

フィリピン共和国  
治水行政機能強化プロジェクト  
実施協議報告書

平成18年5月  
(2006年)

独立行政法人 国際協力機構

地球環境部

環境

JR

06-031

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## 序 文

フィリピン共和国は年平均 20 回の台風が接近し、その半数が上陸するなど集中豪雨が多発する気象条件にあり、洪水、土石流、地滑り等の自然災害が極めて多い。

この状況を受けて、JICA は公共道路事業省治水砂防センターに対し、「治水・砂防技術力強化プロジェクト ステージ 1」として 2000 年 1 月から 2003 年 1 月まで実施した技術協力の終了時評価（2003 年 6 月実施）を受け、引き続き「治水・砂防技術力強化プロジェクト ステージ 2」として 2003 年 1 月から 2005 年 6 月まで、約 2 年 6 ヶ月の技術協力を実施した。

今般、フィリピン政府から上記プロジェクトのフェーズ 2 として「治水行政機能強化プロジェクト」の支援協力要請を受け、2005 年 5 月に事前評価調査団を現地に派遣し、プロジェクト概要の合意に至った。その後、2005 年 6 月にフィリピン側関係者とプロジェクト実施にかかる協議を行い、その結果、フィリピン側と実施協議の討議議事録（R/D）など必要な文書の署名を取り交わし、当プロジェクトが 2005 年 7 月から実施されることになった。

本報告書は、当プロジェクト関連調査・協議結果を取りまとめたものであり、今後のプロジェクト活動の展開に広く活用されることを願うものである。

ここに、本調査にご協力いただいた外務省、国土交通省、在フィリピン日本大使館など、内外関係各機関の方々に深く謝意を表するとともに、引き続き一層のご支援をお願いする次第である。

平成 18 年 4 月

独立行政法人国際協力機構  
地球環境部  
部長 富本 幾文

# 総 目 次

序 文	
総目次	
プロジェクトサイト図	
略語表	

## 第 I 部 実施協議報告書

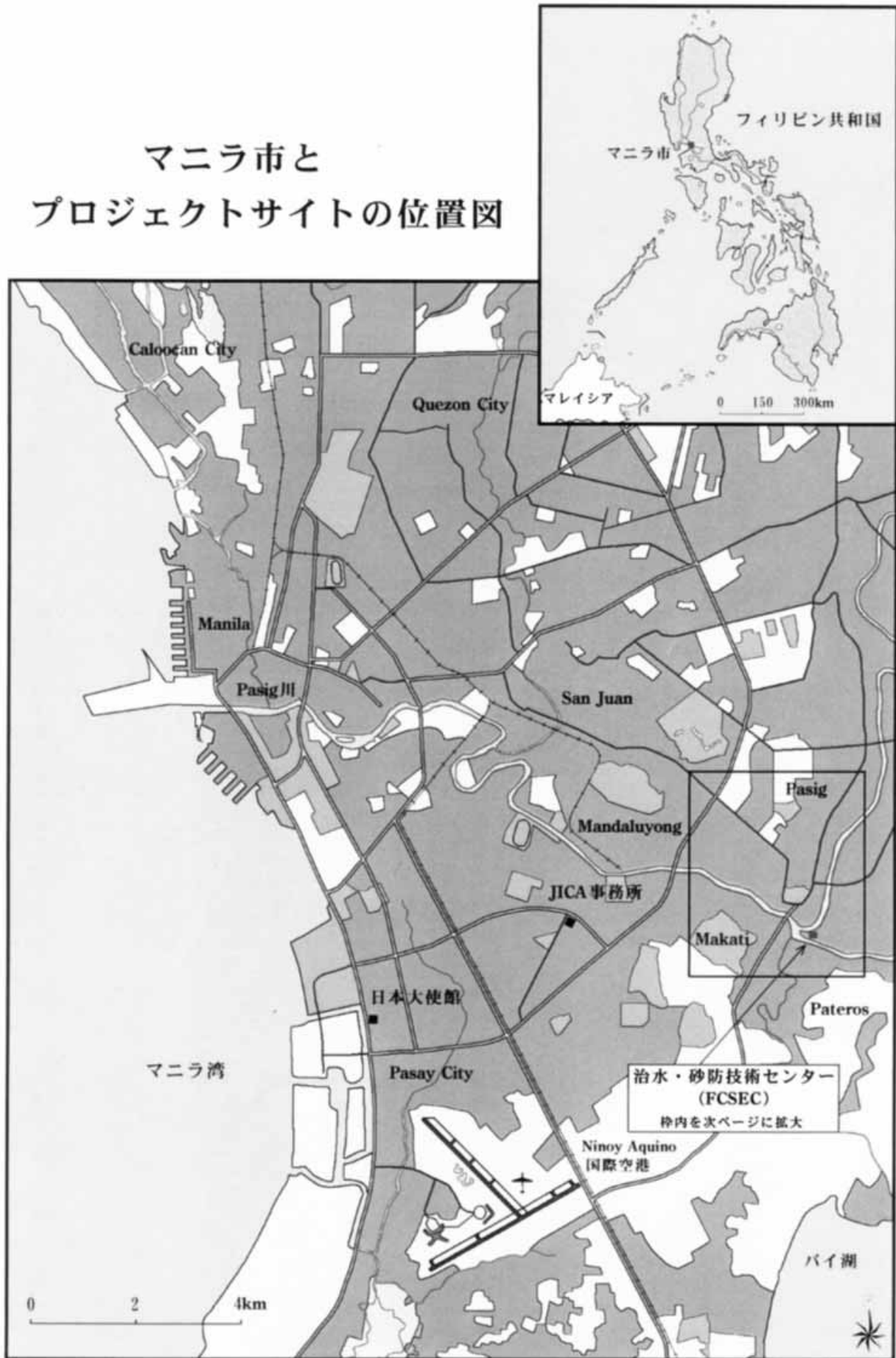
第 1 章 背景	1
第 2 章 プロジェクト概要	3
2-1 プロジェクト名称	3
2-2 協力期間	3
2-3 実施機関	3
2-4 プロジェクト目標	3
2-5 プロジェクト基本計画	3
付属資料	
1. 討議議事録 (Record of Discussions)	7
2. ミニッツ (Minutes of Meeting)	17

## 第 II 部 事前調査報告書

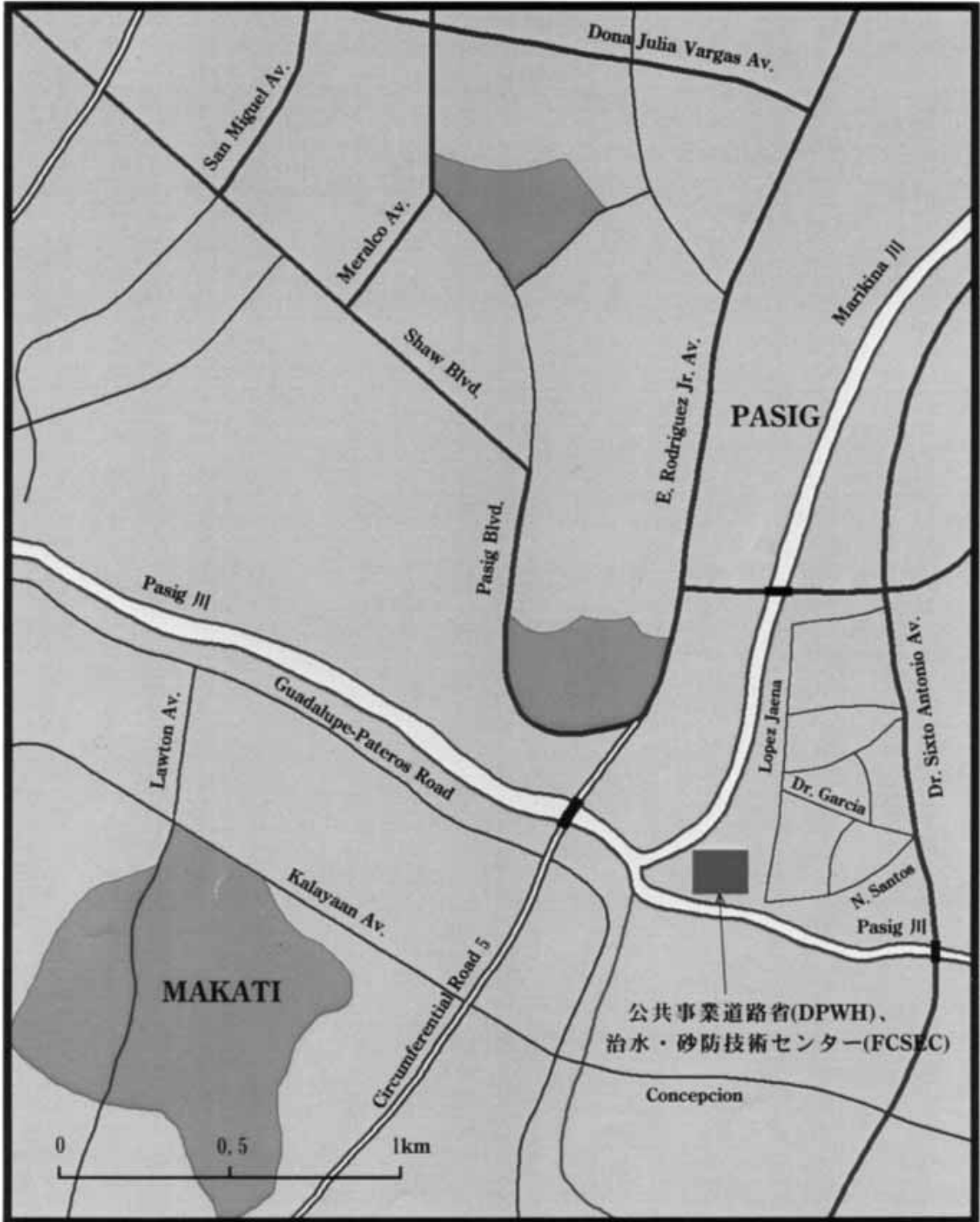
事業事前評価表	25
写真	31
第 1 章 事前調査団の派遣	33
1-1 派遣の経緯と目的	33
1-2 調査団の構成	33
1-3 調査日程	34
第 2 章 背景	35
2-1 フィリピンにおける洪水被害	35
2-2 治水砂防技術力強化プロジェクト	35
2-3 プロジェクト実施の必要性	35

第3章 評価5項目による事前評価結果	37
3-1 妥当性	37
3-2 有効性	38
3-3 効率性	39
3-4 インパクト	39
3-5 自立発展性	39
第4章 プロジェクト実施にあたっての要件	41
付属資料	
1. ミニッツ (Minutes of Meeting)	45
2. 公共事業道路省地方事務所に対するアンケート調査結果	81

# マニラ市と プロジェクトサイトの位置図



# 枠内の拡大図



略語表

略語	英語名称	日本語名称
DBM	Department of Budget and Management	予算管理省
DENR	Department of Environment and Natural Resources	環境自然資源省
DPWH	Department of Public Works and Highways	公共事業道路省
ENCA	Project for Enhancement of Capabilities in Flood Control and Sabo Engineering of DPWH	治水砂防技術力強化プロジェクト
FCSEC	Flood Control and Sabo Engineering Center	治水砂防技術センター
JICA	Japan International Cooperation Agency	独立行政法人国際協力機構
M/M	Minutes of Meeting	ミニッツ（協議議事録）
NDCC	National Disaster Coordinating Council	国家災害調整委員会
NEDA	National Economic and Development Authority	国家経済開発庁
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration	フィリピン天文気象庁
PDM	Project Design Matrix	プロジェクトデザインマトリックス
PHIVOLCS	Philippine Institute of Volcanology and Seismology	フィリピン火山地震研究所
R/D	Record of Discussions	討議議事録



## 第 I 部 実施協議報告書

第 1 章 背景	1
第 2 章 プロジェクト概要	3
2-1 プロジェクト名称	3
2-2 協力期間	3
2-3 実施機関	3
2-4 プロジェクト目標	3
2-5 プロジェクト基本計画	3
付属資料	
1. 討議議事録 (Record of Discussions)	7
2. ミニッツ (Minutes of Meeting)	17

## 第1章 背景

フィリピンは年平均で20回の台風が接近し、その半数が上陸するなど集中豪雨が多発する気象条件にあり、大規模な火山噴火や国土全域にわたる森林伐採等による山地の荒廃により大雨に伴う土砂災害も頻発している。このため平均で年700人を超える死者・約80億ペソに達する被害が生じており、被害額は国家予算の2%に達している。農業生産、物流交通等の社会基盤への度重なる被害は経済活動へ深刻かつ長期的な影響を与え、地域間格差の拡大や貧困層の都市部流入の一因となっている。このような状況下、全国の主要河川の治水・砂防事業及び災害復旧を実施する DPWH は、FCSEC を設立し、計画から設計、施工監理、維持管理に関する種々の技術基準やマニュアルを作成して、技術者の研修、実験研究等の人材育成活動を実施することにより、DPWH の治水・砂防分野の技術力を向上を図ってきた（技術協力プロジェクト「治水砂防技術力強化」2000-2005年）。本取り組みは、DPWH の中期開発計画（DPWH Infrastructure Development Plan 2001-2004）において、FCSEC の機能強化がうたわれるなど、DPWH の最重要プロジェクトの一つに位置づけられている。

これまでの活動を通じ、地方の事務所の技術者をはじめとする DPWH 職員に対して、一定程度の技術力向上が達成され、DPWH 本部・地方事務所の職員はもとよりフィリピン天文気象庁（PAGASA）や科学技術省地震火山研究所（PHIVOLCS）といった関係機関からも技術的な問い合わせを受けるまでに存在感を醸成しつつあり、本プロジェクト終了時までには、実施機関である DPWH の FCSEC の技術者は計画、設計、施工管理、維持管理の分野において研修を計画・実行する能力が得られる見込みである。しかしながら、実際的な応用技術や河川工学、砂防工学に関する調査研究技術を身に付けるにはいたっていない。また、DPWH 内の能力強化のために、開発した治水構造物の計画、設計、施工、維持管理という一連のプロセスに係る技術は、一層開発・改良を進める必要があることが、2004年12月に実施された当該プロジェクトの終了時評価調査の結果確認された。

これを受け、JICA は 2005 年 5 月 22 日から 6 月 4 日の日程で事前調査を実施し、プロジェクト概要の合意に至った。今般、フィリピン側関係者とプロジェクト実施に係る協議を行い、その結果、フィリピン側と R/D など必要な文書を取り交わし、技術協力プロジェクト「治水行政機能強化プロジェクト」が 2005 年 7 月から 2010 年 6 月まで実施されることになった。

## 第2章 プロジェクト概要

本実施協議は2005年6月30日にフィリピン国DPWHにて実施され、同省 Mr. Manuel M. Bonoan とプロジェクト実施を取り決めた協議議事録 (R/D) 及びミニッツ (M/M) の署名を取り交わした (付属資料1及び2)。

### 2-1 プロジェクト名称

フィリピン国治水行政機能強化プロジェクト

### 2-2 協力期間

2005年7月1日から2010年6月30日

### 2-3 実施機関

フィリピン国 DPWH FCSEC

### 2-4 プロジェクト目標

「DPWH の治水行政機能が、研究開発、研修、情報管理システム、パイロットプロジェクトの実施および内部支援システムの構築により強化される」

### 2-5 プロジェクト基本計画

R/Dの「ANNEX I MASTER PLAN」のとおり合意した。

## 付 属 資 料

1. 討議議事録 (Record of Discussions)
2. ミニッツ (Minutes of Meeting)

RECORD OF DISCUSSIONS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE PHILIPPINES  
ON  
JAPANESE TECHNICAL COOPERATION  
FOR  
THE PROJECT  
FOR  
STRENGTHENING THE FLOOD MANAGEMENT FUNCTION  
OF  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

In response to the request of the Government of the Philippines, the Government of Japan has decided to conduct the technical cooperation concerning the Project for Strengthening the Flood Management Function of the Department of Public Works and Highways (hereinafter referred to as "the Project").

Accordingly, Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation scheme of the Government of Japan, will cooperate with the authorities concerned of the Government of the Philippines for the Project.

JICA and the Philippine authorities concerned had a series of discussions on the framework of the Project. As a result of the discussions and in accordance with the provisions of the Agreement on Technical Cooperation between the two Governments, JICA and the Philippine authorities concerned agreed on the matters referred to in the document attached hereto.

Manila, June 30, 2005



Mr. Shozo Matsuura  
Resident Representative  
Philippine Office  
Japan International Cooperation Agency  
Japan



Mr. Manuel M. Bonoan  
Undersecretary  
Department of Public Works and Highways  
Republic of the Philippines

## THE ATTACHED DOCUMENT

### I. COOPERATION BETWEEN JICA AND THE PHILIPPINE GOVERNMENT

1. The Government of the Philippines will implement the Project for Strengthening the Flood Management Function of the Department of Public Works and Highways (hereinafter referred to as "the Project") in cooperation with JICA.
2. The Project will be implemented in accordance with the Master Plan which is given in Annex I.

### II. MEASURES TO BE TAKEN BY JICA

In accordance with the laws and regulations in force in Japan, JICA will take, at its own expense, the following measures according to the normal procedures under the Colombo Plan Technical Cooperation Scheme.

#### 1. DISPATCH OF JAPANESE EXPERTS

JICA will provide the services of the Japanese experts as listed in Annex II.

#### 2. PROVISION OF MACHINERY AND EQUIPMENT

JICA will provide such machinery, equipment and other materials (hereinafter referred to as "the Equipment") necessary for the implementation of the Project as listed in Annex III. The Equipment will become the property of the Government of the Philippines upon being delivered C.I.F. (cost, insurance and freight) to the Philippine authorities concerned at the ports and/or airports of disembarkation.

#### 3. TRAINING OF PHILIPPINE PERSONNEL IN JAPAN

JICA will receive the Philippine personnel connected with the Project for technical training in Japan.



### III. MEASURES TO BE TAKEN BY THE GOVERNMENT OF THE PHILIPPINES

1. The Government of the Philippines 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 full and active involvement in the Project by all related authorities, beneficiary groups and institutions.
2. The Government of the Philippines will ensure that the technologies and knowledge acquired by the Philippine nationals as a result of Japanese technical cooperation will contribute to the economic and social development of the Philippines.
3. The Government of the Philippines will grant in Philippine privileges, exemptions and benefits to the Japanese experts referred to in II-1 above and their families, which are no less favorable than those accorded to experts of third countries working in the Philippines under the Colombo Plan Technical Cooperation Scheme.
4. The Government of the Philippines will ensure that the Equipment referred to in II-2 above will be utilized effectively for the implementation of the Project in consultation with the Japanese experts referred to in Annex II.
5. The Government of the Philippines will take necessary measures to ensure that the knowledge and experience acquired by the Philippine personnel from technical training in Japan will be utilized effectively in the implementation of the Project.
6. In accordance with the laws and regulations in force in the Philippines, the Government of the Philippines will take necessary measures to provide at its own expense :



- (1) Services of the Philippine counterpart personnel and administrative personnel as listed in Annex IV ;
  - (2) Land, buildings and facilities as listed in Annex V ;
  - (3) Supply or replacement of machinery, equipment, instruments, vehicles, tools, spare parts and any other materials necessary for the implementation of the Project other than the Equipment provided by JICA under II-2 above ;
  - (4) Means of transport and travel allowances for the Japanese experts for official travel within the Philippines ; and
  - (5) Suitably furnished accommodation for the Japanese experts and their families.
7. In accordance with the laws and regulations in force in the Philippines, the Government of the Philippines will take necessary measures to meet :
- (1) Expenses necessary for transportation within the Philippines of the Equipment referred to in II-2 above as well as for the installation, operation and maintenance thereof ;
  - (2) Customs duties, internal taxes and any other charges, imposed in the Philippines on the Equipment referred to in II-2 above ; and
  - (3) Running expenses necessary for the implementation of the Project.

#### IV. ADMINISTRATION OF THE PROJECT

1. The Undersecretary for Planning and Technical Services of the Department of Public Works and Highways will bear overall responsibility for the administration





and implementation of the Project.

2. The Director of the Flood Control and Sabo Engineering Center will be responsible for the managerial and technical matters of the Project.
3. The Japanese Team Leader will provide necessary recommendations and advice to the Project Director and the Project Manager on any matters pertaining to the implementation of the Project.
4. The Japanese experts will give necessary technical guidance and advice to the Philippine counterpart personnel on technical matters pertaining to the implementation of the Project.
5. For the effective and successful implementation of technical cooperation for the Project, a Joint Coordinating Committee will be established whose functions and composition are described in Annex VI.

#### V. JOINT EVALUATION

Evaluation of the Project will be conducted jointly by JICA and the Philippine authorities concerned, at the middle and during the last six months of the cooperation term in order to examine the level of achievement.

#### VI. CLAIMS AGAINST JAPANESE EXPERTS

The Government of the Philippines undertakes to bear claims, if any arises, against the Japanese experts engaged in technical cooperation for the Project resulting from, occurring in the course of, or otherwise connected with the discharge of their official functions in the Philippines except for those arising from the willful misconduct or gross negligence of the Japanese experts.



VII. MUTUAL CONSULTATION

There will be mutual consultation between JICA and the Philippine Government on any major issues arising from, or in connection with this Attached Document.

VIII. MEASURES TO PROMOTE UNDERSTANDING OF AND SUPPORT FOR THE PROJECT

For the purpose of promoting support for the Project among the people of the Philippines, the Government of the Philippines will take appropriate measures to make the Project widely known to the people of the Philippines.

IX. TERM OF COOPERATION

The duration of the technical cooperation for the Project under this Attached Document will be five (5) years from July 1, 2005.

ANNEX I	MASTER PLAN
ANNEX II	LIST OF JAPANESE EXPERTS
ANNEX III	LIST OF MACHINERY AND EQUIPMENT
ANNEX IV	LIST OF PHILIPPINE COUNTERPART AND ADMINISTRATIVE PERSONNEL
ANNEX V	LIST OF LAND, BUILDINGS AND FACILITIES
ANNEX VI	JOINT COORDINATING COMMITTEE



## ANNEX I MASTER PLAN

### 1. Super Goal

Water-induced disasters are mitigated through improved effectiveness of flood control and sabo structures and other measures implemented by DPWH for sustainable development.

### 2. Overall Goal

More effective and appropriately designed flood control and sabo structures/facilities are constructed by DPWH in accordance with technical standards, guidelines and manuals.

### 3. Project Purpose

The flood management function of DPWH is strengthened through research and development, training, information management, implementation of pilot projects and creation of the internal support mechanism.

### 4. Outputs

- (1) Pilot projects are implemented using the technical standards, guidelines and manuals.
- (2) Research is conducted for developing/updating technical standards, guidelines and manuals; and assessing efficient countermeasures for flood control and sabo.
- (3) A sufficient number of personnel of DPWH are trained on flood control and sabo engineering.
- (4) Information Management System is established for a more effective flood management function of DPWH.
- (5) DPWH creates the internal mechanism to sustain the development of technology and organization in the field of flood control and sabo engineering.

### 5. Activities

- (1-1) Collect available data/information regarding the selected pilot sites through survey and investigation, and interviews with local residents.
- (1-2) Formulate Master Plan(s) for pilot rivers.
- (1-3) Conduct Feasibility Studies on the pilot projects identified in the Master Plan.
- (1-4) Conduct hydraulic experiments for the pilot projects.
- (1-5) Conduct detailed design of the pilot projects.
- (1-6) Supervise the construction of the pilot projects.
- (1-7) Conduct post evaluation of the completed pilot projects.
- (1-8) Prepare/submit reports.
  
- (2-1) Conduct field survey and investigation including disaster survey.
- (2-2) Conduct hydraulic experiments for other offices/organizations' technical requirements and to further improve the technical standards, guidelines and manuals.
- (2-3) Monitor usage/applicability of the technical standards, guidelines, manuals and other outputs of the project.
- (2-4) Make reports and recommendations.
  
- (3-1) Continue training on structure planning & design, construction supervision and maintenance.
- (3-2) Commence training on planning and design of sabo works.
- (3-3) Evaluate the training.
  
- (4-1) Conduct coordination meetings/seminars with related agencies/organizations regarding flood and sabo management.
- (4-2) Issue bulletins and annual reports.
- (4-3) Accumulate and compile data and information.
  
- (5-1) Hold consultative meetings regularly to strengthen the internal mechanism.
- (5-2) Prepare a plan/document on the sustainability of the project gains.



## ANNEX II LIST OF JAPANESE EXPERTS

1. Long-term experts
  - Chief Advisor
  - Coordinator
  - Sabo Engineering
  - River Engineering
2. Short-term experts
  - Sediment discharge analysis
  - Run-off analysis
  - Hydraulic experiments
  - Feasibility studies of the pilot projects
  - Other fields as required

Note: The fields, number and terms of assignment of the short-term experts will be finalized in consideration of the progress of the Project through mutual consultations for each Japanese fiscal year.

## ANNEX III LIST OF MACHINERY AND EQUIPMENT

1. A set of equipment needed for surveying and updating manuals such as (a) vehicle(s), survey equipment, a large-format printer for mapping, etc.
2. A set of equipment needed for hydraulic experiments and research, such as a personal computer system, etc.
3. A set of equipment needed for establishing an information filing and dissemination system such as a photocopy machine, printing equipment for publication, etc.



ANNEX IV LIST OF PHILIPPINE COUNTERPART AND ADMINISTRATIVE PERSONNEL

1. Overall responsibility for the administration and implementation of the Project  
Manuel M. Bonoan, Undersecretary for Planning and Technical Services of DPWH
2. Responsibility for managerial and technical matters of the Project  
Resito V. David, MNSA, Project Director of FCSEC, DPWH
3. Counterpart and Administrative Staff  
In addition to the Project Director and the Project Manager, 14 technical positions and 7 administrative positions are approved by Department of Budget and Management as follows, although currently 5 positions are vacant.

(1) Project Manager of FCSEC  
Dolores M. Hipolito

(2) Staff Members

Position	Number of staff	Vacant positions within the number
Engineer V	3	
Engineer IV	3	including 1 currently vacant position
Engineer III	4	
Draftsman III	1	
Laboratory Technician III	1	
Information Technology Officer I	1	
Librarian II	1	currently vacant
Human Resource Management Officer IV	1	currently vacant
Administrative Officer III	1	
Budget Officer III	1	
Accountant III	1	currently vacant
Artistic Illustrator II	1	currently vacant
Clerk III	1	
Driver II	1	
Total number of Staff	21	including 5 vacant positions

ANNEX V LIST OF LAND, BUILDINGS AND FACILITIES

The office building, its facilities and the dormitory building for the trainees in the Napindan Hydraulic Control Structure (NHCS) Compound is provided for the Project, together with the hydraulic laboratory installed by the Japanese Grant Aid.

## ANNEX VI JOINT COORDINATING COMMITTEE

### 1. Functions

A Joint Coordinating Committee will be created, which will meet at least once a year and whenever the need arises.

The functions of the Committee are as follow.

- (1) To supervise the annual work plan of the Project in line with the Project Design Matrix and the Plan of Operations.
- (2) To review the annual and overall progress of the Project and to evaluate the accomplishment of the annual targets and achievement of the objectives.
- (3) To find out proper ways and means for solution of the major issues arising from or in connection with the Project.

### 2. Composition of the Committee

#### (1) Chairperson

Undersecretary for Planning and Technical Services of DPWH

#### (2) Members

##### a. Philippine Side

1. Director of Infrastructure Staff, NEDA
2. Director of Project Monitoring Staff, NEDA
3. Director of Planning Service, DPWH
4. Director of Bureau of Research and Standards, DPWH
5. Director of Bureau of Design, DPWH
6. Director of Bureau of Construction, DPWH
7. Director of Bureau of Maintenance, DPWH
8. Cluster Director, Cluster B, DPWH
9. Cluster Director, Cluster C, DPWH
10. Cluster Director, Cluster E, DPWH
11. Project Director of FCSEC, DPWH
12. Other person(s) concerned appointed by Chairperson

##### b. Japanese Side

1. Chief Advisor
2. Coordinator
3. Other Japanese experts
4. Member(s) of missions dispatched by JICA
5. Representative(s) of JICA Philippine Office
6. Other person(s) concerned appointed by Chief Advisor

Note: Official(s) of the Embassy of Japan may attend the Committee meetings as observer(s).



MINUTES OF MEETINGS  
BETWEEN  
JAPAN INTERNATIONAL COOPERATION AGENCY  
AND  
AUTHORITIES CONCERNED OF THE GOVERNMENT OF THE PHILIPPINES  
ON  
JAPANESE TECHNICAL COOPERATION  
FOR  
THE PROJECT FOR STRENGTHENING THE FLOOD MANAGEMENT FUNCTION  
OF  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

Japan International Cooperation Agency (hereinafter referred to as "JICA") and the Philippines authorities concerned (hereinafter referred to as "the Philippines side") had a series of discussions for the purpose of working out the details of the technical cooperation program concerning the Project for Strengthening the Flood Management Function of the Department of Public Works and Highways (hereinafter referred to as "the Project").

As a result of the discussions, both sides agreed to summarize the matters referred to in the document attached hereto as a supplement to the Record of Discussions signed at Manila on June 30, 2005.

Manila, June 30, 2005



Mr. Shozo Matsuura  
Resident Representative,  
Philippines Office,  
Japan International Cooperation Agency  
Japan



Mr. Manuel M. Bonoan  
Undersecretary  
Department of Public Works and Highways  
Republic of the Philippines

### Annex I Project Design Matrix (PDM)

Project name : Project for Strengthening the Flood Management Function of DPWH  
 Implementing Agency : Flood Control and Sabo Engineering Center of DPWH (FCSEC)

Date : June 2, 2005  
 Duration : July 01, 2005 – June 30, 2010

Target group : Internal organizations and Personnel of DPWH relevant to Flood Control and Sabo Engineering activities

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<p>(Super Goal)                      Water-induced disasters are mitigated through improved effectiveness of flood control and sabo structures and other measures implemented by DPWH for sustainable development.</p>	<p>Significant decrease in damage to life and properties.</p>	<p>1. Damage Assessment Report                      2. Calamity Report</p>	<p>1. FCSEC is supported by policies of the government.                      2. The national budget for flood control projects is sustained.</p>
<p>(Overall Goal)                      More effective and appropriately designed flood control and sabo structures/facilities are constructed by DPWH in accordance with the technical standards, guidelines and manuals.</p>	<p>Number of flood control and sabo structures/facility that are designed and constructed in accordance with the technical standards, guidelines and manuals formulated and produced by FCSEC.</p>	<p>1. DPWH Annual Report</p>	<p>1. Flood management policy of DPWH and related offices/agencies are reviewed and made appropriate for the prevailing conditions in the country.                      2. No abrupt change in environment and natural conditions takes place.</p>
<p>(Project Purpose)                      The flood management function of DPWH is strengthened through research and development, training, information management, implementation of pilot projects and creation of the internal support mechanism.</p>	<p>Number of offices that have capability for implementing survey, planning, design, construction supervision, and maintenance of flood control and sabo structures/facility.</p>	<p>1. DPWH Annual Report</p>	<p>1. Support from relevant offices in DPWH and other agencies/organizations is sustained.                      2. DPWH regional, district engineering and project management offices observe the technical standards, guidelines and manuals.                      3. Project activities are continued beyond the technical cooperation period.</p>
<p>(Outputs)                      1. Pilot projects are implemented using the technical standards, guidelines and manuals.                      2. Research is conducted for developing/updating technical standards, guidelines and manuals, and assessing efficient countermeasures for flood control and sabo.                      3. A sufficient number of personnel of DPWH are trained on flood control and sabo engineering.</p>	<p>1-1 At least 3 pilot projects (revetment, spur dike and sabo dam) are planned, designed, constructed and maintained.                      2-1 Recommendation is made for the revision/modifications/updating of the technical standards, guidelines and manuals.                      2-2 Appropriate countermeasures based on actual field requirements are recommended.                      2-3 Alternative low cost flood control and sabo structures are developed.                      2-4 Reports on the usage/applicability of the technical standards, guidelines and manuals are prepared.                      3-1 Engineers of 40 offices are trained for planning and design of flood control structures.                      3-2 Engineers of 40 offices are trained on planning and design of sabo works.                      3-3 Engineers of 40 offices are trained for construction supervision of flood control and sabo projects.                      3-4 Engineers of 40 offices are trained for maintenance of flood control and sabo structures.</p>	<p>1-1 Progress report                      1-2 Records on project completion                      1-3 Monitoring report                      2-1 Supplementary technical standards, guidelines and manuals                      2-2 Technical report, Minutes of Meeting / Records of Discussion, Letter Request                      2-3 Technical report, Approved design plans                      2-4 Reports                      3-1 Record of training                      3-2 Record of training                      3-3 Record of training                      3-4 Record of training</p>	<p>1. Support from relevant offices in DPWH and other agencies/organizations is sustained.                      2. DPWH regional, district engineering and project management offices observe the technical standards, guidelines and manuals.                      3. Trained staff continue working for DPWH and develop expertise in flood control and sabo engineering.</p>



<p>4. Information Management System is established for a more effective flood management function of DPWH.</p>	<p>4-1 Networks with other related agencies/organizations are established for improved data sharing and coordination.  4-2 Coordination meetings /seminars on flood and sabo management are held with other related agencies/organizations at least once a year.  4-3 Adequate data and information are collected, analyzed and compiled in the database.  4-4 Annual Report is submitted at the end of the year. FCSECC Bulletin is published twice a year.</p>	<p>4-1 Memorandum of Agreement, Network Flowchart  4-2 Records/materials of seminars  4-3 Updated database  4-4 Inclusion in the DPWH Annual Report and publication of FCSECC Bulletin  5-1 Approved resolutions  5-2 Approved plan/document</p>	<p>1. A sufficient number of counterpart and technical/administrative support staff are secured.  2. Maintenance and other operating expenses are released on time.</p>
<p>5. DPWH creates the internal mechanism to sustain the development of technology and organization in the field of flood control and sabo engineering.</p> <p>(Activities)  1-1 Collect available data/information regarding the selected pilot sites through survey and investigation, and interviews with local residents.  1-2 Formulate Master Plan(s) for pilot rivers.  1-3 Conduct Feasibility Studies on the pilot projects identified in the Master Plan(s).  1-4 Conduct hydraulic experiments for the pilot projects.  1-5 Conduct detailed design of the pilot projects.  1-6 Supervise the construction of the pilot projects.  1-7 Conduct post evaluation of the completed pilot projects.  1-8 Prepare/submit reports.</p> <p>2-1 Conduct field survey and investigation including disaster survey.  2-2 Conduct hydraulic experiments for other offices/organizations' technical requirements and to further improve the technical standards, guidelines and manuals.  2-3 Monitor usage/applicability of the technical standards, guidelines, manuals and other outputs of the project.  2-4 Make reports and recommendations.</p> <p>3-1 Continue training on structure planning &amp; design, construction supervision and maintenance.  3-2 Commence training on planning and design of sabo works.  3-3 Evaluate the training.</p> <p>4-1 Conduct coordination meetings/seminars with related agencies/organizations regarding flood and sabo management.  4-2 Issue bulletins and annual reports.  4-3 Accumulate and compile data and information.</p> <p>5-1 Hold consultative meetings regularly to strengthen the internal mechanism.  5-2 Prepare a plan/document on the sustainability of the project gains.</p>	<p>(Input)  [Philippine side]  ▪ Assignment of a sufficient number of counterpart personnel  ▪ Assignment of administrative support staff  ▪ Buildings/facilities  ▪ Expenses necessary for the implementation of the project and for operation and maintenance of building and equipment  [Japanese side]  ▪ Long-term experts;  Chief Advisor  Coordinator  Sabo Engineering  River Engineering  ▪ Short-term experts;  Sediment discharge analysis  Run-off analysis  Hydraulic experiments  Feasibility studies of the pilot projects  Other fields as required  ▪ Training of counterpart personnel in Japan and/or third countries;  ▪ Provision of equipment  Equipment for surveying and updating manuals  Equipment for hydraulic experiments and research  Equipment for establishing an information filing and dissemination system</p>	<p>1. DPWH Executive Committee and top management commit full support to the project.  2. DPWH commits to make FCSECC a permanent organization.</p>	

27

Annex II Tentative Plan of Operations  
 Project Name : The Project for Strengthening the Flood Management Function of DPWH

Expected Output	Activities Needed	Expected Results	Schedule																	
			2005			2006			2007			2008			2009			2010		
			III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1. Pilot Projects are implemented using the technical standards, guidelines and manuals.	1-1 Collect available data/information regarding the selected pilot sites through survey and investigation, and interviews with local residents. 1-2 Formulate Master Plan(s) for pilot rivers. 1-3 Conduct Feasibility Studies on the pilot projects identified in the Master Plan(s). 1-4 Conduct hydraulic experiments for the pilot projects. 1-5 Conduct detailed design of the pilot projects. 1-6 Supervise the construction of the pilot projects. 1-7 Conduct post evaluation of the completed pilot projects. 1-8 Prepare/submit reports.	1-1 At least 3 pilot projects (revetment, spur dike and sabo dam) are planned, designed, constructed and maintained.																		
2. Research is conducted for developing/ updating technical standards, guidelines and manuals; and assessing efficient countermeasures for flood control and sabo.	2-1 Conduct field survey and investigation including disaster survey. 2-2 Conduct hydraulic experiments for other offices/organization's technical requirements and to further improve the technical standards, guidelines and manuals. 2-3 Monitor usage/applicability of the technical standards, guidelines, manuals and other outputs of the project. 2-4 Make reports and recommendations.	2-1 Recommendation is made for the revision/modifications/ updating of the technical standards, guidelines and manuals. 2-2 Appropriate countermeasures based on actual field conditions are recommended. 2-3 Alternative low cost flood control and sabo structures are developed. 2-4 Reports on the usage/applicability of the technical standards, guidelines and manuals are prepared.																		

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 : Continuous activities  
 : Regular activities

		Schedule																					
		2005				2006				2007				2008				2009				2010	
		III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II		
Expected Output	Expected Results																						
3. A sufficient number of personnel of DPWH are trained on flood control and sabo engineering.	<p>3-1 Continue training on structure planning &amp; design, construction supervision and maintenance.</p> <p>3-2 Commence training on planning and design of sabo works.</p> <p>3-3 Evaluate the training.</p> <p>a) sabo</p> <p>b) river</p>	<p>3-1 Engineers of 40 offices are trained for planning &amp; design of flood control structures.</p> <p>3-2 Engineers of 40 offices are trained on planning and design of sabo works.</p> <p>3-3 Engineers of 40 offices are trained for construction supervision of flood control and sabo projects.</p> <p>3-4 Engineers of 40 offices are trained for maintenance of flood control and sabo structures.</p>																					
4. Information Management System is established for a more effective flood management function of DPWH.	<p>4-1 Conduct coordination meetings/seminars with related agencies/organizations regarding flood and sabo management.</p> <p>4-2 Issue bulletins and annual reports.</p> <p>4-3 Accumulate and compile data and information.</p>	<p>4-1 Networks with other related agencies/ organizations are established for improved data sharing and coordination.</p> <p>4-2 Coordination meetings/seminars on flood control and sabo management are held with other related agencies/organizations at least once a year.</p> <p>4-3 Adequate data and information are collected, analysed and compiled in the database.</p> <p>4-4 Annual Report is submitted at the end of the year. FCSEC Bulletin is published twice a year.</p>																					

		Schedule																
		2005			2006			2007			2008			2009			2010	
		III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	
Expected Output	Expected Results	<p>5. DPWH creates the internal mechanism to sustain the development of technology and organization in the field of flood control and sabotage engineering.</p> <p>Expected Results</p> <p>5-1 Resolutions in support of the project objectives/goals are approved by the JCC.</p> <p>5-2 Plan/document on the sustainability of the project gains is submitted to and approved by DPWH management.</p>																
Activities Needed	<p>5-1 Hold consultative meetings regularly to strengthen the internal mechanism.</p> <p>5-2 Prepare a plan/document on the sustainability of the project gains.</p>																	
5. DPWH creates the internal mechanism to sustain the development of technology and organization in the field of flood control and sabotage engineering.																		

23