

SUPPORTING REPORT N
FLOOD/LANDSLIDE DAMAGE SURVEY

SUPPORTING-N : FLOOD/LANDSLIDE DAMAGE SURVEY

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1. GENERAL

The objective of the Flood/Landslide Damage Survey is to grasp the current flood/landslide conditions and assets in the hazardous area. The collected information would be processed and used as basic information for estimating the damage caused by floods/landslides and the benefit derived from the project.

2. PROCESS AND METHOD OF THE SURVEY

Two-stepped interview survey, namely, “pilot survey” and “full-scale survey”, were conducted during the first stage of the Study in Honduras. The process of the survey activities were as follows:

1) Preparation of Interview Sheet for Pilot Survey

Draft Interview Sheets was prepared by the Study Team and discussed in the counterpart meeting with the assistance of the Study Team for finalizing.

2) Pilot Survey

Using the interview sheet prepared above, the pilot survey was carried out for flood/landslide area with 100 samples (50 samples for flood area and 50 samples for landslide area), in order to confirm the method of interview and items to be asked, and to train the interviewers.

3) Modification of Interview Sheet for Full-scale Survey

Based on the results and the lessons of the pilot-survey, the interview sheets have been modified for the full-scale survey. The finalized interview sheets are presented in the Data Book.

4) Full-scale Survey

The full-scale survey was carried out for the possible hazardous area of flood/landslide with 634 samples in total. The surveys were carried out by the counterpart agencies of the Study through the interview to the habitants who are living in the possible flood and landslide area of the Study Area. The results are initially processed by the conducting agencies as presented in Appendix.

Two agencies of the counterparts, AMDC and SANNA, were in charge of the surveys. The numbers of households surveyed were as follows:

Table N.2.1 Agencies in Charge of the Survey

Survey	Agency in Charge	Sample Number
Flood Damage Survey:	AMDC	304
Landslide Damage Survey:	SANAA	330

3. SUMMARY OF SURVEY

3.1 LOCATIONS AND NUMBERS OF SURVEY

The colonias, which have experienced inundation/landslide, were selected through the counterpart meeting as the target of interview survey. To avoid aerial and social biases, the areas and households/buildings surveyed were carefully examined during the course of the interview survey.

Locations of colonias/barrios surveyed are shown in *Figures N.3.1* and *N.3.2*. *Table N.3.1* and *N.3.2* show the number of samples to be surveyed with their attributes.

Table N.3.1 Survey Locations and Numbers (Flood Damage)

	Residential				Gov. office	Public Building	Large Business	Small Business	Total
	High	Medium	Low	Poor					
1st Avenue	1	1							2
Barrio Abajo	3	2	1	1	1				8
Betania				3					3
Buenos Aires		2							2
Carrizal # 1 and # 2		2							2
Concepcion		2						2	4
El Chile		6	6		1				13
El Pedregal		3	1	2					6
El Sitio		2							2
Estados Unidos		1		1					2
Flor del Campo		3							3
Guanacaste								2	2
Guillen			7	4					11
Hato de Enmedio		1	1						2
Kennedy		21	1		2	1	2	5	32
La Concordia		2							2
La Haya		4						1	5
La Primavera		4	2			1			7
La Travesia		1	1	3					5
Las Brisas		1	1	3					5
Las Mercedes	1			1					2
Las Palmas			1	1					2
Las Torres				2					2
Las Vegas		4	5	6					15
Loarque	1	7	1	7	1			2	19
Los Robles	1	1							2
Lower El Pedregal				10					10
Miramesi			1	10		4			15
Nueva Suyapa	2								2
Reparto Arriba		1	19	4					24
Rio Grande	2	3		1					6
Roberto Suazo C.			1	2					3
San Juan del Norte		1	1						2
Santa Fe	2			1					3
Soto			5	11					16

	Residential				Gov. office	Public Building	Large Business	Small Business	Total
	High	Medium	Low	Poor					
Universidad Suyapa				2					2
Valle de Angeles				1					1
Villa Nueva		7	9	8				2	26
Villa Olimpica		1							1
Others	2	16	6	9					33
Total	15	99	70	93	5	6	2	14	304

Table N.3.2 Survey Locations and Numbers (Landslide Damage)

	Residential				Public Building	Total
	High	Medium	Low	Poor		
14 de Febrero	0	0	5	21	0	26
Campo Cielo	0	0	19	34	0	53
Las Torres	0	3	17	46	0	66
Nueva Esperanza	0	0	27	41	0	68
Reparto Arriba	0	9	80	27	1	117
Total	0	12	148	169	1	330

3.2 SUMMARY OF SURVEY RESULTS

3.2.1 CHARACTERISTICS OF HOUSEHOLDS

The characteristics of households by each survey are shown in the table below.

Table N.3.3 Characteristics of Households by Survey Area

		Construction cost of house	Value of Household Asset	Monthly Income	Living Length	Number of Person per Household
Flood Area	Lps.	91,735	55,506	6,228	11.4	5.48
	\$	5,918	3,581	402		
Landslide Area	Lps.	38,560	14,833	3,492	14.0	5.95
	\$	2,488	957	225		

3.2.2 SUMMARY OF FLOOD DAMAGE

162 households/buildings have experienced inundation, which represents more than half of the total households/buildings of 304. Among the affected households/buildings of 162, more than 85 % of 139 were suffered from inundation by Hurricane "Mitch". The average duration of inundation at the event of Mitch is 5.7 days (maximum: more than 30 days).

3.2.3 SUMMARY OF LANDSLIDE DAMAGE

Approximately 30 % of total households surveyed, namely 98 households, have been affected by the damage of landslide. Among them, 84 households, which is more than 85 % of 98 affected households, had the damage in 1998; the year attacked by Mitch. The remaining 14 households were damaged in 1999 and 2000.

3.2.4 VALUE OF ASSETS IN FLOOD AREA

The average value of assets of household in the possible inundation area by household classifications and other buildings are summarized in the following tables.

Table N.3.4 Summary of Value of Assets (Flood Area: Residential)

		Const. Cost of House	Asset's Value	Monthly Income	Living Length	Family Members
High	Lps.	291,833	162,500	23,367	10.8	6.33
	\$	18,828	10,484	1,508		
Middle	Lps.	139,077	92,615	9,633	14.9	5.31
	\$	8,973	5,975	621		
Low	Lps.	80,500	40,006	3,704	11.1	5.74
	\$	5,194	2,581	239		
Poor	Lps.	33,725	21,223	2,818	8.0	5.37
	\$	2,176	1,369	182		
Total	Lps.	91,735	55,506	6,228	11.4	5.48
	\$	5,918	3,581	402		

Source: JICA Survey

Table N.3.5 Summary of Value of Assets (Flood Area: Other Buildings)

		Const. Cost of Building	Assets	Monthly Proceeds	Length of Operation
Gov. Office	Lps.	228,450	41,200		11.7
	\$	14,739	2,658		
Public Building	Lps.	73,000	25,333		16.3
	\$	4,710	1,634		
Large Business	Lps.	224,500	119,000	11,705	12.0
	\$	14,484	7,677	755	
Small Business	Lps.	52,200	153,133	7,310	8.0
	\$	3,368	9,880	472	
Total	Lps.	121,282	97,344		11.0
	\$	7,825	6,280		

Source: JICA Survey

3.2.5 VALUE OF ASSETS IN LANDSLIDE AREA

The average value of assets of household in the possible landslide area by household classifications are shown in the table below.

Table N.3.6 Summary of Survey in Possible Landslide Area (Residential)

		Const. Cost of House	Asset's Value	Monthly Income	Living Length	Family Members
Middle	Lps.	120,727	34,000	8,285	21.1	6.85
	\$	7,789	2,194	534		
Low	Lps.	50,593	19,157	3,743	15.6	5.69
	\$	3,264	1,236	241		
Poor	Lps.	22,806	9,345	2,889	12.1	6.12
	\$	1,471	603	186		
Total	Lps.	38,560	14,833	3,492	14.0	5.95
	\$	2,488	957	225		

Source: JICA Survey

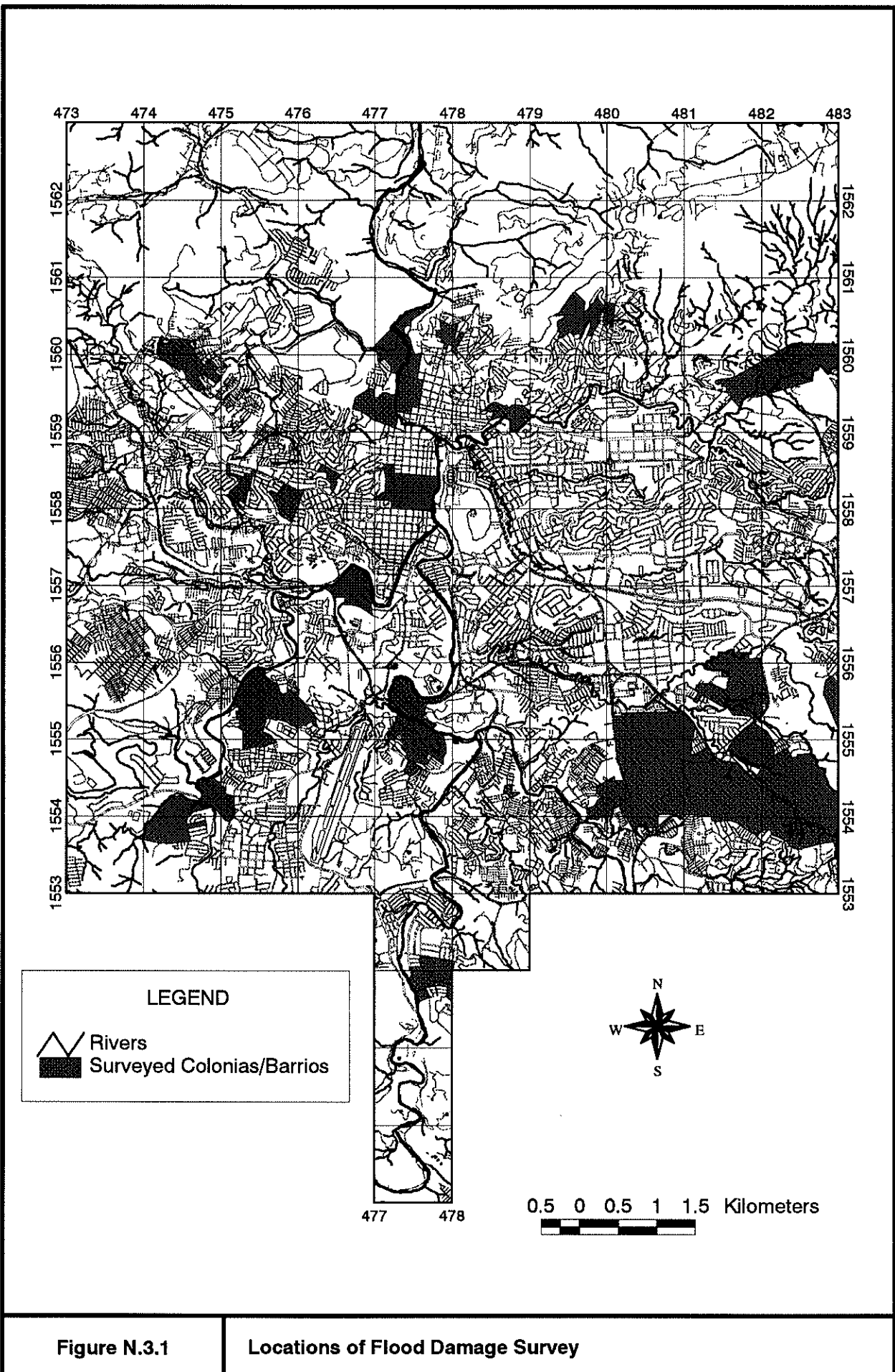


Figure N.3.1

Locations of Flood Damage Survey

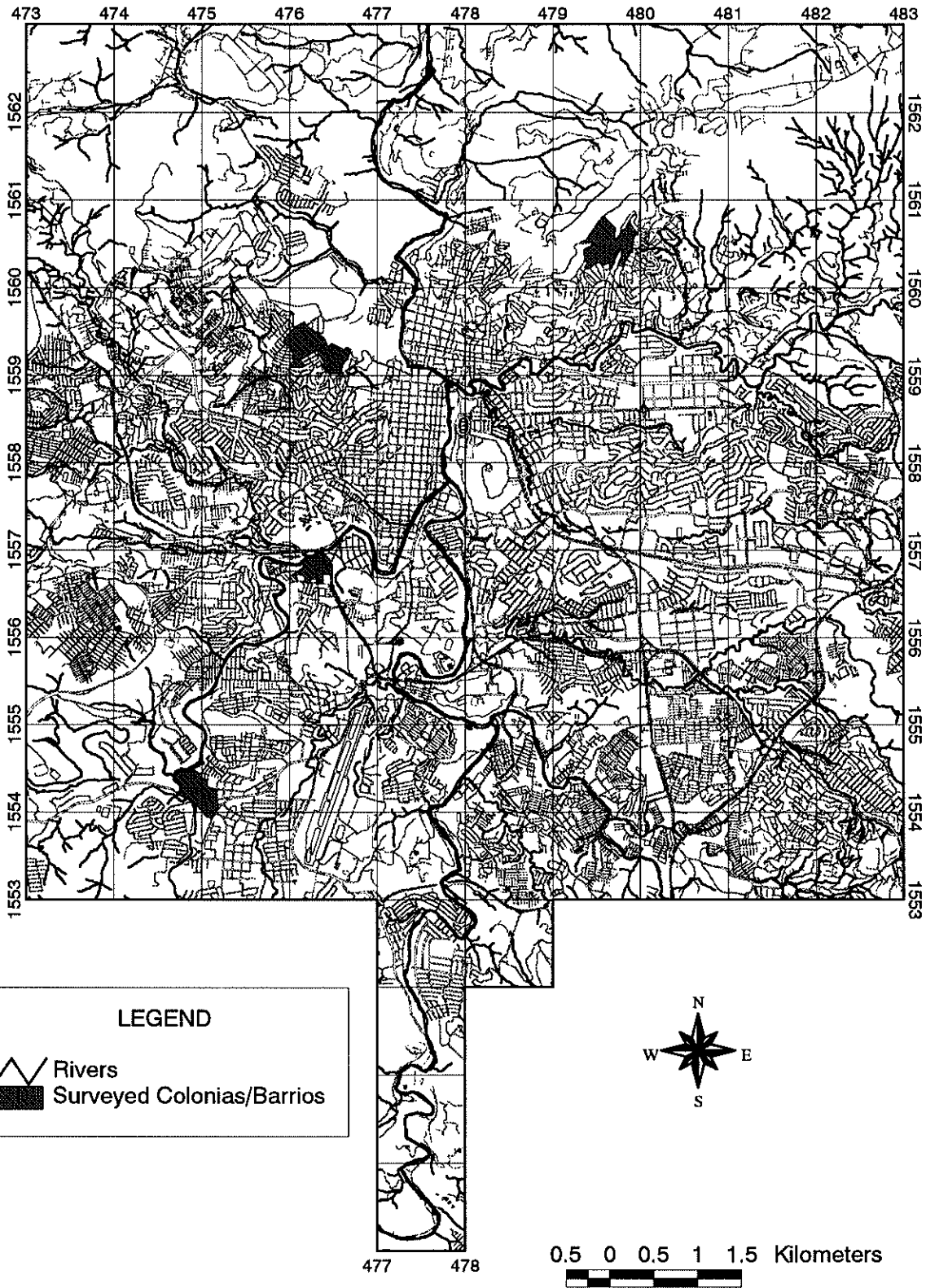


Figure N.3.2

Locations of Landslide Damage Survey

REFERENCES

- 1) Informe sobre desarrollo humano Honduras 1999, El Impacto de un huracán, nov. 1999, UNPD(PNUD)
- 2) Informe resumen de daños y pérdidas a la ciudad capital, CODEM
- 3) Resultados del cuestionario de daños por deslizamientos de tierra, derrumbes y arrastre de piedras, tierra y materiales, AMDC
- 4) Resultados del cuestionario de daños por deslizamientos de tierra, derrumbes y arrastre de piedras, tierra y materiales, SANAA
- 5) Alba Consuelo Flores, Preparativos para desastres, COPECO

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APPENDIX N

APPENDIX N.1

FLOOD DAMAGE SURVEY RESULT

APPENDIX N.2
LANDSLIDE DAMAGE SURVEY RESULT

Landslide Damage Survey Result (2/5)

#	Barrio or Colonia	Use of Building	Construction Materials				Ownership and property price own / rented	Floor area	Building area	Concrete Cost (Cement, Brick, Adobe)	Time Living (years)	Number of people in house	Amount of Assets	Monthly Family Income	Landslide Records (yes/no/year)	Type of Landslide	Amount of Damages (Income Loss, Sales Loss, Production Loss)		
			Roof	Wall	Floor	Wood													
75	Nueva Esperanza	res/poor	Zinc	Brick	Wood	Own	300y	218	150y	108	15,000	20	5	3,500	2,000				
76	Nueva Esperanza	res/poor					18	12	218	6	38	12,000	12	6	10,000	3,000			
77	Nueva Esperanza	res/poor					15	10	150	6	48	30,000	12	6	5,000	3,000			
78	Nueva Esperanza	res/poor					10	15	150	6	48	25,000	17	4	7,000	3,000			
79	Nueva Esperanza	res/poor					9	12	108	6	42	1,300	2	5	8,000	3,200			
80	Nueva Esperanza	res/poor					10	16	160	9	6	48	20,000	18	5	10,000	3,000		
81	Nueva Esperanza	res/poor					20	10	200	15	8	120	50,000	20	10	10,000	3,000		
82	Nueva Esperanza	res/poor					10	7	70	5	6	30	20,000	2	6	10,000	4,800		
83	Nueva Esperanza	res/poor					13	8	104	9	6	34	35,000	12	5	15,000	15,000		
84	Nueva Esperanza	res/poor					15	16	240	11	5	55	30,000	20	7	30,000	5,000		
85	Nueva Esperanza	res/poor					20	15	300	16	14	224	90,000	20	5	20,000	4,800		
86	Nueva Esperanza	res/poor					17	9	153	7	5	35	55,000	20	6	10,000	1,200		
87	Nueva Esperanza	res/poor					287y	6	214	280y	167	160,000	20	16	40,000	5,000			
88	Nueva Esperanza	res/poor					12	10	120	8	8	48	12,000	1	2	5,000	4,000		
89	Nueva Esperanza	res/poor					14	12	168	8	8	64	20,000	1	7	8,000	3,500		
90	Nueva Esperanza	res/poor					160y	115	80y	57	20,000	8	3	6,000	1,500				
91	Nueva Esperanza	res/poor					18	14	252	10	10	40,000	20	7	10,000	5,000			
92	Nueva Esperanza	res/poor					18	14	252	14	12	168	35,000	22	7	12,000	4,500		
93	Nueva Esperanza	res/poor					15	14	224	12	10	120	16,000	12	3	11,000	3,000		
94	Nueva Esperanza	res/poor					200y	144	6	4	24	5,000	7	3	8,000	3,500			
95	Las Torres	res/poor					6	12	72	3	9	4m	2	2	200	2,500			
96	Las Torres	res/poor					192	0	9	8	54	4,000	13	3	3,000	1,600			
97	Las Torres	res/poor					150y	108	7	5	35	60,000	6	8	40,000	6,000			
98	Las Torres	res/poor					400	0	4	2	8	1m	2	2	2,500	2,000			
99	Las Torres	res/poor					250y	160	200y	144	25,000	18	6	40,000	2,500				
100	Las Torres	res/poor					10	6	60	8	8	48	5,000	4	4	15,000	2,000		
101	Las Torres	res/poor					8	12	96	8	12	96	10,000	19	10	20,000	4,000		
102	Las Torres	res/poor					4	10	40	6	0	4m	4	4	9,000	1,200			
103	Las Torres	res/poor					14	10	140	6	8	48	9,000	10	6	15,000	3,300		
104	Las Torres	res/poor					14	10	140	12	10	120	40,000	10	6	25,000	1,800		
105	Las Torres	res/poor					148y	30	8	240	15	4	60	25,000	1	3	4,000	200	
106	Las Torres	res/poor					148y	108	80y	57	12,000	16	6	6,000	1,500				
107	Las Torres	res/poor					140y	101	100y	72	30,000	7	3	12,000	4,000				
108	Las Torres	res/poor					140y	101	80y	57	15,000	2	6	1,500	2,500				
109	Las Torres	res/poor					140y	101	40y	28	800	6	6	500	1,800				
110	Las Torres	res/poor					9	15	135	9	10	90	4,500	2	7	10,000	4,000		
111	Las Torres	res/poor					12	6	72	8	6	48	22,000	12	2	25,000	7,500		
112	Las Torres	res/poor					10	8	80	8	8	48	20,000	9	4	16,000	1,800		
113	Las Torres	res/poor					8	10	80	6	6	36	20,000	12	4	40,000	6,000		
114	Las Torres	res/poor					8	10	80	6	8	48	15,000	13	7	50,000	9,000		
115	Las Torres	res/poor					210y	151	180y	130	218,000	14	5	12,000	1,200				
116	Las Torres	res/poor					10	8	80	6	0	8,000	10	4	6,000	2,800			
117	Las Torres	res/poor					200y	144	100y	72	7,000	13	4	10,000	1,800				
118	Las Torres	res/poor					120y	86	80y	57	6,000	12	5	1,500	3,000				
119	Las Torres	res/poor					12	0	10	10	100,000	12	9	20,000	2,000				
120	Las Torres	res/poor					11	9	99	8	7	56	25,000	12	6	50,000	2,000		
121	Las Torres	res/poor					10	0	0	0	60,000	13	6	80,000	2,000				
122	Las Torres	res/poor					10	0	0	0	60,000	13	5	15,000	2,000				
123	Las Torres	res/poor					8	6	48	0	60,000	11	7	10,000	3,000				
124	Las Torres	res/poor					12	10	120	8	8	72	1,500	2	6	6,000	500		
125	Las Torres	res/poor					12	10	120	9	8	72	5,000	1	3	800	1,200		
126	Las Torres	res/poor					12	10	120	9	8	72	20,000	6	8	1,200	1,200		
127	Las Torres	res/poor					10	8	80	8	7	56	50,000	18	5	2,000	18,000		
128	Las Torres	res/poor					140y	101	110y	78	25,000	6	3	8,000	1,000				
129	Las Torres	res/poor					120y	86	100y	72	12,000	14	6	3,000	3,000				
130	Las Torres	res/poor					150y	108	130y	93	25,000	11	5	5,000	1,500				
131	Las Torres	res/poor					140y	101	120y	86	22,000	20	3	15,000	3,000				
132	Las Torres	res/poor					140y	101	80y	57	9,000	15	5	8,000	900				
133	Las Torres	res/poor					140y	101	120y	86	35,000	20	5	10,000	2,000				
134	Las Torres	res/poor					140y	101	120y	86	11,000	10	4	5,000	2,100				
135	Las Torres	res/poor					130y	93	80y	57	8,000	6	5	8,000	2,000				
136	Las Torres	res/poor					150y	108	120y	86	25,000	1	6	15,000	5,000				
137	Las Torres	res/poor					140y	101	60y	43	9,000	23	15	1,000	800				
138	Las Torres	res/poor					8	10	80	4	9	32	15,000	6	4	35,000	2,500		
139	Las Torres	res/poor					8	8	64	6	8	48	10,000	6	8	8,000	3,500		
140	Las Torres	res/poor					6	8	48	6	8	48	15,000	15	7	25,500	3,000		
141	Las Torres	res/poor					8	10	80	6	8	48	5,000	1	2	2,000	1,000		
142	Las Torres	res/poor					8	10	80	6	8	48	5,000	1	2	2,000	1,000		
143	Las Torres	res/poor					8	10	80	6	8	48	5,000	1	2	2,000	1,000		
144	Las Torres	res/poor					8	10	80	6	8	48	5,000	1	2	2,000	1,000		
145	Las Torres	res/poor					8	10	80	6	8	48	5,000	1	2	2,000	1,000		
146	Las Torres	res/poor					8	10	80	6	8	48	5,000	1	2	2,000	1,000		
147	Las Torres	res/poor					8	10	80	6	8	48	5,000	1	2	2,000	1,000		
148	Las Torres	res/poor					8	10	80	6	8	48	5,000	1	2	2,000	1,000		

Landslide Damage Survey Result (3/5)

#	Barrio or Colonia	Use of Building	Roof				Construction Materials				Ownership and property price	Floor area	Building area	Construc-tion Cost	Time Living (years) in house	Number of people in house	Amount of Assets	Monthly Family Income	yes	no	Landslide Records	land	Building	I.M.	Amount of Damages		
			Zinc	Cement	Tile	Adobe	Adobe	Block	Brick	Wood															Soil	Brick	Wood
149	Las Torres	res/poor																									
150	Las Torres	res/poor																									
151	Las Torres	res/poor																									
152	Las Torres	res/poor																									
153	Las Torres	res/poor																									
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161	Campo Cielo	res/poor																									
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222	Reparto Amba	res/poor																									

Table (1/5)

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