APPENDIX-XV
Transfer of Technology

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

FINAL REPORT

SUPPORTING REPORT

APPENDIX XV TRANSFER OF TECHNOLOGY

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CHAPTER 1 TRANSFER OF TECHNOLOGY DURING THE STUDY

1.1 General

The transfer of technology is one of the most important objectives of the study. A total of four workshops and four seminars are scheduled for the transfer of technology to the counterpart personnel. A practical schedule, including participating staff, the period and content of the workshops and seminars, is shown in Figure 1.1.1.

In addition to the workshops, meetings with the Technical Working Group, joint meetings, on-the-job Training (OJT) have been carried out during the phase 1 and phase 2 studies for the purpose of technology transfer, as shown in Table 1.1.1.

1.2 Seminar, Workshop and Meetings

(1) Workshops for Master Plan Formulation

The staff required to participate were selected from a number of agencies, a science related agency, regional government, representatives of regional inhabitants and NGO for the purpose of formulation of the master plan and the feasibility study. The number of participants in the first and second workshops in Manila and Iba was approximately 40 and 100, respectively.

The main theme of the workshops on 19 and 24 September 2002 was to explain and discuss the master plan and the priority projects for the feasibility study. The participants generally agreed on the proposed master plan and priority projects for the feasibility study.

(2) Workshops for Feasibility Study

The second workshops were held in Iba on June 11, 2003 and Manila on June 16, 2003. The number of the participants was 60 in Iba including the LGUs officials, students, NGOs and DPWH counterparts, while the number was approximately 40 in Manila with staff of the National Government Agencies and the DPWH officials.

The objective of the second workshop is to disseminate the results of the feasibility study to the concerned government agencies, people in the study area and the related NGOs and others. The subjects of the seminar were 1) outline of the study, 2) sediment balance analysis, 3) structural design for the feasibility, 4) GIS database and hazard mapping, 5) non-structural and the CDPP plan formulation, 6) EIA and resettlement plan, and 7) project evaluation and institutional plan. Open forum was conducted after the presentation to discuss the output of the study team. The comments raised in the open forum are assessed / considered for the completion of the feasibility study.

(3) Technology Transfer Seminar

The first technology transfer seminar was held in the Training Center of Ramon Magsaysay Technological University in Iba, Zambales on December 16, 2002 and in Multipurpose Hall of the DPWH central office, Manila on December 17, 2002. The number of the participants was 60 in Iba including the LGUs officials, students, NGOs and DPWH counterparts, while the number was about 40 in Manila with staff of the National Government Agencies and the DPWH officials.

The subjects of the seminar in Iba were 1) master plan formulation, 2) flood runoff model through the HEC-HMS, 3) two dimensional mudflow inundation simulation, and 4) sabo structures. The subjects in Manila were 1) master plan formulation, 2) flood runoff model through HEC-HMS, 3) GIS

database, 4) two dimensional mudflow inundation simulation, 5) sabo structures, 6) sabo works in Japan, and 7) economic evaluation. Almost all the above subjects were presented by the study team except for "sabo works in Japan", which was introduced by the counterpart.

Rather active discussion was observed in the seminar in the DPWH central office, Manila held on December 17, 2002, regarding condition of the mudflow simulation, necessity of the public information drive, application of the HEC model, etc. Some questions were raised in the seminar in Iba such as what is the purpose of the sabo dam, meaning of lahar and sabo, etc.

The second technology transfer seminar was held in Provincial capitol in Iba Zambales on August 5, 2003 and in multipurpose hall of the DPWH central office in Manila on August 8, 2003. the subjects of the seminar both in Iba and Manila were (1) formulation of overall plan in the study, (2) sabo/flood control structural measures, (3) sabo/flood non-structural measures, (4) community disaster prevention system, and (5) environmental assessment.

(4) GIS Seminar

Subsequently to the introductory explanation on GIS given in the technology transfer seminar in Manila, the detailed GIS seminar took place from February 20 to 22, 2003 in the study team's office in Iba. The seminar was designed for the DPWH counterparts and the LGU officials to practice operating the GIS computer software ArcView8.1 while using the software under the supervision of a GIS expert of the study team.

The GIS seminar consisted of 1) basic information on the ArcView8.1, 2) editing of a layer and coordinate system, and 3) outline of digital database. The participants were the DPWH counterparts, Provincial Engineer of the Zambales Province, and staff of DPWH Iba District Engineering office. All the participants were interested in GIS and participated in the seminar actively.

GIS is a supporting tool to find and analyze problems and/or issues on the interested subjects with database and statistical tool. In addition, it is useful to develop and assess the countermeasures. It may be said that on-the-job training is more effective rather than the seminars to learn how to use GIS for finding, analyzing, developing and assessing once the trainee gets familiar with the GIS operation.

(5) Meeting with Technical Working Group

Total nine Technical Working Group (TWG) meetings have been conducted during the field investigation works between April 2002 and August 2003. The TWG is composed of the Director, Assistant Directors and Managers of the related agencies in the DPWH, National Water Resources Board (NWRB), Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA), PHIVOLCS, and Department of Environment and Natural Resources (DENR).

Throughout the TWG meetings, progress of the study was presented by the study team and counterparts for fruitful discussion. For the presentation to the TWG, the counterpart staff mainly conducted the presentation on the progress and output of the respective sector. It is one way of transferring technology from the study team to the counterpart team because they are supposed to coordinate with study team members during making materials. This was quite effective for the counterparts to encourage the participation in the study and to understand the various technical aspects. The TWG meeting also resulted in improving their presentation skills.

(6) Joint Meeting

There were four joint meetings for the purpose of transferring technology from the study team to the counterpart staff. The participants in the joint meetings were generally all members of the study team and counterpart staff working in Iba. The meetings were usually held prior to the TWG meetings, and

experts of the study team presented the progress and outputs of the study in respective parts. Various comments and questions were raised by the counterparts and details were discussions actively for the entire day.

1.3 On-the-Job Training (OJT)

On-the-job training has been provided to each counterpart through day-to-day works with each study team member. The training includes explanation by the study team member and discussions with the counterpart on the purposes and procedures of the investigations and studies for each field. Through the training, the counterparts conducted investigations and studies together with the study team member, and exchanged opinions to apply the trained procedures and results of the studies for future work.

The previous experience on the OJT conducted during the phase 1 study, however, disclosed less effectiveness of this type of training compared with the joint meetings, workshops and the Technical Working Group meetings. Improvement of the on-the-job training was required for more effective technology transfer.

As a trial, a target setting and post evaluation system was introduced for the on-the-job training for the phase 2 study. Each counterpart set his/her own target of the training before starting and evaluated by him/herself their achievements. At the end, corresponding expert of the study team member provided comments and recommendation for their output. The sample form of prepared target setting and post evaluation sheets are attached in this appendix together with evaluation and comments by each expert. Results of the training show that the target setting and post evaluation system functioned well in guiding their daily works and assessing the progress. It was confirmed that on-the-job training through target setting and post evaluation system was quite effective to monitor the progress and output of the training for the both of the experts and the counterpart personals.

Tables

Table 1.1.1 Achievements on Transfer of Technology

Meeting		Date	Venue	Details
Workshop	1st-1	September 19, 2002	Iba	• Explanation and Discussion on Master Plan and Priority Projects
	1st-2	September 24 2002	Manila	• Explanation and Discussion on Master Plan and Priority Projects
	2nd-1	June 11, 2003	Iba	• Explanation and Discussion on The Results of Feasibility Studies
	2nd-2	June 16 2003	Manila	• Explanation and Discussion on The Results of Feasibility Studies
Meeting with Technical Working Group	1st	April 3, 2002	Manila	• Explanation and Discussion on Overall Study Plan
	2nd	May 17, 2002	Iba	• Presentation by Counterparts on Progress of the Study
	3rd	June 11, 2002	Manila	• Presentation by Counterparts on Progress of the Study, Explanation and Discussion on Flood Control and Sabo Measures
	4th	August 16, 2002	Iba	• Presentation by Counterparts on Hydrological Survey, Geological Survey and Sabo Plan
	5th	September 23, 2002	Manila	• Presentation by Counterparts on Master Plan and Priority Projects
	6th	December 10, 2002	Manila	• Presentation of Interim Report and Discussion
	7th	March 12, 2003	Manila	• Presentation by Counterparts on The Progress of Feasibility Studies
	8th	June 17, 2003	Manila	• Presentation by Counterparts on the Results of Feasibility Studies
	9th	August 6, 2003	Manila	• Presentation by Study Team on Draft Final Report
Joint Meeting	1st	May 28, 2002	Iba	• Explanation by Study Team on Overall Study, Collection of Hydrological Data, Geological Investigation and Traffic Volume Survey
	2nd	June 7, 2002	Iba	• Explanation of Flow and Outline of Framework Plan Formulation in Sto. Tomas River Basin by Study Team
	3rd	August 27, 2002	Iba	• Presentation by the Study Team on Hydrological Analysis, Mudflow Control Plan, and Initial Environmental Examination (IEE)
	4th	February 20, 2003	Iba	• Presentation of the Outline of the Feasibility Study, Explanation and Discussion on Geology (including Maraunot Notch), Structural Measures, Bucao and Maculcol Bridge & Community Disaster Prevention Plans
Technology Transfer Seminar	1st-1	December 16, 2002	Iba	• Presentation and Discussion on the Formulation of Master Plan, Introduction of HEC-HMS for Flood Run-off, Importance of Mudflow Analysis and the Purpose and Design Criteria of Sabo Structures
	1st-2	December 17, 2002	Manila	• Presentation and Discussion on the Formulation of Master Plan, Introduction of HEC-HMS for Flood Run-off, Importance of Mudflow Analysis and the Purpose and Design Criteria of Sabo Structures
	2nd-1	August 05, 2003	Iba	• Presentation and Discussion on Formulation of Overall Plan in the Study, Sabo and Flood Control Structural Measures, Sabo and Flood Control Non-structural Measures, Community Disaster Prevention System, and Environmental Assessment
	2nd-2	August 08, 2003	Manila	• Presentation and Discussion on Formulation of Overall Plan in the Study, Sabo and Flood Control Structural Measures, Sabo and Flood Control Non-structural Measures, Community Disaster Prevention System, and Environmental Assessment
GIS Seminar	1st	February 20 - 22, 2003	Iba	• The purpose of the seminar is designed to dramatically change the way geographic data can be viewed and shared for the planning purpose
On-the-Job Training	April - September, 2002, December, 2002 - March 2003, April - June 2003		Iba	• Face to face, day by day Training

Figures

THE GOVERNMENT OF THE PHILIPPINES
THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

The Study on Sabo and Flood Control for Western River Basins of Mount Pinatubo in the Republic of the Philippines

JAPAN INTERNATIONAL COOPERATION AGENCY

Figure 1.1.1

General Schedule and Outline of Workshop and Seminar for Transfer of Technology

Attachments

Attachment XV.1 Sample Form of Target Setting and Post Evaluation Sheet

Theme	To understand the basic concept of Flood and Sediment Control in the Master Plan and Feasibility Study
Specialty (Position)	
Name of Counterpart	
Organization	
Period	
Expert in Charge	

Objectives

1	Ownership	To participate in the study positively with ownership
2	Understanding	To understand the objectives and process of M/P and F/S
3	Capacity Building	To understand the basic concept of Flood and Sediment Control

Objectives	Activities	Achievement

Outputs Submitted by the Counterpart	

Comments by Counterparts (at the beginning of assignment)

Comments by Person in Charge (at the beginning of assignment)

Attachment XV.2 Self-Evaluation of Counterpart and Evaluation from the Study Team

(1) Team Leader

Counterpart / Mr. Orland M. CASIO

My general understanding on the formulation of Master Plan for flood and sediment control is to come-up with a comprehensive study or reference in the implementation of countermeasures namely: Structural/Non-structural and Community Disaster Development Plan to mitigate if not eliminate the adverse effects of flood and mudflows within the influence area.

What I have learned as counterpart in the study is very much applicable to my work. I am also grateful to the Experts for willingly helping us for the details of everything we ask to the best of their knowledge for any doubtful or what we can't understand.

My counterpart is very supportive to impart his knowledge especially that the DPWH is focusing on the small scale Sabo and Flood Control project. Furthermore, I would like to give thanks to Mr. Shinsuke Hino, Team Leader, Sabo and flood Control Project for West Pinatubo although our work's deals mainly on Managerial Level but still he give me some pointers on Flood Control works.

Study Team / Mr. Shinsuke HINO

Mr. Casio is the Field Team Leader of the counterpart group. His duties are of wide range from the technical matters to the managerial ones. The successful study can be attained by combination of technology and management. Through daily discussion between Mr. Casio and me, he understands well about this point.

In this second work stage from December 2002 to March 2003, I suggested two topics for him to take actions, one is the reporting about present situation of the Dizon dam and another is the conduct of the DPWH financed feasibility study.

The report of the Dizon dam has been prepared well and on time. The report is incorporated into the progress report to be submitted soon.

As for the conduct of the DPWH feasibility study, he discussed with the central office. Based on the discussion, the Maloma River was selected for the feasibility study. He started to prepare the implementation program for the study including the time schedule and the staff. The substantial study will be made in the next stage.

(2) Co-Team Leader

Counterpart / Ms. Madelyn B. LOYOLA

Transfer of technology, skills and techniques by working contact with the consultants' staff or by formal training are valuable products of consultants' services.

My involvement in this study helped me a lot in the understanding of how important the Community Disaster Prevention and the Non-structural Measures to the calamity stricken areas such as those affected by the eruption of Mt. Pinatubo.

Most of the time, I got interested mainly on the structural measures such as the design, type of structure etc. and never came to my mind that there are people out there who need much attention, particularly the indigenous ones.

Learning moreover is a two-way process involving the teacher and the student with both teaching

each other and learning from each other at the same time.

For this 1st quarter my participation was to supplement the expert with the basic data and information which I deemed necessary for the expert's analysis.

I also participated in the conduct of workshops, tried to impart my knowledge to the participants.

My utmost gratitude is likewise extended to Mr. Ken Nishino who unselfishly share his views/opinions and techniques and gave explanations whenever I ask him on the issues/topics I need for clarifications amidst the workload he has.

I hope that the teaching and learning process be a continuing, dynamic and fruitful one.

Study Team / Mr. Ken NISHINO

I think Ms.Medelyn have fully understood why the Community based Disaster Management Plan is necessary as a component of flood and mudflow control master plan. We have conducted plenty of discussions as well as exchange mutual opinions in this regard.

Previous series of disasters in the study area created bulk of poverty people. Even more than 10years after the eruption, the recovery of the livelihood in the upstream area is still not in progress. On the other hand, proposed structural measures in master plan are not covered in the upstream mountain area where Aeta communities exist. They will be out from the master plan if no CDPP is proposed.

Ms.Madelyn attended all the PCM workshops for five areas. Performing the workshops for needs finding and problem analysis is widely applied as a manner of plan formulation for public infrastructure development. Based on the problem analysis, key factor for solve the problem will be found and then effective development plan can be formulated. As Ms.Madelyn belongs to Planning Division of DPWH, these experiences must be useful for her project planning activities in future.

Accountability of the project is the essential requirement for the planner. All the local counterparts should fully understand the proposed plans in this study and to explain the third persons including the concerned LGUs as well as the people. At least, I hope that Ms.Madelyn is to be able to explain the overall of the project formulation to the other persons not limited only for CDPP.

Next stage, I would like to give task to Ms.Madelyn to conduct feasibility study including cost and benefit analysis for the CDPP. Techniques for the economic / financial evaluation will be transferred. But the technique is not really important. The essential thing is how to find the good project which is viable for economic development under the policy of "Growth with equity".

Ms.Madelyn attended intensify GIS seminar for 3 days. I wonder whether she have fully understood the GIS technique or not. If she have got the techniques, I hope she will transfer her knowledge to me. I am still not capable to operate GIS though I'm quite interesting to learn it.

GIS must be very strong tools for planners. But it is not easy to get GIS as a planning tool, which may take time. Prior to challenge to GIS, I would like to recommend to Ms.Madelyn to utilize excel program as much as possible, including the database and the graphic functions. After then, please challenge to GIS again.

Regarding the presentation capacity, Ms.Madelyn improved obviously in the course of the study period. Particularly, she performed presentation in this time for the five PCM workshops as the representative of DPWH, which was quite appreciated.

For the feasibility study of CBFM, Ms.Madelyn performed as key player. It was quite helpful to me.

(3) Design Engineer

Counterpart / Mr. Cesar M. CRISTOBAL

The Study on Sabo Engineering particularly the determination of the design discharge of river channel, as my expert counterpart has taught me, has a great deal of knowledge in my part. Especially in making river profile, and typical cross section using the Design Guidelines, Criteria and Standards for Public Works and Highways, Volume II.

The period that they have given to me as a counterpart of Sabo Engineer is very short, yet I have learned the basic guidelines in designing river channel cross section, dike and their limitations.

Books, References and other Guidelines that are given to me by the expert are a very big help for me as a designer. Engr. Kenji Toyota as my expert counterpart in this study is my maestro in Sabo Engineering.

I wish to work with him up to the end of this study in order to learn more about their technology. Thank you.

Study Team / Mr. Kenji TOYOTA

He (Mr. CESAR Molina CRISTOBAL) is participating with us in this study. His position in this study is counterpart of Sabo Structural Designer.

It is conceivable that evaluation to his work is closely Good, because he is eager to obtain any knowledge of Sabo structures through this study and is the first to go reconnoitering the study area with us to get information applied in preliminary design of Sabo structures.

Regarding quality of his submitted materials, his experience for short-term is insufficient to create satisfied output, but his improvement appears steady progress in creating.

Regarding his improvement of knowledge in this study, he is always reading relative specifications and sample of relative reports and he makes an effort to seek answer to our requests. Thus, we believe that his knowledge of structural design shall be certainly enhanced by his experiences and in the future, a desire to improve himself is kept maintaining for long-term.

We expect that he will take an active part in Sabo Structural Engineer. Thank you very much.

(4) Geologist

Counterpart / Ms. Cherri C. ESTUDILLO

At first, I was not able to fully understand the importance of my involvement in the study, later I realized that I learned many from the experts.

I should study not only geological aspects but also other fields of activities and its importance & concept to formulate a master plan.

I need to learn and study more how to formulate a master plan, conduct feasibility study and make my own report as understandably as I can.

I am very fortunate enough that the experts/OJT's are very cooperative and friendly in sharing their expertise/knowledge and they are very patient to my many questions. Sometimes, though we have the difficulty in our communications still we come-up to what I want to know.

I appreciate and thank Mr. Noboru Yokoyama.

Study Team / Mr. Noboru YOKOYAMA

My counterpart is not a specialist of topography and geology, but she was very eager for the absorption of the knowledge. And also, we discussed any geological phenomena.

She get that what is engineering geology, and also get the technique how to use the stereoscope and other equipments.

(5) Bridge Engineer

Counterpart / Ms. Jennie V. ALMEDA

I really appreciate the opportunity to learn from this study because the knowledge I gain counts a lot. To learn from the expert is a great privilege. I learn and understand how to make and choose the appropriate alignment for Bucao Bridge. I also learn the bending moment, shearing force and torsion as consideration in the designing of bridge.

From the vertical and horizontal curvature I make, I choose one line to consider as best due to economic advantage。 I know there is still more to learn but the time is limited and I wish I can gain it in my own effort since I really like bridge design.

I wish I will always involve in this kind of study from now and onwards. I really look up to my counterpart for his unselfishness in imparting his knowledge in this study.

Study Team / Mr. Youichi MOROISHI

1. I give my counterpart 2 subjects. One is to study alignment for approach road of Manila side. The other is, to study structural calculation. It is easy to understand image for the former, but not easy to select alignment. It is easy to calculate, but not easy to understand image for the latter. Both was studied without computer.

2. She drew 3 lines for horizontal curvature. Then she selected 1 line, and studied 3 vertical curvatures. She learns the following items for the former: Bridge without curve is better than with curve. Less land acquisition is good. Less excavation is good for environmental consideration.

3. I think she understood the concept of bending moment, shearing force and torsion for the latter.

4. She will become an excellent engineer with effort and enthusiasm after 10 years.

(6) GIS Expert

Counterpart / Ms. Marilow L. MANUEL

Generally, I was focused on the usage of GIS software for the editing of geographical information. It is indeed a great opportunity for me to have the knowledge in using this famous software. Ms Ishihara has been very patient in giving instructions and I know there is a lot more that I can learn from her though it is sometimes harder since were are both not using our vernacular terms. I know that I should continue reading and perform some more hands-on activities for better understanding of the feasibility study. I will also try to explore the software more often so I can learn more by myself as an addition to what Ms. Ishihara have taught us. At first , I encounter errors but it is alright with me because at the same time I'm learning troubleshooting when getting through these mistakes. And I believe that more practice will make it perfect. I should study more so in the near future I can be an expert in GIS. And not only that, some experts also help me in other activities that are why I also get

educated about roads and bridge design. I'm looking forward to gaining more knowledge as we continue this feasibility study and I hope that the experts will not lose their patience in sharing their knowledge with us.

Study Team / Ms. Chiaki ISHIHARA

GIS is integration software map with database. Quality of GIS database is decided to how to collect necessary data, and to make exactly and minute database. Maui, she is very interesting to GIS and study eagerly. If I will add, I would like to create map more carefully and exactly.

But, she will need a few years to use all GIS ability. It was impossible to take all of GIS only this assignment (1.5 month), in this time, he only approached GIS first step.

From now on, I would like to her use Database software, and study geography. It will be useful to be GIS analyst.

Counterpart / Mr. Zaiel V. Gonzaga

As a counterpart my assigned job is to encode barangay database through Microsoft Access, which is important as a reference for further analysis. However, I was not able to fully understand the whole software of ArcGIS because I only focused on data encoding. I should pay attention to not only small field but whole software of ArcGIS in the next assisgnment.

I would like to appreciate Ms. Chiaki Ishihara for exerting effort in making me understand ArcGIS.

Study Team / Ms. Chiaki ISHIHARA

GIS is integration software map with database. Quality of GIS database is decided to how to collect necessary data, and to make exactly and minute database. Zaiel's job was very good. But, he will need a few years to use all GIS ability. It was impossible to take all of GIS only this assignment (1.5 month), in this time, he only approached GIS first step.

From now on, I would like to him use Drawing software and Database software, and study geography. It will be useful to be GIS analyst.

(7) Environmentalist

Counterpart / Mr. Jesus O. AVERILLA

As a member of the project proponent (DPWH), I am responsible for carrying out the EIA and preparation of the EIS, including securing an ECC for the Project. For fulfilling this duty, I have been actively participated in key concerned field surveys, including such items as biological survey and confirmation of potential resettlement issue in the areas of selected priority structural measures. On the other hand, I have actively consulted with EMB Region III personnel for holding the 1st level scoping meeting. The 1st level scoping meeting was realized and held on January 31,2003 and confirmed the scope of work for the EIA and contents of the EIS. In addition, close contacts and consultation with the NCIP Iba Office have been made for securing the NCIP Certificate, which is needed as a part of the ECC.

In responding to the request of the JICA Study Team expert, I have established a whole work schedule up to the submittal of the Final DPWH version of the EIS to EMB-DENR Region III for the ECC (by end of April 2003).

Study Team / Mr. Ryozo OHNO

Through mutual discussions made on the ways of implementing the assignments given under the Feasibility Study, the counterpart has been showing his positive posture toward fulfilling his duties. Taking initiatives and careful following-up for each activity needed were seen.

Regarding implementation of the EIA, preparation of the EIS and securing the ECC from EMB-DENR, the positions of the project proponent, various activities to be initiated and followed, the ways of monitoring the activities and performance of the EIA subcontractor, etc. have all been understood by the counterpart. It is notable that the 1st level scoping meeting with EMB R-III was realized and carried out on the expected date.

The counterpart has actively participated in field surveys/investigations on the concerned areas of selected priority structure measures from points of view of potential environmental impacts.

He has also actively involved in various discussions with the EIA subcontractor for reviewing the implementation status and problems being encountered. Through such activities, capacity building of the counterpart has substantially being achieved.

In addition to the documents submitted at the beginning of the assignment this time, "Indigenous People Rights Act of 1997 and Its Implementation Rules and Regulations" has also been submitted. This is a key document to be referred to for fulfilling the rights of concerned IPs in the Study Area.

From the above, it is concluded that achievements of the counterpart under this assignment is excellent.

(8) Hydrologist

Counterpart / Mr. Elmo F. ATILLANO

My basic concept of hydrology in the study of flood and mudflow control is the most significant part because the planning, design, assessment and evaluation of countermeasures depends on the results/information provided under this aspect. In this study, my contribution and/or participation is limited only, to wit:

- Gathering of secondary hydrological data (e.g. rainfall data, etc.) from different offices/agencies concerned;
- Carry-out Surveys: river cross-sectional survey and water velocity survey;
- Gathering of primary data: Downloading of rainfall data from rainfall gauges and observation of water level thru staff gauges;
- Preparation of river profiles;
- Estimation of discharges/hydrographs;
- Maintenance of hydrological monitoring equipment; and
- Assists in the construction of web page for the study.

The above-mentioned were provided to the experts as basic information/inputs for their analysis; thus, I could say that I am not able to fully understand the whole process of MP and FS because I only focused on said activities. However, I could say that all experts tried their best to transfer their technical know-how to their respective local counterparts through seminars, workshops, OJT, joint meetings and consultations.

With this, I would like to extend my deepest appreciation not only to Mr. K. Yajima and Mr. K. Kumasaka but especially to Mr. S. Hino and Mr. K. Nishino for making themselves as a good model in every aspect of leadership. Likewise, to all other experts concerned for their precious time, patience and efforts extended not because they just want to adhere to their duties and commitment in this study, but we knew that their goals is to make us understand if not possible the whole process of MP/FS or at least the specific assigned task to each respective counterpart and support staff.

Study Team / Mr. Kaoru YAJIMA and Mr. Kazuhiro KUMASAKA

As Mr. Atillano mentioned in his self-evaluation, he was able to participate in many activities during the master plan and feasibility study focusing on the hydrological aspects such as installation and maintenance of rainfall gauge and water level gauge, collection of secondary hydrological data, cross section survey and so on. I hope that he could understand not only the process of hydrological analysis but the significance of hydrological data to formulate the master plan. It would be recommended to maintain the installed hydrological monitoring system to reflect the data in the future design stage.

In the feasibility study, it is noted that he contributed a lot to establish web-page of this study, by which he was able to learn more about the whole structure of the master plan besides the hydrological study.

Finally, I would like to thank Mr. Atillano for his enthusiastic cooperative activities in the hydrological study and useful comments on presentation during the Joint Meeting.