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REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY

APPLICATION for the
DEVELOPMENT STUDY PROGRAM
of the GOVERNMENT OF JAPAN

MASTER PLAN
AND FEASIBILITY STUDY
ON
WESTERN RIVER BASINS
OF
MOUNT PINATUBO

July 2000

I. PROJECT DIGEST

(1) PROJECT TITLE

MASTER PLAN/FEASIBILITY STUDY ON LAHAR/FLOOD CONTROL AND REHABILITATION OF THE WESTERN RIVER BASINS OF MOUNT PINATUBO

(2) LOCATION

Province of Zambales, Region III
(Please refer to maps in Attachment I)

(3) IMPLEMENTING AGENCY

Name of Agency

Department of Public Works and Highways (DPWH)

Number of Staff of the Agency

<u>Office</u>	<u>Regular Employee</u>	<u>Contractual Employee</u>	<u>Daily Employee</u>	<u>Total</u>
Department Proper	1,425		128	1,553
Staff Bureaus	1,138		83	1,221
Regional Offices	16,705		9,957	26,662
Project Management Office		2,348	696	3,044
TOTAL	19,268	2,348	10,864	32,480

Budget Allocated to the Agency

<u>Particulars</u>	<u>Allocation (1,000 ₱)</u>		
	<u>1998</u>	<u>1999</u>	<u>2000</u>
I. Programs	8,458,815	8,034,129	9,449,068
II. Projects			
Highways	29,732,517	24,219,543	21,469,019
Flood Control and Drainage	5,211,871	4,283,751	4,301,503
Water Supply	198,808	8,894	5,000
Prelim & Det. Eng'g.	235,000	235,000	250,000
National Buildings	439,100	283,538	238,600
Various Infrastructure	5,670,219	606,482	14,999,049
Ports	125,055	13,080	-

Facilities for Disabled	40,000	20,000	20,000
Support to Gender Dev't.	20,000	20,000	20,000
Urgent Local Roads/Bridges	1,684,902		1,613,777
		-----	-----
TOTAL	61,816,287	37,724,417	52,366,016

Organizational Chart

Refer to Attachment II.

(4) JUSTIFICATION OF THE PROJECT

4.1 Present Condition of the Sector

The Sto. Tomas-Marella, Bucao-Balin Baquero and Cabangan-Maloma River Basins in Zambales are among the still active river channels in the Mount Pinatubo area. As of 1999, Phivolcs projected that Sto. Tomas-Marella River basin has remaining 10-20 million cubic meters of potential lahar source materials while Bucao-Balin-Baquero has about 40-70 million cubic meters of potential pyroclastic flow source. (Please refer to Attachment III for an excerpt of the Phivolcs Report). These situations pose imminent danger to the downstream municipalities of Botolan, Cabangan, Maloma, San Felipe, San Narciso, San Antonio, San Marcelino, Sta. Fe, San Rafael, Iba, Castillejos and Subic, all in Zambales. The heavy siltation in the river channels places these downstream areas in constant threat from severe flooding and/or excessive siltation.

As has been reported by Phivolcs in 1998, the freeboard of two major bridges in the area, Macolcol Bridge and Bucao Bridge has been drastically reduced to 0.25m and 4.6m, respectively, placing them at high risk of over-topping and cut-off by lahar, thus threatening to cut-off a major road link between Zambales and Pangasinan (Please refer to the road map in Attachment IV).

This situation is aggravated by the fact that some portions of the Sto. Tomas dike protecting most of the downstream areas of Zambales have been damaged by earthquake in December 1999. Please refer to earthquake damage photos in Attachment V.

Reports (Attachment VI) obtained from the Province of Zambales on the damages resulting from the occurrence of Typhoons Ditang, Edeng and Gloring from July 3-15, 2000 confirmed Phivolc's forecast of possible major disaster. The breaching of about 350-meter portion of the Sto. Tomas dike caused panic and massive evacuation and disrupted traffic for almost three days along the Zambales-Pangasinan Road (San Narciso-San Vicente Section). During this period, five municipalities suffered massive flooding and agricultural losses.

While the GOP recognizes the necessity and urgency of putting up sufficient flood control measures in the river basins west of Mount Pinatubo, funding constraints place limit to the preventive measures that could be done by the Government.

This situation is aggravated by the fact that these river systems have to compete for funding with the other river basins affected by the Mount Pinatubo eruption, foremost of which is the Pasig-Potrero River Basin. Owing to the greater risk faced by the more populous communities within the Pasig-Potrero basin and considering budgetary limitations, the government's efforts in the past years have been more concentrated in these areas. Nonetheless, the Government in the same way places importance and urgency to the need for more intensive measures in the Mount Pinatubo western river basins. The Government recognizes that aside from life, infrastructure and property damages that could result if remedial measures are not put in place, the livelihood of majority of the people are also in peril from extensive sedimentation and flooding. Zambales is primarily an agricultural area, therefore it is imperative that the agricultural areas, which are the primary source of income be protected.

The Department of Public Works and Highways recognizing that several areas are now at very high risk from excessive and extensive flooding considers that it is very necessary and urgent to intensify intervention in the Western River Basins of Mount Pinatubo. The DPWH thus reiterates its application for urgent technical assistance from the Government of Japan for the conduct of a Master Plan and Feasibility Study for the Western River Basins of Mount Pinatubo.

4.2 Sectoral Development Policy of the National/Local Government

Flood control is among the priority projects of the Philippine Government in view of its thrust to provide every individual maximum protection from calamities. The project is also in accord with the thrust of the current administration to strengthen food security by affording protection to the fertile agricultural lands and fishery areas in the highly productive lands in Zambales.

The Presidential Task Force Pinatubo was established on June 26, 1991 to put in place a concrete machinery and program that will guide rehabilitation efforts of government after the eruption of Mount Pinatubo. The task force was replaced by the Mount Pinatubo Commission (MPC) which was established in October 1992.

The proposed study is part of the recommendations contained not only in MPC's "Integrated Plan for the Mount Pinatubo Affected Areas" but also in other related studies, including the USACE Recovery Action Report.

The proposed study is also in line with the vision of Central Luzon to solve the perennial problem of flooding in the region that was aggravated by the siltation of major rivers due to lahar flows. As stated in Central Luzon's Regional Development Plan (1999-2004), it is the thrust of the region to pursue a more holistic approach in addressing the flood problem in Central Luzon. This study will complement the earlier studies done in the other affected river basins. With the completion of this study, Central Luzon's dream of having a complete and holistic plan for the Mount Pinatubo area would finally come true.

4.3 Problems to be Solved in the Sector

As expressed in the Central Luzon Regional Development Plan, 1999-2004, one bane for the development of Central Luzon is its topographic characteristics. Flooding has been the perennial problem besetting the region for several decades, which is further aggravated by the siltation of major rivers due to lahar flows. This in effect sets back the region's pace of recovery from the devastation brought about by the eruption Mount Pinatubo.

The proposed study aims to recommend viable solutions to this problem of massive sediment discharge, particularly in the Sto. Tomas-Marella, Maloma and Bucao-Balin Baquero Rivers in Zambales. The Study will formulate an integrated disaster prevention plan including land use plan, future development plan and economic activities of the area.

4.4 Outline of the Study

The study shall cover the Sto. Tomas-Marella, Bucao-Balin Baquero and Maloma River basins in the province of Zambales and the surrounding areas including the rivers and tributaries directly or indirectly affected by the eruption of Mount Pinatubo.

The study shall cover the conduct of a Master Plan in the three river basins and Feasibility Studies and formulation of initial design of recommended projects in the Sto. Tomas-Marella River basins. The works shall include:

- (1) Review of the previous and related studies
- (2) Field surveys and investigations necessary for basic design (feasibility study level) of the various structures proposed as highest priority projects (Urgent Projects)
- (3) Formulate the configuration of the priority projects for urgent flood/lahar control and rehabilitation measures covering hydrological, geological, topographic, hydraulic, flood damage, socio-economic and environmental investigations and assess their technical and economic viability through comparative study of various schemes/alternatives
- (4) Prepare the basic design and estimates for the various structures and verification of the basic design by hydraulic model test.
- (5) Prepare the Master Plan/Feasibility Study Reports
- (6) Ensure transfer of technology to Filipino counterpart staff thru seminars/workshop on regional development including disaster prevention

The study will include the following activities:

- (a) Data gathering and review of existing plans/studies
- (b) Surveys and investigations
- (c) Mapping and Aerial Photography, including lahar hazard mapping
- (d) Analysis of watershed and river condition
- (e) Hydrologic and hydraulic studies

- (f) Flood damage assessment and analysis
- (g) Formulation of lahar/flood control plan
- (h) Preliminary design and estimate
- (i) Implementation schedule
- (j) Plan of operation and maintenance
- (k) Economic evaluation
- (l) Environmental impact assessment
- (m) Report preparation

4.5 Purpose (short term objective) of the Study

The project aims to:

Mitigate damage to lives, infrastructure and properties in the project areas that are being threatened by flood and sediment discharge.

4.6 Goals (long term objective) of the Study

To promote the improvement of facilities for land conservation and erosion control in order to ensure stability of the river basins. To enhance the socio-economic development and recovery of Region III from the devastation brought by the eruption of Mount Pinatubo through reduction and mitigation of flood damages.

4.7 Prospective Beneficiaries

The people of Zambales with estimated population of 569,266 as of 1995 will directly benefit from the project. This includes the indigenous peoples, e.g., Aetas, (current population 31,664 or 6,795 families) living both in the upland and lowland areas of Zambales and who depend chiefly on agriculture for their livelihood. Additional beneficiaries include the motorists that take the major highway from Zambales to Pangasinan and vice versa whose travel time will be affected if the Bucao and Macolcol Bridges will be cut-off. Data on population and other socio-economic indicators for Zambales and Region III are shown in Attachment VII.

4.8 The Projects Priority in the National Development Plan/Public Investment

The rehabilitation of the Mount Pinatubo-affected areas is among the top priority undertaking of the Government and has always been included in projects in the flood control sector of the DPWH.

(5) DESIRABLE TIME OF COMMENCEMENT OF THE PROJECT

- Expected date of start : September 2000
- Expected date of completion : September 2001

Total period of services will be 12 months, 6 months of master plan study and 6 months of feasibility study.

(6) PROSPECTIVE FUNDING SOURCE AND/OR ASSISTANCE

The Japanese Government through the Japan International Cooperation Agency-Development Study Program (JICA-DSP).

II. TERMS OF REFERENCE OF THE PROPOSED STUDY

(1) NECESSITY OF THE STUDY

The need to control massive flooding in the Sto. Tomas-Marella, Bucao-Balin Baquero and Maloma Rivers in Zambales because of siltation of rivers due to lahar flows from Mount Pinatubo prompted the Philippine Government (GOP) to request technical assistance from the Government of Japan (GOJ) to undertake detailed study of the necessary flood control measures, both structural and non-structural, in this basin

The study will determine the appropriate measures to be adopted as well as the location, type and dimensions of the proposed measures. Special attention will have to be given to social impact, especially with respect to land acquisition and resettlement, water use, water quality and related issues to ensure social acceptability of the projects. Sufficient measures regarding right-of-way acquisition and environmental impacts on the natural resources and the local communities should also be thoroughly studied to ensure success of the project.

(2) NECESSITY OF THE JAPANESE TECHNICAL COOPERATION

Flood control related studies in the eastern basins of Mount Pinatubo have been conducted by DPWH with assistance and funding from JICA which is known for its technical expertise in studies of this nature. In view of the necessity to complete the study at the shortest time possible, it is being proposed for GOJ financing because they have the technical expertise and financial capacity to assist the Philippine Government in this undertaking.

(3) OBJECTIVES OF THE STUDY

(a) General Objective

To enhance the socio-economic development and recovery of Region III from the devastation brought by the eruption of Mount Pinatubo through reduction and mitigation of flood damages.

(b) Specific Objectives

- 1) To monitor lahar deposition and to forecast future sediment sources in the project areas
- 2) To formulate a Master Plan for controlling and regulating lahar and sediment flows in the project areas.
- 3) To conduct feasibility study on priority intervention measures identified in the Master Plan and to prepare initial design of these projects.
- 4) To effect transfer of technical know-how through the conduct of a seminar or workshop on regional development.

(4) STUDY AREA

The Sto. Tomas-Marella, Bucao-Balin Baquero and Maloma River Basins in Zambales, their tributaries and impact areas.

(5) SCOPE OF THE STUDY

The proposed study is divided into two stages: (1) Formulation of a Master Plan in the 3 basins; and (2) Conduct of Feasibility Study on Priority Projects in the Sto. Tomas-Marella River Basin. The following are the scope of each stage:

Stage I: Formulation of Master Plan

The formulation of the Master Plan will include but shall not be limited to the following:

- (1) Review and analysis of existing policies, rules and regulations that may affect the formulation of the Master Plan
- (2) Review and analysis of existing projects and future programs of the GOP as well as proposed measures by other agencies, donors, LGUs, NGOs and the private sector
- (3) Collection, review and analysis of available data and information relevant to the study, including but not limited to aerial photographs, maps, reports, drawings, plans and other relevant information
- (4) Conduct of field surveys and investigation including :

- a. Mapping and aerial photography
 - b. Field monitoring of the sediment source in the pyroclastic flow deposit field, secondary erosion of lahar deposit in the middle reach and sediment accumulation in the downstream reach
 - c. Periodic cross sectional and longitudinal surveys of the river channel
 - d. Environmental surveys including social impact
 - e. Sediment sampling of lahar and lahar deposits
- (5) Sediment discharge analysis including relationship between rainfall intensity and lahar occurrence, magnitude of flood and lahar and sediment concentration and accumulation
 - (6) Evaluation of existing damages and potential risks based upon the results of data analyses
 - (7) Preparation of lahar hazard/flood risk maps
 - (8) Formulation of preliminary structural design for disaster mitigation which will include comparative implementation strategies, design criteria, main features of the facilities, preliminary cost estimates and cost-benefit analysis
 - (9) Formulation of prioritization criteria and selection of Urgent Priority projects for feasibility study
 - (10) Prepare the Master Plan Study Report
 - (11) Technology transfer to local counterpart staff through on-the-job training and seminars that may be complemented, by overseas training

Stage 2: Feasibility Study

The feasibility study for the selected urgent priority projects shall include but not be limited to the following activities:

- (1) Conduct of a detailed field reconnaissance or site investigation in terms of volcanology, geology, geomorphology
- (2) Collection of additional data and information necessary for the basic design
- (3) Conduct of geodetic and geotechnical surveys on the proposed sites of structures
- (4) Conduct of hydrological, hydraulic and sediment analysis for structural design
- (5) Hydraulic model test to seek effective structural plan of urgent priority projects
- (6) Planning and designing of structures for the prevention and mitigation of possible dangers from deposits of pyroclastic materials, outflow of debris or sediment
- (7) Preparation of preliminary cost estimate of proposed structures and facilities
- (8) Conduct of detailed socio-economic analysis
- (9) Conduct technical and economic evaluation of proposed projects
- (10) Environmental Impact Assessment and preparation of Environmental Impact Statement

(6) **REPORTS**

In the course of the study, the following reports will be prepared by the Study Team to be submitted to the authorities concerned:

1. Inception Report
2. Master Plan Report
3. Draft Final Report
4. Final Report

In addition, the Study Team is expected to conduct periodic briefing or presentation to the concerned authorities, including the local government, on the status and progress of the study.

(7) **STUDY SCHEDULE**

The study shall be carried out for a period of 12 months, 6 months of Master Plan and 6 months of Feasibility Study

(8) **EXPECTED MAJOR OUTPUTS OF THE STUDY**

A Master Plan and Feasibility Study shall be formulated outlining the short-term and long-term recommendations for the prevention or mitigation of the disastrous after-effects of the Mount Pinatubo eruption and monsoonal rains. Countermeasures shall be developed to address the current sediment discharge problem as well as their future impacts to the community and the livelihood and the quality of lives of the people.

Satellite photographs with a scale of 1:25,000 covering the project areas and maps of scale of 1:10,000 within the urgent project sites shall be prepared.

Technology transfer through on-the-job training and seminar for local counterpart personnel will be conducted during the course of the study.

(8) **REQUEST FOR THE STUDY TO OTHER DONOR COUNTRIES, IF ANY.**

None.

(9) **OTHER RELEVANT INFORMATION, IF ANY.**

a. **Progress of Philippine Reconstruction Program in the Affected Area**

As previously mentioned, funding constraints and the equally pressing need of the other river basins have placed limitation on the Government's efforts to completely address the problems in the Western River Basins of Mount Pinatubo. Nevertheless, since 1991, the Government has been allocating funds to respond to the more urgent mitigation measures including restoration of damaged bridges,

flood control dikes and desiltation of river mouths. A list of projects that have been completed and being undertaken by the Philippine Government in the Project Area is shown in Attachment VIII.

b. Involvement of Concerned Agencies in the Reconstruction Program

All reconstruction and rehabilitation efforts in the Mount Pinatubo-affected areas are coordinated through the Mount Pinatubo Commission (MPC). MPC was established in 1992, replacing the defunct Presidential Task Force Pinatubo, an interim body established immediately after the eruption in 1991 to spearhead the relief and rehabilitation efforts in the affected areas.

The MPC is mandated to assist the communities adversely affected by the eruption of Mount Pinatubo by i) extending aid, relief, resettlement, rehabilitation and livelihood; ii) undertaking construction, repair and/or reconstruction of infrastructure; and iii) to restore living conditions of Aetas and other members of the cultural communities in the affected areas.

The organizational structure is as shown in Attachment IX. The Commission is composed of eleven members, four (4) coming from the Cabinet (Department of Social Welfare and Development, Department of Budget and Management, Department of Environment and Natural Resources, and NEDA); the chairpersons of the Bases Conversion Authority (BCDA), Subic Bay Metropolitan Authority (SBMA), and Clark Development Corporation (CDC); and an Executive Director.

The rehabilitation plans and programs of the MPC are implemented by the respective line agencies: Department of Public Works and Highways (DPWH) for infrastructure facilities such as roads, bridges, dike systems, desilting, dredging, etc.; Office of Civil Defense (OCD), Regional Disaster Coordinating Council (RDCC), Phil. Institute of Volcanology and Seismology (PHIVOLCS) and the DPWH for monitoring of lahar and flood warning; Department of Social Welfare and Development (DSWD), Local Government Units (LGUs) and OCD for relief and evacuation activities; National Housing Authority (NHA) and Department of Labor and Employment (DOLE) in coordination with DSWD and LGUs for resettlement and livelihood; and the Department of Health (DOH) for medical services. Assistance and donations from Non-Government Organizations (NGOs) is coordinated with the MPC, LGUs and the DSWD.

c. Status of implementation of assistance proposed by Donor Agencies

Following are the technical and financial assistance received by the Philippine Government through the DPWH for engineering intervention measures in the Mount Pinatubo areas.

I. Technical Studies/Assistance

(1) U.S. Geological Surveys (USGS)

Just before the eruption of Mount Pinatubo on June 15, 1991, USGS/PHIVOLCS had forecast the disastrous volcanic activity of Mount Pinatubo and the community and civil defense officials convinced a skeptical public to evacuate. It was reported that owing to this warning, more than 10,000 and perhaps as many as 25,000 people escape certain death. The reports prepared by PHIVOLCS/USGS gave precious baseline data for volcanic activities and lahar avalanches.

(2) US Army Corps of Engineers (USACE)

USACE conducted the Mt. Pinatubo Recovery Action Plan under USAID fund. The objective of the USACE's study is (i) to evaluate existing pyroclastic and sediment deposits, (ii) assess the risks of future sedimentation, flood and lahars and (iii) develop recommendations of possible engineering alternatives for the eight major river basins draining Mt. Pinatubo. The output of the study are summarized in the following:

- (1) The Interim Action Plan Report completed in December 1992, covering early development and implementation measures to mitigate potential impacts of the 1993 monsoon season for the Pasig-Potrero river basin.
- (2) The Long Term Action Plan Report, the final report completed in March 1994, addresses the long term flooding and sediment control measures for the eight river basins affected by Mount Pinatubo.

3) Swiss Disaster Relief (SDR) Study

The SDR conducted a study on lahars in the O'Donnel River System. The objectives of the study are: (1) to assess the present situation in the O'Donnel river system with regard to lahar hazards and forecast future development and (ii) to propose possible countermeasures to reduce the expected damage due to future lahars. In the SDR's Final Report submitted in January 1994, several countermeasures organized into protective dikes, sediment retention dams, dredging works and monitoring system were recommended.

4) Master Plan and Feasibility Study in the Sacobia-Bamban and Abacan River Basins and Monitoring in the Pasig-Potrero River Basin by the Japan International Cooperation Agency (JICA)

The study aimed to formulate and recommend alternative plans aiming at rehabilitation of the Sacobia-Bamban River basin and Abacan River basins. The study was completed in March 1996.

II. Financial Assistance

1. USAID Grant Assistance

The USAID provided financial aid amounting to a total of US\$ 40 million from its ESF Funds to finance construction/reconstruction of several school buildings, health centers and 2 emergency hospitals in selected areas affected by the eruption. The projects started in 1992 and were completed in 1994.

2. German Grant Aid

KfW provided a two-tranche financial grant amounting to a total of DM40 million for the construction/reconstruction of school buildings and complete level II water supply systems in selected Mt. Pinatubo eruption-affected areas. The project started in 1992 and was completed in 1995.

3. JICA Grant Aid for Water Supply for Upland Resettlement Areas of Mount Pinatubo

JICA provided grant aid for the construction of level I water supply systems in eight (8) upland resettlement areas of Mount Pinatubo. The project catered primarily to aetas or indigenous community affected by the eruption. The project was completed in 1996. Included in the grant are several sets of water drilling equipment, materials and support vehicles that were used by the DPWH in continuing the drilling activities in selected low land areas.

4. Asian Development Bank Loan (Loan No. 1163-PHI(SF))

The ADB provided a loan for the construction/rehabilitation of several roads, bridges, school buildings, health centers and hospitals damaged by the eruption. Total loan amounted to US\$ 230 million. The project was completed in 1997.

5. Dutch Grant Fund

The Dutch Government provided a grant amounting to P200 million for dredging of the Pasac-Delta Area. The project was completed in 1998.

6. World Bank (IBRD) Loan

The IBRD provided an amount of P160 million to finance construction of a dike in Pampanga. The project was completed in 1997.

7. JBIC Loan (PH-P166)

JBIC provided a loan amounting to Y2,334 million to finance implementation of mudflow/flood control projects in the Sacobia-Bamban River Basin based on the recommendations of the JICA-assisted M/P and F/S. The project, entitled Pinatubo Hazard Urgent Mitigation Project, Phase I covers the following major components:

- Design and civil works for Sacobia-Bamban River basin

- Agricultural Development Planning for Sacobia-Bamban River
- Monitoring and Planning on Lahar/Mudflow control works for Pasig-Potrero River Basin

The project commenced in 1997. The Agricultural Development Planning in Sacobia-Bamban and the Monitoring and Planning for Pasig-Potrero River have been completed with the Final Reports submitted in March 1998. Civil works projects are over 95% complete as of May 2000.

8. JBIC Loan No. PH-P209

A second-tranche loan amounting to Y9,013 million for Phase II of Mount Pinatubo Hazard Urgent Mitigation Project covering flood control works in Pasig-Potrero River and Pasac Delta Area was signed between JBIC and the GOP in December 1999. Procurement of consulting services is ongoing.

III. FACILITIES AND INFORMATION FOR THE STUDY TEAM

(1) ASSIGNMENT BY THE IMPLEMENTING AGENCY OF COUNTERPART PERSONNEL FOR THE STUDY

<u>Local Counterpart</u>	<u>Position</u>	<u>Number of Staff</u>
Team Leader (Sabo)	Engineer V	1
Sabo Engineer	Engineer IV	1
Hydrologist/Hydraulic Engineer	Engineer III	1
Sabo Engineer	Engineer III	1
River/Flood Control Engineer	Engineer III	1
Flood Control Engineer	Engineer III	1
Structural Engineer	Engineer III	1
Socio-Economist	Economist III	1
Construction Planner/ Cost Estimator	Engineer II	1
Environmental Specialist	Sr. Env'l Mgt. Sp.	1

(2) AVAILABLE DATA, INFORMATION, DOCUMENTS, MAPS ETC. RELATED TO THE STUDY

<u>Type of Data</u>	<u>Source</u>
Socio-economic data	NEDA, NCSO
Geographical data	NEDA/NCSO
Hydrological data	PAGASA
Project Maps	NAMRIA
Environmental information	DENR
Previous studies	DPWH
Lahar Hazard maps and lahar delivery projections	PHIVOLCS

(3) **INFORMATION ON THE SECURITY CONDITIONS IN THE STUDY AREA**

Peace and order prevails in the province of Zambales.

IV. **GLOBAL ISSUE**

(1) **ENVIRONMENTAL COMPONENTS**

An environmental study will be conducted for the urgent priority projects to determine their possible impacts to the environment. This will include identification of environmentally critical areas, the presence of endangered species and archeological relics, and investigation of the present land use and projected overall development in the study area. Public consultations and scoping sessions will be conducted to inform the stakeholders and beneficiaries and assess their perceptions on the proposed projects.

(2) **ANTICIPATED ENVIRONMENT IMPACTS**

Right-of-way/land acquisition and resettlement are among the issues anticipated to arise hence this will be given especial focus during the conduct of the environmental impact assessment

(3) **WOMEN AS MAIN BENEFICIARIES OR NOT**

The project will have both men and women as beneficiaries.

(4) **PROJECT COMPONENTS WHICH REQUIRE SPECIAL CONSIDERATION FOR WOMEN**

None.

(5) **ANTICIPATED IMPACTS ON WOMEN**

None.

(6) **POVERTY REDUCTION**

The realization of this study and eventual implementation of the projects will result in mitigation of flooding/lahar. It will consequently improve the economy in the impact areas due to anticipated increase in agricultural production owing to protection afforded by the flood control project.

(7) **ANY CONSTRAINTS AGAINST THE LOW INCOME PEOPLE CAUSED BY THE PROJECT**

None.

V. UNDERTAKING OF THE GOVERNMENT OF THE REPUBLIC OF THE PHILIPPINES

In order to facilitate a smooth and efficient conduct of the Study, the Government of the Republic of the Philippines shall take necessary measures:

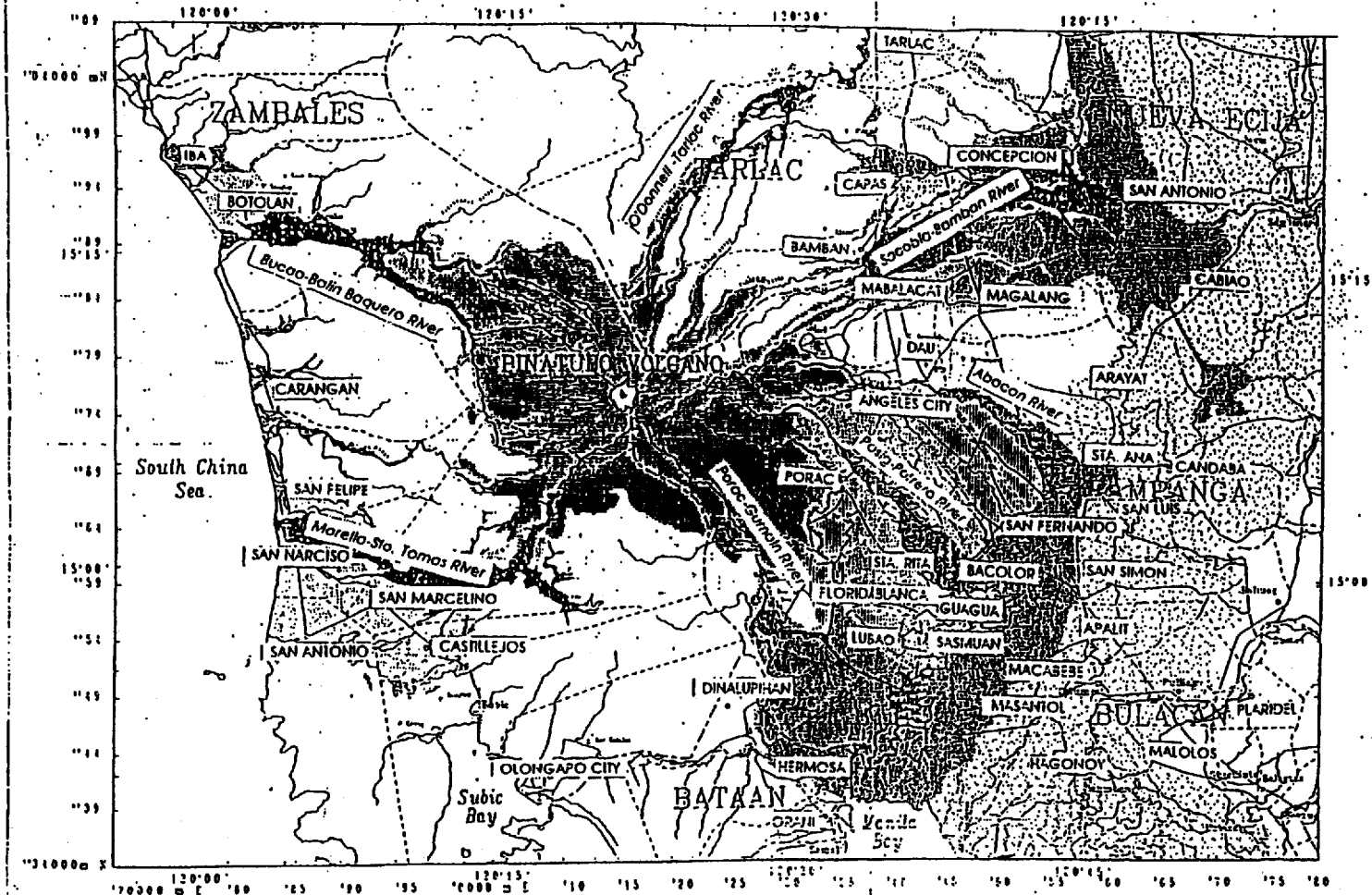
- (1) to secure the safety of the Study Team.
- (2) to permit the members of the Study team to enter, leave and sojourn in the Republic of the Philippines in connection with their assignment therein, and exempt them from alien registration requirement and consular fees.
- (3) to exempt the Study team from taxes, duties and any other charges on equipment, machinery and other materials brought into and out of the Republic of the Philippines for the conduct of the Study.
- (4) to exempt the Study team from income taxes and other similar levies in connection with any emoluments or allowances paid to members of the Study team for their services in connection with the implementation of the Study.
- (5) to provide necessary facilities to the Study team for remittances as well as utilization of the funds in the Republic of the Philippines from Japan in connection with the implementation of the Study.
- (6) if necessary, to secure permission for entry into private properties or restricted areas for the conduct of the Study
- (7) if and when necessary, to secure permission for the Study team to take all necessary data, documents and materials related to the Study out of the Republic of the Philippines to Japan in accordance with Philippine regulations
- (8) to provide medical services as needed, however, expenses will be chargeable to members of the Study team.
- (9) the Government of the Republic of the Philippines shall bear claims, if any arises against member(s) of the Japanese Study team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claim arise from gross negligence or willful misconduct on the part of member of the Study team.
- (10) the Department of Public Works and Highways shall act as counterpart agency to the Japanese Study team and also as coordinating body in relation with other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

- (11) the Government of the Republic of the Philippines assures that the undertakings by the Philippine Government referred to in this form will be ensured for smooth conduct of the Development Study by the Japanese Study team.

ATTACHMENT I

Figure 1. The Lahar affected river channels draining from Pinatubo Volcano: O'Donnell-Tarlac (N), Socobia-Bamban (NE), Abacan (E), Pasig-Potrero (SE), Porac-Gumain (SSE), Morella-Sto. Tomas (SW), Malama (W), and Bucco-Bolin Baquero (NW).

PINATUBO VOLCANIC AND FLOOD HAZARDS MAP



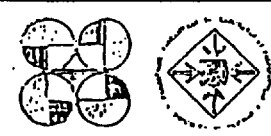
LEGEND

- 1988 pyroclastic flow deposits
- Areas covered by 1988, 1990 and 1993 lahars
- High ash zone
- Areas at risk due to erosion
- Other damaged/interfered water
- Potential eruption point
- Areas prone to lahar deposition from the 1991 pyroclastic flow deposits of Pinatubo Volcano
- Areas prone to flooding due to blocking of tributaries and secondary pyroclastic flow and/or lahar deposits
- Areas prone to pyroclastic flow deposition during future major significant eruptions of Pinatubo Volcano, probably hundreds of years hence
- Regional flood prone areas due to high precipitation, filling up of river channels from landslides and remobilized 1988 lahars since Earthquake (October 1990)
- Upward resettlement
- Landward resettlement
- Protected capital
- City
- Municipality
- Coastline
- Provincial boundary
- Municipal boundary
- River and tributary
- Major road
- 1988 Pinatubo Crater rim

Notes:

1. Lahar boundaries are approximate.
2. Locations of lahars are the result of the identification of lahars from aerial photographs. Lahar boundaries may not be affected by the eruptions and are not related to the lahars. Lahar boundaries are not to be construed as such.
3. This map was prepared using information derived from the Lahar Deposits and Deposited Area Inventory of the Department of Geology, University of the Philippines, Diliman, Quezon City, Philippines.

Scale: 1:200,000
 0 100 200 300 400 500 600 700 800 900 1000 Meters



PREPARED BY THE PHILIPPINE INSTITUTE OF VOLCANOLOGY AND SEISMOLOGY (PHIVOLCS) AND NATIONAL ECONOMIC AND DEVELOPMENT AUTHORITY (NEDA) REGION II. WITH ASSISTANCE FROM THE AUSTRALIAN INTERNATIONAL DEVELOPMENT ASSISTANCE BUREAU (AIDAB).

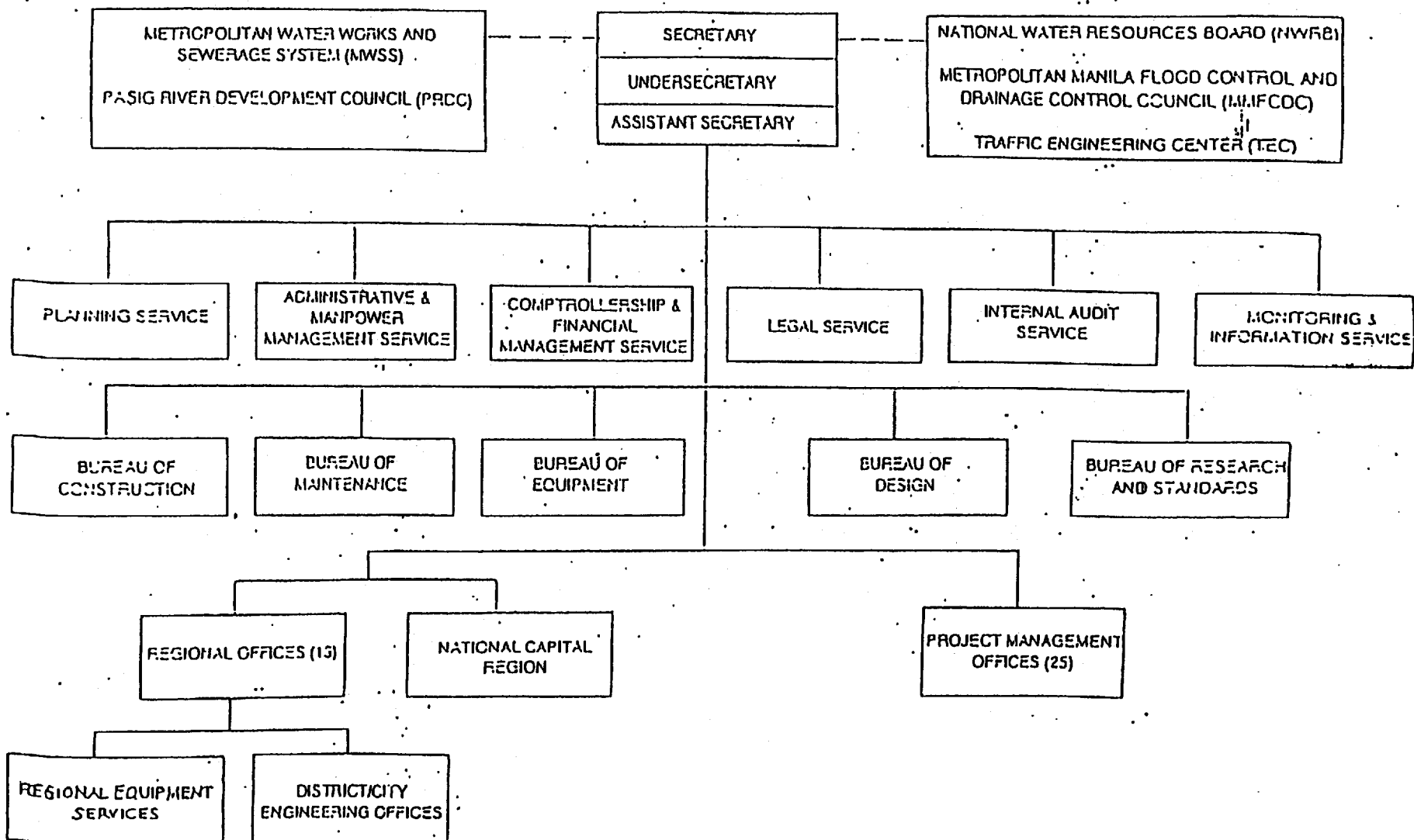


PRODUCED BY: NEDA REGION III GIS, 2016 DECEMBER 1994

Source of Information:
 1. Lahar reports for 1991, 1992 & 1993 PHIVOLCS
 2. Lahar maps from 1991 to 1993 PHIVOLCS
 3. Lahar maps from 1991 to 1993 PHIVOLCS
 4. Lahar maps from 1991 to 1993 PHIVOLCS
 5. Lahar maps from 1991 to 1993 PHIVOLCS
 6. Lahar maps from 1991 to 1993 PHIVOLCS
 7. Lahar maps from 1991 to 1993 PHIVOLCS
 8. Lahar maps from 1991 to 1993 PHIVOLCS
 9. Lahar maps from 1991 to 1993 PHIVOLCS
 10. Lahar maps from 1991 to 1993 PHIVOLCS

ATTACHMENT II

Organizational Chart

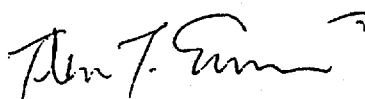




ORGANIZATIONAL CHART OF THE
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

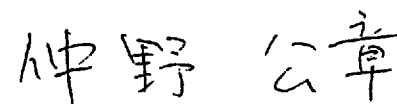
**IMPLEMENTING ARRANGEMENT
ON
THE TECHNICAL COOPERATION
FOR
THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF
MOUNT PINATUBO IN THE REPUBLIC OF THE PHILIPPINES**

**AGREED UPON BETWEEN
THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
AND
JAPAN INTERNATIONAL COOPERATION AGENCY**

Manila, December 6, 2001



Mr. TEODORO T. ENCARNACION
 UNDERSECRETARY 
DEPARTMENT OF PUBLIC WORKS
AND HIGHWAYS



Mr. MASAAKI NAKANO
LEADER
PREPARATORY STUDY TEAM OF
JAPAN INTERNATIONAL COOPERATION
AGENCY

M. N.

I. INTRODUCTION

In response to the request of the Government of the Republic of the Philippines (hereinafter referred to as "GOP"), the Government of Japan (hereinafter referred to as "GOJ") decided to conduct a Study on Sabo and Flood Control for Western River Basins of Mount Pinatubo in the Republic of the Philippines (hereinafter referred to as "the Study"), and exchanged the Notes Verbale with GOP concerning the implementation of the Study.

Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programs of GOJ, will undertake the Study in accordance with the relevant laws and regulations enforced in Japan.

On the part of GOP, the Department of Public Works and Highways (hereinafter referred to as "DPWH") shall act as the counterpart agency to the Japanese Study Team and also as coordinating body in relation to other governmental and non-governmental organizations concerned for the smooth implementation of the Study.

The present document constitutes the implementing arrangement between JICA and DPWH under the above-mentioned Notes Verbale exchanged between the two governments.

II. OBJECTIVES OF THE STUDY

The objectives of the Study are:

1. To formulate a master plan on sabo and flood control for the western river basins of Mount Pinatubo and to conduct a feasibility study on urgent project(s) identified in the master plan, and
2. To carry out technology transfer to counterpart personnel in the course of the Study.

III. STUDY AREA

The study area shall cover the western river basins of Mount Pinatubo (Sto. Tomas, Bucao and Maloma river basins). Refer to Annex 1

IV. SCOPE OF THE STUDY

The Study comprises two phases as follows:

Phase 1 : Formulation of the Master Plan

1. Data Collection

- (1) relevant plans and studies
- (2) flood and mudflow damage data during the past ten years
- (3) existing and planned/proposed relevant facilities
- (4) meteorological and hydrological conditions
- (5) topographic and geological conditions
- (6) volcanic activities
- (7) socio-economic aspects (population, patterns of land use and ownership, and social impact of resettlement, etc.)
- (8) environmental aspects
- (9) others

2. Field Survey
 - (1) field reconnaissance
 - (2) flood and mudflow damage survey
 - (3) river survey (longitudinal and cross sectional profile)
 - (4) meteorological and hydrological monitoring
 - (5) river bed material test
 - (6) socio-economic survey
 - (7) environmental survey
 - (8) others

3. Study and Analysis
 - (1) hydrological and hydraulic analysis
 - (2) flood and mudflow damage analysis
 - (3) aerial photograph analysis
 - (4) satellite data analysis
 - (5) economic and financial study
 - (6) socio-economic analysis
 - (7) environmental analysis
 - (8) others

4. Formulation of Master Plan
 - (1) formulation of master plan on sabo and flood control for the study area
 - 1) basic layout of major structures
 - 2) preliminary design of major facilities
 - 3) formulation of stepwise development concept
 - 4) non-structural measures (resettlement, evacuation, and restraining from land use, etc.)
 - 5) institutional and administrative aspects
 - 6) rough estimation of costs for construction, operation and maintenance
 - 7) project evaluation
 - (2) identification of the most urgent sabo and flood control projects

Phase 2 : Feasibility Study on Urgent Project(s)

1. Supplemental Survey
 - (1) aerial photographic survey
 - (2) topographic survey for proposed structure site(s)
 - (3) river survey (longitudinal and cross sectional profile)
 - (4) geological and geotechnical survey including construction material survey
 - (5) river bed material test

2. Supplemental Analysis
 - (1) hydrological and hydraulic analysis
 - (2) flood and mudflow damage analysis
 - (3) others

3. Preliminary Design and Construction Plan of Major Structure(s)
4. Non-structural Measure(s)
5. Operation and Maintenance Plan
6. Evaluation of Technical, Social, Economic Impact of Disaster, Finance, and Environment
7. Cost Estimation

8. Formulation of Implementation Plan

V. STUDY SCHEDULE

The Study shall be carried out for approximately eighteen (18) months, in accordance with the tentative schedule as attached in the Annex 2.

VI. REPORTS

JICA shall prepare and submit the following reports in English to GOP.

1. Inception Report (IC/R)
Thirty (30) copies of IC/R at the commencement of the Study.
2. Progress Report (PR/R)
Thirty (30) copies in the middle of Phase 1. This report shall contain the progress of Phase 1 as the Master Plan and outline of Phase 1 study program.
3. Interim Report (IT/R)
Thirty (30) copies at the end of Phase 1. This report shall contain the results of Phase 1 as the Master Plan and outline of Phase 2 study program.
4. Draft Final Report (DF/R)
Thirty (30) copies at the end of the Phase 2. DPWH shall comment on the report within one (1) month after the receipt of the report.
5. Final Report (F/R)
Final Report shall be prepared incorporating the comments from DPWH and fifty (50) copies shall be submitted within one (1) month after the receipt of the comments.

VII. UNDERTAKING OF GOP

1. To facilitate the smooth conduct of the Study, GOP shall take the following measures:
 - (1) to permit the members of the Japanese Study Team (hereinafter referred to as "the Team") to enter, leave and sojourn in the Philippines for the duration of their assignments therein, to exempt them from foreign registration requirements and consular fees;
 - (2) to bear the payment of taxes, duties and any other charges on equipment, machinery, and other materials brought into and out of the Philippines for the implementation of the Study;
 - (3) to bear the payment of income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Team for their services in connection with the implementation of the Study;
 - (4) to provide necessary facilities to the Team for the remittance as well as utilization of the funds introduced into the Philippines from Japan in connection with the implementation of the Study.
2. GOP shall bear claims, if any arises against the members of the Team resulting from, occurring in the course of, or otherwise connected with the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful

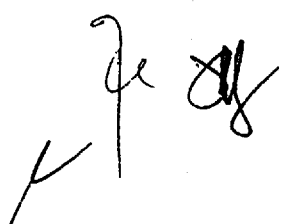
misconduct on the part of the members of the Team.

3. DPWH shall, at its own expense, provide the Team with the following in cooperation with other organizations concerned:

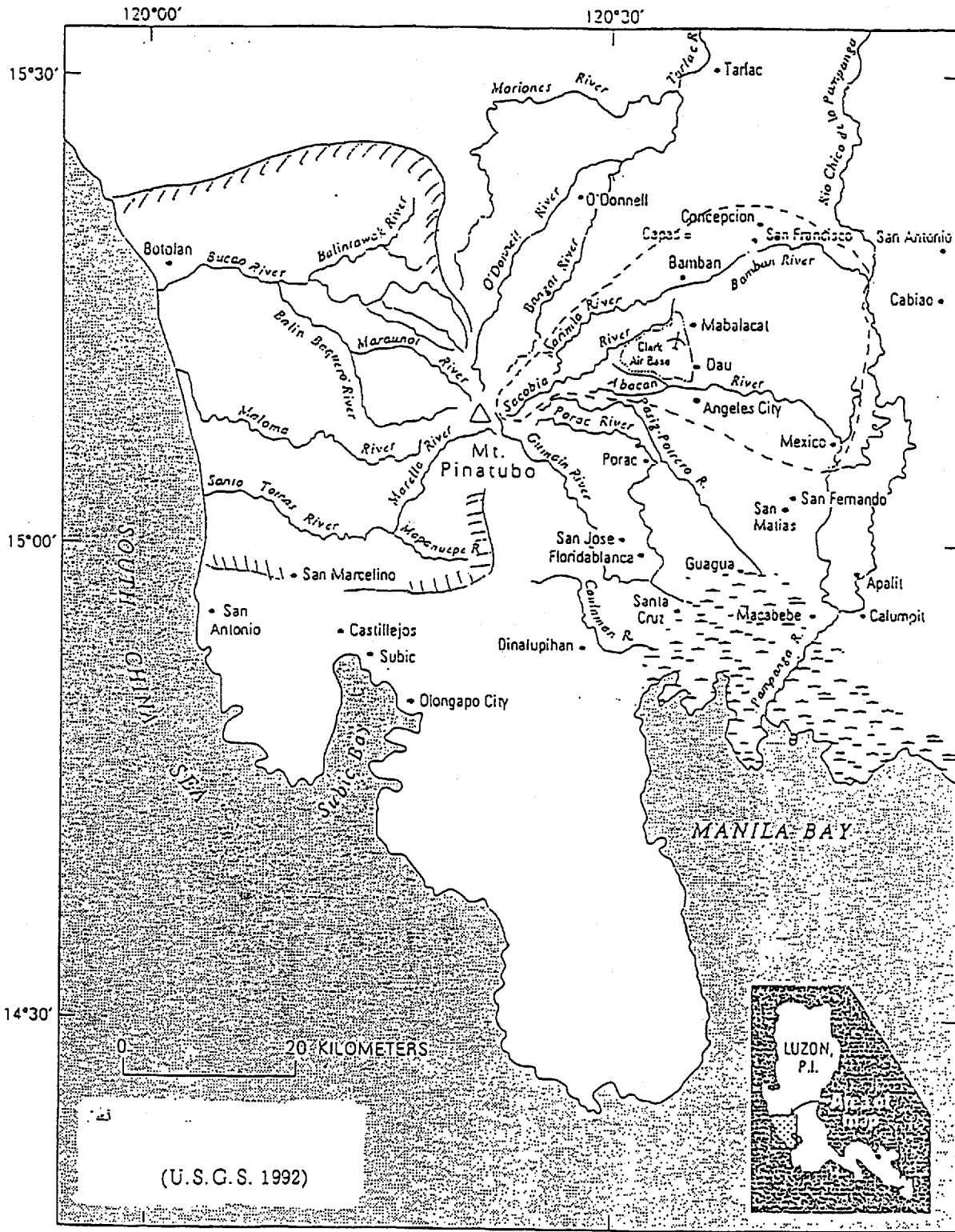
- (1) security-related information as well as measures to ensure the safety of the Team;
- (2) information as well as support in obtaining medical service, available data and information related to the Study;
- (3) counterpart personnel;
- (4) suitable office space with necessary equipment;
- (5) credentials and identification cards; and
- (6) vehicles with drivers.

VIII. CONSULTATION

JICA and DPWH shall consult with each other with respect to any matters that may arise from or in connection with the Study.

Handwritten signature or initials in black ink, appearing to be a stylized 'K' followed by a vertical line and a flourish.

Annex 1 : STUDY AREA

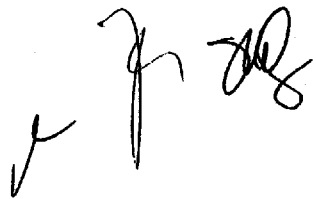


[Handwritten signatures and initials]

Annex 2 : STUDY SCHEDULE

Month Work	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Schedule	<div style="border: 1px solid black; width: 80%; margin: 0 auto; height: 20px;"></div>																	
Report	△ IC/R																	△ F/R

IC/R : Inception Report
F/R : Final Report



3. 討議議事録 (M/M)

MINUTES OF DISCUSSIONS FOR IMPLEMENTING ARRANGEMENT

ON

THE TECHNICAL COOPERATION

FOR

THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER

BASINS OF MOUNT PINATUBO

IN

THE REPUBLIC OF THE PHILIPPINES

AGREED UPON BETWEEN

THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

AND

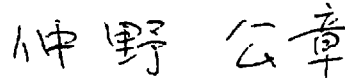
JAPAN INTERNATIONAL COOPERATION AGENCY

Manila, December 6, 2001



Mr. TEODORO T. ENCARNACION

UNDERSECRETARY
DEPARTMENT OF PUBLIC WORKS
AND HIGHWAYS



Mr. MASA AKI NAKANO

LEADER
PREPARATORY STUDY TEAM OF
JAPAN INTERNATIONAL COOPERATION
AGENCY

Japan International Cooperation Agency (hereinafter referred to as "JICA"), at the official request of the Government of the Republic of the Philippines (hereinafter referred to as "GOP") dispatched the Preparatory Study Team (hereinafter referred to as "the Team") to the Philippines from November 19 to December 8, 2001 to discuss and agree on the Implementing Arrangement (I/A) for the Study on Sabo and Flood Control for Western River Basins of Mount Pinatubo in the Republic of the Philippines (hereinafter referred to as "the Study").

The Team carried out field surveys of the study area, and held a series of discussions with the Department of Public Works and Highways (hereinafter referred to as "DPWH") and other authorities concerned.

This Minutes of Discussions summarize the result of discussions held between the Team and the concerned agencies of GOP. The list of attendees is attached in the Appendix.

The main items discussed regarding I/A are as follows:

1. The Title of Study

Both sides agreed that the Study title should be "THE STUDY ON SABO AND FLOOD CONTROL FOR WESTERN RIVER BASINS OF MOUNT PINATUBO IN THE REPUBLIC OF THE PHILIPPINES."

2. Duration of Study

Both sides agreed that the duration of the Study is about eighteen (18) months.

3. Crater Lake

DPWH requested the Team to conduct a study to avoid a disaster posed by the sudden outflow of Mt. Pinatubo's crater lake. The Team promised to convey this request to JICA Headquarters.

4. The Counterpart Training

- 1) The Philippine side requested that the counterpart training in Japan and the seminars/workshops in the Philippines be held in the course of the Study including provision of equipment and software in order to pursue effective technology transfer. The Team promised to convey this request to JICA Headquarters.
- 2) Both sides agreed that DPWH would organize a counterpart team which would cooperate with the Study Team. The members of the counterpart team would be nominated before the commencement of the Study. It is preferable for the counterpart team to include personnel in charge of institutions and public relations as well as technical planning and design.

5. A Steering Committee

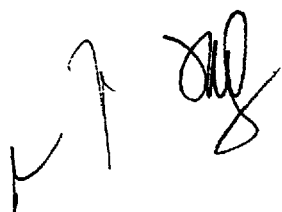
Both sides agreed that GOP would create a steering committee consisting of the following organizations under the chairmanship of the DPWH:

- 1) PHIVOLCS (Philippine Institute of Volcanology and Seismology)
- 2) DENR (Department of Environment and Natural Resources)
- 3) PAGASA (Philippine Atmospheric, Geophysical and Astronomical Services Administration)
- 4) OCD (Office of Civil Defense)

The chairman may invite other departments and agencies concerned, if necessary.

6. Undertaking of GOP

DPWH agreed to provide an office with a suitable space at DPWH central office and an office near the study area. However, DPWH mentioned that it would be difficult to provide facsimile machine, copy machine, vehicle(s) and computers and further requested JICA to provide these units of equipment. The Team promised to convey this request to JICA Headquarters.



APPENDIX

LIST OF ATTENDEES

(Philippine side)

Department of Public Works and Highways (DPWH)

Teodoro T. Encarnacion	Undersecretary
Florante M. Soriquez	Assistant Secretary
Jesus P. Cammayo	Assistant Secretary
Linda M. Templo	Director, Planning Service
Philip F. Menez	Project Director, PMO-MFCDP, Cluster II
Rebecca T. Garsuta	Chief, Development Planning Division
Napoleon S. Famadico	Development Planning Division
Johnny V. Montano	Infrastructure Planning Research and Statistics Division
Elmo F. Atilano	Development Planning Division
Maximina M. Razon	PMO-MFCDP, Cluster II
Dolores M. Hipolito	PMO-FCSEC
Alejandro A. Sosa	PMO-MFCDP, Cluster II
Maximo F. Bulanadi	PMO-MFCDP, Cluster II

National Economic and Development Authority (NEDA)

Vanessa Agnes F. Dimaano	Public Investment Staff
Joel R. Lustina	Infrastructure Staff

Office of Civil Defense (OCD)

MGen Melcor P. Rosales (Ret)	Administrator
Elvira Gumabay Calina	Regional Director, Region III

Philippine Institute of Volcanology and Seismology (PHIVOLCS)

Mylene Villegas	Officer-in-Charge, Geology Department
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Botolan Municipal Office

Hon. Rogelio B. Yap	Municipal Mayor
Thelma D. Dijona	Vice Mayor

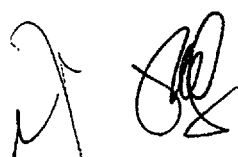
San Marcelino Municipal Office

Lydia F. Rodriguez	Municipal Mayor
Joyulin T. Rodriguez	Municipal Council Chairman

(Japanese side)

Preparatory Study Team

Masaaki Nakano	Team Leader
Yoshiki Nagai	Sabo Planning
Yasutaka Kageta	Study Planning
Tetsuaki Iwakiri	Hydraulics-Hydrology/Sabo Facility
Takayoshi Itoigawa	Social Environment/Environmental Consideration



Embassy of Japan

Shuntaro Kawahara

First Secretary

Japan Bank for International Cooperation

Takatoshi Nishikata

Representative

JICA Philippine Office

Hideo Ono

Resident Representative

Kiyoshi Masumoto

Deputy Resident Representative

Yusuke Murakami

Chief, Assistant Resident Representative

Noriko Bamba

Assistant Resident Representative

Santos Jun N. Godornes, Jr.

Program Officer

JICA Expert

Eiji Otsuki

DPWH

Hideaki Fujiyama

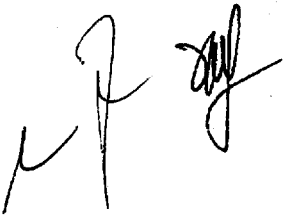
FCSEC

Toshihide Kawachi

FCSEC

Yuichiro Tanioka

PHIVOLCS



4. 主要面会者リスト

役務団員面会者リスト

ピナツボ火山西部河川流域洪水及び泥流制御計画調査・事前調査

No.	氏名	部署	組織名
1	小野秀男	所長	JICAフィリピン事務所
2	升本潔	次長	JICAフィリピン事務所
3	村上雄祐	業務班長	JICAフィリピン事務所
4	番場紀子	業務班	JICAフィリピン事務所
5	Santos "jun" N. Godornes, Jr.	Project Management Section	JICAフィリピン事務所
6	川原俊太郎	一等書記官 (Economic Affairs)	日本大使館
7	大槻英治	JICA専門家 (河川管理行政担当)	DPWH計画局
8	藤山秀章	治水砂防技術センター (チームリーダー)	DPWH/FCSEC
9	川内俊英	治水砂防技術センター (JICA砂防専門家)	DPWH/FCSEC
10	Linda M. Templo	Director of Planning Service	DPWH
11	Rebecca T. Garsuta	Chief of Development Planning Division	DPWH
12	Napoleon S. Famadico	Development Planning Division Engineer IV	DPWH
13	Docores M. Hipolito	PMO-FCSEC Engineer V	DPWH
14	Johnny V. Montano	IPRSD Engineer III	DPWH
15	Carlos P. Zamora	Project Evaluation Division	DPWH
16	Alejandro A. Sosa	PMO-MFCDP Engineer V	DPWH
17	Dr. Judy F. Sese	Chief of Research and Development Division	DPWH-BRS
18	Anaclet P. Espirite	Chief of Division	DPWH-BRS
19	Felix V. Jugan		DPWH-BRS
20	Philip F. Menez	PMO-LADP	DPWH CARBDP
21	Maximina M. Razon	PMO-LADP Engineer IV	DPWH CARBDP
22	Alfredo G. Tolentino	Regional Director	DPWH Region III
23	Efren C. Manalo	MPR Engineer V	DPWH Region III
24	Isabelita M. Manalo	MPR Manager	DPWH Region III
25	Lemuel R. Garcia	MPR-PMO Mechanical Engineer	DPWH Region III
26	Alexs S. Canoa	MPR-PMO Project Inspector	DPWH Region III
27	Lucila O. Padilla	MPR-PMO Material Engineer	DPWH Region III
28	Feren V. Pacson	Iba District Office District Engineer	DPWH Region III
29	Hercules C. Manglicmot	Iba District Office Chief Construction Engineer	DPWH Region III
30	Hector A. Dayrit	Excutive Director	National Water Resources Board
31	Dominador D. Pascua	Office of the Administrator, Manager	National Irrigation Administration
32	Epifanio G. Sadang	Flood Forecasting Branch, Chief Hydrogist	PAGASA
33	Yoshihiro Yamashita	JICA Expert, (River Management)	PAGASA
34	Ma. Lynn Paladio Melosantos	Geology and Geophysics R&D Div., Geologist,	PHIVOLKS
35	谷岡勇一郎	JICA Expert	PHIVOLKS
36	Elvis P. Cezar	Environmental Met Bureau	DENR
37	Allen V. Uanveva	Environmental Met Bureau	DENR
38	Guinto	Infrastructure Section	NEDA
39	Franklin Castillo	Chief of Operation	NDCC
40	Mgen Melchor P. Rosales	Administrator	OCD

No.	氏 名	部 署	組 織 名
41	Elvira Gumabay-Calina	Regional Director	OCD Regional Center III
42	Teofilo T. Minas, Jr.	Provincial Engineer	Province of Zambales
43	Raul L. Dela Crus	Minning Engineer	Province of Zambales
44	Rogelio B. Yap	Municipal Mayer	Botoran Municipal Office
45	Thelma D. Dijona	Vice Mayor	Botoran Municipal Office
46	Erlia A. Rico	Municipal Administrator	Botoran Municipal Office
47	Isagani A. Ecele	Social Welfare Officer III	Botoran Municipal Office
48	Lydia F. Rodoriguez	Municipal Mayer	San Marcelino Municipal
49	Joyulin T. Rodriguez	Provincial Town Council Chaiman	San Marcelino Municipal
50	Gilbert N. Villena	MDDC Office	San Marcelino Municipal
51	Antonio B. Claveriaa Jr.		A.Claveria Surveying
52	Reynaldo R. Medina	President	Woodfields Consultants, Inc.

**QUESTIONNAIRE
FOR
THE STUDY
ON
SABO AND FLOOD CONTROL FOR THE WESTERN RIVER BASINS OF MOUNT PINATUBO
IN
THE REPUBLIC OF THE PHILIPPINES**

質問票回答集計表

**NOVEMBER 2001
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

1. General
2. Natural conditions
3. Social and economic conditions
4. Laws, regulations, policies and customary practices relevant to environment
5. Disaster
6. Organization
7. Maps photographs and satellite images
8. Data / Report in and around the study area
9. River Management
10. Environment
11. Local consultants
12. Questionnaires for PAGASA
16. Questionnaires for DND, OCD, NDCC, RDCC, DSWD
17. Questionnaires for NEDA, NCSO, LUG
20. Questionnaires for DENR
22. Questionnaires for NAMRIA
25. Questionnaires for PHIVOLCS

ABBREVIATION

DENR: Department of Environment and Natural Resources

DND: Department of National Defense

DOT: Department of Tourism

DPWH: Department of Public Works and Highways

DSWD: Department of Social Welfare and Development

DTI: Department of Trade and Industry

EMB: Environment and Management Bureau

MDCC: Municipal Disaster Coordinating Council

NAMRIA: National Mapping & Resource Information Authority

NDCC: National Disaster Coordinating Council

NEDA: National Economic and Development Authority

NIA: National Irrigation Administration

NWRB: National Water Recourses Board

OCD: Office of Civil Defense

PAGASA: Philippine Atmospheric, Geophysical and Astronomical Services Administration

PDOC: Provincial Disaster Operation Center

PHIVOLCS: Philippine Institute of Volcanology and Seismology

RDCC: Regional Disaster Coordinating Council

Questionnaires for the study on sabo and flood control for the western river basins of mount Pinatubo in the republic of the Philippines

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
I. General				
1-1	Socio-economic information for the last 5 years (Region III) 1) Gross domestic product (GDP) 2) Gross regional domestic product (GRDP) 3) Structure of Production 4) Growth of consumption and investment 5) Growth of merchandise trade 6) Balance of payment and reserves 7) Total external debt	N	May be obtained from Regional Development Council	
1-2	Financial performance in the last 5 years 1) National budget with breakdown 2) Foreign trade balance 3) Foreign economic assistance	N		
1-3	Public investment in the last 5 years (Region III) 1) Capital outlays 2) sources of finances	N		
1-4	Development plans (Region III) 1) National development plan 2) Five year economic development plan 3) Agricultural development plan 4) Industrial development plan 5) Transport development plan 6) Forecast of socio-economic indicators 7) Land management	N		
1-5	Progress of development project (Mt. Pinatubo)	N		
1-6	Outline of the study	N		
1-7	Other relevant data and information	N		

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
2. Natural conditions				
2-1	Geology and topography 1) Map and aerial photography 2) Protected area, etc.	Y	May be Obtained from EIS, ECPS in Region3	
2-2	Meteorology and hydrology 1) Meteorological data 2) Hydrological data	Y		
2-3	Fauna and flora 1) wildlife and plant distribution 2) relevant information	Y		
3. Social and economic conditions				
3-1	Population statistics (Region III)			
3-2	Economic conditions 1) Economic growth 2) Structure of production	N	Refer to NEDA or RDC	
3-3	Present conditions of infrastructure 1) Social and economic infrastructures relevant to the study 2) Land use 3) On-Going and planned project relevant to the study	Not sure		
3-4	Environmental issues	Y	May be obtained from EIS, ECPs Region 3	
4. Laws, Regulations, Policies and customary practices relevant to environment				
4-1	Lows / guidelines (national and regional level)	Y	Refer to EMB	
4-2	Lows / Guidelines related to EIA (national & regional level)	Y	Refer to EMB	
4-3	Quality standards (national & regional level)	Y	Refer to EMB	
4-4	International conventions on environmental conservation	Y	Refer to EMB	
4-5	Present Institutions, organization, administration and their function relevant to environment	Y	Refer to EMB	
4-6	Budget	Y	Refer to EMB	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	1) National Budget 2) Local Budget 3) Budget Allocation to Environment			

5. Disaster

5-1	Disaster preparedness response and rehabilitation (DSWD)	N	DPWH	
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6. Organizations / Administration

6-1	Organization chart and the related information / data, such as function, number of staff, key personnel concerned etc., of related study: * Other agencies/department related to the Study, if any		DPWH	
6-2	Divisions or branches of the organization in the study area		DPWH	
6-3	Structure of governmental and local governmental administration in the country and the study area		DPWH	

7. Maps, photographs and satellite images

7-1	<p>Maps in and around the study areas</p> <p><u>Categories of maps:</u></p> <ul style="list-style-type: none"> * Administration map * Transportation (Road & Railway) map * Topographic-map * Geological map * Hydro-geological map * Soil map * Land use map * Vegetation map * Development plan (map) * Forest map * Parks and Reserves map * Cadastral map * Others, if any <p><u>Required information for maps:</u></p> <ul style="list-style-type: none"> * Index map * Area covered * Scale * Contour lines interval * Agency in charge of management 	<p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>N</p> <p>N</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p>	<p>Answer from Zambales Province</p> <p>Provincial Map</p> <p>RNDP</p> <p>Provincial Map 1966-67</p> <p>DA PFPF 1996</p> <p>PFPF1996</p> <p>PFPF1996</p> <p>PFPF1996</p> <p>PFPF1996</p> <p>PFPF1996</p> <p>PFPF1996</p> <p>PFPF1996</p> <p>Topo Map 1966 - 67</p> <p>Province</p> <p>1/15,000</p> <p>Topo Map</p> <p>Province</p>	
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No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
7-2	Aerial-Photographs <u>Required information for aerial photographs:</u> * Index map * Area covered * Scale * Year * Agency in charge of management * Permission and/or cost of use by the study team	Y	Topo Map 1966 - 67 Province 1/15,000 1966 - 67 Province	
7-3	Satellite images covering the study area	N		

8. Data / Reports in and around the study area

8-1	Topographic data / reports of the study area	Y	Province 1966 - 67	
8-2	Geological / foundation data / reports (boring data) of the study area	N	Refer to PHIVOLCS	
8-3	Discharge (and water level) records at major stations in and around the study area <u>Required information / data</u> * Yearly, Monthly, Daily and Hourly (Max. Mean, Mini.) data * Hydrographs of major floods and Lahar * Rainfall record	N	Refer to PAGASA	
8-4	Sediment (river bed) loads measurement of each rivers in the study area <u>Required Information/Data</u> * Location (Map, Name, No.) * Items of measurement * Period and Frequency of records * Records of sediment measurement * Agency in charge	N	Refer to PHIVOLCS and MGB	

9. River Management

9-1	National or local laws (including act, norms, custom, regulation, etc.) related to river (water body) management and / or flood and lahar control. <u>Required information:</u> * Name / Title * Year established/amended * Agency in charge * Main purpose * Brief content * Other information/comments, if any			
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No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
9-2	Standard, design criteria and guidelines for river, flood / lahar control planning <u>Required information:</u> * Name / Title * Year established/amended * Agency in charge * Main purpose * Brief content	N	Refer to DPWH	
9-3	Principal features of the study area <u>Required information</u> * River basin area and length of main stream and major tributaries * Runoff (annual, monthly, flood peak) at major points * Conditions (Change) at the river mouth	N	Refer to PHIVOLCS	
9-4	River course, profile and sections of rivers in the study area <u>Availability of survey data</u> * River course (Changes) * Longitudinal sections (River profile) * Cross sections * River bed variation records, if any <u>Required information</u> * Locations (survey sections) * Year of survey * Agency in charge	N	Refer to PHIVOLCS	
9-5	Flood / Lahar / Inundation records <u>Required Information</u> * Flood /Lahar conditions (Year, Month and Day, Locations, Flood duration, Flood water level, Inundation area/depth/duration, etc.) * Flood / Lahar damages conditions (Inundation area/depth/duration, Conditions of * Man-made causes of increased flood water levels, if any * Direct damage amount (Houses, Agriculture, Livestock, Fishery, Public facilities, etc.) * Indirect damage amount (Transportation, Suspension of economic activity, disease, etc.) * Flood / Lahar damage mitigation measures taken during and after the floods * Others (Rainfall records, Photographs, etc.)	N	Refer to PHIVOLCS	
9-6	Major flood / lahar control, mitigation (or river improvement) plans, projects for rivers or the basin in the study area (Past, on-going, and future) <u>Required Information</u> * Name / Title * Year prepared * Agency in charge (prepared by ?)	Y	Answere from Disitricct Office of DPWH in Iba Construction of dike along with Sto.Tomas river 1991 - 1998 DPWH- Dsitricct / Region Office	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<ul style="list-style-type: none"> * Main purpose * Brief content * Present actual progress/status of the implementation based on the plan 		To guide the lahar flow, Training work Completed	
9-7	Non-structural measures for flood / lahar mitigation (Early warning system, rescue activity, etc.) in the study area, if any	Y	Desilting of Sto.Tomas River, 1991 - 1999	
9-8	Existing (including under construction) and proposed structures located in and around the study area to be used for the flood / lahar control, mitigation works in the study area <u>Required information</u> <ul style="list-style-type: none"> * Kind of structure/works such as dam, ground sill, weir, bank protection, dredging, etc. * Location (with map) * Purpose * Basic dimension and capacity * Basic water levels * O & M Agency * Year of construction/rehabilitation * Others (such as drawings, present conditions of function, etc.), if any 	Y	Answer from District Office of DPWH in Iba Bank Protection and Dredging North Dike, macolcol River - Bank Front. Bridge Site, Down Stream - Dredging	
9-9	Other uses / structures of rivers in the study area <u>Required information</u> <ul style="list-style-type: none"> * Location (with map) * Purpose * Basic Features of the uses/structures <u>Example of other uses/purposes</u> <ul style="list-style-type: none"> * Water supply * Irrigation * Sand mining control * River corridor management * Water quality conservation * River maintenance flow control 	N	Refer to DPWH	
9-9	Criteria and standards for structural plan and design <u>Required information</u> <ul style="list-style-type: none"> * Name of criteria/manual/guideline/standard * Agency prepared * Structures/Works to be applied 	N	Refer to DPWH	
9-10	Watershed conservation measures / plans (past and proposed) in the study area <ul style="list-style-type: none"> * Forestation * Erosion control 	N	Refer to EMB, DENR Region 3	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	* Land use control			
9-11	Issues / Status of water resources in the study area <u>Category:</u> * Water supply (for industrial, commercial, public, domestic uses) * Irrigation * Fishery * Navigation * Recreation * Others, if any	N	Refer to NWRB	
9-12	Legal or customary right for water use in the study area <u>Required Information</u> * Location * Discharge of water use (m ³ /s, m ³ /day, m ³ /month and/or m ³ /year) * Purpose to use (User) * Agency/office in charge of O & M * Authorization of water right * Problems / troubles in the past, if any.	N	Refer to NWRB	

10. Environment

10-1	Experiences of EIA for similar projects (in the past)	Y	EIS Doc. In the EMB	
10-2	Park / Reserve / Protected area for environmental conservation, in and around the study area (of international conventions, national or province, if any) <u>Required Information</u> * Location and area * Significance for conservation/reserve * Present status/conditions * Other information, if any	N	Refer to EMB REG.3 and PAWB REG3	
10-3	Major environmental conservation / improvement plans / projects / studies / survey (including recreation site) in and around the study area (Past, On -going, and Future) <u>Required Information</u> * Name / Title * Year prepared * Agency / Company in charge * Main purpose * Brief content * Present actual progress / status of the area	Y	EIS in the EMB	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
10-4	Land ownership and status of registration in the study area <u>Required Information</u> * General classification of land ownership * Land ownership map with classification * Special features of land ownership	N	Refer to LMB	
10-5	Land acquisition, compensation and resettlement in the areas to be used for the flood / lahar mitigation works in the study area <u>Required Information</u> * General system / procedure for land acquisition, compensation and resettlement * Record of activity and examples of resettlement in the past * Problems / issues on the land acquisition, compensation and resettlement	N		
10-6	Security, health, hygiene and welfare in the study area <u>Required Information</u> * Present status of security , health, hygiene and welfare * Special / endemic disease * Hygiene problems, during or after the flooding / lahar and inundation	N	Refer to DOH or DOA Region 3	
10-7	Water quality records of the study area <u>Required Information</u> * Location * Test/Observation items * Availability (period) of records * Agency in charge * Present general status	N	Refer to EMB Region 3	
10-8	Historical spot, cultural heritage, special landscape, and major tourist or religious places in the study area <u>Required Information</u> * Name, location, etc. * Special features/present status * Protection activities	N	Refer to NCIP and National Museum	
10-9	Valuable or endangered fauna and flora, if any, in and around the study area <u>Required Information</u> * Name * Living location and features of fauna / flora * Present status	N	Refer to PANB or EMB Reg.3	
10-10	Protected area for nature conservation such as valuable forest and swamps in the	N	Refer to PANB or EMB Reg.3	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<u>Required Information</u> * Location and area * Special features * Present status			

11. Local Consultants

11-1	<p>Local consultants / Firms available for the study</p> <p><u>Fields of Services</u></p> <ul style="list-style-type: none"> * Topographic survey * Geological survey (including boring) * Soil survey * Facility inventory survey * Water quality survey * Social impact survey (including resettlement matters) * Environmental impact assessment * Design of river improvement and river structures * Others, if any <p><u>Required information of Firms</u></p> <ul style="list-style-type: none"> * Name * Location, address, telephone number, mail number * Specialty / Fields of services (Number of experts in each field of specialty) * General features and experience (including the annual sales and list of major experiences of consulting services) * Hydraulics - Hydrology survey * Contact person * Other information, if any 	Y	Cordinate at EMB	
11-2	<p>Cost and unit prices for the consulting services / survey</p> <p><u>Category</u></p> <ul style="list-style-type: none"> * Topographic survey * Geological survey (including boring) * Soil survey * Facility inventory survey * Water quality survey * Social impact survey (including resettlement matters) * Environmental impact assessment * Design of river improvement and river structures * Others, if any <p><u>Category of Items</u></p> <ul style="list-style-type: none"> * Survey / Study * Manpower 	N		

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	* Test * Other required items			
11-3	Other donor's participation for the flood control / mitigation in and around the study area (in the past or proposed for the future) <u>Required information</u> * Name of Agent / Country * Name of Project * Type and Scope of Project * Kind of Assistance (Technical / Financial) * Project Cost/Amount of Financial Assistance	N		
11-4	Name list of NGO and their major activities in and around the study area	N		
11-5	Establishment of steering committee and / or technical committee, and member lists	N		
11-6	Criteria and standards for cost estimate of construction works to be referred in the Philippines (for the Study)	N	Refer to DPWH	
11-7	Other information and data (Other reference information and data which are not included in the above items, if any.)	N		

((Questionnaires for PAGASA))

12. Maps for the study area

12-1	Hydro-geological maps in and around the study area <u>Required Information/Data</u> * Index map * Area covered * Scale * Contour lines interval * Agency in charge of management	Y	EIS of ECPs in Region 3	
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13. Hydrological data

13-1	Meteorological observatory (especially rainfall gauges) in and around the study area <u>Required Information/Data</u> * Location (Map, Name, No.) * Type of equipment/observatory * Recording period * Recording items, such as rainfall (daily, hourly), temperature, humidity, wind velocity and evaporation	N	Refer to PAGASA	
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No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<ul style="list-style-type: none"> * Agency in charge * Present conditions 			
13-2	<p>Meteorological / Rainfall records at major stations in and around the study area</p> <p><u>Required Information/Data</u></p> <ul style="list-style-type: none"> * Yearly, Monthly, Daily and Hourly (Max. Mean, Mini.) data of rainfall * Yearly, Monthly and Daily (Max. Mean, Mini.) data of other meteorological records (temperature, humidity, evaporation, etc) * Hyetographs of major storm * Isothermal map (by seasons) 	N	Refer to PAGASA	
13-3	<p>Stream gauging station and hydrological data in and around the study area</p> <p><u>Required Information/Data</u></p> <ul style="list-style-type: none"> * Location (Map, Name, No.) * Type of recorder * Period of water level records * Frequency of water level recording * Period of flow discharge records * Availability of rating curves * Agency in charge * Present conditions 	N	Refer to PAGASA	
13-4	<p>Discharge (and water level) records at major stations in and around the study area</p> <p><u>Required Information/Data</u></p> <ul style="list-style-type: none"> * Yearly, Monthly, Daily and Hourly (Max. Mean, Mini.) data * Hydrographs of major floods 	N	Refer to PAGASA	
13-5	<p>Sediment (river bed) loads measurement of rivers in the study area</p> <p><u>Required Information/Data</u></p> <ul style="list-style-type: none"> * Location (Map, Name, No.) * Items of measurement * Period and frequency of records * Records of sediment measurement * Agency in charge 	N	Refer to PHIVOLCS or MGB	

14. Flood / Lahar records

14-1	<p>Flood / Lahar records</p> <p><u>Required Information</u></p> <ul style="list-style-type: none"> * Flood / Lahar conditions (year, month and day, locations, flood duration, flood water level, inundation area/depth/duration, etc.) 	N	Refer to PHIVOLCS	
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No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<ul style="list-style-type: none"> * Flood / Lahar damages conditions (Inundation area/depth/duration/houses, kinds/conditions of damages) * Man-made causes of increased flood water levels, if any * Direct damage amount (houses, agriculture, livestock, fishery, public facilities, etc.) * Indirect damage amount (transportation, suspension of economic activity, disease, etc.) * Flood / Lahar damage mitigation measures taken during and after the floods * Others (rainfall records, photographs, etc.) 			
14-2	Other damages caused by typhoon / heavy rain / earthquake / volcano activity	N	Refer to PHIVOLCS	
14-3	Existing (including under construction) and proposed structures located in and around the study areas to be used for the flood control / mitigation works <u>Required information</u> <ul style="list-style-type: none"> * Kind of structure / works such as dam, ground sill, weir, bank protection, dredging, etc. * Location (with map) * Purpose * Basic dimension and capacity * Basic water levels * O & M Agency * Year of construction/rehabilitation * Others (such as drawings, present conditions of function, etc.), if any 	N	Refer to PHIVOLCS	

15. Other information

15-1	Other information and data (other reference information and data which are not included in the above items, if any.)	N		
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((Questionnaires for DND, OCD, NDCC, RDCC, DSWD))

16. Disaster and rehabilitation information

16-1	Location maps for disaster in and around the study areas	Y	Available at Phivolcs, DENR, MGB, FMB, Local Government	
16-2	Aerial-photographs of disaster	Y	Available at NAMRIA, AFP Mapping Center	
16-3	Rehabilitation, development and resettlement plans and policy related to disaster	Y	PD1566, RA7160	
16-4	General information and data for social economic / financial conditions in and around the study area <u>Required data/information:</u> <ul style="list-style-type: none"> * Population / population density / household * GDP / income / occupation * Industries (agriculture, industry, commercial, etc.) 	Y Y N N	Available at DSWD, DOH, DTI, LGU NSO Province 1995	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<ul style="list-style-type: none"> * Living standards / education / community activities * Hygiene / sanitation * Other items, if any 	<p style="text-align: center;">N N N</p>		
16-5	Non-structural measures for flood / lahar mitigation (early warning system, rescue activity, etc.) in the study area, if any	<p style="text-align: center;">Y</p>	EWS - PAGASA, NAPOCOR (Dam Monitoring) DCCs at Regional Down. Rescue Activities - NDCC, DCCs, LGUs, NGOs	
16-6	<p>Existing (including under construction) and proposed structures located in and around the proposed areas to be used for the flood / lahar control, mitigation works in Required information</p> <ul style="list-style-type: none"> * Kind of structure / works such as dam, ground sill, weir, bank protection, dredging, etc. * Location (with map) * Purpose * Basic dimension and capacity * Basic water levels * O & M Agency * Year of construction/rehabilitation * Others (such as drawings, present conditions of function, etc.), if any 	<p style="text-align: center;">Not sure</p>	LGUs could be answered	
16-7	<p>Watershed conservation measures / plans (past and proposed) in the study area</p> <ul style="list-style-type: none"> * Forestation * Erosion control * Land use control 	<p style="text-align: center;">Y Y Y Y</p>	<p>DENR DENR NWRB and Other Agencies NWRB and Other Agencies</p>	
16-8	<p>Issues / Status of water resources in the study area</p> <p>Category:</p> <ul style="list-style-type: none"> * Water supply (for industrial, commercial, public, domestic uses) * Irrigation * Fishery * Navigation * Recreation * Others, if any 	<p style="text-align: center;">Y Y Y</p>	<p>NWRB, Naitonal Irrigation Authority Air Transportation Office, AFP - Philippine Air Force</p>	
16-9	Existing / proposed water resources development plans / projects in the study area	<p style="text-align: center;">N</p>	LGUs, NWRB, NIA	
16-10	<p>Legal or customary right for water use in the study area</p> <p>Required Information</p> <ul style="list-style-type: none"> * Location * Discharge of water use (m³/s, m³/day, m³/month and/or m³/year) * Purpose to use (User) * Agency/office in charge of O & M * Water right is official or not ? 	<p style="text-align: center;">Y</p>	LGUs, NWRB, manila Water and Maynilad, NIA, LWUA	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	* Problems/troubles in the past, if any.			
16-11	<p>Land acquisition, compensation and resettlement in the areas to be used for the flood mitigation works in the study area</p> <p><u>Required Information</u></p> <ul style="list-style-type: none"> * General system/procedure for land acquisition, compensation and resettlement * Examples of resettlement for public works in the past * Expected problems/issues on the land acquisition, compensation and resettlement 	<p style="text-align: center;">Y</p> <p style="text-align: center;">Y</p>	<p>DPWH is the Agency to construct, and maintain, HULKB, DENR, LGU, NHA are the Agency for Land acquisition</p> <p>Objections for relocations on the part of people</p>	
16-12	<p>Security, health, hygiene and welfare in the study area</p> <p><u>Required Information</u></p> <ul style="list-style-type: none"> * Present status of security, health, and hygiene * Special / endemic disease. * Hygiene problems, during / after the flooding / inundation. 	Y	DOH, DSWD, PNRC, PNP, NGOs and LGUs	
16-13	Social / natural environmental damages at the time of past major flooding / lahar in the study area	Y	Data available at OCD	
16-14	<p>Other donor's Participation for flood control / mitigation / relief / resettlement in the study area (in the past or proposed for the future)</p> <p><u>Required information</u></p> <ul style="list-style-type: none"> * Name of agent / country * Name of project * Type and scope of Project * Kind of assistance (technical / financial) * Project cost / amount of financial assistance 	Y	<p>In the past and proposed</p> <p>JICA, DPWH, PHIVOLCS, NEDA, DSWD, DOH, DCCs</p>	
16-15	Other information and data (other reference information and data which are not included in the above items, if any.)	Y	Statistics on flood are available at the NDCC - OCD	

((Questionnaires for NEDA, NCSO, LUG))

17. Development Plans

17-1	<p>Development plans and policies related to the study</p> <ul style="list-style-type: none"> * Other plans / policies related to the study / project * Land use plan of the study area 	N		
17-2	<p>General information and data for socio-economic conditions in and around the study</p> <p><u>Required data/information:</u></p> <ul style="list-style-type: none"> * Population / population density / household 	<p style="text-align: center;">Y</p> <p style="text-align: center;">Y</p>	NSO Province 1995 NSO Survey	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<ul style="list-style-type: none"> * GDP / income / occupation * Industries (agriculture, industry, commercial, etc.) * Living standards / education / community activities * Hygiene / sanitation * Settlement, resettlement of inhabitants or movement, if any 	N N N N N		

18. Social projects and plans

18-1	Major flood control / mitigation plans / projects for the study area (past, on -going, and future) <u>Required Information</u> <ul style="list-style-type: none"> * Name / title * Year prepared * Agency in charge (prepared by) * Main purpose * Brief content * Present actual progress / status of the implementation based on the plan 	N		
18-2	Non-structural measures for flood and lahar mitigation (early warning system, relief activity, etc.) in the study area, if any	N		
18-3	Watershed conservation measures / plans (past and proposed) in the study area <ul style="list-style-type: none"> * Forestation * Erosion control * Land use control 	N		
18-4	Issues / status of water resources in the study area <u>Category:</u> <ul style="list-style-type: none"> * Water supply (for industrial, commercial, public, domestic uses) * Irrigation * Fishery * Navigation * Recreation * Others, if any 	N		
18-5	Park / Reserve / Protected area for environmental conservation, in and around the study area (of International Conventions, National or State, if any) <u>Required Information</u> <ul style="list-style-type: none"> * Location and area * Significance for conservation / reserve 	N		

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<ul style="list-style-type: none"> * Present status / conditions * Other information, if any 			
18-6	Land ownership in the study area <u>Required Information</u> <ul style="list-style-type: none"> * General classification of land ownership * Land ownership map with classification * Special features of land ownership 	N		
18-7	Status of illegal occupants in the study area	N		
18-8	Land acquisition, compensation and resettlement in the areas to be used for the flood mitigation works in the study area <u>Required Information</u> <ul style="list-style-type: none"> * General system / procedure for land acquisition, compensation and resettlement * Examples of resettlement for public works in the past * Expected problems/issues on the land acquisition, compensation and resettlement 	N		
18-9	Security, health, hygiene, welfare, education systems in the study area <u>Required Information</u> <ul style="list-style-type: none"> * Present status 	Y	PDCC, PSWDO, DECS, IPHO	
18-10	Historic spot, cultural heritage, special landscape, and major tourist or religious locations in the study area <u>Required Information</u> <ul style="list-style-type: none"> * Name, location, etc. * Special features / present status * Protection activities 	Y	IDA Poonbato, Botolan	
19. Information for consultants and other				
19-1	Local consultants / firms for investigation of socioeconomic and social impact study <u>Required information of firms</u> <ul style="list-style-type: none"> * Name * Location, address, telephone number, mail number * Specialty / Fields of services (Number of experts in each field of specialty) * General features and experience (including the annual sales and list of major experiences of consulting services) * Contact person * Other information, if any 	N		

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
19-2	<p>Cost and unit prices for the consulting services for social and economical impact study and survey</p> <p><u>Category of Items</u></p> <ul style="list-style-type: none"> * Survey / study * Manpower * Test * Other required items 	N		
19-3	<p>Other donor's participation for social cooperation activities in and around the study area (in the past or proposed for the future)</p> <p><u>Required information</u></p> <ul style="list-style-type: none"> * Name of agent / country * Name of Project * Type and Scope of Project * Kind of assistance (technical / financial) * Project cost / amount of financial assistance 	N		
19-4	Other information and data (other reference information and data which are not included in the above items, if any.)	N		

((Questionnaires for DENR))

20. Environmental information

20-1	<p>National or province's laws (including act, norms, custom, regulation, etc.) related to the environmental protection / conservation for the study (including the study for land acquisition and resettlement)</p> <p><u>Required Information</u></p> <ul style="list-style-type: none"> * Name / Title * Year established / amended * Agency in charge * Main purpose * Brief content * Other information/comments 	Y	Cordinate with EMB C.O. or R.O.	
20-2	<p>Guidelines for EIA</p> <p><u>Required Information</u></p> <ul style="list-style-type: none"> * Name / Title * Year established/amended * Agency in charge * Main purpose * Brief content 	Y	Cordinate with EMB C.O. or R.O.	
20-3	EIA of similar project (in the past)	Y	Cordinate with EMB C.O. or R.O.	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
20-4	<p>Park / reserve / protected area for environmental conservation, in and around the study area (of international conventions, national or state, if any) <u>Required Information</u> * Location and area * Significance for conservation / reserve * Present status / conditions * Other information, if any</p>	Y	<p>Refer to PAWB Mapaduepe Lake Fishery</p>	
20-5	<p>Major environmental conservation / improvement plans / projects / studies / survey (including recreation site) in the study area (past, on -going, and future) <u>Required Information</u> * Name / title * Year prepared * Agency / company in charge (prepared by) * Main purpose * Brief content * Present actual progress/status of the area</p>	Y	Cordinate with EMB	
20-6	<p>Status of illegal occupants in the study area</p>	N	Consult with LGU	
20-7	<p>Land acquisition, compensation and resettlement in the areas to be used for the flood mitigation works along the study area <u>Required Information</u> * General system / procedure for land acquisition, compensation and resettlement * Examples of resettlement for public works in the past * Expected problems / issues on the land acquisition, compensation and resettlement</p>	N	Refer tp DPWH or LGU	
20-8	<p>Security, health, and hygiene in the study area <u>Required Information</u> * Present status of security, health, and hygiene * Special / endemic decease. * Hygiene problems, during/after the flooding/inundation.</p>	N	Refer to DOA or Local Health clinic	
20-9	<p>Water quality records of the study area <u>Required Information</u> * Location * Test / observation items * Availability (period) of records * Agency in charge * Present general status</p>	N	Refer to EMB Reg.3	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
20-10	<p>Historic spot, cultural heritage, special landscape, and major tourist or religious locations in the study area</p> <p><u>Required Information</u></p> <ul style="list-style-type: none"> * Name, location, etc. * Special features / present status * Protection activities 	Y	<p>Refer to National Museum</p> <p>IDAPoonbato, Botolan</p>	
20-11	Social / natural environmental damages at the time of past major flooding / lahar in the study area	N		
20-12	<p>Valuable or endangered fauna and flora, if any, in and around the study area</p> <p><u>Required Information</u></p> <ul style="list-style-type: none"> * Name * Living location and features of fauna / flora * Present status 	Y	<p>Refer to PAWB Reg.3</p> <p>Deer, Wild Pigs</p>	
20-13	Status of approvals for international treaties fro environmental protection by the government	Y	Refer to EMB	
20-14	<p>Protected area for nature conservation such as valuable forest and swamp in the</p> <p><u>Required Information</u></p> <ul style="list-style-type: none"> * Location and area * Special features * Present status 	Y	<p>Refer to PAWB Reg.3</p> <p>Mapanuepe Lake, Eaw Nalcelido</p>	

21. Others

21-1	<p>Local consultants / firms available for IEE, EIA and environmental survey and investigation works</p> <p><u>Required information of Firms</u></p> <ul style="list-style-type: none"> * Name * Location, address, telephone number, mail number * Specialty / Fields of services (Number of experts in each field of specialty) * General features and experience (including the annual sales and list of major experiences of consulting services) * Contact person * Other information, if any 	Y	Coordinate with EMB C.O. and Reg.3	
21-2	Related NGOs,NPOs if any	N		
21-3	<p>Cost and unit prices for the consulting services / survey for IEE and EIA</p> <p><u>Category of Items</u></p>	N		

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<ul style="list-style-type: none"> * Survey / study * Manpower * Test * Other required items 			

((Questionnaires for NAMRIA))

22. Maps and aerial-photographs

22-1	<p>Maps in and around the study areas</p> <p><u>Categories of maps:</u></p> <ul style="list-style-type: none"> * Administration map * Transportation (Road & Railway) map * Topographic-map * Geological map * Hydro-geological map * Soil map * Land use map * Vegetation map * Development plan (map) * Forest map * Parks and Reserves map * Cadastral map * Others, if any <p><u>Required information for maps:</u></p> <ul style="list-style-type: none"> * Index map * Area covered * Scale * Contour lines interval * Agency in charge of management 	N	Zambales Peovince	
22-2	<p>Aerial-photographs</p> <p><u>Required information for Aerial Photographs:</u></p> <ul style="list-style-type: none"> * Index map * Area covered * Scale * Year * Agency in charge of management * Permission of use by the study team 	Y	<p>Zambales Peovince</p> <p>Province</p> <p>Province</p> <p>1/15,000</p> <p>1966 - 67</p> <p>Province</p> <p>Province</p>	
22-3	Satellite images covering the study area	N	Zambales Peovince	

No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
23. Topography, geology and land use				
23-1	Topographic data / reports of the study area	Y	Zambales Peovince	
23-2	Geological / foundation data / reports (boring data) of the study area	N	Zambales Peovince	
23-3	Land use plan of the study area	N	Zambales Peovince	
23-4	Land ownership in and around the study area <u>Required Information</u> * General classification of land ownership * Land ownership map with classification * Special features of land ownership	N	Zambales Peovince	
23-5	Status of illegal occupants in the study area	N	Zambales Peovince	
23-6	Land acquisition, compensation and resettlement in the areas to be used for the flood mitigation works in the study area <u>Required Information</u> * General system / procedure for land acquisition, compensation and resettlement * Examples of resettlement for public works in the past * Expected problems / issues on the land acquisition, compensation and resettlement	N	Zambales Peovince	

24. Others

24-1	Local consultants / firms available during the study <u>Fields of Services</u> * Topographic survey * Geological survey (including boring) * Soil survey * Facility inventory survey * Water quality survey * Social impact survey (including resettlement matters) * Environmental impact assessment * Design of river improvement and river structures * Hydraulics - Hydrology survey * Others, if any <u>Required information of Firms</u> * Name * Location, address, telephone number, mail number * Specialty/Fields of services (Number of experts in each field of specialty) * General features and experience (including the annual sales and list of major experiences of consulting services)	N	Zambales Peovince	
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No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	<ul style="list-style-type: none"> * Contact person * Other information, if any 			
24-2	<p>Cost and unit prices for the consulting services / survey</p> <p><u>Category</u></p> <ul style="list-style-type: none"> * Topographic survey * Geological survey (including boring) * Soil survey * Facility inventory survey * Water quality survey * Social impact survey (including resettlement matters) * Environmental impact assessment * Design of river improvement and river structures * Others, if any <p><u>Category of Items</u></p> <ul style="list-style-type: none"> * Survey/Study * Manpower * Test * Other required items 	N	Zambales Peovince	
24-3	<p>Other donor's participation for the flood control / mitigation in and around the study area (In the past or proposed for the future)</p> <p><u>Required information</u></p> <ul style="list-style-type: none"> * Name of agent / country * Name of project * Type and scope of project * Kind of assistance (technical / financial) * Project cost / amount of financial assistance 	N	Zambales Peovince	
24-4	<p>Criteria and standards for cost estimate of construction works to be referred in the Philippines (for the Study)</p>	N	Zambales Peovince	
24-5	<p>Other information and data (other reference information and data which are not included in the above items, if any.)</p>	N	Zambales Peovince	

((Questionnaires for PHIVOLCS))

25. Maps and Aerial-Photographs

25-1	<p>Lahar hazard maps in and around the study area</p> <ul style="list-style-type: none"> * Index * Area covered 	Y	<p>1998 Lahar Hazard Maps</p> <p>Scale Zambales Province / 4sheets</p>	
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No.	Required Data/Information	Availability (Yes/No/ Not sure)	Remarks and/or Source (s)/Title for Data Collection	Reference No. of the data prepared/attached.
	* Scale * Contour lines interval		1/50k 20m	
25-2	Aerial-photographs of lahar <u>Required information for Aerial Photographs:</u> * Index * Area covered * Scale * Year * Agency in charge of management	Y	Lahar Channels Nov-91	
25-3	Satellite images of lahar covering the study area	N		

26. Other information

26-1	Other information and data related to volcano activity, earthquake and lahar	Y	Organizatio Chart and other Informatioun as atatched in the Information lists	
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資料リスト(■収集資料/□専門家作成資料)

主管課長	文書管理課長	主管課長	情報管理課長	技術情報課長	図書館受入日

		プロジェクトID		調査団番号	A01-		
地域	東南アジア	調査団名又は 専門家氏名	フィリピン山岳部内河川流域洪水 及び泥流制御計画調査(I/A協 賛)	調査の種類又は指導科目	開発調査(事前調査)	担当部課	社調2課
国名	フィリピン	配属機関名		現地調査期間又は 派遣期間	2001年11月19日～ 2001年12月8日	担当者氏名	影田 康隆

番号	資料の名称	形態(図書、ビデオ、 地図、写真等)	収集資 料	専門家 作成資 料	JICA作 成資料	テキスト	発行機関	取扱区分	図書館記入欄
1	行政区分地図 RegionIII (1/250,000)	地図	*				National Mapping and Resources Information Authroty	⑩-CR()-SC	
2	ピナツボ山周辺地形図(1/50,000)	地図	*				National Mapping and Resources Information Authroty	⑩-CR()-SC	
3	ピナツボ山周辺土地利用・森林形態図(1/100,000)	地図	*				National Mapping and Resources Information Authroty	⑩-CR()-SC	
4	ピナツボ山周辺航空写真インデックス1991年(1/100,000) (写真縮尺1/15,000)	地図	*				Certeza Surveying & Aerophoto Sysytems, Inc	⑩-CR()-SC	
5	ピナツボ山周辺航空写真インデックス1992年(写真縮尺 1/25,000)	地図	*				Certeza Surveying & Aerophoto Sysytems, Inc	⑩-CR()-SC	
6	ピナツボ山周辺航空写真インデックス1994年(写真縮尺 1/15,000)	地図	*				Certeza Surveying & Aerophoto Sysytems, Inc	⑩-CR()-SC	
7	フィリピン国内航空測量会社情報	コピー	*				A&A Geoinformatics Corporation	⑩-CR()-SC	
8	NAMRIA Newsletter Volume V No.3 (July-Sep. 2001)	パンフレット	*				National Mapping and Resources Information Authroty	⑩-CR()-SC	
9	Infomapper Volume 7 No.1 (Nov.2000)	パンフレット	*				National Mapping and Resources Information Authroty	⑩-CR()-SC	
10	Philippine Natural Resoruces Statistics Vol.II Land (1979)	図書	*				Ministry of Natural Resources	⑩-CR()-SC	
11	Philippine Natural Resoruces Statistics Vol.VI Minerals (1979)	図書	*				Ministry of Natural Resources	⑩-CR()-SC	
12	Philippine Natural Resoruces Statistics Vol.VIII Forestry (1979)	図書	*				Ministry of Natural Resources	⑩-CR()-SC	
13	Philippine Natural Resoruces Profile and Statistics Vol.VI Minerals (1979)	図書	*				Ministry of Natural Resources	⑩-CR()-SC	
14	Philippine Natural Resoruces Profile and Statistics Vol.IV Fisheries (1979)	図書	*				Ministry of Natural Resources	⑩-CR()-SC	
15	Guide to Philippine Flora and Fauna Vol.1(1981)	図書	*				Natural Resources Management Cente, Ministry of Natural Resources	⑩-CR()-SC	

番号	資料の名称	形態(図書、ビデオ、地図、写真等)	収集資料	専門家作成資料	JICA作成資料	テキスト	発行機関	取扱区分	図書館記入欄
16	Guide to Philippine Flora and Fauna Vol.2(1981)	図書	*				Natural Resources Management Center, Ministry of Natural Resources	IB-CR()-SC	
17	A Compilation of Laws Pertaining to Management, Administration and Reservation of National Parks Vol.2	図書	*				Resource Policy and Strategy Research Division, Natural Resources Management Center	IB-CR()-SC	
18	A Balance Between Extremes and Other Speeches (1979)	図書	*				Natural Resources Management Center, Ministry of Natural Resources	IB-CR()-SC	
19	Water Code of the Philippines and the Implementing rules and Regulations	図書	*				Natural Resources Management Center, Ministry of Natural Resources	IB-CR()-SC	
20	NRMC Research Monograph No.4 Series of 1979	リーフレット	*				National Water Resources Board	IB-CR()-SC	
21	Status of CY 2001 Ongoing Irrigation Project As of June 30, 2001 In Zambales	コピー	*				Natural Resources Management Center, Ministry of Natural Resources	IB-CR()-SC	
22	Status of Service & Irrigated Area As of May 31, 1999 REGION III	コピー	*				National Irrigation Administration	IB-CR()-SC	
23	Soil / Land Resources Evaluation Project, The Physical, Agro-Social-Economics and Evaluation Part I,II&III. Province of Zambales (1988)	図書	*				National Irrigation Administration	IB-CR()-SC	
24	Land Management Unit Map for Region III (1/250,000)	地図	*				Bureau of Soils & Water Management, Department of Agriculture	IB-CR()-SC	
25	Present Land Use and Vegetation Map for Region III (1/250,000)	地図	*				Department of Agriculture Region III, Bureau of Soil & Water Management	IB-CR()-SC	
26	Rainfall Intensity - duration-Frequency data for Iba, Zambales	コピー	*				Department of Agriculture Region III, Bureau of Soil & Water Management	IB-CR()-SC	
27	Rainfall Intensity - duration-Frequency data for Dagupan Dity, Pangasian	コピー	*				The Hydrometeorological Investigations and Special studies Section Flood Forecasting Branch,	IB-CR()-SC	
28	Rainfall Intensity - duration-Frequency data for apalit, Pampanga	コピー	*				The Hydrometeorological Investigations and Special studies Section Flood Forecasting Branch,	IB-CR()-SC	
29	洪水予警報システム概要	コピー	*				The Hydrometeorological Investigations and Special studies Section Flood Forecasting Branch,	IB-CR()-SC	
30	EIAガイドライン及び関連法規、環境基準	コピー	*				Environmental Monitoring Bureau, Dept. of Environmental and Natural Resources	IB-CR()-SC	
31	List of Consulting Firms for EIA	コピー	*				Environmental Monitoring Bureau, Dept. of Environmental and Natural Resources	IB-CR()-SC	
32	Schedule of Laboratory Fees for the Environmental Management Sector 1994	コピー	*				DENR	IB-CR()-SC	
33	Organizational Structure for Municipal Disaster Coordinating Council of San Marcelino, Zambales July 2001 - 2003	コピー	*				San Marcelino Municipality	IB-CR()-SC	
34	Memorandum of MDCC Meeting	コピー	*				Office of the Municipal Mayor, Municipality of Botolan	IB-CR()-SC	
35	NDCC Report As of August 29, 2001 Pinatubo Crater The Marunot Notch	コピー	*				Mitigation & Preparedness Section, Operations Division, NDCC	IB-CR()-SC	
36	Investigation Report for Pinatubo Crater Lake	コピー	*				By Masao Chida, Geologist of Nippon Kouei	IB-CR()-SC	
37	Executive Summary Report on Mt. Pinatubo Eruptions, Its Effect and Disaster Operations	コピー	*				National Disaster Coordinating Council, Office of Civil Defense	IB-CR()-SC	
38	2001 Philippine Year Book	図書	*				Tomas P. Africa, Administrator, National Statistics Office, Manila	IB-CR()-SC	

番号	資料の名称	形態(図書、ビデオ、 地図、写真等)	収集資 料	専門 家 作成資 料	JICA作 成資料	テキスト	発行機関	取扱区分	図書館記入欄
39	The President's 1999 Socioeconomic Report	図書	*				National Economic and Development Authority	IB-CR()-SC	
40	Medium-Term Philippine Development Plan 1999-2004	図書	*				National Economic and Development Authority	IB-CR()-SC	
41	Updated Medium-Term Philippine Development Plan 1996-1998	図書	*				National Economic and Development Authority	IB-CR()-SC	
42	2001 Philippine Statistical Year Book	図書	*				National Statistical Coordination Board	IB-CR()-SC	
43	1997 Family Income and Expenditures survey, Vol. II, Integrated survey of Households Bulletin Series No.98	図書	*				National Statistics Office	IB-CR()-SC	
44	1995 Census of Population, Report No.2-91C: Socio- Economic and Demographic Characteristics, Zambales	図書	*				National Statistics Office	IB-CR()-SC	
45	Provincial Profile Zambales	図書	*				National Statistics Office	IB-CR()-SC	
46	1995 Cesus-Based City/Municipal Popuration Projections	図書	*				National Statistics Office	IB-CR()-SC	
47	National Statistics Office 1999 Annual Report	図書	*				National Statistics Office	IB-CR()-SC	
48	September 2001, NSO Monthly Bulletin of Statistics	図書	*				National Statistics Office	IB-CR()-SC	
49	Provinces, The Countryside in Figures, 2000 Edition	図書	*				National Statistical Coordination Board	IB-CR()-SC	
50	Economic Indicators Oct 2001	図書	*				National Statistical Coordination Board	IB-CR()-SC	
51	Philippine Institute of Volcanology and Seismology PHIVOLCS Assessment of the Volcanic Activities And Lahar	コピー	*				PHIVOLCS	IB-CR()-SC	
52	Situation At Pinatubo volcano (As of 17 April 1997)	コピー	*				PHIVOLCS	IB-CR()-SC	
53	Update on Lahar Hazards In the Pasig-Potrero River Basin (August 27, 1996)	コピー	*				PHIVOLCS	IB-CR()-SC	
54	Lahar Situatio Pinatubo Volcano, Lahar /Report / Projecdtions 98.doc	コピー	*				PHIVOLCS	IB-CR()-SC	
55	Lahar Hazards Maps/Bucao River, Sto.Tomas River System. 1992/97	コピー	*				PHIVOLCS	IB-CR()-SC	
56	An elementary Statistical Analysis of annual Sediment Delovery Rates in Lahar-affected watersheds Around Mount	コピー	*				PHIVOLCS	IB-CR()-SC	
57	Pinatubo Volcano Active Lahar Channels	コピー	*				PHIVOLCS	IB-CR()-SC	
58	Pinatubo Lahars Volume Projections 06/11/97,	コピー	*				PHIVOLCS	IB-CR()-SC	
59	Pinatubo Lahar and Flood Hazards Projections in 1999	コピー	*				PHIVOLCS / DOST	IB-CR()-SC	
60	Lahar Studies 1994	コピー	*				PHIVOLCS / UNESCO	IB-CR()-SC	
61	Mt. Pinatubo Infrastrucure Rehabilitaiton Plan and Program	コピー	*				PHIVOLCS	IB-CR()-SC	

番号	資料の名称	形態(図書、ビデオ、地図、写真等)	収集資料*	専門家作成資料	JICA作成資料	テキスト	発行機関	取扱区分	図書館記入欄
62	Placement Map of Mt. Pinatubo Lahar Warning System	コピー	*				PHIVOLCS	IR-CR()-SC	
63	Conditions for Natural Breaching of the Marañon Notch and Catastrophic Drainage of Pinatubo Crater	コピー	*				PHIVOLCS	IR-CR()-SC	
64	Pinatubo Crater Lake, Echo sounding Measurements and Volume Estimates	コピー	*				PHIVOLCS	IR-CR()-SC	
65	Marañon Traverse, Longitudinal Section	コピー	*				PHIVOLCS	IR-CR()-SC	
66	The Philippine Institute of Volcanology and Seismology Organizational Chart	コピー	*				PHIVOLCS	IR-CR()-SC	
67	Pinatubo Volcano Monitoring Network, June 1995	コピー	*				PHIVOLCS	IR-CR()-SC	
68	Five Year of Lahars at Pinatubo Volcano: Declining But Still Potentially Lethal Hazards, Journal of Geological Society of Philippines, 1997	コピー	*				PHIVOLCS	IR-CR()-SC	
69	Immediate and Long Term Hazards From Lahars and Excess Sedimentation in Rivers draining Mount Pinatubo, Philippines Water-Resources Investigations Report 92-4039	コピー	*				PHIVOLCS / U.S. Agency for International Development	IR-CR()-SC	
70	Fire and Mud, Eruptions and Lahars of Mount Pinatubo, Philippines Newhall Punongbayan	書籍	*				PHIVOLCS / Washington	IR-CR()-SC	
71	Famil and Community Disaster Preparedness, Guide for Training families and Communities, 8 Models	書籍	*				DSWD	IR-CR()-SC	
72	Core Shelter Assistance Project, prespective Plan Drawings	設計図面	*				DSWD	IR-CR()-SC	
73	Designe Indicate Description for Core shelter (Price List)	コピー	*				DSWD	IR-CR()-SC	
74	Masterlist of Licensed / Accredited Non-Governmental Organizations, (As of Jun 20, 2001)	書籍	*				DSWD	IR-CR()-SC	
75	Core Shelter Assistance Project (CASP)	リーフレット	*				DSWD	IR-CR()-SC	
76	Progress report on the International Breaching of the Mount Pinatubo Crater	コピー	*				DSWD	IR-CR()-SC	
77	Executive Summary, Potential for Crater Lake Breaching and Consequent Lahars and flooding Pinatubo volcano,	コピー	*				Oxfarm / DSWD	IR-CR()-SC	
78	DPWH Organization Chart	コピー	*				DPWH	IR-CR()-SC	
79	On-Going Foreign Assisted Projects Around Mt. Pinatubo Area	コピー	*				DPWH	IR-CR()-SC	
80	Average Cost of Construction Works	コピー	*				DPWH	IR-CR()-SC	
81	Application for Japan's Grant Aid for Emergency Construction Works to Mitigate water Level Rise at Mt. Pinatubo crater (Jan 2001)	コピー	*				DPWH	IR-CR()-SC	
82	Reorganization of Clusters for Major Flood Control Project, 2000	コピー	*				DPWH	IR-CR()-SC	

番号	資料の名称	形態(図書、ビデオ、 地図、写真等)	収集資 料	専門家 作成資 料	JICA作 成資料	テキスト	発行機関	取扱区分	図書館記入欄
83	Amending Department Order No.30, series of 2001, On Authrity and Responsibility of Undersecretaries and assistant Secretaries, and Other Purposes	コピー	*				DPWH	IB-CR()-SC	
84	1998 Annual Report DPWH	パンフレット	*				DPWH	IB-CR()-SC	
85	Volcanic Disaster Mitigation in the Philippines	パンフレット	*				DPWH / JICA	IB-CR()-SC	
86	Reports/ Studies/ Recommendations to Mitigate the effect of a possible catastrophic breakout of the Pinatubo Crater Lake	コピー	*				DPWH	IB-CR()-SC	
87	新聞記事 (Design flow slows flow.他)	コピー	*				Nippon Koei Co., Ltd	IR-CR()-SC	
88	Findings and Recommendation on Increase in Water Level at the Creter Lake of Mt.Pinatubo and Western Basins	コピー	*				Nippon Koei Co., Ltd	IB-CR()-SC	
89	ピナツボ火山と火口湖の現地調査報告、Pinatubo Volcano and Crater Lake, Dec 11-16, 2000	コピー	*				Nippon Koei Co., Ltd	IB-CR()-SC	
90	Pinatubo Volcano and crater Lake, Dec 12-14, 2000	コピー	*				Nippon Koei Co., Ltd	IB-CR()-SC	
91	Lahar and Flooding situation on the Zambales-Side of Mount Pinatubo (As of Aug.6, 1996)	コピー	*				PHIVOLCS	IB-CR()-SC	
92	The Project for Enhancement of Capabilities in Flood Control and Sabo Engineering of the DPWH	コピー	*				DPWH	IB-CR()-SC	
93	On-going Foreign Assisted Projects Around Mt.Pinatubo Area	コピー	*				DPWH	IB-CR()-SC	
94	Bucaao River Basin Mean Discharge data(1983-1990)	コピー	*				DPWH	IB-CR()-SC	
95	全国雨量データ	CDコピー	*				PAGASA	IB-CR()-SC	
96	Major Flood Control Projects	コピー	*				DPWH Project Management Office	IB-CR()-SC	
97	Sample of IEE, Memorandum of Agreement (DENR-DPWH)	コピー	*				DPWH Environmental Impact Assessment Project Office	IB-CR()-SC	
98	The Regional Development Council	書籍	*				National Economic and Development Authority	IB-CR()-SC	
99	各種統計資料出版案内 色の資料はすでに提出済みあるいは調査団員が保管してい るものを示す。	リーフレット	*				National Statistics Office	IB-CR()-SC	
			*					IB-CR()-SC	

7. 現地調査経費

フィリピン国ピナツボ火山西部河川流域洪水及び泥流制御計画調査(事前調査・I/A協議)
物価調査票(案)

項目	単位	金額(P. P)	備考(仕様、納期等)
1. 事務所			
1) 事務所スペース	平米	500.00	首都圏商業地域内賃貸月額
2) 事務机	1卓	6,000.00	事務机タイプ
3) 椅子	1脚	1,500.00	事務所用
4) 本棚		10,000.00	5段スチールタイプ
5) スタンドライト	1台	3,000.00	20w蛍光灯タイプ
6) 扇風機	1台	2,000.00	普通スタンドタイプ
7) クーラー	1台	45,000.00	壁設置型2馬力
8) クーラー取付け工事	1式	6,000.00	設置配管電源一式
9) コピー機(リース)	1台・月	6,000.00	Sharp普及型(白黒)月額
10) コピー機(購入)	1台	70,000.00	Sharp SF-1125普及型
11) コピー料金(モノクロ)	1枚	50.00	A4
12) コピー料金(カラー)	1枚	3.00	A4
13) パソコン	1台	80,000.00	Athlon 1.0GHz, 30GB, モニター付
14) ディスプレイ	1台	10,000.00	17" SVGA
15) プリンター	1台	21,000.00	HPDeskjet1125C
16) ソフトウェア	1式	30,000.00	MS Office XP
17) フロッピーディスク	1枚	20.00	2HD
18) 電話加入料金	1回線	7,000.00	PLDT 商用回線
19) 携帯電話加入料金	1台	6,000.00	NOKIA3310
20) ファクシミリ加入料金	1台	9,000.00	Panasonic KX-FT33/63
インターネットプロバイダー			
21) 加入料金		20,000.00	INFOCOM (10computers network)
22) 市内通話料金	1通話	1,300.00	PLDT 商用回線月額基本料金
23) 電気料金	1kwh	3.00	
24) ガス料金	1m ³	300.00	1シリンダーボンベ
25) A4用紙	1枚	200.00	Subs#24 コピー用紙
26) UPS(2kw)	1台	15,000.00	APC Smart UPS 620VA
2. 傭人			
27) タイピスト(英文)	1人・日	300.00	
28) タイピスト(英文)	1人・日	300.00	
29) 通訳(英語→タガログ語)	1人・日	750.00	

フィリピン国ピナツボ火山西部河川流域洪水及び泥流制御計画調査(事前調査-I/A協議)
物価調査票(案)

項目	単位	金額(P. P)	備考(仕様、納期等)
30) ドラフトマン	1人・日	500.00	
31) 技術者	1人・日	1,000.00	
32) 事務員	1人・日	300.00	
33) 人夫	1人・日	250.00	
34) ドライバー(日帰り)	1人・日	300.00	
35) ドライバー(宿泊あり)	1人・日	350.00	日当・宿泊費を含む合算
3. 車輛			
1) 借上費(セダン)	1台・日	1,700.00	マニラ市内カローラセダン
2) 借上費(4WD)	1台・日	4,600.00	マニラ市内ハイラックス
3) 購入費(セダン)	1台	600,000.00	トヨタカローラ
4) 購入費(4WD)	1台	1,250,000.00	トヨタハイラックス
5) 修理・点検	1回	40,000.00	点検修理契約・月額・部品代込み
6) ガソリン	1リットル	17.00	レギュラー・マニラ市内
7) 軽油	1リットル	14.00	マニラ市内
8) エンジンオイル	1リットル	150.00	
4. 資機材			
1) 航空写真	1枚	250.00	
2) 地図	1枚	100.00	
3) 空送費(マニラ→東京)	1kg	1,500.00	DHL
4) エクス(マニラ→東京)	1kg	1,200.00	エコノミークラス料金の1.5%
5. その他			
1) ワークショップ/セミナー会場	1日	50,000.00	100人(@500/人)1日
2) ワークショップ/セミナーテキスト作成費		30,000.00	100部、20ページ印刷

2001年 月 日現在

1ドル=124円

1フィリピンペソ=0.0192ドル

1フィリピンペソ=2.381円

現地委託業者リスト (面会打合せ)

業務分類	業者名	所在地	電話	備考
測量	Acer Surveying & Development	31-A, J.Escaler St., Loyolh Hts., Quezon City Attn: Edilberto B. Tato, Ge, President	929-0118	資料1 (会社概要、見積書)
測量	A. Claveria Surveying	East Compound, Parasiso St., Parang, Marikina City Attn: Antonio B. Claveria Jr. Geodetic Engineer	941-2770	資料2 (会社概要、見積書)
航空写真測量	Certeza Surveying & Aerophoto Systems Inc.	795 EDSA, Diliman Quezon City Attn: Reynaldo R. Adorodor, Executive Vice President	928-1536	資料3 (会社概要、見積書)
地図作製	A & A Geoinformatics corporation	Green Palm Building, 1468 Quezon Avenue Quezon City Attn: Takeshi Toyooka	374-7771	資料4 (見積書)
地質調査	Industrial Inspection (Int'l) Inc	MJL building 1175, Chino Roces Ave., Makati 1200 Attn: Vicente G. Ramos, President	890-7520	
地質調査	Technotest, Inc.	893 EDSA Quezon City Attn: Antonio G. Espiritu, Executive Vice President	924-2007	資料5 (会社概要、見積書、報告書サンプル)
地質調査	Construction & Drilling Specialists, Inc.	Suite 401 Penthouse, ALCCO Building. Ortigas Avenue, Greenhills, San Juan, Metro Manila Attn: Esmeraldo Q. Salvana, President	726-4516	
地質調査	Advanced Geotechnical Engineering Services	103 Dunhill Street Fairview Park Subdivision East Fairview, Quezon City, 1118	939-6368	資料6 (会社概要、見積書)
環境・社会調査 全般	Woodfields Consultants, Inc.	3rd Floor, 153 Kamias Road, kamias Quezon City 1120, Metro Manila Attn: Dr. Reynaldo R. Medina, President	436-7360	資料7 (見積書)
EIA 調査	BCD Technocom	140 kalayaan Avenue, Diliman Queson city Attn: Donato S. Delacruz, Director	920-7410	資料8 (会社概要)