Table 4.5 - RUNOFF DISCHARGE SUMMARY TABLE (I of 2) DRAINAGE MAINS

DRAINAGE MAINS						
		NORTH MAI			r	
MAIN	NAME	MANHOLE	CALC.			3E, Q (m³/s)
CODE		NO.	POINT	AREA, ha.	2-YR FLOOD	10-YR FLOOD
DM01	BLUMENTRITT INTERCEPTOR	H15C3371	7	72.52	11.31	15.50
		H15C2009	8	239.75	30.86	42.52
		H15B2142	9	259,68	30.74	42.46
- · · · · · · · · · · · · · · · · · · ·		II15B2236	io	275,88	28.34	39.32
DM02	SOLIS-TECSON	H15B2007	12	42.21	7.36	10.05
ENVIOR	130E13-1EC30N	111582007	13 17	66.45	10.03	13.75
		111502016	14 15	92.38	12.31	16.95
		11.000.010		0200		
DM04	LÁKÁNDÚLÁ	Lualhati St.	38	20.53	3,23	4.42
,1.7		II15À4099	39	31.81	4.56	6.26
DM05	FUGOSO	1115B4175	34	61.35	11.47	15.62
		II 15B4258	35	76.29	12.33	16.87
			-		. :	and which has been re-
DM06	SEVERINO REYES	II15C4027	36	97.33	12.04	16.61
		II15C4157	37	99.02	11.54	15,95
DM07	JOSEFINA-LEPANTO	II15C3275	28	92.87	13.70	18.80
		H15C3297	29	125,12	15,49	21.37
		END	27	129.23	15.37	21.23
DM08	ECONOMIA	II15C3285	25	12.51	2.79	3.78
	* ** * *	II15C3296	26	47.30	8.88	12.10
		END	27	63,89	10.76	14.70
DM09	PMARGAL	II15C3284	24	9.27	1.97	2.67
	lijaiiiia	initi inna'	ا م	1.4.44		1 12 22
DM10	VISAYAS	H11A4068	32	85.73	13.34	18.28
		III11A4193	33	105.13	14.73	20.25
'buse'	74545664545464	matrici				45.15.
DM25	ZARAGOSA SUB-MAIN	III11A4101	40	44.90	9.13	12.40
bilde	PAMPANGA-EARNSHAW	H15B2040	16	45 25		
DM26	PAMPANGA-EARNSHAW	II15B2040	17	15.39 133.77	3.27 21.88	4,43 29,93
		1113/12101		133.77	Z.1.88	29.93
DM27	BUENDIA	``IH5Ä2053	12	8.23	2.00	2.70
DIVIE	BOCHOIX	111582243	11	33.60	7.32	9.92
		111002213	''	33.00	1.32	9.92
DM28	SOUTH ANTIPOLO	H15C3282	19	19.70	3,59	4.90
	COOTITATING CEO	II15C3352	20	31.11	5.12	7.00
		Box Culvert	21	98.28	11.86	16.38
	• · · · · · · · · · · · · · · · · · · ·	DON CONTENT	· · · ·	30.20	11.00	10.00
DM29	TAYUMAN	II15B3061	22	38.45	6.81	9.30
		II15B3204	23	96.99	13.38	18.40
			,		· · · · · · · · · · · · · · · · · · ·	
DM30	LEPANTO GOV. FORBES	111503092	27	193.13	22.76	31.44
		II15C4101	30	202.73	22.25	30.81
		II15C4178	31	253.38	25.40	35.26
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Table 4.5 - RUNOFF DISCHARGE SUMMARY TABLE (2 of 2)
DRAINAGE MAINS

<u> </u>	SOUTH MANILA						
MAIN		MANHOLE	CALC.	DRAINAGE	DISCHAR	SE, Q (m³/s)	
CODE	NAME	NO.	POINT	AREA, ha.	2-YR FLOOD	10-YR FLOOD	
DM11	PADRE FAURA	OUTFALL.	17	76.58	10.50	14.45	
DM12	REMEDIOS	OUTFALL	18	88.54	13.29	18.23	
DM14	VITO CRUZ	OUTFALL	23	91.85	11.69	16.11	
DM15	BUENDIA-ROXAS OUTFALL	OUTFALL	28	109.60	12.54	17,34	
DM16	LIBERTAD OUTFALL	OUTFALL	29	99.36	13.89	19.09	
DM17	EDSA OUTFALL	ÖÜTFÄLL	30	106.74	17.46	23.88	
DM20	ESTRADA	OUTFALL	19	23.98	4.16	5.68	
DM21	ZOBEL-ORBIT	OUTFALL	26	479.65	49.71	68.94	
DM22	FĀRĀŌĀŸ	OUTFALL	27	22.78	3.85	5.27	
DM23	ZÖBEL-RÖXÁS	PNR Junction OUTFALL	21 22	69.43 96.72	12.17 13.80	16.61 18.98	
DM35	C. RIVERA	OUTFALL	31	26.36	5.14	6.99	
		•	-• · · · · ·				
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		***************************************					
Note: See F	ig 4.3 for runoff discharge calculation a						

Note: See Fig.4.3 for runoff discharge calculation points.

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Table 4.6 - RUNOFF DISCHARGE SUMMARY TABLE OPEN CHANNELS

		OPEN CHAN			<del></del>	<del></del>	
		NORTH MA					
CHANNEL CODE	NAME	LOCATION	CALC.	DRAINAGE	DISCHARGE, Q (m³/s)		
			POINT	AREA, ha.	2-YR FLOOD	10-YR FLOOD	
EST01	CASILI CREEK	1 + 400	47	245.44	24.09	33.47	
		0 + 000	47	344.22	29,44	41.07	
EST02	ESTERO DE MAYPAJO (EAST)	DM01	À	324.69	31.57	43.88	
3 2 1 2	ESTERO DE MAYPAJO (WEST)	END	6	624.84	57.59	80,15	
		1		· · · · ·			
ES103	ESTERO SUNOG APOG	END	18	951.07	72.28	101.19	
ESTOGA	LIBBED FOTEDO DE MASSALEMA	F-1133 · · · · ·	ا ا			<del>.</del>	
1231007	UPPER ESTERO DE MAGDALENA	END	21	14.52	2.99	4.06	
ËST068	LOWER ESTERO DE MAGDALENA	1+050	42	17.72	3,14	4.28	
		0 + 770	43	26.39	4.24	5.80	
		0 + 000	44	44.48	5.91	8,13	
						· · · · · · · · · · · · · · · · · · ·	
EST07	ESTERO DE SAN LAZARO		45	14.18	2.84	3.86	
			46	37.05	5.33	7.31	
					· · · · · · · · · · · · · · · · · · ·		
	<u> </u>	SOUTH MAI	J				
CHANNEL	<u> </u>	T	CALC.	DRAINAGE	DIROLLADO		
CODE	NAME	LOCATION	POINT	AREA, ha.	2-YR FLOOD	E, Q (m³/s)	
EST27	UPPER CALATAGAN CREEK	Exist Weir	35	234.23	28,19	38.92	
		END	j j	76.05	13.19	18.01	
		······································					
EST29	MAKATI DIVERSION CHANNEL II	END	3	186.83	21.03	29.10	
#8 <del>7</del> 85****							
EST28	UPPER MAKATI DIV. CHANNEL I	END	4	155.69	19.67	27.12	
EST28	LOWER MAKATI DIV. CHANNEL T	END	6	502.53	50,93	70.68	
	Lone Change	CIVO			30,93	70.08	
EST25	LOWER TRIPA DE GALLINA	END	11	1767.54	147.60	206.04	
	PNR OPEN CANAL (South) -						
EST27	LOWER CALATAGAN CREEK		32	24.85	4.54	6.18	
			14	67.32	10.01	13.74	
***************************************			15 16	115.04	16.61	22.81	
			10	164,59	20.28	27.99	
EST27	CALATAGAN CREEK (East)		13 "	47.72	7.95	10.87	
						10,07	
EST30	PNR OPEN CANAL (North)		33	23,99	4.17	5.70	
,	***************************************		34	45.29	6.62	9.09	
EST31	MARICABAN CREEK			14888148		···	
ESISI	MARICADAN CREEN	END	9	1032.25	80.08	112.04	
					• • • • • • • • • • • • • • • • • • • •	.=	
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			·		************		
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Mote: See F	igures 4.2 & 4.3 for runoff discharge ca	loulation saiule	1	L			

# LIST OF FLOOD-PRONE AREAS AND SUGGESTED MEASURES

NO.		CHANNEL					
	Code	Name					
1	DM01	BLUMENTRITT INTERCEPTOR					
1	NL041	AMORANTO/MAYON/CALAMBA-RIGHT SIDE					
2	DM01	BLUMENTRITT INTERCEPTOR					
۷	NL039	ANDRES BONIFACIO (WACAT-BLUMENTRITT-DNO1)					
3	DM01	BLUMENTRITT INTERCEPTOR					
3	NL043	MAYON/M CUENCO (DAPITAN-M CUENCO-BLUMENTRITT-DM01)					
4	DM06	N. REYES - SEVERINO					
	NL031	LAONGLAAN/GOV FORBES/ESPANA (ANDALUCIA-GOV FORBES-ESPANA-P CAMPA)					
5	DM06	N. REYES - SEVERINO					
	NL032	DIMASALANG/GOV FORBES/ESPANA (CONSTANCIA-LAONGLAAN-ESPANA-N REYES)					
6	DM07	JOSEFINA - LEPANTO					
	NL036	ESPANA-RIGHT SIDE (QUEZON CITY CIRCLE-CRAIG-DM07)					
	DM08	ECONOMIA					
7	NL034	ESPANA-RIGHT SIDE (KUNDIMAN-VICENTE CRUZ-DM08)					
	NL035	ESPANA-LEFT SIDE (CRAIG-VICENTE CRUZ-DM08)					
8	NL032	DIMASALANG/GOV FORBES/ESPANA (CONSTANCIA-LAONGLAAN-ESPANA-N REYES) M EARNSHAW/ESPANA (SULUCAN-GOV FORBES-ESPANA)					
	NL033	M V DELOS SANTOS-RIGHT SIDE (C TORTUOSA-LEGARDA)					
9	NL029 NL030	M V DELOS SANTOS-RIGHT SIDE (C TORTUOSA-LEGARDA)					
	DM28	SOUTH ANTIPOLO					
10	NL055	F HUERTAS (BATANGAS-ANTIPOLO-EST10)					
	DM02	SOLIS - TECSON					
11	NL016	JOSE ABAD SANTOS-RIGHT SIDE (ANTIPOLO-SOLIS-DMO2)					
	NL017	JOSE ABAD SANTOS-LEFT SIDE (RIZAL AVE EXT-SOLIS-DMO2)					
	DM29	TAYUMAN					
12	NL025	OROQUIETA (ANTIPOLO-TAYUMAN-DM29)					
	EST06	ESTERO DE MAGDALENA					
	EST04	ESTERO DE VITAS					
13	DM29	TAYUMAN					
	NL018	S HERRERA (SEVERINO REYES-ESTO6)					
	NL019	TAYABAS (T MAPUA-ESTO6)					
	DM10	VISAYAS					
14	EST16	ESTERO DE VALENCIA					
	NL049	LUZON/NEGROS (BOHOL-NEGROS-VISAYAN AVE-DM10)					
15	EST05	ESTERO DELA REINA					
	NL010	C M RECTO -LEFT SIDE (STO CRISTO-ES105)					
16	DM05	FUGOSO					
	NL026	P GUEVARRA (TAYUMAN-FUGOSO-DM05)					
17	DM04	LAKANDULA					
	NL004	MORIONES/NOLASCO/MORGA (MASINOP-NOLASCO-MORGA-ASUNCION-DM04)					
18	EST09	NORTH ANTIPOLO CREEK					
	NL020	IPIL (T BUGALLON-ANTIPOLO-ESTO9)					
19	DM07	JOSEFINA - LEPÁNTO					
	NL044	CORDILLERA/QUEZON AVE/D TUAZON/DATA/MATIMYAS					
20	EST15	ESTERO DE SAN MIGUEL  CARLOS PALANCA/PADILLA/NEPOMUCENO (ELIZONDO-P CASAL EXT-) NEPOMUCENO (EST 15)					
	NL028						
21	EST16	ESTERO DE VALENCIA					
	NL054	OLD STA MESAJALBINAJALTURA EXT/R MAGSAYSAY/HIPODROMO/ANONAS  JOSEFINA - LEPANTO					
22	DM07	MATIMYAS-RIGHT SIDE (T ALFONSO-JOSEFINA III-DM07)					
22	NL045	MATIMYAS-RIGHT SIDE (T ALFONSO-JOSEFINA III-DM07)  MATIMYAS-LEFT SIDE (ALEX-JOSEFINA III-DM07)					
	NL046 DM23	ZOBEL ROXAS					
	SL001	PRIMO DE RIVERA-A					
23	SL001	VITO CRUZ EXTENSION					
	SL022	MAYAPIS					
	EST25	ESTERO DE TRIPA DE GALLINA					
24	SL032	SEN. GIL PUYAT-DIAN-DM22					
	SL033	FINLANDIA-EDISON-MORSE-EST 25					
	EST29	MAKATI DIVERSION CHANNEL II					
25	SL037	HEN. A. RICARTE					
	EST25	ESTERO DE TRIPA DE GALLINA					
26	5L039	CABRERRA-PROTACIO EXT.					
	EST27	ESTERO DE TRIPA DE GALLINA					
{							
27	SL031	DAYAP/DIAN/CALATAGAN CREEK					

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## LIST OF FLOOD-PRONE AREAS AND SUGGESTED MEASURES

NO.	CHANNEL					
****	Code	Name				
28	EST27	CALATAGAN CREEK				
- 20	DM33	PASONG TAMO				
29	EST27	CALATAGAN CREEK				
	SL055 LUMBAYAO & ST. PAUL					
30	DM23	ZOBEL ROXAS				
	SL022	MAYAPIS				
31	EST25	ESTERO DE TRIPA DE GALLINA				
	DM23	ZOBEL ROXAS				
32	EST30	PNR OPEN CANAL				
	SL020	DAGONOY				
	EST30	PNR OPEN CANAL				
33	SL021	ESTRADA				
	SL054	ESTRADA-B				
34	EST21	ESTERO DE CONCORDIA				
	SL010 PAZ MENDOZA GUANZON - B					
35	EST25	ESTERO DE TRIPA DE GALLINA				
	SL035					
36	EST31	MARICABAN CREEK				
	SL047	VICTORIA				
37	DM14	VITO CRUZ				
	SL041	DONADA-DM14				
38	EST25	ESTERO DE TRIPA DE GALLINA				
50	SL045	RODRIGUEZ/APELO CRUZ/C. JOSE/DILAIN CREEK				
39	DM11	PADRE FAURA				
35	SL008	T.M. KALAW - TAFT AVE.				
40	EST18	ESTERO DE BALETÉ				
40	SL009	SAN MARCELINO				
	EST25	ESTERO DE TRIPA DE GALLINA				
41	SL032	SEN. GIL PUYAT-DIAN-DM22				
	SL033	FINLANDIA-EDISON-MORSE-EST 25				
43	EST29	MAKATI DIVERSION CHANNEL II				
42	SL029	HERERRA				
	EST26	ESTERO DE STA. CLARA				
43	SL019	E. PASCUA				
	EST25	ESTERO DE TRIPA DE GALLINA				
44	SL014	ROAD 6				
	EST25	ESTERO DE TRIPA DE GALLINA				
45	SL015	ROAD 16-PEDRO GIL				
	2013	I NONO IN FLORO GIL				

Table 6.1
List of Flood-Prone Areas and Suggested Measures (1 of 45)

	100d-Prone A	rreas and Si	iggested iv	ieasures (i	01 45)
Location					
Area	Along Calan	nba Creek	City		Quezon
#1215 (Calamba cor.	Triga)		<b>Y</b>		THE PERSON OF TH
Flooding Condition	in 1999 Septen	nber		<del></del>	
Max. Depth (m)	0.5	Location	Calamba	cor. Iriga	
Max. Duration (hr)	1 1	Location	-		
Ave. Depth (m)		. For the statement of	Ave. Dura	ation (hr)	
Overflow water runs	on Calamba St	reet and flow			ampaloc area
REGIONAL FLOOD	DING (NORTH	I EAST MAN	NILA)		
Major Drainage Sys					
Drains to Blumentritt	Interceptor (D	M01) througl	ı Calamba (	NL041).	
Causes					
Poor capacity of Cala				The second secon	
Originally, this creel	k has insuffici	ent cross sec	ction compa	red with the	runoff discharge
from its drainage area					
In addition, flow capa	icity is decrease	ed due to seve	ral obstacle	s in this creel	ζ.
Photo 2 is a pipe thro	wn into the cree	eks.		_	
Photo 3 is silt taken ju	ust after a flood	l by inhabitan	its prepared	for the next f	lood.
These silts come from	i the constructi	on places she	own in Photo	o 4 since this	drainage area has
steep slope and sand/s	silt is easily trai	nsported to th	ie creek.		
Measures	····		<del></del>		
Develop solid waste o	ontrol plan incl	luding constri	uction mater	ials mananan	1ent
Develop alternative s	scheme to incre	ease drainage	: main/laters	al capacity of	ioni. Lito reduce runoff
peak.			intole	capacity of	. to reduce runon
As this involved of	her drainage a	reas, this h	as to be in	ncluded in th	ie overall master
planning.	•	•			

Table 6.1
List of Flood-Prone Areas and Suggested Measures (2 of 45)

	TOOU-FTORE A	icas and si	iggested Mea	isuics (2 i	J1 47)		
Location							
Area	Sta. Mesa	Heights	City		Quezon		
# 766 Calavite cor. Blumentritt Ext.							
Flooding Condition i	in 1999 Septem	ber					
Max. Depth (m)	0.5	Location					
Max. Duration (hr)	12	Location			About the first second to the control of the contro		
Ave. Depth (m)		***************************************	Ave. Duratio	on (hr)			
			- 1				
REGIONAL FLOOD	ING (NORTH	EAST MAN	HLA)				
Major Drainage Sys Drains to Blumentritt		M01) through	ı drainage late	ral A. Boni	facio (NL039).		
				***************************************			
Causes							
The lateral does not h			o .				
Receiving drainage m							
50% deposit at sag po The steep slope of the drainage main (DM0)	e laterals may			and flow w	vill over shoot the		
Measures				<u> </u>			
Declog manhole ii150	2019.						
Reinforce or upgrade	drainage lateral	using prope	r drainage plar	nning proce	ess.		
Declog/dredge drainage	ge main (DM01	<b>)</b> .					
As a contributor into overall master planning.							
L			•				

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Table 6.1 List of Flood-Prone Areas and Suggested Measures (3 of 45)

	dood-Prone A	reas and 5	uggested	Measures (3	01 45)
Location	Ct. Mars	TT.T.Y.	~		·
Area Piy. Margal cor, Hale	Sta. Mesa	Heights	City	1	Quezon
riy. maigai coi, rian	2011 (#00 <i>3)</i>				
Flooding Condition	in 1000 Senten				
Max. Depth (m)	   1	Location			+
Max. Duration (hr)	1	Location			
Ave. Depth (m)		1,000	Ave. Du	ration (hr)	
	i		1	and they	<del></del>
REGIONAL FLOOD	ING MORTH	FAST MAI	MII A)		
TOO THE LOCAL	1111011) 01111	LAS UMA	NILA)		
Major Drainage Sys	tem	<del></del>	*****		
Drains to Blumentrit		DM01) thro	ugh the dra	inage lateral	under Piy Margal
(NL043).		•	-	Ü	<b>yy</b>
					•
•					
Causes	<del></del>			-	
Drainage line NL043	does have adeq	mate capacit	v	V-100-072	
Runoff overflows and	d is conveyed a	long the str	eets. Flow:	along the stee	n road overshoots
the drainage mains, R	unoff cascades	down and tr	ansfers to S	Sampaloc area	(Photo 5)
Receiving drainage m	ain (DM01) has	s limited cap	acity thus,	flooding appea	ars.
<u> </u>					
Measures			TO THE REAL PROPERTY OF		
As the flooding pro	blem encompa	asses large	flooded as	ea and inter	action of several
drainage areas, altern study.	ative plans to i	ncrease draii	nage lateral	/main/estero d	capacity should be
Develop other flood m	nitination meas	irae etrueti	iral or non	oten etuen l	
In so doing, a comprel	hensive study sl	nes structi hould be und	naror non- lertaken tha	structural. La macter nla	nnino
,	y u	noma ov ma	ortanen un	a master pia	iming.

Table 6.1
List of Flood-Prone Areas and Suggested Measures (4 of 45

Location Area				-			
	C			1			
	Sampa		City		Manila		
R. Papa St. cor. Nica	nor Reyes (#12	(97)					
Flooding Condition	. 1000 C						
Flooding Condition Max. Depth (m)			15.5				
Max. Deput (III)	0.6 m	Location	R. Papa cor.	N. Reyes			
	72	Location			ti tida da sala da sala sa		
Ave. Depth (m)			Ave. Duration	ı (hr)			
DECIONAL FLOOR	ING GIODEL						
REGIONAL FLOOD	ING (NORTH	EAST MAN	ILA)				
Major Drainage Sys	tem		· · · · · · · · · · · · · · · · · · ·				
Drains to N. Reyes S		ge Main (DN	(06) through dr	ainage late	eral under Lagner		
Laan/Gov. Forbes/Es	paña (NL031).	8	. · · · · · · · · · · · · · · · · · · ·	amago nace	an under Laong-		
*1	( 12222 1).						
Causes	······································		······································	·····			
Drainage lateral does	not have adequ	ate canacity	Everse runoff	will annea	01		
NL031 has small outle	et hence a chol	cina condition	OCCURE	wiii appea	r as 11000.		
Receiving drainage n	iain (DM06) b	as limited co	roccins. Pacity This	nduaan fi	etlana avanttina a C		
flood.	(57770) 11	as matea a	pacity. This	mauces tu	inici swelling of		
Additionally, the floodwater coming from northern Sampaloc spills to España.							
Additionally, the flood	lwater coming t	from northern	Sampaloc spil	ls to Españ			
Additionally, the flood	lwater coming t	from northern	Sampaloc spil	ls to Españ			
Additionally, the flood	lwater coming f	from northern	Sampaloc spil	ls to Españ			
Additionally, the flood	lwater coming (	from northern	Sampaloc spil	ls to Españ			
Additionally, the flood	lwater coming f	from northern	Sampaloc spil	ls to Españ			
Additionally, the flood	lwater coming f	from northern	Sampaloc spil	ls to Españ			
	lwater coming (	from northern	Sampaloc spil	ls to Españ			
Measures			••••		ia.		
Measures Develop alternative fl	ood mitigation		••••		ia.		
Measures  Develop alternative flepeak, to provide storage	ood mitigation	measures (	to increase flo	v capacity	, to reduce flood		
Measures  Develop alternative flepeak, to provide storage As this involved a nu	ood mitigation ge). mber of interd	measures — (	to increase flow	v capacity	, to reduce flood		
Measures  Develop alternative flepeak, to provide storage As this involved a nulies in a low-lying area	ood mitigation ge). mber of interd	measures – ( ependent dra ive drainage	to increase flow	v capacity well as the	, to reduce flood e drainage basin		
Measures  Develop alternative flepeak, to provide storage As this involved a nulies in a low-lying area Develop guidelines to	ood mitigation ge). mber of interd g, a comprehens o improve dra	measures — ( ependent dra ive drainage inage planni	to increase flow mage basin as planning should ng, design, co	v capacity well as the	, to reduce flood e drainage basin		
Measures  Develop alternative flepeak, to provide storage As this involved a nulies in a low-lying area	ood mitigation ge). mber of interd g, a comprehens o improve dra	measures — ( ependent dra ive drainage inage planni	to increase flow mage basin as planning should ng, design, co	v capacity well as the	, to reduce flood e drainage basin		
Measures  Develop alternative flepeak, to provide storage As this involved a nulies in a low-lying area Develop guidelines to	ood mitigation ge). mber of interd g, a comprehens o improve dra	measures — ( ependent dra ive drainage inage planni	to increase flow mage basin as planning should ng, design, co	v capacity well as the	, to reduce flood e drainage basin		
Measures  Develop alternative flepeak, to provide storage As this involved a nulies in a low-lying area Develop guidelines to	ood mitigation ge). mber of interd g, a comprehens o improve dra	measures — ( ependent dra ive drainage inage planni	to increase flow mage basin as planning should ng, design, co	v capacity well as the	, to reduce flood e drainage basin		
Measures  Develop alternative flepeak, to provide storage As this involved a nulies in a low-lying area Develop guidelines to	ood mitigation ge). mber of interd g, a comprehens o improve dra	measures — ( ependent dra ive drainage inage planni	to increase flow mage basin as planning should ng, design, co	v capacity well as the	, to reduce flood e drainage basin		
Measures  Develop alternative flepeak, to provide storage As this involved a nulies in a low-lying area Develop guidelines to	ood mitigation ge). mber of interd g, a comprehens o improve dra	measures — ( ependent dra ive drainage inage planni	to increase flow mage basin as planning should ng, design, co	v capacity well as the	, to reduce flood e drainage basin		
Measures  Develop alternative flepeak, to provide storage As this involved a nulies in a low-lying area Develop guidelines to	ood mitigation ge). mber of interd g, a comprehens o improve dra	measures — ( ependent dra ive drainage inage planni	to increase flow mage basin as planning should ng, design, co	v capacity well as the	, to reduce flood e drainage basin		

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Table 6.1
List of Flood-Prone Areas and Suggested Measures (5 of 45)

Location			
Area	Sampa	loc	City   Manila
Gov. Forbes cor. Espa	ña (#845)		
•			
Flooding Condition in	n 1999 Senten		
Max. Depth (m)	0,6 m	Location	Gov. Forbes cor. España
Max. Duration (hr)	24	Location	Oot. 1 oroco cor. Sopana
Ave. Depth (m)		1	Ave. Duration (hr)
			1
REGIONAL FLOOD	ING (NORTH	EAST MAN	IILA)
Major Drainage Syst	em		
Drains to N. Reyes	Severino Dra	inage Main	(DM06) through drainage lateral under
Dimasalang-Gov. For	bes-España (N	L032).	
<u> </u>			
Causes			
Drainage lateral has in			zon City spills along Calamba and Maria
Clara but drainage ma	nin (DM06) ha	s limited can	acity. Thus, flooding the Sampaloc area on
large scale.	(= )	o turneya cap	and the same and the same and the same
	saw-tooth drai	inage profile,	producing clogged manhole especially at
place with abrupt slop		•	
			·
34			
Measures		<u> </u>	
Clean/declog NL032.	area scala flor	oding of the	Sampaloc, this should be included in the
overall master planning		oding of the	Samparoc, uns snoutu de included in the
		design, const	truction, and operation guidelines so as to
put more emphasis on			
	<b>,</b>	• • • • • • • • • • • • • • • • • • • •	
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Table 6.1
List of Flood-Prone Areas and Suggested Measures (6 of 45)

	1000 110110 / 1	1000 000	ggested Measures (o ot 13)
Location			
Λrea		[ ]	City
Josefina cor. Espana (	(#804)		to the Marian and analysis of the Control of the Co
Flooding Condition i	in 1999 Senfen	shor	
Max. Depth (m)	NF	Location	1
Max. Depth (III)  Max. Duration (hr)	111	Location	
Ave. Depth (m)		LOVIIIO	Ave. Duration (hr)
Ave. Deput (iii)	L	<del></del>	M.c. Diranon (m)
REGIONAL FLOOD	ING (NORTH	EAST MAN	ILA)
	-		•
			**************************************
Major Drainage Sys			
	æpanto Main (	(DM07) thro	nigh drainage lateral España (right side)
NL036.			
Causes			
Drainage lateral does	not have adequ	ate flow caps	rify
			otential location for sediment to settle.
			pill over to flooded area.
Receiving drainage m			
Receiving dramage in	Alli (Divior) na	з роот сараса	ıy.
,			
:			
<u> </u>	<del> </del>		
Measures			
			inage basin as well as the drainage basin
			planning should be undertaken.
			ruction, and operation guidelines so as to
put more emphasis on	i the hydraulic a	spect of the p	problem.
1			
N .			

Table 6.1
List of Flood-Prone Areas and Suggested Measures (7 of 45)

<del>,</del>	100a-r tone	Aleas and St	iggested Measures (7 of 45)
Location			
Area			City
España cor. San Dieg	o St. (#805)		
Flooding Condition			\$ 0.50 mm of the contraction of
Max. Depth (m)	0.5	Location	
Max. Duration (hr)	12	Location	
Ave. Depth (m)	<u> </u>		Ave. Duration (hr)
REGIONAL FLOOD	DING (NORT	H EAST MAN	NILA)
Major Drainage Sys Drains to Economia I and (NL034).		) through Espa	ña under drainage lateral (NL035) left side
Causes NL035 has an adequa Floodwater from surr	-	-	34 does not have one. rainage lateral area.
lies in a low-lying a	area, a comp be given esp	rehensive drai pecially that th	ainage basin as well as the drainage basin nage planning should be undertaken. Due ne drainage main (DM08), drainage lateral ge basin.

Table 6.1
List of Flood-Prone Areas and Suggested Measures (8 of 45)

ryst Of 1.	100u-1 101	ie Areas and	Juggostou	Micasaros	(0 01 10)
Location					
Area	Sa	mpaloc	City		Manila
Extramadura cor. Esp	oaña (#848)	)			
Flooding Condition	n 1999 Sei	otember	**************************************		
Max. Depth (m)	0.5	Location	I		ali kalini na kali i lafak i Amanana Afrikani'a tana ili mamananan
Max. Duration (hr)	12	Location			
Ave. Depth (m)	12	Liocation	Ave Di	ıration (hr)	TO THE THE PARTY OF THE PARTY OF A CHARGE AND THE PARTY OF THE PARTY O
Ave. Depai (iii)	<u>l</u>	·-·	170.17	mation (m)	
DECIONAL ELOOP	UNIC (NIOT	OTHER CT MA	ANUL AN		
REGIONAL FLOOD	MINO (NOI	CITI ENST WI	MINICAL		
:					
<b>N</b>			<del></del>		
Major Drainage Sys		2 d 1 M F		~ AU 0	731
Drains to drainage lat	terai NLU3.	z urrough M. E	amsnaw/Es	pana (NLU.	33).
Causes			<del>~~~~~~</del>	<del></del>	
Lateral has inadequat	a aanaaitu				
Clogged outlet (ii15C			C4152		
Choke at ii15C4075.	alu (root)	THE WOLDSHIP	C4132.		
Floodwater spills ove	r the Estero	o de Calubcub :	and overland	l runoff alo	no España
Troodwater spins ove	I the Bator		aid Official	i i i i i i i i i i i i i i i i i i i	пь Бэрапа.
ļ					
Measures					· · · · · · · · · · · · · · · · · · ·
Clean clogged manho	les from ii	15C4064 to iil:	C4071.		
				onducting o	drainage planning of
					proper installation of
laterals.	J	,	Ü		1 1
P .	the large s	cale flooding o	f the Sampa	loc, this she	ould be included in the
overall master planning		V	•	,	
· •	•				
i e					
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Table 6.1
List of Flood-Prone Areas and Suggested Measures (9 of 45)

List of P	1000-1	10110 711	cas una	ougge	-310d 111	cusures (x	01 10)
Area		Sampal	oc	City			Manila
Aranga cor. Reten (#	957)		~~	1		I	
, ,	,						
Flooding Condition	n 1999	Septem	ber				
Max. Depth (m)	0.9		Location	Ai	ranga co	r. Reten	
Max. Duration (hr)			Location				
Ave. Depth (m)				Λ,	ve. Durat	ion (hr)	
REGIONAL FLOOD	iNG (I	NORTH	EAST M	ANILA	.)		
Major Drainage Sys Drains to Estero de S - M.V. delos Santos ( - M.V. delos Santos (	an Mig left sid	e) NL030	)	ge late	ral unde	r:	
Causes Very small capacity. Drainage lateral has 5 Manhole ii15C4086 a It is part of the low-ly Floodwater from upper	nd ii 15 ing Sai	C4051 cl mpaloc ai	logged. rea (south	em poi		ntos.	
Measures Study the possibility planning. As this involved a m	ımber -	of interde	ependent o	drainag	e basin	as well as	the drainage basir
lies in a low-lying are	a, a coi	mprehens	ive draina	ge plar	ıning sho	ould be und	lertaken.

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Table 6.1 List of Flood-Prone Areas and Suggested Measures (10 of 45)

<del></del>	TOUG-1 TOHC AL	ous und ou	ggesteu tvicasures (	1 0 0 10)
Location				
Area	Sta. Ci	ruz	City	Manila
F. Huertas cor. Batan	ıgas (#862)			
·				
Flooding Condition	in 1999 Septem	aber	<del></del>	
Max. Depth (m)	0.6	Location	AND THE STATE OF T	manyayangan mana aragamat manana manahananga mahali abbandi babbah banah
Max. Duration (hr)	24	Location	F. Huertas cor. Bata	angas
Ave. Depth (m)	And the state of t	1,	Ave. Duration (hr)	
			.1	
REGIONAL FLOOD	NORTH	STA. CRUZ	<b>)</b>	
				,
	····			
Major Drainage Sys		(20) -11	1 - 4 1 1 1	Harrier Marsani (1 tribina) (mp. 1 p. no. (1998) (mp. no. (1998) (mp. no. (1998) (mp. no. (1998) (mp. no. (199
Drains to South Antiq - F. Hueitas (NL055)	•	28) through c	drainage laterals under	••
- ค. ศินธิเหลร (เพียงรา	<i>).</i>			
Causes		The state of the s	The second secon	
Flow capacity of drai			•	
Receiving drainage m				
Runoff spills between				
The area serve by the	) lateral is low-ij	ying.		
Measures		The second comments of the second control of	ar in the stray of the territory of the strain of the stra	
Dredge South Antipo				ور ورو
	ent study may	be continea	within small drainag	ge area of the north
Sta.Cruz.				
		·		
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Table 6-1

		Table			
	lood-Prone A	reas and Su	iggested Me	asures (11 of 45)	
Location					
Area	Tondo		City	Manila	1
Solis cor. J. Abad Sa	ntos (#533)				
Flooding Condition		- g			
Max. Depth (m)	0.6	Location		. Abad Santos	
Max. Duration (hr)	24	Location		. Abad Santos	
Ave. Depth (m)	<u></u>		Ave. Durat	ion (hr)	
REGIONAL FLOOE	DING (NORTH	STA. CRU	Z)		
Major Drainage Sys Drains directly by S Abad Santos (NL016	olis-Tecson Dra	ainage Main	(DM02) thro	ough drainage lateral	under J
Causes Poor capacity of drain Both ends of NL016 I NL017 has 70% unifor Receiving drainage mage mage to the laterals lie in a lot the upstream end of E	have 50% depos orm deposition ain (DM02) has ow-lying area w	and manhole s small carry here flood c	ing capacity. an persists lo	clogged. ng. The laterals are lo	cated at
Measures Declog NL016 & NL Study on upgrading d Improve carrying ca laterals for small drai	rainage lateral l pacity of DM	oy proper dra 02, includin	ninage planning in the stud	g process. ly improvement of o	Irainage

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Table 6.1
ist of Flood-Prone Areas and Suggested Measures (12 of 45

List of F	lood-Prone Ai	reas and Su	iggested Measi	ires (12 of 45)
Location				
Area	Sta. C	ruz	City	Manila
Oroquieta cor. Batan	gas (#858)			
Flooding Condition	in 1999 Senten	her		
Max. Depth (m)	0.6	Location		
Max. Duration (hr)	24	Location	Oroquieta cor	Rataurae
Ave. Depth (m)		L	Ave. Duration	
	<u> </u>	<del></del>	1 Troc. Daration	(117)
<b> </b>				
REGIONAL FLOOD	ING (NORTH	STA, CRU	Z)	
Major Drainage Sys				· · · · · · · · · · · · · · · · · · ·
Drains to Tayuman D	Prainage Main a	nd then to E	stero de Vitas th	rough the drainage laterals
under Oroquieta (NL)	025).			
Causes				
Drainage lateral has in		capacity.		
Drainage profile is sa				
Manhole ii 15B3 180 c	logged. Sedimer	it deposits o	n sag point.	
Receiving drainage m	ain (DM29) has	limited cap	acity	
Possible, runoff spills				
The area serve by late	rai is low-lying.			
Measures				· · · · · · · · · · · · · · · · · · ·
Declog manhole.		··		
Dredge Tayuman Mai	n.			
		led in the sn	nall basin wide <	tudy (say North Sta. Cruz
area).	,		THE STATE STATE OF	(one rioral bia. Ciua
•				
				:

Table 6.1 List of Flood-Prone Areas and Suggested Measures (13 of 45)

Location	***************************************	<del></del>	Egested Medistres (15	
Area	Sta.	Cruz	City	Manila
Severino Reyes cor. I				474144444
		, <b>,</b>	,	
Flooding Condition	in 1999 Septe	ember	**************************************	
Max. Depth (m)	0.6	Location	Ipil cor. F. Yuseco	
Max. Duration (hr)	3 (0.6 m)	Location	Ipil cor. F. Yuseco	
Ave. Depth (m)			Ave. Duration (hr)	NAMES OF PROPERTY.
REGIONAL FLOOD	)ING (NORT	H STA. CRUZ	Z)	
Major Drainage Sys Drains to Estero de laterals under: - Tayabas (F. Yuseco - S. Herrera for Sever	Magdalena, T	F. Yuseco (NI		rough the drainage
Causes Drainage laterals hav	e poor capaci	itv.		
Estero de Magdalena The area is a low-lyin	(upper reach)  ig area where  tion of Ester	) has insufficie flood can stand o de Magdalen		gas. Take note of
Measures For immediate impaction from South Antipolo	ning, conduct	a drainage in	lagdalena. provement study of Est le the improvement of th	ero de Magdalena e drainage laterals
under a small basin w		·	•	·

Table 6.1
List of Flood-Prone Areas and Suggested Measures (14 of 45)

	lood-Prone Al	cas and sup	ggested w	leasures (14	0143)
Location		•			10 The first of the last of th
Area	Sampa	loc 1	City	- <b>.</b>	Manila
Maria Luisa cor. Luz	on (#466)				
	1 1000 0				· · · · · · · · · · · · · · · · · · ·
Flooding Condition i			1		THE PERSON AND THE SECOND PROPERTY OF THE SECOND SE
Max. Depth (m) Max. Duration (hr)	0.6 3	Location Location			
Ave. Depth (m)	3	Location	Ave. Dura	otion (br)	
Avo. Deptii (iii)	l		Ave. Dai	atton (III)	
LOCAL FLOODING	)				
Major Drainage Sys	lom				
Drains to Visayas D		and then to	Estera de	Valencia three	much the drainess
laterals under the street	et of Ma. Luisa	(NL049).	Estero de	vaicioia une	ough the dramage
		` ,			
Adequate capacity at	outlet				
Causes		······································			
Steep slope followed t	ov adverse slope	forms a sad	dle part (pc	tential siltatio	on site)
70% clogged at saddle	e (manhole iii l l	A4197).	•		•
Incoming lateral from	Luzon may hav	e inlet proble	em, such th	at flooding oc	curs.
Measures					
Declog manhole iii 11/					**************************************
Improve slope of later	al and check inl	et to NL049	from Luzoi	ı.	
Proper drainage plann				1	
Develop proper drain put more emphasis on	age planning, o	esign, constr	uction, and	operation gi	uidelines so as to
put more emphasis on	uic nyutaune a.	spect of the p	iooiciii.		
			•		
					·

Table 6.1
List of Flood-Prone Areas and Suggested Measures (15 of 45)

	1000 1101	e Aleas and Su	Egosted incus	4103 (13	0143)
Location	1				
Area	<b>1.</b>	ı Nicolas	City	I	Manila
St. Mary cor. C.M. F	tecto (#333	5)			
F21. 12 63 12.1	10000				····
Flooding Condition			- 1		
Max. Depth (m)	0.6	Location	P. West of M. Hallering & Date of Conference of Confer		. A. 1945 No. 11
Max. Duration (hr)	3	Location			
Ave. Depth (m)			Ave. Duration	i (hr)	
LOCAL FLOODING	ì				
	•				
Major Drainage Sys	tom				
Drains to Estero de la	Roine 11	mah desines - 1-4	aral (NII O1O)		
Diams to Esteto de la	i Kema unt	ough orannage ran	erai (NLOTO).		
Causes	· · · · · · · · · · · · · · · · · · ·		<del></del>		<del></del>
	1				
Drainage lateral has i	nadequate (	capacity.			
Upstream end of later	al may be s	small.			
Measures					
Reinforce drainage la	toral to sa-	nı additional	041		
remote dramage la	iciai iu cali	ry auditional fulf	m unougn prop	er pianni	ng process.
					•

Table 6.1
List of Flood-Prone Areas and Suggested Measures (16 of 45)

	TOOU-I TOILE AT	cas and su	ggested Measur	es (10 ot .	13)
Location		<u>1</u>	erie e e e e e e e e e e e e e e e e e e		
Area	Sta. Cu		City		Manila
Mayhaligue cor. P. G	mevarra cor. (#	908) and Oro	quieta (#685)		
Elastica Condition	1000 Conton			·····	
Flooding Condition		*	18.6		
Max. Depth (m) Max. Duration (hr)	0.6	Location	P. Guevarra and		
Ave. Depth (m)	24	Location	P. Guevarra and		
Ave. Deput (iii)	L		Ave. Duration (h	ir)	
LOCAL FLOODING	1		•		
DOONE I DOOD II.	,				
**					
Major Drainage Sys		· · · · · · · · · · · · · · · · · · ·	Add 4		
Drains to Fugoso Dra	ilnage Main (DN	v105) through	drainage laterals	under:	
- Mayhaligue and P. 0	Juevarra (NLUZ	26)			
Causes					
Not adequate flow cap			•		
Undulating drainage p					
Clog manhole at sag (	(1115C3326) and	i at upstream	manhole (HISC33	322 <b>)</b> .	
Measures				<del></del>	
Declog drainage latera	al (NL026)				
Improve drainage p		nroner di:	oinage กโลกกing	includes e	wrong worke
(horizontal and vertic	al control), deli	ineate draina	nnago piaining	runoff disc	harga lavout
of drainage laterals, co	onstruction/worl	kmanship rec	mirement	tunon uno	alaige, iayout
Develop proper drain	age planning, d	lesign, consti	niction, and opera	ation onide	linee en ae tn
put more emphasis on	the hydraulic a	spect of the n	roblem.	mon Saas	ilitos so as to
Francis F		share as are to	100.0		

Table 6.1 List of Flood-Prone Areas and Suggested Measures (17 of 45)

	1000-Pione At	cas and 5	uggesteu	vicasures (	(17 01 43)
Location	p a diament of site of	a in and desirate and a second			
Area	Tonde	0	City		Manila
Lakandula cor. Ylaya	(#428)		*******		
Flooding Condition	in 1999 Senfem	her			
Max. Depth (m)	0.5	Location	T		1968 - Marian Mandalaha kalaman arawa na mana mana mana mana mana na pamban papan papan paga mangan paga manga
Max, Duration (hr)	3	Location			er et fener skrivener er enner en
Ave. Depth (m)			Ave. Dura	tion (hr)	and the second s
11.1. T. 17.	L		*****		
LOCAL FLOODING	<b>;</b>				
Mr. to Donata and Co	•	<del></del>			
Major Drainage Sys		(D) (O) (I			. A 2 7 4 4 4
Drains to Lakandula	Drainage iviain	(DM04) ն	irough the	dramage lat	eral under Lakandula
(NL004).					
<u> </u>	<del></del>	<del></del>	<del></del>		
Causes					
Drainage lateral has in					
Drainage profile has a	ı saw-tooth shar	re; clogged	manhole ii	15A4037 (s	ag point).
Lateral behaves hydra				e.	
Drainage lateral has 8	0% deposit ove	r its length.	-		
	<del></del>	<del> </del>			
Measures					
Declog drainage latera					
Study upgrading the d	Irainage lateral t	thru proper	drainage p	lanning.	
-					

Table 6.1
List of Flood-Prone Areas and Suggested Measures (18 of 45)

Location			niggested Measures (10 of 45)
Area	. †	Tondo	City Manila
Tindalo cor. Tecson	(#1468)		
Flooding Condition	in 1999 Se	ntember	
Max. Depth (m)	0.70	Location	Tindalo cor. Tecson
Max. Duration (hr)	12	Location	111134110 001. 1003011
Ave. Depth (m)			Ave. Duration (hr)
	.1		
LOCAL PLOOPING	_		
LOCAL FLOODING	j		
Major Drainage Sys	stem		
Drains to North Anti	polo Creek	through drainas	ge lateral under Ipil (NL020).
<u> </u>			
Causes			
Outlet manhole (ii15)			
Whole length of NL0			sit.
Drainage profile is co			
North Antipolo Creek			
Possible spilling of n	motf from	upstream of Sol	is-Tecson Main.
-			
Measures			
Declog/clean NL020			
Improve downstream		e laterals	
Improve North Antip		o incornio.	
		nav be confine	d within small drainage area of the north
Sta.Cruz. Thus this			
			•

Table 6.1
List of Flood-Prone Areas and Suggested Measures (19 of 45)

Flooding Condition i	in 1999 Septemb	£1	
Max. Depth (m)	0.5	Location	Fajardo cor. Batanes
Max. Duration (hr)	1 1	Location	,
Ave. Depth (m)			Ave. Duration (hr)
LOCAL FLOODING	<b>;</b>		
Major Drainage Sys Drains to Josefina-I Quezon Avenue-D. T Adequate at outlet/ina	Lepanto Main (I uazon-Data Matir	myas (NL0	ough drainage lateral under Cordillera- 14).
Causes Constricted drainage Size changes from 76 Choking condition. Profile undulating.			
of the choke. Smoothen drainage p	rofile as well.	_	from iii11A3186 to iii11A3121 to get rid

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Table 6.1 List of Flood-Prone Areas and Suggested Measures (20 of 45)

12/3( 0) 1 (	(000-1 10110 711	Cas and of	nggesten ivicasure:	3 (20 01 45)
Location				
Area	Quiap	)0	City	Manila
Padilla cor. P. Casal			kent in Paris index a minimum in more insured in a second	A contraction of the contraction
Flooding Condition i				
Max. Depth (m)	0.5	Location		
Max. Duration (hr)	3	Location		
Ave. Depth (m)			Ave. Duration (hr)	
LOCAL FLOODING	<del>}</del>			
Major Drainage Sys	stem	<del></del>	<del></del>	
		nd then to	Estero de Sampalo	c through the drainage
laterals under:	•		-	-
- Padilla, and (NL028	8)			
- Tanduay.	•			
•				
			·	
Causes				
Not adequate flow ca				
Adverse bed slope nea		lic behavior	r changes.	
Deposition at saddle p				
Clogging of manhole	#20C1025.			
Measures		<del></del>		
Declog manhole # ii2	nC1025		. OF The A. L. OF THE PROPERTY AND THE ADMINISTRAL AND ADMINISTRAL	A-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
		nroner d	Irainaga nlanning i	includes survey works
				runoff discharge, layout
of drainage laterals, of				illion discharge, rayout
of diamago laterate, v	Mistinotty in	Milanomp .	equirement.	
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Table 6.1 List of Flood-Prone Areas and Suggested Measures (21 of 45)

	1000-Prone A	teas and Su	ggested Measures (2	1 01 43)
Location				
Area	Sta. C	Tuz	City	Manila
Pureza cor. P. Santos	: (#474)			Harman Marian
Flooding Condition	in 1999 Senter	uher		
Max. Depth (m)	0.6	Location		56-Y 2" FE4 W b
Max. Duration (hr)	20	Location	Pureza cor. P. Santo	
Ave. Depth (m)	20	1 1300011011	Ave. Duration (hr)	<u> </u>
Ave. Depui (iii)	I		Ave. Dinamon (iii)	
LOCAL FLOODING	<b>}</b>			
DOCAD I DOODING	,			
Major Drainage Sys	tem			
			ough drainage latera	ls under Old Sta.
Mesa/Albina/Altura I	Ext./R. Magsay	/say/Hipodroi	no/Anonas (NL054).	
Causes			<del></del>	· · · · · · · · · · · · · · · · · · ·
The lateral has limited	d flow capacity	7	200 A.L 20	
Presence of two chok		•		
		ly due to al	rupt change in section	n area and due to
incomplete siphon.		-,	The similar in section	a www tana and to
Clogged manhole due	to choking.			
	to onoming.			
	•			
Measures				
Declog manhole.			nd dalahar	
Revise drainage profi	la through pror	var drainaga n	Januiu a	
Davidon propor droit	ie unougn prop	design sour	nauning. Euction, and operation	
put more emphasis or	the hydroulie	design, consi	nuction, and operation	guidelines so as to
put more emphasis or	i ine nyuranne	aspect of the	problem.	

Table 6.1
List of Flood-Prone Areas and Suggested Measures (22 of 45)

	1000-11011	ie Aleas and Su	ggested iviea	Silles (ZZ	0143)
Location	F == F F F F F F F F F F F F F F F F F				
Area		ampaloc	City		Manila
Blumentritt cor. Fajai	rdo Ext. au	d Matimyas (#11	34)		
Flooding Condition	n 1999 Se	ntember			
Max. Depth (m)	0.5	Location		en manual and annual an	
Max. Duration (hr)	1	Location		Mak Managaran na n	
Ave. Depth (m)			Ave. Duratio	on (hr)	en en de descripción de la composición
	L		_1		
LOCAL FLOODING	i F				
					_
Major Drainage Sys	lem	and the second s			
Drains to Josefina-Le	panto Drai	nage Main throug	h drainage late	eral under:	
- Matimyas NL045 (r	ight)				
- NL046 (left) – good	profile ade	equate			
Causes	<del></del>				
NL045 does not have	ademiate c	anacity			
NL045 drainage latera	al has 50%	apaony. Jenosition at jijl	1 4 3 2 0 9		
•		deposition at	1112407,		
Measures	<del></del>		···	<del></del>	· · · · · · · · · · · · · · · · · · ·
Declog NL045.		The second secon		7	
Improve or reinforce	drainage	lateral through i	ronar draina	lannin	- Cli
design, construction, a	nd oneratio	an etanés Turcius mitoriès l	noper uramag	ge prammış	g from planning,
2001B 0011021 (141101) =	na operació	m stages.			
			•		

Table 6.1
List of Flood-Prone Areas and Suggested Measures (23 of 45)

Area	San Anton	io Village	City	Makati
		•		
Flooding Condition	in 1999 Septer	mber	<del></del>	<del></del>
	······································	Y	·r	
Max. Depth (m)	1.0	Location	Dita cor. Santol	
	1.0 48.0 (0.6m)	Location Location	Dita cor. Santol Calantas cor. Santol	

## REGIONAL FLOODING (SOUTH MANILA)

### Major Drainage System

Major Laterals: those under the streets of Primo de Rivera (SL 001), Vito Cruz Ext. (SL 002) and Mayapis (SL 022).

Lateral (SL 001) joins (SL 002). Laterals (SL 002) and (SL 022) join to Zobel-Roxas Drainage Main (DM 023), which flow into Estero Tripa de Gallina

#### Causes

Adverse, slope from 0 to 450 and from 580 to 700 of SL001. Surface runoff from headwaters to Tejeron spills over towards areas served by SL001 and SL002 (P. de Rivera and Pasong Tamo, respectively).

The general area of San Antonio Village is flat and low-lying bounded by main streets and the existing railroad track which is relatively higher than the natural ground. This results in ponding during heavy rains coupled with clogged and/or inadequate drain capacity due to improper construction.

#### Measures

Re-design SL001 and rectify longitudinal slope. Constant slope must be maintained throughout the whole length. Verify availability of head from upper end of line to junction with SL044 (Vito Cruz), to DM 23 (Zobel Roxas) and ultimately at Tripa de Gallina.

Do the same for SL003 (kamagong), SL004 (upper segment of Pasong Tamo) and SL002 (North segment of Mayapis).

Improved channel capacity of Calatagan Creek and Tripa de Gallina.

Provide auxillary pump at the Tripa de Gallina inlet of Vito Cruz outfall (DM 14). Forced pumping is necessary.

Another alternative is to completely redesign/reconstruct the drainage system of San Antonio Village. Compartmentalize the area by providing floodgates on Tripa de Gallina at Vito Cruz and Libertad to prevent external flows. This will ensure a definite influence area for the Libertad Pumping Station plus a new auxiliary force pump which should be provided at the inlet of Vito Cruz outfall.

Undertake master plan.

Table 6.1
List of Flood-Prone Areas and Suggested Measures (24 of 45)

Location			ggestett Measti	(5)	J. 13)
Λrea	San Is	idro	City	1	Makati
Flooding Condition					
Max. Depth (m)	0.9	Location	cor. Aragon		
Max. Duration (hr)	12 (0.9 m)	Location	cor. Aragon		
Ave. Depth (m)			Ave. Duration (	hr)	
DECIONAL FLOOR	NING (CALITH	AAANII AN			
REGIONAL FLOOD	NING (2001H	MANILA)			
Major Drainage Sys	tem	· · · · · · · · · · · · · · · · · · ·			
Drainage laterals und		L032 & SL0	33) joins Estero T	ripa de C	Gallina
	•		,,		
Causes					····
The drainage laterals	hava inadamet	a flavu canaci			
Drainage profile has s	raddle nortion	e now capaci	ty.		
Chances of sediment 1		a ava bink	16		
Estero Tripa de Gallir	ming the saddi	e are mgn am	ı tast.		
restero Tripa de Oanii	ia overnowed.				
N		<del></del>			
Measures					
Improve drainage prof	ite if possible t	ising sound d	rainage planning a	and desig	<b>11</b>
As the flooding probl	lem encompass	es several di	ainage inter-relate	ed and ii	nterconnected in
flat area, a compreher	isive master pl	anning should	I be undertaken c	onsiderin	g the tributaries
of Estero Tripa de G	allina. The ma	ster planning	should cover the	area fro	om San Antonio
Subdivision down to tl	ne Estero Tripa	de Gallina P	umping station.		

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Table 6.1
List of Flood-Prone Areas and Suggested Measures (25 of 45)

	ood-Prone Ar	eas and Su	ggestea Me	asures (25	ot 45)
Location	20. F. 187-20 1000000 1 100 100 100 100 100 100 100				
Area	Bangk		City		Makati
Along P. Binay near I P. Binay cor. Dallas (			aud Estrella (	(#1004)	
Flooding Condition i	n 1999 Septem	ber			
Max. Depth (m)	0.5	Location			
Max. Duration (hr)	2	Location		e- t-186 t-186	
Ave. Depth (m)	<del></del>		Ave. Durat	ion (hr)	
REGIONAL FLOOD	ING (SOUTH I	MANILA)			
Major Drainage Syst Open channel (SL03 Channel, just upstream	7) installed ale				Makati Diversion
Causes The drainage lateral d Drainage size changes Drainage profile is un Uniform flow condition Due to adverse slope, A 40% sediment depo Estero Tripa de Gallin	s along the lengt even. on fails because siltation thicken sit is developed.	h, the outlet of adverse s is as flow go	has small siz lope.		
Measures  Declog/clean drainage Plan and design latera Develop drainage man As the flooding prob flat area, a comprehen to Estero Tripa de G Subdivision down to t	I with sound dra ual of the above lem encompasse nsive master pla allina. The mas	e to upgrade es several d anning shoul ster planning	capability of rainage inter- d be undertal should cove	government related and ken consider er the area t	interconnected in ing the tributaries

)

Table 6.1
List of Flood-Prone Areas and Suggested Measures (26 of 45)

Location			5800100 1110001100 1	(2001.10)
Area			City	Pasay
Cabrera cor. M. de Je	asus (#435)			Lasay
	<i>30.03 (1.153)</i>			
Flooding Condition	in 1999 Senten	her	·	
Max. Depth (m)	0.5	Location		
Max. Duration (hr)	3	Location	and the state of t	
Ave. Depth (m)		J. Document	Ave. Duration (hr)	
	L		1110. Daranon (m)	<u> </u>
REGIONAL FLOOD	ING (SOUTH	MANILA)		
[				
Major Drainage Sys	tem	<del></del>		
		through drai	naga lateral under (	Cabrera Protacio Ext.
(SL039).	pa de Gamma	unough diai	nage lateral unider C	adieia Piotacto Ext.
(02037).				
Causes				
The drainage lateral h	as insufficient f	low capacity	The second section of the second seco	
An uneven drainage p	rofile is exhibite	ed.	•	
Clogged manhole at u				
Overtopping of Estero				
	•			
	•			i
· · · · · · · · · · · · · · · · · · ·				
Measures				
Reconstruct pipe secti	ons to gradual s	slope.	4	
Declog/clean manhole	iii21A1042 and	d downstream	sections.	
				:
				;
				j
				1

Table 6.1
List of Flood-Prone Areas and Suggested Measures (27 of 45)

	lood-Pro	ne Areas and S	uggested Measi	ures (27 of 45)
Location	T			
Area	Ī	Palanan	City	Makati
Catalagan cor. Dian	(#60) and	Dian cor Emilia	(#213 & #1016)	
			<del></del>	
Flooding Condition				
Max. Depth (m)	0.7	Location		
Max. Duration (hr)	3	Location		The state of the s
Ave. Depth (m)	<u>L</u> ,		Ave. Duration	(hr)
l				
REGIONAL FLOOI	NNG (SO	TITH MANII AY		
REGIONADTEOOL	M10 (30	OTTI MIKINILA)		
l				
ı				
At day to the control of			- · · · · · · · · · · · · · · · · · · ·	
Major Drainage Sys			-AI I I	D: (0) 021) 1 (01
030).	creek un	rough drainage i	ateral under Day	/ap-Dian (SL031) and (SL
usuj.				
Causes				
Inadequate discharge			·I	
Receiving creek with				
Swelling of flood ove				
Overtopping estreo T	ripa de Ga	allına		
				•
Measures		<del></del>		<u></u>
	n Crast		andr ad last commendations being a company generally experience and with the second desired and administrative de-	14 14 14 14 14 14 14 14 14 14 14 14 14 1
Improve the Calataga				
Develop other flood				
The area being part	of wide s	pread flooding, i	t should be consi	idered in the overall master
planning at San Anto	nto down	to Estero Tripa d	e Gallina pumpin	g station.

Table 6.1
List of Flood-Prone Areas and Suggested Measures (28 of 45)

Location		no racas ai		255541			
Area		Palanan	(	ity		1	Makati
Ampere cor. Dian (#4							CLEARING MEDICAL MEDIC
	•						
			<u></u>	ma 7. 47. / /	····		
Flooding Condition							
Max. Depth (m)	0.6	Local		Ampere	cor. Dia	<u> </u>	an ale consisted account as an account as some the alea account at the account.
Max. Duration (hr)	3	Locat	ton			<del> </del>	
Ave. Depth (m)				Ave. Du	ration (h	(r)	
REGIONAL FLOOD	ING (SO	UTH MANI	LA)				
Major Drainage Sys Pasong Tamo main (I		ains to Calat	agan cr	eek.			
Causes		·····					
Inadequate flow capa Calatagan does not ha Flood water spreads of Upstream section is s	ive enoug out becaus	h discharge o se of limited o	capacit		boring	drainag	ge laterals.
Measures		a					
Desilt the drainage m							
Improve Calatagan or Develop alternative so A comprehensive ma affecting number of d	cheme to a ster plann	ing should b					

Table 6.1 List of Flood-Prone Areas and Suggested Measures (29 of 45)

	ood-Prone Ar	eas and Si	uggested Mea	asures (29	of 45)
Location					·
Area	San Antonio	Village	City	<i>.</i> l	Makati
along St. Paul (#222	& 223) and Lun	nbayan (#1	761)		
Flooding Condition					
Max. Depth (m)	1.0	Location	Lumbayan co		
Max. Duration (hr)	12 (0.6 m)	Location	St. Paul cor. 1		
Ave. Depth (m)			Ave, Duration	(hr)	
REGIONAL FLOOD	ING (SOUTH	MANILA)			
	·				
Major Drainage Syst	lem			<del></del>	
Drains to Calatagan		the drainae	e lateral under	Lumhavac	12) Incl. TZ & C
055).			viat undol	~univaya	. w or, radi (ob
	······································			<del></del>	
Causes		Make a constitution of the			
Inadequate capacity.					
Flat area with slow me	ovement of surf	ace run off.			
	•				
Measures					
Refer to suggested me	asures for the w	hole San A	utonio Village	<u></u>	***
See Sheet 23			omo rmage.		
					i
,					
					<del>-</del>
-					
L		<del></del>		· · · · · · · · · · · · · · · · · · ·	

Table 6.1 List of Flood-Prone Areas and Suggested Measures (30 of 45)

Location	Toola x Tolk	Meas and Su	ggoated M	cusures (50	01 13)
	1			T	
Area #171 Mayania cov (	<u></u>		City		Makati
# 171 Mayapis cor. (	atmon				
Flooding Condition	- 1000 Son	4	<del></del>		
Max. Depth (m)	0.7	Location	· F		
Max. Duration (hr)	U. / 	Location		e . v	The state of the s
Ave. Depth (m)	1	Location	Ave. Dura	tion the	CONTRACTOR STANDARD CONTRACTOR CO
reve. Deput (m)	L		1 Are. Dure	mon (m)	· · · · · · · · · · · · · · · · · · ·
REGIONAL FLOOD	ING (SOU	TH MANILA)			
to the state of th	-				
Major Drainage Sys	tem ·				
Drains to Zobel Roxa	s main throi	igh drainage late	ral Mayapı	s (SL022).	
			٠		
Causes	· · · · · · · · · · · · · · · · · · ·		<del></del>	<u> </u>	
Inadequate flow capaci			P. P. S. B. S. B. S.	**************************************	
Drainage lateral is clo		A motore			
The drainage area for					
the animale area to	latelat 15 m	ιι.			
Measures	and the same of th	P. 1944 (1.11)			
Declog whole length of	f drainage l	ateral			The second secon
Include in the maste	r planning	of the San Ar	tonio dowr	to Estero '	Tripa de Gallina
pumping station.		-			
•					

Table 6.1

Location	lood-l'rone Ai	cas and Su	ggested ivie	asures (31 or	43)
Area	Metropolita	n Cuhd	City	<u>I</u>	Makati
ABC cor. Zobel-Roxa		n Suou.	City	L	Макап
Flooding Condition i					
Max. Depth (m)	1.2	Location			
Max. Duration (hr) Ave. Depth (m)		Location	I Down	41 \ \ 1	
Ave. Deput (ai)		<del></del>	Ave. Durati	ion (hr)	
REGIONAL FLOOD	PING (SOUTH	MANILA)			
Major Drainage Syst Drainage main Zobel-		joins Estero	Tripa de Gal	lina.	
Causes The flow capacity alm Not enough provision Receiving Estero Trip The drainage area is b	of drainage late oa de Gallina ov	eral inlet to n ertopped.	nain.	the upstream c	nd.
Measures Evaluate other draina area of flooding is la required considering a would involve those fr	arge and may : all factors com	spill to near ing into play	by drainage, v of the drain	thus a master	r plan study is he study area

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Table 6.1
List of Flood-Prone Areas and Suggested Measures (32 of 45)

LIST OF F	1000-Prone At	eas and Su	ggested Measur	es (32 of 45)
Location		_		
Area	San Andres	s Bukid	City	Manila
Esmeralda St. cor. Es	strada (# 144) &			res (# 158)
	•			•
Flooding Condition	in 1999 Septen	iber		
Max. Depth (m)	0.8/0.6	Location		The second secon
Max. Duration (hr)	2/3	Location		
Ave. Depth (m)		1	Ave. Duration (h	ır)
	1		-t	<del></del>
REGIONAL FLOOD	NA KASI DAK	DRES BUK	ID)	
KDOMMD : 1000	mo tomi mi	DKEO DOM	10)	
**				
Major Drainage Sys		1. 8		GI AAA)
Drains to PNR open of	zanai norin throi	ugn dramage	under Dagonoy (	SL020).
Causes				
The lateral has limited	d flour canacity			
The outlet of the later				
			t sottled at the sa	addle section reduces the
flow.	nova, pana a.	M one deposi	t semen at mo so	ludio section reduces are
Clogged manhole (iii l	I6A3158)			
The receiving PNR O		imited capaci	itv	
	per canarnas i	unicoa capito		
Measures				
Clear manhole iii16A	3158 of sedimer	nt deposit.		
Dredge PNR Open Ca				
		ain has scat	tered flood-prone	place. Considering the
scatter of the flood-	prone place it	is modest	to evaluate meas	sures of reducing flood
duration. A small bas				
	_	•	* •	
•				
•				

Table 6.1
List of Flood-Prone Areas and Suggested Measures (33 of 45)

List of Fi	lood-Prone Ar	eas and S	Suggested l	Measures	(33 of 45)
Location	-				
Area	San And		City		Manila
Estrada cor. South Su	iper Highway (#	#135) & C		bel Roxas	(# 147)
			·····		
Flooding Condition					
Max. Depth (m)	1.2 / 0.5	Location			
Max. Duration (hr)	3/8	Location			
Ave. Depth (m)			Ave. Du	iration (hr)	
REGIONAL FLOOD	ING (SAN AN	DRES BU	KID)		
,					
Major Drainage Sys	fem			<del></del>	<del></del>
		ı drainage	lateral Est	rada (SLO	21) and Estrada Left
(SL054).	· cantil allotte	. антадо	morai Ba	.iddii (ODO	zij ana izanada izan
(5200 1).					
Causes		<del> </del>	· · · · · · · · · · · · · · · · · · ·		
		·		····	
Discharge capacity of	oom dramage i	aterais is r	iot adequate	), 	to - mrA: 4:11
SLUZI is clogged at i	manhole iii 16A.	31/1 and	rest of later	al length ha	is 50 to 75% sand/silt
deposition.	1.1 %				•
SL054 has a 50% san	id deposition ovi	er its lengti	h.		
PNR open receiving	capacity is very	y small, th	us some flo	oding occu	r at the entry or PNR
open canal is overtopp	ped.				
	-				
		•			
		···········			
Measures				•	
Declog PNR open can	ial, declog/clean	the draina	age laterals	as well.	
The improvement of	the drainage la	iterals for	San Andre	s Bukid ca	n be studied in detail
using a small basin wi	ide approach.				

Table 6.1
List of Flood-Prone Areas and Suggested Measures (34 of 45)

Location			<u> </u>	( )
Area	Paco	`	City	Manila
P.M. Guanzon cor. M				I FALLERING
* 14744 ********************************	Tondion	a morepen	) Dire (nexe)	
Flooding Condition	:- 1000 Senfew	.h.,		<del></del>
Max. Depth (m)	0.8 Septem	Location	1	The state of the s
Max. Duration (hr)	12	Location		
Ave. Depth (m)	14	1000000	Ave. Duration (h	-1
Creation Con	<u></u>		are paramon in	<u>''                                   </u>
LOCAL FLOODING	}			
35 1 Durings Com				
Major Drainage Sys		العالم ال	1-41	
(SL 010).	Concordia uno	ugh the ar	amage lateral une	der P. Mendoza Guanzon
(SL VIV).				
Causes				
Faulty construction c	of drainage line	with exces	ssive sag at 380.	The erratic slope greatly
reduces flow capacity	<i>1</i> .			
Drain size is not consi	istent (larger at f	the upper e	nd and smaller at f	the lower end).
				•
1				
1				
ļ				
M#	<del></del>			
Measures	1			
Reconstruct drain line		<i>i</i> e.		
Verify size of drain lir				
The flatness of the exi	Sting terrain ma	y require or	ioser spacing or so	reet/curb inlets.
end.	mailer at nie up	per ena an	d progressively of	ecome larger at the lower
ena.				
r				

Table 6.1
List of Flood-Prone Areas and Suggested Measures (35 of 45)

Location		*** **********************************		
Area	San Isidro	City		Makati
Rockefeller cor. Galv	ani (#55)			
			·	
Flooding Condition		· ·		
Max. Depth (m)	0.8 Locat			
Max. Duration (hr)	6 Locati			
Ave. Depth (m)		Ave. Dura	ation (hr)	
į				
LOCAL FLOODING	•			
LOCAL PLOODING	ı			
Major Drainage Sys	tem			
Drainage laterals und	er Rockefeller and Ford	d (SL035) drains	to Estero Tr	ipa de Gallina.
Causes	······································	<u> </u>		
	as barely enough flow			
The area serve by the	lateral lies on a flat are	capacity.	° 0 3: : . 1	L: 1
The possibility of close	gged road inlets is high	ea and chances of	r nooding is i	nigh.
This may be simply a	case of local flooding.	, mices are not pr	ovided.	
i	ouse of focul flooding.			
·····				
Measures				
Declog manhole inlets			- 1	The second secon
Additional curb inlets	if necessary.			
Clean existing line.				
		-		
			•	
				•

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Table 6.1
List of Flood-Prone Areas and Suggested Measures (36 of 45)

	ood-Prone Ar	eas and S	uggested Me	asures (36	ot 45)		
Location							
Area	Magallanes	Village	City		Makati		
EDSA (#51)							
Flooding Condition	in 1999 Septem	ber					
Max. Depth (m)	0.8	Location					
Max. Duration (hr)	2	Location					
Ave. Depth (m)	THE RELEASE OF LABORATE CONTRACT OF THE PARTY OF THE PARTY.		Ave. Duration	n (hr)	and the second s		
	I		<u> </u>	······································			
LOCAL FLOODING	<b>)</b>						
-							
Major Drainage Sys	tem		· · · · · · · · · · · · · · · · · · ·				
Storm water is drain		an Creek (	1+575) via di	ainage later	al installed under		
Victoria (SL 047).		0100 (	,	annago racer	ar motarioa anaor		
(4 - 1 11)							
Causes				-			
Outfall is submerged	by Maricaban C	reek durin	g floods.				
Faulty design and con	struction of seg	ment 0 to 4	91.				
Measures Redesign and reconstruct segment 0 to 893 for a steeper slope.							
Redesign and reconsti	ruct segment 0 t	o 893 tor a	steeper slope.				
					İ		

Table 6.1
List of Flood-Prone Areas and Suggested Measures (37 of 45)

	TOOUS TONG	Micas and S	uggesteu	Measures (3	70(43)
Location		. End Ut 2.10 W. W			
Area		Isidro	City		Pasay
Menlo cor. Canada (#	<i>1</i> 585)				
Flooding Condition	in 1999 Sept	tember			
Max. Depth (m)	0.6	Location			
Max. Duration (hr)	1	Location			
Ave. Depth (m)			Ave. Dura	tion (hr)	
			L		
LOCAL FLOODING	ì				
j					
M. D	<del></del> _				·
Major Drainage Sys	tem				
Through the laterals	(SL 041) ald	ong Canada or	PNR, sto	rm water is di	rained to Vito Cruz
Drainage Main and M	lanıla Bay.				
Causes					
Inadequate capacity.					The state of the s
Segment 176 to 289 d	oes not confi	orm with mini	num requir	ement of DPV	VH.
Measures					
Clean existing drain.					
Redesign whole segme	ent and repla	ce with larger	RCPs.		
- 0	. •				

Table 6.1
List of Flood-Prone Areas and Suggested Measures (38 of 45)

Location	TOOU-1 TOTIC 7	Treas and Ga	iggested iv	Tensures (50	0143)
Area	T Mal	:L			The second section is the second performance of the second second section is the second second second section is the second second second section is the second second second second second second second second second sec
Apelo Cruz cor, Dom	Mali	bay	City		Pasay
Apeio Ciuz coi, Dom	anguez ana ya.	3)			
Flooding Condition	in 1999 Septe	mber		<del></del>	
Max. Depth (m)	0,6	Location	T		
Max. Duration (hr)	3	Location			
Ave. Depth (m)			Ave. Dur	ation (hr)	and the state of t
Very low area with el	evation of 12.	02 m.		<u> </u>	· · · · · · · · · · · · · · · · · · ·
LOCAL FLOODING	ì				
		· —			
Major Drainage Sys	tem				
Drains to Estero Trip	a de Gallina t	hrough drains	age laterals	under Apelo	Cruz, Dominguez
F. Cruz, Rodriguez ar	nd EDSA (SLO	J45 <b>)</b> .			-
Causes	<del></del>				
	- in-Januata			mana	11 54 4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-
The drainage lateral harmonic the land	as madequate	How capacity	'. '		<u>.</u>
The upstream of the la The drainage lateral is	Hefal is on mg - 25% filled w	,h ground and id. codiment d	inlets to ma	mhole are not	adequate.
A saddle point is prese	ont of unmer re	illi seament u sals af lateral	eposit.	مرملم مشمل	1 .a1 .
Tronsaco pomo as pro-	at apper is.	den or morm,	, nyurauno c	Denavior chan	ges abruptiy.
Measures					
Clean inlets. If necess	ary, provide a	dditional inlet	s.		
Desilt/declog the whole	e pipe system.				

Table 6.1
List of Flood-Prone Areas and Suggested Measures (39 of 45)

	OOU TIONO THOUS	and Suggested M	cusuros (37	01 45)
Location				
Area	Ermita	City		Manila
Taft Ave. cor. T.M. k				
	anan (nos)			
<del> </del>				
Flooding Condition i				
Max. Depth (m)	The second control of	ation		and an experience of the second secon
Max. Duration (hr)	3 Loc	ation		
Ave. Depth (m)		Ave. Durati	on (hr)	
LOCAL FLOODING	i			
Major Drainage Sys Drains to Padre Faui 008).		rough the drainage	lateral unde	r Taft Avenue (SL
Causes				
Curb inlets are clogge Undersized drain. Size of drain from 31 Adverse slope from 0	7 to 500 is below DI	PWH standard.		
Measures Clean inlets. Recalculate to determ Replace existing line Rectify longitudinal s	or provide additiona		s if space is a	vailable.

Table 6.1
List of Flood-Prone Areas and Suggested Measures (40 of 45)

Location	1000-11010 731		aggested medicines	<u> </u>
Area	Intramu	TOS	City	Manila
Sylvia cor. Ayala (#9			1.227	
~, ooi. Ayala (#9	-,			
Flooding C. 100	in tono e · ·	her		
Flooding Condition i				
Max. Depth (m)	0.7	Location Location		
Max. Duration (hr)	1	Location	Ave. Duration (hr)	
Ave. Depth (m)	1		True Squaron (III)	
LOCAL FLOODING	}			
-2011 LOODING	-			
		<del></del>		
Major Drainage Sys	stem		I-Acrel 1	madia OL COC
Drams to Estero de B	salete through the	e drainage	lateral under San Mai	rcenno SL 009).
		<del></del>		
Causes				
	Estero de Balete	outfall. 1	the lateral is affected	by high water level of
Pasig River.				
Massure		<del></del>		
Measures	shoot act	61I		AMERICAN I A SEL COMMUNICATION OF A SERVICE CONTRACTOR
Provide flap gate or c	спеск gate at out	uall.		

Table 6.1 List of Flood-Prone Areas and Suggested Measures (41 of 45)

	1000-1 10110 1	Micas and St	iggested ivi	casures (4)	0143)	
Location	T Can I	· · · · · · · · · · · · · · · · · · ·			14.1	
Area Finlandia cor Nonto	. <del>1</del> ————— — — —		City		Makat	<u> </u>
Finlandia cor. Newto	#I (#IIVZ) ano	l Aragon (#114	J1)			
Flooding Condition		ember				
Max. Depth (m)	0.6/9	Location				
Max. Duration (hr)	6/12	Location				
Ave. Depth (m)			Ave. Dura	tion (hr)		
					_	
LOCAL FLOODING	<b>.</b>					
LUCAD EROODIUS	J					
Major Drainage Sys	forn				·· · · · · · · · · · · · · · · · ·	
Drainage lateral unde		31.032 & SL03	(3) ioins Este	roTripa de (	Galling	
Dinimbe interne	il tilleurum y-	HAUDA (Q DILUL	D) Jones Bees	itu i i i pu uv .	Janna.	
			**			·
Causes					·	
Manholes are filled w			- <b></b>			
The drainage lateral h Uniform flow condition						
Omtoni now condica	Oli lälis, occas	ise of adverse.	siopes.			
**		<del></del>				
Measures		1				<u>-</u>
Improvement of di construction, and open	rainage in a	accordance v	vitin sound	dramage	planning,	design,
Develop drainage man		our montioned	hinat			
Develop dramage mai	llugi vi uiv ava	Эус-шешопоно	suojeci.			
					•	

. 3,

Table 6.1
List of Flood-Prone Areas and Suggested Measures (42 of 45)

	ood Front IX	V. (10 1111 11 11 11 11 11 11 11 11 11 11 11	gostou mousuros (.				
Location							
Area	Pio del Pilar,	Legaspi (	City	Makati			
Pasong Tamo cor. Femando (#256)							
	7000 0						
Flooding Condition	n 1999 Septem	ber					
Max. Depth (m)	0.9	Location					
Max. Duration (hr)	3	Location	A. D. ration (bs)				
Ave. Depth (m)			Ave. Duration (hr)				
LOCAL FLOODING	ì						
Major Drainage Sys	stem			and the state of t			
Drains to Makati Div	ersion Channel	through the c	rainage lateral under	Herrera.			
				•			
Causes							
Inadequate discharge	сарасиу						
Clogged outlet							
[	•						
Measures			appropries and a state of the s				
Clean/clear of sedim	ent deposit the	whole length	of drainage lateral				
•							

Table 6.1
List of Flood-Prone Areas and Suggested Measures (43 of 45)

Location			uggested i	reasures	(43 01 43)
Area	Sta. A	กล	City	···	Manila
M. Roxas cor. Del Pi	lar (#1362)	THE SECOND SECON	1		
Flooding Condition	in 1999 Sentem	her		<del></del>	
Max. Depth (m)	0.5	Location	T		
Max. Duration (hr)	3	Location			and the second of the second o
Ave. Depth (m)	and the second section of the second	L	Ave. Durat	ion (hr)	
	<u> </u>				
LOCAL FLOODING	<b>}</b>				
	,				
Major Drainage Sys	fom				
Drains to Estero de S	Santa Clara thro	woh the de	inaca 1-4-	J J 1.	D
019).	iania Ciara uno	nga me ar	ımage iatera	u under M	. Koxas E. Pascua (si
· · · · · · · · · · · · · · · · · · ·					
Causes		· · · · · · · · · · · · · · · · · · ·		<del></del>	
Inadequate flow capac	city, clogged at o	outlet			
Affected by tide which	ı causes backıya	ater and red	uces flow ca	anacity	
·				quoity.	
Measures					
Redesign and reconstr	uct SL019 from	0 to 167.			
Raise outfall invert to	EL. 11.50.				
•					
	•				

Table 6.1
List of Flood-Prone Areas and Suggested Measures (44 of 45)

Location				
Area	Pandac	an	City	Manila
Road 7 cor. Road 5 (			k man a a Karaman makan sun sensenan seramahan Asa same	VI
,	•			
Flooding Condition i	n 1999 Sentem	her		
Max. Depth (m)	0.5	Location		
Max. Duration (hr)	3	Location	THE CONTROL OF THE CO	
Ave. Depth (m)		l	Ave. Duration (hr)	
Maina Daning S		<del></del>		
Major Drainage Sys		a dealwas :	lateral under Deed 6 /Cl	014)
rains to Tripa de Ga	amna urrougn ti	ie uramage	lateral under Road 6 (SI	z v14).
•				
Causes		· · ·	· · · · · · · · · · · · · · · · · · ·	
The outfall is affected	l hy high water	level at Tri	na de Gallina	status tau nomen nomenerum estenante abbas en me mercanismo restero este mente en
The Outlan is affected	i oʻy ingn mator	10701 (16 11)	pu ao Gunna.	
				•
		<u></u>		
Measures				
Reconstruct segment	from 0 to 50 an	d raise out	all invert to Elev. 12.	
Increase channel capa	acity of Tripa de	e Gallina.		
			•	
·				

Table 6.1
List of Flood-Prone Areas and Suggested Measures (45 of 45)

Awaa	Sta. Ana	Cian	Manile.
Area	L Sta. Ana	City	Manila Manila
Road 16 (#1352)			
El. P. O. N.	1000 G		
Flooding Condition Max. Depth (m)	0.5 Location	1	
Max. Deput (III)  Max. Duration (hr)	3 Location	A DESCRIPTION OF THE PARTY OF T	
Ave. Depth (m)		Ava Duration (hr)	
Ave. Deput (III)		Ave. Duration (hr)	
LOCAL FLOODING	ì		
	•		
Major Drainage Sys	tem		
Drains to Tripa de C	Gallina though the drainag	e laterals under Road	l 16, 13, 14 and 9 (S
015).			
Causes	<del></del>	·····	······································
	nent 0 to 50 is a bottleneck		and the state of t
Outfall invert is too l		<b>.</b> .	
	ow. nt of conduit sizes which ha	ave been installed inco	meietantly
inoro is un assortino	it of conduit 51205 which he	ave occii instancu met	moistently.
Measures			
Measures Redesign and reconst	ruct segment from 0 to 328		
Redesign and reconst Rectify longitudinal s	lope.		
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope.		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.
Redesign and reconst Rectify longitudinal s The drain size must p	lope. rogressively become large		lower end.