

**DATA BOOK D**  
**Record of Seminars and Workshops**

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**THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT  
AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS  
IN THE REPUBLIC OF THE PHILIPPINES**

**FINAL REPORT  
VOLUME IV  
DATA BOOK D  
RECORD OF SEMINARS AND WORKSHOPS**

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**D.1**  
**Technology Transfer Seminar**

**FIRST TECHNOLOGY TRANSFER SEMINAR  
ON  
THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE  
FLOOD MITIGATION PLAN FOR THE SELECTED AREAS  
IN THE REPUBLIC OF THE PHILIPPINES**

**PROGRAMME**

Date: September 27, 2006

Venue: MDS 5th Floor, DPWH Central Office, Manila

1.	Registration	-----	<u>Gloria L. Atillano</u> Secretariat	8:30 - 9:00
2.	Opening Program			
	National Anthem	-----	<u>Leonila R. Mercado</u> Engineer IV, PMO-MFCP-I	9:00 - 9:05
	Invocation	-----	<u>Gloria L. Atillano</u> Secretariat	9:05 - 9:10
	Opening Remarks	-----	<u>Rebecca T. Garsuta</u> Engineer V, Planning Service	9:10 - 9:20
	Welcome Address	-----	<u>Shunta Dozono</u> JICA Flood Management Advisor	9:20 - 9:30
3.	Presentation of Objectives and Approach of the Study	-----	<u>Yoshiharu Matsumoto</u> JICA Study Team	9:30 - 10:30
	<i>BREAK TIME</i>			10:30 - 10:45
4.	Presentation of Plan of Operation of the Study	-----	<u>Kenichiro Kondo</u> JICA Study Team	10:45 - 11:45
	<i>LUNCH BREAK</i>			12:00 - 13:00
5.	Presentation of Survey/Questionnaire for the Potential Flood Prone Areas Nationwide	-----	<u>Orlando N. Casio</u> Engineer III, Planning Service	13:00 - 13:10
6.	Flood Control Works in the Philippines	-----	<u>Julius D. Borja</u> Project Manager I, PMO-FCSEC	13:10 - 13:20
7.	Improvement of Sediment Control Countermeasures	-----	<u>Takeo Mitsunaga</u> JICA Sabo Engineering Advisor	13:20 - 13:30
8.	Improvement of Flood Control Activities in the Philippines	-----	<u>Shunta Dozono</u> JICA Flood Management Advisor	13:30 - 13:45
9.	Open Forum	-----		13:45 - 15:30
	<i>BREAK TIME</i>			15:30 - 15:45

10. Conclusion and Remarks	-----	<u>Rebecca T. Garsuta</u> Engineer V, Planning Service	15:45 - 16:00
11. Distribution of Certificates	-----		16:00 - 16:15

Note: Topics for Discussion/Open Forum

1. How to collect/gather the information on flood/debris flow and sedimentation disaster
2. How to decide the criteria
3. How to design concrete countermeasure for actual disaster
4. Other matters

**THE STUDY ON NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD  
MITIGATION PLAN FOR THE SELECTED AREAS IN THE PHILIPPINES  
MDS 5<sup>th</sup> Floor, DPWH Central Office**

**1<sup>st</sup> Technology Transfer Seminar**

**September 27, 2006**

**8:30 A.M. – 5:00 P.M**

**A T T E N D A N C E**

<b>No.</b>	<b>Name</b>	<b>Position</b>	<b>Office</b>
1	Lewy Leander C. Ignacio	Engineer II	RO I
2	Noel G. Nadera	Draftsman II	RO VIII
3	Rogelio A. Atilano	Engineer II	RO IX
4	Dulce C. Adiong	Engineer III	RO X
5	Arlette C. Guzman	Engineer II	RO III
6	Ethel L. Manalo	Engineer IV	RO III
7	Edwin A. Dugho	Engineer III	RO XII
8	Danilo C. Pioquinto	Engineer II	RO XIII
9	Eduardo V. Santos	Engineer III	NCR
10	George C. Balisi	Engineer II	RO II
11	Brigildo M. Fabia	Engineer II	RO V
12	Fitzgerald R. Icamen	Engineer II	RO VII
13	Pablo C. Reyes	Engineer III	RO IV
14	Kenichiro Kondo	JICA Study Team	FCSEC
15	Tiburcio L. Canlas	OIC, Proj Mngr.	PRCS-PMO
16	Reginald P. Mercader	Engineer III	RO IV-B
17	Aquilina T. Decilos	Engineer III	DPD, Planning
18	Mario C. Ulangca	Engineer III	DPD
19	Madelyn B. Loyola	Engineer III	DPD, Planning
20	Estelita M. Leonado	Economist II	DPD, Planning
21	Dolores M. Hipolito	PM II	FCSEC
22	Justino Jaime T. Surot, Jr.	Engineer II	DPD, Planning
23	Orlando M. Casio	Engineer III	DPD, PS
24	Gloria L. Atillano	Staff	DPD, PS
25	Michael T. Ampatan	Engineer IV	PMO - FCSEC
26	Gil I. Agamat	Engineer V	PMO - FCSEC
27	Jerry A. Fano	Engineer III	FCSEC
28	Napoleon S. Famadico	Engineer III	IPRSD-PS
29	Julius D. Borja	PM I	MFCDP RII/FCSEC
30	Rebecca T. Garsuta	Engineer V	PS
31	Yoshiharu Matsumoto	JICA Study Team	FCSEC
32	Keiko Tsuji	JICA Study Team	FCSEC
33	Shunta Dozono	JICA Expert	DPWH-PS
34	Takeo Mitsunaga	JICA Expert	FCSEC
35	Tokunaga Yoshio	JICA Expert	FCSEC
36	Toyoya Kenji	JICA Study Team	FCSEC

**SECOND TECHNOLOGY TRANSFER SEMINAR  
ON  
THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE  
FLOOD MITIGATION PLAN FOR THE SELECTED AREAS  
IN THE REPUBLIC OF THE PHILIPPINES**

**PROGRAMME**

Date: September 12, 2007

Venue: 5th Floor, Training Room, DPWH Central Office, Manila

1.	Registration	-----	<u>Gloria L. Atillano/</u> Secretariat <u>Estelita M. Leonado</u> Economist	8:00 - 9:00
2.	Opening Program			
	National Anthem	-----	<u>Leonila R. Mercado</u> Engineer IV, PMO-MFCP-I	9:00 - 9:05
	Invocation	-----	<u>Estelita M. Leonado</u> Economist	9:05 - 9:10
	Opening Remarks	-----	<u>Maria Catalina E. Cabral,</u> <u>PhD.</u> OIC-Director, Planning Service	9:10 - 9:20
	Welcome Address	-----	<u>Minoru Kamoto</u> JICA River Management Advisor	9:20 - 9:30
3.	A.M. Presentation			
	3.1 Introduction	-----	<u>Rebecca T. Garsuta</u> Engineer V, DPD, Planning Service	9:30 - 10:00
	<i>BREAK TIME</i>			10:00 - 10:15
	3.2 Presentation of Interim Report	-----	<u>Yoshiharu Matsumoto</u> Team Leader JICA Study Team	10:15 - 11:30
	3.3 Open Forum			11:30 - 12:00
	<i>LUNCH BREAK</i>			12:00 - 13:00
4.	P.M. Presentation			
	4.1 Presentation of HEC-RAS	-----	<u>Kenichiro Kondo</u> Co-Team Leader JICA Study Team	13:00 - 14:30
	4.2 Open Forum			14:30 - 15:30
	<i>BREAK TIME</i>			15:30 - 16:00

4.3 Conclusions and Remarks	-----	<u>Rebecca T. Garsuta</u> Engineer V, DPD, Planning Service	16:00 - 16:10
4.4 Distribution of Certificates	-----	<u>Maria Catalina E. Cabral,</u> <u>PhD.</u> OIC-Director, Planning Service <u>Yoshiharu Matsumoto</u> Team Leader JICA Study Team	16:10 - 16:30



**THE STUDY ON NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD  
MITIGATION PLAN FOR THE SELECTED AREAS IN THE PHILIPPINES**  
5<sup>th</sup> Floor, Training Room, DPWH Central Office

**2<sup>nd</sup> Technology Transfer Seminar**  
**September 12, 2007**  
**8:30 A.M. – 4:30 P.M**

**A T T E N D A N C E**

<b>No.</b>	<b>Name</b>	<b>Position</b>	<b>Office</b>
1	Rogelio A. Atilano	Engineer II	RO IX
2	Godofredo S. Dagdag, Jr.	Engineer II	RO IV-B
3	Juliet W. Chan	Engineer II	RO - CAR
4	Rhett Willem P. Varilla	Engineer II	RO II
5	Erwin R. Macatingrao	Engineer II	RO V
6	Ramon N. Regala	Special Investigator	Bulacan 2nd District
7	Danielito P. Padon	Engineer II	RO VIII
8	Nelson C. Livara	Engineer III	BOD
9	Serrano J. Galagala	Engineer III	RO Norte XI
10	Alain John R. Sotto	Engineer III	RO XI
11	Samson L. Hebra	Engineer IV	RO XIII
12	Benjamin S. Babia	Chief PDS	DPWH DEO Camiguin
13	Avelino B. Piano	Engineer III	RO I
14	Grecille Christopher Damo	Engineer III	FCSEC
15	Leoncio G. Ocampo	Engineer I	DPWH, QCSED
16	Pablo C. Reyes	Engineer III	RO IV-A
17	Estelita M. Leonado	Economist II	PS
18	Rebecca G. Yuse	Engineer II	RO VIII
19	Leonila R. Mercado	Engineer IV	PMO-MFCP C1
20	Leonardo P. Sanchez	Engineer III	PMO-MFCP C1
21	Tadanori Kitamura	JICA Study Team	FCSEC
22	Aquilina T. Decilos	Engineer III	PS
23	Matsumoto Yoshiharu	JICA Study Team	FCSEC
24	Kenichiro Kondo	JICA Study Team	FCSEC
25	Hideki Konno	JICA Study Team	FCSEC
26	Orlando M. Casio	Engineer III	PS
27	Kamoto	JICA Expert	DPWH
28	Freddie M. Combalicer	Engineer II	DPWH Quezon II
29	Gerard G. Dunque	Draftsman II	Negros Occ. III
30	Martiniane dela Cruz	Engineer III	BOD
31	Marcelino G. Tolentino, Jr.	Engineer III	PS
32	Jesse C. Felizardo	Engineer IV	FCSEC
33	Elmo F. Atillano	Engineer III	PS
34	Dolores M. Hipolito	Project Manager II	FCSEC
35	Julius D. Borja	Project Manager I	MFCDP-II
36	Ma. Lucila C. Pinteno	Engineer III	RO VI
37	Rebecca T. Garsuta	Engineer V	PS
38	Michael G. de Jesus		PS
39	Silverio D. Auxtero	Draftsman	PS
40	Carlos D. Zamor	Engineer III	PS

**THIRD TECHNOLOGY TRANSFER SEMINAR  
ON  
THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE  
FLOOD MITIGATION PLAN FOR THE SELECTED AREAS  
IN THE REPUBLIC OF THE PHILIPPINES**

**P R O G R A M M E**

**DATE : February 8, 2008**

**VENUE : BAYVIEW PARK HOTEL  
Roxas Blvd., Manila**

- |  |   |                          |
|--|---|--------------------------|
| <b>1. REGISTRATION</b>                                     | <b>GLORIA ATILLANO/ESTELITA LEONADO</b><br>Secretariat        | <b>8:30 AM-9:00 AM</b>   |
| <b>2. OPENING PROGRAM</b>                                  |   |                          |
| National Anthem  | <b>AQUILINA DECILOS</b><br>Engineer III<br>Planning Service   | <b>9:00 AM-9:05 AM</b>   |
| Invocation   | <b>GLORIA ATILLANO</b><br>Secretariat                         | <b>9:05 AM-9:10 AM</b>   |
| Opening Remarks  | <b>Dir. MARIA CATALINA R. CABRAL, PhD</b><br>Planning Service | <b>9:10 AM-9:25 AM</b>   |
| Seminar Overview   | <b>MINORU KAMOTO</b><br>JICA River Expert                     | <b>9:25 AM-9:45 AM</b>   |
| <b>COFFEE BREAK</b>  |   | <b>9:45AM-10:00AM</b>    |
| <b>3. OVERVIEW OF THE STUDY</b>                            | <b>YOSHIHARU MATSUMOTO</b><br>Team Leader<br>JICA Study Team  | <b>10:00 AM-12:00 AM</b> |
| From Screening to Selection<br>of Model River Basin        |   |                          |
| <b>LUNCH BREAK</b>   |   | <b>12:00 AM-1:00 PM</b>  |
| <b>4. FLOOD MITIGATION PLAN<br/>FOR MODEL RIVER BASIN</b>  | <b>KENICHIRO KONDO</b><br>Co-Team Leader<br>JICA Study Team   | <b>1:00 PM-3:30 PM</b>   |
| a Basic Procedure  |   |                          |
| b Flood Mitigation Plan for<br>Ilog-Hilabangan River Basin |   |                          |
| <b>COFFEE BREAK</b>  |   | <b>3:30AM-3:45PM</b>     |
| <b>5. OPEN FORUM</b>                                       |   | <b>3:45 PM-4:15 PM</b>   |
| <b>6. WRAP-UP</b>  | <b>REBECCA T. GARSUTA</b><br>Team Leader<br>Local Counterpart | <b>4:15 PM-4:30 PM</b>   |
| <b>7. CLOSING REMARKS</b>                                  | <b>Dir. RESITO DAVID</b><br>PMO-FCSEC                         | <b>4:30 PM-4:45 PM</b>   |
| <b>8. DISTRIBUTION OF CERTIFICATES</b>                     |   | <b>4:45 PM-5:00 PM</b>   |

**EMCEE: Engr. LEONILA R. MERCADO**

**THE STUDY ON NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD  
MITIGATION PLAN FOR THE SELECTED AREAS IN THE PHILIPPINES**  
Bayview Hotel, Roxas Blvd., Manila

**3<sup>rd</sup> Technology Transfer Seminar**

**February 8, 2008**

**8:30 A.M. – 4:30 P.M**

**A T T E N D A N C E**

<b>No.</b>	<b>Name</b>	<b>Position</b>	<b>Office</b>
1	Ramon N. Regala	Special Investigator	Bulacan 2nd District
2	Edgar A. Sarto	E-II	Bulacan 2nd District
3	David L. Fabila, Jr.	DENR	RXI
4	Arlette C. Guzman	Engineer II	DPWH RO III
5	Alain John R. Sotto	Engineer III	RO XI
6	Joan Barrera	Supervising EDS	MEDCO
7	Julito E. Magdadaro	E-II	DPWH R.XI Tagum City
8	Albert Lee B. Cabanting		DPWH, RXI, Tagum City
9	Tirso R. Perloda, Jr.	Engineer IV	DPWH, BOC
10	Arnelord De Guzman	PO III	CPDD
11	Josephine I. Dela	DO II	CDPD Cal. City
12	Baodilla B. Quezon	PDO IV	LGU Sto. Tomas
13	Rex L. Sagot	Municipal Engineer	LGU Sto. Tomas
14	Bernardo C. Rabanoz, Jr.	Municipal Engineer	LGU B.E.
15	Rolando Calomarde	Chief Geologist	MGB-G
16	Marlene S. Melarpis	Res. Spec. II	DENR-4A
17	Fidel P. Gamos, Jr.	Forester III	DENR R-10
18	Margie M. Duro	PDO II	LGU SLDM
19	Arnel A. Vitug	Engineer III	LGU CSSDM, Bul.
20	Jerry C. Quirante	Engineer II	LGU CSSDM, Bul.
21	Romar Ledesma	Engineer	
22	Eugenio O. Diaz, Jr.	Engineer II	DENR-CO-RBCO
23	Sol T. Abasa	Engineer III	ESSO, PS
24	Josephine D. Hapil	Senior EDS	NEDA IV-A
25	Aquilina T. Decilos	Engineer III	PS
26	Alejandro A. Sosa	PM II	MFCDP II
27	Julius D. Borja	Project Manager	MFCDP II
28	Jesusa T. Roque	Engineer III	NWRB
29	Francis B. Hilarie	ECO III	NWRB
30	De Guzman	Engineer III	CAL ENGG
31	Robert Suilan	Engineer II	CAL ENGG
32	Leonila R. Mercado	Engineer IV	PMO-MFCP C1
33	Estelita M. Leonado	Economist II	PS
34	Gloria L. Atillano	S. Staff	DPD PS

<b>No.</b>	<b>Name</b>	<b>Position</b>	<b>Office</b>
35	Orlando M. Casio	Engineer III	DPD PS
36	Kenichiro Kondo	JICA Study Team	FCSEC
37	Tadanori Kitamura	JICA Study Team	FCSEC
38	Hideki Konno	JICA Study Team	FCSEC
39	Dolores M. Hipolito	Project Manager II	FCSEC
40	Sah B. P.	GIS Expert	FCSEC
41	Kamoto Minoru	JICA Advisor	DPWH
42	Freddie M. Combalicer	Engineer II	DPWH Quezon II
43	Matsumoto Yoshiharu	JICA Study Team	FCSEC
44	Rebecca T. Garsuta	Engineer V	PS
45	Alan Del Socoppo	EDS II	NEDA
46	Grecille Christopher Damo	Engineer III	FCSEC
47	Isagani S. Rubio, Jr.	PO III	LGU Meyc
48	Restituto B. Bauan	Tech Transfer Div. Chief	DENR R-3
49	Jose C. Rosana, Jr.	CEO II	OCD NDCC
50	Rino A. Lacandazo	SRA I	DENR R8
51	Manuel Ivis Dionio	Sr. EDS	NEDA R-6
52	Milagrosa A. Estandarte	Engineer II	R-10
53	Benjamin S. Babia	Chief PDS	DPWH DEO Camiguin
54	Arturieto P. Ramigoso		LGU Catarman
55	Noel L. Lumacang	Mun. Engineer	LGU Catarman
56	Leonardo P. Sanchez	Engineer III	PMO-MFCP C1
57	Pablo C. Reyes	Engineer III	RO IV
58	Marichu T. Edwarte	Draftsman II	DPWH R8
59	Danielito P. Padon	Engineer II	DPWH R8
60	Eladio L. Lim III	Draftsman II	DPWH R8
61	Gerard G. Dunque	Draftsman II	Negros Occ. III
62	Manuel M. Merana	Administrator	LGU Real
63	Edgardo A. Juntereal	MPDC	LGU Real Quezon
64	Jesus D. Alaurin	ME	PEB
65	Alejo T. Germinal	Engineer I	DPWH Neg 3rd
66	Ma. Lucila C. Pinero	Engineer III	RO VI
67	Jesse A. Tanmoya, Jr.	CPDC	LGU Kabankalau
68	Rogelio Diaz	City Engineer	LGU Kabankalan
69	Elbert L. Magbato	MPDC	LGU Ilog
70	Orlando M. Casio	Engineer III	PS
71	Patrick A. Postrero	CPDO	LGU Baybay
72	Michael L. Cavi	Mayor	Baybay City
73	Ranulfo A. Tagolgol	CEO	LGU Baybay

## **D.2 Stakeholder Workshop and Meeting**

## **FIRST STAKEHOLDER WORKSHOP**

### **ON THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES**

#### **1. Outline of the Workshop**

##### **1.1 Background**

The study which was started in September 2006 has come to the time for selection of model river basin for pilot project, through the following procedure:

- First screening of selection of 120 river basins
- Second screening of selection of 56 river basins
- Grouping by flood damage type for 56 river basins to 6 groups and selection of model river basin

On this occasion, first stakeholder workshop was held to receive opinions and comments to elaborate the content of the study and facilitate further study for planning on the following model river basins.

- Ilog-Hilabangan (Region VI)
- Dungcaan (Region VIII)
- Meycauayan (Region III)
- Kinanliman (Region IV-A)
- Tuganay (Region XI)
- Compol (Region X)

The materials used for this workshop are attached hereto.

##### **1.2 Objective of the Workshop**

The workshop was held in principle under the following objectives:

- To understand and appreciate the Study.
- To identify the needs on flood mitigation of each model river basin.
- To identify the flood problems, effects, causes, recommended countermeasures and responsible agencies.

##### **1.3 Date and Venue**

The date and venue is as follows:

- Date : July 24, 2007
- Venue : Multipurpose Hall, DPWH Headquarter

##### **1.4 Participants**

Among the 104 invited persons, total 82 persons or 79% of the invited persons attended the workshop. The invited persons were shown below. On the other hand, attendance list is attached at the end of this paper.

- LGUs from the model river basins: 44 persons
- TWG Agencies (Manila Based): 6 persons
- DPWH (Central): 21 persons
- DPWH (Regional and District): 18 persons
- Academe: 1 person
- MEDCO: 1 person
- Others: 13 persons

#### **2. Program**

##### **2.1. Morning Session**

The morning session started in accordance with the following program:

- Opening program, which consisted of the national anthem, invocation, opening remarks (by Mr. David, Project Director, PMO-FCSEC), and workshop overview (by Ms. Garsuta, Team Leader of the local counterpart team).
- Presentation of Progress of the Study Mr. Matsumoto, Team Leader of the JICA Study Team
- Explanation of Further Schedule of the Study Mr. Kondo, Co-Team Leader of the JICA Study Team
- Presentation of Structural Measures of Flood Control in the Philippines by Mr. Borja, Co-Team Leader of the local counterpart team
- Presentation of Integrated Flood Mitigation by Ms. Hipolito, Project Manager II, PMO-FCSEC
- Introduction of Long-term Flood Mitigation Plan in Japan by Mr. Kamoto, JICA River Management Advisor, DPWH
- Introduction of Open Forum and Workshop Mechanics by Ms. Hipolito, Project Manager II, PMO-FCSEC

## **2.2. Afternoon Session**

The afternoon session is performed in accordance with the following program:

- Workshop with participants grouping themselves by the model river basins. Each group was assigned DPWH personnel to facilitate each group in their discussion of the flood problems, effects of floods, causes, recommended countermeasures and responsible agencies.
- Then, workshop output mainly consisting of features of river basin and countermeasures for flood problem was presented by the leader of each group.
- Wrap-up of the workshops was undertaken by Rebecca T. Garsuta, Team Leader, Local Counterpart Team with thanks for cooperation by JICA and JICA Study Team.
- Ms. Garsuta then presented closing remarks. The First Stakeholder Workshop ended with a distribution of certificate of attendance.

## **3. Output of Workshop**

Output of workshop is summarized in the format distributed from each group. The output is shown in the following tables:

## Results of the Workshop

### ILOG-HILABANGAN

#### 1. Features of the Basin

Problem No.	Flood Problems	Effects of Floods	Causes
1	Overflow	Damage to properties, agricultural, institutional (school, hospitals, etc.)	Small capacity (narrow river section), siltation, forest denudation
	Inundation	Disruption of economic activities, endangering lives and properties	Delta area, high tide
	Bank erosion in some sections	Damage to agricultural/private lands, properties	High flow velocity & constricted sections in rivers

#### 2. COUNTERMEASURES FOR FLOOD PROBLEMS

Problem No.	Recommended Countermeasures	Responsible Agencies
<b>a) Structural Measures</b>		
	Deepening, widening of channels	DPWH
	Dredging	DPWH
	Heightening of Earthdikes	DPWH
	Revetment works	DPWH
<b>b) Non-structural Measures</b>		
	Watershed management	DENR
	Information Education Campaign	DENR, DPWH,
	Land Use Regulation	LGU
	Flood Forecasting and Warning System Flood Hazard Mapping	PAGASA,DCC PAGASA, PHIVOLCS, DPWH
<b>c) Policy, Laws and Institutions</b>		
	Strong Implementation of Existing Laws & Policies	DENR, NWRB, DILG
	Observance of River Easement (e.g. 20m from the banks) per water code	DPWH, LGUs
	Regulate Quarrying Activities	LGU, DENR



## DUNGCAAN

### 1. FEATURES OF THE BASIN

Problem No.	Flood Problems	Effects of Floods	Causes
1	overflow - due to heavy rain with high tide	Damage to properties such as houses, fish pond agriculture and infrastructure	inadequate channel capacity
2	bank erosion	damage to houses, bridge, abutment	due to direct hit of water flow
3	inland flooding	damage to houses and inconvenience to people living in the area	The terrain is flat thereby water cannot be drained successfully by gravity

### 2. COUNTERMEASURES FOR FLOOD PROBLEMS

Problem No.	Recommended Countermeasures	Responsible Agencies												
a) Structural Measures														
1	Dike, pumping station, dredging, flap gate, seawall	DPWH, NGOs												
2	- revetment on steel sheet pile, downstream of Dungcaan bridge - sodding and spur dike at upstream	LGUs, NGOs, OCD, NDCC												
3	pumping station improvement of drainage facilities	LGUs, NGOs, OCD, NDCC												
b) Non-structural Measures														
1	evacuation center, warning system, periodic drill, contingency plan	DPWH, LGUs												
2	- regular monitoring of critical areas - encourage the residents to adopt vegetative activities	DENR, LGUs, NGOs, OCD, NDCC												
3	information dissemination	LGUs, NGOs, OCD, NDCC												
	Characterization / assessment of the whole watershed area shall be conducted in order to determine what vegetative measures shall be applied therein. It is recommended that the following the approaches be adopted. <table><tr><td>Particulars</td><td>Approaches</td></tr><tr><td>1) grass land areas</td><td>planting with fast growing tree species</td></tr><tr><td>2) area planted with seasonal agro crops</td><td>agro-forestry ( planting with fruit trees / agro crops</td></tr><tr><td>3) clear patches of inadequately stocked forest</td><td>enrichment planting</td></tr><tr><td>4) coconut plantation areas</td><td>planting with fruit trees and cacao / coffee</td></tr><tr><td>5) patches of forest areas</td><td>forest protection</td></tr></table>	Particulars	Approaches	1) grass land areas	planting with fast growing tree species	2) area planted with seasonal agro crops	agro-forestry ( planting with fruit trees / agro crops	3) clear patches of inadequately stocked forest	enrichment planting	4) coconut plantation areas	planting with fruit trees and cacao / coffee	5) patches of forest areas	forest protection	DENR
Particulars	Approaches													
1) grass land areas	planting with fast growing tree species													
2) area planted with seasonal agro crops	agro-forestry ( planting with fruit trees / agro crops													
3) clear patches of inadequately stocked forest	enrichment planting													
4) coconut plantation areas	planting with fruit trees and cacao / coffee													
5) patches of forest areas	forest protection													
c) Policy, Laws and Institutions														
1	city ordinance for comprehensive city risk disaster measures	LGUs, NGOs												
2	- implement the 3 meter easement - city resolution to promoting vegetative activities	LGUs, NGOs												
3	- Impose the landuse regulation	LGUs, NGOs												

**MEYCAUAYAN**

**1. FEATURES OF THE BASIN**

Problem No.	Flood Problems	Effects of Floods	Causes
1	EXCESSIVE HIGH TIDE	DAMAGE TO AGRICULTURE, PROPERTIES AND ROADS	GLOBAL WARMING/CLIMATE CHANGE
2	INLAND FLOODING	RIVER SILTATION, LOSS OF LIFE, POVERTY, STARVATION, HOMELESSNESS	IMPROPER GARBAGE DISPOSAL POOR DRAINAGE SYSTEM
3	FLASH FLOOD	LONGER FLOOD DURATION, INCREASED FLOOD PLAIN AREA, DECREASE IN CHANNEL CAPACITY, DAMAGE TO AGRICULTURE, PROPERTIES AND ROADS	ILLEGAL LOGGING CONTINUOUS OR PROLONGED RAINFALL HIGH RAIN INTENSITY
4	COASTAL FLOODING	HINDERS DEVELOPMENT, HIGH LEVEL OF WATER, UNCONTROLLED TIDE EFFECTS	HIGH TIDE STORM SURGES
5	RIVERBANK EROSION	DAMAGE TO RIVER, INFRASTRUCTURE/BREACHING, NARROWING RIVER CHANNEL	ENCROACHMENT OF FISHPONDS POOR FLOOD GATES AND DIKES RIVER SILTATION
6	POOR WATER DRAINAGE	IMPEDES RIVER FLOW	INFORMAL SETTLERS

**2. COUNTERMEASURES FOR FLOOD PROBLEMS**

Problem No.	Recommended Countermeasures	Responsible Agencies
<b>a) Structural Measures</b>		
1	FLOOD GATES	DPWH, LGUs
2	FLOOD WALLS	DPWH, LGUs
3	RING DIKES	DPWH, LGUs
4	PUMPING STATION	DPWH, LGUs
5	RESETTLEMENT	DPWH, LGUs
<b>b) Non-structural Measures</b>		
1	DREDGING	DPWH
2	FLOOD FORECASTING	DILG
3	REFORESTRATION	NDCC
4	IEC	PAG-ASA
5	WARMING SYSTEM	PHIVOLCS
6	FLOOD HAZARD MAPPING	MGB
<b>c) Policy, Laws and Institutions</b>		

1	ZONING AND LAND USE PLANNING	DENR
2	COMPREHENSIVE LAND USE MAP	LGUs
3	PD 263 ENCROACHMENT ALONG RIVERBANKS	DILG
4	EVACUATION PLAN / MAPS	

### KINANLIMAN

#### 1. FEATURES OF THE BASIN

Problem No.	Flood Problems	Effects of Floods	Causes
1	Debris Flow	Loss of Lives, Damage to properties, Infrastructure Damage, Livestock Damage	Steep Slope and Heavy rain
2	Flash Flood	Loss of lives, Damage to properties, Infrastructure Damage, Livestock Damage	Steep slope and heavy rain
3	River Bed Siltation (aggradation)	Prone to flooding, Damage to properties, Lesser height of water (river) during dry season	Debris flow
4	Scouring/erosion of River Banks	Change of direction of waterway, Damage to properties	High velocity of flow
5	Overflow of river	Damage to properties, Infrastructure damage	Heavy rain

#### 2. COUNTERMEASURES FOR FLOOD PROBLEMS

Problem No.	Recommended Countermeasures	Responsible Agencies
<b>a) Structural Measures</b>		
1	Sabo Dam	DPWH
2	Spur dike	DPWH
3	Dredging	DPWH
4	Dike	DPWH
5	Revetment	DPWH
<b>b) Non-structural Measures</b>		
1	Maintenance	DPWH
2	Hazard Mapping	DOST, DENR, DPWH
3	Evacuation	LGU
4	Information/Education Campaign	DECS/DOST/LGU
5	Warning	PAGASA/LGU
<b>c) Policy, Laws and Institutions</b>		

1	Policy formulation and Institutionalization through Barangay, Municipal and provincial	
2	InterAgency coordination	DPWH, LGU, DOH, DOST (PAGASA, PHIVOLCS) DENR,
3	Strengthen Riverbasin Management by the Government i.e. prohibit living in high risk areas and prohibits excavation of river bed materials	DPWH-LGU-DENR

### TUGANAY

#### 1. FEATURES OF THE BASIN

Problem No.	Flood Problems	Effects of Floods	Causes
1	Overflow in the downstream	Damages to houses, fishponds, crops/coco and road networks, Health disorders	Heavy siltation of river channel, Existence of fish pens causing disruption of water flow, Tidal intrusion
2	Overflow in the upstream	Water less community (no portable water) Damages to crops/ properties/ infrastructure Disrupted economic activities/Road not passable Evacuation of inhabitants	Rapid conversion of rice lands to banana plantation, Improper solid waste management, Heavy siltation of river channel
3	Denuded forest/watershed	Heavy siltation	Severe soil erosion, Improper land use (upland/kaingin)
4	Overflow from Tagom-Libuganon	Longer duration, Increase flood damages	Increase water volume (overflow)
5	Insufficient flood disaster preparedness	High damage to crop/ properties/ live stocks	Not integrated disaster management

#### 2. COUNTERMEASURES FOR FLOOD PROBLEMS

Problem No.	Recommended Countermeasures	Responsible Agencies
<b>a) Structural Measures</b>		
1	River improvement Dredging	DPWH/NIA/LGUs
2	River improvement Dredging	DPWH/NIA/LGUs
3	None	
4	Construction of flood control structures	DPWH
5	None	
<b>b) Non-structural Measures</b>		
1	Flood plain zoning	DPWH
2	Flood plain zoning	DPWH

3	Watershed management & rehabilitation Proper land uses/Proper zoning	DENR, NIA & LGUs LGUs
4	Flood plain zoning of Tagum-Libuganon	DPWH
5	IEC	PDCC
<b>c) Policy, Laws and Institutions</b>		
1	Passage of local ordinances concerning river regulations	LGUs
2	Passage of local ordinances concerning river regulations	LGUs
3	Implementation of existing laws	LGUs/DENR
4	Passage of local ordinances concerning river regulations	LGUs
5	Mainstreaming of flood risk reduction into LGUs development plan/activities	PDCC/LGUs

### **COMPOL**

#### **1. FEATURES OF THE BASIN**

<b>Problem No.</b>	<b>Flood Problems</b>	<b>Effects of Floods</b>	<b>Causes</b>
1	Overflow of flood water	Damages to houses, agricultural crops, properties, roads, carriageways, slope protections, human lives, livestock	Sedimentation, big rock is blocking,
2	Flush flood	Loss of human life, crops Around 10 persons died in 2001 Damages to coral reefs and other marine lives (siltation) Good effect: Source of quarry material	Less forest cover, only shrubs and grassland, steep slope of the river
3	Debris Flow	Damages to Infrastructure such as roads, culverts, bridges	Large volcanic rock deposit in the upstream
4	River bank erosion in the upstream	Damages to agricultural crops such as coconuts, bamboos, corns, vegetables Damages to coral reefs and other marine lives (siltation)	

**2. COUNTERMEASURES FOR FLOOD PROBLEMS**

<b>Problem No.</b>	<b>Recommended Countermeasures</b>	<b>Responsible Agencies</b>
<b>a) Structural Measures</b>		
1	Revetment	DPWH
2,3	Slit Dam, Ordinary Sabo Dam	DPWH
<b>b) Non-structural Measures</b>		
1	Forestation in the upstream, Dredging and appropriate quarrying	DENR, LGUs
2	Community-based early warning system	LGUs
3	Bio-Eco Engineering (Planting bamboo along the bank)	LGUs, DENR, DPWH
-	Continuous info drive	
<b>c) Policy, Laws and Institutions, Response, Recovery</b>		
1	Evacuation	LGUs, OCD
2	Flood Fighting	LGUs
3	Zoning, land use	LGUs
-	Policy of Garbage Disposal	
All	Enforce bank easement requirements through resolutions	

## Attendance List

No.	Name	Position	Office
1	Brigida Q. Cudal	Assistant PPDC	Prov't. Planning & Dev't. Office
2	Anita G. Juntilla	Proj. Eval. Officer IV	Davao del Norte
3	Eric. H. Ayapana	Engineer III	DPWH, Quezon 1st
4	Helen O. Asinas	Engineer III	DPWH, Quezon I
5	David L. Fabila, Jr.	Forester II	DENR, RXI, Davao City
6	Benjamin S. Babia	Chief, PDS	DPWH - X - Camiguin
7	Eduardo T. Laganson, Jr.	Engineer II	DPWH - X - Camiguin
8	Irma P. Garde	PPDC	OPPDC - Quezon
9	Edwin B. Elloso	PDO IV	OPPDC - Quezon
10	Danielito P. Padon	Engineer II	Region VIII - Leyte V
11	Lyndel P. Jabines	Engineer II	Region VIII - Leyte V
12	Orlando M. Casio	Engineer III	P. S.
13	Estelita M. Leonado	Economist II	P. S.
14	Concepcion C. Anaud	Chief EDS	NEDA XI
15	Ma. Lucila C. Pinero	Engineer III	Region XI
16	Ydna Valientes	Engineer I	Negros Occidental III
17	Gerard Dunque	Draftsman II	Negros Occidental III
18	Evelina A. Priolo	CPDC	LGU - Meycauayan City
19	Carlos J. Abacan	City Engineer	City Gov't. Mey.
20	Aquilina T. Decilos	Engineer III	DPD, PS
21	Resito David	Project Director	FCSEC
22	Hermilo E. Alfonso, Jr.	Engineer II	DPWH - Region III
23	Venancio C. Salazar	Engineer III	DPWH - Bul 2nd
24	Edgar A. Sarto	Engineer II	DPWH - Bul 2nd
25	Ramon N. Regala	Special Investigator	DPWH - Bul 2nd
26	Leonila R. Mercado	Engineer IV	PMO - MFCP, C1
27	Robert P. Manalo	Operations Officer	OCDR - 3
28	Serrano J. Galagala	Engineer III	DPWH - Davao del Norte
29	Liberato S. Tan, Jr.	Engineer III	DPWH - Davao del Norte
30	Ignacia M. Ramos	Supvg. Environmental Mgt. Sp.	ESSO - DPWH
31	Leonardo Sanchez	Engineer III	MFCV - PMO
32	Crispina B. Abat	C. Plans OCD / NDCC	OCD
33	Salvador G. Estudillo	RD	OCD 8
34	Minda C. Morante	RD	OCD XI
35	Kamoto Minoro	Jica Expert	DPWH
36	Nelson Livada	Engineer III	BOD
37	Ma. Elya Alpino	Zero Waste Management	Phy. Plant
38	Jesse C. Felizardo	Engineer IV	FCSEC
39	Alejandro B. Centeno	Planning Engineer	DPWH - Bul 2nd
40	Rick Rodell C. Luis	Senior Geologist	MGB - R3
41	Julito N. Vargas	AMD III	PPDC Quezon
42	Magtanggol E. San Miguel	Municipal Engineer	Municipal of Plaridel
43	Ciriaco F. Castillo	Engineer V	Region IV-A
44	Pablo C. Reyes	Engineer III	Region IV-A
45	Martiniano dela Cruz	Engineer III	BOD
46	Rebecca T. Garsuta	Engineer V	PS
47	Rodolfo J. Santos	SDO IV	Office of the LGU Bul.
48	Hilton Hernando	WX Specialist II	DACASA
49	Yoshio Tokunaga	Chief Advisor, JICA	PMO - FCSEC
50	Dolores. M. Hipolito	PM II	PMO - FCSEC
51	Evth Renan C. Florendo	Engineer II	PMO - MFCDP II
52	Julius D. Borja	PM	PMO - MFCDP II

<b>No.</b>	<b>Name</b>	<b>Position</b>	<b>Office</b>
53	Florentino R. Sison	Dep't. Chief - Operations Div.	OCD NDCC
54	Naomi Kato	JICA Study Team	FCSEC
55	Michael T. Autasan	Engineer IV	PMO - FCSEC
56	Cesar P. Odi	Forester I	DENR
57	Emmie Ruales	Engineer IV	NWRB
58	Grecille Christopher Damo	Engineer III	FCSEC
59	Takeo Mitsunaga	JICA Expert	FCSEC
60	Jerry Fano	Engineer III	FCSEC
61	Roseller E. Coy	Forester II	DENR Tac. City
62	Silverio D. Auxterio	Draftsman	DPWH - P.S.
63	Jaime Surot	Engineer II	DPWH - P.S.
64	Emmanuel Adriano	Engineer II	DPWH - P.S.
65	Ma. Soledad Balisi	Economist III	DPWH - P.S.
66	Christine Tolentino	Clerk	PS
67	Elpidio U. Avena	Municipal Engineer	Obando, Bulacan
68	Madelyn B. Loyod	Engineer III	PS
69	Emma C. Banatao	Engineer III	PS
70	Kenichiro Kondo	JICA Study Team	FCSEC
71	Nobuyuki Sato	JICA Study Team	FCSEC
72	Hideki Konno	JICA Study Team	FCSEC
73	Satoshi Takata	JICA Study Team	FCSEC
74	Yoshiharu Matsumoto	JICA Study Team	FCSEC
75	Taketoshi Matsunaga	JICA Expert	FCSEC
76	Joel I. Jacob	Legal Service	Legal
77	Maxim Fernandez	Legal Service	Legal
78	Arturo Santos	PMO - SB	SB - PMO
79	Angelito D. Damo	Assistant Director	SB - PMO
80	Zosimo C. Culla	LO 4	Legal
81	Merlinda Manila	OIC Chief - FRDD	DENR IV - Calabarzon
82	Minnie Darang	In-house Consultant	JICA



## **SECOND STAKEHOLDER WORKSHOP**

### **ON THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES**

#### **1 Outline of the Workshop**

##### **1.1 Background**

The study which was started in September 2006 has come to the time for the presentation of the measures at model river basins for pilot project tentatively.

On this occasion, the second stakeholder workshop was held to receive opinions and comments to elaborate the content of the study and organize the result of the study for planning on the following model river basins.

- Ilog-Hilabangan (Region VI)
- Dungcaan (Region VIII)
- Meycauayan (Region III)
- Kinanliman (Region IV-A)
- Tuganay (Region XI)
- Compol (Region X) (The name of the river basin was corrected as “Dinangasan” by the stake holder member.)

The materials used for this workshop are attached hereto.

##### **1.2 Objective of the Workshop**

The workshop was held in principle under the following objectives:

- To understand and appreciate the Study.
- To introduce the structural measures and non-structural measures.
- To identify the strength and weakness of implementation of the proposed structural measures and non-structural measures.

##### **1.3 Date and Venue**

The date and venue is as follows:

- Date : November 28, 2007
- Venue : Bayview Park Hotel, Manila

##### **1.4 Participants**

Among the 80 invited persons, totaling 51 persons or 66% of the invited persons attended the workshop. The invited persons were shown below. On the other hand, attendance list is attached at the end of this paper.

- LGUs from the model river basins: 16 persons
- DPWH (Central): 6 persons
- DPWH (Regional and District): 15 persons
- Others: 14 persons

#### **2 Program**

##### **2.1 Morning Session**

The morning session started in accordance with the following program:

- Opening program, which consisted of the national anthem, invocation (by Ms. Mercado, PMO-MFCP-I), opening remarks (by Ms. Cabral David, PhD, OIC Director, PS), and workshop overview (by Ms. Decilos, PS).

- Presentation of Structural Measures for Model River Basins, Mr. Kondo, Co-Team Leader of the JICA Study Team
- Presentation of Non-Structural Measures for Model River Basins, Mr. Kitamura, the JICA Study Team
- Presentation of Initial Environmental Examination for Model River Basins, Ms. Naomi Kato, the JICA Study Team
- Introduction of Open Forum and Workshop Mechanics by Ms. Hipolito, Project Manager II, PMO-FCSEC

## **2.2 Afternoon Session**

The afternoon session is performed in accordance with the following program:

- Workshop with participants grouping themselves by the model river basins. Each group was assigned DPWH personnel to facilitate each group in their discussion of the strength and the weakness of Implementation of the Structural measures and Non-Structural Measures.
- Then, workshop output was presented by the leader of each group.
- Wrap-up of the workshops was undertaken by Ms. Hipolito, with thanks for cooperation by JICA and JICA Study Team.
- Mr. Menez, Project Director, PMO-MFCP-II, then presented closing remarks. The Second Stakeholder Workshop ended with a distribution of certificate of attendance.

## **3. Output of Workshop**

Output of workshop is summarized in the format distributed from each group. The output is shown in the following tables:

## **ILOG-HILABANGAN**

### **1. Implementation of the Proposed Structural Measures**

<b>Items</b>	<b>Strength</b>	<b>Weakness</b>
1) Technical Aspect	<ul style="list-style-type: none"> <li>- Availability of manpower resources</li> <li>- Early implementation of the project</li> <li>- Availability of material for the project</li> </ul>	<ul style="list-style-type: none"> <li>- Late implementation of the project as project schedule in the study (2014)</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Corporation / Willingness of LGUs in the provision of relocation site / Evacuation center</li> <li>- Acceptability of the affected people</li> <li>- Early implementation of the project</li> </ul>	
3) Institutional Aspect		<ul style="list-style-type: none"> <li>- Dependency of LGUs in national agencies as to flood control area in all aspect</li> <li>- Lack of funds</li> <li>- Insufficient inter-regional</li> <li>- Communication</li> <li>- Lack of coordination among stakeholders</li> </ul>

### **2. Implementation of the Proposed Non-Structural Measures**

<b>Items</b>	<b>Strength</b>	<b>Weakness</b>
1) Technical Aspect	<ul style="list-style-type: none"> <li>- Active GO-NGO participation</li> </ul>	<ul style="list-style-type: none"> <li>- No monitoring facilities</li> <li>- Inadequate capacity to conduct/ handle monitor of stations</li> <li>- No hazard map</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Project Acceptability</li> </ul>	<ul style="list-style-type: none"> <li>- No adequate funds for relocation sites including disturbance compensation</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- Presence of active local disaster coordinating council</li> <li>- Support form provincial government</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of corporation among stakeholder</li> <li>- Insufficient inter-regional corporation</li> </ul>

## DUNGAAN

### 1. Implementation of the Proposed Structural Measures

Items	Strength	Weakness
1) Technical Aspect	<ul style="list-style-type: none"> <li>- River improvement will reduce or solve flooding problem</li> <li>- Availability of sand and gravel and construction materials</li> <li>- Presence of DPWH and city engineering personnel</li> </ul>	<ul style="list-style-type: none"> <li>- Limited or lack of fund</li> <li>- Incapability of the LGU to maintain of flood control facilities</li> <li>- Lack of knowledgeable technical personnel that specialized major flood mitigation project</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Willingness of the LGU to support socioeconomic aspect</li> <li>- Generate/Increase investment potential and employment</li> <li>- Willingness of the LGU to relocate/transfer the affected households</li> <li>- Ensured peace and order during construction</li> </ul>	<ul style="list-style-type: none"> <li>- Dredging ecological disturbance</li> <li>- Dredging ; spoils dumping location uncertain</li> <li>- Mangrove destruction</li> <li>- Presence of illegal cutting of trees</li> <li>- Right of way land acquisition</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- Presence of NGA, NGO and PO</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of networking and coordination of line agencies, NGO, PO</li> <li>- Lack of support in strengthening organization</li> <li>- Political intervention/Political will</li> </ul>

### 2. Implementation of the Proposed Non- Structural Measures

Items	Strength	Weakness
1) Socio-Cultural Aspect	<ul style="list-style-type: none"> <li>- High awareness of the residents on warning system</li> <li>- Capability of LGU to do flood warning</li> </ul>	<ul style="list-style-type: none"> <li>- Insufficient instruments for warning system</li> <li>- Insufficient funds for operation and maintenance of early warning system</li> <li>- Lack of communications signals (for example Telephone, cell phone) in some mountainous area</li> </ul>
2) Environmental Aspect	<ul style="list-style-type: none"> <li>- Increased people's awareness and preparedness</li> <li>- Availability of Hazard Maps</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- Resistance of some families along the river banks</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- Sustained warning system by LGU even in the change of administration</li> <li>- Regular seminar for disaster preparedness campaign</li> <li>- High level of people's receptivity to disaster preparedness campaign</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of advocacy IEC (Information Education Campaign) , LGU</li> </ul>

## MEYCAUAYAN

### 1. Implementation of the Proposed Structural Measures

Items	Strength	Weakness
1) Technical Aspect	<ul style="list-style-type: none"> <li>- Technical assistance from Japan to provide modern/efficient dredging equipment</li> <li>- Proposed drainage master plan and flood control projects</li> <li>- Continuous infra projects being initiated by LGUs</li> <li>- “Technical Personnel” are available for the implementation of the projects</li> </ul>	<ul style="list-style-type: none"> <li>- In adequate quantity of equipment</li> <li>- Improper disposal of contaminated dredged materials</li> <li>- Prioritization of infrastructure for implementation</li> <li>- Modern dredging equipment to accommodate massive volume of silt and other materials</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Operational Solid waste collection system</li> <li>- Availability of relocation site for informal settlers along waterways</li> </ul>	<ul style="list-style-type: none"> <li>- Presence of subdivision project encroaching the river easements</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- Strong commitment of LCEs to address the flooding problem</li> <li>- Strong partnership with NGAs, NGOs, Pos, of Industry</li> </ul>	<ul style="list-style-type: none"> <li>- Insufficient financial resources of LGUs</li> </ul>

### 2. Implementation of the Proposed Non-Structural Measures

Items	Strength	Weakness
1) Technical Aspect	<ul style="list-style-type: none"> <li>- Availability of Water Quality Monitoring Results</li> <li>- Availability of technical assistance from NGAs and foreign agencies</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of technical training for LGU personnel</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Existing “Productivity Center” w/c produces seedlings like Mahogany, Bamboo, and other seedlings</li> <li>- Continuous information and education campaign for environmental Protection</li> </ul>	<ul style="list-style-type: none"> <li>- Improper disposal and segregation of household garbage</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- Strong partnership with NGAs, NGOs, Pos, and Industry</li> <li>- Formulated Evacuation Plan</li> <li>- Establishment of Water Quality Management Area for the Clean-up and Rehabilitation of Meycauayan-Marilao-Obando River System pursuant to Clean Water Act of 2004</li> </ul>	<ul style="list-style-type: none"> <li>- Land Use Regulation</li> <li>- Lack of political will on the illegal settlers</li> <li>- Insufficient Evacuation Facilities</li> </ul>

**KINANLIMAN**

**1. Implementation of the Proposed Structural Measures**

<b>Items</b>	<b>Strength</b>	<b>Weakness</b>
1) Technical Aspect	<ul style="list-style-type: none"> <li>- Construction materials available</li> <li>- Heavy equipment and trucks available</li> <li>- Available hazard maps</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of sophisticated early warning device or system during calamities/flashflood</li> <li>- upstream and downstream river banks susceptible to landside and scoring and erosion</li> <li>- LGU and national financial incapability</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Knowledgeable POs and NGOs</li> </ul>	<ul style="list-style-type: none"> <li>- relocation site and expenses after displacement of affected residents</li> <li>- informal settler and Relocation site</li> <li>- LGU/NG(National Government) lack of financial resources</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- Prepared MDCC</li> </ul>	<ul style="list-style-type: none"> <li>- Implementation of land use</li> <li>- Insufficient funds</li> </ul>

**2. Implementation of the Proposed Non-Structural Measures**

<b>Items</b>	<b>Strength</b>	<b>Weakness</b>
1) Technical Aspect	<ul style="list-style-type: none"> <li>- Engineering people capable LGU &amp; DPWH</li> <li>- Available hazard maps</li> </ul>	<ul style="list-style-type: none"> <li>- Right of way acquisitions</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Organized POs &amp; NGOs</li> </ul>	<ul style="list-style-type: none"> <li>- Failure to stop illegal cutting of trees for illegal timber and charcoal</li> <li>- Insufficient fund</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- Organized management disaster council</li> </ul>	<ul style="list-style-type: none"> <li>- No available water shed management plan</li> <li>- Insufficient fund</li> </ul>

## TUGANAY

### 1. Implementation of the Proposed Structural Measures

Items	Strength	Weakness
1) Technical Aspect	<ul style="list-style-type: none"> <li>- less investment, actually acting as the retarding pond (presently)</li> <li>- for LGUs: <b>20% of the IRA is devoted purely for programs and projects</b></li> <li>Presence of ordinances prohibiting a quarrying 5 km downstream and 1 km upstream of Tuganay CIS</li> </ul>	<ul style="list-style-type: none"> <li>- difficulty implementation of designed width along big banana plantation</li> <li>- construction by other private companies of flood dikes and other infra without approved plans to compliment other projects</li> <li>- financial support to the project</li> <li>- no funds for national &amp; locals</li> <li>- acquisition of areas to be intended for retarding basins</li> <li>- insufficient funds for the demand of infra project</li> <li>- no proper monitoring during night time</li> <li>- effects of channel improvement on the fishponds downstream</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- There is an on-going study of the 8,000 has to be developed as a watershed area at the upstream portion of Tuganay river within LGU-Sto. Tomas</li> </ul>	<ul style="list-style-type: none"> <li>- lack of funds for the implementation of the said project</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- support of the LGUs</li> <li>- support of the land owners where the proposed structural measures will be located</li> <li>- minimized flooding that affects the people</li> <li>- ample regulations/Laws on water code</li> </ul>	<ul style="list-style-type: none"> <li>- no-strict implementation LGU</li> <li>- projects were limited to farm market roads, school buildings and barangay health stations but not on flood control</li> <li>- relocation of people that will be affected by the project</li> <li>- water code boundary issues (river bank within titled property)</li> </ul>

### 2. Implementation of the Proposed Non-Structural Measures

Items	Strength	Weakness
1) Technical Aspect	<ul style="list-style-type: none"> <li>- flood warning system: already existing in place- RDCC&amp;MDCC</li> <li>- non/government-LGU/province institutions (banana plantation) has own monitoring system in-place: rain gages, river x-sect, field warning system</li> </ul>	<ul style="list-style-type: none"> <li>- no watershed master -plan upstream/headwater</li> <li>- lack of hazard mapping &amp; information</li> <li>- LGU: Corresponding/affected municipality- insufficient</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- presence of multinational companies to fund non-structural measures within their area of responsibility (EX planting of trees/bamboos along river banks)</li> <li>- presence of big banana plantation companies that increases employment and also local source of the municipal income</li> </ul>	<ul style="list-style-type: none"> <li>- conversion of upland areas to agricultural land</li> <li>- no upstream and downstream coordination of the LGUs for the monitoring of run-off hazard</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- disaster preparedness of the people</li> <li>- Presence of foreign assistance from JBIC for Dujali and Sto. Tomas</li> <li>- very active MDCC</li> <li>- Successful in the implementation of RA 9003 outstanding LGU-national Awardii. this area now serves as national showcase for RA 9003 implementation.</li> </ul>	<ul style="list-style-type: none"> <li>- Insufficient funds for the more improved equipment to be used for residual waste and its processing for economic enterprise development.</li> </ul>

## DINANGGASAN

### 1. Implementation of the Proposed Structural Measures

Items	Strength	Weakness
1) Technical Aspect	<ul style="list-style-type: none"> <li>- Technical Capability of DPWH personnel assigned in this area</li> <li>- Existing Dike can be continued</li> <li>- Construction material s are available</li> </ul>	<ul style="list-style-type: none"> <li>- limited funds of GOP</li> <li>- Policy which limits DEO project implementation to 20M pesos</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Sufficient construction time because of distinct dry season</li> <li>- Few household to be affected during the construction</li> </ul>	<ul style="list-style-type: none"> <li>- No relocation plan for possible displaced families</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- active Barangay District Coordinating Council (BDCC)</li> <li>- Dynamic local leaders</li> <li>- People are cooperative</li> <li>- Aforestation project being implemented by DENR</li> </ul>	<ul style="list-style-type: none"> <li>- Political intervention in hiring local workers</li> </ul>

### 2. Implementation of the Proposed Non-Structural Measures

Items	Strength	Weakness
1) Technical Aspect	<ul style="list-style-type: none"> <li>- Competent technical personnel of partner agencies</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of transportation and technical equipment</li> </ul>
2) Socio-Environmental Aspect	<ul style="list-style-type: none"> <li>- Coastal resources management project funded by NZ already implemented</li> </ul>	<ul style="list-style-type: none"> <li>- Loss of income of residence due to displacement</li> </ul>
3) Institutional Aspect	<ul style="list-style-type: none"> <li>- Cooperative and competent department partner agencies</li> <li>- Active BDCC</li> <li>- Awareness of people what to do in case of disaster (floods)</li> <li>- Non-structural measures were already conducted by JICA in 2002.</li> </ul>	<ul style="list-style-type: none"> <li>- No proper coordination among barangay</li> </ul>



**Attendance List**

<b>No.</b>	<b>Name</b>	<b>Position</b>	<b>Office</b>
1	Alain John R. Sotto	Engineer III	RO XI
2	Alejo T. Germinal	Engineer I	DPWH Neg 3rd
3	Amadeo C. Cruz		Val Engineer Office
4	Aquilina T. Decilos	Engineer III	PS
5	Arlette C. Guzman	Engineer II	DPWH RO III
6	Arnuifo V. Cabantog	MGB IVA	DENR
7	Aurelio Dagula, Jr.	Engineer	LGU
8	Baodilla B. Quezon	PDO IV	LGU Sto. Tomas
9	Bayani R. Torres Jr.	Asst. CPDO	LGU Meycauayan
10	Benjamin S. Babia	Chief PDS	DPWH DEO Camiguin
11	Blas G. Coloma, Jr.	OIC City Engineer	LGU Meycauatan
12	David L. Fabila, Jr.	DENR	RXI
13	Dolores M. Hipolito	Project Manager II	FCSEC
14	Edgardo A. Juntereal	MPDC	LGU Real Quezon
15	Eduardo T. Laganson, Jr.	Engineer II	DPWH X Camiguin
16	Elbert L. Magbato	MPDC	LGU Ilog
17	Elmo F. Atillano	Engineer III	
18	Estelita M. Leonado	Economist II	PS
19	Freddie M. Combalicer	Engineer II	DPWH Quezon II
20	Gloria L. Attillano	Staff	DPWH Central
21	Hermilo E. Alfonso, Jr.	Engineer II	DPWH RO III
22	Higino Sixto P. Garaygay	CITY ADM	LGU Kabankalan
23	Jesse C. Felizardo	Engineer IV	FCSEC
24	Jesus D. Alaurin	ME	PEB
25	Jose B. Serafica	Engineer II	DPWH IV-a
26	Julius D. Borja	Project Manager I MFCDP-II	
27	Leandro E. Aumentado	SB Member	LGU Real
28	Leonila R. Mercado	Engineer IV	PMO-MFCP C1
29	Luis A. Calleja	SB Member	LGU Real
30	Lyndel P. Jabines	Engineer II	DPWH ROVIII
31	Ma. Lucila C. Piñero	Engineer III	RO VI
32	Magtanggol C. San Miguel	MUN Emgineer	Malilao, Real
33	Manuel M. Meraña	Exec. Assistant	LGU Real
34	Marcelino Tolentino, Jr.	Engineer III	PS
35	Margie M. Duro	PDO II	LGU SLDM
36	Milagrosa A. Estandarte	Engineer II	
37	Minoru Kamoto	Adviser	DPWH

38	Orlando M. Casio	Engineer III	PS
39	Orlando M. Pineda	Chief G	DENR MGB-3
40	Patrick A. Postrero	CPDO	LGU Baybay
41	Philip F. Meñez		
42	Ramon N. Regala	Special Investigator	Bulacan 2nd District
43	Ranulfo A. Tagolgol	CEO	LGU Baybay
44	Ricardo L Sta Ana		
45	Ro-Ann A. Bacal	Director III	NEDA X
46	Rogelio Diaz	CITY Engineer	LGU Kabankalan
47	Rolando D. Eduria	CB	Cal CE
48	Ronald D. Robles	P.O. III	CPDO-Val
49	Val B. Bachita	Engineer II	LGU Kabankalan
50	Wilfredo Jay R. Peras	SB Member	LGU Real
51	Ydna R. Valientes	Engineer I	DPWH Neg 3rd

**Meeting on Flood Mitigation Planning  
for  
Ilog-Hilabangan River**

**THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD  
MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE  
PHILIPPINES**

**1. Outline of the Meeting**

**1.1 Background**

The study which was started in September 2006 has come to the time for flood mitigation planning for six selected model river basins as pilot projects within the study. In this connection, the study team conducts site investigation with ocular site survey and a meeting with stakeholders to obtain local information related to flood mitigation for Ilog-Hilabangan river.

**1.2 Objective of the Meeting**

The meeting was held in principle under the following objectives:

- To identify the problem areas,
- To assess the current conditions particularly for non-structural measures such as land use, disaster management, etc,
- To discuss the possible structural and non-structural measures, and
- To identify other concerns

**1.3 Date and Venue**

The date and venue is as follows:

- Date : October 4, 2007
- Time : 8:45 – 13:00
- Venue : Function Hall, Kabankalan City

**1.4 Participants**

Affected cities and municipalities in the alluvial fan part, which is the most flood-prone are in Ilog-Hilabangan river basin, together with a representative of DPWH, NIA and CENRO (DENR) are invited to the meeting. Totally 25 persons attended the workshop. The attendance list is attached.

**2. Program**

The meeting started with opening program, which consisted of the national anthem, invocation, opening remarks (by Ms. Hitolia, District Engineer, DPWH Region 6 3rd

Engineering District).

After progress of the study and purpose of the meeting was explained by Mr. Damo, C/P study team, the following two sessions were conducted.

#### Session 1 Discussion on structural measures

The session consists of the followings.

- Explanation on structural measures (Mr. Kondo, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on city and municipalities. Representatives from DPWH, NIA and DENR were assigned to each group.
- Presentation on the result of group discussion
- Discussion on possible structural measures

#### Session 2 Discussion on non-structural measures

The session consists of the followings.

- Explanation on concept of non-structural measures (Mr. Kitamura, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on city and municipalities. Representatives from DPWH, NIA and DENR were assigned to each group.
- Presentation on the result of group discussion

Wrap-up of the meeting was undertaken by Mr. Damo, C/P study team, with thanks for all of the participants.

### **3. Output of Workshop**

Output of meeting is summarized in the format distributed to each group for structural and non-structural measures. The outputs are attached.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

Date:
Time:
Venue:
Group Name: Himamaylan
(1) Purpose of Urgent Improvement
a. How do severe floods occur? So. Buhian, Ilahud, Brgy. Toog, So. of Saise Barangay Buenavista
b. How is frequency of floods? Medium frequency flood.
c. Is it due to river basin changed? - How does urbanization occur? - How does land use change? Saise-land used change
d. Is it in relation to other project? - How does urban plan relates? - How does agricultural/irrigation project relates? - How does other river project relates? - How does sabo project relates? - How does other disaster relation project relates? - How does road/coastal project relates? - Others?
(2) Where is urgent target area of flood mitigation? So. Buhian, Ilahud Brgy To-og, So. Daan Banwa, Park Riverside, Park Allovera. So. Cagay, So. Bitu, So. Mapa-it
(3) Where is necessary portion of improvement? 1)Other Project, Urban Plan-less flooding, increase in investment / business flourish; 2)Agriculture / Irrigation Project; 3)Other River Project-Dikes, Multipurpose dam-for irrigation, electricity and flood control
(4) Any others regarding flood mitigation? 1)Sabo project-Saise; 2)Disaster Relation Project-flood dikes, foot bridge, hanging bridge, bank project; 3)Road and Coastal project-Sea wall and semi-commercial post.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

Date:
Time:
Venue:
Group Name: Municipality of Cauayan
(1) Purpose of Urgent Improvement
a. How do severe floods occur? To prevent life loss and severe damage to properties.
b. How is frequency of floods? Minimal (during typhoon season only)
c. Is it due to river basin changed? - How does urbanization occur? Less flood, more investment - How does land use change? Increase in land productivity
d. Is it in relation to other project? - How does urban plan relates? Rapid development. - How does agricultural/irrigation project relates? Increase in production. - How does other river project relates? Lessen the cost of river project. - How does sabo project relates? Minimize siltation. - How does other disaster relation project relates? Minimal. - How does road/coastal project relates? Will greatly improved. - Others?
(2) Where is urgent target area of flood mitigation? Barangay Guiljungan, barangay Caliling, barangay Inayauan, Cauayan Negros
(3) Where is necessary portion of improvement? The whole strip of the river.
(4) Any others regarding flood mitigation? Riverbank protection, dredging, and reforestation.

**The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas**  
**ANSWER TO QUESTION ON STRUCTURAL MEASURES**

<i>Date:</i>
<i>Time:</i>
<i>Venue:</i>
<i>Group Name:</i> <b>Kabankalan</b>
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> Even without rain in Kabankalan, if there is rain in the uplands of Negros Oriental, there is still the possibility of flooding in Kabankalan. (Negros Oriental – Mabinay, Ayungon, Bais, Bindoy, Tayasan). Flood prone areas in Kabankalan City are Barangays 1–9, Talubangi, Biniquil, Daan Banwa, Linao, Hilamonan, Orong, Camansi, Saling and portion of Camugno.
<b>b. How is frequency of floods?</b> Every rainy season.
<b>c. Is it due to river basin changed?</b> Yes. – <b>How does urbanization occur?</b> Population growth, deforestation, migration and conversion of lands from agricultural and forestal to commercial, residential and industrial. – <b>How does land use change?</b>
<b>d. Is it in relation to other project?</b> – <b>How does urban plan relates?</b> – <b>How does agricultural/irrigation project relates?</b> With abundance of water during rainy season and no water during dry season, storage of water is needed for use during dry season. – <b>How does other river project relates?</b> – <b>How does sabo project relates?</b> – <b>How does other disaster relation project relates?</b> – <b>How does road/coastal project relates?</b> – <b>Others?</b>
<b>(2) Where is urgent target area of flood mitigation?</b> All the flood prone areas mentioned in question no. 1.
<b>(3) Where is necessary portion of improvement?</b> Overflow to Sitio Talubangi.
<b>(4) Any others regarding flood mitigation?</b> 1) Revetment wall, 2) Diversion channel, 3) Bridge construction, 4) Improvement of tributaries, 5) Dam construction – irrigation/hydroelectric

**The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas**  
**ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)**

<i>Date:</i>
<i>Time:</i>
<i>Venue:</i>
<i>Group Name:</i> <b>Kabankalan</b>
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> 1)Typhoon Nitang–1984, Ruping–1991, Nanang–2001, Ursula–2003. Affected areas are poblacion–barabgays 1–9. Biniquil, Talubangi, Camugao, Linao, Salong, Camansi, Orong, Daan–Banua.
<b>b. How is frequency of floods?</b> Recurring every year, even just heavy down pour of rains. Four hours continuous rains flooded barangays.
<b>c. Is it due to river basin changed?</b> Reasons are 1) Erosion (yearly cropping of sugarcane); 2) Siltation (create heavy siltation on downstream); 3) Rapid growth of population (1.73% increase per year; 4) Various tributary rivers which added volume of water downstream (Cabangahan, Kayutesan, tablas, Dinayngon, Sangomayon); 5)Brought damage to roads (national) – <b>How does urbanization occur?</b> more rapid if flood will be minimized – <b>How does land use change?</b>
<b>d. Is it in relation to other project?</b> – <b>How does urban plan relates?</b> 1) Must be coordinated to flood control projects for every projects implemented; 2) must have a comprehensive / master plan for a comprehensive solution to answer the problem – <b>How does agricultural/irrigation project relates?</b> 1) Construction of irrigation dam upstream to provide irrigation (mitigate flooding, retarding basin) especially on oriental side (upland areas); 2) Development of water shed (Long-term solution); 3) Hydro power generation (Carol-an River) – <b>How does other river project relates?</b> Deepening, widening, construction of revetwalls on Hilamonan creek – <b>How does sabo project relates?</b> – <b>How does other disaster relation project relates?</b> Equipment support, training – <b>How does road/coastal project relates?</b>

**The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas**  
**ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)**

<b>(2) Where is urgent target area of flood mitigation?</b> Kabankalan City (as per specified affected areas).
<b>(3) Where is necessary portion of improvement?</b> Whole river.
<b>(4) Any others regarding flood mitigation?</b> 1) River channel improvement; 2) Dam; 3) Retarding Basin; 4) Drainage Facilities including culvert replacement.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)

<i>Date:</i>
<i>Time:</i>
<i>Venue:</i>
<i>Group Name:</i> Ilog
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> 1) Continuous heavy rains even for 3 hours; 2) During storms; 3) Even without rains but other upland places experienced rain – all the water goes to Ilog, this result to flash floods. The project to answer flood problems, loss of lives and damage to properties.
<b>b. How is frequency of floods?</b> Flood is a common calamity in Ilog. This will lessen the occurrence of flood.
<b>c. Is it due to river basin changed?</b> – <b>How does urbanization occur?</b> 1) For the development and protection of the populace; 2) Expand development/urban area – <b>How does land use change?</b> Vacant / unused area will be utilized for agriculture and other purposes.
<b>d. Is it in relation to other project?</b> – <b>How does urban plan relates?</b> Urbanization means development, good income and increase standard of living of residents. – <b>How does agricultural/irrigation project relates?</b> The project is expected to increase agricultural production (both agri and aqua) for 3 croppings. – <b>How does other river project relates?</b> The project will strengthen the existing river channels (I, II, III) of Ilog and stopped the inundation at river banks. – <b>How does sabo project relates?</b> For irrigation purposes an prevention of siltation. This will also lessen the current of floods. – <b>How does other disaster relation project relates?</b> It will prevent the loss of lives, damage to properties, both Agri, animals and aqua – <b>How does road/coastal project relates?</b> Road projects / coastal structures will be preserved. Reconstruction and maintenance will be lessen and prevented. – <b>Others?</b>

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)

<b>(2) Where is urgent target area of flood mitigation?</b> Sitio Malabang, Andulauan; Poblacion (barangay I & II), Bacana, Calubang, V. Alegue, Mamalad, Deliciro, Galicia, Dancalan, Consuelo
<b>(3) Where is necessary portion of improvement?</b> a) Channels I, II & III; b) Poblacion, Ilog; c) Vista Alegre, d) Deliciro
<b>(4) Any others regarding flood mitigation?</b>

# Non-Structural Measures

Name												Rating:		
Agency/Office		ILOC Municipality										1: Nothing, 2: Exist, but not active, 3: Working fairly,		
Position												4: Working well, 5: Working very well		
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation		(5) Constraints for Improvement	
Purpose(1)		To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	Municipal Council	Yes	No				CLUP be revised with provision on flood mitigation / preparation	
	Afforestation & Reforestation	1	2	3	4	5	DENR, Mun. Govt. of ILOO, Brgy.	Yes	No				National Government / DENR to conduct direct implementation of tree reforestation project	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	Mun. of ILOO, Brgy. DA, DENR, DPWH	Yes	No					
Purpose(2)		To reduce vulnerability against flood-related hazard												
Mitigation	Flood proofing structures	1	2	3	4	5	MUN. OF ILOO, DPWH, Brgy. Residents	Yes	No				Flood usually occurs in ILOO. It is an ordinary event, residents used to it. Financial constraints.	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	MDCC, PNP, Rescue, Brgy.	Yes	No				MDCC to formulate a true / actual and functional plan	
	Hazard map (including evacuation place and route)	1	2	3	4	5	MDCC, PNP, Rescue, Brgy.	Yes	No				MDCC to prepare a hazard map	
	Emergency Material and Equipment	1	2	3	4	5	MDCC, PNP, Rescue, Brgy.	Yes	No					
	IEC	1	2	3	4	5	MDCC, PNP, Rescue, Brgy.	Yes	No				Provincial government will assist provide LMDCC IEC materials for preparedness	
	Monitoring / Flood forecasting and warning	1	2	3	4	5	MDCC, PNP, Provincial, Rescue, Brgy.	Yes	No				Strengthened monitoring/forecasting equipment	
Response	Information dissemination	1	2	3	4	5	MDCC, PNP, Rescue, Brgy.	Yes	No				Strengthened up to barangay level info-dissemination program/activity	
	Flood fighting	1	2	3	4	5	MDCC, Rescue, Brgy.	Yes	No				Barangay to send volunteers for training on flood fighting activities	
	Evacuation	1	2	3	4	5	MDCC, Rescue, Brgy., PNP, MSNO	Yes	No				MDCC to de-identify evacuation site with facilities on sanitation and kitchen	
	Reporting of disaster condition	1	2	3	4	5	MDCC, Rescue, Brgy., PNP, MSNO	Yes	No				MDCC to have a clear assignment of function, e.g. Report on condition	
	Rescue activity	1	2	3	4	5	MDCC, PNP, Rescue, Brgy.	Yes	No				Strengthened rescue equipment personnel	
	Supporting from neighboring LGUs	1	2	3	4	5	MDCC, Other LGU, Rescue Teams	Yes	No				Strengthened relation between other LGU rescue team & Organized district disaster coordination teams	
Recovery	Post-flood damage assessment	1	2	3	4	5	MDCC (Centralized)	Yes	No				Strengthen MDCC capacity on flood damage reporting. Establish data base	
	Rehabilitation	1	2	3	4	5	MDCC, MSWD, Mun. of ILOO, Residents	Yes	No				LGU to allocate funds for flood rehabilitation	
	Insurance	1	2	3	4	5	MDCC, LGU	Yes	No					

# Non-Structural Measures

Name												Rating:		
Agency/Office		KABANKALAN City										1: Nothing, 2: Exist, but not active, 3: Working fairly,		
Position												4: Working well, 5: Working very well		
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation		(5) Constraints for improvement	
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition													
Mitigation	Land use regulation	1	2	3	4	5	CPDC	Yes	No	More consultants and public hearings			Assets settlement agreement	
	Afforestation & Reforestation	1	2	3	4	5	DENR, DA, LGU	Yes	No	More planting of trees, NGO involvement (Tree Planting Activity)			Kaingin system, needs monitoring and follow-up	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	BARANGAY, NGO	Yes	No	Active participation of Stakeholders			More active participation / involvement of NGO's and stakeholders	
Purpose(2)	To reduce vulnerability against flood-related hazard													
Mitigation	Flood proofing structures	1	2	3	4	5	LGU / DPWH	Yes	No	Good planning and implementation			No specific ordinance for implementation of flood proofing structures, insufficient funds	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LGU	Yes	No	Active participation of NGO's, Good Coordination			Inadequate training, lack of equipments	
	Hazard map (including evacuation place and route)	1	2	3	4	5	NATIONAL AGENCY, LGU	Yes	No				Hazard areas not properly identified - focus more on flood	
	Emergency Material and Equipment	1	2	3	4	5	LGU	Yes	No	Good planning and coordination			Lack of equipments, more additional equipments needed	
	IEC	1	2	3	4	5		Yes	No				Method very traditional, Lack of equipments to improve the method	
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LGU	Yes	No	"Out there"			Lack of equipments and technical support	
Response	Information dissemination	1	2	3	4	5	LGU / CDCC	Yes	No	Good planning and coordination			More technical support and equipment	
	Flood fighting	1	2	3	4	5	LGU / CDCC	Yes	No	Good utilization of existing facilities, Good planning and coordination			Lack of upgraded equipments	
	Evacuation	1	2	3	4	5	LGU / CDCC	Yes	No	Active participation of NGO's, Good planning and coordination				
	Reporting of disaster condition	1	2	3	4	5	LGU / CDCC	Yes	No	Good utilization of existing facilities, Good planning and coordination			Good communication facilities and coordination	
	Rescue activity	1	2	3	4	5	LGU / RESCUE VOLUNTEER	Yes	No	Involvement of NGO's, Good planning and coordination			Additional rescue vehicles and equipment, upgrading of facilities	
	Supporting from neighboring LGUs	1	2	3	4	5	LGU	Yes	No	Good planning and coordination			Good communication facilities and coordination	
Recovery	Post-flood damage assessment	1	2	3	4	5	LGU / CDCC	Yes	No	Involvement of NGO's, Good planning and coordination			Prompt reporting	
	Rehabilitation	1	2	3	4	5	LGU	Yes	No	Involvement of NGO's, Good planning and coordination			Availability of equipments	
	Insurance	1	2	3	4	5	GIS / LGU, SSS	Yes	No	Active involvement of concerned agencies, Good planning and coordination			No existing laws and regulation	



Non-Structural Measures													
Name		Amel C. Tanaway, Olm O. Tagna, Domingo L. Loringa, Jr.										Rating: 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well	
Agency/Office		CAJAYAN Municipality											
Position		BAC - Secretariat											
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Readiness for improvement		(4) Reason for Successful Implementation		(5) Constraints for Improvement
Purpose(s)	To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	LGU, MPDO	Yes	No	Good cooperation	Land use plan is limited only on urban areas		
	Afforestation & Reforestation	1	2	3	4	5	DENR, MAD	Yes	No	Good cooperation	Insufficient funds		
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	DENR, P.O., PNP	Yes	No	Good cooperation	Insufficient funds		
Purpose(s)	To reduce vulnerability against flood related hazard												
Mitigation	Flood proofing structures	1	2	3	4	5	DPWH / MEO	Yes	No	Good cooperation	Land owners of affected areas are incooperative		
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	MDCC	Yes	No	Good cooperation	Insufficient funds		
	Hazard map (including evacuation place and route)	1	2	3	4	5	MPDO	Yes	No	Updated map	Insufficient funds		
	Emergency Material and Equipment	1	2	3	4	5	MDCC, LGU	Yes	No		Insufficient funds		
	IEC	1	2	3	4	5	LGU, MSWD	Yes	No		Insufficient funds		
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LGU, MEO	Yes	No		Insufficient funds		
Response													
	Information dissemination	1	2	3	4	5	MAYOR'S OFFICE	Yes	No		Insufficient funds		
	Flood fighting	1	2	3	4	5	MDCC	Yes	No		Insufficient funds		
	Evacuation	1	2	3	4	5	MDCC	Yes	No		Insufficient funds		
	Reporting of disaster condition	1	2	3	4	5	MDCC	Yes	No		Insufficient funds		
	Rescue activity	1	2	3	4	5	PNP / MDCC	Yes	No		Insufficient funds		
	Supporting from neighboring LGUs	1	2	3	4	5	MAYOR'S OFFICE	Yes	No		Insufficient funds		
Recovery													
	Post-flood damage assessment	1	2	3	4	5	MAYOR'S OFFICE	Yes	No		Insufficient funds		
	Rehabilitation	1	2	3	4	5	LGU	Yes	No		Insufficient funds		
	Insurance	1	2	3	4	5	LGU	Yes	No		Insufficient funds		

Non-Structural Measures

Name													Rating: 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well
Agency/Office	HIMAWAYLAN Municipality												
Position													
		(1) Rating for existing condition				(2) Responsible Agencies		(3) Readiness for improvement		(4) Reason for Successful Implementation		(5) Constraints for Improvement	
Purpose(s)	To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	CPDO / LGU, CENTRO	Yes	No			Lack of policies/regulations regarding land use easement, Weak implementation of policies on land use forest	
	Afforestation & Reforestation	1	2	3	4	5	LGU, PEMO, DENR	Yes	No			Weak forest protection and enforcement limited resources, Weak enforcement	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited resources for the sustainability of the program	
Purpose(s)	To reduce vulnerability against flood-related hazard												
Mitigation	Flood proofing structures	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			More flood proofing	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited equipment / facilities, Limited trained staff	
	Hazard map (including evacuation place and route)	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited equipment / facilities, Staff limited resources	
	Emergency Material and Equipment	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited facilities but active personnel	
	IEC	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited mobility, IEC materials / facilities	
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			No facilities, dependent on the Provincial Disaster Management Team	
Response	Information dissemination	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited mobility	
	Flood fighting	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Lack / insufficient fund	
	Evacuation	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited facilities / resources	
	Reporting of disaster condition	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited communication facilities	
	Rescue activity	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited rescue facilities	
	Supporting from neighboring LGUs	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited resources	
Recovery	Post-flood damage assessment	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No				
	Rehabilitation	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited resources	
	Insurance	1	2	3	4	5	LGU, POI, NOOs, BRGY, PDMCC	Yes	No			Limited resources	

**THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT  
AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS**

DATE: 4-Oct-07  
TIME: 8:30 A.M.  
VENUE: Function Hall, Kabankalan City Hall

NO.	NAME	OFFICE
1	Elbert L. Magbato	MPDO - ILOG
2	Dureno E. Dagupan	Building Inspector, ILOG
3	Isagani Glenogo	Draftsman, ILOG
4	Jorge S. Adlaon	Mayor's Office
5	Jerry E. Cigare	NIA-NOPIO
6	Susana M. Casalem	DENR-CENRO, Kabankalan
7	Teodora Padilla	MSWDO - ILOG
8	Hidino Garriga	Kabankalan City
9	Jeri Dave Repique	Kabankalan City
10	Ulysis Corpus	Kabankalan City
11	Apelina A. Tomaro	CSWDO - Kabankalan City
12	Glicerio T. Cabatac, Jr.	CEO - Kabankalan City
13	Aurelio Corme	CPDO - Himamaylan
14	Randy F. Siason	Mayor's Office - ICD - Kabankalan
15	Glyn G. Tupas	MEO - Cauayan
16	Arnel C. Tanjusay	MEO - Cauayan
17	Domingo Loriega, Jr.	MPDO - Cauayan
18	Noel Harold Israel	CEO - Kabankalan City
19	Rene Ben Ledesma	Executive Assistant III
20	Armela E. Evaldato	Himamaylan City
21	Ma. Elena B. San Jose	PEMO, Bacolod City
22	Kenichiro Kondo	JICA Study Team
23	Tadanori Kitamura	JICA Study Team
24	Orlando Casio	DPWH, PS
25	Grecile Christopher Damo	DPWH-PMO-FCSEC

## **Meeting on Flood Mitigation Planning for Dungcaan River**

### **THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES**

#### **1. Outline of the Meeting**

##### **1.1 Background**

The study which was started in September 2006 has come to the time for flood mitigation planning for six selected model river basins as pilot projects within the study. In this connection, the study team conducts site investigation with ocular site survey and a meeting with stakeholders to obtain local information related to flood mitigation for Dungcaan river.

##### **1.2 Objective of the Meeting**

The meeting was held in principle under the following objectives:

- To identify the problem areas,
- To assess the current conditions particularly for non-structural measures such as land use, disaster management, etc,
- To discuss the possible structural and non-structural measures, and
- To identify other concerns

##### **1.3 Date and Venue**

The date and venue is as follows:

- Date : September 27, 2007
- Time : 9:00 – 13:00
- Venue : Baybay City

##### **1.4 Participants**

Most affected barangays in Dungcaan river, together with a representative of DPWH and CENRO (DENR) are invited to the meeting. Totally 29 persons attended the workshop. The attendance list is attached.

#### **2. Program**

The meeting started with opening remarks (by Mr. Damo, C/P study team).

After progress of the study and purpose of the meeting was explained by Mr. Damo, C/P study team, the following two sessions were conducted.

#### Session 1 Discussion on structural measures

The session consists of the followings.

- Explanation on structural measures (Mr. Kondo, JICA Study Team)
- Discussion on possible structural measures

#### Session 2 Discussion on non-structural measures

The session consists of the followings.

- Explanation on concept of non-structural measures (Mr. Kitamura, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on barangaies. Representatives from Baybay City, DPWH and DENR were assigned to each group.
- Presentation on the result of group discussion

Wrap-up of the meeting was undertaken by Mr. Damo, C/P study team, with thanks for all of the participants.

### **3. Output of Workshop**

Output of meeting is summarized as a separate sheet for structural measures and in the format distributed to each group for non-structural measures. The outputs are attached.

## Output for Structural Measures

1. Barangay Cogon- during high tide due to typhoon and continuous rain  
sea water penetrates along the river that causes the overflow of water at the river banks and destroyed tenths of hectares of paddy fields.  
It was also informed that the revetment that protects the bridge is also damaged and needs to be repair.  
The river width before is ten (10) meters but as of today it is already about 100 meters.  
Flooding in barangay cogon occurs every year.  
The river bank eroded easily because it is sandy soil type.  
Seventy five (75) families to one hundred (100) families are affected every time floods occur.
2. Barangay Candadom
  1. Sitio Brande- every time there's a typhoon and continuous rain  
floods occurs, that causes the overflow . There is an  
evacuation of around 180 household.
  2. Sitio Pagbanganan- Flash flood occurs and there is one (1) casualty  
(dead person).
3. Barangay Sto. Rosario  
It was informed that the flooding problem is the same as Barangays Cogon and Candadom.
4. Barangay Cani-pa  
It was also informed that every time floods occurs in the area due to typhoon and continuous rain bank collapse and bank scouring always happened in the area.  
Fifteen (15) families are affected.  
One-half (1/2) of agricultural land in the barangay always affected or damaged by floods.  
There is a propose plan to construct irrigation in the area.
5. Barangay Igang  
This barangay always experienced flash flood during typhoon and continuous rains. They also experienced mudflow and overflow in the area.  
Urbanization is experienced in this barangay.  
The whole barangay is inundated every time flooding occurs.

6. It was also informed that the location of proposed Dam #3 by JICA Study Team is problematic due to Right of Way (ROW) during the implementation.

Barangay Sto Nino, the proposal is to raised and improved the existing dike.

Barangay Cani-pa, the proposal is to construct dike to protect the resident.

# Non-Structural Measures

Group-1		Rating											
Name	Cris Lonto, Pepe Mandras, Dodong Fernandez, Fred Castro, Elmer Macababao												
Agency/Office													
Position													
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation		(5) Constraints for improvement
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	CPDC, HLURB	Yes	No	Approved CLUP, FLUP	Policies for strict implementation		
	Reforestation & Rehabilitation	1	2	3	4	5	LGU, DENR	Yes	No	Rehabilitation of open & denuded lands inside Pangasinan river watershed	Conversion of forest land to agriculture, Scheduling of cultivation & re-planting		
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LGU, BROY, OFFICIAL	Yes	No	Good coordination between LGU & barangay residence	Technical knowledge of existing laws		
Purpose(2)	To reduce vulnerability against flood-related hazard												
Mitigation	Flood proofing structures	1	2	3	4	5	LGU, DPWH	Yes	No	Good Structural Design	Lack of funds		
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LGU, CITY, DISASTER COOR. COUNCIL	Yes	No	Early Warning System	Lack of funds		
	Hazard map (including evacuation place and route)	1	2	3	4	5	LGU, CDCC, MGB	Yes	No	Early Warning System & awareness	Technical assistance from concern agencies		
	Emergency Material and Equipment	1	2	3	4	5	LGU, CDCC, BROY	Yes	No	Preparedness	Manpower and resources		
	IEC	1	2	3	4	5	LGU, CDCC, PAGASA	Yes	No	Support from concerned agencies	Lack of funds for training		
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LGU, CDCC, BROY	Yes	No	Public awareness/Invol. Of new technologies	Lack of budget/funds, Lack of technical knowledge		
Response													
	Information dissemination	1	2	3	4	5	LGU, CDCC, PDCC	Yes	No	Networking from LGU to barangay	Lack of communication facilities and manpower		
	Flood fighting	1	2	3	4	5	LGU, CDCC, PDCC, MILITARY, BDC	Yes	No	Adequate resources and competent personnel	Lack of facilities		
	Evacuation	1	2	3	4	5	LGU, MILITARY, BROY	Yes	No	Good coordination	Lack of adequate facilities for resources		
	Reporting of disaster condition	1	2	3	4	5	LGU, MILITARY, BROY	Yes	No	Good coordination	Lack of adequate facilities for resources		
	Rescue activity	1	2	3	4	5	LGU, MILITARY, BROY	Yes	No	Adequate facilities and competent personnel	Lack of funds		
Recovery	Supporting from neighboring LGUs	1	2	3	4	5	NEIGHBORING LGU	Yes	No	Good coordination / communication	Lack of coordination / unwillingness		
	Post-flood damage assessment	1	2	3	4	5	LGU, PDCC, CDCC, BROY	Yes	No	Reliable Data	Lack of communication / accessibility		
Recovery	Rehabilitation	1	2	3	4	5	LGU, BROY, CONCORD, SSMAN	Yes	No	Adequate resources	Lack of funds		
	Insurance	1	2	3	4	5	LGU, CONSTITUTION	Yes	No	Awareness	Lack of funds / unwillingness		

# Non-Structural Measures

Name		Group-2 Daniello P. Padon, Patrick Postero, Lolita Artillo, Guaberto Abad, Lando Yllescas										Rating			
Agency/Office															
Position															
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation		(5) Constraints for improvement		
Purpose(1)		To ensure effect of structural measures to mitigate hazard condition													
Mitigation	Land use regulation	1	2	3	4	5	BROY, LGU	Yes	No				No ordinance for barangay land uses		
	Reforestation & Rehabilitation	1	2	3	4	5	BROY, LGU, CENRO	Yes	No				Lack of information and education campaign on reforestation		
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	BROY, LGU	Yes	No				Lack of information and education campaign		
Purpose(2)		To reduce vulnerability against flood-related hazard													
Mitigation	Flood proofing structures	1	2	3	4	5	LGU, NATIONAL GOVERNMENT	Yes	No				Monetary reasons		
Preparedness	Emergency, education and post-flood plan	1	2	3	4	5	LGU, NATIONAL GOVERNMENT	Yes	No	The plan exist and people are aware of the existing plan			Lack of cooperation and understanding of the plan		
	Hazard map (including evacuation place and route)	1	2	3	4	5	LGU, NATIONAL GOVERNMENT	Yes	No	Proper dissemination of information of the hazard map					
	Emergency Material and Equipment	1	2	3	4	5	LGU's	Yes	No				Monetary reasons		
	IEC	1	2	3	4	5	LGU, NATIONAL GOVERNMENT	Yes	No	Regularized IEC					
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LGU's	Yes	No	Regularized IEC					
Response															
	Information dissemination	1	2	3	4	5	LGU's	Yes	No	Regularized IEC					
	Flood fighting	1	2	3	4	5	LGU's	Yes	No				Fear for their lives		
	Evacuation	1	2	3	4	5	LGU, NATIONAL GOVERNMENT	Yes	No	Regularized IEC and there's an existing plan					
	Reporting of disaster condition	1	2	3	4	5	LGU's	Yes	No	Regularized IEC and there's an existing plan					
	Rescue activity	1	2	3	4	5	LGU's	Yes	No	Trainings conducted					
Recovery	Supporting from neighboring LGUs	1	2	3	4	5	LGU's	Yes	No				Attitudinal problems		
	Post-flood damage assessment	1	2	3	4	5	LGU's	Yes	No	Trainings conducted					
Insurance	Rehabilitation	1	2	3	4	5	LGU's	Yes	No				Monetary reasons		
	Insurance	1	2	3	4	5	PRIVATE AGENCIES	Yes	No				Monetary reasons		

# Non-Structural Measures

Name	GROUP III										Rating: 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well				
Agency/Office															
Position															
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessary for improvement	(4) Reason for Successful Implementation		(5) Constraints for Improvement			
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition														
Mitigation	Land use regulation	1	2	3	4	5	CITY PLANNING	Yes	No	Coordination among concerned parties	Lack of proper IEC				
	Afforestation & Reforestation	1	2	3	4	5	CENRO, LOU, DA	Yes	No	IEC on tree registration program	Lack of funds in full implementation of tree registration program				
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LOU, DENR	Yes	No	Coordination with concerned agencies	Lack of funds and working force				
Purpose(2)	To reduce vulnerability against flood-related hazard														
Mitigation	Flood proofing structures	1	2	3	4	5	LOU, DPWH, PROVL, GOVT	Yes	No	IEC	Lack of funds				
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	OCDO, PADASA, PDCC, BDCC	Yes	No	Public awareness	Lack of funds				
	Hazard map (including evacuation place and route)	1	2	3	4	5	CDCC, DSWD, DOH, LOU	Yes	No	IEC	Lack of funds				
	Emergency Material and Equipment	1	2	3	4	5	LOU	Yes	No	Public awareness	Lack of funds				
	IEC	1	2	3	4	5	LOU, CDCC, BDCC, PDCC	Yes	No	Adoption of early warning mechanism like distribution of hand outs	Lack of funds				
	Monitoring / Flood forecasting and warning	1	2	3	4	5	PADASA	Yes	No	Public awareness	Lack of funds				
Response	Information dissemination	1	2	3	4	5	PUBLIC INFO. AGENCY (PIA)	Yes	No	Tapping of media	Lack of support				
	Flood fighting	1	2	3	4	5	CDCC, BDCC, PDCC	Yes	No	Active participation	Lack of manpower and training				
	Evacuation	1	2	3	4	5	DepEd & DSWD, CDCC, BDCC	Yes	No	Community involvement & participation	Lack of manpower				
	Reporting of disaster condition	1	2	3	4	5	CDCC, BDCC, MEDIA	Yes	No	Community involvement & participation	Lack of knowledge				
	Rescue activity	1	2	3	4	5	CDCC, BDCC	Yes	No	Community involvement & participation	Lack of manpower and training				
	Supporting from neighboring LOUs	1	2	3	4	5	CDCC, BDCC	Yes	No	Community involvement & participation	Lack of manpower and training				
Recovery	Post-flood damage assessment	1	2	3	4	5	DA, LOU, BI concerned agencies	Yes	No	Community involvement & participation	Lack of manpower				
	Rehabilitation	1	2	3	4	5	DA, LOU, BI concerned agencies	Yes	No	Community involvement & participation	Lack of funds				
	Insurance	1	2	3	4	5	DA, LOU, BI concerned agencies	Yes	No	Community involvement & participation	Lack of funds				

# Non-Structural Measures

Name	GROUP IV										Rating: 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well	
Agency/Office												
Position												
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessary for improvement	(4) Reason for Successful Implementation	(5) Constraints for Improvement	
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition											
Mitigation	Land use regulation	1	2	3	4	5	CITY OF BAYBAY, DENR	Yes	No	Newly started	Information dissemination	
	Afforestation & Reforestation	1	2	3	4	5	CITY OF BAYBAY, DENR	Yes	No	Replacement	Information dissemination	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LOU	Yes	No	Supportive	community involvement	
Purpose(2)	To reduce vulnerability against flood-related hazard											
Mitigation	Flood proofing structures	1	2	3	4	5	DENR, DPWH, LOU	Yes	No	Supportive	community involvement	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	CDCC, LOU, DSWD	Yes	No	Disaster training / seminar	Information dissemination / funding	
	Hazard map (including evacuation place and route)	1	2	3	4	5	DENR	Yes	No	Disaster training / seminar	Information dissemination / funding	
	Emergency Material and Equipment	1	2	3	4	5	LOU	Yes	No	Disaster training / seminar	Information dissemination / funding	
	IEC	1	2	3	4	5	LOU	Yes	No	Disaster training / seminar	Agencies support	
	Monitoring /Flood forecasting and warning	1	2	3	4	5	PAOASA, LOU	Yes	No	Disaster training / seminar	Agencies support	
Response	Information dissemination	1	2	3	4	5	LOU, BROY, OFFICIALS	Yes	No	Active Disaster & Coordinating Council	Funding requirements	
	Flood fighting	1	2	3	4	5	LOU, BROY, OFFICIALS	Yes	No	Active Disaster & Coordinating Council	Flood fighting equipments	
	Evacuation	1	2	3	4	5	LOU, DSWD, BROY, OFF	Yes	No	Disaster training / seminar	Financial support	
	Reporting of disaster condition	1	2	3	4	5	LOU, BROY, OFFICIALS	Yes	No	Strong coordination among agencies	Mobility support	
	Rescue activity	1	2	3	4	5	MILITARY, OCD, LOU	Yes	No	Training	Funding	
	Supporting from neighboring LOUs	1	2	3	4	5	LOU, OCD, BROY, OFF	Yes	No	Coordination	Funding support	
Recovery	Post-flood damage assessment	1	2	3	4	5	LOU, OCD, BROY, OFF	Yes	No	Support and coordination	Funding support	
	Rehabilitation	1	2	3	4	5	LOU, DPWH, DA, DSWD	Yes	No	Strong support & concern in line agencies	Logistic / funding	
	Insurance	1	2	3	4	5	DA, POIC, LOU	Yes	No	Crop & livestock insurance support	Information dissemination	



**THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT  
AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS**

DATE: 27-Sep-07  
TIME: 9:00 AM  
VENUE: BAYBAY

NO.	NAME	OFFICE
1	Alfredo Caintic	Barangay Cogon 335-4403
2	Elizer Managbanag	Barangay Cogon
3	Lolita M. Avelino	Barangay Candadam
4	Gualberta A. Ababat	Barangay Candadam
5	Florencio H. Canete, Jr.	Barangay Candadam
6	Raymundo Cerna	Barangay Comipa
7	Cresencia A. Coronado	Barangay Candadam
8	Jose G. Danas, Jr.	Barangay M. Galenzoga
9	Edgardo Villas	Sto. Rosario
10	Pepe B. Mandras	DENR
11	Jose Pepito Fernandez	CPD Office
12	Patrick A. Postrero	City Planning & Dev't Office
13	Danielito P. Padon	DPWH 5th LED
14	Lyndel P. Jabines	DPWH 5th LED
15	Lut B. Bacleaan	DPWH 5th LED
16	Rebecca S. Yuse	DPWH R8
17	Orlando M. Casio	DPWH P.S., Manila
18	Cris S. Loreto	SP Member
19	Lindo Laplana	SP Member
20	Ernesto Volezon	Comipa
21	Emmanuel G. Tau	DENR, CENRO - Baybay
22	Ritchie R. Lepasana	Driver
23	Domingo Villabuenca	Driver
24	Carlo S. Enriquez	SP Member
25	Artemio O. Canano	
26	Kenichiro Kondo	JICA Study Team
27	Tadanori Kitamura	JICA Study Team
28	Orlando Casio	DPWH, PS
29	Grecile Christopher Damo	DPWH-PMO-FCSEC

## **Meeting on Flood Mitigation Planning for Meycauayan River**

### **THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE PHILIPPINES**

#### **1. Outline of the Meeting**

##### **1.1 Background**

The study which was started in September 2006 has come to the time for flood mitigation planning for six selected model river basins as pilot projects within the study. In this connection, the study team conducts site investigation with ocular site survey and a meeting with stakeholders to obtain local information related to flood mitigation for Meycauayan river.

##### **1.2 Objective of the Meeting**

The meeting was held in principle under the following objectives:

- To identify the problem areas,
- To assess the current conditions particularly for non-structural measures such as land use, disaster management, etc,
- To discuss the possible structural and non-structural measures, and
- To identify other concerns

##### **1.3 Date and Venue**

The date and venue is as follows:

- Date : October 31, 2007
- Time : 9:00 – 13:00
- Venue : Max's Restaurant, Meycauayan City

##### **1.4 Participants**

Affected municipalities in the alluvial fan part, which is the most flood-prone are in Meycauayan river basin, together with a representative of DPWH and CENRO (DENR) are invited to the meeting. Totally 38 persons attended the workshop. The attendance list is attached.

#### **2. Program**

The meeting started with opening program, which consisted of the national anthem, invocation, opening remarks.

After progress of the study and purpose of the meeting was explained by Ms. Aquilina T. Decilos, C/P study team, the following two sessions were conducted.

#### Session 1 Discussion on structural measures

The session consists of the followings.

- Explanation on structural measures (Mr. Kondo, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on city and municipalities. Representatives from DPWH and DENR were assigned to each group.
- Presentation on the result of group discussion
- Discussion on possible structural measures

#### Session 2 Discussion on non-structural measures

The session consists of the followings.

- Explanation on concept of non-structural measures (Mr. Kitamura, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on city and municipalities. Representatives from DPWH, NIA and DENR were assigned to each group.
- Presentation on the result of group discussion

Wrap-up of the meeting was undertaken by Ms. Aquilina T. Decilos, C/P study team, with thanks for all of the participants.

### **3. Output of Workshop**

Output of meeting is summarized in the format distributed to each group for structural and non-structural measures. The outputs are attached.

**The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas**  
**ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)**

<i>Date:</i> October 31, 2007
<i>Time:</i> 8:00 AM – 2:00 PM
<i>Venue:</i> Max's Restaurant, Calvario, Meycauayan, Bulacan
<i>Group Name:</i> Obando, Bulacan

**(1) Purpose of Urgent Improvement**

<p><b>a. How did severe floods occur?</b></p> <ol style="list-style-type: none"> <li>1. Due to high tides coupled by flash floods (due to typhoon/heavy rain fall)</li> <li>2. Due to damaged flood control structures/facilities especially during high tides</li> <li>3. Due to heavy siltation and indiscriminate dumping of garbage on river systems</li> <li>4. Dilapidated and old flood control structures</li> <li>5. Encroachments and illegal dwellers of thin waterways</li> <li>6. Worsing global warming and water extraction</li> <li>7. Phased out waterways due to encroachments, etc.</li> </ol>
<p><b>b. How was frequency of floods?</b></p> <ol style="list-style-type: none"> <li>1. Regular / frequent (due to high tide)</li> <li>2. Seasonal (due to flash flooding during rainy months)</li> </ol>
<p><b>c. Is it due to river basin changed?</b> Partly changed due to Pinatubo eruption causing land salitre</p> <p>– <b>How did/will urbanization occur?</b> –Construction of buildings, concrete pavements, land development are rapidly giving</p> <p>–Reclamation of nearby Dagat-dagatan / Navotas area</p> <p>–Effects of Phase I, CAMANAVA Project are operational</p> <p>– <b>How did/will land use change?</b> Change in forest cover/environment. Due to coastal location of Obando, its analysis location is prone to flooding that former agricultural areas were converted to residential / fishponds.</p>
<p><b>d. Is it in relation to other project?</b></p> <p>– <b>How did/will urban plan relates?</b></p> <p>– <b>How did/will agricultural/irrigation project relates?</b> Not applicable.</p> <p>– <b>How did/will other river project relates?</b> CAMANAVA Phase I project affects Obando due to its poor diking system</p> <p>– <b>How did/will sabo project relates?</b> Not applicable.</p> <p>– <b>How did/will other disaster relation project relates?</b></p> <p>– <b>How did/will road/coastal project relates?</b> Coastal reclamation areas in Metro Manila especially along Roxas Boulevard affects the flooding in Obando, Bulacan.</p> <p>– <b>Any others?</b></p>

**The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas**  
**ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)**

<p><b>(2) Where is urgent target area of flood mitigation?</b> All river systems surrounding and within Obando, Bulacan should be the subject of flood mitigation.</p>
<p><b>(3) Where is necessary portion of improvement?</b></p> <ol style="list-style-type: none"> <li>1. Flood control dikes and tidal gate structure along Meycauayan River ( Obando side)</li> <li>2. Flood control dikes and tidal gate structure along Pelasan River ( Inland river)</li> <li>3. Flood control dikes and tidal gate structure along Pelinis River ( towards Manila Bay)</li> <li>4. Flood control dikes and tidal gate structure along Pinagkabalian River ( Obando side)</li> <li>5. Upgrading of roadway at J.P. Rizal Steet, from Panghulo to Tawim bridge</li> </ol>
<p><b>(4) Any others regarding flood mitigation?</b></p>

**The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES**

Date: <i>October 31, 2007</i>
Time: <i>8:00 AM – 2:00 PM</i>
Venue: <i>Max's Restaurant, Calvario, Meycauayan, Bulacan</i>
Group Name: <i>City of Meycauayan</i>
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How did severe floods occur?</b> 1. High tide 2. During typhoon / heavy rains 3. Back flood
<b>b. How was frequency of floods?</b> -Rainy season (5 months, June to October, 3x/month) -High tide / back flood (twice/month, June to October)
<b>c. Is it due to river basin changed?</b> Yes. - How did/will urbanization occur? Affects in-migration - How did/will land use change? Yes.
<b>d. Is it in relation to other project?</b> - How did/will urban plan relates? Yes, with proper planning. - How did/will agricultural/irrigation project relates? No. - How did/will other river project relates? Yes, lessen flooding (on-going project dike) - How did/will sabo project relates? - How did/will other disaster relation project relates? No. (Tsunami , earthquake) - How did/will road/coastal project relates? - Any others?
<b>(2) Where is urgent target area of flood mitigation?</b> 14 Barangays (flood prone) namely: 1. Calvario, 2. Saluysoy, 3. Poblacion, 4. Zamora, 5. Gasak, 6. Hulo, 7. Bayug, 8. Bancal, 9. Longos, 10. Banga, 11. Pandayan, 12. Lawa, 13. Liputan (Island Barangay), 14. Ubijan (Island Barangay)
<b>(3) Where is necessary portion of improvement?</b> 1. Widening of river mouth 2. Dredging of river bed 3. Fortification and fast tracking of slope protection works 4. Clearing of illegal settlers along the river bank / along the easement of the river 5. Clearing of river tributaries 6. Upgrading / improvement of existing dikes
<b>(4) Any others regarding flood mitigation?</b>

**The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES**

Date: <i>October 31, 2007</i>
Time: <i>8:00 AM – 2:00 PM</i>
Venue: <i>Max's Restaurant, Calvario, Meycauayan, Bulacan</i>
Group Name: <i>Valenzuela</i>
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How did severe floods occur?</b> -3 days continuous rains, high tides -water releases from nearby dams -overtapping / breaching of peripheral dikes
<b>b. How was frequency of floods?</b> Seasonal, during rainy season
<b>c. Is it due to river basin changed?</b> Yes. - How did/will urbanization occur? Developments in business and demographics - How did/will land use change? Due to urbanization
<b>d. Is it in relation to other project?</b> - How did/will urban plan relates? On-going comprehensive land use plan study - How did/will agricultural/irrigation project relates? None - How did/will other river project relates? Improvement of peripheral dikes and construction of tidal gates - How did/will sabo project relates? None - How did/will other disaster relation project relates? None - How did/will road/coastal project relates? None - Any others? On-going master planning of city drainage system
<b>(2) Where is urgent target area of flood mitigation?</b> 17 barangays of District I
<b>(3) Where is necessary portion of improvement?</b> Along Polo, Meycauayan and Tullahan Rivers
<b>(4) Any others regarding flood mitigation?</b> On-going campaign on proper solid waste management

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)

Date: <i>October 31, 2007</i>
Time: <i>8:00 AM – 2:00 PM</i>
Venue: <i>Max's Restaurant, Calvario, Meycauayan, Bulacan</i>
Group Name: <i>Caloocan City</i>

**(1) Purpose of Urgent Improvement**

<p><b>a. How did severe floods occur?</b></p> <ul style="list-style-type: none"> <li>-River overflow due to heavy rains</li> <li>-Obstructions to natural streams (informal settlers, excessive solid waste on water ways, erosions, landslides)</li> </ul>
<p><b>b. How was frequency of floods?</b></p> <ul style="list-style-type: none"> <li>-During rainy season (June to November)</li> </ul>
<p><b>c. Is it due to river basin changed? Yes.</b></p> <ul style="list-style-type: none"> <li>- <b>How did/will urbanization occur?</b></li> <li>-Increasing number of settlers due to presence of government resettlement projects</li> <li>-Rapid development of urban settlements</li> <li>- <b>How did/will land use change?</b></li> <li>-Minor change occurs on main tributaries of Meycauayan to Manila River</li> </ul>
<p><b>d. Is it in relation to other project? Yes.</b></p> <ul style="list-style-type: none"> <li>- <b>How did/will urban plan relates?</b></li> <li>-Improvement/rehabilitation of drainage system</li> <li>-Clearing of easements, construction of embankments</li> <li>-Acquisition of drainage maintenance equipment</li> <li>- <b>How did/will agricultural/irrigation project relates?</b></li> <li>Not applicable.</li> <li>- <b>How did/will other river project relates?</b></li> <li>Improvement and rehabilitation / clearing of tributary streams to Meycauayan – Marilao River</li> <li>- <b>How did/will sabo project relates?</b></li> <li>Not applicable.</li> <li>- <b>How did/will other disaster relation project relates?</b></li> <li>-Evacuation plan for affected families (flood prone areas)</li> <li>-Relocation of informal settlers within danger zone areas</li> <li>- <b>How did/will road/coastal project relates?</b></li> <li>- Any others?</li> </ul>

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)

<p><b>(2) Where is urgent target area of flood mitigation?</b></p> <ul style="list-style-type: none"> <li>-Clearing of river easements along Marilao River and its tributaries</li> <li>-River systems and its tributaries</li> </ul>
<p><b>(3) Where is necessary portion of improvement?</b></p> <ul style="list-style-type: none"> <li>-Clearing of river easements along Marilao River and its tributaries</li> <li>-Dredging, rip-rapping of creeks and improvement of drainage system</li> <li>-Survey and clearing of minimum 3 meters easements along major river courses and tributary systems</li> <li>-Construction of terraces, cribs and other embankments to prevent erosions and landslides at Matarik Creek</li> </ul>
<p><b>(4) Any others regarding flood mitigation?</b></p> <p>Acquisition and maintenance of one 'Vac-Master', 3 dumptrucks (6 wheeler), 1 set jack hammer (with 3000 psi compressor), 1 service vehicle, 1 mighty mite for dredging of river / water systems and canals.</p>

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)

Date: October 31, 2007
Time: 8:00 AM – 2:00 PM
Venue: Max's Restaurant, Calvario, Meycauayan, Bulacan
Group Name: Marilao Group
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How did severe floods occur?</b> Heavy downfall of rain / during rainy season, high tide, typhoon, illegal dumping of garbage, illegal settlers
<b>b. How was frequency of floods?</b> Hightide – 2 to 3 times a month ( from June to August)
<b>c. Is it due to river basin changed?</b> Yes. – How did/will urbanization occur? Developmental influence of Metro Manila. New business were established, in-migration occur. Over extraction of underground water. Siltation of Marilao river. – How did/will land use change? Agricultural lands were converted to industrial and/or residential.
<b>d. Is it in relation to other project?</b> – How did/will urban plan relates? The revised comprehensive development plan is now with the Provincial Land Use Committee. We are presently using our 1982 town plan. – How did/will agricultural/irrigation project relates? Polluted water was the result of industrialization, water no longer fitted to irrigation. – How did/will other river project relates? – How did/will sabo project relates? Not applicable. – How did/will other disaster relation project relates? – How did/will road/coastal project relates? Not applicable. – Any others?

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)

<b>(2) Where is urgent target area of flood mitigation?</b> Barangay Ibayo, Poblacion I, Poblacion II, Aba. Sur, Aba. Norte, T. Ilog
<b>(3) Where is necessary portion of improvement?</b> –Construction of River Bank Protection along Tabing Ilog, Saog, Lias, Nagbalon –Creek Side Protection at Ab. Sur and Norte, Poblacion II, Ibayo and nagbalon –Construction of flood gates, drainage canal –Road upgrading
<b>(4) Any others regarding flood mitigation?</b>

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)

Date: October 31, 2007
Time: 8:00 AM – 2:00 PM
Venue: Max's Restaurant, Calvario, Meycauayan, Bulacan
Group Name: San Jose del Monte
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How did severe floods occur?</b> During the onset of heavy rains, it usually occurs at high density areas, particularly subdivisions
<b>b. How was frequency of floods?</b> During Heavy rains, or if continuous rains occurs (usually one week rains) Rarely on several barangays of San Jose
<b>c. Is it due to river basin changed?</b> No, but is due to urbanization. – How did/will urbanization occur? Waste and encroachment of rivers. Urbanization usually causes waste. – How did/will land use change? Usually land use changes from agricultural to built-up areas.
<b>d. Is it in relation to other project?</b> – How did/will urban plan relates? It does because of subdivision. – How did/will agricultural/irrigation project relates? Non-operational (Approximately 5–8 years) – How did/will other river project relates? Ripraping and slope protection for pre-disaster preparation – How did/will sabo project relates? Once or twice every ten years – How did/will other disaster relation project relates? Activation of volunteer brigade – How did/will road/coastal project relates? Easy access both to rescue and constituents – Any others? Narrowing of roads, most subdivision drainage is clogging. Master plan for drainage system should be prioritized.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)

<b>(2) Where is urgent target area of flood mitigation?</b> For the whole city, since no master plan for drainage system is available. If there is, implementation of the same is not priority.
<b>(3) Where is necessary portion of improvement?</b> 1. Creek and drainage, in barangays where encroachment and construction is a main problem 2. Clogging of drainagemostly on subdivision 3. Most of the barangay roads and city roads has no drainage system 4. Road carriageway should be widened and improve at the areas like Tunku, Muzon, Kaypian, Minuyan, Poblacion
<b>(4) Any others regarding flood mitigation?</b> During rainy season, the hilltop dam, source of water, usually opens the gates, this causes the city for flooding, therefore drainage master plan is necessary.

# Non-Structural Measures

Name											Rating: 1: Nothing, 2: Envis, but not active, 3: Working fairly, 4: Working well; 5: Working very well	
Agency/Office	MEYCAJAYAN CITY											
Position												
		(1) Rating for existing condition				(2) Responsible Agencies	(3) Necessity for Improvement	(4) Reason for Successful Implementation			(5) Constraints for Improvement	
Purpose(s)	To ensure effect of structural measures to mitigate hazard condition											
Mitigation	Land use regulation	1	2	3	4	5	CPDO	Yes	No	Existing CLUP for revision this year	Lack of manpower to effectively implement zoning ordinance	
	Afforestation & Reforestation	1	2	3	4	5	CITY AGRICULTURIST	Yes	No			
	O & M supported by local residents including pre-evac activity against encroachment	1	2	3	4	5		Yes	No			
Purpose(s)	To reduce vulnerability against flood-related hazard											
Mitigation	Flood proofing structures (houses)	1	2	3	4	5	CITY ENGINEER	Yes	No		Lack of fund	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	CDCC	Yes	No	Has existing comprehensive contingency plan		
	Hazard map (including evacuation place and route)	1	2	3	4	5	CDCC/CITY ENGINEER	Yes	No			
	Emergency material and equipment	1	2	3	4	5		Yes	No	Available resources inventory and gap identification	Lack of fund	
	IEC	1	2	3	4	5	DILG/CAO/CDCC	Yes	No	Conduct of contingency plan workshop/seminar		
	Monitoring / Flood forecasting and warning	1	2	3	4	5	CDCC	Yes	No	Regular update from PDCC / RDCC to CDCC		
Response												
	Information dissemination	1	2	3	4	5	DILG/CAO/CDCC	Yes	No	Have from 26 barangay disaster coordinating council		
	Flood fighting	1	2	3	4	5	CDCC	Yes	No	Trained volunteer barangay workers		
	Evacuation	1	2	3	4	5	CDCC	Yes	No	Identified 6 Shoserved courtyards open center/chapel/private group as evacuation center		
	Reporting of disaster condition	1	2	3	4	5	CDCC	Yes	No	RDCC - established a standard form in coordinating external/prognostic report		
	Rescue activity	1	2	3	4	5	CDCC	Yes	No	Activities based on scenario generation and response capability - Active rescue group		
	Supporting from neighboring LGUs	1	2	3	4	5	PDCC/CDCC	Yes	No	MDCC/CDCC workshop establish communication and support from neighboring LGUs		
Recovery												
	Post-flood damage assessment	1	2	3	4	5	COCC	Yes	No	Reports have included flood damage assessment		
	Rehabilitation	1	2	3	4	5	ENGR.	Yes	No			
	Insurance	1	2	3	4	5		Yes	No			

# Non-Structural Measures

Name											Rating: 1: Nothing, 2: Envis, but not active, 3: Working fairly, 4: Working well; 5: Working very well	
Agency/Office	CALOOCAN CITY											
Position												
		(1) Rating for existing condition				(2) Responsible Agencies	(3) Necessity for Improvement	(4) Reason for Successful Implementation			(5) Constraints for Improvement	
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition											
Mitigation	Land use regulation	1	2	3	4	5	CITY PLANNING ZONING ADMIN, COCC	Yes	No	Presence of comprehensive Land Use Plan Presence of Zoning Ordinance	Weak monitoring system Fast urbanization	
	Afforestation & Reforestation	1	2	3	4	5	NOT APPLICABLE	Yes	No	Not Applicable	Not Applicable	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	CITY ENGRS DEPT., BROY UNITS, MMDA	Yes	No	Close coordination between concerned agencies	Vested interest of some / few barangay officials	
Purpose(2)	To reduce vulnerability against flood-related hazard											
Mitigation	Flood proofing structures (houses)	1	2	3	4	5	CITY ENGRS DEPT., RESIDENTS	Yes	No	Regular maintenance activity by City Engineering Department	Need for additional funds for flood proofing structures	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	BROY UNITS, SMD, ENDO, COCC	Yes	No	Close coordination between concerned agencies	Need for regular consultative meeting for COCC for updates	
	Hazard map (including evacuation place and route)	1	2	3	4	5	DPSTM, CITY PLANNING, ENDO, SMD, ENDO, BROY UNITS, BROY COUNCIL, CRO, CDCC, PIL, DEPT.	Yes	No	Close coordination between concerned agencies	Base data is not updated/ complete / integrated into a single map	
	Emergency material and equipment	1	2	3	4	5	DPSTM, SMD, BROY COUNCIL, CRO, CDCC, PIL, DEPT.	Yes	No	Has budget allocation at city level and barangay level	Need for additional funding for update disaster equipments	
	IEC	1	2	3	4	5	OM, NOCC/COCC, PAGASA	Yes	No	Close coordination between concerned agencies	Additional funding for IEC activities both at city and barangay level	
	Monitoring / Flood forecasting and warning	1	2	3	4	5	OM, NOCC/COCC, PAGASA	Yes	No	Presence of media		
Response											RECOMMENDATION:	
	Information dissemination	1	2	3	4	5	CSMD, BROY SEC, CRO, HEALTH.	Yes	No		No IEC materials, budget constraints, no regular advocacy sessions with the barangay	
	Flood fighting	1	2	3	4	5	DEPES, CSMD, DPSTM, ENGR.	Yes	No			
	Evacuation	1	2	3	4	5	DEPES, CSMD, DPSTM, ENGR.	Yes	No		School sometimes are not available No permanent evacuation center	
	Reporting of disaster condition	1	2	3	4	5	CCPDC	Yes	No		Restructuring of CCDC	
	Rescue activity	1	2	3	4	5	CSMD, DPSTM, ENGR.	Yes	No		Additional vehicle and equipments e.g. ambulance Presence of medical personnel and medicines	
	Supporting from neighboring LGUs	1	2	3	4	5		Yes	No		RECOMMENDATION:	
Recovery											Technical Assistance for the formulation of:	
	Post-flood damage assessment	1	2	3	4	5		Yes	No		1. Disaster Preparedness Management Plan	
	Rehabilitation	1	2	3	4	5		Yes	No		2. Risk Management Plan	
	Insurance	1	2	3	4	5		Yes	No		3. Safety and Management Plan Review	
											4. Financial assistance for IEC activities	



Non-Structural Measures											
Name							Rating				
Agency/Office		VALENZUELA					1: Nothing, 2: Exist, but not active, 3: Working fairly,				
Position							4: Working well, 5: Working very well				
		(1) Rating for existing condition					(2) Responsible Agencies	(3) Necessity for improvement		(4) Reason for Successful Implementation	(5) Constraints for Improvement
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition										
Mitigation	Land use regulation	1	2	3	4	5	CPDO / CBO	Yes	No	Political will	Political between Executive and Legislative
	Afforestation & Reforestation	1	2	3	4	5		Yes	No		
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	CBO	Yes	No	Political will	Uma Law
Purpose(2)	To reduce vulnerability against flood-related hazard										
Mitigation	Flood proofing structures (houses)	1	2	3	4	5	VAC	Yes	No	Effective management	Budgetary
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	CSMD / VAC	Yes	No	Effective Planning and Coordination	Affected constituents refusing to vacate
	Hazard map (including evacuation place and route)	1	2	3	4	5	LDCC	Yes	No	Effective Planning and Coordination	
	Emergency material and equipment	1	2	3	4	5	VAC	Yes	No	Creativity and resourcefulness	Budgetary
	IEC	1	2	3	4	5	CSMD / BFP / PNRC / CHO	Yes	No	Sustained efforts	Public response
	Monitoring / Flood forecasting and warning	1	2	3	4	5	VAC	Yes	No	Planned Activity	None
Response	Information dissemination	1	2	3	4	5	CSMD / BFP / PNRC / CHO	Yes	No	Sustained activity	Public response
	Flood fighting	1	2	3	4	5	VAC / CEO	Yes	No	Improvement and maintenance of existing facilities	Budgetary
	Evacuation	1	2	3	4	5	CSMD / VAC	Yes	No	Effective planning	Budgetary
	Reporting of disaster condition	1	2	3	4	5	LDCC	Yes	No	Routine activity	None
	Rescue activity	1	2	3	4	5	VAC	Yes	No	Effective Planning and Coordination	None
	Supporting from neighboring LGUs	1	2	3	4	5		Yes	No	Not applicable	Not applicable
Recovery	Post-flood damage assessment	1	2	3	4	5	VAC / CEO	Yes	No	Routine Activity	None
	Rehabilitation	1	2	3	4	5	CEO	Yes	No	Routine Activity	Budgetary
	Insurance	1	2	3	4	5		Yes	No	Not applicable	Not applicable

Non-Structural Measures

Name											Rating
Agency/Office	SAN JOSE DEL MONTE										1: Nothing, 2: Exist, but not active, 3: Working fairly,
Position											4: Working well, 5: Working very well
		(1) Rating for existing condition				(2) Responsible Agencies	(3) Necessity for improvement		(4) Reason for Successful Implementation	(5) Constraints for improvement	
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition										
Mitigation	Land use regulation	1	2	3	4	5	Sangguniang Panalagan, City Planning, City Eng'g	Yes	No	Political will	Other policy for amendments, without monitoring pending CLUP
	Afforestation & Reforestation	1	2	3	4	5	CENRO, BROY'S, NGOs	Yes	No	Cooperation, Planting of mangrove	Funds
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	ENGO, POLICE, DPWH, MAVSS	Yes	No	Not applicable	Non-cooperation of resident, no allocation of fund
Purpose(2)	To reduce vulnerability against flood-related hazard										
Mitigation	Flood proofing structures (houses)	1	2	3	4	5	CITY MAYOR, NGO, CDC	Yes	No		
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	CITY MAYOR, NGO, CDC	Yes	No	Available area for evacuation, immediate response	Available funds, meetings, planning
	Hazard map (including evacuation place and route)	1	2	3	4	5	BROY COUNCIL	Yes	No	Coordination within others at LGU mapping	Needed materials, mobilization
	Emergency material and equipment	1	2	3	4	5	SPANLINDSON DISASTER MAT	Yes	No	Coordination, Disaster fund	Emergency material
	EC	1	2	3	4	5	CENRO, BA, OFFICE PROJ	Yes	No	All barangay, participation	Public is not responding, need modernization
	Monitoring / Flood forecasting and warning	1	2	3	4	5	DISASTERS, MAYORS, DSWD	Yes	No		Budgetary requirements, needs modern equipments, communication
Response	Information dissemination	1	2	3	4	5	DISASTERS, MAYORS, DSWD	Yes	No		
	Flood fighting	1	2	3	4	5	ENGO, HOMEOWNERS, DPWH	Yes	No		
	Evacuation	1	2	3	4	5	BROY, NGO, LGU, DSWD	Yes	No	Immediate report	Mobilization
	Reporting of disaster condition	1	2	3	4	5	BROY OFFICIAL, MAYOR	Yes	No		
	Rescue activity	1	2	3	4	5	DISASTERS, MAYORS, DSWD	Yes	No	Support from NGO	Needed materials, equipments
	Supporting from neighboring LGUs	1	2	3	4	5	CALOCAN, LGU, STA. MARIA	Yes	No		
Recovery	Post-flood damage assessment	1	2	3	4	5	ENGO, DSWD, POLICE	Yes	No		
	Rehabilitation	1	2	3	4	5	ENGO, POLICE	Yes	No		
	Insurance	1	2	3	4	5	MAYORS, LGU, DSWD	Yes	No		

Non-Structural Measures

Name												Rating	
Agency/Office	MUNICIPALITY OF OBAÑO DULACAN											1. Nothing, 2. Exist, but not active, 3. Working fairly,	
Position												4. Working well, 5. Working very well	
		(1) Rating for existing condition					(2) Responsible Agencies	(3) Necessity for improvement		(4) Reason for Successful Implementation	(5) Constraints for improvement		
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	LOU, PROVINCIAL	Yes	No		1989 Municipal Development Plan, 2002 Land Use Plan approve on municipal level but pending at PLUC due to technicalities		
	Afforestation & Reforestation	1	2	3	4	5	LOU, DENR	Yes	No		Critical Saline Infiltration on rivers, planting of mangroves		
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LOU, PROVS, NHA, HEDCC	Yes	No		No relocation sites, no allocated financial assistance		
Purpose(2)	To reduce vulnerability against flood-related hazard												
Mitigation	Flood proofing structures (houses)	1	2	3	4	5	HOME-OWNERS	Yes	No		Financial constraints		
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LOU, NGO'S, PROVINCIAL	Yes	No		Limited first aid facilities, limited high ground for evacuation		
	Hazard map (including evacuation place and route)	1	2	3	4	5	LOU, PROVINCIAL	Yes	No	Computerized mapping (CAD)	Financial constraints for improvement / modernization		
	Emergency material and equipment	1	2	3	4	5	LOU, NGO'S, PROVINCIAL	Yes	No	In place emergency fund for purchase	Lack of donors from good hearted citizens		
	EC	1	2	3	4	5	ALL STAKEHOLDERS	Yes	No	In place communication system (radio/cellular / telephone)	Need to modernize		
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LOU, NGO'S, NATIONAL	Yes	No		Needs assistance from DPWH / DENR for tide gauge on different rivers		
Response	Information dissemination	1	2	3	4	5	LOU, PROVINCIAL	Yes	No	In place communication system (old type)	Lack of proper communication system		
	Flood fighting	1	2	3	4	5	LOU, PROVS, DPWH, HEDCC	Yes	No	In place equipments (basic needs)	Lack of funds / donor for needed equipments		
	Evacuation	1	2	3	4	5	LOU, PROVINCIAL	Yes	No	In place equipments / vehicle	Source funding		
	Reporting of disaster condition	1	2	3	4	5	LOU, PROVINCIAL	Yes	No	In place telecom system			
	Rescue activity	1	2	3	4	5	LOU, PROVINCIAL	Yes	No				
	Supporting from neighboring LOUs	1	2	3	4	5	NEIGHBORING LOU	Yes	No		Lack of donors from neighboring LOU		
Recovery	Post-flood damage assessment	1	2	3	4	5	LOU, PROVINCIAL	Yes	No		Financial constraint		
	Rehabilitation	1	2	3	4	5	LOU, PROVINCIAL	Yes	No		Financial constraint		
	Insurance	1	2	3	4	5		Yes	No				

Non-Structural Measures

Name												Rating	
Agency/Office	Maricao											1. Nothing, 2. Exist, but not active, 3. Working fairly,	
Position												4. Working well, 5. Working very well	
		(1) Rating for existing condition					(2) Responsible Agencies	(3) Necessity for improvement		(4) Reason for Successful Implementation	(5) Constraints for Improvement		
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	MPDO	Yes	No		Political will, Updating of land use plan in process		
	Afforestation & Reforestation	1	2	3	4	5	MAO	Yes	No		Lack of designated land area		
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	MPDO	Yes	No		Lack of awareness and advocacy campaign		
Purpose(2)	To reduce vulnerability against flood-related hazard												
Mitigation	Flood proofing structures (houses)	1	2	3	4	5		Yes	No				
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	MDCC	Yes	No		Lack of equipment, trained personnel and funds		
	Hazard map (including evacuation place and route)	1	2	3	4	5	MDCC	Yes	No		Lack of GIS map or reference map with updated data		
	Emergency material and equipment	1	2	3	4	5	OSO / ENOPO	Yes	No		Lack of funds		
	IEC	1	2	3	4	5	MDCC / OSO / MPDO	Yes	No		Lack of technical experts and funds for training		
	Monitoring / Flood forecasting and warning	1	2	3	4	5	MDCC / OSO / ENOPO / BRGY LEVEL	Yes	No		Lack of updated equipment for monitoring		
Response	Information dissemination	1	2	3	4	5	OBANDO / MDCC	Yes	No		Lack of public participation, equipment and trained staff		
	Flood fighting	1	2	3	4	5	ENOPO / MDCC / OSO	Yes	No		Lack of public participation, equipment and trained staff		
	Evacuation	1	2	3	4	5	OSO / OBANDO	Yes	No		Lack of public participation, equipment and trained staff		
	Reporting of disaster condition	1	2	3	4	5	MDCC	Yes	No		Lack of technical experts, equipment		
	Rescue activity	1	2	3	4	5	MDCC	Yes	No		Lack of trained personnel and equipment		
	Supporting from neighboring LOUs	1	2	3	4	5		Yes	No				
Recovery	Post-flood damage assessment	1	2	3	4	5	OBANDO / MDCC	Yes	No		Lack of GIS mapping		
	Rehabilitation	1	2	3	4	5	OSO / ENOPO	Yes	No		Limited funds		
	Insurance	1	2	3	4	5		Yes	No				

**ATTENDANCE: MEETING ON FLOOD MITIGATION PLANNING**

**Date:** 31-Oct-07

**Time:** 8:00 AM – 2:00 PM

**Venue:** Max's Restrant, Meycauayan City

NO.	NAME	OFFICE (TEL)	SIGNATURE
1	Alfredo N. Contreras	Obando Municipal	
2	Ema A. Cervantes	DENR	
3	Roberto B. Darilag	Valenzuela City	
4	Renato B. de Guzman	Caloocan Engineering	
5	Aurora C. Ciego	Caloocan City Planning	
6	Josephine I. dela Cruz	Caloocan City Planning	
7	Marilou N. Galban	Caloocan Social Welfare Dev't	
8	Rowena Drilon	Caloocan Social Welfare Dev't	
9	Evelina Lyn-lyn Priolo	CPDO – Meycauayan	
10	Venancio C. Salazar	DPWH Bulacan 2nd DEO	
11	Adeltrudes V. Catanes	DPWH Bulacan 2nd DEO	
12	Ramon N. Regala	DPWH Bulacan 2nd DEO	
13	Ricardo L. Sta. Ana	Engineering Dep't (Meycauayan)	
14	Blas Coloma, Jr.	Engineering Dep't (Meycauayan)	
15	Armando De Guzman	MPDC – Obando	
16	Elpidio U. Avena	Municipal Engineer – Obando	
17	Josie C. Acuvantes	CPDC Valenzuela	
18	Prac s. Canares	CEO Valenzuela	
19	Rhodora S. Ignacio	CSWD Meycauayan	
20	Norberto B. Sta. Maria	CSJOM City Engr.	
21	Arsenio C. Sangalang	City Disaster Coord. Concil (Meyc)	
22	Edgar A. Sarto	Bulacan 2nd	
23	Arlette C. Guzman	DPWH – RIII	
24	Delia A. Coronado	MSWDO-Obando	
25	Carina A. Felias	CSWD – City of San Jose DM	
26	Margie M. Duro	San Jose del Monte	
27	Mat C. San Miguel	044-7112177 / 7114419	
28	Venus Q. Gacinan	Valenzuela City	
29	Rod L. Perez	Valenzuela City	
30	Hermie J. Bautista	MPDC Marilao	
31	Eddie A. Allarilla	Meycauayan	
32	Bienvenido SM. Marquez	Marilao	
33	Flora F. Clor	Caloocan	
34	Lydia S. Gagani	Caloocan	
35	Kenichiro Kondo	JICA Study Team	
36	Tadanori KITAMURA	JICA Study Team	
37	Aquilina T. Decilos	DPWH, DPD	
38	Estelita M. Leonado	DPWH, DPD	

**Meeting on Flood Mitigation Planning  
for  
Kinanliman River**

**THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD  
MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE  
PHILIPPINES**

**1. Outline of the Meeting**

**1.1 Background**

The study which was started in September 2006 has come to the time for flood mitigation planning for six selected model river basins as pilot projects within the study. In this connection, the study team conducts site investigation with ocular site survey and a meeting with stakeholders to obtain local information related to flood mitigation for Kinanliman river.

**1.2 Objective of the Meeting**

The meeting was held in principle under the following objectives:

- To identify the problem areas,
- To assess the current conditions particularly for non-structural measures such as land use, disaster management, etc,
- To discuss the possible structural and non-structural measures, and
- To identify other concerns

**1.3 Date and Venue**

The date and venue is as follows:

- Date : October 19, 2007
- Time : 9:00 – 13:00
- Venue : Real Municipality

**1.4 Participants**

Most affected by flood from Kinanliman river, together with a representative of DPWH are invited to the meeting. Totally 29 persons attended the workshop. The attendance list is attached.

**2. Program**

The meeting started with opening program, which consisted of the national anthem, invocation, opening remarks (by Ms. Mercado, C/P study team).

After progress of the study and purpose of the meeting was explained by Mr. Orland, C/P

study team, the following two sessions were conducted.

#### Session 1 Discussion on structural measures

The session consists of the followings.

- Explanation on structural measures (Mr. Kondo, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on barangaies. Representatives from DPWH were assigned to each group.
- Presentation on the result of group discussion
- Discussion on possible structural measures

#### Session 2 Discussion on non-structural measures

The session consists of the followings.

- Explanation on concept of non-structural measures (Mr. Kitamura, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on barangaies. Representatives from DPWH were assigned to each group.
- Presentation on the result of group discussion

Wrap-up of the meeting was undertaken by Ms. Mercado, C/P study team, with thanks for all of the participants.

### **3. Output of Workshop**

Output of meeting is summarized in the format distributed to each group for structural and non-structural measures. The outputs are attached.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<b>Date:</b> October 20, 2007
<b>Time:</b>
<b>Venue:</b> Puerto Real
<b>Group Name:</b> Ungos
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> None – slightly affected during the flashfloods on November 29, 2004.
<b>b. How is frequency of floods?</b> None.
<b>c. Is it due to river basin changed?</b> – How does urbanization occur? – How does land use change?
<b>d. Is it in relation to other project?</b> – How does urban plan relates? not applicable – How does agricultural/irrigation project relates? not applicable – How does other river project relates? not applicable – How does sabo project relates? not applicable – How does other disaster relation project relates? not applicable – How does road/coastal project relates? Flood debris were deposited along the coastal area of the barangay. – Others?
<b>(2) Where is urgent target area of flood mitigation?</b> Cawayan – Ungos waterways – excavation of sediments for the immediate discharge of flashfloods from Poblacion 01 to 61. (Kapapatian Creek)
<b>(3) Where is necessary portion of improvement?</b> Riverbank protection (revetment, stone masonry)
<b>(4) Any others regarding flood mitigation?</b> Construction of drainage canal

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<b>Date:</b> October 19, 2007
<b>Time:</b> 8:00AM – 12:00NN
<b>Venue:</b> Puerto Real Resort
<b>Group Name:</b> Poblacion 61
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> During heavy rains / continuous rains especially in the upstream.
<b>b. How is frequency of floods?</b>
<b>c. Is it due to river basin changed?</b> – How does urbanization occur? Because of squatting / migration. – How does land use change? Agricultural land was converted to residential.
<b>d. Is it in relation to other project?</b> – How does urban plan relates? Unregulated erection of illegal structures. – How does agricultural/irrigation project relates? Not applicable. – How does other river project relates? Constructed river control helps to mitigate floor occurrence. – How does sabo project relates? Not yet implemented. – How does other disaster relation project relates? Through disaster preparedness program / installation of warning device. – How does road/coastal project relates? Construction of alternate roads with drainage canal. – Others?
<b>(2) Where is urgent target area of flood mitigation?</b> Upstream and downstream areas of Kinanliman river (left and right)
<b>(3) Where is necessary portion of improvement?</b> Seawall should be constructed along the seashore of Poblacion 61 as well as Poblacion 01.
<b>(4) Any others regarding flood mitigation?</b> Construction of Sabo da, river bed dredging, clean-up device, continuous IEC on disaster preparedness.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)

<b>Date:</b> October 19, 2007
<b>Time:</b> 9:30 A.M.
<b>Venue:</b> Puerto Real Resort
<b>Group Name:</b> Poblacion 01 Officials and Mayor's Office

**(1) Purpose of Urgent Improvement**

**a. How do severe floods occur?**

Severe floods occur everytime it rains, frequent when there are heavy rains. Results to overflowing Poblacion 01, 61 and part of Ungos and scouring of river banks. Streamline or water flow route changes. Clogging of bridge structure and excessive siltation.

**b. How is frequency of floods?**

Frequent everytime it rains and siltation severe during heavy rains and storms / typhoons.

**c. Is it due to river basin changed? Yes.**

**- How does urbanization occur?**

It will occur once proposed flood mitigation project was completed.

**- How does land use change?**

Adjacent to Kinanliman River or both sides would change. Looking upstream, right side of river, residential and left side of river, combined agricultural and residential.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)

**d. Is it in relation to other project? Yes.**

**- How does urban plan relates?**

Urbanization of Poblacion 01 and Poblacion 61 follows / forecasted when project is completed.

**- How does agricultural/irrigation project relates?**

No irrigable area at Poblacion 01 and 61 but Poblacion 01 have enough lowlands that can be converted as ricefield or irrigable area.

**- How does other river project relates?**

Potable water source or water supply facility for the whole municipality can be incorporated.

**- How does sabo project relates?**

Will be advantages in regulating water flow and as water supply source when treated. Catch basins and or diversion channels may be necessary.

**- How does other disaster relation project relates?**

Disaster-related projects like complete slope protection structure and drainage closely related. Also mini-hydro.

**- How does road/coastal project relates?**

Closely related in the sense that service roads or cosement on sides should be provided.

**- Others?**

Many - dredging of the river bed, construction of new bridge without piers (suspension of truss-type)  
Appartenant structures like protection dikes, diversion channels and drainage. Also sodding for slope protection.

**(2) Where is urgent target area of flood mitigation?**

Target service area of flood mitigation are as follows:

- 1) Poblacion 01
- 2) Poblacion 61
- 3) Portion of barangay Ungos
- 4) Coastal sitios
- 5) Residential areas both sides of Kinanliman River downstream and upstream

**(3) Where is necessary portion of improvement?**

Upstream right side of Kinanliman facing West and later left side upstream and both sides downstream.

**(4) Any others regarding flood mitigation?**

Construction of the said grant project of JICA must be designed to withstand strong flow with debris and scouring of foundations or footings should be supervised by competent honest supervisors to maximize the contract price to arrived to a quality structure. A monument that should last for a lifetime or for years.

## Non-Structural Measures

Name	Group I - LGU / Publication 01										Rating: 1. Nothing, 2. Exist, but not active, 3. Working fairly, 4. Working well, 5. Working very well	
Agency/Office	LGU and Publication 01											
Position	Mayor's Office / Barangay Officials											
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation	(5) Constraints for Improvement
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition											
Mitigation	Land use regulation	1	2	3	4	5	MPDC - LGU	Yes	No	Properly regulated by LGU	Limited area /lack of funds	
	Afforestation & Reforestation	1	2	3	4	5	DENR - LGU - NGO	Yes	No	Enormous advantage	Limited resources	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LGU	Yes	No	Proper dissemination and administration	Limited resources	
Purpose(2)	To reduce vulnerability against flood-related hazard											
Mitigation	Flood proofing structures	1	2	3	4	5	LGU	Yes	No	Financial Capability	Limited resources	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LGU	Yes	No	Updated Training	None	
	Hazard map (including evacuation place and route)	1	2	3	4	5	LGU	Yes	No	Updated contingency plan	None	
	Emergency Material and Equipment	1	2	3	4	5		Yes	No	Periodic Maintenance	Limited resources	
	IEC	1	2	3	4	5	LGU	Yes	No	Training update and practice	None	
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LGU	Yes	No	Not applicable	Limited resources / No flood level gauge	
Response	Information dissemination	1	2	3	4	5	LGU	Yes	No	Effective communication		
	Flood fighting	1	2	3	4	5	LGU	Yes	No	Not successful	Limited structures /tools	
	Evacuation	1	2	3	4	5	LGU / DepEd	Yes	No	Facility available	None	
	Reporting of disaster condition	1	2	3	4	5	LGU /PAGASA	Yes	No	Effective communication	Distance	
	Rescue activity	1	2	3	4	5	LGU /MEDI A	Yes	No	Effective communication	Limited resources /Distance	
	Supporting from neighboring LGUs	1	2	3	4	5	LGU	Yes	No	Effective communication	Distance	
Recovery	Post-flood damage assessment	1	2	3	4	5	LGU	Yes	No	Communication / Cooperation	Shortage of volunteers	
	Rehabilitation	1	2	3	4	5	LGU	Yes	No	Communication / Cooperation	Limited resources	
	Insurance	1	2	3	4	5	MSWD	Yes	No	Prioritizing	Limited resources	

## Non-Structural Measures

Name	Group II - Publication 01										Rating: 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well	
Agency/Office	POBLACION 01											
Position												
		(1) Rating for existing condition				(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation	(5) Constraints for Improvement	
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition											
Mitigation	Land use regulation	1	2	3	4	5	LGU / Zoning	Yes	No	Implementation of zoning ordinance		
	Afforestation & Reforestation	1	2	3	4	5	LGU / NATIONAL AGENCIES	Yes	No	Continuous reforestation with the coordination of DENR	Allocation of fund for reforestation	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LGU / NGO	Yes	No	Lack of coordination / participation of local residents	Funding	
Purpose(2)	To reduce vulnerability against flood-related hazard											
Mitigation	Flood proofing structures	1	2	3	4	5	LGU / NATIONAL AGENCIES	Yes	No		Minimal allocation for funding	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	MDCC / NDCC	Yes	No	Effective partnership of concern agencies	Lack of support from the barangay / community	
	Hazard map (including evacuation place and route)	1	2	3	4	5	LGU / NATIONAL AGENCIES	Yes	No	Disaster plans and program are in place / readily available	Appropriate fund	
	Emergency Material and Equipment	1	2	3	4	5	LGU / NDCC	Yes	No	Availability of emergency materials and equipments	Needs training of first responders	
	IEC	1	2	3	4	5	MDCC / BDCC	Yes	No		Needs further and continuous IEC	
	Monitoring / Flood forecasting and warning	1	2	3	4	5	NDCC / MDCC / PAGASA	Yes	No		Replacement of non-functional monitoring gauge / additional	
Response	Information dissemination	1	2	3	4	5	MDCC / NDCC / BDCC	Yes	No		Limited fund / resources	
	Flood fighting	1	2	3	4	5		Yes	No			
	Evacuation	1	2	3	4	5	MDCC	Yes	No	Availability of evacuation center	Provision of permanent evacuation, inadequate supply of shelter and sanitary facilities	
	Reporting of disaster condition	1	2	3	4	5	MDCC / BDCC	Yes	No	Active BDCC		
	Rescue activity	1	2	3	4	5	MDCC / BDCC	Yes	No		Limited resources	
	Supporting from neighboring LGUs	1	2	3	4	5	MDCC / BDCC	Yes	No			
Recovery	Post-flood damage assessment	1	2	3	4	5	MDCC	Yes	No			
	Rehabilitation	1	2	3	4	5	LGU	Yes	No			
	Insurance	1	2	3	4	5		Yes	No			



# ATTENDANCE: MEETING ON FLOOD MITIGATION PLANNING

**Date:** 18-Oct-07

**Time:**

**Venue:** Puerto Real Resort

NO.	NAME	OFFICE (TEL)	SIGNATURE
1	Renato A. Penamante	MMO – Liason Officer	
2	Efrem Combalicer	MMO Aide I – Liason Officer	
3	Engr. M.M. Merana	MMO – Executive Assistant	
4	Jesus D. Alaurin	MEO	
5	Elmer F. Arendido	MEO	
6	Eirick G. Juntereal	MEO	
7	Roseller A. De Leon	MEO	
8	Aladin V. Zuela	Barangay Captain – Ungos	
9	Norman C. Resplandor	Barangay Kagawad – Pob. 61	
10	Catherine Serados	DPWH	
11	Nolan C. Odonon	Barangay Kagawad – Pob. 61	
12	Amadeo F. Ruanto	Barangay Captain – Pob. 61	
13	Lilian S. Aveno	Barangay Kagawad – Pob. I	
14	Joeyfrey G. Duerme	Barangay Kagawad – Pob. I	
15	Nenita S. Cuento	Barangay Kagawad – Pob. I	
16	Fabian A. Asis, Sr.	Barangay Kagawad – Pob. I	
17	Freddie M. Combalicer	DPWH – Quezon I	
18	Bautista A. Aveno	Poblacion I	
19	Nixon M. Delos Santos	Poblacion I	
20	Ildefonso A. Cleofas, Jr.	MPDC / MMO	
21	Rocelle H. Poblete	MPDC Staff	
22	Bryan E. Potestades	MPDC Office	
23	Aurora A. Pujulte	DSWD Office	
24	Edgardo A. Juntereal	MPDCO / MPDC	
25	Rene C. Sollestre	Sangguniang Bayan	
26	Kenichiro Kondo	JICA Study Team	
27	Tadanori Kitamura	JICA Study Team	
28	Orlando Casio	DPWH, PS	
29	Leony Mercado	DPWH, PMO	

**Meeting on Flood Mitigation Planning  
for  
Tuganay River**

**THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD  
MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE  
PHILIPPINES**

**1. Outline of the Meeting**

**1.1 Background**

The study which was started in September 2006 has come to the time for flood mitigation planning for six selected model river basins as pilot projects within the study. In this connection, the study team conducts site investigation with ocular site survey and a meeting with stakeholders to obtain local information related to flood mitigation for Tuganay river.

**1.2 Objective of the Meeting**

The meeting was held in principle under the following objectives:

- To identify the problem areas,
- To assess the current conditions particularly for non-structural measures such as land use, disaster management, etc,
- To discuss the possible structural and non-structural measures, and
- To identify other concerns

**1.3 Date and Venue**

The date and venue is as follows:

- Date : October 11, 2007
- Time : 9:00 – 13:00
- Venue : Carmen Municipality

**1.4 Participants**

Affected municipalities in the alluvial fan part, which is the most flood-prone are in Tuganay river basin, together with a representative of DPWH, NIA and CENRO (DENR) are invited to the meeting. Totally 34 persons attended the workshop. The attendance list is attached.

**2. Program**

The meeting started with opening program, which consisted of the national anthem,

invocation, opening remarks (by Mayor of Municipality of Carmen).

After progress of the study and purpose of the meeting was explained by Ms. Hipolito, C/P study team, the following two sessions were conducted.

#### Session 1 Discussion on structural measures

The session consists of the followings.

- Explanation on structural measures (Mr. Kondo, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on city and municipalities. Representatives from DPWH, NIA and DENR were assigned to each group.
- Presentation on the result of group discussion
- Discussion on possible structural measures

#### Session 2 Discussion on non-structural measures

The session consists of the followings.

- Explanation on concept of non-structural measures (Mr. Kitamura, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on city and municipalities. Representatives from DPWH, NIA and DENR were assigned to each group.
- Presentation on the result of group discussion

Wrap-up of the meeting was undertaken by Ms. Hipolito, C/P study team, with thanks for all of the participants.

### **3. Output of Workshop**

Output of meeting is summarized in the format distributed to each group for structural and non-structural measures. The outputs are attached.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<b>Date:</b> October 11, 2007
<b>Time:</b> 10:00 A.M.
<b>Venue:</b>
<b>Group Name:</b> Panabo City
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> 1) When heavy rains occur 2) Continous down pour of rains
<b>b. How is frequency of floods?</b> Once or twice a year, only flash floods
<b>c. Is it due to river basin changed?</b> - How does urbanization occur? Sometimes river banks or creeks inhibited and occupied by people such as in Barangay San Francisco, New Visayas and Gredu. - How does land use change?
<b>d. Is it in relation to other project?</b> - How does urban plan relates? Changes from agricultural to residential to commercial and industrial - How does agricultural/irrigation project relates? Excess water from irrigation canal - How does other river project relates? Dam on Lasang River as source of irrigation - How does sabo project relates? No sabo project in Panabo - How does other disaster relation project relates? No serious disaster occur in Panabo - How does road/coastal project relates? Inadequate drainage system - Others?
<b>(2) Where is urgent target area of flood mitigation?</b> 1) Barangay Salvacion, San Francisco, Gredu and San Pedro
<b>(3) Where is necessary portion of improvement?</b> 1) Improvement and rehabilitation of drainage canals at barangay Salvacion, San Francisco, Gredu and San Pedro
<b>(4) Any others regarding flood mitigation?</b> 1) Proper implementation of solid waste management 2) Education and information drive

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)

<b>Date:</b> October 11, 2007
<b>Time:</b> 10:00 A.M.
<b>Venue:</b> Carmen Session Hall
<b>Group Name:</b> Sto. Tomas Group
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> Occurrence of local rainfall during rainy days, denudation of forest causes landslides / riverbanks erosion
<b>b. How is frequency of floods?</b> Twice a year, usually on the 1st and last quarter
<b>c. Is it due to river basin changed?</b> Heavy Siltation - How does urbanization occur? Due to rapid conversion of crops from palay to banana, migrants from other places came for employment. - How does land use change? From merely agricultural, it is now converted as agro industrial
<b>d. Is it in relation to other project?</b> - How does urban plan relates? Strict compliance of the standard urban plan as prescribed to address drainage system and flood control. - How does agricultural/irrigation project relates? Overflow of the Kipaliko dam causes flood to downstream portion. - How does other river project relates? Some irrigation projects with poor maintenance of siphons and canal structures contributed also the floods. - How does sabo project relates? None. - How does other disaster relation project relates? Corrective measure at Libuganon River (Talomo portion) to strengthen flow of water. - How does road/coastal project relates? Some of the utilized local roads especially along Libuganon River. - Others? More construction as protection dike. (double purpose)

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)

<b>(2) Where is urgent target area of flood mitigation?</b> Barangays: 1) San Miguel 2) Kinamayan going to the municipality of Dujali 3) Talomo 4) Esperanza 5? Portion of San Vicente – spill out
<b>(3) Where is necessary portion of improvement?</b> Structures along Libuganon River and some of NIA irrigation structures.
<b>(4) Any others regarding flood mitigation?</b> Watershed development – at present 800 hectares

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<b>Date:</b> October 11, 2007
<b>Time:</b>
<b>Venue:</b> SB Session Hall, Carmen
<b>Group Name:</b> LGU – Braulio E. Dujali
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> Overflowing of water at Tuganay River dike that causes damage to families and agricultural products
<b>b. How is frequency of floods?</b> Twice a year (1st and last quarter of the year)
<b>c. Is it due to river basin changed?</b> – How does urbanization occur? It is not the urbanization that causes flooding but it is the elevation of the area that is more likely the same of the mean sea level. – How does land use change? Due to severe flood, productive agricultural land becomes unproductive (marsh land)
<b>d. Is it in relation to other project?</b> – How does urban plan relates? It relates to the urban planning because it can minimize the occurrence of flooding. – How does agricultural/irrigation project relates? It relates because the problem of the farmers will be solved and it increase agricultural production. – How does other river project relates? – How does sabo project relates? – How does other disaster relation project relates? – How does road/coastal project relates?
<b>(2) Where is urgent target area of flood mitigation?</b> (Barangay Dujali) From the boundary of Libertad, Sto. Tomas down to the boundary of San Isidro, Carmen and from the boundary of San Miguel, Sto. Tomas and boundary of Salvacion, Carmen. (Mag Creek)
<b>(3) Where is necessary portion of improvement?</b> More or less 6 kilometers within Dujali area that needs to be improved or develop. (Protection Dike) More or less 4 kilometers (Mag Creek Dike)
<b>(4) Any others regarding flood mitigation?</b>

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<b>Date:</b> October 11, 2007
<b>Time:</b> 9 A.M.
<b>Venue:</b> SB Hall, Carmen
<b>Group Name:</b> Carmen 1
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> During heavy rains especially on the catchment area upstream.
<b>b. How is frequency of floods?</b> Yearly
<b>c. Is it due to river basin changed?</b> Yes, because several creeks confine into one man-made watershed channel. – How does urbanization occur? Gradual – How does land use change? Moderate
<b>d. Is it in relation to other project?</b> Yes – How does urban plan relates? Moderate – How does agricultural/irrigation project relates? Massive conversion of staple into commercial and exportable crops. – How does other river project relates? Other river project enhanced / helped flood water to drain. – How does sabo project relates? None – How does other disaster relation project relates? Barangay Magsaysay, New Camiling, Ising, Salvacion, Mabaus, Tuganay and Anibungan will increase the production – How does road/coastal project relates? Provision of dike as a mitigating measure especially at km. 41, barangay New Camiling that will protect the concrete national road along Carmen – Dapecol National Road – Others?
<b>(2) Where is urgent target area of flood mitigation?</b> Barangays Ising, Tuganay, Anibungan, San Isidro, Mabaus, Salvacion, Guadalupe, Magsaysay, Alejal, New Camiling because these are the flood prone areas of this municipality and source of staple crops particularly rice.
<b>(3) Where is necessary portion of improvement?</b> Within 13 flood prone barangays of this municipality and along the major river and water channels by diking along this river and continuous desilting.
<b>(4) Any others regarding flood mitigation?</b> 1) Reforestation on the upstream catchment area of river basin 2) Awareness of residents to environment especially on garbage disposal.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (1/2)

<i>Date: October 11, 2007</i>
<i>Time:</i>
<i>Venue: Sanggunian Office</i>
<i>Group Name: Carmen Group B</i>
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> Continous raining in consecutive 3 days, especially upstream. Overflowing in minor river and creeks.
<b>b. How is frequency of floods?</b> Average of 2 to 3 times a year.
<b>c. Is it due to river basin changed? No.</b> – How does urbanization occur? Moderate. – How does land use change? Moderate.
<b>d. Is it in relation to other project? Yes.</b> – How does urban plan relates? Affects socio and economic condition of the people, productivity of the area and health and sanitation. – How does agricultural/irrigation project relates? Reduce production and damage irrigation structural and facilities cause heavy siltation of drainage, creeks and farms. – How does other river project relates? Raising of dike embankment to prevent overflow of water river, water backflow along Tuganay and Tagum River. – How does sabo project relates? None. – How does other disaster relation project relates? (To Magsaysay, Ising, Alejal, Camiling, Tuganay, Mabaus, Cabay-angan, Dujali, Talobo, Magupising, Esperanza, Salvacion, San Miguel, Kinayaman, San Isidro, Anibungan, and etc.) to minimize flood damage. – How does road/coastal project relates? Minimize flood. – Others? Scouring of our river bannks of Tuganay River and Tagum.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES (2/2)

<b>(2) Where is urgent target area of flood mitigation?</b> Along Libuganon dike (wiyhin NIA side) and Anibungan creek – Guadalupe, Tuganay, Anibungan, Salvacion, Mabaus, Esperanza, Mag-upising, Talomo, Salvacion – .30 to .70 height flood Along Cabay-angan creek, Tuganay creek, Matin-an creek, Tibalog creek channel – San Isidro, Nen Kasay, Dujali, San Miguei, Bacali, Cabay-angan, Salvacion, Salvacion, Kinamayan Along Ising, Magsaysay Mactan River Channel, Mangalcal creek and Tibulao creek –Ising, Alejal, Camiling, Magsaysay, Tuganay, Maligaya, Mangalcal
<b>(3) Where is necessary portion of improvement?</b> 1) Dike section 2) Raising of dike height – Mabaus, Mag-upising, Guadalupe and Tuganay River, Matin-an, Dujali, San Isidro section, Mag-upising section (repair riverbank), Mactan dike (repair existing dike of Magsaysay, Alejal, New Camiling, Ising)
<b>(4) Any others regarding flood mitigation?</b>

# Non-Structural Measures

Name		GROUP 1- CARMEN(1)										Rating:				
Agency/Office												1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well				
Position																
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for intervention		(4) Reason for Successful Implementation		(5) Constraints for improvement			
Purpose(1)		To ensure effect of structural measures to mitigate hazard condition														
Mitigation	Land use regulation	1	2	3	4	5	LOU's	Yes	No				Minimal construction's participation			
	Attenuation & Rehabilitation	1	2	3	4	5		Yes	No				Not applicable			
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LOU's	Yes	No	Baywatch System						
Purpose(2)		To reduce vulnerability against flood related hazard														
Mitigation	Flood proofing structures	1	2	3	4	5	LOU's	Yes	No				RRRV problem and limited funding			
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5		Yes	No				Identified selected higher grounds such as dikes and shoal			
	Hazard map (including evacuation place and route)	1	2	3	4	5		Yes	No							
	Emergency Material and Equipment	1	2	3	4	5		Yes	No				We have backhoe, dump truck except rubber boat			
	IEC	1	2	3	4	5		Yes	No				Conduct awareness in flood prone areas / barangays			
	Monitoring /Flood forecasting and warning	1	2	3	4	5		Yes	No				Provides communication equipment for every barangay			
Response																
	Information dissemination	1	2	3	4	5		Yes	No	Active municipal disaster council and barangays			Give disaster information through radio / cellphone			
	Flood fighting	1	2	3	4	5		Yes	No	Coordinated effort of LOU's and National Agency						
	Evacuation	1	2	3	4	5		Yes	No				Barangay's and Municipal			
	Reporting of disaster condition	1	2	3	4	5		Yes	No	Existing radio communication						
	Rescue activity	1	2	3	4	5		Yes	No	With trained rescue personnel						
	Supporting from neighboring LOUs	1	2	3	4	5		Yes	No				Only Provincial government support the emergency activities			
Recovery																
	Post-flood damage assessment	1	2	3	4	5	LOU's	Yes	No	Every agency prepared emergency report submit to DCC						
	Rehabilitation	1	2	3	4	5		Yes	No	Not enough manpower and funding if large damage required longer time for rehabilitation						
	Insurance	1	2	3	4	5		Yes	No				Not available for all - only selected			

# Non-Structural Measures

Non-structural measures		GROUP 2- CARMEN(2)										Rating:		
Name												1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well		
Agency/Office														
Position														
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for Intervention		(4) Reason for Successful Implementation		(5) Constraints for Improvement	
Purpose(1)		To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	MAYOR'S OFFICE	Yes	No	Implementation of zoning ordinance building code			Budgetary and Technology	
	Attenuation & Rehabilitation	1	2	3	4	5	LOU / PENRO	Yes	No	Coordination of farmers /land owners			Limited area	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LOU / PCUP	Yes	No	Coordination of people and strong leadership			Growing of informal settlers / updating of new guidelines	
Purpose(2)		To reduce vulnerability against flood related hazard												
Mitigation	Flood proofing structures	1	2	3	4	5	LOU / NIA / DPWH / PEO	Yes	No	Access funding assistance and participation			Right of way, budgetary of illegal settlers	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LOU / BARANGAY / AFP	Yes	No	Disaster management plan			Budgetary needs	
	Hazard map (including evacuation place and route)	1	2	3	4	5	LOU	Yes	No				Temporary evacuation site	
	Emergency Material and Equipment	1	2	3	4	5	LOU / NIA	Yes	No	Good coordination with various agencies			Limited units	
	IEC	1	2	3	4	5	LOU / BARANGAY	Yes	No	Barangay management disaster plan			Upgraded communication facilities	
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LOU	Yes	No	24 hours operation and ACC				
Response	Information dissemination	1	2	3	4	5	LOU / BARANGAY	Yes	No				Lack of supplies and materials	
	Flood fighting	1	2	3	4	5	LOU / BARANGAY	Yes	No	Organized			Need capacity building	
	Evacuation	1	2	3	4	5	LOU	Yes	No				No permanent area for evacuation center / higher grounds	
	Reporting of disaster condition	1	2	3	4	5	LOU	Yes	No				No permanent staff assign	
	Rescue activity	1	2	3	4	5	LOU / AFP	Yes	No				Limited rescue team	
	Supporting from neighboring LOUs	1	2	3	4	5		Yes	No	Cooperation			Lack budgetary assistance	
Recovery	Post-flood damage assessment	1	2	3	4	5	LOU / NIA / BARANGAY / PEO	Yes	No	Cooperation				
	Rehabilitation	1	2	3	4	5	LOU / NIA / BARANGAY / PEO	Yes	No	Smooth communication and operation				
	Insurance	1	2	3	4	5		Yes	No					

# Non-Structural Measures

Name		GROUP 3-SL Tamar										Rating:		
Agency/Office												1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well		
Position														
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation		(5) Constraints for improvement	
Purpose(1)		To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	MPDO	Yes	No	Availability of LUP had its implementation				
	Afforestation & Reforestation	1	2	3	4	5	DENR - LGU	Yes	No	Cooperative local officials and DENR				
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LGU	Yes	No	Inactive involvement of local residents				
Purpose(2)		To reduce vulnerability against flood related hazard												
Mitigation	Flood proofing structures	1	2	3	4	5	RESIDENTS	Yes	No	Awareness of residents and availability of local materials to be used				
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LGU - MDCC	Yes	No	Availability of school buildings near affected area				
	Hazard map (including evacuation place and route)	1	2	3	4	5	MDCC	Yes	No	Availability of hazard map / integrated in the contingency plan of the municipality				
	Emergency Material and Equipment	1	2	3	4	5	MEO	Yes	No					
	IEC	1	2	3	4	5	PUBLIC INFORMATION	Yes	No	Information and education included in the C-SVRM Program				
	Monitoring /Flood forecasting and warning	1	2	3	4	5	MDCC	Yes	No	Active involvement of BOCC				
Response														
	Information dissemination	1	2	3	4	5	MDCC	Yes	No	Availability of communication equipments				
	Flood fighting	1	2	3	4	5	MDCC	Yes	No	Active MDCC and other local officials				
	Evacuation	1	2	3	4	5		Yes	No	Availability of school buildings for evacuation centers				
	Reporting of disaster condition	1	2	3	4	5	MDCC	Yes	No	Active MDCC and BOCC				
	Rescue activity	1	2	3	4	5	MDCC	Yes	No	Active MDCC and BOCC				
	Supporting from neighboring LGUs	1	2	3	4	5		Yes	No	City of Panabo gave financial assistance CY 2008				
Recovery														
	Post-flood damage assessment	1	2	3	4	5	MDCC	Yes	No	Joint effort of NGO and MDCC				
	Rehabilitation	1	2	3	4	5	MDCC	Yes	No	Extension of financial assistance and availability of heavy equipment				
	Insurance	1	2	3	4	5		Yes	No					Non-existence of insurance for crops

# Non-Structural Measures

Name		GROUP 4 - Bupal										Rating:		
Agency/Office												1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well		
Position														
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation		(5) Constraints for improvement	
Purpose(1)		To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	SB	Yes	No					
	Afforestation & Reforestation	1	2	3	4	5	MENRO / LGU	Yes	No		No area for reforestation / all Infa area			
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5		Yes	No	Dayabahan / People's cooperation				
Purpose(2)		To reduce vulnerability against flood related hazard												
Mitigation	Flood proofing structures	1	2	3	4	5	MEO, DPVM, PEO, NIA	Yes	No		Lack of funds / Flood proofing structures needs big budgetary requirements			
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	MDCC, BDCC	Yes	No		Lack of trainings of MDCC and BDCC			
	Hazard map (Including evacuation place and route)	1	2	3	4	5	MPDO	Yes	No	Approved CDP and CLUP				
	Emergency Material and Equipment	1	2	3	4	5	MEO	Yes	No		Lack of funds for the purchase of equipment			
	IEC	1	2	3	4	5	DSWD / MDCC MEMBER	Yes	No					
	Monitoring / Flood forecasting and warning	1	2	3	4	5	DCC	Yes	No	Availability of communication facilities				
Response	Information dissemination	1	2	3	4	5	DCC	Yes	No	Empowerment of Purak Leaders and barangay officials				
	Flood fighting	1	2	3	4	5	MEO	Yes	No		Insufficient equipment and manpower			
	Evacuation	1	2	3	4	5	MYSDO / DEPED	Yes	No					
	Reporting of disaster condition	1	2	3	4	5	MDCC SECRETARIAT	Yes	No	Active response of MDCC member				
	Rescue activity	1	2	3	4	5	MEO / PNP	Yes	No					
	Supporting from neighboring LGUs	1	2	3	4	5		Yes	No	Networking and Linking to various agencies				
Recovery	Post-flood damage assessment	1	2	3	4	5	MDCC	Yes	No	Active response of MDCC member				
	Rehabilitation	1	2	3	4	5	MEO	Yes	No					
	Insurance	1	2	3	4	5	MEO	Yes	No					



**THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT  
AND THE FLOOD MITIGATION PLAN FOR THE SELECTED AREAS**

**DATE:** 11-Oct-07  
**TIME:** 9:00 AM  
**VENUE:** Carmen Session Hall

NO.	NAME	OFFICE
1	Jose D. Alba	New Camiling, Carmen
2	Rolando G. Cabillad	Barangay Ising, Carmen
3	Maximo S. Pilcotes	Magro, Carmen
4	Ma. Theresa Alagdon	MPDC – Carmen
5	Alfredo B. Uy	MPDO – Carmen
6	Tadanori Kitamura	Jica Study Team
7	Grecille Christopher Damo	DPWH-PMO-FCSEC
8	Orlando M. Casio	DPWH-P.S., Manila
9	Aquilina T. Decilos	DPWH-P.S., Manila
10	Baodilla B. Quezon	LGU – Sto. Tomas
11	Ronelo C. Fernandez	LGU – Carmen
12	Ronil T. Sagayno	LGU – Carmen
13	Rey L. Sagot	LGU – Sto. Tomas
14	Bernardo Rabanol, Jr.	LGU – B.E. Dujali
15	Nilo A. Buenacosa	LGU – Carmen
16	Joe S. Amido	LGU – Sto. Tomas
17	Romy H. Cristobal	LGU – Panabo
18	Dante A. Bautista	Office of Congressman Lagdameo
19	Joe Solican	LGU – Panabo
20	Edwin T. Chavez	NIA
21	Luzminda Atabelo	LGU – Carmen
22	Angelina P. Tacalin	LGU – B.E. Dujali
23	Roger Aguacito	LGU – B.E. Dujali
24	Melanie B. Espanola	LGU – Carmen
25	Moises Y. Lura	Barangay Captain, Magsaysay
26	Albert Lee B. Cabanting	DPWH – Tagum
27	Gil V. Bigcas	DENR – Panabo City
28	Dolores M. Hipolito	DPWH-PMO-FCSEC
29	Kenichiro Kondo	Jica Study Team
30	Yoshio Tokunaga	DPWH-PMO-FCSEC
31	Julius D. Borja	DPWH-MFCDP-CII
32	Ernie A. Garcia	DENR CENRO
33	Francisco S. Intong, Jr.	Alejal, Carmen
34	Rex T. Lumucso	MEO – LGU, Carmen

**Meeting on Flood Mitigation Planning  
for  
Dinanggasan River**

**THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD  
MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE  
PHILIPPINES**

**1. Outline of the Meeting**

**1.1 Background**

The study which was started in September 2006 has come to the time for flood mitigation planning for six selected model river basins as pilot projects within the study. In this connection, the study team conducts site investigation with ocular site survey and a meeting with stakeholders to obtain local information related to flood mitigation for Dinanggasan River.

**1.2 Objective of the Meeting**

The meeting was held in principle under the following objectives:

- To identify the problem areas,
- To assess the current conditions particularly for non-structural measures such as land use, disaster management, etc,
- To discuss the possible structural and non-structural measures, and
- To identify other concerns

**1.3 Date and Venue**

The date and venue is as follows:

- Date : October 25, 2007
- Time : 9:00 – 13:00
- Venue : Catarman Municipality

**1.4 Participants**

Most affected barangays in Dinanggasan River, together with a representative of DPWH, PENRO (DENR) and other related agencies are invited to the meeting. Totally 31 persons attended the workshop. The attendance list is attached.

**2. Program**

The meeting started with opening program, which consisted of the national anthem, invocation, opening remarks.

After progress of the study and purpose of the meeting was explained by Ms. Hipolito, C/P

study team, the following two sessions were conducted.

#### Session 1 Discussion on structural measures

The session consists of the followings.

- Explanation on structural measures (Mr. Kondo, JICA Study Team)
- Group discussion by participants
  - Grouping was made basically based on barangaies. Representatives from DPWH, DENR and other agencies were assigned to each group.
- Presentation on the result of group discussion
- Discussion on possible structural measures

#### Session 2 Discussion on non-structural measures

The session consists of the followings.

- Explanation on concept of non-structural measures (Mr. Kitamura, JICA Study Team)
  - Grouping was made basically based on barangaies. Representatives from DPWH, DENR and other agencies were assigned to each group.
- Presentation on the result of group discussion

Wrap-up of the meeting was undertaken by Mr. Ms. Hipolito, C/P study team, with thanks for all of the participants.

### **3. Output of Workshop**

Output of meeting is summarized in the format distributed to each group for structural and non-structural measures. The outputs are attached.

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<i>Date:</i> October 25, 2007
<i>Time:</i> 9:30 A.M.
<i>Venue:</i> Catarman Central School
<i>Group Name:</i> Group I – Brgy. Liloan, Sto. Nino (Engr. Martinez, Edrelyn G. Salutan)
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> 3 hours continuous rains, severe flood occurs ( no over flooding)
<b>b. How is frequency of floods?</b> During rainy season (August to Decembe rusually the frequency of floods)
<b>c. Is it due to river basin changed?</b> – How does urbanization occur? No. – How does land use change? Still agricultural land.
<b>d. Is it in relation to other project?</b> – How does urban plan relates? No. – How does agricultural/irrigation project relates? No irrigation project at barangay Liloan. – How does other river project relates? No river project at barangay Liloan. – How does sabo project relates? No sabo project at barangay Liloan. – How does other disaster relation project relates? Active BDCC, however there is no safe evacuation center. – How does road/coastal project relates? Due to heavy rains, landslide occur on the provincial road near the river basin 1 1/2 meter distance located at Purok I, II, III – Others? Need for dike river control to be located at Tag-Ibo.
<b>(2) Where is urgent target area of flood mitigation?</b>
<b>(3) Where is necessary portion of improvement?</b>
<b>(4) Any others regarding flood mitigation?</b>

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<i>Date:</i> October 25, 2007
<i>Time:</i> 10:00 A.M.
<i>Venue:</i> Catarman Central School Training Center
<i>Group Name:</i> Group II – Barangay Looc, Sto. Nino (DENR & PHILVOLCS)
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> Flash floods occur during heavy rains / typhoons, monsoon seasons.
<b>b. How is frequency of floods?</b> Usually severe floods occur every 5 years causing destruction in properties.
<b>c. Is it due to river basin changed?</b> Yes. – How does urbanization occur? Due to lard contour changes after flood occurrences. – How does land use change?
<b>d. Is it in relation to other project?</b> No, its due to natural calamities. – How does urban plan relates? – How does agricultural/irrigation project relates? Irrigation canals have benn destroyed after severe floods. – How does other river project relates? Dams, dikes, diversion of river flow will help protect further destruction of properties and loss of lives. – How does sabo project relates? It will control flow of water and danger is flow of water may divert to populated areas or rice-planted areas. – How does other disaster relation project relates? It will help or worsen. – How does road/coastal project relates? Improved roads for better access to barangays necessary; minimize coastal destruction. – Others?
<b>(2) Where is urgent target area of flood mitigation?</b>
Barangays Campol, Looc, Liloan, Sto. Nino, Poblacion, Catarman, Mainit arc target areas of flood mitigation.
<b>(3) Where is necessary portion of improvement?</b>
–Liloan, Looc and Campol 1) Liloan and Looc dike needs improvement. 2) Campol is in great danger because lard countour has damaged, most likely the next severe flood will hit Campol. 3) Sto. Nino creek where Sto. Nino cold spring is located needs dike and access road to school center.
<b>(4) Any others regarding flood mitigation?</b>
Mainit, Sto. Nino especially its tourism centers (Sto. Nino Spring Resort and Tuason Falls)

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<i>Date:</i> October 25, 2007
<i>Time:</i>
<i>Venue:</i> Catarman Central School
<i>Group Name:</i> Group III – Looc
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> 1) During typhoon / storm 2) Heavy rains 3) Water spouts
<b>b. How is frequency of floods?</b> During the southwest monsoon (June to February)
<b>c. Is it due to river basin changed?</b> – How does urbanization occur? There is an increase in settlement near river bank. – How does land use change? There were cutting of trees especially along river banks. Land cultivation along slope / steep lands.
<b>d. Is it in relation to other project?</b> Opening of cross-country roads destroy soil structure and contributes to soil erosion. Opening of cross-country roads leads to entry of new settlement in forestal areas where it is hard to control. – How does urban plan relates? – How does agricultural/irrigation project relates? – How does other river project relates? – How does sabo project relates? – How does other disaster relation project relates? – How does road/coastal project relates? – Others?
<b>(2) Where is urgent target area of flood mitigation?</b> A) Residential areas B) Institutional area – Camiguin National High School C) Agricultural area D) Existing bridge
<b>(3) Where is necessary portion of improvement?</b> A) Sea wall along coastline of Looc B) Re-channelling / deepening of Dinanggasan River C) River dike continuation at Looc side of Dinanggasan river D) Sabo dam at Dinanggasan river E) River dike both sides at Looc creek
<b>(4) Any others regarding flood mitigation?</b> A) Community disaster preparedness

The Study on the Nationwide Flood Risk Assessment  
and the Flood Mitigation Plan for the Selected Areas  
ANSWER TO QUESTION ON STRUCTURAL MEASURES

<i>Date:</i> October 25, 2007
<i>Time:</i>
<i>Venue:</i> Catarman Central School
<i>Group Name:</i> Group IV
<b>(1) Purpose of Urgent Improvement</b>
<b>a. How do severe floods occur?</b> Severe floods occur due to: 1) Heavy rains 2) Buhawi (Water Spout)
<b>b. How is frequency of floods?</b> During rainy season (August to January)
<b>c. Is it due to river basin changed?</b> Yes. – How does urbanization occur? Flooding occurs long time before everytime there is heavy rains / buhawi / typhoons. – How does land use change? Still agricultural land
<b>d. Is it in relation to other project?</b> – How does urban plan relates? It affects existing agricultural projects. – How does agricultural/irrigation project relates? Affected agricultural areas. – How does other river project relates? No river control project. – How does sabo project relates? None. Protects residence, agricultural project, control flooding. – How does other disaster relation project relates? Yes. – How does road/coastal project relates? – Others?
<b>(2) Where is urgent target area of flood mitigation?</b> A) Sitio Cogon of barangay Sto. Nino – control dike B) River control dike at barangay Mainit. C) Deepening of river at barangay Looc to Liloan.
<b>(3) Where is necessary portion of improvement?</b> A) Expansion of existing dike at Compol side of the Dinanggasan river bank (almost equal to 4 kms.) with diversion canal going to existing Dinanggasan bridge. B) River control dikes on both sides going downstream from existing Dinanggasan bridge. C) Existing dike of barangay Liloan be extended upward.
<b>(4) Any others regarding flood mitigation?</b> –Evacuation center

# Non-Structural Measures

Name	Group I										Rating: 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well				
Agency/Office	Barangay Libena, LGU														
Position	Brgy. Captain, BDOCC Member, LGU, Prov. Govt.														
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation		(5) Constraints for Improvement		
Purpose(1)		To ensure effect of structural measures to mitigate hazard condition													
Mitigation	Land use regulation	1	2	3	4	5	BARANGAY COUNCIL		Yes	No	Conduct barangay assembly meeting		Political intervention		
	Afforestation & Reforestation	1	2	3	4	5	BRODY COUNCIL / DENR		Yes	No	Tree planting		Lack of planting materials		
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LGU		Yes	No					
Purpose(2)		To reduce vulnerability against flood-related hazard													
Mitigation	Flood proofing structures	1	2	3	4	5			Yes	No	Not applicable		Inadequate resources		
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	BDOCC / COUNCIL		Yes	No	Positive response of the convening people		None		
	Hazard map (including evacuation place and route)	1	2	3	4	5	BDOCC / COUNCIL		Yes	No	Needs update of existing hazard map		None		
	Emergency Material and Equipment	1	2	3	4	5	BDOCC / COUNCIL		Yes	No	Request free additional materials like boots, raincoat, flashlight, medicines				
	IEC	1	2	3	4	5	BDOCC		Yes	No	Continuous supplies of reading materials (comic k.s)		Drill		
	Monitoring / Flood forecasting and warning	1	2	3	4	5	BDOCC		Yes	No	Regular monitoring especially during rainy days				
Response	Information dissemination	1	2	3	4	5	BDOCC / TANOD		Yes	No			Needs assistance from LGU		
	Flood fighting	1	2	3	4	5	TANOD		Yes	No			Needs more drill		
	Evacuation	1	2	3	4	5	BDOCC		Yes	No	Assigned land / different committee related to evacuation		No evacuation center		
	Reporting of disaster condition	1	2	3	4	5	BDOCC / BRODY COUNCIL		Yes	No	Warning signal (ring of church bell)				
	Rescue activity	1	2	3	4	5	CVO / BRODY TANOD		Yes	No	Active and alert during emergency				
	Supporting from neighboring LGUs	1	2	3	4	5			Yes	No			Inadequate resources from LGU's		
Recovery	Post-flood damage assessment	1	2	3	4	5	BDOCC / LGU		Yes	No	Determined the damages on agriculture				
	Rehabilitation	1	2	3	4	5	LGU		Yes	No			Inadequate resources		
	Insurance	1	2	3	4	5			Yes	No			Not applicable		

# Non-Structural Measures

LGU - Local Government or Institutions											Group II		Rating: 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well	
Agency/Office		LGU - Municipal of Cataman												
Position		Brgy. Sta. Nino, Local, PHILVOLCS, DPAH, DENR												
		(1) Rating for existing condition					(2) Responsible Agencies		(3) Necessity for improvement		(4) Reason for Successful Implementation		(5) Constraints for Improvement	
Purpose(1)		To ensure effect of structural measures to mitigate hazard condition												
Mitigation	Land use regulation	1	2	3	4	5	MPDC / LGU / DENR	Yes	No	Improve the existing zoning plan	Political / Change of administration			
	Afforestation & Reforestation	1	2	3	4	5	DENR - LGU	Yes	No	Foreign / Local funding	Budget constraints / Sincerity of reception on local offices			
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LGU	Yes	No	Funding	Lack of reception / Lack of cooperation			
Purpose(2)		To reduce vulnerability against flood-related hazard												
Mitigation	Flood proofing structures	1	2	3	4	5	LGU - NATIONAL GOVERNMENT	Yes	No	Resources funding - sourcing	Limited resources / funds			
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LGU / NGO's	Yes	No	Build or construct evacuation center	Limited - funding / Inadvisone organization			
	Hazard map (including evacuation place and route)	1	2	3	4	5	PHILVOLCS / DENR	Yes	No	Provided by LGU's / BDOCC	None			
	Emergency Material and Equipment	1	2	3	4	5	LGU / NATIONAL GOVERNMENT	Yes	No	Spirit of voluntarism				
	IEC	1	2	3	4	5	LGU's	Yes	No	Regular IEC in media	Lack of funding			
	Monitoring / Flood forecasting and warning	1	2	3	4	5	PHILVOLCS / LGU	Yes	No					
Response	Information dissemination	1	2	3	4	5	LGU	Yes	No					
	Flood fighting	1	2	3	4	5	NGO's - VOLUNTEER	Yes	No					
	Evacuation	1	2	3	4	5	LGU	Yes	No	Close coordination / cooperation				
	Reporting of disaster condition	1	2	3	4	5	LGU / NGO's	Yes	No		None			
	Rescue activity	1	2	3	4	5		Yes	No	Availability / provision of vehicle equipment				
	Supporting from neighboring LGUs	1	2	3	4	5		Yes	No	Provide instant necessities - food, clothing, water and medicine				
Recovery	Post-flood damage assessment	1	2	3	4	5		Yes	No		None			
	Rehabilitation	1	2	3	4	5		Yes	No					
	Insurance	1	2	3	4	5		Yes	No					

# Non-Structural Measures

Name	Group III										Rating 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well	
Agency/Office	LGU / DOCC / DENR											
Position												
	(1) Rating for existing condition					(2) Responsible Agencies	(3) Necessary for improvement		(4) Reason for Successful Implementation		(5) Constraints for Improvement	
Purpose(s)	To ensure effect of structural measures to mitigate hazard condition											
Mitigation	Land use regulation	1	2	3	4	5	LGU - MUNICIPAL	Yes	No		No proper dissemination	
	Afforestation & Reforestation	1	2	3	4	5	DENR, LGU, PO	Yes	No	Active people by organization	unawareness of the community to be enhanced, no IEC production, non-implementation of laws	
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	LGU	Yes	No		Residents unaware of their roles / duties / responsibilities	
Purpose(s)	To reduce vulnerability against flood-related hazard											
Mitigation	Flood proofing structures	1	2	3	4	5	LGU	Yes	No		Seem not important	
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LGU	Yes	No		Needs new strategy / location in evacuation	
	Hazard map (including evacuation place and route)	1	2	3	4	5	LGU, DENR	Yes	No	Flooding map updated by JICA in 2003 Digitized hazard map 2004 Land use plan	Needs re-evaluation and new evacuation center and route	
	Emergency Material and Equipment	1	2	3	4	5	LGU	Yes	No		Barangay did not supply	
	IEC	1	2	3	4	5	LGU	Yes	No		No materials produced	
	Monitoring / Flood forecasting and warning	1	2	3	4	5	LGU	Yes	No		Not institutionalized	
Response	Information dissemination	1	2	3	4	5	LGU	Yes	No		No plan made	
	Flood fighting	1	2	3	4	5	LGU, DOCC	Yes	No	Availability of materials	Some residents are cooperative, those affected are those who work, while those he are not working	
	Evacuation	1	2	3	4	5	LGU, DENR	Yes	No		Not organized, to each his own approach	
	Reporting of disaster condition	1	2	3	4	5	LGU	Yes	No		No responsible person	
	Rescue activity	1	2	3	4	5	LGU, DOCC	Yes	No		No equipments, no trained volunteers	
	Supporting from neighboring LGUs	1	2	3	4	5	LGU	Yes	No		Not institutionalized	
Recovery	Post-flood damage assessment	1	2	3	4	5	LGU	Yes	No		Rely most from other agencies	
	Rehabilitation	1	2	3	4	5	LGU, DENR	Yes	No		No funding, limited	
	Insurance	1	2	3	4	5		Yes	No		No financial capability	

# Non-Structural Measures

Non-Structural Measures											Rating: 1: Nothing, 2: Exist, but not active, 3: Working fairly, 4: Working well, 5: Working very well
Name	Group IV										
Agency/Office	Barangay Council										
Position											
		(1) Rating for existing condition					(2) Responsible Agencies	(3) Necessary for improvement		(4) Reason for Successful Implementation	(5) Constraints for Improvement
Purpose(1)	To ensure effect of structural measures to mitigate hazard condition										
Mitigation	Land use regulation	1	2	3	4	5	LGU / HLURB / BC	Yes	No		No proper dissemination
	Afforestation & Reforestation	1	2	3	4	5	LGU / DENR / BC	Yes	No		Not established linkage with concerned agency
	O & M supported by local residents including preventive activity against encroachment	1	2	3	4	5	BC	Yes	No		No proper dissemination
Purpose(2)	To reduce vulnerability against flood-related hazard										
Mitigation	Flood proofing structures	1	2	3	4	5	LGU, DPWH	Yes	No		None (no project)
Preparedness	Emergency, evacuation and post-flood plan	1	2	3	4	5	LGU, DSWD, BC	Yes	No		Lack of facilities, mobility
	Hazard map (including evacuation place and route)	1	2	3	4	5	BC, LGU	Yes	No		Lack of facilities, mobility
	Emergency Material and Equipment	1	2	3	4	5	BC, LGU	Yes	No	Basic communication equipment	Needs emergency transport vehicle
	IEC	1	2	3	4	5	BC, LGU	Yes	No	Proper channelling	Strengthen barangay info desk
	Monitoring / Flood forecasting and warning	1	2	3	4	5	MDCC, BDCC	Yes	No	Proper channelling	Strengthen
Response	Information dissemination	1	2	3	4	5	MDCC, BDCC	Yes	No	Proper channelling / Tri-media	
	Flood fighting	1	2	3	4	5	MDCC, BDCC	Yes	No	Voluntarism	Relief support
	Evacuation	1	2	3	4	5	MDCC, BDCC	Yes	No	Utilize school as evacuation center	Establishment of evacuation center
	Reporting of disaster condition	1	2	3	4	5	MDCC, BDCC	Yes	No	Proper channelling	
	Rescue activity	1	2	3	4	5	MDCC, BDCC	Yes	No	Support from other barangay	
	Supporting from neighboring LGUs	1	2	3	4	5	MDCC, PDCC	Yes	No	Full support	
Recovery	Post-flood damage assessment	1	2	3	4	5	LGU	Yes	No		
	Rehabilitation	1	2	3	4	5	MDCC, PDCC	Yes	No		
	Insurance	1	2	3	4	5		Yes	No		None

# ATTENDANCE: MEETING ON FLOOD MITIGATION PLANNING

**Date:** 25-Oct-07

**Time:** 8:00 A.M.

**Venue:** Catarman Training Center

NO.	NAME	OFFICE (TEL)	SIGNATURE
1	Emelyn G. Salutan	MSWDO	
2	Zocilito T. Adaza	BDCC – Looc	
3	Felicidad E. Bacasnot	Barangay Kagawad – Liloan	
4	Arturueto Ramgoso	MPDC	
5	Luisito M. Salugsugan	PHILVOLCS	
6	Elvis A. Jamero	DPWH – CAMIGUIN	
7	Conchita T. Cabudoy	Barangay Liloan	
8	Elmer S. Martinez	CIWASCO	
9	Nilo B. Maglunsod	Sto. Nino – LGU	
10	Romeo B. Econar	Sto. Nino – BDC	
11	Noel L. Lumacang	LGU – Catarman	
12	Marivic A. Borja	LGU – Catarman	
13	Oscar Mejos	Barangay Looc	
14	Jack Z. Prima	LGU – Catarman	
15	Godofredo Apulan	SB – Sto. Nino, Catarman	
16	Edilberto Bailo	SB – Compol	
17	Carlito C. Igtos	Barangay Kagawad – Compol	
18	Rey O. Balbutin	OIC – DENR – Camiguin	
19	Roberto S. Rufino	Frester II / OIC-FM / DENR	
20	Felipe C. Gabales	LGU – Catarman	
21	Aquilina T. Decilos	DPWH – P. S.	
22	Dolores M. Hipolito	DPWH – FCSEC	
23	Rosebert Dadang	Barangay Captain	
24	Satoshi Takata	Jica Study Team	
25	Kenichiro Kondo	Jica Study Team	
26	Tadanori Kitamura	Jica Study Team	
27	Dulce C. Adiong	DPWH – X RO	
28	Benjamin S. Babia	DPWH – CAMIGUIN	
29	Dominador C. Patricio	DPWH – CAMIGUIN	
30	A. Sumodobila	DPWH – CAMIGUIN	
31	A. Lagunda	DPWH – CAMIGUIN	



### **D.3**

## **Education and Training Workshop**

**EDUCATION AND TRAINING WORKSHOP**  
**ON THE STUDY ON THE NATIONWIDE FLOOD RISK ASSESSMENT AND THE FLOOD**  
**MITIGATION PLAN FOR THE SELECTED AREAS IN THE REPUBLIC OF THE**  
**PHILIPPINES**

**1. Outline of the Workshop**

**1.1 Background**

The selected 56 river basins among the screening are classified into several groups by flood damage type, and one model river basin is selected from each group. The selected model river basins are shown below.

- Ilog-Hilabangan (Region VI, VII)
- Dungcaan (Region VIII)
- Meycauayan (Region III, NCR)
- Kinanliman (Region IV-A)
- Tuganay (Region XI)
- Dinanggasan (Region X)

The education and training workshop was held to explain the data contents of GIS data etc. for screening and the procedure of river channel improvement using HEC-RAS. The materials used for this workshop are attached hereto.

**1.2 Objective of the Workshop**

The workshop was held in principle under the following objectives:

- To understand the river planning procedure of Model River Basin.
- To understand the contents of screening data.
- To understand the contents of GIS database.
- To understand the procedure of river channel improvement planning by using HEC-RAS

**1.3 Date and Venue**

The date and venue is as follows:

- Date : February 11~14, 2008
- Venue : Computer Room, DPWH Headquarter

**1.4 Participants**

The cumulative attendance was 89 persons. The attendance list is attached at the end of this paper.

## 2. Program

The program of the session on February 11 is shown below.

- Opening program, which consisted of the national anthem, invocation, opening remarks (by Ms. Dolores M. Hipolito, Project Manager II, PMO-FCSEC)
- Explanation of Outline of Workshop Mr. Kondo, Co-Team Leader of the JICA Study Team
- Presentation of Overview of the Study Mr. Matsumoto, Team Leader of the JICA Study Team
- Presentation of Flood Mitigation Plan for Model River Basins Mr. Kondo, Co-Team Leader of the JICA Study Team
- Presentation of the Screening Data Mr. Kondo, Co-Team Leader of the JICA Study Team

The program of the session on February 12 is shown below.

- Presentation of GIS Database Mr. Bhuvneshwar Prasad Sah
- Presentation of River Channel Improvement Plan using HEC-RAS Mr. Konno, River Engineering-2

The program of the session on February 13 is shown below.

- Exercise of HEC-RAS for River Channel Improvement Plan Mr. Konno, River Engineering-2

The program of the session on February 14 is shown below.

- Exercise of HEC-RAS for River Channel Improvement Plan Mr. Konno, River Engineering-2
- Ms. Dolores M. Hipolito then presented closing remarks. The Education and Training First Workshop ended with a distribution of certificate of attendance.

## Attendance List

Name	Position	Office	Feb. 11th	Feb. 12th	Feb. 13th	Feb. 14th
Abduljalil M Bansao	Engineer II	BOD	○	○	○	○
Alain John R. Sotto	Engineer III	RO XI	○	○	○	○
Albert Lee B. Cabanting	Instrument	DPWH, RXI, Tagum City	○	○	○	○
Aquilina T. Decilos	Engineer III	PS	○	○		
Benjamin S. Babia	Chief PDS	DPWH DEO Camiguin	○	○	○	○
Carlos D. Zamor	Engineer III	PS	○			
Dolores M. Hipolito	Project Manager II	FCSEC	○	○	○	○
Eladio L. Lim III	Draftsman II	DPWH R8	○	○	○	○
Elmo F. Atillano	Engineer III	PS	○	○	○	○
Estelita M. Leonado	Economist II	PS	○	○	○	
Grecille Christopher Damo	Engineer III	FCSEC	○	○	○	○
Julius D. Borja	Project Manager	MFCDP II	○	○	○	○
Leonila R. Mercado	Engineer IV	PMO-MFCP C1	○	○	○	○
Marcelino G. Tolentino, Jr.	Engineer III	PS	○	○	○	○
Marichu T. Edwarte	Draftman II	DPWH R8	○	○	○	○
Maximo F. Bulanad	Engineer III	PMO	○	○	○	○
Milagrosa A. Estandarte	Engineer II	R-10	○	○	○	○
Orlando M. Casio	Engineer III	PS	○	○	○	
Pablo C. Reyes	Engineer III	RO IV	○	○	○	○
Ramon N. Regala	Special Investigator	Bulacan 2nd District	○	○	○	○
Rodolfo M. Casco	Engineer II	CARBDP-PMO	○	○	○	○
Sol T. Abasa	Engineer III	ESSO, PS	○	○	○	○
Teodoro M. Ceralde	Engineer II	BOD	○	○	○	○
Tirso R. Perloda, Jr.	Engineer IV	DPWH, BOC	○	○	○	○