project Cycle Management (hereinafter referred to as "PCM") will be applied to the Project to monitor and evaluate the level of the achievement and enhance communication for its smooth implementation.

2. Project Design Matrix

The Team explained and the Thai side agreed that the Project Design Matrix (hereinafter referred to as "PDM") ought to be designed at the planning stage of the Project, as a framework for clarifying the multi-level chain of cause-to-effect such as input to output, output to project purpose, and project purpose to overall goal.

Both sides reached a mutual understanding on the first version of PDM for the Project as shown in ANNEX 10, and confirmed the following:

- a. The C/P and the Japanese experts should examine the indicators during the planning stage of the Project, which is scheduled in the first year of the cooperation period, so that the indicators and/or targets for project purpose and outputs are as objectively verifiable as possible.
- b. PDM should continue to be reviewed and revised if necessary, with further discussion between both sides.

3. Monitoring

The Team explained and the Thai side agreed to the following:

- a. Based on PDM, regular monitoring on the achievement of the Project's goals should be implemented primarily by C/P and the experts in order to grasp the progress and the achievement of the Project and to modify the plan if necessary.
- b. Within the first 6 months after the commencement of the Project, a monitoring system

should be established by the C/P and the Japanese experts, and every 6 months thereafter, monitoring should be performed and the results should be distributed to the organizations and/or personnel concerned with the Project.

4. Evaluation

With regard to Article V of the R/D, the Team explained and the Thai side agreed to the following:

- a. Evaluation of the Project is to be conducted, based on the five basic evaluation components shown in ANNEX 11.
- b. A midterm evaluation will be conducted jointly by both sides in the middle of the cooperation period in order to examine the achievement of the Project's goals from the viewpoint of the five basic evaluation components and to modify the plan if necessary.
- c. A final evaluation of the Project will be conducted jointly by both sides, approximately 6 months before the termination of the cooperation period, in order to examine the achievement of the Project's goals.

IX Schedule of the Project

Both sides confirmed the Tentative Schedule of Implementation for the Project as shown in ANNEX 12.

Furthermore, both sides confirmed the Plan of Operations (hereinafter referred to as "PO") and Annual Plan of Operations (hereinafter referred to as "APO") for the Japanese fiscal year 2000 for the Project as shown in ANNEXES 13 and 14, respectively.

The PO and APO are regarded as tentative and should be discussed further between the Japanese experts and the Thai side after the Project starts.

X Sustainability of the Project

The Thai side will take necessary measures to ensure that the self-reliant operation of the Project will be sustained during and after the period of Japanese technical cooperation, through the full and active involvement in the Project by all related authorities, beneficiary groups and institutions so that the technologies and knowledge acquired by the C/P through the Project will ultimately contribute to the economic and social development of the Kingdom of Thailand.

XI Common Language Used for the Project

Both sides reconfirmed that the common language used in any activities of the Project should be English.

XII Attendance at the Discussions

A list of attendance at the discussions is shown in ANNEX 15.

LIST OF ANNEXES

- ANNEX 1-1 Organization Chart of DIW
- 1-2 Organization Chart of BIET
- 1-3 Organization Chart of IWTI

- ANNEX 2 Organization Chart for the Administration of the Project

- ANNEX 3-1 Location Map of IWTI
- 3-2 Layout of the Project Facilities

- ANNEX 4 Master Plan

- ANNEX 5 Fields of Technology Transfer

- ANNEX 6 List of the Equipment to be Procured

- ANNEX 7 List of Existing Equipment at DIW

- ANNEX 8 List of C/P and Administrative Personnel

- ANNEX 9-1 Tentative Budget Plan to be allocated for the Project by the Thai Side
- 9-2 Basis of Estimation of the Tentative Budget Plan

- ANNEX 10 Project Design Matrix (PDM)

- ANNEX 11 Five (5) Basic Evaluation Components

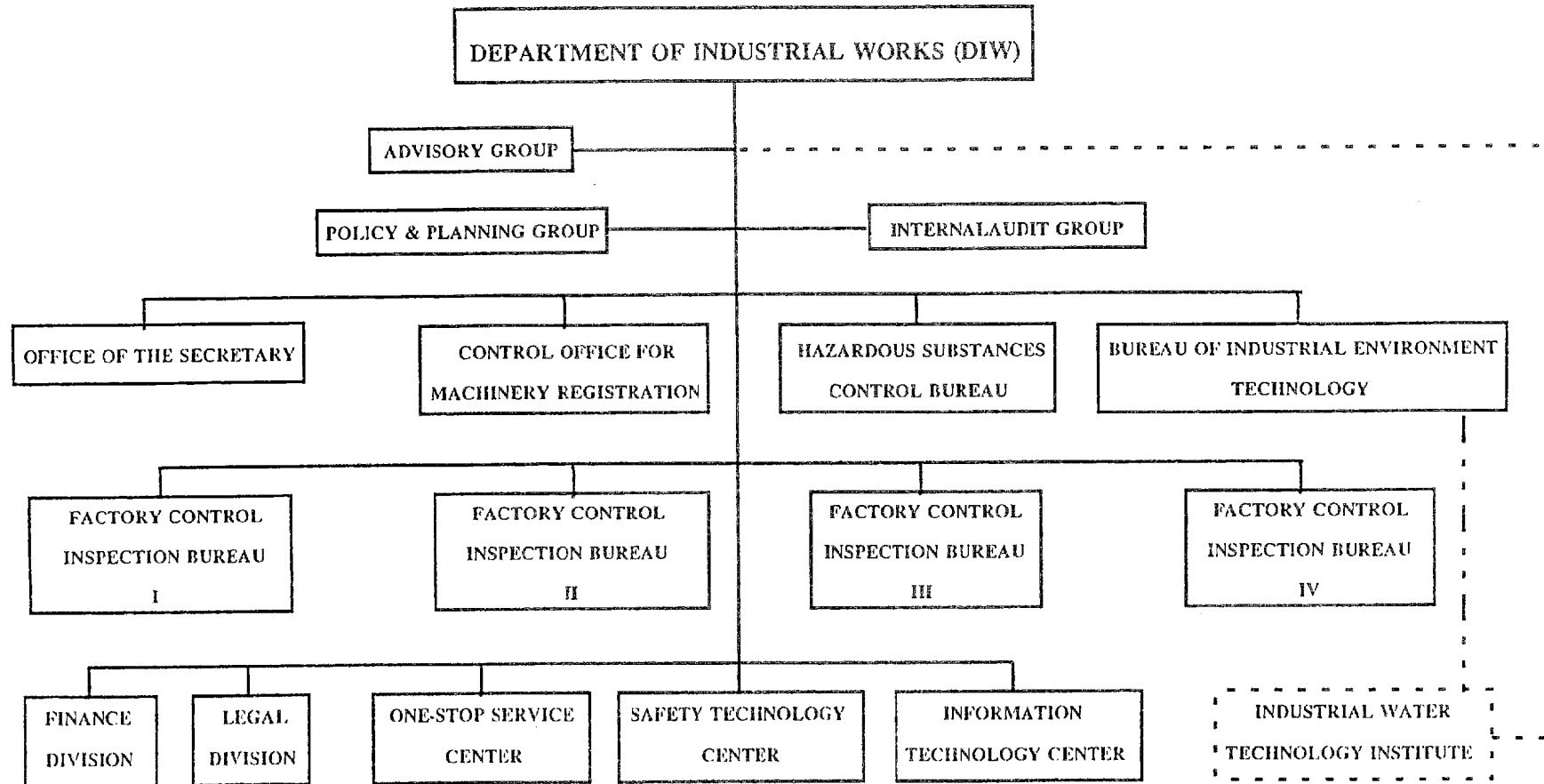
- ANNEX 12 Tentative Schedule of Implementation (TSI)

- ANNEX 13 Plan of Operations (PO)

- ANNEX 14 Annual Plan of Operations (APO)

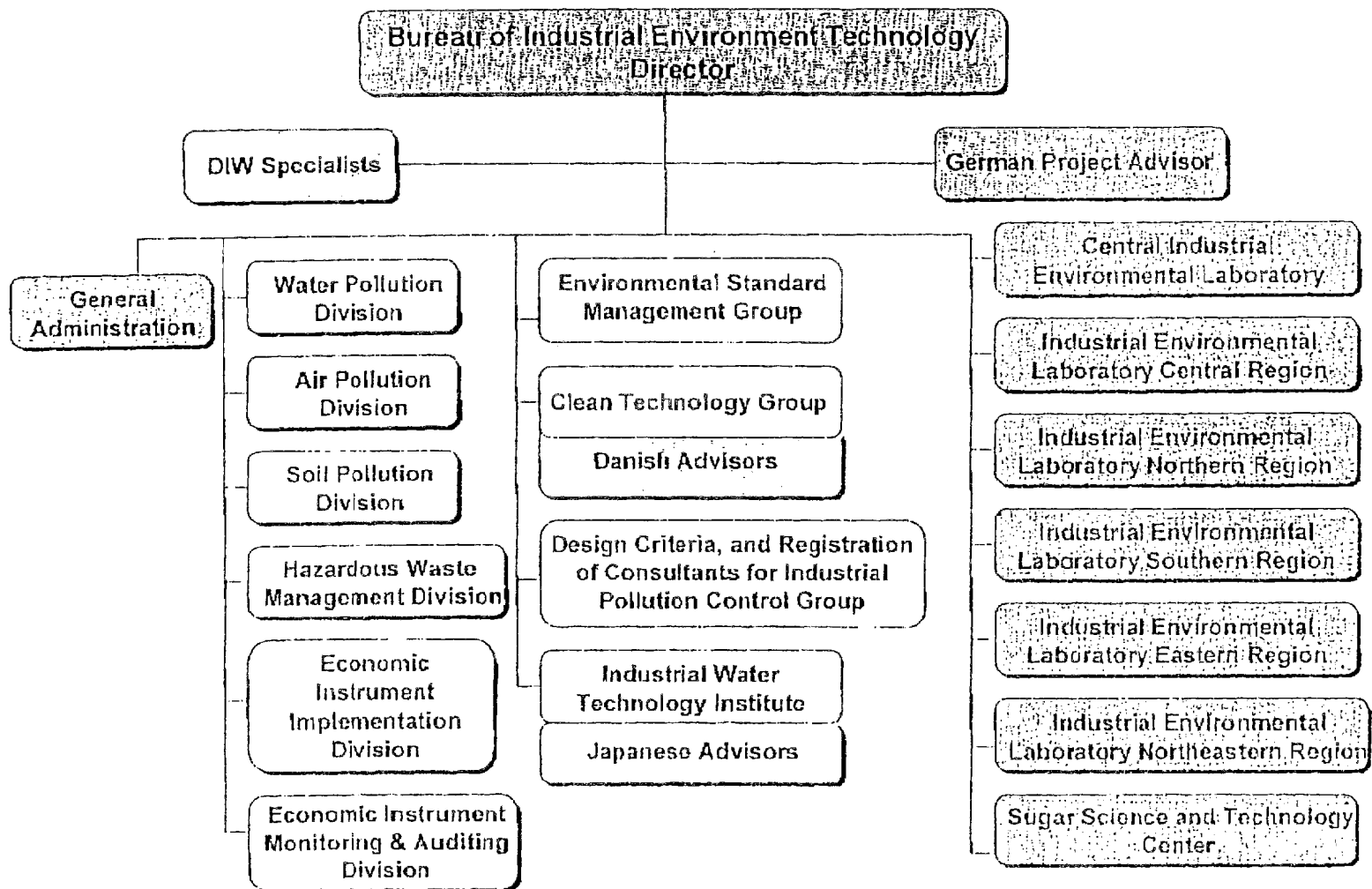
- ANNEX 15 List of Attendance at the Discussion

ORGANIZATION CHART

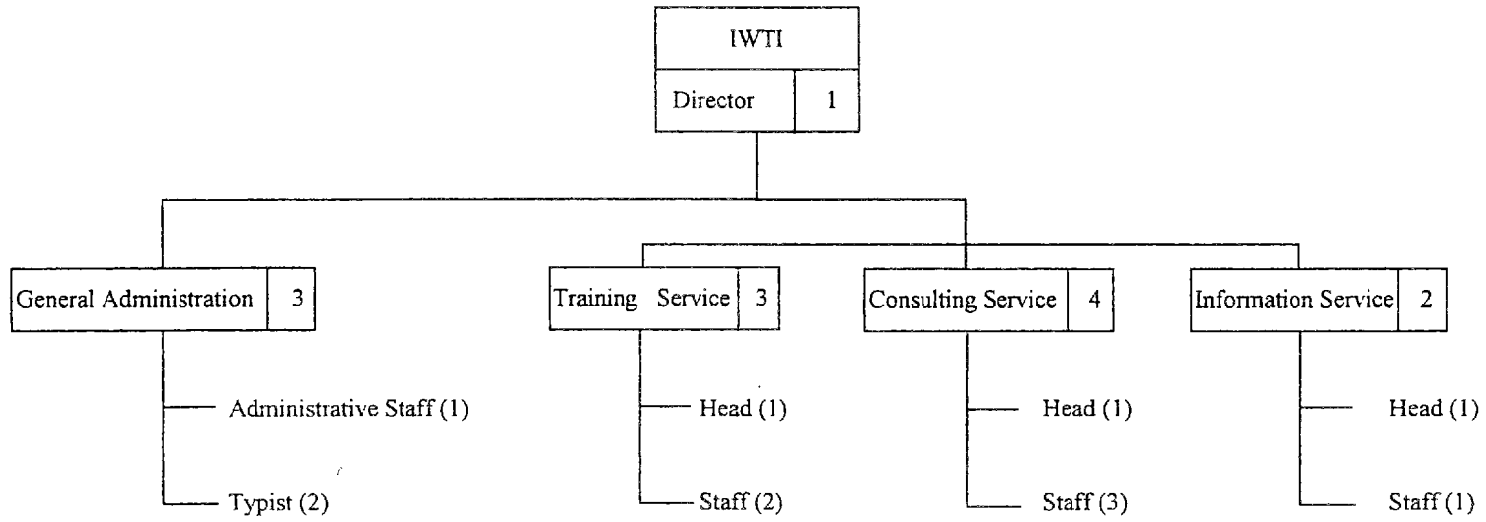


- LINE OF COMMAND
- - - - - LINE OF ROUTINE MANAGEMENT
- · · · · LINE OF SUPERVISION

Organization chart of Bureau of Industrial Environmental Technology
 Bureau of Industrial Environment Technology are 1 Sector 6 Division 3 Group 7 Central 1 Institute

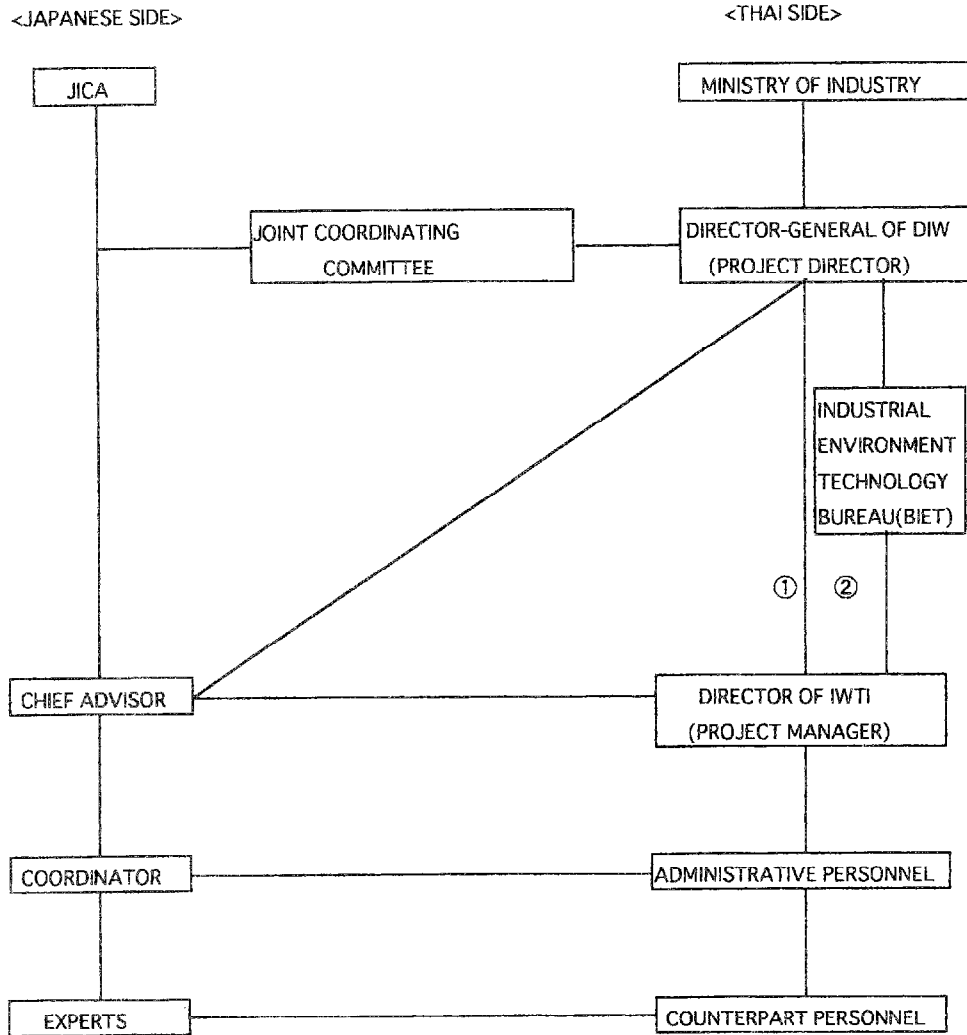


ORGANIZATION CHART OF IWTI

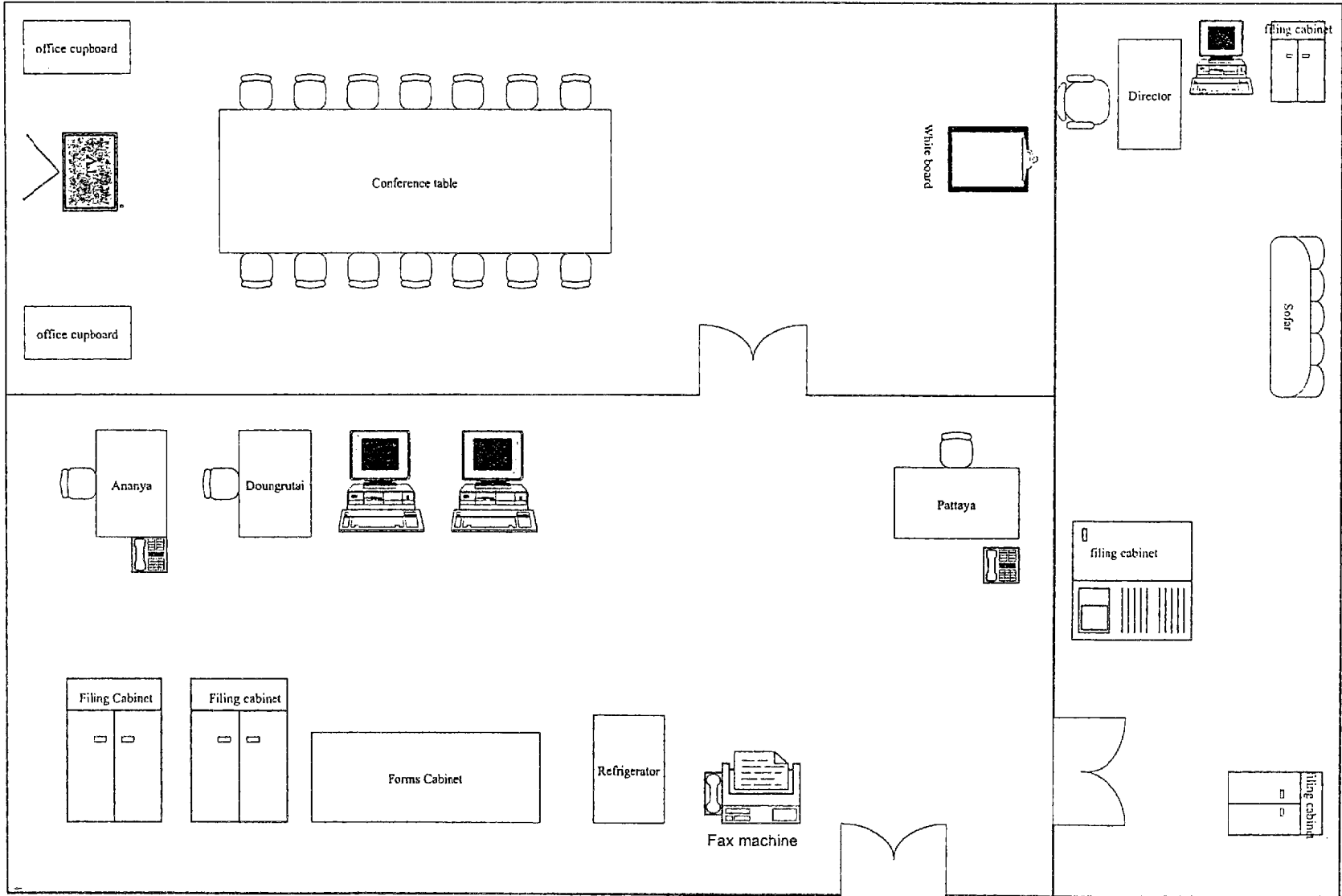


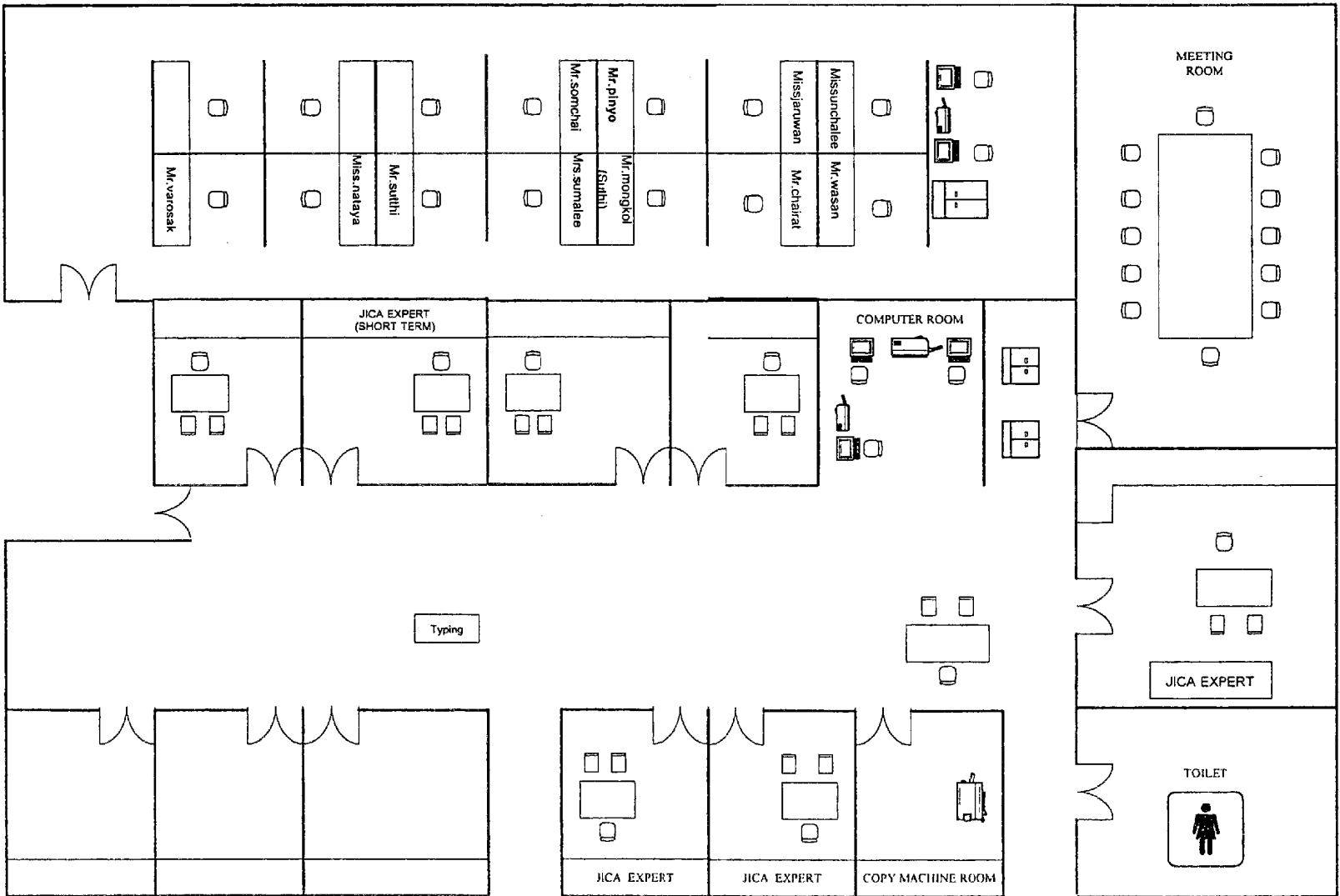
4

Organization Chart for the Administration of the Project



<Note> ① : Supervision of IWTI ② : Routine Management of IWTI





15

Master Plan

1. Objectives of the Project

(1) Overall Goal

Thai industries are able to get more efficient water use and also more effective wastewater treatment and reuse.

(2) Project Purpose

IWTI is able to continuously provide Thai industries with appropriate technical guidance on industrial water supply, effective use of water and wastewater treatment and reuse.

2. Outputs of the Project

(0) The organization of IWTI is strengthened and operated efficiently.

(1) Equipment for technical guidance to Thai industries is installed and operated properly.

(2) The training service on industrial water and wastewater technology is provided to Thai industries by IWTI.

(3) The consulting service on industrial water and wastewater technology is provided to Thai industries by IWTI.

(4) The information service on industrial water and wastewater technology is provided to Thai industries by IWTI.

3. Activities of the Project

0-1 Allocate staff as planned.

-1 Make a personnel allocation plan.

-2 Allocate the personnel.

0-2 Make operation plans of the Project.

-1 Make annual operation plans of the Project.

-2 Review the annual operation plans intermediately.

0-3 Make and implement budgetary plans properly.

-1 Make budgetary plans.

-2 Implement the budgetary plans.

0-4 Operate the joint coordinating committee.

1-1 Provide and purchase the equipment.

-1 Design and select equipment.

-2 Purchase the equipment.

1-2 Make the operation and maintenance plan of the equipment.

-1 Prepare a laboratory and storage of the equipment.

-2 Make operation and maintenance plans.

- 1-3 Operate the equipment constantly and maintain it properly.
 - 1 Prepare operation and maintenance manuals.
 - 2 Operate and maintain equipment appropriately.

- 2-1 Collect necessary information on the training service from industries and other organizations concerned.
- 2-2 Select target industrial sectors and factory size to provide training service.
- 2-3 Make the operation plans of the training section.
 - 1 Make operation plans for the whole project period.
 - 2 Make annual operation plans.
- 2-4 Make plans of technical transfer to the training section staff.
 - 1 Make technology transfer plans for the whole project period.
 - 2 Make detailed plans of technology transfer.
- 2-5 Make curriculums of technical transfer to the training section staff.
 - 1 Make time schedules of lectures.
- 2-6 Prepare reference materials for technical transfer to the training section staff.
 - 1 Select reference books and collect relevant information and data.
- 2-7 Implement technical transfer to the training section staff by lectures.
 - 1 Lecture on practical technology.
- 2-8 Make guidebooks and reference books for factory engineers, water pollution control supervisors and operators and DIW inspectors.
- 2-9 Hold seminars and training courses for factory engineers, water pollution control supervisors and operators and DIW inspectors.
- 2-10 Understand technical levels of training section staff.
 - 1 Have technical discussions appropriately.
 - 2 Monitor training section staff technical levels periodically.
 - 3 Evaluate technical reports and other outputs.

- 3-1 Collect necessary information on the consulting service from industries and other organizations concerned.
- 3-2 Select target industrial sectors and factory size to provide consulting service.
- 3-3 Make the operation plans of the consulting section.
 - 1 Make operation plans for the whole project period.
 - 2 Make annual operation plans.
- 3-4 Make plans of technical transfer to the consulting section staff.
 - 1 Make technology transfer plans for the whole project period.
 - 2 Make detailed plans of technology transfer.
- 3-5 Make curriculums of technical transfer to the consulting section staff.
 - 1 Make time schedules of lectures.
- 3-6 Prepare reference materials for technical transfer to the consulting section staff.

- 1 Select reference books and collect relevant information and data.
- 3-7 Implement technical transfer to the consulting section staff by lectures.
 - 1 Lecture on practical technology.
- 3-8 Implement factory investigations.
- 3-9 Prepare manuals for water and wastewater treatment experiments.
- 3-10 Carry out water or wastewater treatment experiments to take data for operation and engineering by lab. and bench scale testing equipment and demonstrate performance of the treatment systems by using bench scale testing equipment.
- 3-11 Make conceptual designs and improvement plans.
- 3-12 Implement technical guidance to factories with results of experiments and factory investigations and with proposals for improvement of operation conditions and facilities.
- 3-13 Understand technical levels of consulting section staff.
 - 1 Have technical discussions appropriately.
 - 2 Monitor training section staff' technical levels periodically.
 - 3 Evaluate technical reports and other outputs.

- 4-1 Collect necessary information and data for the planning of information service from inside and outside.
- 4-2 Select target information to be managed.
- 4-3 Make the operation plans of the information section.
 - 1 Make operation plans for the whole project period.
 - 2 Make annual operation plans.
- 4-4 Make plans of technical transfer to the information section staff.
 - 1 Make technology transfer plans for the whole project period.
 - 2 Make detailed plans of technology transfer.
- 4-5 Make curriculums of technical transfer to the information section staff.
 - 1 Make time schedules of lectures.
- 4-6 Prepare reference materials for technical transfer to the information section staff.
 - 1 Select reference books and collect relevant information and data.
- 4-7 Implement technical transfer to the information section staff by lectures.
 - 1 Lecture on practical technology.
- 4-8 Make manuals for information management.
- 4-9 Manage information by making files and databases.
- 4-10 Issue the annual report of IWTI
- 4-11 Prepare the homepage.

Note: Activities of the Project would be elaborated to fulfill the outputs.

Fields of Technology Transfer

1. Technology of industrial water and wastewater treatment process

- (1) Factory investigation and assessment
- (2) Experiment planning for engineering data acquisition
- (3) Conceptual design
- (4) Compilation of textbook for training course
- (5) Collection and management of related information
- (6) Introduction of advanced technology

2. Technology of industrial water and wastewater treatment experiments

- (1) Experiment plan
- (2) Operation and maintenance of testing equipment
- (3) Data analysis
- (4) Compilation of textbook for training course
- (5) Collection and management of related information
- (6) Introduction of advanced technology

3. Technology of industrial water quality control and effective use of water

- (1) Factory investigation and assessment
- (2) Industrial water quality control
- (3) Planning on effective use of water
- (4) Compilation of textbook for training course
- (5) Collection and management of related information
- (6) Introduction of advanced technology



List of Equipment to be procured

No.	Name of equipment	Category *1)	Responsible side	Procurement schedule *2)	Place of purchase
Analysis and measuring equipment					
1	Microscope with camera	A	Japanese	JFY2000	Thailand
2	BOD analysis apparatus	A	Japanese	JFY2000	Thailand
3	Suspended Solid (SS) analysis equipment	A	Japanese	JFY2000	Thailand
4	TOC meter	A	Japanese	JFY2000	Thailand
5	Oil analysis	A	Japanese	JFY2000	Thailand
6	Pure water equipment	A	Japanese	JFY2000	Thailand
7	Flow meter	A	Japanese	JFY2000	Thailand
8	Apparatus and equipment for lab	A	Japanese	JFY2000	Thailand
Lab scale testing equipment					
9	Flotation tester	A	Japanese	JFY2000	Thailand
10	Activated sludge	A	Japanese	JFY2000	Thailand
11	Contact oxidation	A	Japanese	JFY2000	Thailand
12	Anaerobic reactor	A	Japanese	JFY2000	Thailand
13	Sand filtration	A	Japanese	JFY2000	Thailand
14	Activated carbon adsorption	A	Japanese	JFY2000	Thailand
15	Ion exchange	A	Japanese	JFY2000	Thailand
16	Raw water feeder	A	Japanese	JFY2000	Thailand
17	Recorder	A	Japanese	JFY2000	Thailand
18	Anaerobic oxic activated sludge testing equipment (A2O)	B	Japanese	JFY2002	Thailand
Bench scale testing equipment					
19	Anaerobic, aerobic wastewater treatment	A	Japanese	JFY2000	Thailand
20	MF testing equipment (Pressure type)	B	Japanese	JFY2002	Thailand
21	MF testing equipment (Suction type)	B	Japanese	JFY2002	Thailand
22	RO testing equipment	B	Japanese	JFY2002	Thailand
23	Membrane separation activated sludge	B	Japanese	JFY2002	Thailand
24	Groundwater softening system	B	Japanese	JFY2002	Thailand
Others					
25	Computer system (Workstation)	A	Japanese	JFY2001	Thailand
26	CAD system	B	Japanese	JFY2002	Thailand
27	Monitoring system	B	Japanese	JFY2002	Thailand
28	Mobile laboratory	B	Japanese	JFY2002	Thailand
29	Vehicle for transportation of testing equipment	A	Japanese	JFY2000	Thailand
30	Laser printer	B	Thai	TFY2002	Thailand
31	Scanner	B	Thai	TFY2002	Thailand

*1) A: Equipment which needs to be procured in the early stage of the Project

B: Equipment whose necessity needs to be examined after making the detailed operation plan of the Project

*2) JFY: Japanese Fiscal Year, TFY: Thai Fiscal Year

ANNEX 7 List of Existing Equipment at DIW

No.	Name of Equipment	Maker/Model	Amount
1	COD meter	HACH DR/2010 and COD reactor	1
2	Portable Residual Chlorine Meter	HACH Pocket Colorimeter	2
3	Portable Turbidity Meter	HACH Model 2100P	2
4	Ultrasonic Flow Meter	FUJI Electric Model Portaflow-X	2
5	Benchtop pH/ORP/Temp.Meter	HACH EC30	1
6	Portable pH/ORP/Temp.Meter	HACH EC10	2
7	Portable DO Meter	HACH DO175	2
8	Portable Conductivity Meter	HACH CO150	2
9	Jar Tester	Phipps&Bird PB900	1
10	Balance	CT1200	1
11	Magnetic Stirrer with Hot Plate	SR350	1
12	Automatic Sampler	ISCO Model6700	1
13	Refrigerator	Mitsubishi MR-VE41B	2
14	Photocopy machine	Fuji Xerox Vivace 450	1
15	Portable Printer	Canon BJC-50	1
16	Color Inkjet Printer	HP 1120C	1
17	Scanner	HP Scanjet 5100C	1
18	Desktop-type Personal Computer	IBM PC300L	2
19	Laptop-type Personal Computer	TOSHIBA Satellite 330CDT	2
20	Laser Printer	HP LaserJet 5000	1
21	CD Rewritable	HP 7200e	1
22	Facsimile Machine	SHARP UX-1100	1
23	Whiteboard with copy function	Panasonic KX-B630G	1
24	Overhead projector	3M Overhead Projector M2770	1
25	Screen	SOPA Screen 60"x60"	1
26	Puncher for book binding	Lamirel Star	1
27	Digital Camera	SONY MVC-FD71	1
28	TV Monitor	SONY KV-XF29m63	1
29	Video Player	SONY SLV-7000KPS	1
30	Video Camera	SONY CCD-TRV55E	1
31	Monitor Rack		1
32	LCD Projector	SANYO PLC-SU10	1
33	Video Presentation Stand (Visualizer)	SONY VID-P110	1
34	Personal Computer		2
35	Printer		2
36	Transport Vehicle (Light Van)		1

List of Counterpart and Administrative Personnel**(1) List of Counterparts**

NAME		POSITION
1. MR. CHUMPON	CHEEWAPRAPANUNT	DIRECTOR AND TECHNICAL COUNTERPART
2. MR. PINYO	THAMMASIRI	TECHNICAL COUNTERPART
3. MRS. SUMALEE	DACHOPONCHAI	TECHNICAL COUNTERPART
4. MR. MONGKOL	SUTHIVATHANAKUL	TECHNICAL COUNTERPART
5. MR. CHAIRAT	LIANGSUPONG	TECHNICAL COUNTERPART
6. MR. SOMCHAI	PHIANPISUT	TECHNICAL COUNTERPART
7. MISS JARUWAN	WIRAWONGNUSORN	TECHNICAL COUNTERPART
8. MR. SUTTHI	TANTIPISITKUL	TECHNICAL COUNTERPART
9. MR. VAROSAK	SUNTIVARAKOM	TECHNICAL COUNTERPART
10. MISS NATAYA	SINTHURAT	TECHNICAL COUNTERPART

(2) List of Administrative Personnel

NAME		POSITION
1. MISS PATHAYA	MEENAK	DIRECTOR'S SECRETARY
2. MISS ANANYA	NORAKARNPHADUNG	ADMINISTRATIVE STAFF
3. MRS. DUANGRUTHAI	PONGSANTISUK	TYPIST
4. TO BE ASSIGNED LATER		JAPANESE EXPERTS SECRETARY

Tentative Budget Plan to be allocated for the Project by the Thai Side

(Unit: Thousand Baht)

Thai Fiscal Year Item	2000	2001	2002	2003	2004	2005	Total	Remark
Personnel Fee	2,401	2,545	2,794	2,962	3,140	3,328	17,170	Salary of the counterparts and administrative staff
Equipment Maintenance	30	30	100	220	300	300	980	Repair, spare parts, etc.
Consumables	400	400	570	590	640	640	3,240	Chemicals, stationary, etc.
Travel Cost	50	273	273	273	273	273	1,415	Daily allowance and accommodation for business trips to provinces
Seminar and Training Course	-	-	370	370	740	740	2,220	Expense for seminar rooms, textbooks, outside lecturers, etc.
Water, Electricity, Fuel, Local Telephone and Transportation	300	310	320	330	340	350	1,950	
Total	3,181	3,558	4,427	4,745	5,433	5,631	26,975	

*) Thai Fiscal Year 2001 starts in October 2000 and ends in September 2001.

Basis of estimation of the Tentative Budget Plan

1. Personnel fee

- (1) According to the Joint Evaluation Report Annex 14, estimated figure for TFY 2000 is 2,401 thousand Baht.
- (2) Assume 6 % increase every year.
- (3) Start employment of a technician in 2002 by 8,000 Baht/month

2. Equipment maintenance

- (1) DIW will repair equipment upon request from IWTI.
- (2) Based on the budgetary plan attached to the Middle and Long-term Plan (2nd draft), 30 thousand Baht for the year 2000 and 2001.
- (3) For the year 2002: 100 thousand Baht
 - For analysis equipment: gradual increase from the year 2001
 - For new equipment (Category A): 0.3 % of estimated initial cost
- (4) For the year 2003: 220 thousand Baht
 - For analysis equipment: same as the year 2002
 - For new equipment (Category A): 0.5 % of estimated initial cost (a little increase from the year 2002 due to aging)
 - For new equipment (Category B): 0.5 % of estimated initial cost
- (5) For the year 2004:
 - For analysis equipment: 40 thousand Baht
 - For new equipment (Category A): same as the year 2003
 - For new equipment (Category B): 1.0 % of estimated initial cost (a little increase from the year 2003 due to aging)
- (6) For the year 2005:
 - Same as the year 2004

3. Consumables

- (1) DIW will provide upon request from IWTI.
- (2) Based on the budgetary plan attached to the Middle and Long-term Plan (2nd draft), sum columns of "chemicals" and "office supplies and expenses".

4. Travel cost

- (1) DIW provide travel cost upon request from IWTI.

(2) For the sub-project No. 2 (rubber factory), assume 3 trips by 4 persons for 2 weeks every year.

$(90 \text{ Baht} \times 14 \text{ days} + 800 \text{ Baht} \times 13 \text{ days}) \times 3 \text{ trips} \times 4 \text{ persons} = 140 \text{ thousand Baht/year}$

(3) For the sub-project No.3 (water saving guidebook) and No.4 (water saving practice), assume 5 trips (5 factories x 1 time) by 4 persons for 5 days every year.

$(90 \text{ Baht} \times 5 \text{ days} + 800 \text{ Baht} \times 4 \text{ days}) \times 5 \text{ trips} \times 4 \text{ persons} = 73 \text{ thousand Baht/year}$

(4) For the sub-project No. 8 (wastewater treatment consulting), assume 8 trips (4 factories x 2 times) by 4 persons for 3 days every year.

$(90 \text{ Baht} \times 3 \text{ days} + 800 \text{ Baht} \times 2 \text{ days}) \times 8 \text{ trips} \times 4 \text{ persons} = 60 \text{ thousand Baht/year}$

5. Seminar and training

(1) Assume unit cost for one seminar as 120,000 Baht and training course as 250,000 Baht. These figures include lecturer, handout, workshop, food & venue. Curriculum should be prepared by IWTI.

(2) Assume the number of training courses (regarding inspector and boiler water) as follows: 2002 once, 2003 once, 2004 twice, 2005 twice.

(3) Assume the number of seminar (regarding boiler water and other topics) as follows: 2002 once, 2003 once, 2004 twice, 2005 twice.

6. Water, Electricity, Fuel, Local Telephone and Transportation

(1) According to the Joint Evaluation Report Annex 14, actual figure for TFY 2000 is 300 thousand Baht.

(2) Assume gradual increase as IWTI will become more active.

Project : The Project on the Industrial Water Technology Institute in the Kingdom of Thailand

Term of Cooperation : June 1, 2000 – May 31, 2005

Target Area : Industrialized Area in the Kingdom of Thailand

Target Group : Factories which need the technical guidance on Industrial Water and Wastewater

Date : April 5, 2000

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
(Overall Goal) Thai industries are able to get more efficient water use and also more effective wastewater treatment and reuse.	1. Water recovery ratio inside factories 2. Situation of industrial water and wastewater treatment	1. Record of technical guidance 2. Interview to factories	a. Thai Government will continue its policy on industrial water and wastewater b. There will be no drastic change in economical situation
(Project Purpose) IWTI is able to continuously provide Thai industries with appropriate technical guidance on industrial water supply, effective use of water and wastewater treatment and reuse.	1. Number of service users which receive technical guidance from IWTI 2. Level of satisfaction by service users	1. Record of technical guidance 2. Interview to service users	a. Thai Government will continue its policy on industrial water and wastewater b. Thai industries will invest for necessary facilities and equipment
(Outputs) 0. The organization of IWTI is strengthened and operated efficiently. 1. Equipment for technical guidance to Thai industries is installed and operated properly. 2. The training service on industrial water and wastewater technology is provided to Thai industries by IWTI. 3. The consulting service on industrial water and wastewater technology is provided to Thai industries by IWTI. 4. The information service on industrial water and wastewater technology is provided to Thai industries by IWTI.	0-1. Number of staff 0-2. Budgets allocation 0-3. Planning ability of C/P 1-1. Contents of equipment 1-2. Maintenance condition of equipment 1-3. Usage of equipment 2-1. Technical level of C/P 2-2. Number and contents of teaching materials for training 2-3. Number of training course, seminar and trainees 2-4. Level of satisfaction by trainees 2-5. Ability of C/P to organize the training service 3-1. Technical level of C/P 3-2. Number and contents of technology disseminating tools for factories 3-3. Number of factories which use consulting service 3-4. Level of satisfaction by recipient factories 3-5. Ability of C/P to conduct the consulting service 4-1. Technical level of C/P 4-2. Number and contents of publication 4-3. Number and contents of information stocked in IWTI 4-4. Level of satisfaction by users 4-5. Ability of C/P to conduct the information service	0-1. List of staff 0-2. Accounting record 0-3. Plan of operation and revision of middle and long-term plan 1-1. List of equipment 1-2. Record of maintenance 1-3. Record of usage 2-1. Evaluation sheet 2-2. List of teaching materials 2-3. Record of training 2-4. Questionnaire to trainees 2-5. Record of activities and assessment by C/P and experts 3-1. Evaluation sheet 3-2. List of tools 3-3. Record of consulting 3-4. Questionnaire and interview to factories 3-5. Record of activities and assessment by C/P and experts 4-1. Evaluation sheet 4-2. List of publications 4-3. List of stocked information 4-4. Questionnaire to service users 4-5. Record of activities and assessment by C/P and experts	a. Thai industries will recognize the roles of IWTI and support it. b. C/P will continue to work for IWTI and gain experience. c. DIW will support activities of IWTI.

Narrative Summary	Inputs		Important Assumptions
	Thai Side	Japanese Side	
(Activities)			a. C/P will
0-1 Allocate staff as planned.			continue to
0-2 Make operation plans of the Project.			work for
0-3 Make and implement budgetary plans properly.	Allocation of	Long-term Experts	IWTI.
0-4 Operate the joint coordinating committee.	necessary budget for	<5 persons×60	b. Equipment
1-1 Provide and purchase the equipment.	operation of IWTI	months>	will be
1-2 Make the operation and maintenance plan of the		Chief Advisor	delivered
equipment.	Long-term	Coordinator	without much
1-3 Operate the equipment constantly and maintain it	assignment of	Industrial Water and	delay due to
properly.	Project Manager and	Wastewater	custom
2-1 Collect necessary information on the training service	9 full-time technical	Treatment Process	clearance and
from industries and other organizations concerned.	counterpart	Industrial Water and	transportation
2-2 Select target industrial sectors and factory size to	personnel	Wastewater	
provide training service.		Treatment	
2-3 Make the operation plans of the training section.	Allocation of	Experiments	
2-4 Make plans of technical transfer to the training section	administrative	Industrial Water	(Pre-conditions)
staff.	personnel	Supply / Effective	a. At least 8 C/P
2-5 Make curriculums of technical transfer to the training	Building and	Use of Water	of Phase I will
section staff.	facilities		continue to
2-6 Prepare reference materials for technical transfer to the		Short-term Experts	work for
training section staff.	Equipment and		IWTI.
2-7 Implement technical transfer to the training section	materials	Equipment for	b. Building,
staff by lectures.		technical guidance on	facilities and
2-8 Make guidebooks and reference books for factory		training, consulting,	equipment can
engineers, water pollution control supervisors and		and information	be used.
operators and DIW inspectors.		services on industrial	c. Related data
2-9 Hold seminars and training courses for factory		water and wastewater	and
engineers, water pollution control supervisors and		technology	information in
operators and DIW inspectors.			DIW will be
2-10 Understand technical levels of the training section		Counterpart Training	available.
staff.		in Japan	
3-1 Collect necessary information on the consulting		<1 or 2 persons/year>	
service from industries and other organizations			
concerned.		Support for the	
3-2 Select target industrial sectors and factory size to		operational cost of the	
provide consulting service.		Project	
3-3 Make the operation plans of the consulting section.			
3-4 Make plans of technical transfer to the consulting			
section staff.			
3-5 Make curriculums of technical transfer to the			
consulting section staff.			
3-6 Prepare reference materials for technical transfer to the			
consulting section staff.			
3-7 Implement technical transfer to the consulting section			
staff by lectures.			
3-8 Implement factory investigations.			
3-9 Prepare manuals for water and wastewater treatment			
experiments.			
3-10 Carry out water or wastewater treatment experiments			
to take data for operation and engineering by lab. and			
bench scale testing equipment and demonstrate			
performance of the treatment systems by using bench			
scale testing equipment.			
3-11 Make conceptual designs and improvement plans.			
3-12 Implement technical guidance to factories with result			
of experiments and factory investigations and with			
proposals for improvement of operation conditions			
and facilities.			
3-13 Understand technical levels of the consulting section			

<p>staff.</p> <p>4-1 Collect necessary information and data for the planning of information service from inside and outside.</p> <p>4-2 Select target information to be managed.</p> <p>4-3 Make the operation plans of the information section.</p> <p>4-4 Make plans of technical transfer to the information section staff.</p> <p>4-5 Make curriculums of technical transfer to the information section staff.</p> <p>4-6 Prepare reference materials for technical transfer to the information section staff.</p> <p>4-7 Implement technical transfer to the information section staff by lectures.</p> <p>4-8 Make manuals for information management.</p> <p>4-9 Manage information by making files and databases.</p> <p>4-10 Issue the annual report of IWTI</p> <p>4-11 Prepare the homepage</p>			
--	--	--	--

2

4

Five (5) Basic Evaluation Components

1 Five (5) Basic Evaluation Components

The five basic components defined by JICA as mentioned below are in line with those used for the evaluation works by DAC and other international assistance organization. Introduction of these components has enabled a consistent, well-balanced evaluation, which minimizes evaluator bias. Further, it allows us to share the results, knowledge and lessons with other aid organizations, since we are using common components and can discuss with them from the same viewpoints.

(1) Efficiency

Evaluate the method, procedure, term and cost of the project with a view to productivity.

(2) Effectiveness

Evaluate the results in comparison with the goals (or revised ones) defined at the initial or intermediate stage, and evaluate the attributes (factors and conditions) of the results.

(3) Impact

Evaluate the positive and negative effects of the project, extent of the effect and beneficiaries.

(4) Relevance

Preliminary evaluate whether the needs in the country have been correctly identified, and whether the design is consistent with the national and/or master plan.

(5) Sustainability

Evaluate the autonomy and sustainability of the project after the termination of cooperation, from the perspectives of operation, management, economy, finance and technology.

2 Relation between Five Basic Components and PDM

The following five components are used for the evaluation and a selection of a project.

- (1) Efficiency
- (2) Effectiveness
- (3) Impact
- (4) Relevance
- (5) Sustainability

These components are directly connected to the elements of PDM as shown in the Figure in the following page.

The component "Efficiency" is a measure to qualitatively and quantitatively compare all resource (input) to the results (output) of the project in order to evaluate the economic efficiency or conversion from input to output.

The parameter "Effectiveness" is a measure to evaluate whether the purpose has been achieved or not, or to evaluate how much the outputs contributed to the achievement of the purpose, or to evaluate whether or not the characteristics of the outputs were as expected.

The parameter "Impact" is a foreseeable or unforeseeable, and a favorable or adverse effect of the project upon society. To evaluate impact, both the goal and project purpose should be referred to in the beginning of the evaluation. Evaluation with this component could lead to more than the confirmation as whether or not the goals have been obtained. Evaluation with this component requires comprehensive surveys in many cases.

The parameter "Relevance" is to comprehensively evaluate whether or not the project meets the overall goals, politics of both the donor and recipient, local needs and given priority levels, in order to decide whether the project should be continued, reformulated or terminated.

The component "Sustainability" is to comprehensively evaluate how long the favorable effect as a result of the project can continue after the project has been terminated. Evaluation with this component is required to decide how much the local resources should continue to be used for the project, and to evaluate how much the country receiving the assistance has been considering important. According to OECD (1989), "Sustainability" is a component to be used for the final test of the success of a development project.

All five components are essential for any of the projects or programs. The five components give necessary information to the decision maker so that he/she can decide how to approach the next step. Since each of the five components build on the intervention strategy, they also lay the foundation for standardization in monitoring and information handling within and among organizations and agencies.

In practice, each of the five parameters should also contain project-specific information.

Tentative Schedule of Implementation (TSI)

Calendar Year	99		2000				2001				2002				2003				2004				2005	
Japanese Fiscal Year	1999		2000				2001				2002				2003				2004				05	
	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	
Term of Technical Cooperation																								
Japanese Side																								
I. Dispatch of Mission																								
(1)Preliminary Study																								
(2)Implementation Study																								
(3)Management Consultation Team																								
(4)Evaluation																								
II. Dispatch of Long-Term Experts																								
(1)Chief Advisor																								
(2)Coordinator																								
(3)Industrial water and wastewater treatment Process																								
(4)Industrial water and wastewater treatment Experiments																								
(5)Industrial water quality control / Effective use of water																								
III. Dispatch of Short-Term Experts																								
IV. Training of C/P Personnel in Japan																								
V. Provision of Machinery and Equipment																								
Thai Side																								
I. Buildings and Facilities																								
II. Machinery and Equipment																								
III. Allocation of C/P Personnel and Administrative Personnel																								
IV. Budgetary Allocation																								

NOTE: The Japanese fiscal year starts in April and ends in March.

Plan of Operations for the IWTI Project Phase II

ANNEX 13
1/3

Output	Activities	Target	Schedule (Japanese Fiscal Year)																				Responsible Person		Input	Remarks	
			2000				2001				2002				2003				2004				05	Japan			Thai
			I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I								
0. The organization of IWTI will be strengthened and operated efficiently.	0-1 Allocate staff as planned.																					L/E	D/I				
	0-2 Make operation plans of the Project.																										
	0-3 Make and implement budgetary plans properly.																										
	0-4 Operate the joint coordinating committee.																										
1. Equipment for technical guidance to Thai industries will be installed and operated properly.	1-1 Provide and purchase the equipment.																										
	1-2 Make the operation and maintenance plan of the equipment.																										
	1-3 Operate the equipment constantly and maintain it properly.																										
2. The training service will be provided by IWTI.	2-1 Collect necessary information on the training service from industries and other organizations concerned.																					L/E	C/T				
	2-2 Select target industrial sectors and factory size to provide training service.																										
	2-3 Make the operation plans of the training section.																										
	2-4 Make plans of technical transfer to the training section staff.																										
	2-5 Make curriculums of technical transfer to the training section staff.																										
	2-6 Prepare reference materials for technical transfer to the training section staff.																										
	2-7 Implement technical transfer to the training section staff by lectures.																										
	2-8 Make guidebooks and reference books for factory engineers, water pollution control supervisors and operators and DIW inspectors.																										
	2-9 Hold seminars and training courses for factory engineers, water pollution control supervisors and operators and DIW inspectors.																										

Plan of Operations for the IWTI Project Phase II

Output	Activities	Target	Schedule (Japanese Fiscal Year)																				Responsible Person		Input	Remarks		
			2000				2001				2002				2003				2004				05				Japan	Thai
			I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II				
	2-10 Understand technical levels of training section staff.																								L/E			
3. The consulting service will be provided by IWTI.	3-1 Collect necessary information on the consulting service from industries and other organizations concerned.																									C/C		
	3-2 Select target industrial sectors and factory size to provide consulting service.																									C/C		
	3-3 Make the operation plans of the consulting section.																									C/C		
	3-4 Make plans of technical transfer to the consulting section staff.																									L/E		
	3-5 Make curriculums of technical transfer to the consulting section staff.																									L/E		
	3-6 Prepare reference materials for technical transfer to the consulting section staff.																									L/E		
	3-7 Implement technical transfer to the consulting section staff by lectures.																									L/E		
	3-8 Implement factory investigations.																									C/C		
	3-9 Prepare manuals for water and wastewater treatment experiments.																									C/C		
	3-10 Carry out water or wastewater treatment experiments to take data for operation and engineering by lab. and bench scale plants and demonstrate performance of the treatment systems by using bench scale testing equipment.																									C/C		
	3-11 Make conceptual designs and improvement plans.																									C/C		
	3-12 Implement technical guidance to factories with results of experiments and factory investigations and with proposals for improvement of operation conditions and facilities.																									C/C		
	3-13 Understand technical levels of consulting section staff.																									L/E		

Plan of Operations for the IWTI Project Phase II

Output	Activities	Target	Schedule (Japanese Fiscal Year)																				Responsible Person		Input	Remarks	
			2000				2001				2002				2003				2004				05	Japan			Thai
			I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV					
4. The information service will be provided by IWTI.	4-1 Collect necessary information and data for the planning of information service from inside and outside.																							C/I			
	4-2 Select target information to be managed.																							C/I			
	4-3 Make the operation plans of the information section.																							C/I			
	4-4 Make plans of technical transfer to the information section staff.																							L/E			
	4-5 Make curriculums of technical transfer to the information section staff.																							L/E			
	4-6 Prepare reference materials for technical transfer to the information section staff.																							L/E			
	4-7 Implement technical transfer to the information section staff by lectures.																							L/E			
	4-8 Make manuals for information management.																							C/I			
	4-9 Manage information by making files and databasos.																							C/I			
	4-10 Issue the annual report of IWTI.																							C/I			
	4-11 Prepare the homepage.																							C/I			

(Notes) L/E:Long term expert D/I:Director of IWTI C/T:Chief of Training Section C/C:Chief of Consulting Section C/I:Chief of Information Section

Annual Plan of Operations for the Year 2000

ANNEX 14
1/8

Activities	Target	Schedule (Japanese Fiscal Year 2000)												Responsible Person		Input	Remarks			
		4	5	6	7	8	9	10	11	12	1	2	3	Japan	Thai					
0. The organization of IWTI will be strengthened and operated efficiently.																				
0-1 Allocate staff as planned.	10 counterparts and 5 administrative staff will be allocated.																L/E	D/I	Counterparts and administrative staff (Thai)	
0-2 Make operation plans of the Project.	Operation plans will be documented.																L/E	D/I		
(1) Revise the Plan of Operations for 5 years																				
(2) Revise the Annual Plan of Operation for JFY2000																				
(3) Review the Annual Plan of Operation for JFY2000																				When the necessity arises
(4) Make the draft Annual Plan of Operation for JFY2001																				
(5) Make the Annual Plan of Operation for JFY2001																				
(6) Make the monitoring and evaluation plan																				
(7) Implement periodical monitoring and evaluation																				Every 6 months
0-3 Make and implement budgetary plans properly.																		D/I	Local cost (Thai), Local cost support (Japan)	
(1) Implement the budgetary plan of TFY2000																				
(2) Implement the budgetary plan of TFY2001																				
(3) Make the budgetary plan of TFY2002 and submit to DIW																				
0-4 Operate the joint coordinating committee.	JCC will be held at least once a year.																	L/E	D/I	Approval of PO

Annual Plan of Operations for the Year 2000

ANNEX 14
2/8

Activities	Target	Schedule (Japanese Fiscal Year 2000)												Responsible Person		Input	Remarks		
		4	5	6	7	8	9	10	11	12	1	2	3	Japan	Thai				
		1. Equipment for technical guidance to Thai industries will be installed and operated properly.																	
1-1 Provide and purchase the equipment.	Equipment for JFY2000 will be procured.																L/E	D/I	Analysis equipment, lab scale plant
(1) Decide specification of the equipment to be purchased in JFY2000																			
(2) Submit an application document to JICA and cooperate to the bidding process																			
(3) Examine the equipment upon delivery																			
(4) Decide items and specification to be purchased in JFY2001																			
1-2 Make the operation and maintenance plan of the equipment.																	L/E	D/I	To be continued in JFY2001
(1) Prepare a laboratory and storage plan																			
(2) Make the operation and maintenance plan of the equipment																			
1-3 Operate the equipment constantly and maintain it properly.																	L/E	D/I	Training by experts will follow in JFY2001
(1) Operate and maintain the existing equipment properly																			
(2) Training on basic operation of the newly procured equipment by manufacturers																			

Annual Plan of Operations for the Year 2000

ANNEX 14
3/8

Activities	Target	Schedule (Japanese Fiscal Year 2000)												Responsible Person		Input	Remarks			
		4	5	6	7	8	9	10	11	12	1	2	3	Japan	Thai					
2. The training service will be provided by IWTI.																				
2-1 Collect necessary information on the training service from industries and other organizations concerned.																	L/E	C/T		
(1) Survey needs of factories																				
(2) Survey needs of inspectors																				
(3) Interview related organizations																				ex) EEAT
(4) Visit similar training centers																				ex) NWTII, ERTC, ICSW
2-2 Select target industrial sectors and factory size to provide training service.																	L/E	C/T		
2-3 Make the operation plans of the training section.																	L/E	C/T		
(1) Make the operation plan for 5 years																				
(2) Make the annual plan for the JFY2000																				
(3) Review the annual plan for the JFY2000																				
(4) Make the annual plan for the JFY2001																				
2-4 Make plans of technical transfer to the training section staff.																	L/E			
(1) Make the technical transfer plan for 5 years																				
(2) Make the annual technical transfer plan for the JFY2000																				
(3) Review the annual technical transfer plan for the JFY2000																				When the necessity arises
(4) Make the annual technical transfer plan for the JFY2001																				
2-5 Make curriculums of technical transfer to the training section staff.																	L/E, S/E			Weekly curriculum
2-6 Prepare reference materials for technical transfer to the training section staff.																	L/E, S/E			
2-7 Implement technical transfer to the training section staff by lectures.																	L/E, S/E			
(1) Lecture on unit treatment processes related to contents of guidebooks																	L/E	L/E		Related to SP6
(2) Lecture on industrial water quality control																	L/E	S/E 1.0 month		Related to SP5
(3) Lecture on other specific technical fields																	L/E, S/E	S/E 1.0 month & 0.5 month		Textile industry, Advanced technology
																	S/E			

51

Annual Plan of Operations for the Year 2000

ANNEX 14
4/8

Activities	Target	Schedule (Japanese Fiscal Year 2000)												Responsible Person		Input	Remarks					
		4	5	6	7	8	9	10	11	12	1	2	3	Japan	Thai							
																		L/E	C/T			
2-8 Make guidebooks and reference books for factory engineers, water pollution control supervisors and operators and DIW inspectors.																			L/E	C/T		
(1) Decide contents of the guidebooks for factories																						Related to SP6
(2) Decide contents of the reference books for supervisors and operators																						Cooperate with BIET (under JETRO project)
(3) Decide contents of the guidebook for inspectors																						Related to SP7
(4) Collect existing useful guidebooks and reference books																						
(5) Draft the guidebooks of wastewater treatment systems, water quality control and effective use of water in English																						
(6) Draft the guidebook for inspectors in English																						
(7) Translate the guidebooks into Thai																						JFY2001
(8) Printing and binding																						JFY2001
3-9 Hold seminars and training courses for factory engineers, water pollution control supervisors and operators and DIW inspectors.																			L/E	C/T		
(1) Decide the curriculum of the training course for factory engineers, water pollution control supervisors and operators and DIW inspectors																						Related to SP7
(2) Prepare the teaching materials of the training course for factory engineers, water pollution control supervisors and operators and DIW inspectors																					Presentation equipment (Thai)	Related to SP7. Training will start in JFY 2001.
2-10 Understand technical levels of training section staff.																			L/E			
(1) Understand technical levels through OJT, report and test																						
(2) Monitoring and evaluation																						Every 6 months

Annual Plan of Operations for the Year 2000

ANNEX 14
5/8

Activities	Target	Schedule (Japanese Fiscal Year 2000)												Responsible Person		Input	Remarks		
		4	5	6	7	8	9	10	11	12	1	2	3	Japan	Thai				
		3. The consulting service will be provided by IWTI.																	
3-1 Collect necessary information on the consulting service from industries and other organizations concerned. (1) Survey needs of factories (2) Collect information from DIW officers (3) Interview related organizations																L/E	C/C		
																L/E	C/C		
																L/E	C/C		
3-2 Select target industrial sectors and factory size to provide consulting service. (1) Select target factories for the survey of wastewater treatment (2) Select target factories for the survey of water quality control (3) Select target factories for the survey of effective use of water																			
																			Cooperate with FTI
3-3 Make the operation plans of the consulting section. (1) Make the operation plan for 5 years (2) Make the annual plan for the JFY2000 (3) Review the annual plan for the JFY2000 (4) Make the annual plan for the JFY2001																L/E	C/C		
3-4 Make plans of technical transfer to the consulting section staff. (1) Make the technical transfer plan for 5 years (2) Make the annual technical transfer plan for the JFY2000 (3) Review the annual technical transfer plan for the JFY2000 (4) Make the annual technical transfer plan for the JFY2001																L/E			
3-5 Make curriculums of technical transfer to the consulting section staff.																L/E, S/E			
3-6 Prepare reference materials for technical transfer to the consulting section staff.																L/E, S/E			
3-7 Implement technical transfer to the consulting section staff by lectures. (1) Lecture on unit treatment processes (2) Lecture on experiment method (3) Lecture on industrial water quality control																L/E, S/E			
																L/E	L/E		Related to SP6
																L/E	L/E		
																L/E, S/E	S/E 1.0 month		Related to SP1 and 5

4

Annual Plan of Operations for the Year 2000

ANNEX 14
6/8

Activities	Target	Schedule (Japanese Fiscal Year 2000)												Responsible Person		Input	Remarks		
		4	5	6	1	8	9	10	11	12	1	2	3	Japan	Thai				
(4) Lecture on water saving for textile industry																S/E		S/E 1.0 month	Related to SP 3 and 4
(5) Lecture on other specific technical fields																S/E		S/E 0.5 month	Advanced/specialized technology
3-8 Implement factory investigations.																L/E, S/E	C/C		
(1) Factory survey on wastewater treatment	Survey at 3 factories																		Related to SP8
(2) Factory survey on water quality	Survey at 2 factories																	S/E (above)	Related to SP 1 and 5
(3) Factory investigation on effective use of water	Investigation at 4 factories																	S/E (above)	Related to SP2 and 4. At least one factory should be selected from textile industry.
3-9 Prepare manuals for water and wastewater treatment experiments.																			Start in JFY2001
3-10 Carry out water or wastewater treatment experiments to take data for operation and engineering by lab. and bench scale testing equipment and demonstrate performance of the treatment systems by using bench scale testing equipment.																			Start in JFY2001
3-11 Make conceptual designs and improvement plans.																			
(1) Make improvement plans on wastewater treatment	Consultation to 2 factories															L/E	C/C		
(2) Make improvement plans on effective use of water	Consultation to 4 factories															L/E	C/C		
3-12 Implement technical guidance to factories with results of experiments and factory investigations and with proposals for improvement of operation conditions and facilities.																L/E	C/C		
(1) Presentation of the results of factory investigation and improvement plans on wastewater treatment to the factories	Presentation to 2 factories																		
(2) Presentation of the results of factory investigation and improvement plans on water saving to the factories	Presentation to 4 factories																		
3-13 Understand technical levels of consulting section staff.																			
(1) Understand technical levels through OJT, report and test																L/E			
(2) Monitoring and evaluation																			Every 6 months

Annual Plan of Operations for the Year 2000

ANNEX 14
7/8

Activities	Target	Schedule (Japanese Fiscal Year 2000)												Responsible Person		Input	Remarks		
		4	5	6	7	8	9	10	11	12	1	2	3	Japan	Thai				
4. The information service will be provided by IWTI.																			
4-1 Collect necessary information and data for the planning of information service from inside and outside.																	L/E	C/I	DIW information center, TCSW, etc.
(1) Survey needs of factories																			
(2) Survey needs of DIW officers																			
(3) Survey needs of related organizations																			
(4) Visit similar information centers																			
(5) Survey of existing data inside DIW																			
(6) Survey of existing data in related organizations																			
4-2 Select target information to be managed.																	L/E	C/I	Cooperate with FTI, EEAT, TEI
4-3 Make the operation plans of the information section.																	L/E	C/I	
(1) Make the operation plan for 5 years																			
(2) Make the annual plan for the JFY2000																			
(3) Review the annual plan for the JFY2000																			
(4) Make the annual plan for the JFY2001																			
4-4 Make plans of technical transfer to the information section staff.																	L/E		
(1) Make the technical transfer plan for 5 years																			
(2) Make the annual technical transfer plan for the JFY2000																			
(3) Review the annual technical transfer plan for the JFY2000																			
(4) Make the annual technical transfer plan for the JFY2001																			
4-5 Make curriculums of technical transfer to the information section staff.																	L/E, S/E	C/I	
4-6 Prepare reference materials for technical transfer to the information section staff.																	L/E, S/E	C/I	
4-7 Implement technical transfer to the information section staff by lectures.																	S/E	C/I	
(1) Lecture on information management																		S/E, 0.5 month and 2.0 months	

Annual Plan of Operations for the Year 2000

ANNEX 14
8/8

Activities	Target	Schedule (Japanese Fiscal Year 2000)												Responsible Person		Input	Remarks
		4	5	6	7	8	9	10	11	12	1	2	3	Japan	Thai		
		4-8 Make manuals for information management.															
4-9 Manage information by making files and databases.																L/E, S/E	CI
(1) Make files of information collected by factory investigation and others																L/E, S/E	CI
(2) Decide structure and interface of the database																S/E	CI
(3) Decide specification of the computer system																S/E	CI
4-10 Issue the annual report of IWTI.																L/E	CI
(1) Decide the contents of annual report																	
(2) Collect necessary information and data																	
(3) Draft the annual report in English and Thai																	
(4) Printing and binding																	
4-11 Prepare the homepage.																L/E, S/E	CI
(1) Investigate the construction method and maintenance system of DIW homepage																S/E	CI
(2) Decide how to design and make the homepage																S/E	CI
(3) Draft contents of the homepage																L/E	CI

(Notes) JFY: Japanese fiscal year TFY: Thai fiscal year L/E: Long term expert D/I: Director of IWTI C/T: Chief of Training Section C/C: Chief of Consulting Section C/I: Chief of Information Section SP: Sub-project
NWTI: National Waterworks Technology Training Institute ERTC: Environmental Research and Training Center TCSW: Training Center for Sewage Works

List of Attendants at the Discussions

Thai Side

Department of Industrial Works

Ms. Kanya Sinsakul	Director-General
Mr. Rachada Singalavanija	Deputy Director-General
Mr. Issra Shoatburakarn	Director, Bureau of Industrial Environment Technology (BIET)
Mr. Chumpon Cheewaprapanunt	Director, Industrial Water Technology Institute (IWTI)
Ms. Sumalee Dachophonchai	Technical Staff, IWTI
Mr. Mongkol Suthivathanakul	Technical Staff, IWTI
Mr. Sutthi Tantapisitkul	Technical Staff, IWTI

Japanese Side

(1) Implementation Study Team

Mr. Shunichi Mizuochi	Leader
Ms. Yukari Saito	Member

(2) Japanese Experts

Mr. Osamu Oba	Chief Advisor / Industrial Wastewater Treatment and Re-use
Mr. Shigeyuki Matsumoto	Coordinator
Mr. Sueo Nagasawa	Industrial Water Supply / Effective Use of Water

(3) JICA Thailand Office

Mr. Kenji Iwaguchi	Resident Representative
Mr. Akio Nakamoto	Assistant Resident Representative