

REPUBLIC OF THE PHILLIPINES

**DATA COLLECTION SURVEY FOR
SEWERAGE SYSTEM DEVELOPMENT
IN DAVAO CITY**

**FINAL REPORT
(VOLUME 2 APPENDICES)**

MARCH 2020

Japan International Cooperation Agency (JICA)

Nippon Koei Co., Ltd. (NK)

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APPENDIX 1.1 INDUSTRY IN DAVAO CITY

(1) GRDP

Table A1.1.1 GRDP of Davao Region by Industry in 2014–2016

Indicator		2014	2015	2016
GRDP at 2000 Constant Prices (PHP million)		281,348	304,412	333,022
Per Capita GRDP at 2000 Constant Prices (PHP)		58,256	61,335	65,837
GRDP Growth Rate at 2000 Constant Prices			8.2%	9.4%
GVA in Agriculture, Fishery and Forestry (Primary) at 2000 Constant Prices	Amount (PHP million)	40,700	41,265	40,743
	% Share to Total GVA	14.5%	13.6%	12.2%
	Growth Rate GVA		1.4%	(1.3%)
GVA in Industry (Secondary) at 2000 Constant Prices	Amount (PHP million)	93,380	104,787	122,112
	% Share to Total GVA	33.2%	34.4%	36.7%
	Growth Rate		12.2%	16.5%
GVA in Services (Tertiary) at 2000 Constant Prices	Amount (PHP million)	147,268	158,360	170,167
	% Share to Total GVA	52.3%	52.0%	51.1%
	Growth Rate		7.5%	7.5%

Source: IM4D based on PSA data

(2) Capitalization

Table 1.1.2 Registered Capitalization by District and by Economic Sector of Davao City, 2016

Congressional District	Administrative District	Registered Capitalization by Economic Sector (PHP)			
		Primary	Secondary	Tertiary	Total
1	Poblacion	63,980,000	167,194,438	95,245,413,368	95,476,587,806
	Talomo	25,639,040	686,884,048	11,585,097,145	12,297,620,232
2	Agdao	28,210,000	136,942,502	5,550,468,747	5,715,621,249
	Buhangin	48,515,741	268,860,010	32,791,227,454	33,108,603,205
	Bunawan	31,100,001	1,390,861,822	13,321,800,659	14,743,762,482
	Paquibato	450,000	736,000	7,777,528	8,963,528
3	Baguio	10,075,002	3,265,000	278,089,033	291,429,035
	Calinan	453,000,605	55,927,928	663,007,357	1,171,935,890
	Marilog	5,820,000	1,838,000	54,101,211	61,759,211
	Toril	181,539,397	9,261,157,598	3,063,569,007	12,506,266,002
	Tugbok	67,826,783	201,241,068	485,407,088	754,474,938
Total		916,156,569	12,174,908,413	163,045,958,597	176,137,023,578

Source: IM4D based on data from the Permits and Licensing Office (Business Bureau) of Davao City

Population and Land Area in Barangays

Congressional District	Administrative District	Barangay	Population(2015)	Land Area, (in has), OCPDC-GIS	Population Density (2015) person/ha	No of HHs, 2015
1	Poblacion	BRGY. 1-A	3,103	15.36	202.08	
		BRGY.2-A	3,589	16.38	219.11	
		BRGY. 3-A	370	20.78	17.81	
		BRGY.4-A	1,683	23.51	71.59	
		Brgy. 5-A	11,436	38.10	300.16	
		Brgy.6-A	2,084	15.00	138.93	
		Brgy. 7 A	3,984	22.50	177.07	
		BRGY. 8-A	11,075	179.80	61.60	
		BRGY.9-A	5,698	27.50	207.20	
		BRGY. 10-A	6,764	28.64	236.21	
		BRGY.11-B	1,901	9.57	198.72	
		Brgy. 12-B	840	17.54	47.90	
		Brgy.13-B	427	11.26	37.93	
		Brgy.14-B	1,175	18.41	63.82	
		BRGY. 15-B	2,891	31.54	91.66	
		BRGY.16-B	840	5.53	151.98	
		BRGY. 17-B	810	5.63	143.95	
		BRGY. 18-B	1,832	19.80	92.53	
		Brgy. 19- B	31,766	362.55	87.62	
		Brgy.20-B	4,581	56.58	80.97	
		Brgy. 21 C	7,478	8.56	873.29	
		BRGY. 22-C	6,634	8.71	761.48	
		BRGY. 23-C	16,489	21.31	773.66	
		BRGY. 24-C	2,602	7.72	337.05	
		BRGY.25-C	1,967	4.96	396.81	
		Brgy. 26- C	2,510	8.05	311.76	
		Brgy.27-C	2,152	30.99	69.44	
		Brgy.28-C	2,270	15.71	144.48	
		BRGY. 29-C	1,557	10.20	152.65	
		BRGY.30-C	1,608	23.50	68.42	
		Brgy. 31-D(Pob)	8,321	22.60	368.23	
		BRGY.32-D	1,985	17.90	110.89	
		Brgy. 33- D	2,033	7.74	262.66	
		Brgy.34-D	1,682	19.63	85.69	
		Brgy.35-D	578	7.00	82.57	
		BRGY. 36-D	1,581	6.93	228.14	
		BRGY.37-D	6,740	7.10	949.30	
		BRGY.38-D	1,505	9.00	167.22	
	BRGY.39-D	5,143	12.80	401.80		
	Brgy. 40- D	2,437	10.02	243.29		
	TOTAL		174,121	1,186.22	146.79	43,712
	Talamo	Bago Aplaya	15,918	217.35	73.24	
		Bago Gallera	17,378	717.82	24.21	
		Baliok	16,140	248.28	65.01	
		Bucana	83,964	410.51	204.54	
		Catalunan Grande	32,461	1,495.06	21.71	
		Catalunan Pequeno	22,809	594.49	38.37	
		Dumoy	18,622	530.77	35.08	
		Langub	2,883	853.20	3.38	
		Maa	59,803	999.38	59.84	
		Magtuod	5,058	462.89	10.93	
		Matina Aplaya	33,384	315.49	105.82	
		Matina Crossing	32,436	488.82	66.36	
		Matina Pangi	18,081	584.12	30.95	
		Talamo Proper	59,678	642.95	92.82	
	TOTAL		418,615	8,561.14	48.90	105,090
	Agdao	Agdao Proper	8,897	38.29	232.37	
		Centro San Juan	15,586	43.48	358.46	
Gov. Paciano Bangoy		8,816	81.47	108.21		
Gov. Vicente Duterte		8,904	52.02	171.18		
Kapt. Tomas Monteverde,Sr.		5,716	19.52	292.81		
Lapu Lapu		11,738	59.99	195.67		
Leon Garcia Sr.		13,652	19.03	717.47		
Rafael Castillo		5,783	44.54	129.84		
San Antonio		10,306	89.88	114.67		
Ubalde		2,966	9.98	297.16		
Wilfredo Aquino		9,903	72.26	137.04		
TOTAL			102,267	530.45	192.79	25,673
Acacia		3,262	920.34	3.54		
Angliongto	13,539	288.36	46.95			

Congressional District	Administrative District	Barangay	Population(2015)	Land Area, (in has), OCPDC-GIS	Population Density (2015) person/ha	No of HHs, 2015	
2	Buhangin	Buhangin Proper	65,461	672.24	97.38		
		Cabantian	43,758	757.62	57.76		
		Callawa	3,553	1,354.75	2.62		
		Communal	16,740	584.65	28.63		
		Hizon	11,265	218.66	51.52		
		Indangan	14,867	1,474.13	10.09		
		Mandug	13,594	969.19	14.03		
		Pampanga	14,381	117.51	122.38		
		Sasa	52,386	767.66	68.24		
		Tigatto	36,387	761.31	47.80		
		Waan	3,925	436.97	8.98		
	TOTAL	293,118	9,323.39	31.44	73,585		
	Bunawan	Alejandro Navarro (Lasang)	10,223	626.58	16.32		
		Bunawan Poblacion	23,495	769.18	30.55		
		Gatungan	1,190	887.01	1.34		
		Ilang	24,947	570.60	43.72		
		Mahayag	6,307	803.81	7.85		
		Mudiang	2,937	686.30	4.28		
		Panacan	35,806	698.12	51.29		
		San Isidro	5,333	630.33	8.46		
		Tibungco	41,864	719.02	58.22		
	TOTAL	152,102	6,390.95	23.80	38,185		
	Paquibato	Colosas	4,731	13,201.08	0.36		
		Fatima	3,502	3,093.73	1.13		
		Lumiad	1,553	3,206.09	0.48		
		Mabuhay	1,062	1,421.06	0.75		
		Malabog	10,816	8,268.79	1.31		
		Mapula	2,876	8,957.47	0.32		
		Pañalum	1,831	1,131.41	1.62		
		Pandaitan	4,037	4,078.59	0.99		
		Paquibato Proper	2,495	3,511.00	0.71		
		Paradise Embac	2,654	2,743.47	0.97		
		Salapawan	2,282	2,779.91	0.82		
		Sumimao	1,666	2,539.79	0.66		
	Tapak	5,258	10,406.75	0.51			
	TOTAL	44,763	65,339.12	0.69	11,237		
	Baguio	Baguio	Baguio Proper	4,655	848.74	5.48	
			Cadalian	2,446	628.15	3.89	
			Carmen	2,156	806.01	2.67	
			Gumalang	5,081	1,572.78	3.23	
			Malagos	6,524	1,210.59	5.39	
			Tambobong	5,993	1,230.05	4.87	
Tawan-tawan			3,889	974.39	3.99		
Wines			3,129	791.78	3.95		
TOTAL			33,873	8,062.49	4.20	8,503	
Calinan		Biao Joaquin	2,289	551.62	4.15		
		Calinan Proper	23,052	830.55	27.76		
		Cawayan	2,295	805.45	2.85		
		Dacudao	4,418	1,247.05	3.54		
		Dalagdag	934	535.12	1.75		
		Dominga	1,607	602.11	2.67		
		Inayangan	4,832	1,420.54	3.40		
		Lacson	5,873	896.96	6.55		
		Lamanan	4,538	2,094.88	2.17		
		Lampianao	845	935.54	0.90		
		Megkawayan	3,015	1,844.95	1.63		
		Pangyan	2,035	708.97	2.87		
		Riverside	5,450	514.85	10.59		
		Saloy	2,112	2,291.36	0.92		
		Sirib	5,199	2,152.65	2.42		
		Subasta	3,641	1,215.88	2.99		
		Talomo River	6,846	810.91	8.44		
		Tamayong	7,273	1,925.20	3.78		
		Wangan	5,821	1,181.46	4.93		
TOTAL		92,075	22,566.05	4.08	23,115		
Marilog		Baganihan	1,295	1,062.62	1.22		
		Bantol	2,324	1,403.54	1.66		
		Buda	1,885	4,292.76	0.44		
		Dalaglumot	1,864	3,183.86	0.59		
	Datu Salumay	2,232	2,107.50	1.06			
	Gumitan	1,756	5,727.67	0.31			
Magsaysay	2,425	5,830.15	0.42				

Appendix 1.2 _Population and Land Area in Barangays

Congressional District	Administrative District	Barangay	Population(2015)	Land Area, (in has), OCPDC-GIS	Population Density (2015) person/ha	No of HHs, 2015
3		Malamba	4,864	11,074.12	0.44	
		Marilog Proper	16,188	18,031.84	0.90	
		Salaysay	4,431	4,467.69	0.99	
		Suawan	4,586	4,571.98	1.00	
		Tamugan	8,351	1,132.32	7.38	
		TOTAL	52,201	62,886.05	0.83	13,105
	Toril	Alambre	2,010	327.41	6.14	
		Atan-Awe	1,119	330.88	3.38	
		Bankas Heights	7,671	247.27	31.02	
		Baracatan	7,671	1,131.61	6.78	
		Bato	10,007	851.61	11.75	
		Bayabas	2,989	1,201.36	2.49	
		Binugao	6,934	483.32	14.35	
		Camansi	1,189	363.18	3.27	
		Catigan	3,044	2,401.89	1.27	
		Crossing Bayabas	11,490	223.35	51.44	
		Daliao	21,124	194.55	108.58	
		Daliaon Plantation	3,214	1,036.93	3.10	
		Eden	2,385	773.77	3.08	
		Kilate	1,309	644.90	2.03	
		Lizada	20,112	436.16	46.11	
		Lubogan	12,156	208.96	58.17	
		Marapangi	6,889	703.76	9.79	
		Mulig	2,477	998.88	2.48	
		Sibulan	2,479	1,699.90	1.46	
		Sirawan	7,140	963.70	7.41	
		Tagluno	1,391	564.16	2.47	
		Tagurano	1,230	505.28	2.43	
		Tibuloy	2,218	833.64	2.66	
		Toril Proper	12,140	131.60	92.25	
		Tungkalan	2,910	1,783.65	1.63	
		TOTAL	148,522	19,041.72	7.80	37,285
	Tugbok	Angalan	2,475	481.31	5.14	
		Bago Oshiro	11,932	637.28	18.72	
		Balengaeng	2,086	478.85	4.36	
		Biao Escuela	3,294	1,284.20	2.57	
		Biao Guianga	3,664	500.91	7.31	
		Los Amigos	9,722	445.49	21.82	
		Manambulan	2,661	768.50	3.46	
		Manuel Guianga	6,436	901.32	7.14	
		Matina Biao	1,811	1,578.20	1.15	
		Mintal	13,227	752.19	17.58	
		New Carmen	2,626	1,107.90	2.37	
		New Valencia	1,679	954.12	1.76	
		Sto.Niño	20,103	147.32	136.46	
		Tacunan	12,773	906.70	14.09	
		Tagakpan	4,208	749.73	5.61	
Talandang		3,392	1,333.40	2.54		
Tugbok Proper		15,115	989.79	15.27		
Ula		4,130	941.30	4.39		
TOTAL	121,334	14,958.48	8.11	30,460		
Davao City	TOTAL	1,632,991	218,846.06	7.46	409,950	

APPENDIX 1.3_POPULATION PROJECTION

Following two population projection methods were compared in IM4D and the team adopted the second option as more realistic option without too much population increase in already congested areas (e.g. Agdao and Poblacion Districts). Table 1.2.5 shows the population projections for 2030 and 2045.

Option 1: Assume current urban growth trend and development management will continue as the current trend. This means high density at the administrative districts of the Poblacion and Talomo, and urban cores of Toril, Calinan, Tugbok, Buhangin, Agdao, and Bunawan. Low density in outer areas that are the districts of Marilog, Paquibato, and Baguio.

Option 2: Establishment of a "strategic growth management plan (SGMP)" coupled with the development of strategic transport network to affect urban development of Davao City. Considerations are given to strong land use controls and urban growth management with density control and strengthened urban functions.

Table A1.3.1 Population Projection for 2030 and 2045 in IM4D

Name of District	Population			Density (Persons/ha)			Area (ha)
	2015	2030	2045	2015	2030	2045	
Agdao	102,267	111,300	124,800	172.5	187.7	210.5	593
Poblacion	174,121	188,100	208,700	153.0	165.3	183.4	1,138
Bunawan	152,102	218,700	317,400	22.7	32.7	47.4	6,694
Buhangin	293,118	450,100	682,700	30.3	46.6	70.6	9,669
Talomo	418,615	581,800	823,600	46.7	64.9	91.8	8,970
Toril	148,522	284,100	485,000	7.8	15.0	25.6	18,963
Tugbok	121,334	226,200	381,600	8.0	14.9	25.1	15,230
Calinan	92,075	107,600	130,700	3.6	4.2	5.0	25,916
Marilog	52,201	52,200	52,200	-	-	-	-
Paquibato	44,763	44,800	44,800	-	-	-	-
Baguio	33,873	33,900	33,900	-	-	-	-
Davao City	1,632,991	2,298,800	3,285,400	-	-	-	244,000

Source: IM4D

APPENDIX 1.4 LAND USE IN DAVAO CITY

1. Existing Land Use

The existing land use as of 2017 is shown in Table A1.4.1 and Figure A1.4.1 based on the data in IM4D report. Figure A1.4.2 shows the enlarged image of Poblacion and Agdao Districts from existing land use map as of 2011 in “Comprehensive Land Use Plan” (2013-2022) by Davao City Planning and Development Office (CPDO).

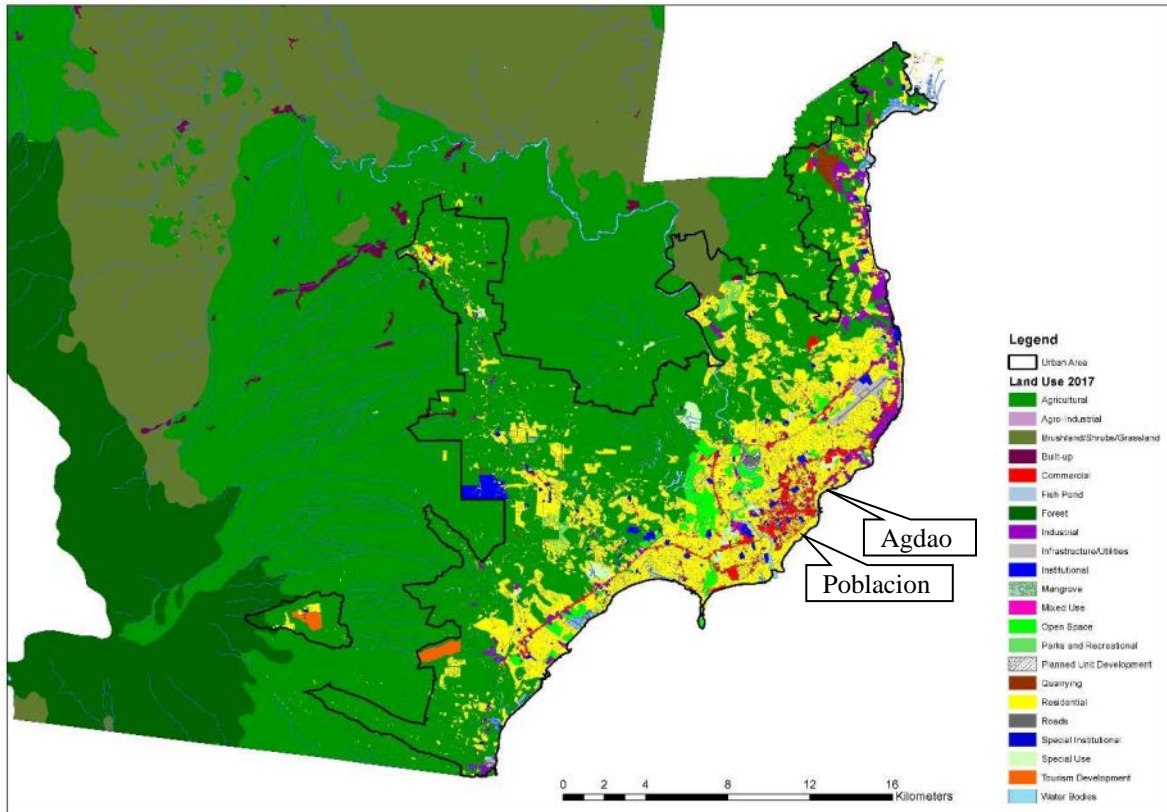
Table A1.4.1 Existing Land Use as of 2017

Land Use Category		Area by Land Use (ha)											Davao City	
		Congressional District 1		Congressional District 2				Congressional District 3						
		Poblacion	Talomo	Agdao	Buhangin	Bunawan	Paquibato	Baguio	Calinan	Marilog	Toril	Tugbok	Area (ha)	Share (%)
Urban Use	Residential	576	2,927	269	2,610	967	132	252	319	278	1,024	692	10,048	4.6
	Commercial	243	248	96	175	56	-	-	17	-	37	12	884	0.4
	Industrial	19	123	71	226	463	-	6	9	-	115	16	1,048	0.5
	Institutional	77	180	12	93	64	-	-	14	-	37	229	705	0.3
	Parks/Recreational	5	42	0.3	91	7	-	-	0.6	-	4	71	222	0.1
	Infrastructure/Utilities	141	516	53	596	159	-	1	51	-	201	143	1,861	0.8
	PUD	-	43	0.2	22	-	-	-	-	-	-	-	65	0.03
	Open Space	66	678	5	106	42	-	-	-	-	41	-	939	0.4
	Subtotal	1,127	4,758	507	3,919	1,758	132	259	410	278	1,460	1,164	15,772	7.2
Agricultural		-	3,614	-	4,136	4,265	1,650	6,134	12,577	5,990	15,665	13,086	67,116	30.6
Forest		-	-	-	-	-	10,464	66	924	11,069	1,500	-	24,023	11.0
Quarrying		-	-	-	-	139	-	-	-	-	-	-	139	0.06
Brushland/Shrubs/Grassland		-	2	-	1,419	2	52,647	1,578	8,463	45,237	-	299	109,648	50.0
Tourism Development		-	-	-	0.2	-	-	-	-	-	193	-	193	0.09
Special Use		23	217	25	13	4	-	-	25	-	8	12	327	0.1
Water Use	Fish Pond	-	14	-	-	60	-	-	-	-	19	3	96	0.04
	Mangrove	-	16	-	-	0.09	-	-	-	-	-	-	16	0.007
	Water Bodies	17	211	5	47	109	350	83	236	397	273	158	1,887	0.9
		Subtotal	17	241	5	47	169	350	83	236	397	292	162	2,000
Total²		1,168	8,833	537	9,533	6,337	65,243	8,120	22,635	62,971	19,118	14,722	219,218	100.0

Note: 1 Land use in rural area was prepared by Davao City in 2011.

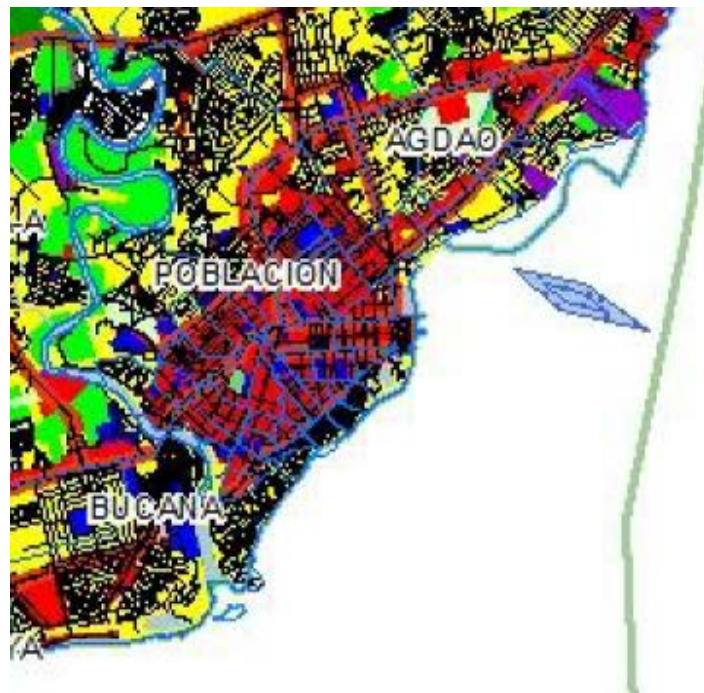
2 Areas were calculated using GIS, and some water bodies are not located under any barangay/district. Therefore, the total area does not match the total area of Davao City (2,440,000 ha).

Source: JICA Survey Team based on IM4D



Note: yellow color: residential, red: commercial, purple: industrial, blue: institutional, green: agricultural, right green: open space
 Source: IM4D

Figure A1.4.1 Land Use Map of 2017



Note: yellow color: residential, red: commercial, purple: industrial, blue: institutional, right green: open space
 Source: Comprehensive Land Use Plan (2013-2022)

Figure A1.4.2 Existing Land Use as of 2011

(1) Residential Area

The residential areas share 4.6% (10,048 ha) of the total area. While the residential areas in the central business district (CBD) and urban centers are highly dense, those in suburban areas are mainly subdivisions with low density. The barangays with bigger residential areas are Ma-a in Talomo District and Buhangin and Cabantian in Buhangin District. Informal settlements can be observed along major water systems including Davao River and Davao Gulf. Many of the residential areas in the CBD have shifted to mixed use to provide residences and commercial space to take advantage of their prime location.

(2) Commercial Use

The commercial areas occupy 0.4% (884 ha) of the total land area and concentrates in Congressional District 1 (Poblacion and Talomo Districts as east and west sides of Davao River). The commercial development has concentrated along major roads and highways. The commercial establishments vary from generally small to medium and large complexes. In the past 10 years, the expansion of commercial establishments in Matina, Lanang, and Buhangin was led by the construction of shopping malls by the private sector.

(3) Industrial Area

The industrial land shares 0.5% (1,048 ha) of its total land area. Of this, more than 70% is located in Congressional District 2, especially in the barangays of Sasa, Bunawan, Panacan, and Ilang. Industrial parks/zones registered with the Philippine Economic Zone Authority (PEZA) are also located in these barangays.

(4) Institutional Area

The institutional areas comprise 0.3% (705 ha) of the total land area. The institutional lands are mainly used for government structures, as well as religious, medical, and educational facilities. While most of the government offices are located in the urban center of Congressional District 1, Barangay Mintal shares more than 30% of the total institutional land due to the presence there of the University of the Philippines Mindanao (UPMin), which occupies more than 200 ha.

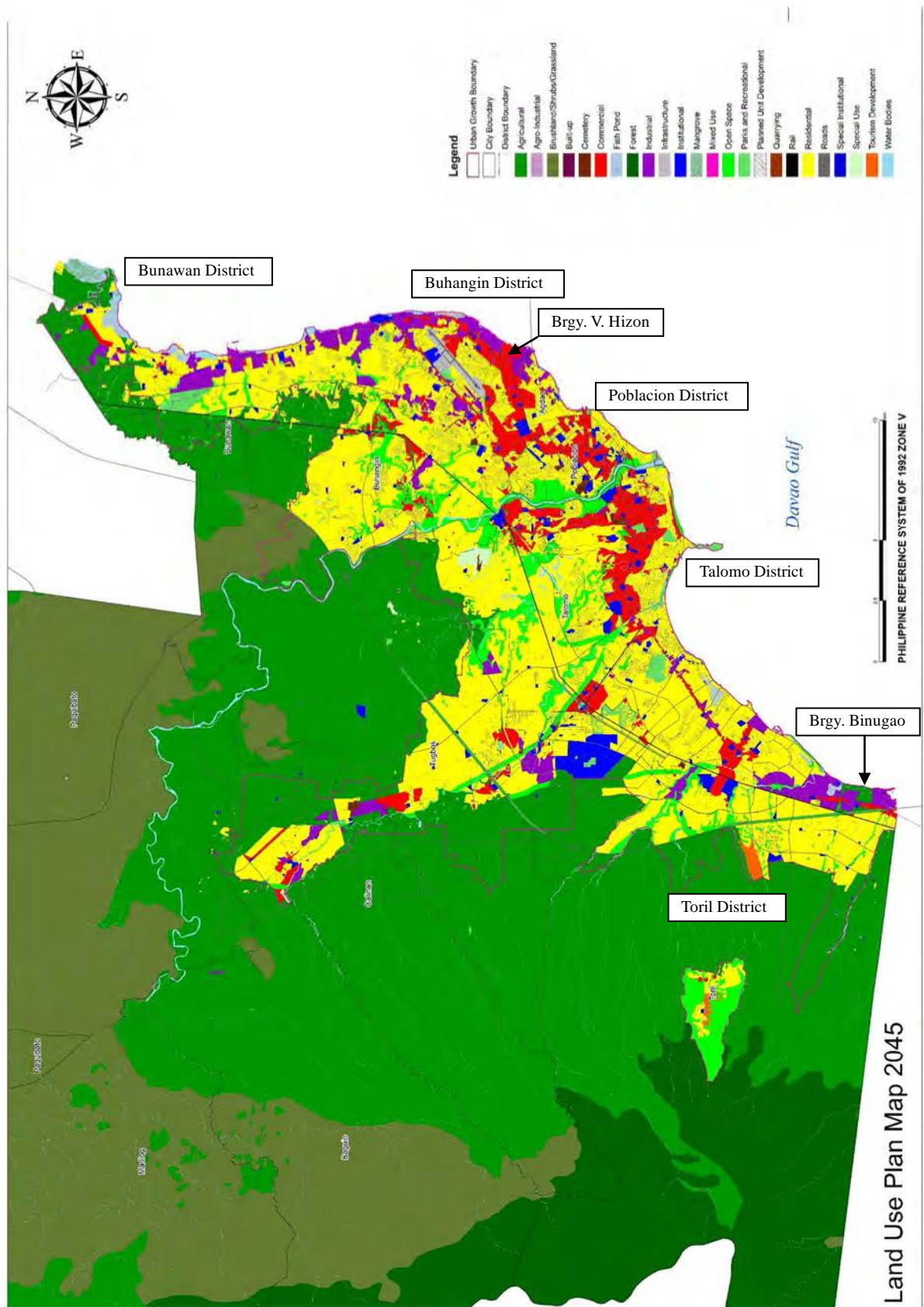
(5) Parks and Recreation

The parks and recreation lands occupy 0.1 % (222 ha) of the total land area. These include the Quezon Park, Rizal Park, Osmeña Park, Freedom Park, Magsaysay Park, and People's Park in the urban center. Outside the city center, there are the Crocodile Park in Barangay Ma-a and Deca Wakeboard Park in Barangay Tucanan.

2. Future Land Use Plan

Figure A1.4.3 shows the future land use plan proposed in IM4D, based on various analysis and coordination on residential areas, commercial areas, industrial areas, institutional areas, and infrastructures in future. Comparing to current land use as of 2017, the residential areas will be expanded to inland and north and south seaside areas. The commercial areas will be also expanded based on the existing commercial areas. Particularly seaside of Buhangin District (e.g. Barangays V. Hizon and Pampang) shows much expansion of commercial area.

Regarding industrial use, south of Toril District (e.g. Barangay Binugao) shows much expansion of industrial area.



Source: IM4D

Figure A1.4.3 Future Land Use Plan of 2045

3. Regulation/Policy on Land Use

“Comprehensive Land Use Plan (2013-2022) (Volume 1)” and “Comprehensive Zoning Ordinance of Davao City (2013-2022) (Volume 2)” prepared by CPDO are sole public documents that stipulates the regulation/policy on land use by Davao City. The contents will be updated for 2023 with the proposed concepts of IM4D. There is no clear restriction on land use except for Conservation Zone (CZ) and Water Resource Zone (WRZ) (*no cemetery or memorial park) but general policies are mentioned in the documents. The follow texts are related to development of future sewerage system and candidate site of treatment plant.

- It is acknowledged that “The lack of public parks and open recreational spaces, especially in the Central Business District (CBD) and other Urban Center areas in the city.” (Plan P111)
- Compatible Use - uses or land activities capable of existing together harmoniously e.g. residential and parks and playground. (Ordinance P3)
- Green Space – community space consisting of land (as parks) rather than buildings (Ordinance P4)
- Heritage site – is a location designated by the governing body of a township, country, province, state or country as important to the cultural heritage of a community. The term usually refers to any non-movable object with a specific location such as any preserved landscape containing important artifacts such as historic gardens, nature preserves, or archeological sites.
- Park - A pleasure ground set apart for recreation of the public to promote sound health and enjoyment. (Ordinance P7)
- Building height must conform to the height restrictions and requirements of the Civil Aviation Authority of the Philippines (CAAP) as well as the requirements of the National Building Code, the Structural Code as well as all laws, ordinances, design standards, rules and regulations related to land development and building construction and the various safety codes. (Ordinance P89)

In short, in case any facility will be developed inside the public place such as park, the design should be harmonious with surrounding area and open space shall be kept for recreational use of nearby residents. In addition, the historical monument should be kept without move.

In the Comprehensive Zoning Ordinance of Davao City (2013-2022) there is a following mention with respect to setback from waterbodies and waterways. Therefore, at least the informal settlers within the said distances from the waterbodies and waterways should relocate their houses in accordance with the ordinance.

ARTICLE XI

COMMON REGULATIONS FOR GENERAL ZONES AND ALL SUB-ZONES

SECTION 5. BUFFER STRIP/EASEMENT.

In the utilization, exploitation, development, conservation and protection of water resource the following setbacks and / or easements along the entire length of the banks of rivers, creeks and streams, shores of the sea, lakes, all waterways shall be observed:

5.1. Five (5) meters setback along banks of waterways in urban areas except for the portion from the mouth of the Davao River up to the Maa-Marfori Bridge Area which should have a thirty (30) meters wide river easement for road and promenade purposes.

5.2. Twenty (20) meters easement for the same in all agricultural.

5.3. Forty (40) meters for forestal and conservation areas.

5.4. Forty (40) meters for shores of the seas, lakes and similar bodies of water.

APPENDIX 1.5_RIVERS IN DAVAO CITY

1) Location

Davao City has six (6) major rivers namely Davao River, Talomo River, Lipadas River, Matina River, Bunawan River and Lasang River as shown in Figure A1.5.1. Davao City area in the north is part of Tuganay River Watershed while in the south is Sibulan Watershed.

2) Davao River

Davao River originates from its headwater or source in some small portions lying within the mountain ranges in the provinces of Davao del Norte and Bukidnon on the northern boundary, North Cotabato on the western boundary and the major portion within the territory of Davao City. It flows southward, meandering through the central part of Davao City and finally flows eastward emptying into Davao Gulf at the southern periphery of the city proper.

The Davao River catchment is considered to be the third largest river basin in the Southern Philippines, Mindanao covering an area of over 1,623 km² (627 square miles). Most of the area is upland.

The river was officially classified as Class A water for upstream and Class B for downstream through DENR Memorandum Circular No. 97-08 dated May 20, 1997.

Davao River WQMA covers 43 barangay out of 182 barangays in Davao City and traverses in the three (1st, 2nd, and 3rd) congressional districts.

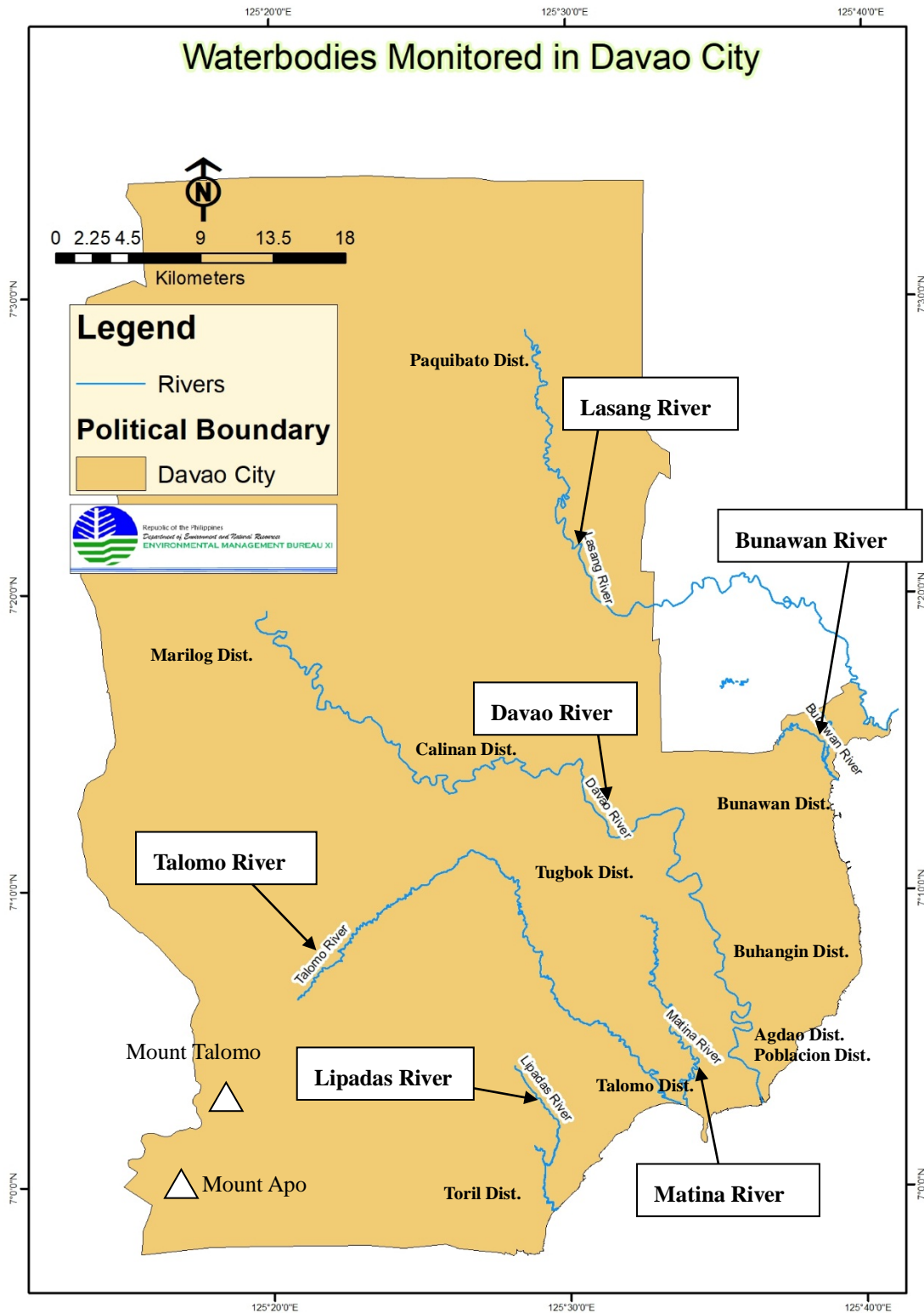
3) Talomo River

Talomo River is a waterway which originates from Mt. Talomo and adjoining Apo Range located at the eastern portion of Davao City. It is generally characterized by a semi-rough topography with gradient from gradual steep to steep slope. It flows east-southerly direction, curves out and finally empties into Talomo Bay.

The river is used for domestic purposes such as bathing and swimming. It also traverses through agro-industrial, industrial, hydropower plant and residential areas.

At Brgys. Malagos, Mintal and Catalunan Pequeno, the river is diverted through a diversion canal and used to service the hydro power plants of Hedcor, Inc.

Talomo River is classified as Class B water per DENR Memorandum Circular No. 97-08 dated May 20, 1997 and it covers 23 barangays in Davao City located in 1st and 3rd Districts of Davao.



Source: Waterbodies 2018 Annual Assessment (EMB) supplemented by JICA Survey Team

Figure A1.5.1 Major Rivers in Davao City

4) Lipadas River

Lipadas River is a waterway which originates from the upper part of Mount Apo passing through barangays Baracayo, Bangkas, Manambulan, Alambre, and Mulig. It is joined by a main tributaries which are Lubogan River, Kilate River and Bato River. It then continues further downstream and joined at Barangay Lizada by another tributary which is the Marapangi Creek. It finally empties itself into Davao Gulf at Barangay Sirawan.

The river traverses through agricultural, agro-industrial and residential areas and it covers 18 barangays of Toril District, Davao City.

5) Matina River

Matina River traverses eleven (11) barangays within Davao City. Its headwater sources are the streams and creeks coming from Brgy. Biao Escuela, Brgy. Biao Guianga, Brgy. Ula, Brgy. Matina Biao, Brgy. Tacunan and Brgy. New Carmen, all of which are located in Davao City.

Matina River is approximately 16.4 km from the confluence of two major tributaries and it empties into Davao Gulf. Matina River traverses Brgy. Langub, Brgy. Catalunan Grande, Brgy. MatinaPangi, Brgy. Matina Crossing and Brgy. MatinaAplaya.

6) Bunawan River

Bunawan River is a waterway which originates from the upper reaches of Brgy. Acacia passing through Brgys.Gatungan, Mahayag, Kyotoy and joined by Tagurot River at Sitio San Isidro Marquez, Brgy. Bunawan, all in Davao City. It continues to meander passing through Brgy. San Isidro and joined by another tributary, Licanan River at Brgy. Bunawan Proper. It finally empties into Davao Gulf.

7) Lasang River

Lasang River is a long meandering river originating from the mountains in the northwestern part of Davao del Norte and flowing southward to its main outlet, the Davao Gulf.

Sand and gravel operations are abundant along the river channel. Sandbars are evident along the Paradise Embak, Mabuhay and Manay portion of the river while a delta exists at the mouth. In 1984-1985, the river's sharp contours located downstream from Lasang Bridge to Tambongan area were corrected by DPWH. A channel cut-off, which is a combination of widening, deepening and straightening were applied as one of the river's flood control measures.

The river is primarily used for irrigation purposes. An ogee-shaped diversion dam was constructed at Brgy. Manay. The dam served the rice fields and banana plantations. It is also used domestically for washing clothes and recreation, such as bathing, to the populace living near the river. It is also used to water fishponds surrounding the river's mouth.



**PRIVILEGED
&
CONFIDENTIAL**

For: Japan International Cooperation Agency (“JICA”)
From: ROMULO
Date: 14 October 2019
Re: Authority of Local Governments to Undertake Wastewater Treatment Services

We write in response to your request for legal advice concerning the authority of local governments to fund, manage, and operate wastewater treatment services in areas covered under existing water districts.

BACKGROUND

We understand that JICA intends to finance the establishment of a waste water treatment facility in a city in the Philippines. Significantly, this city is within the coverage of a local water district’s jurisdiction, and we understand from the facts provided that this water district was created through Resolution No. 1283, entitled “Resolution Forming the Davao City Water District Pursuant to the Provisions of Presidential Decree No. 198, otherwise known as the Provincial Water Utilities Act of 1973.

The intended financing project was initially offered to the water district of the city; however, we understand that the water district did not want to accept the proposal due to financial constraints. As an alternative, we understand that the local government of the city where the water district operates is keen on accepting JICA’s financing project. Nevertheless, the local government is uncertain as to the extent of its authority to invest in and operate the wastewater treatment services, considering that Presidential Decree 198, or the Local Water District Law, already provides for the formation of water districts to create, manage, operate, and maintain the water supply and sewerage facilities within their respective coverage areas. As such, the local government concerned may not have the requisite authority to create and operate the wastewater treatment facilities in lieu or on behalf of its water district.

Given the foregoing, you have requested for our legal advice on the following matters:

1. Does the local government still have authority to invest in or operate wastewater treatment services in their area despite the fact that a water district already exists?
2. May the city claim such authority to invest in wastewater treatment services if this authority is concurrently held by the water district under PD 198 and the local government under the Local Government Code of the Philippines?
3. Are the powers of water districts enumerated in Chapter VII of PD 198 exclusively held by the water district once one is created within a coverage area?

In response to the above request, we discuss the relevant legal points as follows:

DISCUSSION

1. Local governments still have the authority to operate waste water treatment services in an area covered under an existing local water district.

At the onset, PD 198, as amended by PD 768, PD 1479, and Republic Act (“RA”) 9286 (collectively, the “Local Water District Law”), is the operative law for the creation and administration of local water districts. The Supreme Court has held that the Local Water District Law is the original charter conferring authority over water districts, making these government-owned and controlled corporations by nature.¹ As such, the Local Water District Law is the primary authority to look into when studying the powers, limitations, and obligations of all water districts.

The Local Water District Law affords autonomy to water districts over water supply and waste water disposal in a given area. Among other powers granted to water districts to acquire, install, improve, maintain, and operate water supply and distribution systems, local water districts may likewise be formed to provide, maintain, and operate wastewater collection, treatment, and disposal facilities.² Upon the filing of a resolution by the legislative body of a city or municipality to form a local water district, the local government concerned “shall lose ownership, supervision, and control or any right whatsoever over the [water] district except as provided” under the law.³ Each local water district is granted the “power of eminent domain,” subject to the review of the Local Water Utilities Administration (“LWUA”).⁴ From the language of the law, local water districts therefore have the power to construct and operate the wastewater treatment facilities and services, among other powers, without supervision and control of the local government that formed it.

While the Local Water District Law authorizes the formation of local water districts, the formation requires the final act of a city or municipality’s legislative body to enact a resolution that states, among others, that it completely transfers “any and all waterworks and/or sewerage facilities managed, operated by or under the control of such city, municipality or province to such district upon the filing of resolution forming the district.”⁵ The formation of a water district remains to be on “a local option basis” to be operated by and through such districts “to the greatest extent practicable.”⁶

Republic Act No. 7160 or the Local Government Code of 1991 (“LGC”) and its Implementing Rules and Regulations⁷ empower the local government to allow or permit the establishment and operation of waterworks or wastewater systems within their area of jurisdiction, as well as to provide for their regulation. Section 458(a)(5)(vii) of the LGC provides:

- (vii) Subject to existing laws, **establish and provide for the maintenance, repair and operation of an efficient waterworks system to supply water for the inhabitants and to purify the source of the water supply**; regulate the construction, maintenance, repair and use of hydrants, pumps, cisterns and reservoirs; **protect the purity and quantity of the water supply of the city** and, for this purpose, extend the coverage of appropriate ordinances over all territory within the drainage area of said water supply and within one hundred (100) meters of the reservoir, conduit, canal, aqueduct, pumping station, or watershed used in connection with the water service; and **regulate the consumption, use or wastage of water and fix and collect charges** therefor. *(emphasis supplied)*

¹ *Davao City Water District et al. vs. Civil Service Commission and Commission on Audit*, G.R. No. 95237-38, 13 Sept 1991.

² Sec. 5, PD 198.

³ Sec. 7, PD 198, as amended by Sec. 3, PD 768.

⁴ Sec. 25, PD 198, as amended by Sec. 4, PD 1479.

⁵ Sec. 6(c), PD 198, as amended by Sec. 2, PD 768 and Sec. 1, PD 1479.

⁶ Sec. 2, PD 198.

⁷ Administrative Order No. 270.

Considering that the local government is given the mandate above to provide basic water supply and water treatment services and facilities pursuant to the LGC, there is legal basis for local governments to undertake the establishment and operation of wastewater treatment services, not only when there is an absence of a local water district in the area, but also in spite of the authority granted to water districts to undertake the same.

Furthermore, the Local Water District Law is silent as to the operation and maintenance of assets *after* the formation of the water district. While the law provides that the local government's legislative body completely transfers "any and all waterworks and/or sewerage facilities managed, operated by or under the control of such city, municipality or province to such district upon the filing of resolution forming the district"⁸ upon the filing of the resolution forming the water district, and that the local government concerned "shall lose ownership, supervision, and control or any right whatsoever over the [water] district except as provided" under the law,⁹ these provisions talk of existing facilities and waterworks. There is no mention of which entity may establish and operate future waterworks systems and facilities not yet in existence when the water district was formed.

Taken in the context of the local government's responsibility to establish and provide for the maintenance and operation of an efficient waterworks system in accordance with the LGC, we opine that the local government may still validly operate wastewater treatment services, especially when this is a facility currently lacking in the city, and the water district does not have the capacity to provide it. To take a contrary position would mean that a city or municipality would not be afforded access to basic necessities in the event its water district cannot or will not provide services or facilities to operate waterworks, merely because the water district is the only entity allowed to provide such services to the exclusion of its own local government.

2. The local government may be an investor in the creation and operation of wastewater treatment facilities and services.

The autonomy of water districts does not preclude local governments from investing in the creation, management, and operation of wastewater treatment facilities in cities and municipalities covered under water districts. Water districts first and foremost have the power to enter into contracts with the local government for the joint performance of any of the districts' functions.¹⁰ They may also contract loans to pay costs for any public improvements maintained by virtue of their powers under the Local Water District Law.¹¹

The LWUA as the primary lending institution of water districts may transact with local governments for the financing of local water utilities. It is authorized to borrow money from all domestic loan sources, whether government or private, provided that its outstanding loans from domestic sources at any one time shall not exceed PHP 1 billion.¹² The LWUA is likewise authorized to contract loans from foreign governments or international financial institutions or fund sources not exceeding USD 500 million, on terms and conditions of the Department of Finance and Monetary Board.¹³ Thus, to the extent that the water district needs financing from the LWUA or from other sources subject to the LWUA's review, the local government may step in and assist the water district in funding wastewater treatment services.

Local government participation is further emphasized through the enactment of Executive Order ("EO") 279, where all concerned government agencies and instrumentalities were directed to pursue and implement increase in the participation of local governments, government financing

⁸ Sec. 6(c), PD 198, *as amended by* Sec. 2, PD 768 and Sec. 1, PD 1479.

⁹ Sec. 7, PD 198, *as amended by* Sec. 3, PD 768.

¹⁰ Sec. 30, PD 198.

¹¹ Secs. 34 and 35, PD 198, *as amended by* Secs. 14-16, PD 768 and Sec. 7, PD 1479.

¹² Sec. 72, PD 198, *as amended by* Sec. 36, PD 768.

¹³ *Id.*

institutions, and Philippine financing institutions in funding the water supply and sewerage sector. In line with the local governments' mandate to provide basic services and facilities, which include the provision of water supply and sewerage services,¹⁴ local governments are encouraged "to provide delivery of water supply and sewerage services through, but not limited to, investments in, or loans to [Water Service Providers ("WSPs")]."¹⁵

While these local governments may assist in the provision of water and sewerage services, their responsibility to *primarily* finance and operate water service providers under EO 279 expressly excluded responsibility over water districts and rural waterworks and sanitation associations.¹⁶ As such, EO 279 still appears to emphasize the water district's primary responsibility to establish, operate, and maintain waterworks systems and services in a city or municipality, to the extent it is present and able. However, there is no language precluding the local government's investments, and in fact, their assistance is significantly promoted in the abovementioned laws.

The powers enumerated under the Local Water District Law are not exclusively granted to water districts.

As discussed above, local governments have the prerogative to form water districts through the enactment of a resolution filed by the legislative body of a city or municipality. Upon the filing of this resolution, the local government shall lose ownership, supervision, and control or any right whatsoever over the water district except as provided under the Local Water District Law.¹⁷ Significantly, this resolution must state that the local government completely transfers "any and all waterworks and/or sewerage facilities managed, operated by or under the control of such city, municipality or province to such district."¹⁸

However, there is no such exclusivity maintained with respect to waterworks systems and services established in the city or municipality covered by a water district. In the case of *Tawang Multi-Purpose Cooperative v. La Trinidad Water District*,¹⁹ the Supreme Court ruled that the authority granted to water districts to operate and maintain a waterworks system within their territorial jurisdictions is not exclusive. While the Local Water District Law provides that water districts enjoy exclusive franchise over domestic, industrial, and commercial water services,²⁰ the Supreme Court declared such provision as void for being unconstitutional:

No franchise, certificate, or any other form of authorization for the operation of a public utility shall be granted except to citizens of the Philippines or to corporations or other entities organized under the laws of the Philippines, sixty per centum of the capital of which is owned by citizens of the Philippines, **nor shall such franchise, certificate or authorization be exclusive in character** or for a longer period than fifty years. (*emphasis supplied*)

Section 5, Article XIV of the 1973 Constitution states that:

No franchise, certificate, or any other form of authorization for the operation of a public utility shall be granted except to citizens of the Philippines or to corporations or associations organized under the laws of the Philippines at least sixty per centum of the capital of which is owned by such citizens, **nor shall such franchise, certificate or authorization be exclusive in character** or for a longer period than fifty years. (*Emphasis supplied*)

¹⁴ Sec. 17, Republic Act No. 7160 (the "LGC").

¹⁵ Sec. 11, EO 279.

¹⁶ Sec. 8, Implementing Rules and Regulations for Executive Order No. 279 ("EO 279 IRRs").

¹⁷ Sec. 7, PD 198, *as amended by* Sec. 3, PD 768.

¹⁸ Sec. 6(c), PD 198, *as amended by* Sec. 2, PD 768 and Sec. 1, PD 1479.

¹⁹ GR 166471, 22 March 2011.

²⁰ Sec. 47, PD198, *as amended by* Sec. 20, PD 768 and Sec. 9, PD 1479.

Section 11, Article XII of the 1987 Constitution states that:

No franchise, certificate, or any other form of authorization for the operation of a public utility shall be granted except to citizens of the Philippines or to corporations or associations organized under the laws of the Philippines, at least sixty per centum of whose capital is owned by such citizens, **nor shall such franchise**, certificate or authorization **be exclusive in character** or for a longer period than fifty years. (Emphasis supplied)

Plain words do not require explanation. The 1935, 1973 and 1987 Constitutions are clear — franchises for the operation of a public utility cannot be exclusive in character. The 1935, 1973 and 1987 Constitutions expressly and clearly state that, "**nor shall such franchise x x x be exclusive in character.**" There is no exception.

xxx xxx xxx xxx

Indeed, the President, Congress and the Court cannot create directly franchises that are exclusive in character. What the President, Congress and the Court cannot legally do directly they cannot do indirectly. Thus, the President, Congress and the Court cannot create indirectly franchises that are exclusive in character by allowing the Board of Directors (BOD) of a water district and the Local Water Utilities Administration (LWUA) to create franchises that are exclusive in character.

In PD No. 198, as amended, former President Ferdinand E. Marcos (President Marcos) created indirectly franchises that are exclusive in character by allowing the BOD of LTWD and the LWUA to create directly franchises that are exclusive in character. Section 47 of PD No. 198, as amended, allows the BOD and the LWUA to create directly franchises that are exclusive in character. Section 47 states:

Sec. 47. Exclusive Franchise. **No franchise shall be granted to any other person or agency** for domestic, industrial or commercial water service within the district or any portion thereof **unless and except to the extent that the board of directors of said district consents thereto by resolution duly adopted, such resolution, however, shall be subject to review by the Administration.** (Emphasis supplied)

In case of conflict between the Constitution and a statute, the Constitution always prevails because the Constitution is the basic law to which all other laws must conform to. The duty of the Court is to uphold the Constitution and to declare void all laws that do not conform to it.

Considering the foregoing, the local water districts do not hold an exclusive franchise over domestic, industrial, and commercial water services, and the local government or other entities validly granted a franchise may step in and establish and operate such water services for the affected city or municipality, even with an existing local water district.

We trust that the foregoing sufficiently addresses your concerns. Should you have any questions, please do not hesitate to reach out to us.

APPENDIX 2.2_RELEVANT POLICY, LAWS AND REGULATIONS ON ENVIRONMENT MANAGEMENT IN THE PHILIPPINES

Table A2.2.1 Relevant Policy, Laws and Regulations on Environment in the Philippines

Category	No.	Year	Title
Policy/Framework	PD1151	1977	Philippine Environmental Policy
	PD1152	1977	Philippine Environmental Code
	EO192	1987	Reorganized the former DEENR and renamed it as DENR
	RA 9512	2008	National Environmental Awareness and Education Act of 2008
EIA	See Appendix 2.4	-	-
Environmental Conservation	PD 705	1975	Revised Forestry Code of the Philippines
	PD 1067	1976	The Water Code of the Philippines
	RA 7076	1991	People's Small-scale Mining Act of 1991
	RA 7586	1992	National Integrated Protected Areas System (NIPAS) Act of 1992
	RA 7942	1995	Philippine Mining Act of 1995
	RA 8435	1997	Agriculture and Fisheries Modernization Act of 1997
	RA 8550	1998	The Philippine Fisheries Code of 1998
	RA 9147	2001	Wildlife Resources Conservation and Protection Act
Pollution Control	RA856	1975	Sanitation Code
	PA984	1976	Pollution Control Law
	PA6969	1990	Toxic Substances, Hazardous and Nuclear Wastes Control Act
	DAO 92-26	1992	Appointment/Designation of Pollution Control Officers
	DENR AO 92-29	1992	IRR of RA 6969
	DENR AO 98-46	1998	1998 Revised Rules and Regulations for the Prevention, Control and Abatement of Air Pollution from Motor Vehicles
	RA8749	1999	Clean Air Act
	RA9003	2001	Ecological Solid Waste Management Act
	DENR AO 01-34	2001	IRR of the Philippine Ecological Solid Waste Management Act of 2000
	DAO2003-27	2003	Preparation and Submission of Self-Monitoring Report (SMR)
	RA 9275	2004	Clean Water Act
	DENR AO 10-21	2010	Revised IRR of RA 7942, otherwise known as the Philippine Mining Act of 1995
	DENR AO 15-03	2015	Revised IRR of RA No. 7076
	EMB MC 15-011	2015	Guidance Manual for DENR AO 15-09 "Rules and Procedures for the Implementation of the Globally Harmonized System (GHS) of Classification and Labelling of Chemicals in Preparation of Safety Data Sheet (SDS) and Labelling Requirements of Toxic Chemical Substances"
Standard	NPCC MC 80-02	1980	Amendments to Article I (Noise Control Regulations), Chapter IV (Miscellaneous Regulations), Rules and Regulations of the National Pollution Control Commission (NPCC) 1978
	DENR AO 90-34	1990	Revised Water Usage and Classification/Water Quality Criteria Amending Section Nos. 68 and 69, Chapter III of the 1978 NPCC Rules and Regulations
	DENR AO 94-26A	1994	Philippine Standards for Drinking Water 1993 under the Provision of Chapter II, Section 9 of PD 856, otherwise known as the Code on Sanitation of the Philippines
	DOH AO 07-12	2007	Philippine National Standards for Drinking Water 2007
	DENR AO 90-35	1990	Revised Effluent Regulations of 1990
	DENR AO 00-81	2000	IRR of the Philippine Clean Air Act of 1999
	DENR AO 03-25	2003	Hydrocarbon Standards for Motorcycles
	DENR AO 03-51	2003	Revised Emission Standards for In-Use Motor Vehicles Equipped with Spark-Ignition and Compression-Ignition Engines Except Motorcycles
	DENR AO 99-32	1999	Policy Guidelines and Standards for Mine Wastes and Mill Tailings Management
	DENR AO 00-98	2000	Mine Safety and Health Standards

PD: Presidential Decree, EO: Executive Order, PP: President Proclamation, PAO: Presidential Administrative Order, AO: Administrative Order, DAO: DENR Administrative Order, RA: Republic Act, NPCC: National Pollution Control Commission, MC: Memorandum of Circular

Sources: DENR EMB Region XI. "Overview of the Environmental Impact Assessment Process (2013)"

DENR-EMB. "The Philippine EIS System: In the Womb of Time, First National Convention of the PEISS (2013)".

DENR Website: <http://www.denr.gov.ph/>, DENR-EMB Website: <http://emb.gov.ph/>

PHILIPPINES INTERNATIONAL AGREEMENTS ON ENVIRONMENT AND NATURAL RESOURCES

TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
1. Food and Agriculture Organization (FAO) Committee on Forestry (COFO)	The FAO of the United Nations (UN) created the COFO as one of its governing bodies to fulfill its goal in providing food security for everyone. The COFO, as the highest FAO forestry statutory body, gathers 138 countries in biennial session at the FAO Headquarters in Rome, Italy. It brings together senior government officials and heads of different forest services to review international forestry problems, identify emerging policy and technical issues, provide possible solutions, and advise FAO on appropriate action.	First Session: May 1972	Forestry Management Bureau (FMB)
2. International Hydrographic Organization (IHO)	The IHO is an intergovernmental consultative and technical organization established to support safety of navigation and the protection of the marine environment. It aims to coordinate activities of national hydrographic offices, have uniform nautical charts and documents, promote adoption of reliable and efficient methods of carrying out and exploiting hydrographic surveys and develop the sciences in the field of hydrography and the techniques employed in descriptive oceanography.	Date Established: 1921 / Date Convention was Enforced: 1970	National Mapping and Resource Information Authority (NAMRIA)
3. International Tropical Timber Organization (ITTO)	With the support of the United Nations Conference on Trade and Development (UNCTAD), the International Tropical Timber Agreement (ITTA) was negotiated to provide an effective framework for cooperation and consultation between countries producing and consuming tropical timber, and promote and support research and development to improve forest management and wood utilization. The International Tropical Timber Organization (ITTO), based in Yokohama Japan, was established by the ITTA in 1983. The ITTO has 72 members, which are divided into two groups: producer countries (34 members) where the Philippines belongs and consumer countries (38 members) which include the European Union.	Established 1983	Forestry Management Bureau (FMB)
4. United Nations Environment Assembly (UNEA)	UNEA is a result of the call made by world leaders at the United Nations Conference on Sustainable Development (Rio+20), held in Brazil in June 2012, to strengthen and upgrade the United Nations Environment Programme (UNEP) as the leading global environmental authority that sets the global environmental agenda and by establishing universal membership in its Governing Council. It serves as the Assembly for the UNEP. The first UNEA was held in 23-27 June 2014 in Nairobi Kenya, and was attended by over 1,065 participants, including 163 Member States and 113 Ministers.	First Assembly: June 23-27, 2014	Department of Environment and Natural Resources (DENR) Central Office
5. United Nations Forum on Forests (UNFF)	The United Nations Forum on Forests (UNFF) was established by the Economic and Social Council's (ECOSOC) Resolution 2000/35 as part of a new international arrangement on forests, to carry on the work built on the Intergovernmental Panel on Forests (IPF) and International Forum on Forests (IFF) processes. The Forum is composed of all Member States of the United Nations and specialized agencies. The main objective of UNFF is to promote the management, conservation and sustainable development of all types of forests and strengthen long-term political commitment.	Established 2000	Forestry Management Bureau (FMB)

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
6. Basel Convention	The Basel Convention is an international treaty designed to reduce the movements of hazardous waste between nations, specifically to prevent transfer of hazardous waste from developed to less developed countries (LDCs). The Basel Convention on the Control of Transboundary Movements of Hazardous Waste was adopted on 22 March 1989 by the Conference of Plenipotentiaries in Basel, Switzerland, in response to a public outcry following the discovery of deposits of toxic wastes imported to Africa and other parts of the developing world.	Date Ratified: January 19, 1994	Environmental Management Bureau (EMB)
7. Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention / CMS)	Bonn Convention provides a global platform for the conservation and sustainable use of migratory animals and their habitats. CMS brings together the States through which migratory animals pass and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range. Through CMS, Parties also agree that Range States (countries where a particular migratory species reside in or traverse through) should take joint conservation action.	Date Ratified: February 1, 1994	Biodiversity Management Bureau (BMB)
8. Memorandum of Understanding (MOU) on the Conservation and Management of Dugongs and their Habitats throughout their Range	The Memorandum of Understanding on the Conservation and Management of Dugongs (Dugong dugon) and their Habitats throughout their Range (Dugong MOU) is a CMS instrument which aims to promote and ensure the long-term survival of Dugongs and their seagrass habitats.	Date Ratified: August 19, 2008	BMB
9. MOU on the Conservation and Management of Marine Turtles and their habitats of the Indian Ocean and South-East Asia	The Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA Marine Turtle MOU) is a CMS instrument which aims to protect, conserve, replenish and recover marine turtles and their habitats, based on the best scientific evidence, taking into account the environmental, socio-economic and cultural characteristics of the signatory States.	Date Ratified: June 23, 2001	BMB
10. MOU on the Conservation of Migratory Sharks	The Memorandum of Understanding on the Conservation of Migratory Sharks is the first global instrument for the conservation of migratory species of sharks listed on Appendix I or II of the Bonn Convention. The legally non-binding international instrument aims to achieve and maintain a favorable conservation status for migratory sharks based on the best available scientific information, taking into account the socio-economic value of these species for concerned areas.	Date Ratified: February 12, 2010	BMB
11. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	The CITES ensures that international trade in specimens of wild animals and plants does not threaten their survival. CITES provides control for the international trade (importation, exportation) of specimens of selected species through a licensing system for importation/exportation. These species are categorized according to the degree of protection needed:	Date Ratified: August 18, 1981	BMB
12. Convention on Biological Diversity (CBD)	The CBD aims to conserve biological diversity, promote sustainable use of components of biological diversity and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. The Convention was opened for signature on 5 June 1992 at the United Nations Conference on Environment and Development (the Rio Earth Summit). It entered into force on 29 December 1993. The Philippine government signed the Convention on 12 June 1992.	Date Ratified: Party since October 8, 1993	BMB

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
13. Cartagena Protocol	The Cartagena Protocol on Biosafety to the Convention on Biological Diversity is an international agreement which aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.	Date Ratified: Party since October 5, 2006	BMB
14. Nagoya Protocol	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity is a supplementary agreement to the Convention on Biological Diversity. It provides a transparent legal framework for the effective implementation of one of the three objectives of the CBD: the fair and equitable sharing of benefits arising out of the utilization of genetic resources. It was adopted by the Conference of the Parties to the Convention on Biological Diversity at its' tenth meeting on 29 October 2010 in Nagoya, Japan.	Date Ratified: Party since September 29, 2015	BMB
15. Minamata Convention	The Minamata Convention on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury pollution, including a ban on new mercury mines, the phase-out of existing ones, control measures on air emissions, and the international regulation of the informal sector for artisanal and small-scale gold mining. The convention is named after Minamata Bay, which was contaminated by methyl mercury discharged from a local chemical factory. The text of the Minamata Convention on Mercury was adopted by the Conference of Plenipotentiaries on 10 October 2013 in Kumamoto, Japan.	Date Ratified: Signed on October 10, 2013	EMB
16. Convention on Wetlands (Ramsar Convention)	The Convention on Wetlands of International Importance (Ramsar Convention) is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. It was developed and adopted by participating nations in Ramsar, Iran on 2 February 1971 and came into force on 21 December 1975. The Philippines become a Contracting Party to the Convention on 8 November 1994.	Date Ratified: November 9, 1994	BMB
17. Rotterdam Convention	The Convention creates legally binding obligations for the implementation of the Prior Informed Consent (PIC) procedure, covering pesticides and industrial chemicals that have been banned or severely restricted for health or environmental reasons by the Parties to the Convention. The Convention entered into force in 23 February 2004.	Date Ratified: July 31, 2006	EMB
18. Stockholm Convention	The Stockholm Convention is a global treaty to protect human health and the environment from the adverse effects of persistent organic pollutants (POPs). Adopted in 2001 and entered into force in 2004, the convention requires its parties to take measures to eliminate or reduce the release of POPs into the environment. The Convention was adopted and opened for signature at a Conference of Plenipotentiaries in Stockholm, Sweden in May 2001.	Date Ratified: May 27, 2004	EMB

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
19. United Nations Convention on the Law of the Sea (UNCLOS)	The United Nations Convention on the Law of the Sea (UNCLOS) establishes a comprehensive legal framework to govern all activities and uses of the world's seas and oceans. The Convention defines the limits of territorial seas of countries from which they can explore and exploit marine resources. As of January 2015, 166 countries and the European Union have joined the Convention. The Philippines is the 11th country that ratified the Convention.	Date Ratified: Signed the convention on December 10, 1984	NAMRIA
20. United Nations Framework Convention on Climate Change	The United Nations Framework Convention on Climate Change is an international treaty focusing on what countries could do to limit average global temperature increases and the resulting climate change. The ultimate objective of the convention is the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.	Date Ratified: November 20, 2003	EMB
21. Kyoto Protocol	The Kyoto Protocol is an international treaty under the UNFCCC. Adopted last 1997, the protocol commits 43 Annex I countries to limit their greenhouse gas emissions for the period 2008-2012 below or equal to the level of their emissions in 1990. By 2012, the Doha Amendment to the protocol was proposed to extend the protocol to a second commitment period for 2013-2020. However, only 37 countries have committed to binding targets.	Date Ratified: November 20, 2003	EMB
22. Vienna Convention for the Protection of the Ozone Layer	The Vienna Convention serves as a framework for efforts to protect the globe's ozone layer.	Date Ratified: July 17, 1991	EMB
23. Montreal Protocol	The Montreal Protocol on Substances That Deplete the Ozone Layer is a landmark international agreement designed to protect the stratospheric ozone layer from depletion due to ozone (O3) reaction with halogenated hydrocarbons.	Date Ratified: July 17, 1991	EMB
ASIA PACIFIC			
24. Eda Statement (2015 APEC Meeting of Ministers Responsible for Forestry)	APEC Ministers and Senior Officials acknowledged the 2015 APEC theme "Building Inclusive Economies, Building a Better World" and highlighted the importance of sustainable forest management in achieving long term sustainable socio-economic development in the region.	Date Ratified: October 28, 2015	
25. Cusco Statement (2013 APEC Meeting of Ministers Responsible for Forestry)	APEC ministers and senior officials reaffirm the forestry goals outlined in the 2007 Sydney APEC Leaders' Declaration on Climate Change, Energy Security and Clean Development, such as increasing forest cover in the region by at least 20 million hectares of all types of forests by 2020 and recall subsequent commitments and declarations in relation to forests.	Date Signed: August 15, 2013	
26. Beijing Statement on Forests and Forestry (2011 First APEC Meeting of Ministers Responsible for Forestry)	The statement by APEC ministers and senior officials began by noting that improved management, conservation and rehabilitation of forests can make a significant contribution to the economic, environmental and social priorities and goals of the APEC economies and that enhanced international cooperation is needed to address these challenges.	Date Signed: September 7, 2011	

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
27. Beijing Statement (2014 APEC Meeting of Ministers Responsible for Mining)	At their 5th meeting, APEC ministers responsible for mining discussed three topics on closer cooperation of the mining sector in the Asia-Pacific region, innovation-driven growth, and social responsibility and common development centered on the theme "Closer Mining Cooperation for Transformation and Growth."	Date Signed: June 28, 2014	
28. Khabarovsk Statement (2012 APEC Meeting of Ministers Responsible for the Environment)	APEC Ministers and senior officials responsible for the environment, convinced that "environmental protection and the conservation and sustainable use of natural resources, ecosystems and biodiversity are essential foundations for achieving sustainable economic and social results for the APEC region," made statements in five areas: biological diversity, use of natural resources, water management and trans-boundary watercourses, trans-boundary air pollution and climate change, green growth.	Date Signed: July 18, 2012	
29. APEC Experts Group on Illegal Logging and Associated Trade (EGILAT)	The Experts Group on Illegal Logging and Associated Trade (EGILAT) is a new body within APEC under the SOM Steering Committee on Economic and Technical Cooperation. EGILAT's mission is to foster sustainable economic growth in the Asia-Pacific region by enhancing the efforts of member economies to take concrete steps to combat illegal logging and associated trade and promote trade in legally harvested forest products. EGILAT was established in 2011 in response to commitments made by APEC Leaders in 2010, and under direction of APEC ministers responsible for trade in 2011.	Date Launched: 2011	FMB
30. APEC Meeting of Ministers Responsible for Forestry (MMRF)	The MMRF is a high-level policy dialogue among Asia-Pacific economies that encourages greater cooperation in addressing regional challenges and opportunities including forest cover increase, illegal logging and climate change mitigation. It seeks to exchange experiences on promoting good governance and transparency in the trade of legal timber, timber products and front services while enhancing & sustaining local forest industries.	Date Launched: First Meeting 2011	FMB
31. APEC Mining Task Force (MTF)	In 2007, APEC Ministers endorsed the establishment of the Mining Task Force (MTF). The MTF derives its mandate from priorities set by APEC Leaders and Ministers and from directions provided by Ministers Responsible for Mining. The Mining Task Force is composed of policy officials and experts who work with experts in government and academia, private industry, and regional and international organizations.	Date Launched: 2007	Mines and Geosciences Bureau (MGB)
32. APEC Oceans and Fisheries Working Group (OFWG)	APEC's Oceans and Fisheries Working Group (OFWG) was formed in 2011, following a decision to merge the former Marine Resource Conservation and Fisheries working groups which had been in operation since 1990 and 1991 respectively.	Date Launched: 2007	BMB
33. Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet)	The Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) was proposed by China and co-sponsored by Australia and the United States at the 15th APEC Economic Leaders Meeting in Sydney, Australia in September 2007. APEC leaders adopted the proposal and included it in the Sydney Declaration on Climate Change, Energy Security and Clean Development to promote and improve sustainable forest management and rehabilitation in the region through capacity-building, information sharing, regional policy dialogues, and pilot projects.	Date Launched: September 9, 2007 - Date Adopted	FMB

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
34. Asia Pacific Forestry Commission (APFC)	The Asia-Pacific Forestry Commission (APFC) is one of the six Regional Forestry Commissions established by FAO in 1949 to provide a policy and technical forum for countries to discuss and address forest related issues on a regional basis and focus on issues pertinent to Asia and the Pacific. Areas of work include: 1) Promoting improvement in forest management for multiple benefits, 2) Forest Policy, Economics and Institutions, and 3) Fostering greater involvement of people in forestry.	Established 1949	FMB
35. Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP)	The Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP) is an intergovernmental organization that aims to facilitate and coordinate the implementation of applied geoscience programmes in East and Southeast Asia. It promotes capacity building, technology transfer, exchange of information and institutional linkages for sustainable resource development, management of geo-information, geo-hazard mitigation and protection of the environment. The Philippines is a founding member of CCOP, which was adopted as an intergovernmental organization by an MOU in 1987.	25-Mar-87	MGB
36. Coral Triangle Initiative (CTI)	The Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security (CTI-CFF) is a multilateral partnership of six countries (Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor-Leste also known as the "CT6") formed in 2007 to address the urgent threats facing the coastal and marine resources of one of the most biologically diverse and ecologically rich regions on earth.	Formally launched May 15, 2009	BMB
37. EANET - Acid Deposition Monitoring Network in East Asia	The Acid Deposition Monitoring Network in East Asia (EANET) started in 1998 as an intergovernmental initiative. At present, thirteen (13) countries participate in EANET (Cambodia, China, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Russia, Thailand, and Vietnam). The following are the objectives of the EANET: 1. Create a common understanding of the state of the acid deposition problems in East Asia; 2. Provide useful inputs for decision-making at local, national and regional levels aimed at preventing or reducing adverse impacts on the environment caused by acid deposition; and 3. Contribute to cooperation on the issues related to acid deposition among participating countries.	Date Launched 1998	EMB
38. Sulu-Sulawesi Marine Eco-region (SSME)	A priority seascape of the Coral Triangle Initiative, the Sulu-Sulawesi Marine Eco-region addresses concerns related to the sustainable development of coastal and marine resources and food security in six countries: Indonesia, Malaysia, Papua New Guinea, the Philippines, the Solomon Islands, and Timor-Leste.	February 13, 2004 - Tri-national MOU on ECP implementation signed. Approved May 2009 in the Philippine Senate	BMB
ASSOCIATION OF SOUTH EAST ASIAN NATIONS (ASEAN)			

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
39. ASEAN Agreement on the Establishment of the ASEAN Centre for Biodiversity	This Agreement is for the establishment and initial operation of the ASEAN Centre for Biodiversity (ACB) arising from the ASEAN Regional Centre for Biodiversity Conservation, a five-year project funded by the European Union. The ACB is an intergovernmental regional center of excellence that facilitates regional and global cooperation on the conservation and sustainable use of biodiversity. It serves the biodiversity management needs of the ten ASEAN member states through capacity building and trainings, research funding, database development and management. Eight ASEAN members have ratified the ACB Agreement: Brunei Darussalam, Lao PDR, Philippines, Singapore, Viet Nam and Myanmar, Thailand and the latest in 2013 is Malaysia.	Date ratified 2009 ; Date launched September 27, 2005	BMB
40. ASEAN Agreement on Transboundary Haze Pollution (AATHP)	This Agreement aims to prevent and monitor transboundary haze pollution as a result of land and/or forest fires which need to be mitigated through coordinated national efforts and more intense regional and international cooperation. The agreement also establishes the ASEAN Co-ordinating Centre for Transboundary Haze Pollution Control. It is managed by the ASEAN Ministers of Environment and other representatives from ASEAN member states.	Date signed June 10, 2002; Date ratified by the Philippines February 1, 2010	FMB
41. ASEAN-Republic of Korea Cooperation on Forestry (AFoCo)	The ASEAN-RoK Forest Cooperation (AFoCo) is a regional cooperation mechanism in the forest sector between ASEAN Member States and the Republic of Korea (ROK) which was initiated as the first step taken following ROK's proposal for the establishment of the Asia Forest Cooperation Organization (AFoCO). It aims to promote rehabilitation of degraded lands, promote sustainable forest management, and combat desertification.	August 5, 2012 (Entry into force)	FMB
42. Memorandum of Understanding on ASEAN Sea Turtle Conservation and Protection (1997)	In the MOU, ASEAN Governments recognized the significance of the sea turtle populations and their habitats in ASEAN waters.	Date and Place Signed: September 12, 1997 - Bangkok	BMB
43. Ministerial Statement on ASEAN-ROK Special Ministerial Meeting on Forestry 2014	In the Statement, Ministers responsible for Forestry and Forest-related activities from the ASEAN Member State (AMS) and the Republic of Korea (ROK) noted the on-going dialogue for the establishment of ASEAN-ROK Forest Cooperation (AFoCo) among the AMS, ROK and other prospective countries.	Date and Place Signed: December 11, 2014 - Busan, Republic of Korea	
44. ASEAN Joint Statement on Climate Change 2014 (2014 - 25th ASEAN Summit)	The Statement urged Parties to take immediate action in ratifying the Doha Amendments to the second commitment period of the Kyoto Protocol.	Date and Place Signed: November 12, 2014 - Nay Pyi Taw, Myanmar	
45. Statement by the ASEAN Environment Ministers for the Twelfth Meeting of the Conference of the Parties to the Convention on Biological Diversity (2014)	A joint Statement was made by the ASEAN Environment Ministers to the Twelfth Meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP 12) conveyed at the High-level Segment of CBD COP 12 on 15 October 2014 in Pyeongchang, Republic of Korea to express their commitment to the implementation of the CBD Strategic Plan for Biodiversity 2011-2020 and the Aichi Targets. In reiterating ASEAN's commitment to biodiversity conservation, the Ministers noted the essential role of biodiversity for sustainable development in the development of Sustainable Development Goals.	Date and Place Signed: October 15, 2014 - Pyeongchang, ROK	

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
46. Bangkok Resolution on ASEAN Environmental Cooperation (2012)	ASEAN environment ministers resolved to continue to implement the action lines on environmental sustainability in the ASEAN Socio-Cultural Community Blueprint in an effective and timely manner towards a clean and green ASEAN Community.	Date and Place Signed: September 26, 2012 - Bangkok, Thailand	
47. New Delhi ASEAN-India Ministerial Statement on Biodiversity (2012)	Ministers responsible for environment and their representatives from ASEAN and India met in New Delhi and discussed areas of common interest focused on biodiversity.	Date and Place Signed: September 7, 2012 - New Delhi, India	
48. Joint Statement of ASEAN Environment Ministers for the Eleventh Meeting of the Conference of the Parties to the Convention on Biological Diversity (2012)	ASEAN environment ministers renewed the commitments made in the ASEAN Leaders' Statement on Climate Change at the 19th ASEAN Summit in November 2011, the ASEAN Leaders' Statement on Joint Response to Climate Change at the 16th ASEAN Summit in April 2010, the ASEAN Declaration on Environmental Sustainability at the 13th ASEAN Summit in November 2007, and the 2003 ASEAN Declaration on Heritage Parks.	Date and Place Signed: October 29, 2010 - Hyderabad, India	
49. Agreement Between the Governments of the Member States of the Association of Southeast Asian Nations and the Republic of Korea on Forest Cooperation	The agreement serves as a platform to foster cooperation in forestry and dialogue towards the establishment of Asian Forest Cooperation Organization (AFoCO) which aims to facilitate forest cooperation and undertake projects to rehabilitate degraded forest land and prevent deforestation.	Date and Place Signed: November 18, 2011 - Bali	
50. Leaders' Statement on Climate Change to COP-17 UNFCCC and CMP-7 Kyoto Protocol (19th ASEAN Leaders' Summit, 2011)	The Statement urged all Parties to the UNFCCC to work together to secure agreements under the two-track process established under the Bali Roadmap and the Bali Action Plan of the Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) and the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol (AWG-KP) and to reduce global greenhouse gas emissions so as to hold the increase in global average temperature below 2°C above pre-industrial levels	Date and Place Signed: November 17, 2011 - Bali, Indonesia	
51. Statement on ASEAN Plus Three Youth Actions on Environment 25 April (2010)	The ASEAN Plus Three Youth Environment Forum 2010: Creating a Climate for Change was participated in by 140 ASEAN Plus Three Youths, selected on the basis of their contributions and commitments to youth environmental activities. The forum was held on 22-25 April 2010. Participants shared information and experiences on environment and climate change.	Date and Place Signed: April 25, 2010 - Brunei Darussalam	
52. ASEAN Leaders' Statement on Joint Response to Climate Change (16th ASEAN Summit, 2010)	Heads of State renewed their commitments made in the ASEAN Joint Statement on Climate Change to the 15th session of the COP to the UNFCCC and the 5th session of the Conference Parties serving as the Meeting of Parties (CMP) to the Kyoto Protocol (2009), the ASEAN Declaration on the 13th session of COP to the UNFCCC and the 3rd session of the CMP to the Kyoto Protocol (2007), and the ASEAN Declaration on Environmental Sustainability (2007) and made declarations toward a global solution to the challenge of climate change at COP 16/CMP 6 and an ASEAN Community resilient to climate change.	Date and Place Signed: April 9, 2010 - Ha Noi, Vietnam	

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
53. ASEAN Joint Statement on Climate Change to COP-15 to the UNFCCC and CMP-5 to the Kyoto Protocol (15th ASEAN Summit, 2009)	In this Statement, heads of government reaffirmed that Parties should protect the climate system for the benefit of present and future generations and further reaffirmed that the UNFCCC and its Kyoto Protocol continue to be the basic framework and legal instrument for the international community to combat global climate change.	Date and Place Signed: October 24, 2009 - Cha-am Hua Hin, Thailand	
54. Singapore Resolution on Environmental Sustainability and Climate Change (11th AMME, 2009)	Ministers of AMS responsible for the environment made resolutions on the topics of Regional Environmental Protection and Management, Biodiversity and Natural Resources Conservation, Climate Change.	Date and Place Signed: October 29, 2009 - Singapore	
55. Ministerial Statement of the Inaugural EAS Environment Ministers Meeting (2008)	The Inaugural East Asia Summit (EAS) Environment Ministers Meeting held in Ha Noi, Viet Nam on 9 October 2008 was attended by the Environment Ministers of the 10 AMS, and Australia, People's Republic of China, Republic of India, Japan, Republic of Korea, and New Zealand. The meeting was an important initial step to actualize the visions of the EAS Leaders on environmental cooperation, noting that ASEAN as the driving force working with other participating countries in the EAS, and to discuss ways and means to put these ideas into practice through regional cooperative efforts and activities.	Date and Place Signed: October 9, 2008 - Ha Noi, Viet Nam	
56. ASEAN Declaration on Environmental Sustainability (13th ASEAN Summit, 2007)	Heads of the AMS reiterated the need to build an ASEAN Community that is economically vibrant and environmentally friendly, so that the present and future generations can enjoy a clean and sustainable environment and reaffirmed the goals of both the Yangon and the Cebu Resolution on Sustainable Development.	Date and Place Signed: November 20, 2007 - Singapore	
57. ASEAN Declaration on the 13th Session of the Conference of the Parties to the UNFCCC and the 3rd Session of the CMP to the Kyoto Protocol (2007)	AMS heads reaffirmed their resolve to achieve the objectives of sustainable development and implement their relevant commitments to address climate change, based on respective capabilities, and in accordance with the UNFCCC and the Kyoto Protocol with the aim of stabilizing greenhouse gas concentrations.	Date and Place Signed: November 20, 2007 - Singapore	
58. Singapore Declaration on Climate Change, Energy and the Environment (3rd EAS Summit, 2007)	Heads of Government of ASEAN, Australia, China, India, Japan, Korea and New Zealand, on the occasion of the Third East Asia Summit (EAS) made a number of declarations on climate change, energy and environment.	Date and Place Signed: November 21, 2007 - Singapore	
59. ASEAN Statement on Strengthening Forest Law Enforcement and Governance (FLEG), 2007	ASEAN Ministers on Agriculture and Forestry (AMAF), recognizing that forest resources play a vital role that sustains human, animal and plant life, as well as in mitigating climate change in their capacity as carbon sink made a statement during the 29th AMAF Meeting.	Date and Place Signed: November 1, 2007 - Bangkok, Thailand	
60. Cebu Resolution on Sustainable Development (2006)	Ministers of ASEAN Member States responsible for the environment reiterate their commitment to address global environmental issues through national and regional cooperation and active participation at international fora, and call upon the global community to continue to work to enhance such collaboration and launch the Third ASEAN State of the Environment Report 2006.	Date and Place Signed: November 10, 2006 - Cebu, Philippines	
61. ASEAN Declaration on Heritage Parks (2003)	The document declared national protected areas listed in Appendix I as ASEAN Heritage Parks. For the Philippines, heritage parks declared in 1984 are: a) Mt. Apo National Park in Davao del Sur and North Cotabato, and b) Iglit-Baco National Park in Oriental Mindoro.	Date and Place Signed: December 18, 2003 - Yangon, Myanmar	

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
62. Yangon Resolution on Sustainable Development (2003)	Ministers responsible for the environment from the ASEAN member countries emphasized that sustainable development could be achieved by addressing environmental protection, economic growth, and socio-cultural development in an integrated and coordinated manner; and recognized that effective environmental and natural resources management, and sustainable utilization of these resources are critical to alleviate poverty, promote healthy living, reduce the incidence of diseases, and enhancing economic growth in the ASEAN region.	Date and Place Signed: December 18, 2003 - Yangon, Myanmar	
63. The Third Meeting of the ASEAN Agriculture and Forestry Ministers and the Ministers of the People's Republic of China, Japan and Republic of Korea [AMAF Plus Three] (2003)	ASEAN Ministers of Agriculture and Forestry and the Ministers of the People's Republic of China, Japan and the Republic of Korea held their third meeting in Kuala Lumpur, Malaysia on 22 August 2003.	Date and Place Signed: August 22, 2003 - Kuala Lumpur, Malaysia	
64. Declaration on ASEAN Post-2015 Environmental Sustainability and Climate Change Agenda	ASEAN Heads of State took cognizance of the growing need to address global and transboundary environmental concerns and ASEAN's obligations to its people in ensuring environmental sustainability for our region and to achieve sustainable development. They also emphasized the important role that the ASEAN Member States can play in carrying out collective action to address challenges for mutual benefit and the common good.	Date and Place Signed: November 21, 2015 - Kuala Lumpur, Malaysia	
65. ASEAN Joint Statement on Climate Change to the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21)	In this joint statement during the 27th ASEAN Summit, Heads of State recalled their previous commitments on climate change. They highlighted the need to further scale up adaptation and mitigation efforts given the findings of the Intergovernmental Panel on Climate Change's (IPCC's) Fifth Assessment Report (AR5) and emphasized the reality that technology transfer, capacity building and financial assistance are vital to supporting developing countries including least developed countries in implementing Nationally Appropriate Mitigation Actions (NAMAs), National Adaptation Plan of Actions (NAPAs) or National Adaptation Plans (NAPs), as well as Intended Nationally Determined Contributions (INDCs) effectively and efficiently in the long run.	Date and Place Signed: November 21, 2015 - Kuala Lumpur, Malaysia	
66. ASEAN Ministerial Meeting on Environment (AMME)	The first ASEAN Ministerial Meeting on Environment (AMME) was held in 1981. The AMME is attended by ministers in charge of the environment from ASEAN member states in order to promote ASEAN environmental cooperation and to ensure the implementation of the environmental decisions made by the heads of government. ASEAN environmental cooperation recently focused on ten priority areas of regional importance as reflected in the Blueprint for the ASEAN Socio-Cultural Community (ASCC Blueprint) 2009-2015. With the current ASEAN Socio-Cultural Community Blueprint 2025, environmental focus is on sustainability and resilience.	1981 - First meeting	DENR Central Office

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
67. ASEAN Ministerial Meeting on Minerals (AMMin)	Under the Vientiane Action Programme (VAP) 2004-2010, ASEAN leaders called for enhanced trade and investment in the minerals sector and greater cooperation in the utilization of mineral resources. To realize this policy agenda, the Ministerial Understanding (MU) on ASEAN Cooperation in Minerals was signed to formalize regional cooperation to: develop the minerals sector to be an engine for greater economic growth and social progress in the ASEAN region; enhance trade and investment in the ASEAN minerals sector; and promote environmentally sound and socially responsible mineral development practices in the sustainable management and optimum utilization of mineral resources.	2005 - Date established	MGB
68. ASEAN Senior Officials Meeting on Minerals (ASOMM)	Under the Vientiane Action Programme, the ASEAN Senior Officials Meeting on Minerals (ASOMM-1) was first held in 1996 following the adoption of the Program of ASEAN Cooperation in Minerals in 1995. By virtue of the 2005 Ministerial Understanding on ASEAN Cooperation in Minerals, ASOMM became the operating arm of the ASEAN Ministerial Meeting on Minerals (AMMin) in coordinating and implementing programmes, projects and activities as well as the policy directions set by the AMMin.	Established 1996	MGB
69. ASEAN Senior Officials on Forestry (ASOF)	The ASEAN Senior Officials on Forestry (ASOF) was organized in 1988 as one of the subsidiary bodies under the ASEAN Cooperation in Food, Agriculture and Forestry guided by the ASEAN Ministers on Agriculture and Forestry (AMAF) and supported by Senior Officials Meeting (SOM). ASOF discusses the progress of the implementation of the policy framework related to ASEAN Cooperation in Forestry.	1988	FMB
70. ASEAN Senior Officials on the Environment (ASOEN)	ASEAN cooperation on the environment began with the establishment of the ASEAN Experts Group on the Environment (AEGE) under the ASEAN Committee on Science and Technology (COST). In 1989, the AEGE became the ASEAN Senior Officials on the Environment (ASOEN). ASOEN meets yearly to consider the reports of its working groups, which also meet annually, and provide operational policy guidance on the various environmental programs implemented. The Philippines was the lead country in the area of coastal and marine environment during the development and implementation of the Blueprint for the ASEAN Socio-Cultural Community (ASCC Blueprint) 2009–2015.	Established 1989	DENR Central Office
71. ASEAN Task Force on Peatlands (ATFP)	The ASEAN Task Force on Peatlands was established to assist the Committee (COM) under the Conference of the Parties to the ASEAN Agreement on Transboundary Haze Pollution (AATHP) in monitoring and supporting the implementation of the ASEAN Peatland Management Strategy APMS 2016-2020). Its' main role is to realize the objectives of the APMS through oversight of the design and implementation as well as monitoring of the ASEAN Programme on Sustainable Management of Peatland Ecosystems (APSMPE) (2014 –2020) and other relevant programs/projects and facilitate cooperation with relevant partners, and to report the progress of the implementation of the APMS to COM of AATHP.	Established September 23, 2013	BMB

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
72. ASEAN Working Group on a Pan-ASEAN Timber Certification Initiative (AWG-PATCI)	The AWG-PATCI was created in 2002 as an ad hoc working group under the ASEAN Senior Officials on Forestry (ASOF) to explore concrete measures for regional cooperation in timber certification between ASEAN Member States. The main objective of the working group is to support ASOF and ASEAN Ministers on Agriculture and Forestry (AMAF) in decision making and implementation process by providing specific policy oriented and focused research and policy analysis including capacity building activities relevant to legality and sustainability, and trade in legal timber products.	Date established : 2002	FMB
73. ASEAN Working Group on Multilateral Environmental Agreements (AWGMEA)	The AWGMEA is concerned with regional cooperation among ASEAN Member States in promoting capacity building, sharing experiences and best practices, and acting collectively to implement the MEAs to synergize their efforts to contribute effectively in addressing global environmental issues. In 2006, two technical clusters were formed: the Atmosphere Technical Cluster and the Chemical Technical Cluster.	First meeting 17-18 May 1999	EMB
74. ASEAN Working Group on Water Resources Management (AWGWRM)	The AWGWRM was established to enhance regional cooperation on freshwater management. It aims to: (1) promote networking and engage in collaborative action towards the practical implementation of integrated water resources management; (2) promote and facilitate the exchange of relevant information, expertise, technology and know-how among water resource agencies of member countries; and (3) provide or make arrangements for relevant trainings, education and awareness-raising campaigns.	Jul-02	National Water Resources Board (NWRB)
75. ASEAN Regional Knowledge Network on Forest and Climate Change (ARKN-FCC)	The ARKN-FCC was initiated at the 11th Meeting of the ASEAN Senior Officials on Forestry (ASOF) and held its Inaugural Workshop on 30-31 October 2008. It is a venue for ASEAN Member States to share their knowledge and experiences and identify experts and research institutions in the issues of forests and climate change such as Reducing Emissions from Deforestation and Forest Degradation (REDD) in Developing Countries and Afforestation/Reforestation Clean Development Mechanism (A/R CDM).	Date established: August 1, 2008	FMB
76. ASEAN Regional Knowledge Network on Forest Law Enforcement and Governance (ARKN-FLEG)	The ASEAN Regional Knowledge Network on FLEG (ARKN-FLEG) was established during the 11th ASEAN Senior Officials on Forestry (ASOF) Meeting on 1 August 2008 in Malaysia and endorsed by the 30th AMAF meeting in October 2008. It is composed of FLEG experts from leading research institutions in ASEAN and among the ASOF as network members as well as resource persons. The aim of the ARKN-FLEG is to encourage the use of regional knowledge networks to broaden the ASEAN base of knowledge in forestry and provide support in implementing the Work Plan for Strengthening Forest Law Enforcement and Governance (FLEG) in ASEAN (2008-2015).	Established: August 1, 2008	FMB
77. ASEAN Social Forestry Network (ASFN)	The ASEAN Social Forestry Network (ASFN) is a government driven social forestry network in Southeast Asia, with the goal of strengthening ASEAN Cooperation in Social Forestry through the sharing of information and knowledge. ASFN links government forestry policy-makers directly with other network members from civil society, research organizations, academia, private sector and experts of related fields.	Aug-05	FMB
78. ASEAN Wildlife Enforcement Network (AWEN)	Launched in 2005, the ASEAN-WEN is a collaboration among the ten ASEAN member nations to facilitate inter-agency and cross-border collaboration in the fight against wildlife trafficking in Southeast Asia.	Established on December 1, 2005	BMB

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TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
79. Brunei Darussalam–Indonesia–Malaysia–Philippines - East ASEAN Growth Area (BIMP-EAGA)	The Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area (BIMP-EAGA) was formed by the four governments in March 1994 with the goal of increasing trade, investment, and tourism in the region. BIMP-EAGA comprises Palawan and Mindanao in the Philippines; the Sultanate of Brunei Darussalam; ten provinces of Kalimantan, Sulawesi, Maluku, and Irian Jaya in Indonesia; and the states of Sabah and Sarawak and the Federal Territory of Labuan in Malaysia. BIMP-EAGA aims to realize sustainable economic development in part by coordinating the management of ecosystems and common resources in Strategic Pillar 4.	Launched March 1994	DENR Central Office
BILATERAL			
80. Collaborative Research Reef Agreement on Autonomous Monitoring Structures (ARMS) Project	This collaborative research agreement with the Smithsonian Institution is intended for scientific research in biodiversity. This is part of a larger research previously initiated by Smithsonian Institution and the US National Oceanographic and Atmospheric Administration for biodiversity assessment of crypto-biota using ARMS as a standardized biodiversity monitoring tool.	Date of Validity: 2015 - 2017	BMB
81. Collaborative Project - Comparative Biogeography and Conservation of Philippine Vertebrates	At the Kansas University Biodiversity Institute about 100 scientists and graduate students study the planet's species, ecosystems and past cultures. The work they do is crucial and critical to understanding the diversity of life and for predicting the future: changes in populations, threatened species, the spread of disease and the influence of pest species.	Date of Validity: 2015 - 2020	BMB
82. Collaborative Project - Biodiversity Research, Education Outreach and Conservation Genetics of Philippine Amphibians, Reptiles and Invertebrates	The Sam Noble Oklahoma Museum of Natural History features 7 galleries, interactive displays and fossils from Oklahoma and around the world. It is one of the world's largest university-based natural history museums.	Date of Validity: 2015 - 2020	BMB
83. Memorandum Of Agreement (MOA) on Philippine Crocodile National Recovery Plan: Australasian Program	The International Union for Conservation of Nature (IUCN) Red List of Threatened Species (world's most comprehensive inventory of the global conservation status of plant and animal species) lists the <i>Crocodylus mindorensis</i> (Mindoro Crocodile) as critically endangered. The loss of this reptile's habitat due to human migration drives the <i>Crocodylus mindorensis</i> to near extinction. Also known as the Philippine freshwater crocodile, it thrives in small lakes, river tributaries and marshes, particularly in the islands of Mindoro, Northern Palawan, Masbate, Negros, Samar, Mindanao and in the Sulu archipelago.	Date of Validity: 2014 - 2019	BMB
84. MOU between Korea National Arboretum and Ecosystems Research Conservation	The mission of the Korea National Arboretum is to conserve and develop plant resources through comprehensive research and to promote the public's understanding of the forests. The Arboretum covers an area of 1,157 hectares and houses 15 specialized plant gardens, forest museum, forest zoo, a herbarium and seed bank.	Date of Validity: 2014 - 2015	Ecosystems Research and Development Bureau (ERDB)
85. MOU between the Korea Environment Corporation (KECO) and the DENR, Philippines on Cooperation in the Field of Environmental Protection and Sustainable Development	Korea Environment Corporation (KECO) aims to contribute to eco-friendly development of Korea through the effective operation of greenhouse gas reduction programs to prevent environmental pollution, improve the environment, facilitate resource recycling and respond to climate change. (Law No. 11446, The KECO Act)	Date of Validity: 2015 - 2020	EMB

PHILIPPINES INTERNATIONAL AGREEMENTS ON ENVIRONMENT AND NATURAL RESOURCES

TREATIES/AGREEMENTS	FOCUS/OBJECTIVE	DATE	FOCAL OFFICE
MULTILATERAL			
86. MOU between the Department of Environment and Natural Resources of the Republic of the Philippines and the Korea Forest Service of the Republic of Korea on Cooperation in the Field of Forestry	The Korea Forest Service has the overall responsibility for the establishment and implementation of forest policies and laws. This Memorandum of Understanding between Korea Forest Service and the Department of Energy and Natural Resources concretizes the parties' recognition of the benefits derived from closer cooperation in the field of forestry.	Date of Validity: 2012 - 2017	FMB
87. Cooperation in Management, Research and Protection of Natural Protected Areas	The agreement provides the framework for cooperation between Philippines and New Zealand in areas of mutual interest particularly with (i) management techniques for protected areas including national parks (ii) restoration of habitats and rehabilitation of endangered species (iii) protection for migrating birds including preservation of their natural habitats (iv) biological monitoring, research and survey (v) exchange of relevant staff or experts	Date of Validity: 2007 - Present	DENR Central Office
88. MOA on Co's Digital Flora of the Philippines: Cybertaxonomy to the Rescue of Conservation	Co's Digital Flora of the Philippines (CDFP) is a digital checklist of Philippine vascular plants that aims to present a continuously updated account of all native and naturalized species of vascular plants in the Philippines with diagnostic photographs for each taxon.	Date of Validity: 2012 - 2017	BMB
89. Implementation Agreement Technical Assistance on: Preparation of a National REDD+ Mechanism for Greenhouse Gas Reduction and Conservation of Biodiversity in the Philippines (National REDD+ System Philippines)	The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) has been implementing projects to promote economic, ecological and social development in the Philippines on behalf of the German Government since the 1970s. Their work in the Philippines focuses on the areas of peace and security, the environment, rural development and climate change. This Technical Assistance on the Preparation of a National REDD+ Mechanism for Greenhouse Gas Reduction and Conservation of Biodiversity in the Philippines (National REDD+ System Philippines) provided by The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) exemplify the existing solid cooperation between the Philippines and Germany in the areas of environment and climate change.	Date of Validity: 2012 - 2017	FMB
90. MOU for the cooperation in the implementation of the Sulu-Sulawesi Marine Ecoregion (SSME) Comprehensive Action Plan	This project is being implemented in three countries: Indonesia, Malaysia, Philippines. Lead executing agencies are: Indonesia's Ministry of Marine Affairs and Fisheries (MMAF); Malaysia's Ministry of Science, Technology and Innovation (MOSTI); Philippines' Department of Environment and Natural Resources (DENR). The collaboration seeks to: (i) Develop, Adopt, Implement and Monitor Climate-smart spatial development plans explicitly incorporating ecosystem-based adaptation to climate change, and (ii) Coordinate the SSME Comprehensive Action Plan and jointly implement selected bi/tri national projects on MPA and MPA networks (e.g. sustainable fisheries and livelihoods, and threatened, migratory and charismatic species)	Date of Validity: 2012 - 2017	BMB

Source: DENR - Office of the Undersecretary for Environment and International Environmental Affairs (<http://intl.denr.gov.ph/>)

APPENDIX 2.4 PHILIPPINE ENVIRONMENTAL IMPACT STATEMENT SYSTEM (PEISS)

Table A2.4.1 Policy, Laws and Regulations on EIA

Issuance	No.	Year	Title
Major Laws and Presidential Issuances	PD 1151	1977	Philippine Environmental Policy (EIS requirement for every action, project or undertaking which significantly affects environment quality)
	PD 1586	1978	Establishing an Environmental Impact Statement System (EISS) Including Other Environmental Management Related Measures and for Other Purposes
	PP 2146	1981	Proclaiming Certain Areas and Types of Projects as Environmentally Critical and Within the Scope of the EISS Established under PD 1586
	EO 291	1996	Improving the EISS
	PP 803	1996	Declaring the Construction, Development and Operation of a Golf Course as an Environmentally-Critical Project (ECP) Pursuant to PD 1586
	PAO 02-42	2002	Rationalizing the Implementation of the Philippine Environmental Impact Statement System (PEISS) and Giving Authority, In Addition to the Secretary of the Department of Environment and Natural Resources (DENR), to the Director and Regional Directors of the Environmental Management Bureau (EMB) to Grant or Deny the Issuance of Environmental Compliance Certificates (ECC)
DENR Level Issuances	AO 92-21	1992	Amending the Revised Rules and Regulations Implementing PD 1586 (EISS)
	MC 93-12	1993	Submission of the Medium-Term Forest Management Plan to the EISS and Approval of CY 1993 IAOPs
	AO 94-11	1994	Supplementing DAO 92-21 and Providing for Programmatic Compliance Procedures Within the EISS.
	AO 96-37	1996	Revising DAO 92-21 to Further Strengthen the Implementation of the EISS
	AO 97-15	1997	Strengthening the Environmental Impact Assessment (EIA) Division of the EMB
	AO 97-18	1997	Supplementing Guidelines for EIA of Forestry Projects
	AO 99-15	1999	Designating the Forest Management Bureau (FMB) as the Lead Agency in the Implementation of the EISS for Forestry Projects
	AO 99-37	1999	Implementing Rules and Regulations (IRR) governing the Environmental Revolving Fund (ERF)
	AO 00-05	2000	Revising DAO 94-11, Supplementing DAO 96-37 and Providing for Programmatic Compliance Procedures Within the EISS
	AO 00-07	2000	Provisional Guidelines for EIA of Forestry Projects
	AO 00-37	2000	Addendum to Article VIII Section 1.0 of DAO 96-37 Re: Standard Costs and Fees for Various Services of the EMB Relative to the Implementation of the PEISS
	MC 02-15	2002	Cope of Violations and Guidelines for the Imposition of Penalties for Violations under the PEISS (PD 1586)
	MC 03-21	2003	Guidelines on the Availment of the Reduction of Penalties for Projects Found Operating Without ECC in Violation of the PEISS (PD 1586)
	AO 03-30	2003	IRR for the PEISS
	MC 04-14	2004	Prescribing the Guidelines for the Review of EIS and Issuance of ECCs to the Sub-projects under the Laguna de Bay Institutional Strengthening and Community Participation (LISCOP) Project
	AO 06-06	2006	Adoption of Initial Environmental Examination (IEE) Checklist and IEE Report on the ECC Processing of Categorized Final Disposal Facilities (Sanitary Landfill)
	MC 07-08	2007	Simplifying the Requirements for ECC or Certificate of Non-Coverage (CNC) Applications
	MC 08-08	2008	Clarification of the Role of Local Government Units (LGUs) in the PEISS in Relation to MC 2007-08
	AO 09-15	2009	Implementation of EIS-Information System, CNC Automated Processing System, GIS Maps of Environmentally Critical Areas (ECA)
	MC 10-14	2010	Standardization of Requirements and Enhancement of Public Participation in the Streamlined Implementation of the PEISS
AO 15-02	2015	Harmonization of the Implementation of the PEISS and the Philippine Mining Act of 1995 in Relation to Mining Projects	
EMB Issuances	MC 02-002	2002	Guidelines for the Implementation of AO 99-37 Re: ERF
	MC 02-004	2002	Telecommunication Antennas, Mobile Phone Cell Sites and Similar Facilities Projects that are Not Covered by the PEISS
	MC 03-004	2003	Amendment to the Limits on the Number of Heads of Piggery Projects that would Require an ECC
	MC 03-021	2003	Guidelines on the Availment of the Reduction of Penalties for Projects Found Operating Without ECC in Violation of the PEISS
	MC 04-001	2004	Non-requirement of barangay and/or local government unit endorsements and locational clearances for CNC applications
	MC 04-002	2004	CNC Barangay Micro Business Enterprises (BMBEs)

Issuance	No.	Year	Title
	MC 04-004	2004	IEE Checklist for Economic Zone Enterprise
	MC 05-001	2005	Procedural Manual for DAO 03-30
	MC 06-005	2006	Clarificatory guidelines in the implementation of DAO 03-30, IRR for the PEISS
	MC 06-003	2006	IEE Checklist for Wind Energy Projects
	MC 07-001	2007	EIA Review Manual
	MC 07-002	2007	Revised Procedural Manual for DAO 03-30
	MC 10-002	2010	Clarification to DMC 10-14 and Other EIS System Policy Issuances
	MC 10-004	2010	Guidelines for Use of Screening and ECA Map Systems
	MC 11-002	2011	Renewable Energy Projects to be Covered by the EIA System
	MC 11-005	2011	Incorporating Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA) concerns in the PEISS
	MC 13-003	2013	Establishment of Registry System for EIA Practitioners
	MC 14-004	2014	Declaring Class 1 and 2 caves as ECAs
	MC 14-005	2014	Guidelines for Coverage Screening and Standardized Requirements under the PEISS amending relevant portions of MC 07-002
	MC 15-003	2015	Implementation of Online Processing of CNC Applications for Category D Projects under the PEISS
	MC 15-008	2015	Implementation of Online Processing of ECC Applications for Category B projects requiring IEE Checklist Report Forms under the PEISS
	MC 15-009	2015	Processing and Issuance of ECC for Category B Projects
	MC 16-001	2016	Requiring online submission of Compliance Monitoring Reports (CMR) under the PEISS
	MC 16-006	2016	ECC Applicants for Mining Projects Including Sand and Gravel Quarry Projects
	MC 19-003	2019	Updated Guidelines in the Processing and Issuance of ECC for Category B Projects

PD-Presidential Decree; PP-Presidential Proclamation; EO-Executive Order; PAO-Presidential Administrative Order; AO-Administrative Order; MC-Memorandum Circular

Sources: - DENR EMB Region XI. "Overview of the Environmental Impact Assessment Process (2013)" DENR-EMB.
- "The Philippine EIS System: In the Womb of Time, First National Convention of the PEISS (2013)".
- DENR Website: <http://www.denr.gov.ph/>, DENR-EMB Website: <http://emb.gov.ph/>
- DENR EMB Region XI (Davao Regional Office)

1) Environmental Certificate (ECC and CNC)

1) Environmental Compliance Certificate (ECC)

Section 4 of PD 1586 provides that "no person, partnership or corporation shall undertake or operate any such declared environmentally critical project (ECP) or environmentally critical area (ECA) without first securing an Environmental Compliance Certificate (ECC) issued by the President or his duly authorized representative". Namely, PEISS requires any project and undertaking with potential negative impacts on the environment, to obtain an ECC from DENR as a prerequisite for the construction and implementation.

2) Certificate of Non-Coverage (CNC)

A Certificate of Non-Coverage (CNC) certifies that, based on the submitted Project Description, the project is not covered by the EIS System and is not required to secure an ECC. Namely CNC is granted by DENR for all projects without significant impacts on the environment.

2) Environmentally Critical Project/ Environmentally Critical Area (ECP/ECA)

Table A2.4.2 shows a list of the Environmentally Critical Project (ECP) types and Environmentally Critical Areas (ECAs) categories which have been declared through the Presidential Proclamation (PP) 2146 (1981) and 803 (1996).

Table A2.4.2 ECP Types and ECA Categories

ECP/ECA	As declared by	Description	
ECP Types	PP2146 (1981)	1.	Heavy Industries – Non-ferrous Metal Industries, Iron and Steel Mills, Petroleum and Petro-chemical Industries including Oil and Gas, Smelting Plants
		2.	Resource Extractive Industries – Major Mining and Quarrying Projects, Forestry Projects (logging, major wood processing projects, introduction of fauna (exotic animals) in public and private forests, forest occupancy, extraction of mangrove products, grazing), Fishery Projects (dikes for/ and fishpond development projects)
		3.	Infrastructure Projects – Major Dams, Major Power Plants (fossil-fueled, nuclear fueled, hydroelectric or geothermal), Major Reclamation Projects, Major Roads and Bridges
	PP803 (1996)	4.	All golf course projects
ECA Categories	PP2146 (1981)	1.	All areas declared by law as national parks, watershed reserves, wildlife preserves, sanctuaries
		2.	Areas set aside as aesthetic potential tourist spots
		3.	Areas which constitute the habitat of any endangered or threatened species of Philippine wildlife (flora and fauna)
		4.	Areas of unique historic, archaeological, or scientific interests
		5.	Areas which are traditionally occupied by cultural communities or tribes
		6.	Areas frequently visited and/or hard-hit by natural calamities (geologic hazards, floods, typhoons, volcanic activity, etc.)
		7.	Areas with critical slopes
		8.	Areas classified as prime agricultural lands
		9.	Recharged areas of aquifers
		10.	Water bodies characterized by one or any combination of the following conditions: tapped for domestic purposes; within the controlled and/or protected areas declared by appropriate authorities; which support wildlife and fishery activities
		11.	Mangrove areas characterized by one or any combination of the following conditions: with primary pristine and dense young growth; adjoining mouth of major river systems; near or adjacent to traditional productive fry or fishing grounds; areas which act as natural buffers against shore erosion, strong winds and storm floods; areas on which people are dependent for their livelihood.
		12.	Coral reefs characterized by one or any combination of the following conditions: With 50% and above live coralline cover; Spawning and nursery grounds for fish; Act as natural breakwater of coastline

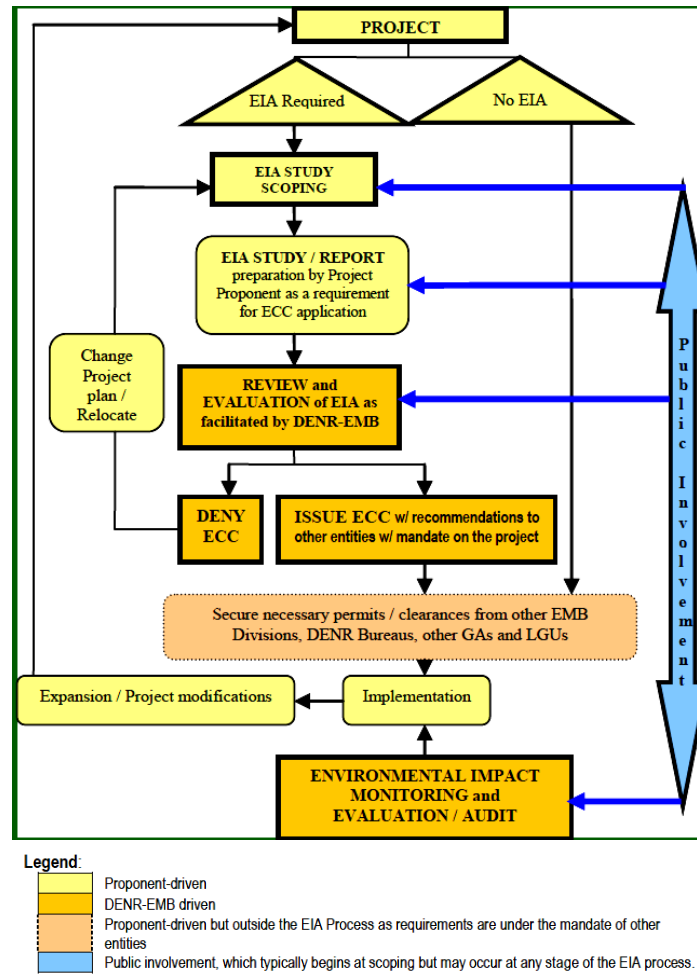
ECP: Environmentally Critical Project, ECA: Environmentally Critical Area, PP: Presidential Proclamation

Source: DAO 03-30, Aug. 2007, EMB/DENR

3) EIA Process

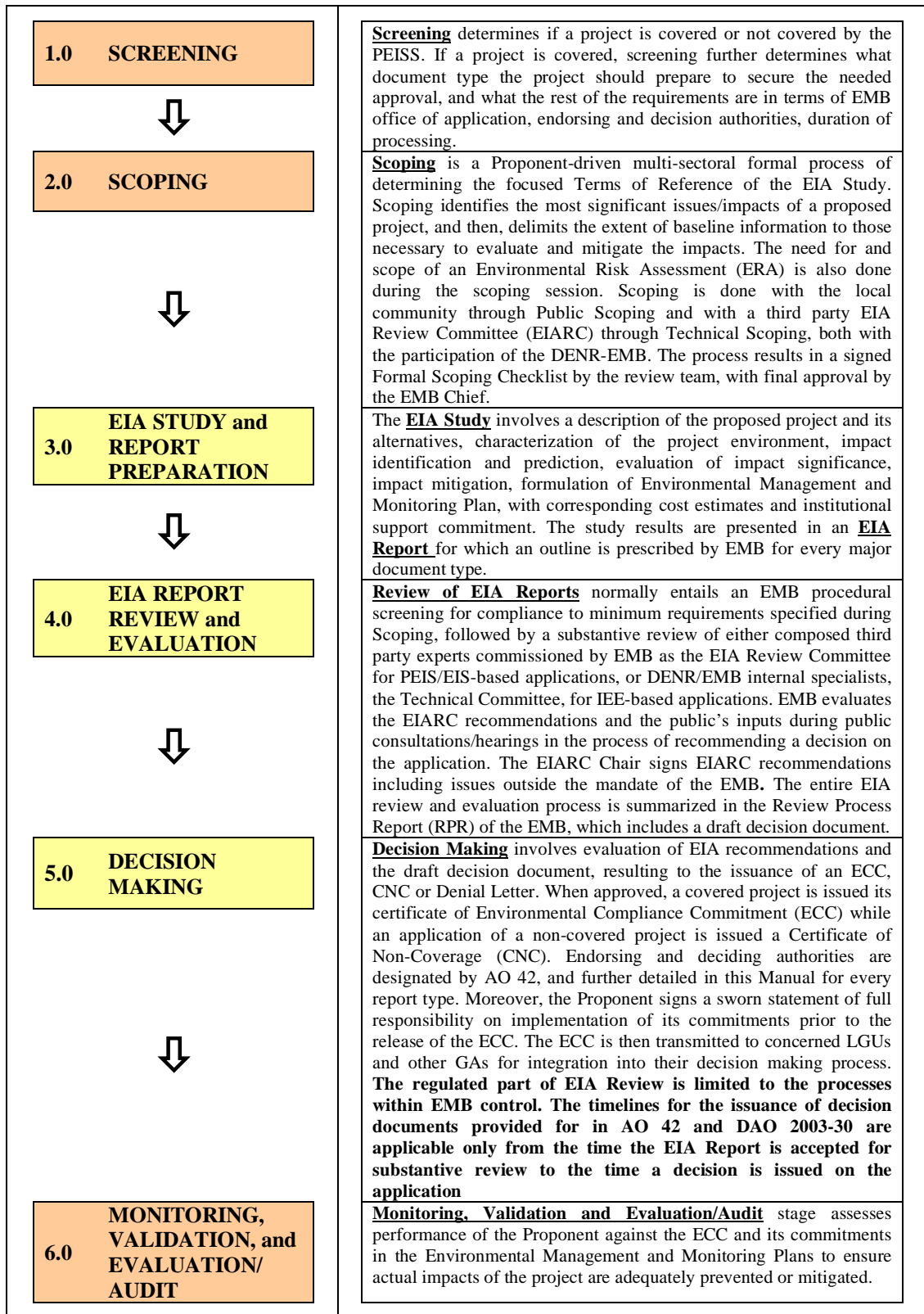
According to the Revised Procedural Manual for DAO03-30, the EIA process is summarized as follows.

- Application into the EIS System requires compliance with certain stages of the EIA Process.
- Requirements per EIA stage vary depending on the project group/type being applied for.
- A summary flowchart of the complete process is presented in Figure A.1 and a descriptive overview is provided in Figure A2.4.2.
- The Philippine EIA Process has six (6) sequential stages – Screening, Scoping, EIA Study and Report Preparation, EIA Review and Evaluation, Decision Making, and Post-ECC Monitoring, Validation and Evaluation/Audit stage.
- Stages 1, 2, 3 and 6a are all Proponent-driven while Stages 4, 5 and 6b are DENR-EMB driven stages.
- The first five (5) stages are those involved when a Proponent applies for ECC or CNC.



Source: Revised Procedural Manual for DAO03-30 (Aug. 2007) EMB/DENR

Figure A2.4.1 Summary Flowchart of the EIA Process



Source: Revised Procedural Manual for DAO03-30 (Aug. 2007, 2nd Printing: Jan. 2008) EMB/DENR

Figure A2.4.2 Overview of Stages of the EIA Process

4) Screening for Coverage by Project Categorization

Section 1 of EMB Memorandum Circular No. 2014-005 stipulates that in order to determine coverage under PEISS, proposed projects or undertakings shall be screened according to the four categories as shown in **Table A2.4.3** which are summarized in Figure A2.4.3. (As regards ECP and ECA, see **Table A2.4.2**)

Table A2.4.3 Project Category in PEISS

Category	Description
A	<ul style="list-style-type: none"> Projects or undertakings which are classified as Environmentally Critical Projects (ECPs) under Presidential Proclamation No. 2146 (1981), Proclamation No. 803 (1996), and any other projects that may later be declared as such by the President of the Philippines. Proponents of these projects implemented from 1982 onwards are required to secure an ECC.
B	<ul style="list-style-type: none"> Projects or undertakings which are not classified as ECP under Category A, but which are likewise deemed to significantly affect the quality of the environment by virtue of being located in Environmentally Critical Area (ECA) as declared under Proclamation 2146 and according to the parameters set forth in the attached guidelines. Proponents of these projects implemented from 1982 onwards are required to secure an ECC.
C	<ul style="list-style-type: none"> Projects or undertakings not falling under Category A or B which are intended to directly enhance the quality of the environment or directly address existing environmental problems.
D	<ul style="list-style-type: none"> Projects or undertakings that are deemed unlikely to cause significant adverse impact on the quality of the environment according to the parameters set forth in the Screening Guidelines. These projects are not covered by the Philippine EIS system and are not required to secure an ECC. However, such non-coverage shall be construed as an exemption from compliance with other environmental laws and government permitting requirements.

Source: EMB Memorandum Circular No. 2014-005



Source: CNC Online Application/Screening Guidelines LGU Orientation on PEISS March 12, 2015 EMB/DENR

Figure A2.4.3 Categorization of Projects

5) Standardized Requirements

With regard to requirements for ECC/CNC, Section 2 of EMB Memorandum Circular No. 2014-005 stipulates as follows.

- All ECC applications shall be accompanied by an EIA report in the form of an Environmental Impact Statement (EIS), an Initial Environmental Examination (IEE) Checklist Report, an Environmental Performance Report and Management Plan (EPRMP), Programmatic EIA or Programmatic EIS.
- CNC applications shall be accompanied by a pro-forma project description as prescribed in Annex C of the attached guidelines (Revised Guidelines for Coverage Screening and Standardized Requirements, MC005 July 2014 EMB DENR).

- Table A2.4.4 is a summary of documentary requirements for proponents as well as the processing and deciding authority based on the category, type and status of implementation of the project.

Table A2.4.4 Documents for ECC/CNC and Office to Process and Decide

Category		Applied to	Documents required for ECC/CNC Application	Office to process and decide
A. ECPs	A-1. New	Co-located projects	Programmatic EIS	EMB Central Office
		Single Project	EIS	
	A-2. Existing and to be expanded, modified and/or rehabilitated	Co-located projects	Programmatic EPRMP	
		Single Project	EPRMP in case monitoring data are available	
			EIS if no monitoring data are available	
	A-3. Operating without ECC			
B. Non-ECPs	B-1. New	Co-located projects	Programmatic EIS	EMB Regional Office in the region where the proposed project is located
		Single Project	EIS IEE Checklist	
	B-2. Existing and to be expanded, modified and/or rehabilitated	Single Project	EPRMP EPRMP Checklist	
	B-3. Operating without ECC	Co-located projects	PEPRMP (in case Programmatic monitoring data are available) *	
C. Environmental Enhancement or Direct Mitigation	-	Co-located or Single projects	Project Description (Parts I and II) (to confirm non-coverage of further classify as either Category A or B)	
D. Not Covered	-	-	Project Description (part I only) Project prior to 1982- Project Description (Part I only) and Proof of Project Implementation prior to 1982 without expansion/ alteration/ modification (if applying for CNC)	

*: Optional, subject to laws, rules and regulations

ECP: Environmentally Critical Project, ECA: Environmentally Critical Area, ECC: Environmental Compliance Certificate, CNC: Certificate of Non-Coverage, EIS: Environmental Impact Statement, EPRMP: Environmental Performance Report and Management Plan, PEMPRMP: Programmatic Environmental Performance Report and Management Plan

Source: EMB Memorandum Circular No. 2014-005 (MD005 2014)

6) Review of ECC Application

DENR Memorandum of Circular (DMC14, 2010) stipulates that guidelines shall be applied for reviews of ECC application are as follows

- Only one (1) request for additional information/clarification on the substance of the EIA report may be required from the project proponent. The project proponent shall respond within five (5) days, otherwise, the EMB/DENR shall decide on the basis of submitted information.
- The decision on the ECC application shall be issued within the following timeframes (Table A2.4.5) after the official acceptance of application documents and payment of the required processing and review fees:
- ECCs issued for all ECPs shall include a condition for the establishment of a greening program.

Table A2.4.5 ECC Approval Authority and Maximum Timeframe

Type of ECC Application		Approving Authority	Maximum Processing Timeframe
ECP	Co-located applying for Programmatic ECC	DENR Secretary/ EMB Director	40 working days
	Mining Projects		
	Forestry Projects		
Non-ECP	EIS or PEPRMP-based	EMB Regional Director	20 working days
	IEE, EPEMP-based		

ECP: Environmentally Critical Project, ECC: Environmental Compliance Certificate, EIS: Environmental Impact Statement, PEMPRMP: Programmatic Environmental Performance Report and Management Plan, IEE: Initial Environmental Examination, EPEMP: Environmental Performance Report and Management Plan

Source: DENR Memorandum Circular (DMC14, 2010)

In regard to Table A2.4.5, according to EMB/DENR, those timeframes may be subject to modification (longer time) depending on characteristics and/or magnitude of impacts of projects by referring to (repealed) Administrative Order No. 42 (2002).

7) Coverage for Sewerage System Projects under PEISS

Development projects in the Philippines are subject to screening in the EIA process of PEISS. A matrix guideline for determining the category in which the projects fall is prepared and attached as “Annex A Project Thresholds for Coverage Screening and Categorization” in the “Revised Guidelines for Coverage Screening and Standardized Requirements under the PEISS, EMB MC 005 July 2014, Environmental Impact Assessment and Management Division (EIAMD), EMB/DENR”.

In accordance with the Annex A, sewerage system projects are subject to “3.8.5 Domestic wastewater treatment facility” under “3.8 Waste Management Projects” in “3. Infrastructure Projects” as shown in Table A2.4.6.

Table A2.4.6 Coverage for Sewerage System Projects under PEISS

Projects/Description	Covered (Required to secure ECC)			Not covered (may secure CNC)	Project size parameters/ Remarks
	Category A: ECP	Category B: Non-ECP		Category D	
	EIS	EIS	IEE Checklist	PD (Part I only)	
3. INFRASTRUCTURE PROJECTS					
3.8 Waste Management Projects					
3.8.5 Domestic wastewater treatment facility (including septage treatment facility)	None	$\geq 5,000\text{m}^3$	$>30\text{m}^3$ but $<5,000\text{m}^3$	$\leq 30\text{m}^3$	Based on system capacity

Source: Excerpt from “Annex A Project Thresholds for Coverage Screening and Categorization” in “Revised Guidelines for Coverage Screening and Standardized Requirements under the PEISS, EMB MC 005 July 2014, Environmental Impact Assessment and Management Division (EIAMD), EMB/DENR

Namely sewerage system projects are not fall under “Category A” as ECP, but fall under “Category B or C” as Non-ECP or “Category D” as Not Covered (may secure CNC) depending on size and capacity of the projects.

8) Online Application for CNC/ECC/CMR

As a way of improving the Environmental Impact Statement (EIS) System, DENR started introducing online application systems of CNCs and ECCs in 2015. In 2016, they followed it through with the implementation of online Compliance Monitoring Report (CMR) submissions.

1) CNC Online

Based on EMB Memorandum Circular 2015-003 (MC003, 2015), a CNC online application system through the EMB homepage on the web site (CNC Online; <http://119.92.161.13/projectchecker/onlineapplication.aspx>) is applied to all Category D projects (involving not more than one hectare (ha) land development and have not been issued ECC).

2) ECC Online

Based on the EMB Memorandum Circular 19-003 (MC003, 2019), an ECC online application system through the EMB homepage on the web site (ECC Online; <https://119.92.161.21/live/>) is applied to all Category B projects. Table A2.4.7 summarizes the procedure and attachments for the ECC Online.

Table A2.4.7 ECC Online Procedure and Necessary Attachments

Procedure	ECC Online Attachments	Other Required Attachments (for sewerage projects)
<ol style="list-style-type: none"> 1. Go to emb.gov.ph 2. Click ECC online 3. Sign Up to create account 4. Complete Steps 1-6 to be able to proceed in Step 7 5. In Step 7 Upload all scanned (pdf file) requirements <p>Note.' You may Download and Print User's Guide for Procedures</p>	<p>Downloadable Forms (Step 6)</p> <ol style="list-style-type: none"> 1. Project Description 2. Duly notarized accountability statement of proponent 3. IEE Checklist Sworn Statement 4. Environmental Impact and Management Plan 5. Abandonment / Decommissioning / Rehabilitation Information 6. Duly accomplished project environmental monitoring and audit prioritization scheme (PEMAPS) questionnaire 7. Project Components 8. Order of Payment/Bank Receipt- P 5,070-processing fee & pay @ any Landbank Branches 	<ol style="list-style-type: none"> 1. Geotagged photos of project site (taken for last 30 days) (e.g. Geocam Android phone Application) 2. Topographic Map of impact/affected areas (at least 1km from the project boundaries) (e.g. Google Earth Based Map) 3. Certification from LGU on the compatibility of proposed project with existing land use plan 4. Schematic diagram of wastewater treatment facility 5. Schematic diagram of Air Pollution Control Facility 6. Organizational Chart in-charge on environmental concerns 7. Proof of authority over the project site (land title, lease contract, deed of absolute sale, etc.) 8. Affidavit of No Complaint 9. Site Development and/or Vicinity map signed by registered professionals 10. Project/Plant Layout 11. SEC/DTI certificates, if applicable 12. Authorization Letter with the Special Power of Attorney, if applicable

Source: DENR EMB Region XI (Davao Regional Office)

3) CMR Online

As issued by EMB through Memorandum Circular 2016-001, CMRs can now be submitted online for Environmentally-Critical Projects (ECPs) with ECCs issued by the EMB-Central Office.

The first Compliance Monitoring Report (CMR) submission covering the 1st and 2nd quarter must be done online by July, while the second CMR submission covering the 3rd and 4th quarter must be done online on January of the following year.

APPENDIX 2.5 LAND ACQUISITION AND RESETTLEMENT SYSTEM OF THE PHILIPPINES

Relevant policies and laws on land acquisition and resettlement in the Philippines are summarized in Table A2.5.1.

Table A2.5.1 Principal Policies and Laws on Land Acquisition and Resettlement

Statute	Brief Overview
Constitution of the Philippines (1987)	<ul style="list-style-type: none"> • Private property shall not be taken for public use without just compensation. (Article III, Section 9) • Free access to the courts and quasi-judicial bodies and adequate legal assistance shall not be denied to any person by reason of poverty. (Article III, Section 11) • The State shall, by law, and for the common good, undertake, in cooperation with the private sector, a continuing program of urban land reform and housing which will make available at affordable cost, decent housing and basic services to under-privileged and homeless citizens in urban centers and resettlement areas. (Article VIII, Section 9) • No resettlement of urban or rural dwellers shall be undertaken without adequate consultation with them and the communities where they are to be relocated. (Article VIII, Section 10). • The State...shall protect the rights of indigenous cultural communities to their ancestral lands to ensure their economic, social, and cultural well-being. By an act of Congress, customary laws governing property rights or relations can be applied in determining the ownership and extent of ancestral domains. (Article XII, Section 5) • Urban or rural poor dwellers shall not be evicted nor their dwellings demolished, except in accordance with the law and in a just humane manner. No resettlement of urban or rural dwellers shall be undertaken without adequate consultation with them and the communities where they are to be relocated. (Article XIII, Section 10)
RA 7160 (Local Government Code) (1991)	<ul style="list-style-type: none"> • An LGU may exercise the power of eminent domain for public use, or purpose or welfare for the benefit of the poor and the landless, upon payment of just compensation, pursuant to the provisions of the Constitution and pertinent laws • Provided, however, that the power of eminent domain may not be exercised unless a valid and definite offer has been previously made to the owner, and such offer was not accepted • Provided, further, that the LGU may immediately take possession of the property upon the filing of the expropriation proceedings and upon making a deposit with the proper court of at least fifteen percent (15%) of the fair market value of the property based on the current tax declaration of the property to be expropriated • Provided, finally, that, the amount to be paid for the expropriated property shall be determined by the proper court, based on the fair market value at the time of the taking of the property.
RA 7279 (Urban Development and Housing Act) (1992)	<ul style="list-style-type: none"> • The policy of the State to undertake, in cooperation with the private sector, a comprehensive and continuing Urban Development and Housing Program which shall be; <ul style="list-style-type: none"> - Uplift the conditions of the underprivileged and homeless citizens in urban areas and in resettlement areas by making available to them decent housing at affordable cost, basic services, and employment opportunities - Provide for the rational use and development of urban land - Adopt workable policies to regulate and direct urban growth and expansion towards a dispersed urban net and more balanced urban-rural interdependence - Provide for an equitable land tenure system that shall guarantee security of tenure to Program beneficiaries but shall respect the rights of small property owners and ensure the payment of just compensation - Encourage more effective people's participation in the urban development process - Improve the capability of local government units in undertaking urban development and housing programs and projects.
RA 8974 (An Act to Facilitate the Acquisition of ROW, Site or Location for National Government Infrastructure Projects) (2000)	<ul style="list-style-type: none"> • IRR of RA 8974 provides the different bases for land valuation for the modes of acquisition: negotiated sale and expropriation. • The IRR of this law state that the Implementing Agency shall negotiate with the owner for the purchase of the property by offering first the current zonal value issued by the Bureau of Internal Revenue for the area where the private property is located. • The law also states that valuation of the improvements and/or structures on the land to be acquired shall be based on the replacement cost which is defined as the amount necessary to replace the structure or improvement based on the current market prices for materials, equipment, labor, contractor's profit and overhead, and all other attendant costs associated with the acquisition

Statute	Brief Overview
IPRA (1997)	<ul style="list-style-type: none"> IPRA sets conditions, requirements, and safeguards for plans, programs, and projects affecting Indigenous Peoples. It spells out and protects the rights of Indigenous Peoples.

RA: Republic Act, IRR: Implementing Rules and Regulations, LGU: Local Government Unit, IPRA: Indigenous Peoples' Rights Act

Source: Constitution, RA 7160, RA 7279, Land Acquisition, Resettlement, Rehabilitation and Indigenous Peoples' Policy (LARRIPP), Department of Public Works and Highways (DPWH), Republic of the Philippines Revised March 23, 2007

1) Other relevant Laws and Regulations

The Land Acquisition, Resettlement, Rehabilitation and Indigenous Peoples' Policy (LARRIPP) of DPWH summarizes other relevant laws and regulations on land acquisition and resettlement as shown in Table A2.5.2.

Table A2.5.2 Other Laws and Regulations on Land Acquisition and Resettlement

Laws and Regulations	Brief Overview
CA 141 Section 112 or Public Land Act	A twenty (20) meter strip of land reserved by the government for public use, with damages being paid for improvements only.
PD 635 amended Section 112 of CA 141	Increasing the width of the reserved strip of twenty (20) meters to sixty (60) meters.
EO 113 (1995) and EO 621(1980)	<ol style="list-style-type: none"> National Roads shall have an ROW width of at least 20 meters in rural areas, which may be reduced to 15 meters in highly urbanized areas; ROW shall be at least 60 meters in unpatented public land; and ROW shall be at least 120 meters through natural forested areas of aesthetic or scientific value.
EO 1035	<ol style="list-style-type: none"> Financial assistance to displaced tenants, indigenous peoples, and settlers equivalent to the average annual gross harvest for the last 3 years and not less that PhP15, 000 per ha. Disturbance compensation to agricultural lessees equivalent to 5 times the average gross harvest during the last 5 years. Compensation for improvements on land acquired under Commonwealth Act 141. Government has the power to expropriate in case agreement is not reached.
MO 65, Series of 1983	<ol style="list-style-type: none"> Easement of ROW where the owner is paid the land value for the Government to use the land but the owner still retains ownership over the land. Quit claim where the Government has the right to acquire a 20 to 60 m width of the land acquired through CA 141. Only improvements will be compensated.
RA 6389 of 1971	Provides for disturbance compensation to agricultural lessees equivalent to 5 times the average gross harvest in the last 5 years.
Article 141, Civil Code	Real actions over immovable prescribe after thirty (30) years. This provision is without prejudice to what is established for the acquisition of ownership and other real rights by prescription (1963).
NCIP Administrative Order No. 1, Series of 2006 or the Free, Prior and Informed Consent Guidelines of 2006	The Free and Prior Informed Consent (FPIC) Guidelines of 2006 spells out the procedure for obtaining the Free and Prior Informed Consent for affected communities. It details the process for conducting Field Based Investigation (FBI) and obtaining the Certification Precondition from the NCIP attesting that the applicant has complied with the requirements for securing the affected ICC/IP's FPIC. It also provides the procedure for validating projects solicited/initiated by Indigenous Peoples.

CA: Commonwealth Act, PD: Presidential Decree, EO: Executive Oder, MO: Memorandum Order, NCIP: National Commission on Indigenous Peoples, ROW: Right of Way

Source: Land Acquisition, Resettlement, Rehabilitation and Indigenous Peoples' Policy (LARRIPP) Department of Public Works and Highways (DPWH) Republic of the Philippines Revised March 23, 2007

APPENDIX 2.6_ GUIDELINES ON ENVIRONMENTAL AND SOCIAL CONSIDERATIONS

(1) Objectives and Project Categories of the JICA Guidelines

The JICA Guidelines state objectives and project categories as follows.

1) Project Category by the JICA Guidelines

- To encourage Project proponents etc. to have appropriate consideration for environmental and social impacts
- To ensure that JICA's support for and examination of environmental and social considerations are conducted accordingly.

In addition, in order to facilitate the achievement of these objectives the JICA Guidelines outlines;

- JICA's responsibilities and procedures along with its requirements for project proponents etc.
- In doing so, JICA endeavors to ensure transparency, predictability, and accountability in its support for and examination of environmental and social considerations.

2) Project Category by the JICA Guidelines

Requirement of the JICA Guidelines are dependent on "project categorization" of the Project, which is stipulated in the JICA Guidelines as follows.

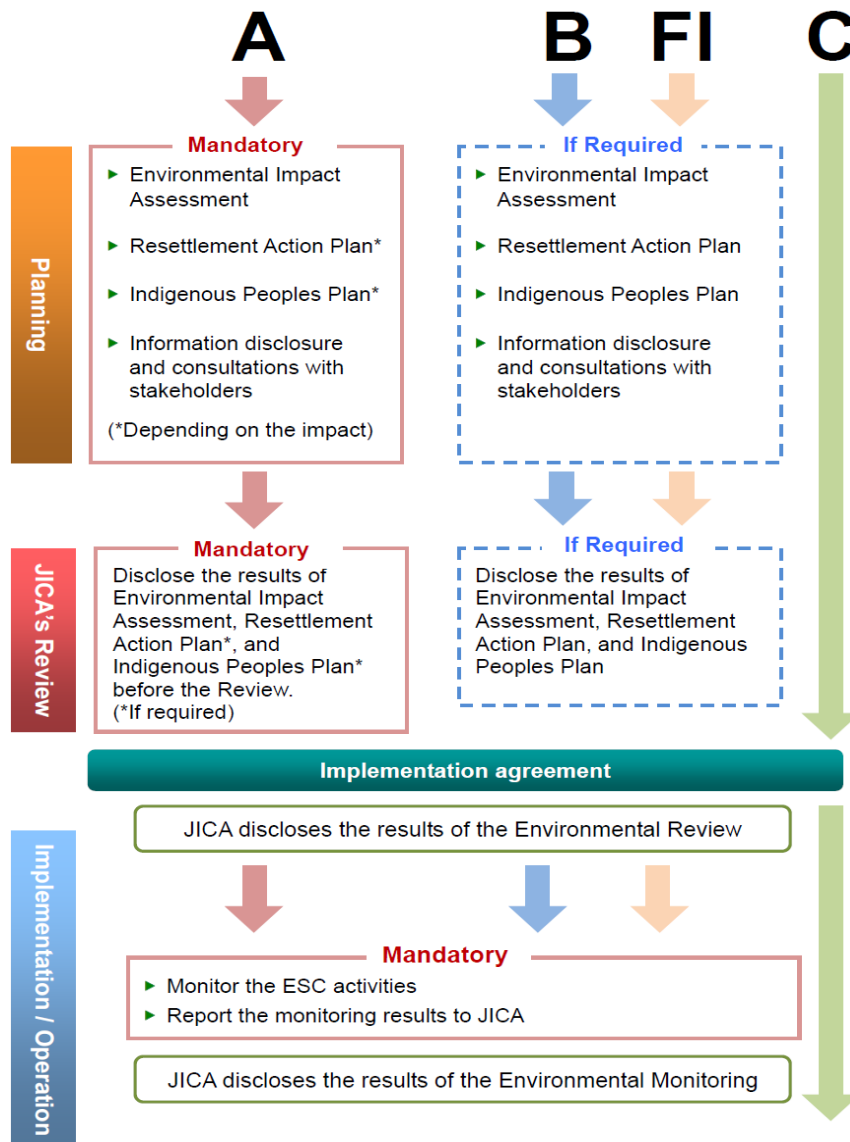
- According to the extent of environmental and social impacts, taking into account an outline of project, scale, site condition, etc., the JICA Guidelines classifies projects into four categories as shown in **Table A2.6.1**.
- When necessary, JICA can change a category even after screening which might occur such as when a new significant impact has come to light as a result of the cooperation project process, or in other specific situations.

Table A2.6.1 Project Category of the JICA Guidelines

Category	Description
A	<ul style="list-style-type: none"> • Proposed projects are classified as Category A if they are likely to have significant adverse impacts on the environment and society. • Projects with complicated or unprecedented impacts that are difficult to assess, or projects with a wide range of impacts or irreversible impacts, are also classified as Category A. • These impacts may affect an area broader than the sites or facilities subject to physical construction. • Category A, in principle, includes projects in sensitive sectors, projects that have characteristics that are liable to cause adverse environmental impacts, and projects located in or near sensitive areas.
B	<ul style="list-style-type: none"> • Proposed projects are classified as Category B if their potential adverse impacts on the environment and society are less adverse than those of Category A projects. • Generally, they are site-specific; few if any are irreversible; and in most cases, normal mitigation measures can be designed more readily.
C	<ul style="list-style-type: none"> • Proposed projects are classified as Category C if they are likely to have minimal or little adverse impact on the environment and society.
FI	<ul style="list-style-type: none"> • Proposed projects are classified as Category FI if they satisfy all of the following requirements: <ul style="list-style-type: none"> - JICA's funding of projects is provided to a financial intermediary or executing agency; - The selection and appraisal of the sub-projects is substantially undertaken by such an institution only after JICA's approval of the funding, so that the sub-projects cannot be specified prior to JICA's approval of funding (or project appraisal); and, - Those sub-projects are expected to have a potential impact on the environment.

Source: JICA Guidelines for Environmental and Social Considerations (April 2010)

(2) Examples of the JICA Environmental and Social Considerations Procedures by Category



Source: The Basics of Environmental and Social Considerations, Introduction to the JICA Guidelines for Environmental and Social Considerations, August 2013, JICA

Figure A2.6.1 JICA Environmental and Social Considerations Procedures by Category (Example)

(3) DBP Policy and Requirements on Environment

1) Environmental Policy

Table A2.6.2 summaries policies on environment of DBP.

Table A2.6.2 Environmental Policy of DBP

Policies	Description
Environmental Initiatives	<ul style="list-style-type: none"> • DBP vigorously pursues its commitment to environmental protection and sustainable development. • DBP is one of the first Philippine banks to integrate environmental considerations in all aspects of its operations. • DBP provides financing as well as technical assistance to projects that are environmentally sound. • The Bank also plays an active role in encouraging clients, and its participating financial institutions under its wholesale lending program, to include environmental considerations in their businesses and thrusts.
Environmental Policy Statement	<ul style="list-style-type: none"> • The DBP, in its developmental mission and initiatives, is committed to environmental protection and sustainable development and shall integrate and implement environmental considerations into all aspects of its operations and services, asset management, and business decisions. • In pursuit of the policy statement, DBP commits to: <ul style="list-style-type: none"> - Develop, implement and continually improve an Environmental Management System; - Encourage other institutions to pursue environmental protection and pollution prevention through the Bank's lending and technical assistance programs, and pursue environmental management practices, including environmental due diligence inquiry in risk assessment and management; - Comply with relevant environmental laws, regulations and agreements to which DBP subscribes; - Set and review environmental objectives and targets along identified significant environmental aspects; and - Ensure that all employees at all levels are made aware of and are actively involved in the Bank's Environmental Policy and programs through appropriate training and information

Source: DBP (<https://www.devbnkphl.com/devbanking.php?cat=5&d671c2e74ba54512d937720f508dd1f6>)

2) Environmental Requirements for Sanitation Sector

Table A2.6.3 shows DBP's environmental requirements for sanitation sector.

Table A2.6.3 DBP's Environmental Requirements for Sanitation Sector

Financing Program	Environmental Requirements
Sanitation Sector	<ol style="list-style-type: none"> 1. For basic sanitation facilities – project proposal or program of works indicating among others, the project description and implementation schedule of the project components. 2. For Sewerage and Septage Management Project: Full blown feasibility study to include the following information: <ol style="list-style-type: none"> a. Profile of Service Provider b. Proposed Project c. Alternative schemes of development: comparison of alternatives and cost, economic analysis d. Recommendations – to include detailed cost estimates 3. ECC or CNC (EMB/DENR): certifies that the recipient has complied with all the requirements of PEISS and has committed to implement its approved Environmental Management Plan 4. Discharge Permit issued by EMB/DENR or LLDA 5. Environmental Sanitation Clearance issued by the Department of Health 6. For Water Districts - Local Water Utilities Administration Waiver on the proposed project 7. Provincial/City/Municipal Ordinance on Sanitation <p>The requirements under items 3 to 6 are not applicable to basic sanitation facilities, i.e. toilets.</p>

Source: DBP (<https://www.devbnkphl.com/devbanking.php?cat=212>)

(4) LBP Policy and Requirements on Environment

1) Environmental Policy

Table A2.6.4 summaries the Integrated Quality and Environmental Policy of LBP.

Table A2.6.4 Integrated Quality and Environmental Policy of LBP

Policies	Description
Social Mission	<ul style="list-style-type: none"> As a universal bank with a social mission, LBP endeavors to deliver quality financial and support services while promoting sustainable development.
Toward the Social Mission	<ul style="list-style-type: none"> To promote a culture of service excellence, professionalism, and social responsibility across all ranks, from the Board, Management, officers and staff; To ensure that services are effective, at par with local and international standards, and responsive to the changing needs of clients and stakeholders; To comply with applicable laws, regulations and covenants that it subscribes to and incorporate best practices in all its operations; and To continuously improve its integrated management system.
Quality and Environmental Sustainability	<ul style="list-style-type: none"> LBP believes that giving premium to quality and environmental sustainability is one of the best ways to show how much LBP values our relationship with our clients, partners and all our stakeholders.

Source: LBP (<https://www.landbank.com/quality-environmental-policy>)

2) LBP's CSR Statement

Principals of the LBP's CSR Statement are summarized below.

- LBP's CSR embodies its commitment to the institution's social mandate with programs and activities that contribute to a better, safer and more progressive society, redounding to an improved quality of life for people of the present and future generations.
- As a major catalyst in countryside development, LDB operations are anchored on the five (5) Sustainability Cornerstones of LBP - (1) Enterprise Development, (2) Community Development, (3) Environmental Protection and Management, (4) Customer Service and (5) Employee Development - on which LBP continue to build and align our sustainability efforts that uphold the principles of responsible corporate citizenship.

As shown in Table A2.6.5, these principles are aligned with the "Sustainability Reporting Guidelines and Financial Services Sector Supplement" of the Global Reporting Initiative (GRI).

Table A2.6.5 Individual Policies of the LBP's CSR

Item	Description
Engaging Stakeholders in Environmental Responsibility	<ul style="list-style-type: none"> LBP commits to innovative products and services that allow the Bank and its clients to fulfil its sustainability and environmental protection goals in business lines, lower its carbon footprint, and promote ecological enhancement. LBP's Corporate Environmental Policy reiterates the incorporation of environmental management practices in all operations, services and decisions. LBP commits to innovative products and services that allow the Bank and its clients to fulfil its sustainability and environmental protection goals in business lines, lower its carbon footprint, and promote ecological enhancement. Its Corporate Environmental Policy reiterates the incorporation of environmental management practices in all its operations, services and decisions. LBP's Environmental Policy on Credit Delivery ensures that all financed projects are environmentally sound and compliant with all environmental laws, while its Green Procurement good practices serve as the Bank's supplemental guide in setting standards in evaluating products and services.
Improving Lives Across the Nation	<ul style="list-style-type: none"> In line with its vision of being the dominant financial institution in countryside development, LBP continues to fuel economic activity in the rural areas by supporting mandated clients and priority sectors, spurring economic growth in rural and agricultural areas as the chief provider of financial and technical assistance. LBP retain its leadership by sustaining excellent customer service through its efficient and cost-effective service operations, its maintenance of a substantial portion in its loan portfolio for priority sectors, and its continuing support to development assistance programs of the national government.
Banking on a Healthy Environment	<ul style="list-style-type: none"> Inherently integrated in LBP's mandate and company culture, its sustainability efforts are embedded in its mission to deliver innovative products and services that are consonant with ecological enhancement while effectively addressing its clients' needs. LBP's various environmental programs are geared toward the protection of natural resources, energy conservation and proper waste management, among others. The environmental sustainability strategy of LBP is founded on three goals: (1) To evaluate and manage its environmental footprint in its daily operations; (2) To deliver products and services that are ecologically sound and compliant with applicable environmental laws; and (3) To support climate change mitigation and adaptation undertakings.
Nurturing our Most Important Resource	<ul style="list-style-type: none"> LBP provides for the professional development and care of its human capital. LBP envisages growth by providing capability-building programs and granting every employee access to fair and equal opportunities for training and development. LBP safeguards occupational health and safety through full compliance with relevant standards.
Championing Human Rights in the Quest for Prosperity	<ul style="list-style-type: none"> LBP champions human rights by performing its duties and responsibilities with full courtesy and respect, without prejudice to race, religion, regional or ethnic origin, gender or political affiliation. LBP prioritizes the protection of human life within and outside of its organization. LBP protects our people through the administration of adequate security coverage for the Bank's personnel and clientele against unlawful acts, harm, damage, loss, and compromise. LBP practices non-discrimination in hiring and granting professional advancement opportunities and uphold the rights of its employees to associate with and participate in a public sector union.
Promoting Social Justice and Sustainable Development	<ul style="list-style-type: none"> LBP has established a well-defined governance structure consistent and compliant with all government policies and applicable laws, with current corporate governance rules and regulations, and with globally-accepted standards and principles of good governance. LBP adheres strictly to civil service rules, and address and mitigate corruption through the implementation of rules on administrative cases, a strict implementation of the Code of Conduct for Public Officials and Employees, and adherence to the provisions of anti-corruption laws. LBP also expects all its employees to comply strictly with its Code of Ethics.
Serving Customers with Excellence and Integrity	<ul style="list-style-type: none"> LBP ensures excellence in customer service through full disclosure of the features, terms and conditions of its products and services that complies with all laws and rules of government regulatory bodies. LBP provides timely financial and technical support for its mandated clients and make pertinent product and service information easily available to them. As a financial institution, LBP makes sure that compliance testing is an established procedure that ensures the management of pertinent risks and compliance with applicable laws, rules, and regulations. LBP enhances customer service and reinforce the culture of quality, excellence and continued improvement by institutionalizing and adopting Quality Management Systems (QMS) in its banking processes. LBP strictly adheres to the requirements of the Anti-Red Tape Act (ARTA) to improve efficiency in the delivery of services to the public by reducing bureaucratic red tape and preventing graft and corruption. All LBP personnel are guided by the principles of professionalism and integrity, and abide by the Code of Conduct for Employees and ARTA.

Source; LBP (<https://www.landbank.com/csr-statement>)

(5) Environmental and Social Safeguards Framework (ESSF)

1) Scope and Objectives of ESSF

- To establish clear procedures and methodologies for the environmental and social screening, review, approval and implementation of sub-projects to be financed under the Project; and
- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to sub-projects.

2) Applicable Policies

Applicable policies on environmental and social safeguards are summarized in Table A2.6.6.

Table A2.6.6 Applicable Policies on Environmental and Social Safeguards

Policy	Environmental Safeguards	Social Safeguards
World Bank (WB)	<ul style="list-style-type: none"> • As per WB's classification, this project has been categorized as a Financial Intermediary (FI) and LBP as a Borrower will ensure that the WB's policies and national regulations on the environment are followed, and appropriate instruments prepared. • Under the FI category, it is possible to have sub-projects belonging to environmental categories A, B, and C as per the WB's classification. • The procedures outlined for each of these types of environmental categories will be followed by the Concessionaires (MWCI and MWSI) and LBP. 	<ul style="list-style-type: none"> • WB's Policy on Involuntary Resettlement (OP 4.12) is applicable as summarized below. <ul style="list-style-type: none"> - Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs. - Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. - Displaced Persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs. - Displaced Persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
Philippines	<ul style="list-style-type: none"> • The following national laws and regulations* provide the basis for the overall framework of ESSF. <ul style="list-style-type: none"> - PD 1586 (1978) - RA 9275 (2004) - PP 2146 (1981) - AO 42 (2002) - DAO 30 (2003) - MC 14 (2010) - RA 9003 (2000) 	<ul style="list-style-type: none"> • The key legal and administrative policies* relevant to involuntary resettlement are as follows. <ul style="list-style-type: none"> - Constitution of the Philippines (In Article III, Section 1 and Section 9) - EO 1035 (1985) - CA 141 (1936) - SCR (1987) - RA 6389 (1971) - RA 8974 (2000) - RA 7279 (1992) - RA 7160 (1991)

*AO: Administrative Order, PD: Presidential Decree, PP: Presidential Proclamation, RA: Republic Act, EO: Executive Order, SCR: Supreme Court Ruling, DAO: DENR Administrative Order, MC: Memorandum Circular, CA: Commonwealth Act

Source: Environment and Social Safeguards Framework (ESSF) 2012

3) Resettlement Policy Framework (RPF)

a) Key Gaps on Policies on Resettlement between the Philippines and the World Bank

In regard to involuntary resettlement, ESSF has identified the key gaps between the relevant laws and regulations in the Philippines and the World Bank's Policy on Involuntary Resettlement (OP 4.12) as summarized below.

- ✓ Philippine Constitution, Article XIII, Section 10: Urban or rural poor dwellers shall not be evicted, nor their dwellings demolished, except in accordance with the law and in a just humane manner. Focus is given on urban poor as per UDHA. Limited assistance or protection is given to the rural poor unless they are tenured agricultural tenants.
- ✓ RA 8974, Sections 8, 9, 10 and 13 provides compensation of affected properties based on fair market value. However, land donation is the first approach to the acquisition of private land.
- ✓ Notwithstanding the ruling by the Supreme Court, none of the laws and regulations clearly provide for compensation at replacement cost.
- ✓ Income restoration/ rehabilitation assistance is available only for resettled beneficiaries of the government's socialized housing.
- ✓ There is no policy for displaced vendors and employees of micro/small enterprises that have to shut down their business / to be relocated.

b) Resettlement Policy Framework (RPF)

In order to address the gaps between the provisions of the World Bank's Policy on Involuntary Resettlement (OP 4.12) and local laws and regulations, namely to address any involuntary land acquisition or resettlement, the Resettlement Policy Framework (RPF) has been prepared in Annex 10 of ESSF as follows.

- RPF includes specific provisions to ensure that compensation for affected lands and other assets is provided at replacement value to all the Displaced Persons including those who may lose access to livelihood due to the project.
- In the unlikely event of physical displacement of 200 or more households due to the subproject, the government and non-government agencies will work closely and coordinate their efforts for livelihood restoration and rehabilitation assistance in accordance with the provisions of RPF, and in compliance with the provisions of the World Bank's OP 4.12.
- RPF is consistent with the provisions of the World Bank's OP 4.12 and national laws and regulations in the Philippines.

APPENDIX 3.1_REFERENCE FIGURES ON FLOODING IN DAVAO CITY

(1) 5-Year Flood Hazards in Davao City

In addition to The flood susceptibility map of Davao City prepared by DENR (Figure 3.1.1 in main text), the hazard map is also in public in the website of “Philippine Flood Hazard Maps” for 5-year, 25-year, 100-year return periods. Figure A3-1-1 shows the example of 5-year return period. This map also shows high flood hazard beside Davao River and Talomo River.



Source: nababaha.com

Figure A3-1-1 5-Year Flood Hazards in Davao City

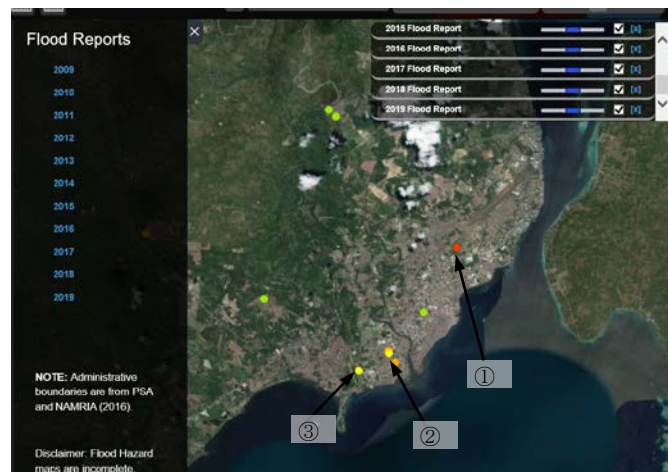
(2) Flood Record in Davao City

The flood record in Davao City for 10 years (2009-2019) is shown in Figure A3-1-2. In this 10 years the high flood event of more than 1.5m depth occurred in July 17, 2014. According to the interview to residents beside Davao River, more than 1m high flooding have occurred periodically in every 2 to 3 years beside Davao River. Regarding port area, the maximum flooding was around 50cm in this 5 years according to the interview to residents near Santa Ana Port.

The flood records in particularly sewerage development area A will be further collected in cooperation with flood control M/P project and barangays.

Flood Level

No.	Year	Location	Flood Level
1	July 17, 2014	Buhangin	Neck high
2	Oct 8, 2011	Bucana	Waist high
3	Feb 7, 2012	Matina Aplaya	Knee high



Source: Nationwide Operational Assessment of Hazards (NOAH) (www.nababaha.com)

Figure A3-1-2 Flood Record in Davao City (2009-2019)

APPENDIX 3.2_ WATER QUALITIES IN RIVERS

1) Talomo River

Talomo River flows down to proposed Sewerage Development Area C. The water quality records in Talomo River in years 2016, 2017, and 2018 are shown in Table A3-2-1. The values in fecal coliform have exceeded the permissible limit extremely in 2016 but it drastically decreased from 2016 to 2018. The nitrate, and phosphase also exceeded slightly in every year or two years but total suspended solids have not exceeded the limit. Regarding the reason of drastic decrease in fecal coliform, EMB analyzed that “This showed that fecal contamination sources are prevalent in the watershed like built-up communities with no sanitary facilities and backyard livestock raising as well as fighting cock game farm.” but it is not clear yet.

Table A3-2-1 Annual Average Concentration per Parameter of Talomo River

Parameters	Water Quality Guideline for Class B	Talomo River		
		2016 Ave. Concentration	2017 Ave. Concentration	2018 Ave. Concentration
Primary Parameters				
Dissolved Oxygen, mg/L	min. 5 mg/L	7.20	7.45	7.11
Biochemical Oxygen Demand, mg/L	max. 5 mg/L	1.43	2.83	1.76
Total Suspended Solids, mg/L	65	36	56	41
pH	6.5-8.5	8.0	8.1	8.1
Temp., °C	26-30	27	26	27
Color, TCU	50	45	26	37
Chloride, mg/L	250	327	205	7.56
Nitrates(NO3), mg/L	7	7.9	12.9	12.2
Phosphate (PO4), mg/L	0.5	0.7	0.6	0.2
Fecal Coliform, MPN/ 100ml	100	223,913	66,539	4,791
Secondary Parameters				
Cadmium, mg/L	0.003	0.004	0.005	0.007
Copper, mg/L	0.02	0.011	0.023	0.026
Lead, mg/L	0.01	0.01	0.07	<0.01
Zinc, mg/L	2	0.023	0.022	0.029
Mercury, mg/L	0.001	-	<0.002	<0.002

Source: EMB Region XI

2) Matina River (Downstream)

Matina River flows down to proposed Sewerage Development Area C. The water quality records in Matina River (Downstream) in years 2016, 2017, and 2018 are shown in Table A3-2-2. The fecal coliform is not monitored in this river. The values in chloride have exceeded the permissible limit extremely in every year. The nitrate, and phosphate were measured in only 2018 and they exceeded the limits.

Table A3-2-2 Annual Average Concentration per Parameter of Matina River Downstream

Parameters	Water Quality Guideline for Class C	Matina River Downstream		
		Class C (Station 1 – Station 2)		
		2016 Ave. Concentration	2017 Ave. Concentration	2018 Ave. Concentration
Primary Parameters				
Dissolved Oxygen, mg/L	min. 5 mg/L	3.66	2.48	4.60
Biochemical Oxygen Demand, mg/L	max. 7 mg/L	5.43	5.13	10.64
Total Suspended Solids, mg/L	80	13	11	21
pH	6.5-9.0	7.7	7.8	7.8
Temp., °C	25-31	30	30	29
Color, TCU	75	23	20	32
Chloride, mg/L	350	3993	2165	2111
Nitrates(NO3), mg/L	7	-	-	16.17
Phosphate (PO4), mg/L	0.5	-	-	1.47

Source: EMB Region XI

3) Lipadas River

Lipadas River flows down towards proposed Sewerage Development Area F. The water quality records in Lipadas River in years 2016, 2017, and 2018 are shown in Table A3-2-3. The values in fecal coliform have exceeded the permissible limit extremely in 2016 and 2017 but it drastically decreased from 2016 to 2018. The nitrate also exceeded the limit in 2017 and 2018.

Table A3-2-3 Annual Average Concentration per Parameter of Lipadas River

Parameters	Water Quality Guideline for Class C	Lipadas River		
		2016 Ave. Concentration	2017 Ave. Concentration	2018 Ave. Concentration
Primary Parameters				
Dissolved Oxygen, mg/L	min. 5 mg/L	6.63	7.01	7.2
Biochemical Oxygen Demand, mg/L	max. 7 mg/L	1.9	3.9	3.0
Total Suspended Solids, mg/L	80	13	31	26
pH	6.5-9.0	7.9	8.0	8.00
Temp., °C	25-31	28	27	27
Color, TCU	75	14	24	35
Chloride, mg/L	350	41	67	65
Nitrates(NO3), mg/L	7	-	21.1	14.0
Phosphate (PO4), mg/L	0.5	-	1.1	0.5
Fecal Coliform, MPN/ 100ml	400	240,231	104,884	9,925
Secondary Parameters				
Cadmium, mg/L	0.005	-	0.003	0.003
Copper, mg/L	0.02	-	0.004	0.009
Lead, mg/L	0.05	-	<0.01	<0.01
Zinc, mg/L	2	-	0.35	0.082

Source: EMB Region XI

4) Bunawan River

Lipadas River flows down towards Barangay Bunawan which locates in north of proposed Sewerage Development Area D. The water quality records in Bunawan River in years 2016, 2017, and 2018 are shown in Table 4.1.5. The fecal coliform has not monitored for this river. Total suspended solid exceeded the permissible limit in 2016 and 2017 but it drastically decreased in 2018.

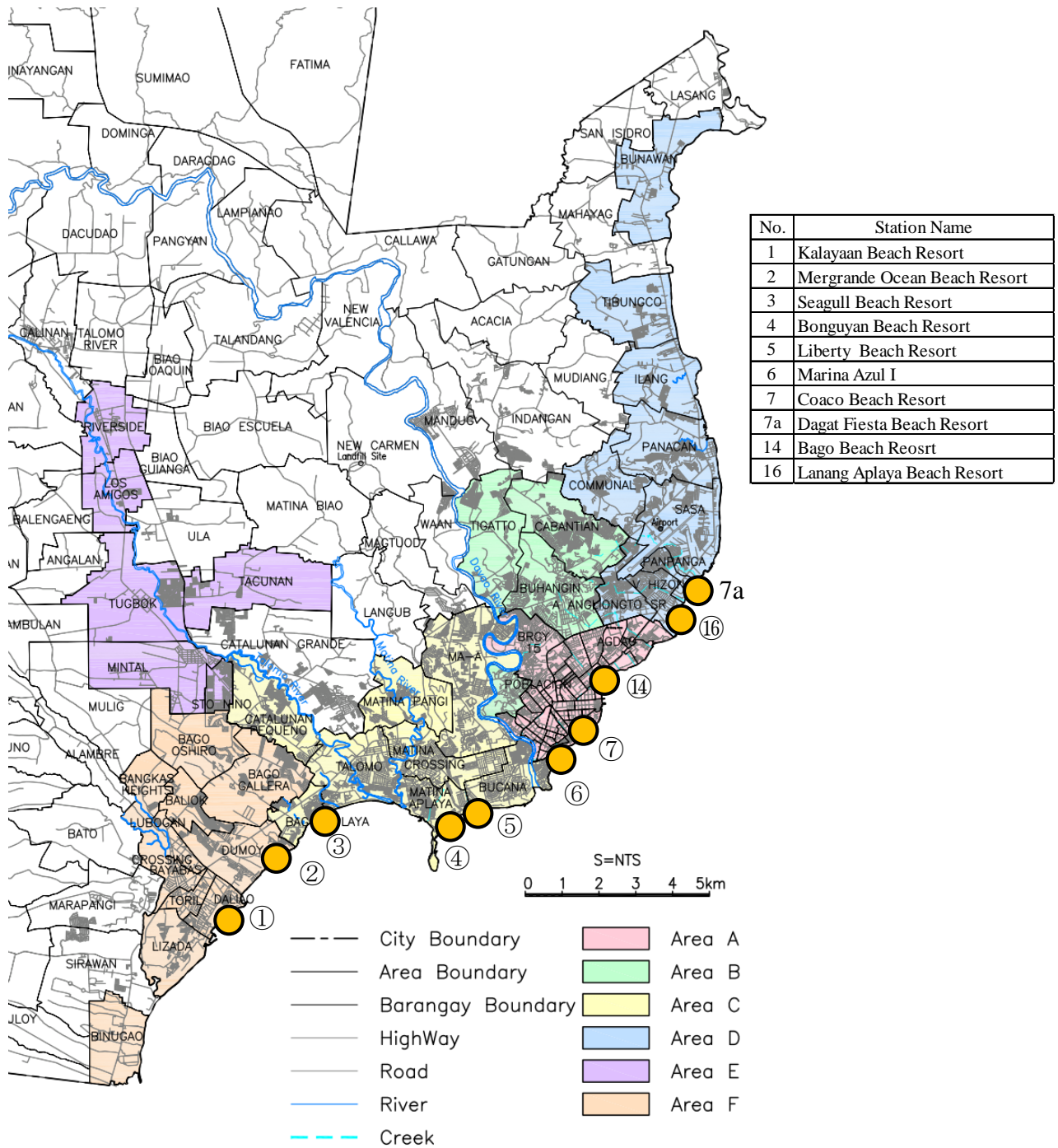
Table A3-2-4 Annual Average Concentration per Parameter of Bunawan River

Parameter	Water Quality Guideline for Class C	Bunawan River		
		2016 Ave. Concentration	2017 Ave. Concentration	2018 Ave. Concentration
Primary Parameters				
Dissolved Oxygen, mg/L	min. 5 mg/L	6.64	6.43	7.01
Biochemical Oxygen Demand, mg/L	max. 7 mg/L	1.07	2.41	1.93
Total Suspended Solids, mg/L	80	108	694	24.46
pH	6.5-9.0	8.3	8.2	8.49
Temp., °C	25-31	29	28	31
Color, TCU	75	41	26	19
Chloride, mg/L	350	58	9	58
Nitrates(NO3), mg/L	7	-	-	<0.89
Phosphate (PO4), mg/L	0.5	-	-	0.5

Source: EMB Region XI

APPENDIX 3.3 LOCATION MAPS OF SAMPLING POINTS FOR WATER QUALITY MONITORING

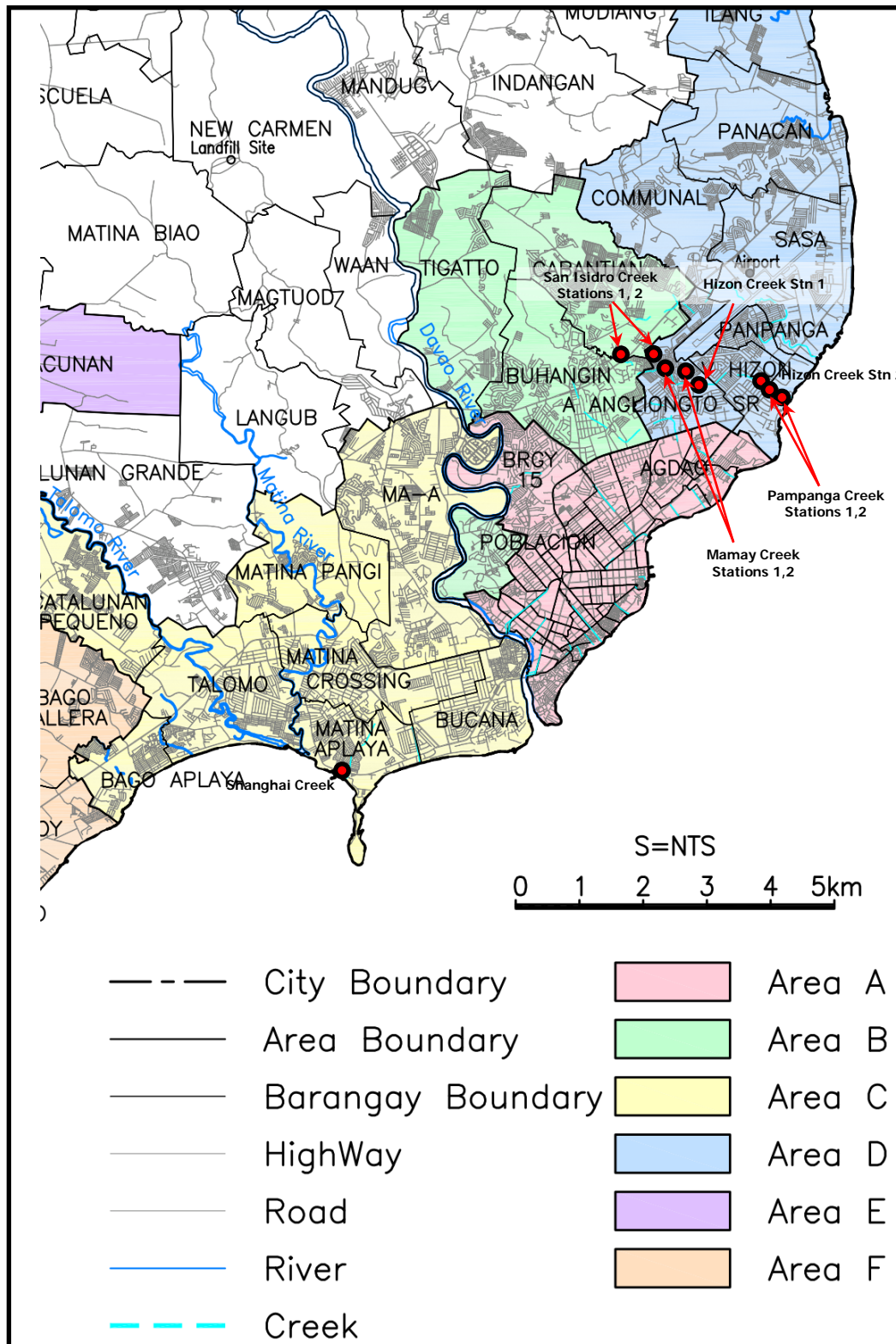
1) Davao Gulf



Source: JICA Survey Team

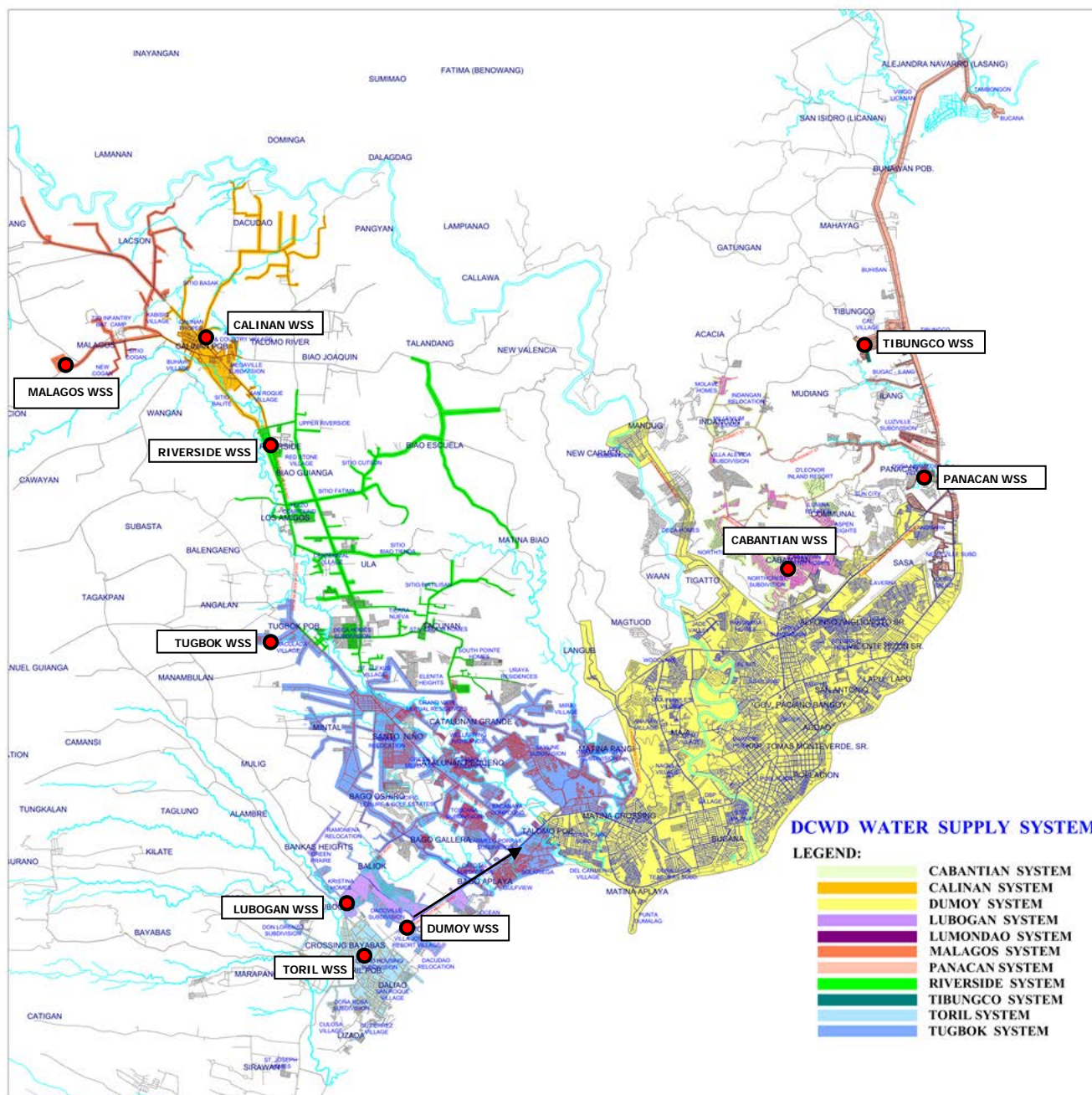
Figure A3.3.1 Locations of Monitoring Stations in Davao Gulf

2) Creek



Source: JICA Survey Team based on coordinates from EMB

Figure A3.3.2 Water Sampling Points in Creeks



Source: JICA Survey Team on DCWD Water Supply System Map

Figure A3.3.3 Groundwater Sampling Points in Davao City

Appendix 3.4 List of Existing Sewage Treatment Plants (STPs) and Status

No.	Name of Facility	Location	Barangay	Category	Status	Type of Treatment		Assumed wastewater generation (m3/day)	Treatment (m3/day)
						STP	Septic Tank		
Poblacion District									
1	LTS,NCCC Mall Magsaysay St.	Magsaysay Ave, Pob. Davao City	Barangay 26-C	Commercial	for compliance		x	98	
2	Ateneo De Davao University	Jacinto St.-Roxas St., Poblacion	Barangay 32-D	Institutional	for compliance		x	229	
3	Marco Polo Hotel	CM Recto St.,corner Roxas Ave., Pob.	Barangay 32-D	Hotel	Operational	x		406	406
4	Avida Tower	CM Recto St.,-Roxas Ave., Pob.	Barangay 34-D	Hotel/Condominium	Operational	x		180	180
5	Hotel Uno	CM. Recto St., Pob., Davao City	Barangay 34-D	Hotel	for compliance		x	N/A	
6	University of Mindanao	Bolton St., Davao City	Barangay 3-A	Institutional	for compliance		x	47	
7	University of Immaculate Conception	De Jesus St.,Corner Bonifacio St.,Pob.	Barangay 36-D	Institutional	for compliance		x	32	
8	University of Immaculate Conception	Fr. Selga St., Pob., Davao City	Barangay 6-A	Institutional	for compliance		x	28	
9	Apo View Hotel	Legaspi St., Poblacion, Davao City	Barangay 3-A	Hotel	Operational	x		196	196
10	Casa Leticia Hotel	Legaspi St., Poblacion, Davao City	4-A	Hotel	for compliance		x	N/A	
11	My Hotel	San Pedro St., Davao City	2-A	Hotel	Operational	x		N/A	
12	JS Gaisano South Citi Mall	Ilustre St., Pob. Davao City	3-A	Commercial	for compliance		x	N/A	
13	Davao Doctors Hospital	Quirino Ave, Davao City	Barangay 3-A	Institutional	Operational	x		162	162
14	Brokenshire Integrated Health Ministries Inc.	Madapo Hills Pob., Davao City	Barangay 8-A	Commercial	for compliance		x	122	
15	Gaisano Mall, Bajada	JP Laurel Ave, Davao City	Barangay 30-C	Commercial	Operational	x		582	582
16	San Pedro Hospital	De Guzman St., Davao City	Barangay 14-B	Institutional	Operational	x		199	199
17	San Pedro College	De Guzman St., Davao City	Barangay 30-C	Institutional	for compliance		x	88	
18	Holy Cross of Davao College	Sta. Ana Ave., Davao City	Barangay 30-C	Institutional	for compliance		x	68	
19	Victoria Plaza/NCCC Mall	Bajada, JP Laurel Ave., Davao City	19-B	Commercial	non-operational	(x)		N/A	
20	DMSF-Davao Medical School	Gahul Ave., Pob., Davao City	Barangay 19-B	Institutional	Operational	x		117	117
21	Abreeza Mall	JP Laurel Ave, Davao City	Barangay 20-B	Commercial	Operational	x		613	613
22	Inspira Condotel	JP Laurel Ave, Davao City		Hotel	newly constructed	x		N/A	
23	Aeon Tower	JP Laurel Ave, Davao City	Barangay 7-A	Commercial	on-going construction	(x)		105	105
24	Camella NorthPoint Condominium	JP Laurel Ave, Bajada, Davao City	19-B	Condominium	Operational	x		213	213
25	Landco-PDCP Corp.	JP Laurel Ave, Bajada, Davao City	19-B	Commercial	Operational	x		N/A	
26	Davao Christian High School	V. Mapa St., Pob., Davao City	Barangay 12-B	Institutional	for compliance		x	26	
27	Felcris Hotel & Resort Corp.	Quimpo Boulevard Ave., Pob.		Hotel	Operational	x		85	85
28	Magallanes Residences Condo	Bolton Extension, Pob., Davao city		Condominium	for compliance		x	N/A	
29	Grand Menseng Hotel	Pichon St., Pob., Davao City	1-A	Hotel	for compliance		x	N/A	
30	Anda Riverview Medical Center/CHDC Hospital	Pichon St., Pob., Davao City		Institutional	for compliance		x	N/A	
31	Limso Hospital	Ilustre St., Pob. Davao City	Barangay 4-A	Institutional	for compliance		x	49	
32	USEP-University of South Estem Philippines	Bo. Oberero, Davao City	18-B	Institutional			x	19	
33	Ritz Hotel Garden Oasis	Porras St., Bo. Obrero, Davao City	15-B	Hotel	for compliance		x	N/A	
34	Linmarr Apartelle	Porras St., Bo. Obrero, Davao City	15-B	Condominium	for compliance		x	20	
					Total of Poblacion	14	19	3,684	2,859
Agdao District									
1	Water Front Insular Hotel	Lanang, Davao City	San Antonio	Hotel	Operational	x		77	77
2	Grand Regal Hotel	Lanang, Davao City	San Antonio	Hotel	Operational	x		45	45
3	Damosa Gateway	Lanang, Davao City	San Antonio	Commercial	On-going Construction	(x)		79	79
4	Dusit Thai Hotel	Lanang, Davao City	San Antonio	Hotel	Newly Constructed	x		N/A	
5	Acacia Hotel	Lanang, Davao City	San Antonio	Hotel	On-going Construction	(x)		N/A	
6	SM Lanang	Lanang, Davao City	San Antonio	Commercial	Operational	x		546	546
7	Mindanao Medical School Foundation College & Matts College and	Villanueva St. R. Castillo St., Agdao	Rafael Castillo	Institutional	for compliance		x	N/A	
8	Davao Mission Hospital	Carpenter, St., Agdao, Davao city		Institutional	for compliance		x	N/A	
9	Hampton Suites Davao Hotel	Lapu-Lapu St, Agdao, Davao City	Lapu Lapu	Hotel	for compliance		x	N/A	
					Total of Agdao	6	3	747	747
					Total of Area A	20	22	4,431	3,606

Source: JICA Survey Team based on data from City Building Office (CBO) and DCWD

Japan International Cooperation Agency (JICA)
Davao City LGU, Davao City Water District (DCWD)

Data Collection Survey for Sewerage System Development in Davao City

HOUSEHOLD INTERVIEW SURVEY

PURPOSE OF SURVEY

To confirm the existing sanitation condition and the results/opinions will be utilized for future improvement of the condition by DCWD/Davao City in urgent areas to develop the sewerage system.

Aron pamatud-an ang kasamtangan nga kahimtang sa kalimpyo ug mga resulta / mga opinyon gamiton alang sa umaabot nga pagpalambo sa kahimtang sa DCWD / Davao City sa mga dapit aron sa pagpalambo sa sistema sa sewerage.

INSTRUCTIONS FOR ANSWERING THE SURVEY FORMS

(Interview)

The survey will be carried out with basically verbal interviews by our surveyors.

Ang survey ipahigayon uban sa mga basehan nga mga interbyu sa atong mga surbeyor

(Questionnaire)

In case verbal interview cannot be conducted due to absence or lack of time, the survey form will be delivered to the households and the answered form will be collected later.

Sa higayon nga ang verbal interview dili mahimo tungod sa pagkawala o kulang sa panahon, ang survey nga porma ipadala ngadto sa mga panimalay ug ang mitubag nga porma ang kolektahon sa ulahi.

Please answer all the survey items sequentially and print the information in the space provided for or check the appropriate box. For any doubts or concerns about the survey forms, please consult the Survey Supervisor or Coordinator.

Palihug tubaga ang mga pangutana seg-un sa mga gitala nga mga pangatuna ug isulat ang mga tubag sa mga espasyo nga gibutang. Kung naay pagduda ug uban pang dili kaayo masabtan sa mga survey forms, palihug ikonsulta sa Survey Supervisor o sa Coordinator.

Form 1. Household Information

Form 1 can be completed by the household head who can provide reliable socio-economic information.
Ang Form 1 kompletohon pinaagi sa mga tubag sa pangulo sa panimalay.

Form 2. People's Perception on Existing Sanitation Conditions and Future Sewerage Service

Form 2 should be completed by the household head.
Ang Form 3 sama sa Form 1, tubagon sa pangulo sa panimalay.

Household No.

HIS Control Form

Name of Person who answered:
Position of Person who answered in the household: 1. Household head, 2. Husband/Wife of head 3. Son/Daughter of head, 4. Father/Mother of head
Household Address/Street Name:
Telephone/Mobile No.:

Barangay Code									
Administrative District									
Congressional District									

Note: Address and telephone number will be used for the follow-up survey purpose only.

GPS Location (To be filled by surveyors)

Ang surveyor maoy motubag ini, base sa pagbasa sa GPS. I-apil ang retrato sa padulngan nga balay.

Latitude: _____ N

Longitude: _____ E

Or recorded on Google Map (Map Marker Application) with Household No. on cell phone by our surveyors.

Interview Record

No.	Date and Time of the Visit/Callback	Next Appointment	Items to be Interviewed in the Next Appointment
1	First Visit Date: Time:	Revisit / Callback Date: Time:	
2	Revisit / Callback Date: Time:	Revisit / Callback Date: Time:	

Persons in Charge of This Household

	Name	Phone Number	Date	Signature
Interviewer				
Barangay office staff (if attended)				

FORM 1: HOUSEHOLD INFORMATION
(Tubagon sa pangulo sa panimalay)

Household No.

Barangay Code

--	--	--	--	--	--

Q1. Number of persons in household _____ Persons

Q2. Type of the house (To be filled by surveyors)

Unsang klaseha sa balay kining imong gipuy-an?

- | | | | |
|------------------------|----------------|--------------------------|--------------------|
| 1. Nipa Hut | 2. Row house | 3. Bungalow-Concrete | 4. Bungalow-Wooden |
| 5. Townhouse/Apartment | 6. Condominium | 7. Other (specify) _____ | |

Q3. How long have you stayed in your current residence? (approximately)

Unsa kadugay ka nangpuyo niining balaya? _____ Years

Q4. What is your total monthly household income in Pesos? Please include amounts transferred from OFW family members and regular financial supports by relatives.

Pila ang kinatibuk-an nga kita sa paningabuhi kada buwan sa tanang membro sa imong panimalay? Palihog i-apil ang padala sa OFW kung naa kay OFW nga membro sa panimalay ug regular nga suporta gikan sa mga paryente.

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1. No income | 2. Below 2,000 | 3. 2,000 – 3,999 |
| 4. 4,000 – 5,999 | 5. 6,000 – 7,999 | 6. 8,000 – 9,999 |
| 7. 10,000 – 14,999 | 8. 15,000 – 19,999 | 9. 20,000 – 24,999 |
| 10. 25,000 – 29,999 | 11. 30,000 – 34,999 | 12. 35,000 – 39,999 |
| 13. 40,000 – 49,999 | 14. 50,000 – 59,999 | 15. 60,000 – 79,999 |
| 16. 80,000 – 99,999 | 17. 100,000 – 149,999 | 18. 150,000 – 199,999 |
| 19. 200,000 – 299,999 | 20. 300,000 – 499,999 | 21. Above 500,000 |

* To keep the privacy and save time, this information will be confirmed from latest information in Barangay Hall if available.

**FORM 2: PEOPLE'S PERCEPTION ON EXISTING SANITATION
CONDITIONS AND FUTURE SEWERAGE SERVICE
(SATISPAKSYON SA KATAWHAN/PERSEPSYON SA KASAMTANGAN,
KONDISYON SA PAMUYO UG SIYUDADNONG SERBISYO)**

1. Water (Tubig)

Q1. Are you connected to DCWD water supply? (Naa ba moy koneksyon sa DCWD?)

1. Yes (Oo) (Go Q2) 2. No (Wala)

Q2. When you pay your water bill, do you pay based on water meter? (Base ba sa metro ang inyong pagbayad sa DCWD?)

1. Yes (Oo) (Go Q3) 2. No (Wala)

**Q3. How much water does your family consume a month on average?
Unsay gidaghan sa tubig nga konsumo sa imong panimalay kada buwan?**

1. Less than 10 m ³	2. 11 – 20 m ³	3. 21 – 30 m ³
4. 31 – 40 m ³	5. 41 – 50 m ³	6. More than 50 m ³
7. Specify in cost: _____ (pesos / month) (pesos/kada bulan)		
Pila ang ginabayad		

Q4. How you pay for water bill from DCWD? (Giunsa nimo pagbayad ang bayranan sa tubig gikan sa DCWD?)

1. Cash in DCWD counter	2. Monthly withdrawal from bank account
3. Through internet with debit/credit card	4. Other: _____

* Need to check which type of payment exist

2. Sanitation (Kalimpyo sa Pamuyo)

Q1-A Do you have a septic tank in your house? Naa ba moy poso negro sa balay?

1. Yes (Oo) (go to Q1-B) 2. No (Wala) (go to Q3)

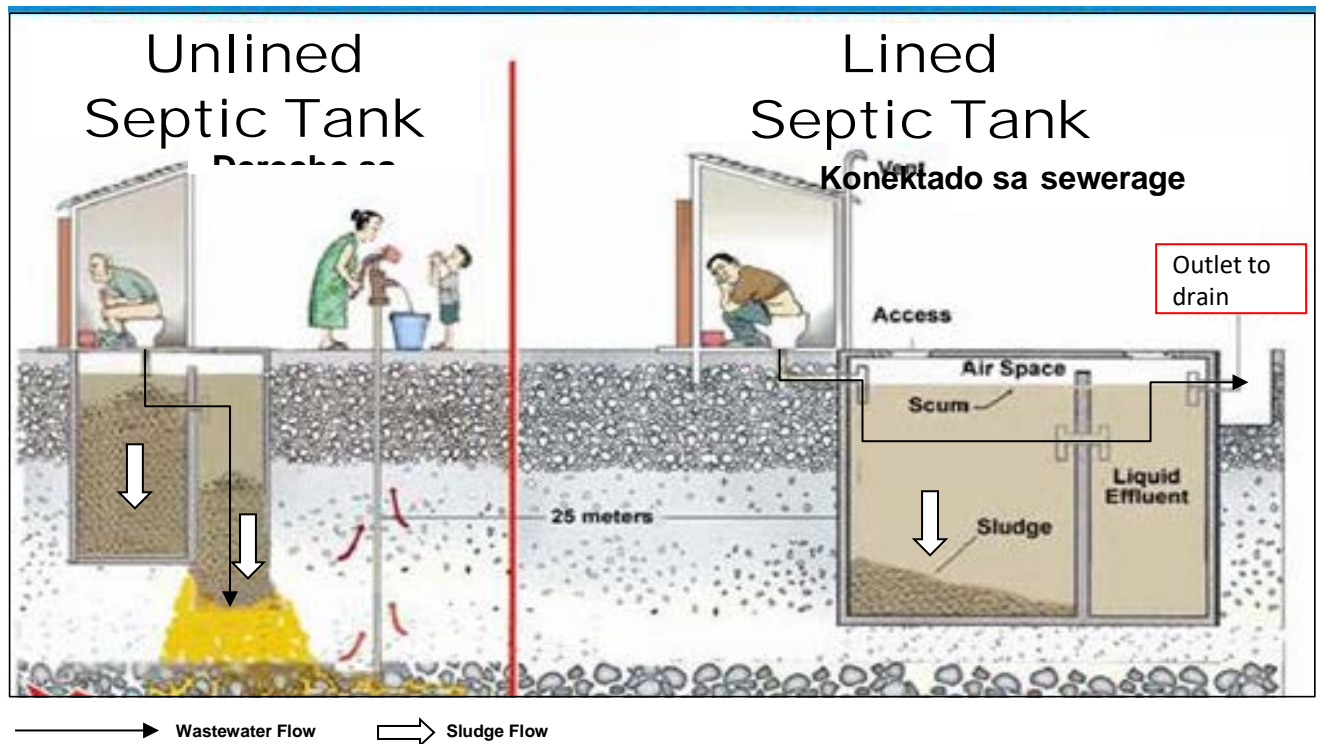
Q1-B Is your septic tank accessible? Makita ra ba nimo dayon ang imong ginagamit nga poso negro?

1. Yes (Oo) (go to Q2-A) 2. No (Wala) (go to Q3)

If yes, ask the household to show the collection point of septage and take picture

**Q2-A. What type of septic tank do you have in your house? (Please see figure below)
Unsay klase sa poso negro sa inyong balay? (Tan-awa ang litrato sa ubos)**

1. Unlined septic tank. (Derecho sa yuta)	2. Lined septic tank (Konektado sa sewerage)
3. I don't know (Wa ko kahibalo)	4. Other (Uban): _____ (palihug hinganli)



Q2-B. Where is the discharge point of septic tank effluent?

Asa man idiskarga ang tubig gikan sa poso negro?

- | | | |
|---|--|---|
| 1. Discharge to sewer pipe
Derecho sa sewer pipe | 2. Discharge to roadside ditch
Derecho sa Kanal kilid sa kalsada | 3. Discharge to road
Derecho sa kalsada |
| 4. Infiltrate to ground
Derecho sa ilawom sa yuta | 5. Discharge to public water body (river, sea, etc.),
Derecho sa krek, suba, dagat, etc. | |
| 6. I don't know
Wa ko kahibalo | 7. Other (specify) _____
(Uban, palihug hinganli) | |

If visible, take picture of discharge point.

Q2-C. How often do you desludge your septic tank?

Gidaghanon sa higayon nga kuhaon ang hugaw sa poso negro?

- | | |
|---|---|
| 1. Annually (Kada-tuig) | 2. Once per 2 years (Kada-duha ka tuig) |
| 3. Once per 3-5 years (Kada 3-5 ka tuig) | 4. Once per more than 5 years (Kada 6 ka tuig ug taas) |
| 5. Never (Wala gyud) | 6. Not sure (Dili ko sigurado) |

Q2-D. Do you pay for desludging service of your septic tanks? If yes, how much do you pay per service?
Naa bay bayad sa pagkuha sa hugaw? Kung naa, tagpila man kada serbisyo?

1. Yes (**Oo**) (PHP _____ / per service)

2. No (**Wala**)

Q3. Without septic tank, wastewater from toilets goes directly to water bodies and polluting them. Do you think this situation should be improved?

Kung walay poso negro, ang tubig gikan sa kasilyas adto paingon sa dagat o suba nga makapollute nila. Sa imong opinion, kinahanglan ba ni nga tarungan?

- | | | |
|----------------------|-----------------------|---|
| 1. Yes (Oo) | 2. No (Dili) | 3. I don't know (Wala ko kahibalo) |
|----------------------|-----------------------|---|

Q4 Where is the discharge point of gray water (wastewater from kitchen, lavatory [handwashing, gargling, brushing teeth, etc.], bath, etc.)?

Asa man ninyo ilabay ang tubig nga gikan sa kusina, laba, hugas, ligo, uban pa?

1. Discharge to sewer pipe Derecho sa sewer pipe	2. Discharge to roadside ditch Derecho sa kanal sa kalsada	3. Discharge to road Derecho sa kalsada
4. Infiltrate to ground Sa ilawom sa yuta	5. Discharge to public water body (river, sea, etc.), Derecho sa suba, dagat ug uban pang tubigan	
6. I don't know Wala ko kahibalo	7. Other: _____ Uban (Palihug hinganli)	

If visible, take picture of discharge point.

Q5 Have you or any of your family experienced water-borne diseases in the past 12 months? Please check (✓) all that apply. (Multiple)

Nasakit ka na ba o imong pamilya sa niaging usa ka tuig niining mga sakita? Palihug e-check (✓)

1. None Wala	2. Diarrhea Kalibang	3. Skin Diseases sakit sa panit
4. Schistosomiasis Mga buhi mga parasite sa lawas. Ga resulta ug inpeksyon sa tina-e ug taas nga kalintura	5. Cholera suka-kalibang	6. Dysentery Inpeksyon sa tinae, pagkalibanga mga adunay dugo ug mala sip-on sa tae
7. Meningitis bacteria sa utok	8. Otitis externa sore (sore eyes) Inpeksyon sa mata	9. Amoebiasis Inpeksyon tungod sa parasito nga amoeba
10. Hepatitis A Inpeksyon sa Atay	11. Typhoid Taas nga Kalintura gumikan sa bacteria gikan sa hugaw nga palibot ga resulta ug pag gawas ug pula pila lawas (rushes) ug pagsakit sa dughan ug Tiyan	12. Hay Fever Allergy sa abog/sagbot, ga resulta ug kalintura
13. Leptospirosis Bacteria gikan sa mga klase klaseng hayop, ga resulta ug taas nga kalintura ug pag dugo sa baga	14. Polio Sakit sa Bukog (spinal Cord)	15. Other: Uban pa.

Q6 Please select the appropriate answers when you or your family experienced water-borne diseases in the past 12 months.

Palihug pili-a ang angay nga tubag kung nasakit ka o imong pamilya niadto.

Q6-A No. of sickness	1. 1	2. 2	3. 3	4. 4	5. >5
Q6-B Total No. of sick days Pila ka adlaw	1. < 1	2. 1-3	3. 4-7	4. 8-30	5. >30
Q6-C Total No. of days absent from work / school Pila ka adlaw absent sa eskwela/trabaho	1. < 1	2. 1-3	3. 4-7	4. 8-30	5. >30
Q6-D Total Approximate amount spent on cures (Peso) Pila nagastos sa pagtambal	1. <100	2. 100-300	3. 300-500	4. 500-700	5. >700

Q7 Please evaluate the following points about sanitation in/around your house.

Palihug timbang-timbanga kining mga puntos mahitungod sa sanitasyon sa inyong balay.

	Always pirmi	Frequently kasagaran	Sometimes panagsa	No problem Walay problema	Not sure Dili sigurado
Q7-A Offensive odor (bad smell): Baho kaayo	1	2	3	4	5
Q7-B Pipe clogging Na-klag na tubo	1	2	3	4	5
Q7-C Overflow of wastewater: Ning-awas nga gamit nga tubig	1	2	3	4	5
Q7-D Mosquitoes and other insects breeding (lamok o lahi pang insekto)	1	2	3	4	5

Sewerage System Development

Sewage should be treated prior to discharge to water bodies. Davao City does not have a sewage treatment system. This situation further exacerbates pollution of water bodies and result in incidence of water-borne diseases which affect the economy and public health. Sewage treatment is the gold standard in preventing water pollution. In this regard, the City Government and DCWD included a new sewage management project in their development priorities. The project includes the following:

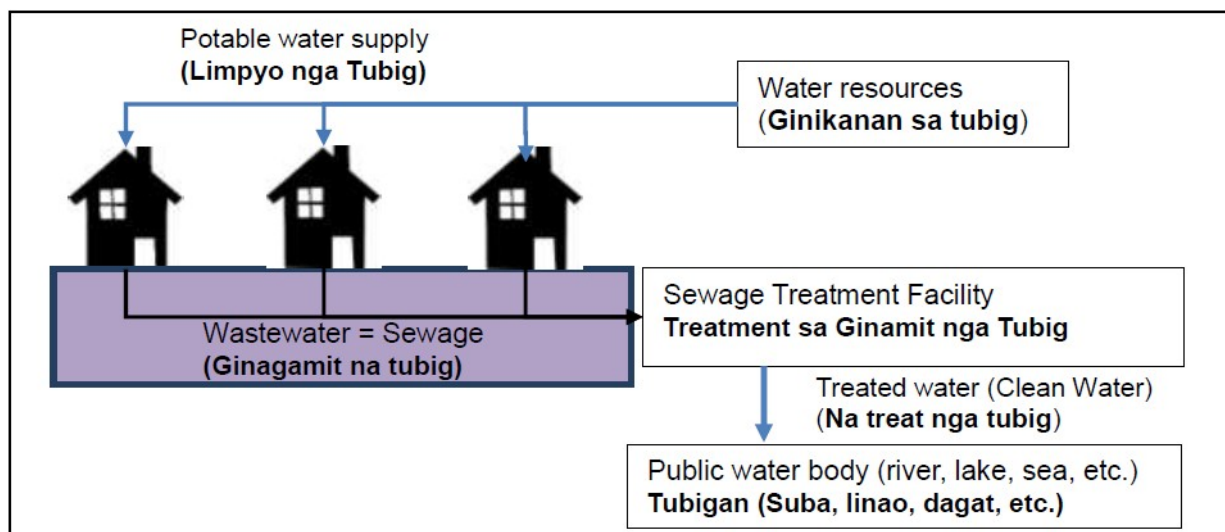
- 1) Construction of a sewage collection pipe network. and
- 2) Construction of a sewage treatment facility.

This will eventually improve river/groundwater quality, thereby reducing incidences of water-borne diseases and enabling economic opportunities. Sewage management, however, entails high investment costs, hence requiring tariffs to recover the investment.

Ang mga hugaw nga ginamit nga tubig kinahanglan i-treat una ilabay sa mga tubigan (suba, sapa, dagat). Ang siyudad sa Davao wala pay systema niini nga treatment. Kini nagpagrabe sa polusyon sa tubigan ug mo resulta sa pagkasit sa mga tawo nga dili maayo sa katawhan ug sa kaayohan sa panglawas. Ang treatment sa ginamit nga tubig usa ka maayo nga paagi sa paglikay sa polusyon sa tubig. Tungod niini, ang City Government ug ang DCWD nagtinguha nga himoong prioridad ang maayong pag-manage sa paglabay sa mga ginamit nga tubig. Kining proyekto naga-apil niini:

- a. Pagbuhat ug mga tubo nga konektado
- b. Pagbuhat ug treatment facility para sa ginamit nga tubig

Kini maka himo ug kaayo-hansa mga tubig ilawom sa yuta ug sa suba ug makahinay sa insidente sa pagkasakit sa mga tawo. Hinoon, dako kaayo ang magasto ini, tulo hangtud lima ka pilo sa gasto sa paghimo ug supply sa tubig, nga nagkinahanglan ug taas nga bayad.



Q8-A. Expectation for developing Sewerage System

As explained above, sewerage system can improve the living environment around your house and general view of public water bodies (creek/river/Davao Gulf). It may lead to more tourists/companies would come to Davao City and it is beneficial in the long term.

From such advantages, do you expect the sewerage development by DCWD/Davao City?

Sumala sa gisaysay sa ibabaw, ang sistema sa sewerage makapauswag sa palibot sa imong palibot ug sa kinatibuk-ang panglantaw sa publiko nga katubigan (creek / river / Davao Gulf).

Mahimo kini mosangpot sa dugang nga mga turista / kompanya nga moadto sa Davao City ug kini mapuslanon sa taas nga panahon.

Gikan sa maong mga kaayohan, nagpaabut ka ba sa pag-uswag sa sewerage sa DCWD / Davao City?

1. Yes (**Oo**)
2. No (**Dili**) (Go to Q8-B)
3. I don't know/cannot answer yet (**Wala ko kahibalo**)

Q8-B. What is the main reason why you do not expect for sewerage system? (multiple answer ok)
Unsa ang nag-unang rason nganong wala ka magpaabot alang sa sistema sa sewerage?

1. Nearby environment is enough good
2. Don't want to pay for sewerage system at all
3. Septage management with septic tank is enough
- * cannot treat the gray water from kitchen and overflow from septic tank in this case
4. Drainage improvement by the city/DPWH should be higher priority
5. Other: _____

Q8-C. How do you think about improvement of the environment of public water body? Giunsa nimo paghunahuna ang pagpalambo sa kalikupan sa publiko nga tubig nga lawas?

1. I hope to improve the public water body (e.g. Creek, Davao River, Davao Gulf) and can pay the certain amount for the environmental improvement itself.
2. I hope to improve the public water body and can pay the certain amount as an extension of improvement of living condition near my house.
3. I hope to improve the public water body but don't want to owe the cost for the improvement.
4. Improvement of the public water body is not my business.
5. Other: _____

Q9. Willingness to Pay for Sewerage System (Kaya sa Pagbayad sa Serbisyo sa Tubig)

If the sanitary conditions in your house can be improved by the system shown above, up to how much is your family willing to pay per month?

Kung ang inyong balay malimpyo tungod sa systema nga gipakita sa taas, hangtud unsa nga presyo ka mobayad sa serbisyo sa tubig kada buwan?

	Yes (Oo)	No (Dili)
1. More than PHP600 (Specify amount: _)	1	2
2. PHP501 to 600 / month	1	2
3. PHP401 to 500 / month	1	2
4. PHP301 to 400 / month	1	2
5. PHP201 to 300 / month	1	2
6. PHP101 to 200 / month	1	2
7. PHP1 to 100 / month	1	2
8. None	1	2

Q10. (Reference) Limitation to Pay for Sewerage System Limitasyon sa Pagbayad sa Sistema sa Alkantariya

In case DCWD/Davao City will charge the sewerage fee for you together with water supply fee, how much is acceptable limit?

Kon ang DCWD / Davao City mag-charge sa sewerage fee alang kanimo uban sa bayad sa suplay sa tubig, unsa ka daghan ang madawat nga limitasyon

* Amount more than answer for Q9

	Yes (Oo)	No (Dili)
1. More than PHP600 (Specify amount: _)	1	2
2. PHP501 to 600 / month	1	2
3. PHP401 to 500 / month	1	2
4. PHP301 to 400 / month	1	2
5. PHP201 to 300 / month	1	2
6. PHP101 to 200 / month	1	2
7. PHP1 to 100 / month	1	2
8. None	1	2

Q11. Sewerage Connection Fee

In case the sewage will be collected individually from household (not through drains), some part of the construction cost for pipe connection to your house will be paid by household as an initial cost separate from monthly payment as a general standard in worldwide. How much is acceptable cost for you?

Sa higayon nga ang mga basura magkolekta sa tagsa-tagsa gikan sa panimalay (dili pinaagi sa drains), ang uban nga bahin sa gasto sa pagtukod alang sa koneksyon sa tubo sa imong balay pagabayran sa panimalay ingon nga unang bili nga bulag gikan sa binulan nga pagbayad ingon nga pangkinatibuk nga sukaranan sa tibuok kalibutan. Daw unsa ka daghan ang madawat nga gasto alang kanimo

	Yes (Oo)	No (Dili)
1. More than PHP5,000 (Specify amount: _)	1	2
2. PHP4000 to 5000	1	2
3. PHP3000 to 4000	1	2
4. PHP2000 to 3000	1	2
5. PHP1000 to 2000	1	2
6. PHP500 to 1000	1	2
7. PHP1 to 500	1	2
8. None	1	2

3. Drainage (Kanal sa Tubig)

Q1 Please assess the drainage conditions in your neighborhood.

Palihug timbang-timbanga ang kondisyon sa kanal sa tubig sa inyong lugar.

Q 1-A. Are there drainage systems in your neighborhood? **Naa bay kanal sa tubig dire sa inyo?**

1. Yes (**Oo**)(Go to Q1-B) 2. No (**Wala**) (Go to Q2)

Q 1-B. If yes, what is their condition? **Kung Oo, unsa may imong ikasulti mahitungod sa kanal dire sa inyo?**

1. Very bad (**Ngil-ad kaayo**) (Go to Q1-C) 2. Bad (**Ngil-ad**) (Go to Q1-C)
3. Average (**Igo-ra**) (Go to Q2) 4. Good (**Maayo**) (Go to Q2)
5. Very good (**Maayo kaayo**)(Go to Q2)

Q 1-C. Please answer reasons you choose in Q1-B or write specific reasons in Others. (multiple OK)
Palihug pag tubag “Yes” or “No” ug explika ang imong rason sa Q1B.

Reasons why you assessed drainage system above Q1-B Rason sa imong gutubag sa pangutana sa Q1-B	Yes	No
1. Water are clogged by waste and plants, etc. Tubig na estak-up sa hugaw ug tanom, ug uban pa)	1	2
2. Water is turbid (Lapokun nga Tubig)	1	2
3. Water has offensive odor. (Tubig nga baho gyod kaayo)	1	2
4. Others (Uban) _____ (Palihug hinganli)		

Q2-A. How often does your house / area get flooded?

Unsa ka daghan nga higayon nga nagbaha sa inyo dire?

1. More than once/month Sobra sa kausa kada bulan	2. Once/month Usa kada bulan	3. More than 5 times/year Sobra 5 kada tuig	4. 2- 5 times/year 2-5 kada tuig
5. Once a year Ka-usa kada tuig	6. Once per 2 years Kausa kada 2 ka tuig	7. Once per 3 years Kausa kada 3 ka tuig	8. Never Wala gyud
9. Not sure Di ko sigurado			

Q2-B. In the flood event, the flooding water looked/smelled including much wastewater? **Kung mahitabo ang baha, ang itsura/baho bas a tubig pareha sa wastewater?**

1. Yes (**Oo**) 2. No (**Wala**)

Q2-C. After the flood event, any person in your family got sick with following diseases? **Human sa baha, naa bay miyembro sa pamilya na nagsakit sa mga niani?**

* See the details of diseases in 2. Sanitation Q5

1. None Wala	2. Diarrhea Kalibang	3. Skin Diseases sakit sa panit
3. Schistosomiasis	4. Cholera	5. Dysentery
6. Meningitis bacteria sa utok	7. Otitis externa sore (sore eyes)	8. Amoebiasis
9. Hepatitis A Inpeksyon sa Atay	10. Typhoid	11. Hay Fever
12. Leptospirosis	13. Polio	14. Other: Uban pa.

(Question to Barangay Official) Pangutana sa Barangay Official**Q3-A.** Who clean the drains in Barangay? Kinsa ang naglimpyo sa mga kanal sa Barangay?

- | | |
|-------------------------|------------------------------|
| 1. Barangay staff, | 2. Household (nearby drain), |
| 3. City Drainage staff, | 4. Private company, |
| 5. Other _____, | 6. Nobody |

Q3-B. How often do you/they clean the drains? Pila ka higayon ginalimpyohan ang mga kanal?

- | | |
|----------------------------|--------------------|
| 1. Once per week or more, | 2. Once per month, |
| 3. Once per 2-6 months, | 4. Once per year, |
| 5. Once per several years, | 6. None |

4. Solid Waste (Pag-kolekta sa Basura)

Dumping and accumulation of garbage in the drain will cause many problems such as choking of drains itself and future sewer pipe (interception pipe from drain, pumping station) and inadequate treatment in the treatment plant due to failure of equipment.

Ang paglumpag ug pag-akumulasyon sa mga basura diha sa habog nga tubig makapahinabo sa daghang mga problema sama sa pag-uyog sa mga tubo mismo ug sa umaabot nga pipe nga panghugas (interception pipe gikan sa alisngaw, pumping station) ug dili igo nga pagtambal sa pagtambal nga planta tungod sa pagkapakyas sa mga ekipo.

Q 1. Have you thrown the garbage (e.g. PET bottle, plastic bag) in open drain/rainwater inlet part of covered drains, or seen neighbors to throw there? **Ginalabay ba nimo ang mga basura (sama sa botelya sa PET, plastik nga bag) diha sa bukas nga agianan sa tubig sa tubig sa ulan / tubig sa ulan, o makita ang mga silingan nga molabay didto?**

- | | |
|----------------------------|-------------------------|
| 1. Yes (Oo)(myself/family) | 2. Yes (Oo) (neighbors) |
| 3. No (Wala) | |

Q 2. What is/do you suppose the main reason to throw the garbage? (multiple answer ok) Unsa ang / nagtuo ka ba nga ang hinungdan sa paglabay sa basura?

1. Insufficient solid waste collection system	2. Could not bring back the garbage to house
3. Lack of awareness to keep clean environment	4. Lack of knowledge for what will happen from the garbage dumping
5. Other: _____	

ANNEX: District and Barangay Code

Barangay Name	Code	Population 2015	No. of Households 2010	Existing Survey in Master Plan 2017	Target No. of Households for Interview 2019
District 1	1				
Poblacion District (40)	1.1				
Barangay 1-A (Pob.)	112402134	3,103	882	12	10
Barangay 2-A (Pob.)	112402135	3,589	763	12	10
Barangay 3-A (Pob.)	112402136	370	100	10	0
Barangay 4-A (Pob.)	112402137	1,683	562	12	0
Barangay 5-A (Pob.)	112402138	11,436	2558	12	20
Barangay 6-A (Pob.)	112402139	2,084	465	12	10
Barangay 7-A (Pob.)	112402140	3,984	1220	12	10
Barangay 8-A (Pob.)	112402141	11,075	2114	12	
Barangay 9-A (Pob.)	112402142	5,698	1228	12	10
Barangay 10-A (Pob.)	112402143	6,764	1149	12	10
Barangay 11-B (Pob.)	112402144	1,901	435	12	0
Barangay 12-B (Pob.)	112402145	840	322	12	0
Barangay 13-B (Pob.)	112402146	427	40	12	0
Barangay 14-B (Pob.)	112402147	1,175	263	12	0
Barangay 15-B (Pob.)	112402148	2,891	664	12	10
Barangay 16-B (Pob.)	112402149	840	147	12	0
Barangay 17-B (Pob.)	112402150	810	204	12	0
Barangay 18-B (Pob.)	112402151	1,832	403	12	0
Barangay 19-B (Pob.)	112402152	31,766	6853	12	20
Barangay 20-B (Pob.)	112402153	4,581	1451	12	10
Barangay 21-C (Pob.)	112402154	7,478	1527	12	10
Barangay 22-C (Pob.)	112402155	6,634	1379	11	10
Barangay 23-C (Pob.)	112402156	16,489	3419	12	20
Barangay 24-C (Pob.)	112402157	2,602	572	11	10
Barangay 25-C (Pob.)	112402158	1,967	380	12	10
Barangay 26-C (Pob.)	112402159	2,510	559	11	10
Barangay 27-C (Pob.)	112402160	2,152	521	12	0
Barangay 28-C (Pob.)	112402161	2,270	630	11	0
Barangay 29-C (Pob.)	112402162	1,557	374	12	0
Barangay 30-C (Pob.)	112402163	1,608	421	11	0
Barangay 31-D (Pob.)	112402164	8,321	1579	12	10
Barangay 32-D (Pob.)	112402165	1,985	618	11	10
Barangay 33-D (Pob.)	112402166	2,033	561	12	0
Barangay 34-D (Pob.)	112402167	1,682	281	11	10
Barangay 35-D (Pob.)	112402168	578	131	11	0
Barangay 36-D (Pob.)	112402169	1,581	430	12	0
Barangay 37-D (Pob.)	112402170	6,740	1521	11	10
Barangay 38-D (Pob.)	112402171	1,505	440	11	0
Barangay 39-D (Pob.)	112402172	5,143	1084	12	10
Barangay 40-D (Pob.)	112402173	2,437	545	11	10
Talomo District (14)	1.2				
Bago Aplaya	112402176	15,918	3441		
Bago Gallera	112402005	17,378	3353		
Baliok	112402010	16,140	3112		
Bucana	112402020	83,964	19407		
Catalunan Grande	112402030	32,461	6796		
Catalunan Pequeño	112402031	22,809	4671		
Dumoy	112402043	18,622	4223		
Langub	112402055	2,883	614		
Ma-a	112402061	59,803	10972		
Magtuod	112402063	5,058	822		
Matina Aplaya	112402074	33,384	6842		
Matina Crossing	112402075	32,436	8022		
Matina Pangi	112402077	18,081	3083		
Talomo (Pob.)	112402116	59,678	13545		

Appendix 3.5

Barangay Name	Code	Population 2015	No. of Households 2010	Existing Survey in Master Plan 2017	Target No. of Households for Interview 2019
District 2	2				
Agdao District (11)	2.1				
Agdao	112402002	8,897	1958	15	15
Wilfredo Aquino	112402196	9,903	1898	11	15
Centro (San Juan)	112402179	15,586	3362	14	15
Lapu-lapu	112402186	11,738	2255	14	15
Leon Garcia, Sr.	112402187	13,652	2860	16	15
Kap. Tomas Monteverd	112402185	5,716	1340	15	10
Gov. Paciano Bangoy	112402181	8,816	2442	13	15
Rafael Castillo	112402190	5,783	1541	13	10
San Antonio	112402192	10,306	2771	14	15
Ubalde	112402194	2,966	655	12	0
Gov. Vicente Duterte	112402182	8,904	2052	16	15
Buhangin District (13)	2.2				
Acacia	112402001	3,262	645		
Alfonso Angliongto Sr.	112402197	13,539	3501	14	0
Buhangin (Pob.)	112402021	65,461	14003	14	20
Cabantian	112402023	43,758	10454	14	10
Callawa	112402027	3,553	680		
Communal	112402035	16,740	1591	14	0
Vicente Hizon Sr.	112402198	11,265	2685	11	10
Indangan	112402050	14,867	2080		
Mandug	112402069	13,594	2902		
Pampanga	112402086	14,381	3336	14	10
Sasa	112402101	52,386	12980	14	10
Tigatto	112402125	36,387	3284	14	0
Waan	112402195	3,925	707		
Bunawan District (9)	2.3				
Bunawan (Pob.)	112402022	23,495	4814	12	0
Gatungan	112402047	1,190	229		
Ilang	112402049	24,947	4188	14	0
Alejandra Navarro (Lasa)	112402056	10,223	2075		
Mahayag	112402064	6,307	1111		
Mudiang	112402080	2,937	602		
Panacan	112402087	35,806	7825	12	0
San Isidro (Licanan)	112402100	5,333	955		
Tibungco	112402124	41,864	8072	12	10

* Highlighted: target barangays in future sewerage development (High priority areas)

Appendix 3.6 Household Interview Survey

1. Method of Interview Survey

(1) Outline of Household Interview Survey in IM4D

IM4Davao Team conducted household interview survey (HIS) in 2017. The features of the HIS were as follows;

- Survey Period: March 24 to April 8, 2017
- Target barangay: All 182 barangays in Davao City
- Total number of households surveyed: 2014
- Target number of households in barangays: 10 to 16
- Surveyed category: household information incl. income, water supply, sanitation incl. septic tank, drainage, telecom, power, solid waste, traffic & transport, governance

(2) Target of Interview Survey

The results of IM4D survey were carefully studied in Barangay-wide and JICA Survey Team selected the target barangays with existing sanitary issues. The main target barangays were ones in Agdao and Poblacion Districts in Area A as top priority area of sewerage development. However, barangays in Area B, C and D which are adjacent to Area A and high priority areas of sewerage development were added. Table 1.1 shows the target barangays and numbers of households of survey with dates of survey and main features of barangays in IM4D HIS result as reasons of selection in this survey.

(3) Interview Sheet

As short time interval after the HIS in IM4D and specialized interview for sewerage project, JICA Survey Team focused on preparing more and deep questions on sanitation compared to IM4D survey. The interview sheet is shown in Appendix 7.2. The comparison of interviewed contents with IM4D is shown in Table 1.2.

Table 1.1 Target Barangays, Number of Households, and Date of Survey

District	Barangay	Land Area (ha)	Nos. of Survey	Date of Survey	Main Feature in IM4D HIS Result
Agdao	Agdao Proper	38.29	20	8-Jun	Water borne disease
	Kap. Tomas Monteverde	19.52	18	17-Jun, 18-Jun	Water borne disease
	Leon Garcia	19.03	12	19-Jun	Water borne disease
	Gov. Paciano Bangoy	81.47	12	18-Jun	Overflow of wastewater
	San Juan (Centro)	43.48	12	22-Jun	Water borne disease
	Lapu Lapu	59.99	12	22-Jun	Water borne disease
	Rafael Castillo	44.54	12	18-Jun, 19-Jun	Water borne disease
	Gov. Vicente Duterte	52.02	12	17-Jun	Offensive odor
	Sub-total Agdao		110		
Poblacion	1-A	15.36	12	26-Jun	Water borne disease
	2-A	16.38	12	26-Jun	Offensive odor
	5-A	38.10	12	18-Jun	Water borne disease
	6-A	15.00	12	11-Jun	Water borne disease
	9-A	27.50	12	20-Jun	Overflow of wastewater
	10-A	28.64	12	19-Jun	Offensive odor
	12-B	17.54	12	13-Jun	Water borne disease
	13-B	11.26	12	10-Jun	Water borne disease
	15-B	31.54	12	24-Jun	Water borne disease
	19-B	362.55	23	19-Jun, 25-Jun	Offensive odor
	20-B	56.58	12	21-Jun	Water borne disease
	24-C	7.72	12	18-Jun	Water borne disease
	25-C	4.96	12	10-Jun	Water borne disease
	26-C	8.05	10	25-Jun	Water borne disease
	31-D	22.60	12	20-Jun, 21-Jun	Water borne disease
	32-D	17.90	10	25-Jun, 27-Jun	None (substitution of 7-A)
	34-D	19.63	12	14-Jun	Water borne disease
	37-D	7.10	12	21-Jun	None (substitution of 23-C)
38-D	9.00	7	17-Jun	Overflow of wastewater	
39-D	12.80	8	17-Jun	Water borne disease	
	Sub-total Poblacion		238		
	Area A Total		348		
Buhangin	Buhangin Proper	672.24	24	10-Jun	Offensive odor
	Area B Total		24		
Talomo	Bucana (West:70%)	287.36	9	25-Jun	Water borne disease
	MA-A	1,014.90	12	20-Jun	Water borne disease
	Talomo	659.70	20	25-Jun	None (Largest population in Area C)
	Bago Aplaya	217.35	12	20-Jun, 21-Jun	Water borne disease
	Area C Sub-total		53		
Buhangin	Communal	570.80	12	10-Jun	Water borne disease
	Pampangang	94.70	12	11-Jun	Water borne disease
	Sasa	695.00	12	11-Jun	None (Largest population in Area D)
Bunawan	Tibungco	780.50	14	14-Jun	Water borne disease
	Ilang	597.70	15	14-Jun, 15-Jun	Water borne disease
	Panacan	726.10	28	24-Jun	Offensive odor
	Area D Sub-Total		93		
			518		

Source: JICA Survey Team

Table 1.2 Comparison of Interviewed Contents with IM4D HIS

No.	Questions	Comparison with IM4D
Form1	Household Information	
	Number of persons, Type of house, Residence year, monthly income	○
Form2	Existing Sanitation Condition	
1.	Water Supply	
1	Connection to DCWD service	○
2	Water bill based on water meter	◎
3	Water consumption or payment amount	○
4	Method of payment	◎
2.	Sanitation	
1-A	Existence of septic tank	○
1-B	Access to septic tank	○
2-A	Type of septic tank	○
2-B	Discharge point of septic tank effluent	○
2-C	Frequency of desludging from septic tank	○
2-D	Payment amount for desludging from septic tank	○
3	Awareness for environmental improvement in case without septic tank	○
4	Discharge point of gray water	○
5	Water-borne disease	○
6-A	No. of sickness	○
6-B	Total sick days	◎
6-C	No. of days absent from work/school	○
6-D	Total approximate amount spent on cures	○
7-A	Offensive odor	○
7-B	Pipe clogging	○
7-C	Overflow of wastewater	○
7-D	Mosquitos and other insects	◎
8-A	Expectation to sewerage development	◎
8-B	Reason of expectation	◎
8-C	Awareness for improving public water body	◎
9	Willingness to pay for sewerage system	○
10	(Reference) Limitation amount to Pay for duty	◎
11	Acceptable amount for sewerage connection fee	◎
3.	Drainage	
1-A	Existence of drainage system	○
1-B	Condition of drainage system	○
1-C	Reason of 1-B answer	○
2-A	Frequency of flooding	○
2-B	Influence of wastewater in flood event	◎
2-C	Water borne disease after flooding	◎
3-A	Who clean the drains in barangay	◎
3-B	Frequency of cleaning	◎
4.	Solid waste	
1	Dumping of garbage to drains	◎
2	Reason of dumping	◎

Note: ○ : Common with IM4D, ◎: Added in this survey

Source: JICA Survey Team

2. Interview Survey Result

The survey results are under review. The results of some important questions are reported as follows.

(1) Questions concerning Wastewater Discharge

1) Ownership of Septic Tank and Accessibility to Septic Tank

The ownership (possession) of septic tanks and accessibility to septic tanks are shown in Table 2.1.

Compared to IM4D the coverage ratio of septic tank slightly decreased. The possible reason is that in this study ratio of congested areas was high since target areas were limited to Area A, B, C and D and some houses do not have enough space to install septic tank. Such houses may flush the septage to drains or back yards directly without septic tanks, or use the community toilets.

Regarding access to septic tank, the ratio of answered “yes” decreased much. Since it is generally quite difficult to find the opening of septic tank at site, this result seems reflecting the impression at sites. According to the interview to residents, many houses clog the opening with mortar to avoid the smell and just in every several years for extracting septage, they destroy the mortar or remove the toilet itself in the house. The access rate is particularly low in Agdao District and Area C.

Table 2.1(1) Ownership of Septic Tank and Access to Septic Tank

Item	Ownership of Septic Tanks				Access to Septic Tanks			
	2019		IM4D		2019		IM4D	
	No.	%	No.	%	No.	%	No.	%
Yes	443	85.5	1,865	92.6	225	43.4	1,559	77.4
No	72	13.9	126	6.3	247	47.7	386	19.2
No Response	3	0.6	23	1.1	46	8.9	69	3.4
Total	518	100.0	2,014	100.0	518	100.0	2,014	100.0

Source: JICA Survey Team and IM4D

Table 2.1(2) Ownership of Septic Tank and Access to Septic Tank (Area-wise)

Area	District	Item	Ownership of Septic Tanks		Access to Septic Tanks	
			2019		2019	
			No.	%	No.	%
Area A	Agdao	Yes	96	87	11	10
		No	12	11	90	82
		No Response	2	2	9	8
		Total	110	100	110	100
	Poblacion	Yes	201	84	144	61
		No	37	16	58	24
		No Response	0	0	36	15
		Total	238	100	238	100
Area B	Yes	23	100	21	91	
	No	0	0	2	9	
	No Response	0	0	0	0	
	Total	23	100	23	100	
Area C	Yes	51	96	5	9	
	No	2	4	48	91	
	No Response	0	0	0	0	
	Total	53	100	53	100	
Area D	Yes	12	100	10	83	
	No	0	0	2	17	
	No Response	0	0	0	0	
	Total	12	100	12	100	

Source: JICA Survey Team

2) Type of Septic Tank

The type of septic tanks is mentioned in Table 2.2. The result of ratio of lined septic tank increased from IM4D survey. However, there was almost no case that the discharge point from septic tank to drain was found. The major condition of lined septic tank is supposed to be 1) there is floor in the bottom of septic tank, 2) But there is no outlet from septic tank or outlet was clogged for countermeasure of smell. From such situation, the answer “I don’t know” should have been more than the result below.

Table 2.2 Type of Septic Tank

Type	2019		IM4D	
	No.	%	No.	%
Unlined Septic Tank	108	20.8	825	44.2
Lined Septic Tank	318	61.4	848	45.5
I Don't Know	23	4.4	114	6.1
Other	17	3.3	7	0.4
No Response	52	10.0	71	3.8
Total	518	100.0	1,865	100.0

Source: JICA Survey Team and IM4D

3) Discharge Point from Septic Tank

The discharge points from septic tank in household is shown in Table 2.3. 45% all the persons answered that they don’t know where is the discharge point in contrast with IM4D that nearly half residents answered infiltrate to ground. Since infiltration to ground is key for understanding of this result, general floor status of septic tank will be discussed with DCWD.

Many residents also answered discharge to sewer pipe but the pipe does not exist in the city except for pipes connecting road side drain and channels.

Table 2.3 Discharge Point of Septic Tank Effluent

Discharge Point	2019		IM4D	
	No.	%	No.	%
Discharge to sewer pipe	104	20.1	596	32.0
Discharge to roadside ditch	2	0.4	114	6.1
Discharge to road	1	0.2	8	0.4
Infiltrate to ground	110	21.2	883	47.3
Discharge to public water body (river, sea,etc.)	34	6.6	21	1.1
I don't know	233	45.0	167	9.0
other	4	0.8		
No response	30	5.8	184	9.9
Total	518	100.0	1,865	100.0

Source: JICA Survey Team and IM4D

4) Desludging from Septic Tank

The result on frequency of desludging from septic tank is shown in Table 2.4. The most major answer was never experienced desludging as same with IM4D HIS. And ratio of “once per more than 5 years” increased from IM4D. From such a circumstance, actual ratio of unlined septic tank should be more than the above answer. Agdao and Area C showed quite high ratio of “Never” experienced desludging.

Table 2.4 Frequency of Desludging from Septic Tank

Frequency	2019		IM4D	
	No.	%	No.	%
Anually	6	1.2	36	1.9
Once per 2 years	10	1.9	91	4.9
Once per 3-5 years	30	5.8	109	5.8
Once per more than 5 years	69	13.3	86	4.6
Never	325	62.7	1,105	59.2
Not sure	28	5.4	341	18.3
No response	50	9.7	97	5.2
Total	518	100.0	1,865	100.0

Source: JICA Survey Team and IM4D

Table 2.4(2) Frequency of Desludging from Septic Tank (Area-wise)

Area	District	Frequency	No.	%
Area A	Agdao	Anually	1	0.9
		Once per 2 years	1	0.9
		Once per 3-5 years	3	2.7
		Once per more than 5 years	4	3.6
		Never	88	80.0
		Not sure	7	6.4
		No response	6	5.5
		Total	110	100.0
	Poblacion	Anually	5	2.1
		Once per 3 years	9	3.8
		Once per 3-6 years	26	10.9
		Once per more than 6 years	37	15.5
		Never	105	44.1
		Not sure	19	8.0
No response		37	15.5	
Total		238	100.0	
Area B	Anually	0	0.0	
	Once per 4 years	0	0.0	
	Once per 3-7 years	1	4.2	
	Once per more than 7 years	11	45.8	
	Never	12	50.0	
	Not sure	0	0.0	
	No response	0	0.0	
	Total	24	100.0	
Area C	Anually	0	0.0	
	Once per 5 years	0	0.0	
	Once per 3-8 years	0	0.0	
	Once per more than 8 years	5	9.4	
	Never	46	86.8	
	Not sure	2	3.8	
	No response	0	0.0	
	Total	53	100.0	
Area D	Anually	0	0.0	
	Once per 6 years	0	0.0	
	Once per 3-9 years	0	0.0	
	Once per more than 9 years	12	13.0	
	Never	74	80.4	
	Not sure	0	0.0	
	No response	6	6.5	
	Total	92	100.0	

Source: JICA Survey Team

5) Payment for Desludging Service of Septic Tanks

The payment for desludging service of septic tanks is shown in Table 2.5. The ratio of household which paid for desludging service increased from IM4D. Poblacion District and Area B (Buhangin) showed high ratio of payment for desludging.

Table 2.5 Payment for Desludging Service of Septic Tanks

Payment	2019		IM4D	
	No.	%	No.	%
Yes	114	26.4	269	14.4
No	317	73.4	1,466	78.6
No Response	1	0.2	130	7.0
Total	432	100.0	1,865	100.0

Source: JICA Survey Team and IM4D

Table 2.5 (2) Payment for Desludging Service of Septic Tanks (Area-wise)

Area	District	Payment	No.	%
Area A	Agdao	Yes	7	9.0
		No	71	91.0
		No Response	0	0.0
		Total	78	100.0
	Poblacion	Yes	76	41.3
		No	108	58.7
		No Response	0	0.0
		Total	184	100.0
Area B	Yes	12	50.0	
	No	12	50.0	
	No Response	0	0.0	
	Total	24	100.0	
Area C	Yes	7	13.2	
	No	46	86.8	
	No Response	0	0.0	
	Total	53	100.0	
Area D	Yes	11	12.0	
	No	80	87.0	
	No Response	1	1.1	
	Total	92	100.0	

Source: JICA Survey Team and IM4D

Payment Amount

Maximum: P10,000, Minimum: P500, Average: P3,818

6) Discharge Point of Gray Water

The discharge point of gray water is shown in Table 2.6. 70% of all the interviewed households answered road side ditch. The ratio of direct discharge to public water body increased from IM4D.

Table 2.6 Discharge Point of Gray Water

Discharge Point	2019		IM4D	
	No.	%	No.	%
Discharge to sewer pipe	25	4.8	316	15.7
Discharge to roadside ditch	365	70.5	780	38.7
Discharge to road	30	5.8	12	0.6
Infiltrate to ground	25	4.8	768	38.1
Discharge to public water body (river, sea, etc.)	56	10.8	62	3.1
I don't know	0	0.0	51	2.5
other	16	3.1	0	0.0
No response	1	0.2	25	1.2
Total	518	100.0	2,014	100.0

Source: JICA Survey Team

7) Water-borne Diseases in the Past Year

The water-borne diseases in the past 12 months in the family (including multiple answers) are shown in Table 2.7. The ratio of no disease increased from IM4D.

Table 2.7 Water-borne Diseases in the Past Year

Disease	2019		IM4D	
	No.	%	No.	%
None	487	94.0	1,299	64.5
Diarrhea	7	1.4	377	18.7
Skin Diseases	4	0.8	75	3.7
Schistosomiasis	1	0.2	10	0.5
Cholera	1	0.2	59	2.9
Dysentery	0	0.0	7	0.3
Meningitis	1	0.2	1	0.0
Otitis externa sore	0	0.0	65	3.2
Amoebiasis	2	0.4	31	1.5
Hepatitis A	1	0.2	0	0.0
Typhoid	1	0.2	49	2.4
Hay Fever	8	1.5	214	10.6
Leptospirosis	2	0.4	2	0.1
Polio	0	0.0	1	0.0
Other	4	0.8	94	4.7
Unknown	3	0.6	0	0.0

Source: JICA Survey Team

The numbers of sick days and absences from work/school by water-borne disease is shown in Table 2.8. No disease cases were counted in “<1 day” in IM4D but in this study counted in no disease.

Table 2.8 Numbers of Sick Days and Absences from Work/School by Water-Borne Disease

Day	No. of Sick Days				No. of Absences from Work / School			
	2019		IM4D		2019		IM4D	
	No.	%	No.	%	No.	%	No.	%
<1 day	48	9.3	1,394	69.2	57	11.0	1,448	71.9
1-3 days	7	1.4	464	23.0	12	2.3	401	19.9
4-7 days	11	2.1	134	6.7	4	0.8	144	7.1
8-30 days	5	1.0	19	0.9	0	0.0	17	0.8
>30 days	2	0.4	3	0.1	0	0.0	4	0.2
No disease	445	85.9	0	0.0	445	85.9	0	0.0
Total	518	100.0	2,014	100.0	518	100.0	2,014	100.0

Source: JICA Survey Team

The amount spent by HIS respondents on cures of water-borne diseases is shown in Table 2.9. In case it is not the smallest amount less than Php100, the largest category was more than Php700.

Table 2.9 Amount Spent by HIS Respondents on Cures for Water-borne Diseases

Cost (PHP)	2019		IM4D	
	No.	%	No.	%
<100	50	9.7	1,513	75.1
100-300	6	1.2	219	10.9
300-500	4	0.8	124	6.2
500-700	3	0.6	62	3.1
>700	12	2.3	96	4.8
No payment	443	85.5	0	0.0
Total	518	100.0	2,014	100.0

Source: JICA Survey Team

8) Evaluation about Sanitation Condition

The evaluation by respondents about sanitation condition in/around houses are shown in Table 2.10.

The answers of “no problem” for odor, pipe clogging, wastewater overflow increased from IM4D. And answers of always offensive odor and pipe clogging, and wastewater overflow all increased from IM4D.

Table 2.10 Evaluation of HIS Respondents' about Sanitation in/around Houses

Day	Offensive Odor				Pipe Clogging				Overflow of Wastewater				Mosquitoes	
	2019		IM4D		2019		IM4D		2019		IM4D		2019	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Always	85	16.4	52	2.6	52	10.0	10	0.5	38	7.3	23	1.1	244	47.1
Frequently	42	8.1	81	4.0	49	9.5	65	3.2	58	11.2	92	4.6	122	23.6
Sometimes	167	32.2	664	33.0	110	21.2	397	19.7	175	33.8	437	21.7	100	19.3
No problem	220	42.5	1,189	59.0	303	58.5	1,437	71.4	244	47.1	1,375	68.3	48	9.3
Not sure	2	0.4	28	1.4	2	0.4	105	5.2	1	0.2	87	4.3	2	0.4
No response	2	0.4	0	0.0	2	0.4	0	0.0	2	0.4	0	0.0	2	0.4
Total	518	100.0	2,014	100.0	518	100.0	2,014	100.0	518	100.0	2,014	100.0	518	100.0

Source: JICA Survey Team

(2) Questions concerning Sewerage System

1) Expectation to Sewerage System

The expectation to sewerage system is shown in Table 2.11. Majority (86.5%) expects the development of sewerage system.

Table 2.11 Expectation to Sewerage System

Expectation for Sewerage	2019		IM4D	
	Nos.	%	No.	%
Yes	448	86.5	N/A	
No	20	3.9	N/A	
I don't know	18	3.5	N/A	
No response	32	6.2	N/A	
Total	518	100.0	N/A	

Source: JICA Survey Team

2) Negative Reason to Sewerage

Out of persons who answered negative to sewerage system in Table 2.12, more than 70% is satisfied with current circumstance as shown in Table 4.2.14.

Table 2.12 Reason of Negative to Sewerage System

Reason of Negative to Sewerage	2019		IM4D	
	Nos.	%	Nos.	%
Nearby environment is enough good	40	71.4	N/A	
Don't want to pay for sewerage system at all	7	12.5	N/A	
Septage management with septic tank is enough	1	1.8	N/A	
Drainage improvement by the city/DPWH should be higher priority.	7	12.5	N/A	
Other	1	1.8	N/A	
Not applicable (positive to sewerage system)	462	-	N/A	
Total	518	100.0		

Source: JICA Survey Team

3) Main Reason for Expecting Environmental Improvement of Public Water Body

The main reason for expecting environmental improvement of public water body is shown in Table 2.13. Nearly large number of residents showed the positiveness to environmental improvement itself.

Table 2.13 Reason of Expectation to Environmental Improvement

Environmental improvement	2019		IM4D	
	No.	%	No.	%
I hope to improve the public water body and can pay the certain amount for the environmental improvement itself	254	49.0	N/A	
I hope to improve the public water body and can pay the certain amount as an extension of improvement of living condition near my house	224	43.2	N/A	
I hope to improve the public water body but don't want to owe the cost for the improvement	24	4.6	N/A	
Improvement of the public water body is not my business	2	0.4	N/A	
Other	0	0.0	N/A	
No response	14	2.7	N/A	
Total	518	100.0		

Source: JICA Survey Team

(3) Questions concerning Financial Analysis

1) Income

The result of monthly household income is shown in Table 2.14. The largest category in IM4D was Php10,000-14,999 (17.7%) and this survey is Php15,000-19,999 (18.5%). The target households are not same with IM4D but in general the trend was similar and slightly increased after 2 years.

Table 2.14 Monthly Household Income

	Monthly Household Income (PHP)			
	2019		IM4D	
	No.	%	No.	%
No income	4	0.8	2	0.2
Below 2,000	5	1.0	18	1.7
2,000-3,999	10	1.9	76	7.0
4,000-5,999	16	3.1	131	12.1
6,000-7,999	24	4.6	158	14.5
8,000-9,999	24	4.6	145	13.4
10,000-14,999	90	17.4	192	17.7
15,000-19,999	96	18.5	134	12.3
20,000-24,999	86	16.6	71	6.5
25,000-29,999	44	8.5	60	5.5
30,000-34,999	54	10.4	35	3.2
35,000-39,999	28	5.4	16	1.5
40,000-49,999	16	3.1	24	2.2
50,000-59,999	13	2.5	11	1.0
60,000-79,999	4	0.8	6	0.6
80,000-99,999	1	0.2	4	0.4
100,000-149,999	0	0.0	1	0.1
150,000-199,999	0	0.0	1	0.1
200,000-299,999	0	0.0	1	0.1
300,000-499,999	0	0.0	0	0.0
Above 500,000	0	0.0	0	0.0
No response	3	0.6	0	0.0
Total	518	100.0	1,086	100.0

Source: JICA Survey Team

2) Willingness to Pay (Monthly Bill)

The result of willingness to pay and limitation to pay for sewerage system are shown in Table 2.15. The “Limitation” means acceptable amount for charged fee as duty. Since affordability to pay (ATP) is calculated based on income information, this is similar but different from ATP.

The most major answers for both of WTP and Limitation to Pay was PHP100/month and the ratio increased from IM4D. However, it is a result from the decrease of “None” (don’t want to pay) compared to IM4D. The persons who never want to pay for sewerage system is completely same answer even if the payment is duty. Poblacion District has more ratio of more than Php200/month than Agdao District and other areas but also shows highest ratio for None (Don’t want to pay). It is because Poblacion District has both of higher class residents with largest commercial area in Davao and large slum areas.

Table 2.15 Willingness to Pay and Limitation to Pay for Sewerage System

Monthly Fee (PHP)	Willingness to Pay (PHP)				Limitation to Pay (PHP)			
	2019		IM4D		2019		IM4D	
	Nos.	%	Nos.	%	Nos.	%	No.	%
>600	0	0.0	21	1.0	0	0.0	N/A	
501-600	0	0.0	13	0.6	6	1.2	N/A	
401-500	26	5.0	11	0.5	20	3.9	N/A	
301-400	3	0.6	40	2.0	7	1.4	N/A	
201-300	20	3.9	245	12.1	31	6.0	N/A	
101-200	63	12.2	420	20.8	128	24.7	N/A	
1-100	343	66.2	793	39.2	263	50.8	N/A	
None	56	10.8	481	23.8	56	10.8	N/A	
No response	7	1.4	0	0.0	7	1.4	N/A	
Total	518	100.0	2024	100.0	518	100.0	N/A	

Source: JICA Survey Team

Table 2.15(2) Willingness to Pay and Limitation to Pay for Sewerage System (Area Wise)

Area	District	Monthly Fee (PHP)	Willingness to Pay (PHP)		Limitation to Pay (PHP)	
			No.	%	No.	%
Area A	Agdao	>600	0	0.0	0	0.0
		501-600	0	0.0	1	0.9
		401-500	4	3.6	3	2.7
		301-400	0	0.0	1	0.9
		201-300	1	0.9	1	0.9
		101-200	4	3.6	32	29.1
		1-100	90	81.8	61	55.5
		None	11	10.0	11	10.0
		No response	0	0.0	0	0.0
		Total	110	100.0	110	100.0
	Poblacion	>600	0	0.0	0	0.0
		501-600	0	0.0	0	0.0
		401-500	15	6.3	15	6.3
		301-400	3	1.3	3	1.3
		201-300	17	7.1	17	7.1
		101-200	47	19.7	47	19.7
		1-100	116	48.7	116	48.7
		None	35	14.7	35	14.7
		No response	5	2.1	5	2.1
		Total	238	100.0	238	100.0
Area B	>600	0	0.0	0	0.0	
	501-600	0	0.0	2	8.3	
	401-500	2	8.3	0	0.0	
	301-400	0	0.0	3	12.5	
	201-300	2	8.3	6	25.0	
	101-200	4	16.7	11	45.8	
	1-100	15	62.5	1	4.2	
	None	1	4.2	1	4.2	
	No response	0	0.0	0	0.0	
	Total	24	100.0	24	100.0	
Area C	>600	0	0.0	0	0.0	
	501-600	0	0.0	0	0.0	
	401-500	0	0.0	0	0.0	
	301-400	0	0.0	0	0.0	
	201-300	0	0.0	0	0.0	
	101-200	4	7.5	15	28.3	
	1-100	48	90.6	37	69.8	
	None	1	1.9	1	1.9	
	No response	0	0.0	0	0.0	
Total	53	100.0	53	100.0		
Area D	>600	0	0.0	0	0.0	
	501-600	0	0.0	3	3.2	
	401-500	5	5.4	2	2.2	
	301-400	0	0.0	0	0.0	
	201-300	0	0.0	7	7.5	
	101-200	4	4.3	23	24.7	
	1-100	74	79.6	48	51.6	
	None	8	8.6	8	8.6	
	No response	2	2.2	2	2.2	
Total	93	100.0	93	100.0		
Total			518		518	

Source: JICA Survey Team

3) Willingness to Pay (Connection Fee)

The willingness to pay for connection fee of sewerage system in Area A to D is shown in Table 2.16. This item was not surveyed in IM4D. The largest group was Php500 (40%) and second was Php1,000 (37.3%). In general, Poblacion District shows the lowest categories of Php500 (76.9%) and None (15.5%).

Table 2.16 Willingness to Pay for Connection Fee for Sewerage System

Area	District	Connection Fee (PHP)	No.	%
Area A	Agdao	>5000	0	0.0
		4001-5000	0	0.0
		3001-4000	3	2.7
		2001-3000	6	5.5
		1001-2000	1	0.9
		501-1000	77	70.0
		1-500	11	10.0
		None	10	9.1
		No response	2	1.8
		Total	110	100.0
	Poblacion	>5000	1	0.4
		4001-5000	0	0.0
		3001-4000	0	0.0
		2001-3000	0	0.0
		1001-2000	4	1.7
		501-1000	10	4.2
		1-500	183	76.9
		None	37	15.5
		No response	3	1.3
		Total	238	100.0
Area B	>5000	0	0.0	
	4001-5000	0	0.0	
	3001-4000	1	4.2	
	2001-3000	5	20.8	
	1001-2000	5	20.8	
	501-1000	9	37.5	
	1-500	2	8.3	
	None	2	8.3	
	No response	0	0.0	
	Total	24	100.0	
Area C	>5000	0	0.0	
	4001-5000	0	0.0	
	3001-4000	0	0.0	
	2001-3000	0	0.0	
	1001-2000	0	0.0	
	501-1000	46	86.8	
	1-500	6	11.3	
	None	1	1.9	
	No response	0	0.0	
	Total	53	100.0	
Area D	>5000	0	0.0	
	4001-5000	0	0.0	
	3001-4000	3	3.2	
	2001-3000	7	7.5	
	1001-2000	16	17.2	
	501-1000	51	54.8	
	1-500	5	5.4	
	None	2	2.2	
	No response	9	9.7	
	Total	93	100.0	
Total	>5000	1	0.2	
	4001-5000	0	0.0	
	3001-4000	7	1.4	
	2001-3000	18	3.5	
	1001-2000	26	5.0	
	501-1000	193	37.3	
	1-500	207	40.0	
	None	52	10.0	
	No response	14	2.7	
	Total	518	100.0	

Source: JICA Survey Team

(4) Questions concerning Drainage System (Reference)

1) Drainage System

The existence of drainage system near houses is shown in Table 2.17. The percentage of Yes is more than one in IM4D. The conditions of drainages system is shown in Table 2.18. The answer showed almost similar trend with one in IM4D.

Table 2.17 Existence of Drainage System near House

Drainage system	2019		IM4D	
	No.	%	No.	%
Yes	439	84.7	1,555	77.2
No	76	14.7	459	22.8
No Response	3	0.6	0	0.0
Total	518	100.0	2,014	100.0

Table 2.18 Condition of Drainage System near House

Condition of drainage	2019		IM4D	
	No.	%	No.	%
Very bad	72	13.9	198	12.7
Bad	103	19.9	304	19.5
Average	131	25.3	533	34.3
Good	113	21.8	414	26.6
Very good	17	3.3	106	6.8
No response	82	15.8	0	0.0
Total	518	100.0	1,555	100.0

Out of all the respondents who answered Yes in Table 2.17, the reasons why answered each in Table 2.18 are shown in Table 2.19. The odor problem was highest figure among all the answers. From the odor and also much answer for turbid, the stagnant drainage condition with wastewater can be found.

Table 2.19 Reasons for Answers on Drainage System Conditions

Reason	2019					IM4D				
	Yes		No.		Total	Yes		No.		Total
	No.	%	No.	%		No.	%	No.	%	
Clogging	197	47.4	219	52.6	416	438	87.3	64	12.7	502
Turbid	268	64.4	148	35.6	416	380	75.7	122	24.3	502
Odor	254	71.3	102	28.7	356	358	71.3	144	28.7	502
Other	1	-	0	0.0	1	-	-	-	-	-

Source: JICA Survey Team

2) Flooding

The frequency of flooding is shown in Table 2.20. Compared to IM4D, large percentage respondents answered more than once/month. Actually many respondent answered frequent flooding after heavy rainfalls and around 30cm flooding happens particularly in the congested areas.

Table 2.20 Frequency of Flooding

Flooding	2019		IM4D	
	No.	%	No.	%
More than once/month	213	41.1	78	3.9
Once/month	1	0.2	100	5.0
More than 5 times/year	0	0.0	61	3.0
2-5 times/year	4	0.8	67	3.3
Once a year	4	0.8	103	5.1
Once per 2 years	1	0.2	54	2.7
Once per 3 years	53	10.2	46	2.3
Never	127	24.5	1,117	55.5
Not sure	109	21.0	388	19.3
No response	6	1.2	0	0.0
Total	518	100.0	2,014	100.0

Source: JICA Survey Team

To the question “In the flood event, the flooding water looked/smelled including much wastewater?” nearly half respondents answered “Yes” and it was more than answer “No”. The dilution of wastewater happens in flooding but many respondents were still aware about wastewater from drains.

Table 2.21 Mixture of Wastewater in Flooding

Wastewater in Flooding	2019		IM4D	
	No.	%	No.	%
Yes	231	44.6	N/A	-
No	199	38.4	N/A	-
No Response	88	17.0	N/A	-
Total	518	100.0	N/A	-

Source: JICA Survey Team

3) Cleaning of Drains

Table 2.22 shows who clean the drains in front of households. More than half respondents answered they clean the drain by themselves. Next major answers were Barangay staff.

Table 2.22 Cleaning of Drain

Cleaning of Drains	2019		IM4D	
	No.	%	No.	%
Barangay staff	95	18.3	N/A	-
Household	298	57.5	N/A	-
City Drainage staff	47	9.1	N/A	-
Private company	0	0.0	N/A	-
Other	65	12.5	N/A	-
Nobody	2	0.4	N/A	-
No response	11	2.1	N/A	-
Total	518	100.0		

Source: JICA Survey Team

The frequency of cleaning drains was asked as shown in Table 2.23. 66% answered that there are frequent cleaning of drains more every week.

Table 2.23 Frequency of Cleaning Drains

Frequency of Cleaning	2019		IM4D	
	No.	%	No.	%
>Once/week	344	66.4	N/A	-
Once\month	50	9.7	N/A	-
Once/2-6months	18	3.5	N/A	-
Once/year	22	4.2	N/A	-
Once/several years	4	0.8	N/A	-
None	3	0.6	N/A	-
No response	77	14.9	N/A	-
Total	518	100.0		

Source: JICA Survey Team

4) Dumping of Garbage in Drain

Table 2.24 shows the answers to “Have you thrown the garbage (e.g. PET bottle, plastic bag) in open drain/rainwater inlet part of covered drains, or seen neighbors to throw there?” and Table 2.25 shows the assumed reasons of dumping. More than half answered No and the reason were not so clear except for few answers for “could not bring back the garbage to house” and lack of awareness to environment.

Table 2.24 Dumping of Garbage to Drain

Garbage to drainage	2019		IM4D	
	No.	%	No.	%
Yes (Myself/Family)	18	3.5	N/A	-
Yes (Neighbors)	149	28.8	N/A	-
No	307	59.3	N/A	-
No response	44	8.5	N/A	-
Total	518	100.0		

Source: JICA Survey Team

Table 2.25 Reason of Garbage Dumping to Drain

Reason of Garbage Dumping in Drains	2019		IM4D	
	No.	%	No.	%
Insufficient solid waste collection system	5	3.0	N/A	-
Could not bring back the garbage to house	10	6.0	N/A	-
Lack of awareness to keep clean environment	9	5.4	N/A	-
Lack of knowledge for what will happen from the garbage dumping	1	0.6	N/A	-
Other	3	1.8	N/A	-
I don't know	139	83.2	N/A	-
Total	167	100.0		

Source: JICA Survey Team

(5) Questions concerning Water Supply System (Reference)

1) Connection to DCWD Water Supply System

Table 2.26 DCWD Connection

Item	DCWD Connection			
	2019		IM4D	
	No.	%	No.	%
Yes	484	93.4	1,020	50.6
No	32	6.2	944	46.9
No Response	2	0.4		
Total	518	100.0	2,014	100.0

Source: JICA Survey Team

2) Water Fee Payment based on Customer Meter

Table 2.27 Payment based on Customer Meter

Item	Payment based on Water Meter			
	2019		IM4D	
	No.	%	No.	%
Based on water meter	422	81.5	N/A	
Not based on water meter	86	16.6	N/A	
No Response	10	1.9	N/A	
Total	518	100.0	N/A	

Source: JICA Survey Team

3) Monthly Household Water Consumption

The monthly water consumption in household is shown in Table 2.28. In case 11-20 m³ is assumed to be 15 m³ and likewise for other categories, the average water consumption in 23.3 m³/month/HH excluding the categories of “Specify in cost” and “No response”.

Table 2.28 Monthly Water Consumption in Household

Volume	Monthly Household Water Consumption			
	2019		IM4D	
	No.	%	No.	%
Less than 10 m ³	35	6.8	220	28.9
11-20 m ³	72	13.9	245	32.2
21-30 m ³	67	12.9	98	12.9
31-40 m ³	37	7.1	85	11.2
41-50 m ³	20	3.9	57	7.5
More than 50 m ³	8	1.5	57	7.5
Specify in cost	244	47.1	-	-
No response	35	6.8	-	-
Total	518	100.0	762	100.0

Source: JICA Survey Team

Table 2.29 Monthly Water Fee in Household

Cost	Monthly Household Water Fee			
	2019		IM4D	
	No.	%	No.	%
Less than 101PHP	3	0.6	220	28.9
101-200PHP	88	17.0	245	32.2
201-300PHP	108	20.8	98	12.9
301-400PHP	69	13.3	85	11.2
401-500PHP	44	8.5	57	7.5
More than 501PHP	168	32.4	57	7.5
No response	38	7.3	-	-
Total	518	100.0	762	100.0

Source: JICA Survey Team

4) Payment Method of Water Fee

The payment method of water fee is shown in Table 2.30. Despite DCWD offers the payment method with bank withdrawal, majority (more than 68.5%) of residents pay the water fee with cash in DCWD counters.

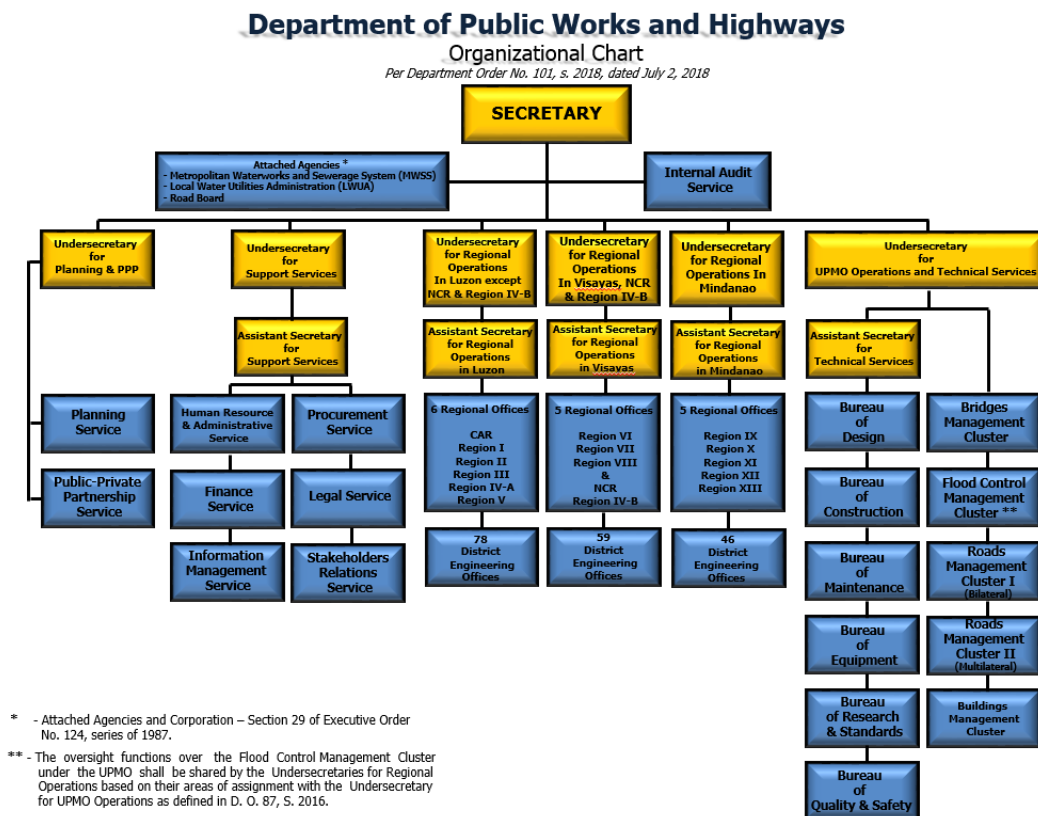
Table 2.30 Payment Method of Water Fee

Item	Payment Method of Water Fee			
	2019		IM4D	
	No.	%	No.	%
Cash in DCWD counter	355	68.5	N/A	
Monthly withdrawal from bank account	1	0.2	N/A	
Through internet with debit/credit card	0	0.0	N/A	
Other	63	12.2	N/A	
No response	99	19.1	N/A	
Total	518	100.0		

Source: JICA Survey Team

APPENDIX 3.7_DPWH ORGANIZATION

The Department of Public Works and Highways (DPWH) is one of the three departments of the government undertaking major infrastructure projects. The DPWH is mandated to undertake (a) the planning of infrastructure, such as national roads and bridges, flood control, water resources projects and other public works, and (b) the design, construction, and maintenance of national roads and bridges, and major flood control systems. DPWH has the regional offices for Luzon, Visayas, NCR, and Mindanao. The organization structure is shown in **Figure A3.7.1**.



* - Attached Agencies and Corporation – Section 29 of Executive Order No. 124, series of 1987.

** - The oversight functions over the Flood Control Management Cluster under the UPMO shall be shared by the Undersecretaries for Regional Operations based on their areas of assignment with the Undersecretary for UPMO Operations as defined in D. O. 87, S. 2016.

Source: DPWH

Figure A3.7.1 General Organization Chart of DPWH

Figure A3.7.2 shows the area categories of totally 16 regional offices that is shown in Figure A3.7.1. Davao City belongs to Region XI as a part of southeastern Mindanao.



Source: DPWH

Figure A3.7.2 Regions of DPWH Management

APPENDIX 3.8_EXISTING DRAINAGE MAP FROM DPWH

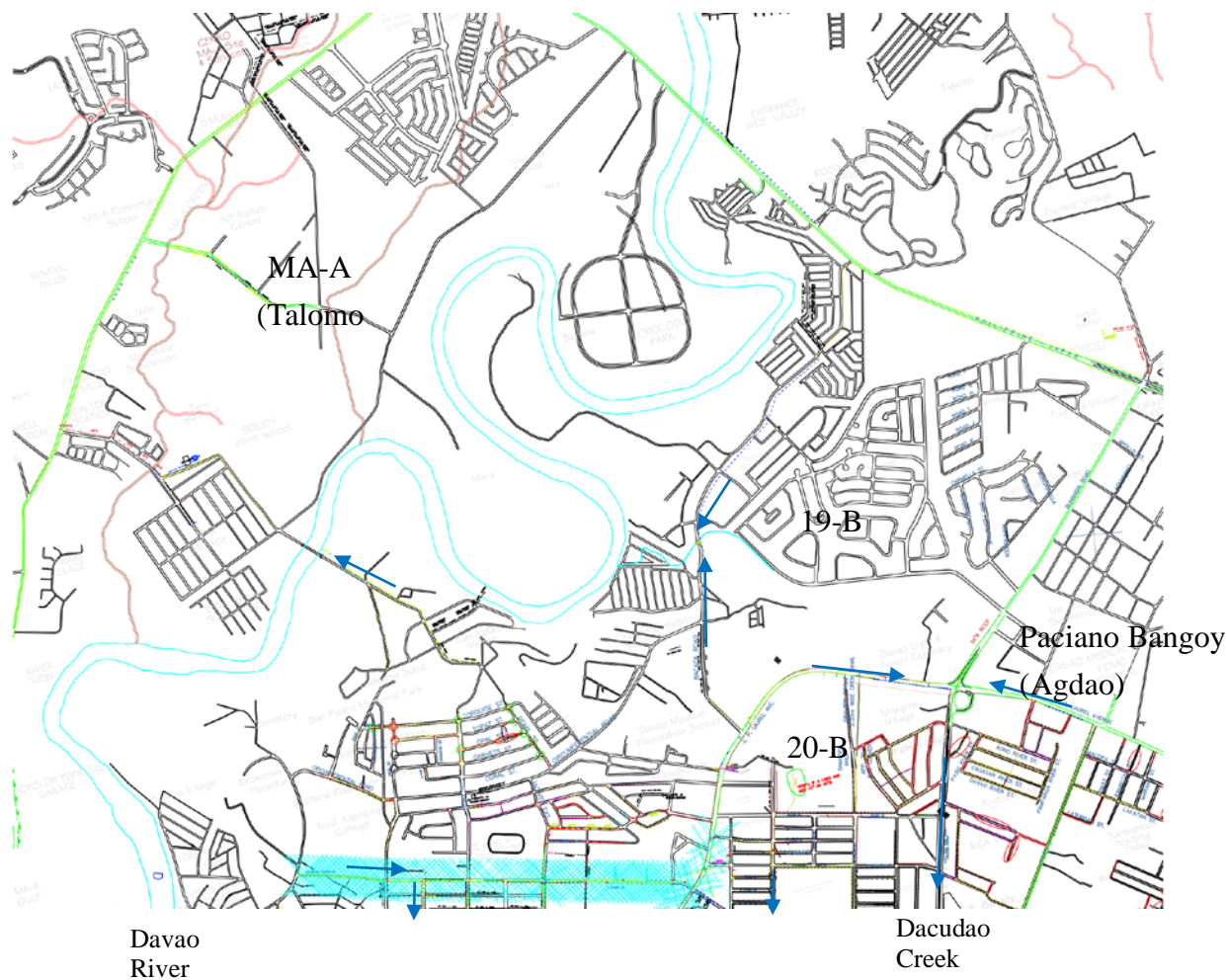
The drainage map was obtained from DPWH cooperated by JICA flood control master plan team. The map shows 1) creeks, 2) box culverts, 3) RCCP (mainly connection between road side drain to creeks) with the sizes. From the information, the locations of main drainage outfalls to creeks can be confirmed. The ones for Poblacion and Agdao Districts are shown in Figure A3-7-1 to A3-7-3.

The major diameters of drainage pipes are 24 inch (Dia.0.61m) and 36 inch (Dia.0.91m) and largest pipe in the city is 72 inch (Dia.1.83m)



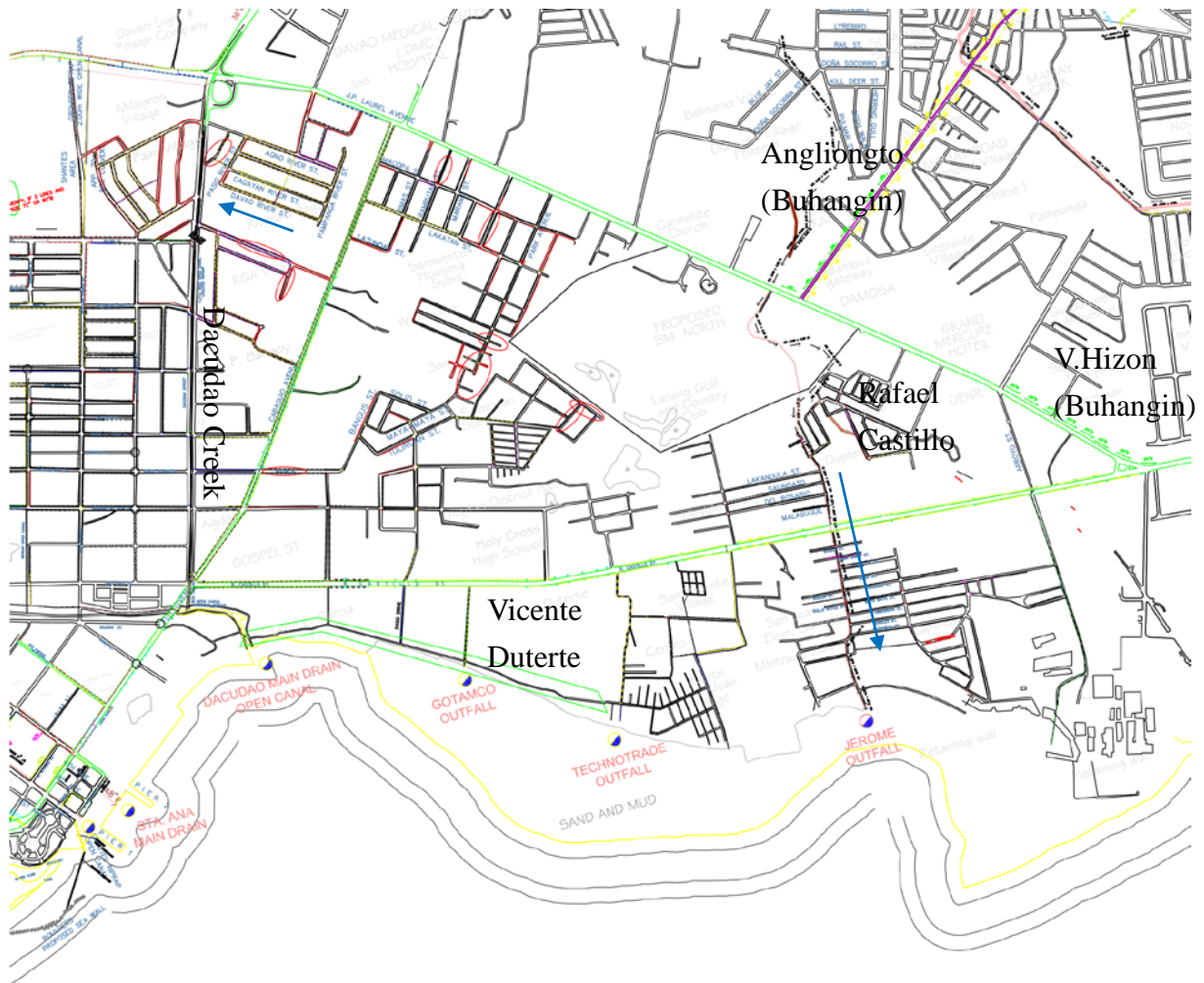
Source: DPWH

Figure A3-8-1 Drainage Development Status in Poblacion District South



Source: DPWH

Figure A3-8-2 Drainage Development Status in Poblacion District North



Source: DPWH

Figure A3-8-3 Drainage Development Status in Agdao District

APPENDIX 3.9_DRAINAGE PROJECTS BY DPWH

The detailed list of past projects for FY2016-2018 is shown in Table A3-9-1. The amounts are increasing from 2016 (PHP 162 million) to 2018 (PHP 952 million). However, the drain improvement works in Poblacion and Agdao Districts are basically to rehabilitate, widen, and cover the drains but insufficient slopes of existing drains are not improved. The pumping stations are installed as gate pumping stations in the mouths of creeks and in flood prone areas to drain the flooding water. The works with increasing the slopes of existing drains and downstream pumping station in the flat area are not included. Therefore, the drastic effects from the drainage works cannot be expected except for inland areas with enough slope and areas without any existing drains.

Table A3-9-1 Past Drainage Project by DPWH in FY2016 to 2018

Programs/Projects/Activities		Construction Cost (Php)
FY 2016		
1	Improvement/Rehabilitation of Drainage Structures at Sandawa Main Drain, Ecoland, Brgy. 76-A, Davao City 1st LD	18,390,000
2	Improvement/Rehabilitation of F. Torres St. to Mabini St. Maindrain, Davao City 1st LD	20,000,000
3	Improvement/Rehabilitation of Jct. Elpidio Quirino Ave., Jct. Mt. Apo St. Drainage to Outfall, Davao City 1st LD (the drainage to Matina River)	34,000,000
4	Completion of Davao City Diversion Road Drainage (Laverna Maindrain), Davao City 2nd LD (the drainage to Lasang Creek)	40,000,000
5	Improvement/Rehabilitation at Belisario Heights, Bloomfields to Jerome Main Drain, Davao City 2nd LD (the drainage to Panacan River)	50,000,000
Sub-total (FY 2016)		162,390,000
FY 2017		
1	Improvement/Construction of Drainage Structures along Leon Garcia St., Davao City (Chainage 000- Chainage 118) (K1508+515- K1508+633) (Carpenter-Sulpicio Line)	4,704,000.00
2	Improvement/Construction of Drainage along Quirino Ave., K1510+-613 -K1510+-455 (Chinese Temple to Jacinto St.), Davao City	3,476,000
3	Improvement/construction of Drainage Structures along L. Garcia St., Davao City a. (Chainage 118- Chainage 374) b. (K1508+309- K1508+516)	8,240,000
4	Improvement of Drainage Structures along Davao- Cotabato Road Chainage 2424 (Jct. Davao-Cotabato Road/Jct. Tulip Section) to outfall (Davao River) , Davao City	41,826,000
5	Construction/Upgrading/Rehabilitation of Drainage along National Roads at F.Torres St.-Jct. Tavera St.-Arellano St.- Mt. Apo St., K1509+770, Davao City	21,091,000
6	Construction/Upgrading/Rehabilitation of Drainage along National Roads Davao City Diversion Road, K1508+722-K1509+180, Davao City	20,700,000
7	Construction/Upgrading/Rehabilitation of Drainage along National Roads Davao City Diversion Road, K1511+900- K1512+000, Davao City	30,897,000
8	Improvement/ Construction of Drainage along Davao- Cotabato Road (Davao City-Jct. Digos Section)- K1518+930-K1518+954, Davao City	30,000,000
9	Construction of Lateral Drainage at Pampanga-Coaco Maindrain, Davao City	20,000,000
10	Construction of Drainage Structures along Jct. Daang Maharlika Road K1502+305, Davao City	15,210,000
11	Const./Rehab of Lateral Drainage along Fatima St. and Pag-Asa St. Leading to Quezon Boulevard Main Drain, Davao City	17,555,000
Sub-total (FY 2017)		208,995,000
FY 2018		
1.	Construction of Drainage along Lasang Creek, Davao City	50,000,000
2.	Improvement of Drainage along J.P. Cabaguio Ave., Davao City	100,000,000
3.	Improvement/Construction of Drainage along Jct. J.P. Cabaguio Ave.-Vinzon St.-Dacudao Ave., Davao City	16,800,000
4.	Improvement/Construction of Drainage along Jct. J.P. Cabaguio Ave.-Villamor St.-Dacudao Ave., Davao City	17,440,000
5.	Improvement/Rehabilitation of Agdao Creek, Davao City	100,000,000
6.	Improvement/Rehabilitation of Marginal St. to R. Magsaysay Outfall, Davao City	50,000,000
7.	Improvement/Rehabilitation of Ponce St. Outfall, Davao City	80,000,000
8.	Improvement/Rehabilitation of Roxas Extension Outfall, Davao City	100,000,000
9.	Improvement/Rehabilitation of Mabini Extension Outfall , Davao City	100,000,000
10.	Improvement/Construction of Drainage along Tulip Drive, Davao City	30,000,000
11.	Improvement/Rehabilitation of Drainage along Ecovest Drive, Davao City	30,000,000
12.	Improvement/Construction of Drainage along Acacia St.-Jct. Patrubay St., Davao City	16,200,000
13.	Improvement/Rehabilitation of Drainage along ABS-CBN Quimpo Blvd. Diversion Road (Jct. Tulip Drive-Jct. Ecoland Terminal), Davao City	61,200,000
14.	Improvement/Rehabilitation of Mamay Creek, Davao City	100,000,000
15.	Improvement/Rehabilitation of Jerome Main Drain, Davao City	100,000,000
Sub-total (FY 2018)		951,640,000

Note: Excluded one road rehabilitation project with gabion for land slide in 2017

Source: DPWH compiled by JICA Survey Team

The ongoing drainage project by DPWH in FY2019 is shown in Table A3-9-2. The total amount for drainage work is PHP 356 million.

Table A3-9-2 Ongoing Drainage Project by DPWH in FY2019

Programs/Projects/Activities		Construction Cost (Php)
1	Construction of Drainage Structure along daang Maharlika (S00001MN) K1507+962 - K1508+475, BS K1508+475 - K1509+490, LS	51,450,000
2	Construction of Drainage Structure along ABS-CBN Quimpo Blvd div. Rd. (S00036mn) - K1514+351 - K1514+378 going to outfall	52,808,000
3	Construction of Drainage Structure along Road Davao City Div Rd (s00013mn) K1505+140 - K1506+770	89,210,000
4	Construction of Drainage Structure along Davao City Diversion Road K1501+882 - K1501+909	98,999,000
5	Rehabilitaqtion/ Improvement of Road with Drainage - Veloso Street, Lacson Street- Iñogo Street, davao	63,340,000
Total FY 2019		355,807,000

Note: Excluded two flood control projects in Davao River

Source: DPWH compiled by JICA Survey Team

The future project in FY2020 is shown in Table A3-9-3. The total amount (budget) is PHP 396 million.

Table A3-9-3 Future Drainage Project by DPWH in FY2020

Programs/Projects/Activities		Construction Cost (Php)
1	Construction of Drainage along Pagatpat St., S.I.R., Phase 1, Brgy. 76-A,Davao City	10,000,000
2	Improvement/Const. of Drainage along Acacia St.,-Jct. Patnubay St., Davao City	16,200,000
3	Construction of Drainage along Rose Santol and Evergreen Streets, Barangay Sto. Niño,Davao City	20,000,000
4	Construction/Improvement of Drainage along Mt. Apo,Mt. Mayon, General Luna, Jose Abad Santos and Camus Street,Davao City	20,000,000
5	Construction/Improvement of Drainage Along Edsa Street, Tahimik Avenue (Barangay 74-A),Davao City	20,000,000
6	Construction/Improvement of Drainage along Artiaga, Faura, Bonifacio, Mabini, Aurora Streets,Davao City	20,000,000
7	Construction/Improvement of Drainage along Garnet Street,Davao City	20,000,000
8	Construction/Improvement of Ecoland Phase IV Drainage (Up to Outfall),Davao City	20,000,000
9	Construction of Drainage along Cadena De Amor and Ilang-Ilang Streets (Sabroso), Barangay 76-A,Davao City	30,000,000
10	Construction of Drainage at Purok 3-9, Matina Pangi,Davao City	30,000,000
11	Construction/Improvement of Drainage along Dona Carmen Street, Dumoy,Davao City	30,000,000
12	Improvement of Sitio Saka Drainage, Brgy. Bago Gallera,Davao City	30,000,000
13	Construction of Sitio Saka - Sitio Bagasa Drainage, Bago Gallera,Davao City	50,000,000
14	Construction of Drainage Within Brgy. 9-A and Brgy. 10-A,Davao City	80,000,000
Total FY 2020 (onwards)		396,200,000

Source: DPWH compiled by JICA Survey Team

Appendix 3.10_Drainage Projects by City (FY2014-2019)

City Government of Davao
General Fund – Development Fund
Annual Budget
Infrastructure Projects

Project Code	Title of Projects/Location	Source of Fund	Status	Date Reported/Details	Appropriation	Contract Amount	Date Started	Date Completed
14111	Construction of Line Canal with Concrete Slab Cover and Cross Drains at Candelaria Street, HPG Area, Barangay Bucana, Talomo District	ADF 2014	completed	04-Dec-14	1,700,000	1,694,390.57	11-Aug-14	14-Nov-14
14112	Construction of Line Canal at Ecoland Phase 4, Barangay Bucana, Talomo District	ADF 2014	completed	30-Oct-14	1,500,000	1,498,048.23	17-Jul-14	03-Oct-14
14114	Construction and Installation of RCCP Line and Manhole Cover at Maligaya Village, Barangay Matina Crossing	ADF 2014	Completed	16-Nov-15	1,380,000	1,375,262.63	26-Jun-15	09-Oct-15
14116	Improvement/Rehabilitation of Drainage Canal at Orchid and Camella Streets, People's Village, Barangay Maa, Talomo District	ADF 2014	Completed	18-Dec-15	1,000,000	996,902.92	09-Jun-15	18-Nov-15
14117	Construction of 601mm Ø RCCP Manholes, Eagle Street, Ecoland, Barangay Bucana, Talomo District	ADF 2014	completed	18-Aug-14	510,000	508,790.00	03-Jul-14	23-Jul-14
14118	Riprapping of Canal at Purok 33, Megaville, Agro Compound, Barangay Bucana (76-A)	ADF 2014	Completed	06-Jul-15	250,000	248,990.63	27-May-15	25-Jun-15
14119	Drainage System at Purok Victoria, Barangay Bago Aplaya, Talomo District	ADF 2014	completed	15-Apr-15	250,000	246,094.15	17-Nov-14	06-Mar-15
14120	Drainage System at Purok 16, Durian, Barangay Bago Gallera, Talomo District	ADF 2014	completed	15-Apr-15	250,000	247,991.96	22-Dec-14	10-Mar-15
14122	Improvement of Line Canal at Barangay R. Castillo, Agdao District	ADF 2014	completed	25-May-15	300,000	298,000.00	30-Mar-15	28-Apr-15
14123	Drainage System at Beta Km. 9, Barangay Tigatto, Buhangin District	ADF 2014	completed	05-May-15	200,000	197,786.05	23-Feb-15	16-Apr-15
14125	Construction of Box Culvert at Barangay Wangan, Calinan District	ADF 2014	completed	08-Jan-15	1,500,000	1,497,473.34	08-Sep-14	27-Nov-14
14126	Improvement of Canal at Sitio Prudential Daliao, Barangay Daliao, Toril District	ADF 2014	completed	11-Mar-15	300,000	299,278.27	28-Nov-14	26-Jan-15
14127	Riprapping of Canal at Barangay Angalan, Tugbok District, D.C.	ADF 2014	completed	01-Mar-16	250,000	248,986.02	22-Sep-15	25-Jan-16
14128	Improvement of Line Canal at St. Jude, Barangay Daliao, Toril District	ADF 2014	completed	24-Feb-15	250,000	249,347.70	29-Dec-14	15-Jan-15
14129	Riprapping of Canal at Purok 1, Barangay Manuel Guaing, Tugbok District	ADF 2014	completed	11-Nov-15	200,000	199,494.25	22-Sep-15	21-Oct-15
14130	Riprapping of Canal at San Francisco Street, Barangay Riverside, Calinan District	ADF 2014	completed	30-Oct-14	200,000	198,889.20	11-Sep-14	05-Oct-14
Total ADF 2014					10,040,000	10,005,726		
15125	Lined Canal (CHB) with Concrete Beams at Lanzona Subdivision Matina Crossing, Talomo District	ADF 2015	completed	30-Jun-16	3,155,000	3,149,416.89	15-Jan-16	03-May-16
15127	Rehabilitation/Repair of Covered Canal at Barangay 32-D, Purok 4 and 5, Poblacion District	ADF 2015	Completed	06-Nov-15	100,000	99,169.74	08-Sep-15	01-Oct-15
15128	Canal Riprapping at Barangay Matina Pang, P8-A Km. 8-5 the Road connecting to Barangay Hall, Talomo District	ADF 2015	completed	14-Jul-15	100,000	98,186.99	02-Jun-15	26-Jun-15
15129	Construction of New Drainage Line at Guadalupe Entrance Road, Lanang, Barangay Anglongto, Buhangin District	ADF 2015	Completed	18-Dec-15	1,100,000	1,095,977.18	22-Jun-15	01-Dec-15
15130	Flood Control Project at Indangan Creek, Purok Silad, Barangay Mandug, Davao City	ADF 2015	completed	20-Jul-15	400,000	396,814.15	09-Jun-15	25-Jun-15
15131	Rehabilitation of Drainage System along Taurus Street, Barangay Wilfredo Aquino, Agdao District	ADF 2015	Completed	25-Nov-15	350,000	347,102.51	05-Jun-15	29-Oct-15
15132	Riprapping of Line Canal at Purok 9, Carmen, Baguio District	ADF 2015	Completed	20-Jan-16	300,000	297,434.07	30-Sep-15	01-Dec-15
15134	Riprapping of Canal at Sampaguita Street at Barangay Riverside, Calinan District, Davao City	ADF 2015	Completed	18-Dec-15	350,000	347,382.31	30-Sep-15	27-Nov-15
Total ADF 2015					5,855,000	5,831,484		
16107	Drainage System at Block 1-7, Sitio Riverbed, Brgy. 22-C, Poblacion District-Dist. I-7	ADF 2016	completed	23-Nov-16	250,000	247,672.96	12-Aug-16	12-Oct-16
16108	Drainage Program at Purok Juliville, Brgy. Tigatto, Buhangin District - Dist. II-6	ADF 2016	completed	23-Nov-16	200,000	197,879.02	22-Aug-16	07-Oct-16
16109	Construction of Drainage System for Barangay Ilang, Bunawan District	ADF 2016	completed	17-Jan-16	3,000,000	2,994,715.15	08-Aug-16	24-Nov-16
16111	Riprapping of Line Canal at Brgy. Sto Niño, Tugbok District - Dist. III-6	ADF 2016	completed	23-Nov-16	100,000	98,082.62	04-Aug-16	02-Sep-16
16112	Riprapping of Canal at Purok Neptune St., Brgy. Crossing Bayabas, Toril District - Dist. III-7	ADF 2016	completed	23-Nov-16	200,000	197,924.15	15-Aug-16	23-Sep-16
16113	Riprapping of Canal at Brgy. Tamayong, Calinan District - Dist. III-7	ADF 2016	completed	21-Nov-16	100,000	98,739.49	05-Aug-16	02-Sep-16
Total ADF 2016					3,850,000	3,835,013		
17218	Installation of 26" RCCP from corner Sobrecarey to Lacson St.-Lacson St. to Corner Porras St.-Lacson St., Brgy. 18-B, Poblacion District	ADF 2017	completed	09-Aug-18	2,500,000	2,493,431.26	07-Feb-18	25-Jun-18
17219	Construction of CHB Line Canal at Purok 24, SAMULCO, Catalunan Pequeño, Talomo District	ADF 2017	issued NTP	03-Dec-18	1,700,000	1,695,877.22		
17222	Installation of Drainage Line with Manhole at Purok 6, V. Guzman St., Brgy. 27-C, Poblacion District	ADF 2017	completed	25-Oct-18	1,000,000	995,987.26	10-May-18	05-Sep-18
17223	Construction of Drainage at Kapalaran St., Lower Ledesma, Brgy. 10-A, Poblacion District	ADF 2017	completed	05-Dec-17	1,000,000	994,529.77	10-Jul-17	18-Oct-17

Appendix 3.10_Drainage Projects by City (FY2014-2019)

Project Code	Title of Projects/Location	Source of Fund	Status	Date Reported/Details	Appropriation	Contract Amount	Date Started	Date Completed
17224	Construction of Drainage at Platinum St., San Rafael Village, Brgy. 10-A, Poblacion District	ADF 2017	completed	01-Oct-18	1,000,000	994,878.89	18-Jul-18	06-Sep-18
17225	Construction of Drainage at Purok 3, Monteverde St., Brgy. 27-C, Poblacion District	ADF 2017	completed	27-Jun-18	400,000	396,929.78	02-May-18	06-Jun-18
17228	Slope Protection at Purok 1, Brgy. Fatima, Paquibato District	ADF 2017	on-going POW		2,500,000			
17229	Construcion of Box Culvert at Pizzaro to Panacan Relocation Road, Buhangin District	ADF CY2017	completed	20-Sep-18	2,000,000	1,996,929.95	02-Apr-18	14-Aug-18
17230	Rehabilitation of existing Line Canal along Sta. Lucia Chapel going to Purok San Nicolas and Pag-asa St. including the completion of existing line canal going to main open canal near Galaura Residence at Brgy. Centro, Agdao District	ADF 2017	completed	26-Jun-18	1,000,000	996,912.49	05-Apr-18	29-May-18
17233	Construction/Improvement of Drainage on both sides, Brgy. Wilfredo Aquino, Agdao District	ADF 2017	completed	06-Sep-18	500,000	496,847.79	30-Apr-18	23-Jul-18
17234	Rehabilitation of Drainage System at Purok San Vicente, Brgy. Agdao Proper, Agdao District	ADF 2017	completed	11-Jul-18	450,000	444,672.70	13-Apr-18	11-Jun-18
17235	Improvement of Drainage System and Pathway at Purok San Miguel, Brgy. Agdao Proper, Agdao District	ADF 2017	Programmed	waiting for docs - for submission to BAC	350,000			
17236	Rehabilitation of Drainage System at Purok Salvacion, Brgy. Agdao Proper, Agdao District	ADF 2017	on-going POW		350,000			
17237	Improvement of Drainage at Indian River Street going to Almasiga St., Brgy. Lapu-Lapu, Agdao District	ADF 2017	completed	31-Aug-18	300,000	297,247.48	19-Apr-18	31-Jul-18
17241	Riprapping of Canal at Purok 9, Barangay Anggalan, Tugbok District, Davao City - Dist. III-4	ADF 2017	completed	20-Apr-18	200,000	196,491.33	22-Jan-18	20-Feb-18
17242	Riprapping of Canal at Barangay Manuel Guianga, Tugbok District, Davao City - Dist. III-4	ADF 2017	for releasing of award		200,000			
17243	Riprapping of Canal at Barangay Tugbok Proper, Tugbok District, Davao City - Dist. III-4	ADF 2017	completed	07-May-18	200,000	197,403.96	09-Mar-18	06-Apr-18
17244	Rip-rapping of Canal at Purok 1-A, Brgy. Riverside Calinan District, Davao City. - Dist. III-7	ADF 2017	completed	27-Nov-17	300,000	298,696.25	26-Aug-17	24-Oct-17
17245	Construction/Rehabilitation and Improvement of Main Road Drainage System at Barangay Cawayan, Calinan District	ADF 2017	completed	06-Jun-18	3,000,000	2,996,983.53	20-Nov-17	11-May-18
17246	Rip-rapping of canal at Purok 1, Brgy. Manuel Guianga, Tugbok District, Davao City - Dist. III-7	ADF 2017	completed	15-Mar-18	200,000	197,371.84	31-Jan-18	20-Feb-18
17247	Construction of Box Culvert, Brgy. Gumitan, Marilog District	ADF 2017	Completed	03-Apr-19	3,500,000	3,497,896.99	30-Apr-18	21-Jan-19
17248	Construction of Drainage System (Riprapping) from Corner San Jose in front of Girl Scout Camp to Mcleod St., Brgy. Daliao, Toril District	ADF 2017	completed	02-Aug-18	3,000,000	2,992,629.98	09-Mar-18	11-May-18
17249	Construction of Drainage System at (1) Sitio JV Feriols to Sitio Dacudao and (2) Sition Lizada Proper to Sitio Tambacan, Barangay Lizada, Toril District	ADF 2017	completed	15-Oct-18	3,000,000	2,993,416.19	05-Mar-18	27-Sep-18
17250	Rip-rapping of Canal in front of Highland Banana Corporation (HBC), Purok 1, Brgy. Manuel Guianga, Tugbok District	ADF 2017	completed	23-Aug-18	3,000,000	2,993,663.69	21-Apr-18	20-Jun-18
17251	Construction of Grouted Riprap Canal (Area 2) at Brgy. Sirib, Calinan District	ADF 2017	completed	15-May-18	1,600,000	1,595,493.73	27-Nov-01	25-Apr-18
17252	Construction of Box Culvert Single Barrel at Brgy. Wangan, Calinan District	ADF 2017	completed	29-Aug-18	1,200,000	1,196,138.58	15-May-18	23-Jul-18
17253	Construction of Box Culvert Single Barrel at Sitio Bala, Brgy. Tamugan, Marilog District	ADF 2017	completed	28-Sep-18	1,200,000	1,196,125.11	23-Apr-18	13-Sep-18
17254	Installation of Singe Barrel Box Culvert (Site 1 and 2) at Purok 4, Brgy. Atan-awe, Toril District	ADF 2017	completed	19-Jul-18	1,100,000	995,324.57	13-Oct-17	15-Jun-18
17255	Construction of Double Barrel Box Culvert at Brgy. Saloy, Calinan District	ADF 2017	completed	04-Jun-18	1,000,000	994,701.02	29-Jan-18	12-Apr-18
17256	Construction of Box Culvert at Purok 6, Brgy. Alambre, Toril District	ADF 2017	completed	03-Apr-18	1,000,000	996,382.58	16-Nov-17	13-Feb-18
17257	B. Riprapping of Canal at San Francisco St., Brgy. Riverside, Calinan District (Packaged to 17259)	ADF 2017	completed	10-Apr-18	700,000	697,401.62	26-Jan-18	05-Mar-18
17258	Riprapping of Canal at Balderas Elementary School, Brgy. Talandang, Tugbok District	ADF 2017	completed	09-May-18	300,000	296,269.40	27-Feb-18	21-Mar-18
17259	A. Riprapping of Canal at Purok 1-A, Brgy. Riverside, Calinan District (Package to 17257)	ADF 2017	completed	10-Apr-18	300,000	298,886.41	26-Jan-18	05-Mar-18
				Total ADF2017	40,050,000	38,435,521.37		
18147	Completion of Drainage System along Villa Abrille Street, Brgy. 30-C, Poblacion District	ADF 2018	Contract on Process	10-May-19	2,000,000	1,996,556.43		
18148	Construction of Canal at Corner De Guzman and Palma Gil Streets to corner Sobrecarey Street, Bo. Obrero, Brgy. 14-B, Poblacion District	ADF 2018	for final inspection	15-May-19	2,000,000			
18149	Construction of Drainage System at Purok 2, Burgos St. Bo. Obrero, Brgy. 20-B, Poblacion District	ADF 2018	Contract on Process	01-Mar-19	1,688,000 part of 2,000,000	1,685,970.57		
18150	Construction of Drainage System along Panganiban Street, Barangay 11-B, Poblacion District	ADF 2018	Issued NTP	11-Mar-19	2,000,000	1,994,644.72		

Appendix 3.10_Drainage Projects by City (FY2014-2019)

Project Code	Title of Projects/Location	Source of Fund	Status	Date Reported/Details	Appropriation	Contract Amount	Date Started	Date Completed
18152	Concreting with Drainage System at Purok 75 to Purok 77, Alkhair, Muslim Village, Bangkal, Brgy. Talomo Proper, Talomo District	ADF 2018	Bidded	12-Feb-19	3,294,300			
18153	Construction of Pathway with Drainage at Pag-asa Village, Brgy. Matina Aplaya, Talomo District	ADF 2018	Issued NTP	17-May-19	1,019,552	1,012,491.54		
18154	Construction of Drainage Line along Cordillera St., Central Park, Bangkal, Brgy. Talomo Proper, Talomo District	ADF 2018	Contract on Process	25-Mar-19	21,415,382.08 part of 22,232,244	21,400,544.45		
18156	Construction of Line Canal at Union St., Bangkal, Brgy. Talomo Proper, Talomo District	ADF 2018	Issued NTP	15-May-19	2,310,949	2,307,637.63		
18157	Installation of 36" RCCP Drainage Line at Lacson Street (from Porras St. to N. Torres St.),Bo. Obrero, Brgy. 18-B, Poblacion District	ADF 2018	Inspected	To be reported to CPDO for change Title	5,977,269			
18158	Installation of 24" RCCP Drainage Line from J.P. Laurel Avenue to Porras St., Brgy. 18-B, Poblacion District	ADF 2018	Contract on Process	2019/4/1	3,762,180	3,756,999.00		
18159	Installation of 24" RCCP Drainage Line at Ponce St., Chavez St., Juan Luna St., Brgy. 28-C, Poblacion District	ADF 2018	on-going POW		4,364,163			
18161	Installation of 24" RCCP (R. Magsaysay -Sales St.-Juan Luna Extension) , Brgy. 28-C, Poblacion District	ADF 2018	for re-inspection		5,312,076			
18162	Rehabilitation of drainage system along corner Pag-asa, Ponce Street to Suazo Street to Quezon Boulevard, Brgy. 25-C, Poblacion District	ADF 2018	Contract on Process	14-May-19	2,000,000	1,997,131.00		
18164	Improvement of Drainage System at Gempesaw Street, Brgy. 27-C, Poblacion District	ADF 2018	issued NTP	17-May-19	2,000,000	1,995,655.44		
18166	Construction of Drainage System at Purok 4-Bayside, Barangay Lapu-lapu, Agdao District	ADF 2018	on-going 40%	25-Apr-19	2,000,000	1,996,921.97	31-Jan-19	
18167	Installation of 24" RCCP along Old San Isidro Road, Brgy. Buhangin, Buhangin District	ADF 2018	waiting for ownership (documents)		1,425,445			
18168	Construction of Drainage system at Doña Salud Subdivision, Brgy. Sasa, Buhangin District	ADF 2018	on-going POW / Plan		2,031,952			
18170	Construction of Single Box Culvert and CHB Line Canal with Concrete Cover at Brgy. Paquibato Proper, Paquibato District	ADF 2018	Contract on Process	2019/4/1	2,914,336	2,904,335.94		
18171	Rehabilitation of Drainage Line at Guadalupe Village, Lanang, Brgy. Angiongto, Buhangin District	ADF 2018	Contract on Process	07-May-19	9,053,681	9,043,460.12		
18174	Construction of Slope Protection at Purok 10, Jirah Settlers Association, Brgy. Bunawan, Bunawan District	ADF 2018	on-going POW / Plan		735,295			
18175	Construction of Drainage system at JV Ferriols to Sitio Dacudao, Barangay Lizada, Toril District	ADF 2018	issued NTP	15-May-19	2,000,000	1,997,234.31		
18176	Construction of DrainageSystem at Purok 10, Main Road, Brgy. Cawayan, Calinan District	ADF 2018	completed	30-Oct-18	2,000,000	1,991,560.91	08-Aug-18	02-Oct-18
18177	Construction of Double Barrel Box Culvert at Purok 1-B, Bridge 1, Datu Muncay, Brgy. Gumalang, Baguio District	ADF 2018	completed	10-May-19	997,569	987,399.64	18-Sep-18	20-Mar-19
18178	Construction of Double Barrel Box Culvert at Purok 1-B, Bridge 2, Datu Muncay , Brgy. Gumalang, Baguio District	ADF 2018	on-going		1,882,069	1,871,432.44	18-Sep-18	
18179	Construction of CHB Line Canal at Purok Maladaya towards Purok Sta. Cruz, Brgy. Tagakpan, Tugbok District	ADF 2018	issued NTP	11-Mar-19	10,321,000 part of 10571800	10,360,000.00		
18182	Construction of Drainage System at Purok Coconut, Brgy. Tagakpan, Tugbok District	ADF 2018	just started		183,317	182,279.73	05-Dec-18	
18183	Construction of Box Culvert at Purok 11, Brgy. Ula, Tugbok District	ADF 2018	issued NTP	25-Mar-19	1,000,000	995,200.00		
18186	Riprapping of Canal at Fishport Avenue, Brgy. Daliao, Toril District	ADF 2018	completed	02-Apr-19	2,000,000	1,997,818.67	01-Nov-18	07-Mar-19
18187	Riprapping of Canal at Purok 2, Brgy. Camansi, Toril District	ADF 2018	on-going 40%	as per const. div. monthly report for march 2019	2,000,000	1,995,556.51	10-Jan-19	

Appendix 3.10_Drainage Projects by City (FY2014-2019)

Project Code	Title of Projects/Location	Source of Fund	Status	Date Reported/Details	Appropriation	Contract Amount	Date Started	Date Completed
18188	Riprapping of Canal along Barangay Road at Sitio Santa Marina (upper portion), Barangay Binugao, Toril District	ADF 2018	on-going 55%	as per const. div. monthly report for march 2019	2,000,000	1,993,450.00	02-Nov-18	
18189	Construction of Single Barrel Box Culvert at Brgy. Atanawe, Toril District	ADF 2018	Issued NTP	11-Mar-19	1,000,000	996,329.88		
18190	Riprapping of Canal at Sitio San Nicolas, Brgy. Daliao, Toril District- Dist.III-4	ADF 2018	COMPLETED	07-Nov-18	200,000	194,324.37	16-Aug-18	28-Sep-18
18192	A. Riprapping of Canal at Purok 1, Brgy. Malagos, Baguio District-Dist.III-4	ADF 2018	completed	06-Feb-19	200,000	199,096.39	02-Nov-18	17-Dec-18
18193	Riprapping of Canal at Purok 26, Sitio Abing, Brgy. Calinan Proper, Calinan District-Dist.III-4	ADF 2018	on-going POW	Waiting for Ownership	200,000			
18194	Riprapping of Canal at Purok 2, Brgy. Riverside, Calinan District-Dist.III-4	ADF 2018	completed	17-Dec-18	300,000	293,606.68	11-Oct-18	19-Nov-18
18195	Improvement of Drainage at Sitio San Jose, Brgy. Daliao, Toril District- Dist.III-4	ADF 2018	completed	31-Oct-18	300,000	294,056.36	08-Aug-18	26-Sep-18
18197	Riprapping of Canal at Purok 6, Brgy. Tamayong, Calinan District-Dist.III-7	ADF 2018	on-going 85%	as per const. monthly report for march 2019	200,000	199,225.22	02-Nov-18	
18198	Construction of Pagalunan Bridge at Purok Olamiag to Purok 1, Brgy. Mapula, Paquibato District	ADF 2018	For inspection		5,500,000			
			Total ADF 2018		76,164,153	78,640,920		
19098	Construction of Drainage System at 481 Alley F. Torres St., fronting RMC Gym, Brgy. 7-A, Poblacion District	ADF 2019			1,099,000			
19099	Improvement of Drainage System from corner Jacinto St., and Fatima St., to corner Fatima St. and Aurora St., Brgy. 24-C, Poblacion District	ADF 2019			700,000			
19100	Rehabilitation of Drainage at Gempesaw St., Purok 3, Brgy. 28-C, Poblacion District	ADF 2019			1,050,000			
19101	Rehabilitation of Drainage at Purok 4, Juan Luna St., corner Guerrero St., Brgy. 29-C, Poblacion District	ADF 2019			280,000			
19102	Construction of Drainage System at Subli Habanera down to the outfall, Lanzona Subd., Brgy. Matina Aplaya, Talomo District	ADF 2019	Contract on Process	08-May-19	1,824,000	1,820,953.33		
19103	Rehabilitation/Improvement of Drainage at Purok 17-B, Barangay 5-A, Poblacion District	ADF 2019			350,000			
19104	Construction of Drainage System at 480 Alley, Del Carmen Chapel near Gorgonio Residence, F. Torres St., Brgy. 7-A, Poblacion District	ADF 2019			154,000			
19105	Construction of Drainage System at Surveyor St., Doña Vicenta, Brgy. 9-A, Poblacion District	ADF 2019			18,700,000			
19106	Construction of Main Drainage at El Rio Vista Village, Phase 5, Barangay 19-B, Poblacion District	ADF 2019			1,848,000			
19107	Outfall for the Main Drainage with Road Concreting at El Rio Vista Village, Phase 5, Barangay 19-B, Poblacion District	ADF 2019			5,600,000			
19108	Rehabilitation and Construction of Slope Protection of main canal from Ladislawa Village up to Awhag Subdivision, Brgy. 19-B, Poblacion District	ADF 2019			5,600,000			
19109	Construction of Drainage System at Burgos St., Barangay 20-B, Poblacion District	ADF 2019			581,000			
19110	Construction of Drainage System at Purok 7B, Barangay 23-C, Poblacion District	ADF 2019			245,000			
19111	Construction of Drainage System at Fatima St., to Artiaga St., Roxas St., Brgy. 24- C, Poblacion District	ADF 2019			4,700,000			
19112	Construction of Drainage System at Damaso Suazo St., Brgy. 25-C, Poblacion District	ADF 2019	Contract on Process	08-May-19	679,000	676,776.68		
19113	Elevation of Drainage System at Alley Pusong Bakal St., Brgy. 25-C, Poblacion District	ADF 2019	Contract on Process	08-May-19	315,000	313,968.56		
19114	Construction of Drainage System at Purok 3-A, Brgy. 25-C, Poblacion District	ADF 2019	Contract on Process	08-May-19	533,000	531,254.75		
19115	Rehabilitation of Drainage at Juan Luna St., Purok 5, Barangay 28-C, Poblacion District	ADF 2019			350,000			
19116	Rehabilitation of Drainage at corner Juan Luna and Governor Chavez St. to Ponce St., Purok 6 to 7, Barangay 28-C, Poblacion District	ADF 2019			700,000			

Appendix 3.10_Drainage Projects by City (FY2014-2019)

Project Code	Title of Projects/Location	Source of Fund	Status	Date Reported/Details	Appropriation	Contract Amount	Date Started	Date Completed
19117	Construction of Drainage System at Purok 7, Artiaga Extension, Brgy. 37-D, Poblacion District	ADF 2019	Contract on Process	08-May-19	357,000	355,819.51		
19118	Construction of Drainage System at Purok 7, Renters Village, Brgy. 37-D, Poblacion District	ADF 2019			214,000	213,292.37		
19119	Construction of Drainage System at Purok 2, San Juan, near Angelo's Shoes, Brgy. 37-D, Poblacion District	ADF 2019			525,000	523,263.99		
19120	Construction of Drainage System along Rizal St., from Purok 1,2 and 4, Barangay 38-D, Poblacion District	ADF 2019			980,000			
19121	Construction of Drainage System at Purok 5, Brgy. 39-D, Poblacion District	ADF 2019			67,000			
19122	Construction of Drainage System at Purok 11, Brgy. 39-D, Poblacion District	ADF 2019			515,000			
19123	Construction of Drainage System at Purok 10-B to 9, Brgy. 39-D, Poblacion District	ADF 2019			805,000			
19124	Rehabilitation of Drainage at Purok 7-A, Brgy. 39-D, Poblacion District	ADF 2019			221,000			
19125	Construction of Drainage System at EcoCity Heights, Purok 4, Brgy. Baliok, Talomo District	ADF 2019			3,984,000			
19126	Construction of CHB Line Canal with Steel Gates at Kabacan Elementary School, Candelaria St, Ecoland, Brgy. Bucana 76-A, Talomo District	ADF 2019			1,545,000			
19127	Construction of Drainage System at infront of San Vicente Ferrer Chapel, Savina going to Davao River, Barangay 76-A, Bucana, Talomo District	ADF 2019			1,400,000			
19128	Construction of Drainage System at Purok 57 Davao River Patnubay St., Brgy. 76-A, Talomo District	ADF 2019			40,900,000			
19129	Construction of Rainwater Arrester, at Ecowest Drive, Ecoland, Brgy. 76-A, Talomo District	ADF 2019			700,000			
19130	Construction of Drainage System at Dacoville Entrance, Barangay Dumoy, Talomo District	ADF 2019			5,300,000			
19131	Construction of Open Drainage System along Courage St., Don Julian Subd., Brgy. Ma-a, Talomo District	ADF 2019			6,300,000			
19132	Construction of Drainage Line at Purok 22, km. 12, Brgy. Catalunan Pequeño, Talomo District	ADF 2019			2,600,000			
19133	Line canal with steel gates at New Matina Gravahan, Brgy. Matina Crossing, Talomo District	ADF 2019	Contract on Process	03-Apr-19	400,000	396,857.69		
19134	Concreting of Drainage Canal at San Francisco De Asis Vill., Tinikling St., Brgy. 74-A Matina Crossing, Talomo District	ADF 2019	Contract on Process	08-May-19	105,000	104,824.62		
19135	Construction of Cross-Drainage Canal at Tinikling St., Lower ABS-CBN, Brgy. 74-A Matina Crossing, Talomo District	ADF 2019	Contract on Process	08-May-19	135,000	134,774.51		
19136	Construction of Drainage System from Malagueña to Curadang St. to Habanera St., Lanzona Subd., Brgy. Matina Aplaya, Talomo District	ADF 2019	Contract on Process	24-Apr-19	1,250,000	1,245,439.93		
19137	Construction of Drainage System at Shanghai Village-Urban, Brgy. Matina Aplaya, Talomo District	ADF 2019	Contract on Process	09-May-19	2,223,000	2,219,283.73		
19138	Construction of Drainage at Subli St., Lanzona Subdivision, Barangay Matina Aplaya, Talomo District	ADF 2019	Contract on Process	08-May-19	490,000	489,181.54		
19139	Construction of Drainage at Curadang St., Lanzona Subdivision, Barangay Matina Aplaya, Talomo District	ADF 2019	Contract on Process	08-May-19	578,000	577,459.69		
19140	Construction of Drainage System at Purok 8.5 front of Barangay Hall, Brgy. Matina Pangsi, Talomo District	ADF 2019			1,060,000			
19141	Continuation of Construction of Drainage System at Sitio Bulusan, Brgy. Talomo Proper, Talomo District	ADF 2019			4,305,000			
19142	Repair/ Rehabilitation of Drainage system from Crossing Puan fronting INC to Purok 12, Brgy. Talomo Proper, Talomo District	ADF 2019			1,548,000			
19143	Construction of Drainage System at Central Park Avenue, Barangay Talomo Proper, Talomo District	ADF 2019			1,645,000			
19144	Rehabilitation/ Improvement of Main Drainage along Narra St. beside Mabini Elem. School, Talomo District	ADF 2019			1,800,000			
19145	Rehabilitation of Drainage System with canal cover at Del Rosario St., Brgy. R. Castillo, Agdao District	ADF 2019			1,984,000			
19146	Improvement of Drainage System both side with cover at Maya-Maya St., Brgy. Lapu-Lapu, Agdao District	ADF 2019			4,230,000			

Appendix 3.10_Drainage Projects by City (FY2014-2019)

Project Code	Title of Projects/Location	Source of Fund	Status	Date Reported/Details	Appropriation	Contract Amount	Date Started	Date Completed
19147	Rehabilitation of Drainage System with canal cover at Salindatu St., Brgy. R. Castillo, Agdao District	ADF 2019			1,928,000			
19148	Rehabilitation of Drainage System at Lulu Village and Lanang Executive Homes Phase 2, Brgy. R. Castillo, Agdao District	ADF 2019			2,048,000			
19149	Rehabilitation/Improvement of canal from corner Cajoles and Jayme St., to corner Waling-Waling and Tulip St., Belisario Village, Brgy. San Antonio, Agdao District	ADF 2019			2,800,000			
19150	Rehabilitation/Improvement of Drainage System at NHA Phase 1 to Purok Masea, Brgy. V. Duterte, Agdao District	ADF 2019			4,032,000			
19151	Improvement of Drainage System at Purok 2, Brgy. Riverside, Calinan District	ADF 2019			1,400,000			
19152	Riprapping of canal/Drainage System boundary of Brgy. Lubogan and Brgy. Crossing Bayabas at Purok 1, Toril District	ADF 2019			1,626,000			
19153	Riprapping of canal both sides at Purok 8, Brgy. Toril Proper, Toril District	ADF 2019			1,482,000			
19154	Improvement of Drainage System at Purok 2 Catleya, Brgy. Riverside, Calinan District	ADF 2019			1,740,000			
19155	Improvement of Drainage System with Culvert at Purok 2 Catleya, Brgy. Riverside, Calinan District	ADF 2019			780,000			
19156	Improvement of Drainage System (both side) at Purok 2 San Francisco, Brgy. Riverside, Calinan District	ADF 2019			1,080,000			
19157	Improvement of Drainage System at Purok 1 San Francisco, Brgy. Riverside, Calinan District	ADF 2019			300,000			
19158	Improvement of Drainage System at Purok 5 Sampaguita St., Brgy. Riverside, Calinan District	ADF 2019			240,000			
19159	Improvement of Drainage System at Purok 5 Anthurium Extension St., Brgy. Riverside, Calinan District	ADF 2019			990,000			
19160	Improvement of Drainage System (both side) at Purok 1, Brgy. Riverside, Calinan District	ADF 2019			1,560,000			
19161	Installation of Single Barrel Box Culvert at Purok Pakisama, Brgy. Saloy, Calinan District	ADF 2019			1,200,000			
19162	Installation of Single Barrel Box Culvert at Purok Kaunlaran, Brgy. Saloy, Calinan District	ADF 2019			1,200,000			
19163	Drainage System at Calinan National High School	ADF 2019			6,100,000			
19164	Riprapping of Canal/Drainage System at Purok 3 Neptune St., Brgy. Crossing Bayabas, Toril District	ADF 2019			690,000			
19165	Construction and Rehabilitation of Drainage Canal at Purok 3 Venus St., Brgy. Crossing Bayabas, Toril District	ADF 2019			760,000			
19166	Drainage System on Rasay St., going to J.P. Rizal St., to St. Peter St., (both sides) Brgy. Crossing Bayabas, Toril District	ADF 2019			588,000			
19167	Riprapping of Canal/Drainage System at St. Peter Street, Brgy. Crossing Bayabas, Toril District	ADF 2019			2,316,000			
19168	Drainage System at Purok 2 and Purok 4, Brgy. Tagurano, Toril District	ADF 2019			16,000,000			
19169	Rehabilitation/Improvement of Drainage System at Don Juan Dela Cruz Elementary School going to R. Magsaysay Elementary School, Toril Proper, Toril District	ADF 2019			8,896,000			
19170	Construction of Drainage System at Fishermans Village to Sitio Lizada beach, Brgy. Lizada, Toril District	ADF 2019			2,592,000			
19171	Construction of Drainage System at Doña Rosa Phase 2, Brgy. Lizada, Toril District	ADF 2019			3,080,000			
19172	Flood Control at Lipadas River near Toril Batching Plant, Brgy. Lubogan, Toril District	ADF 2019			5,000,000			
Total ADF 2019					203,902,000	9,603,151		

Appendix 3.10_Drainage Projects by City (FY2014-2019)

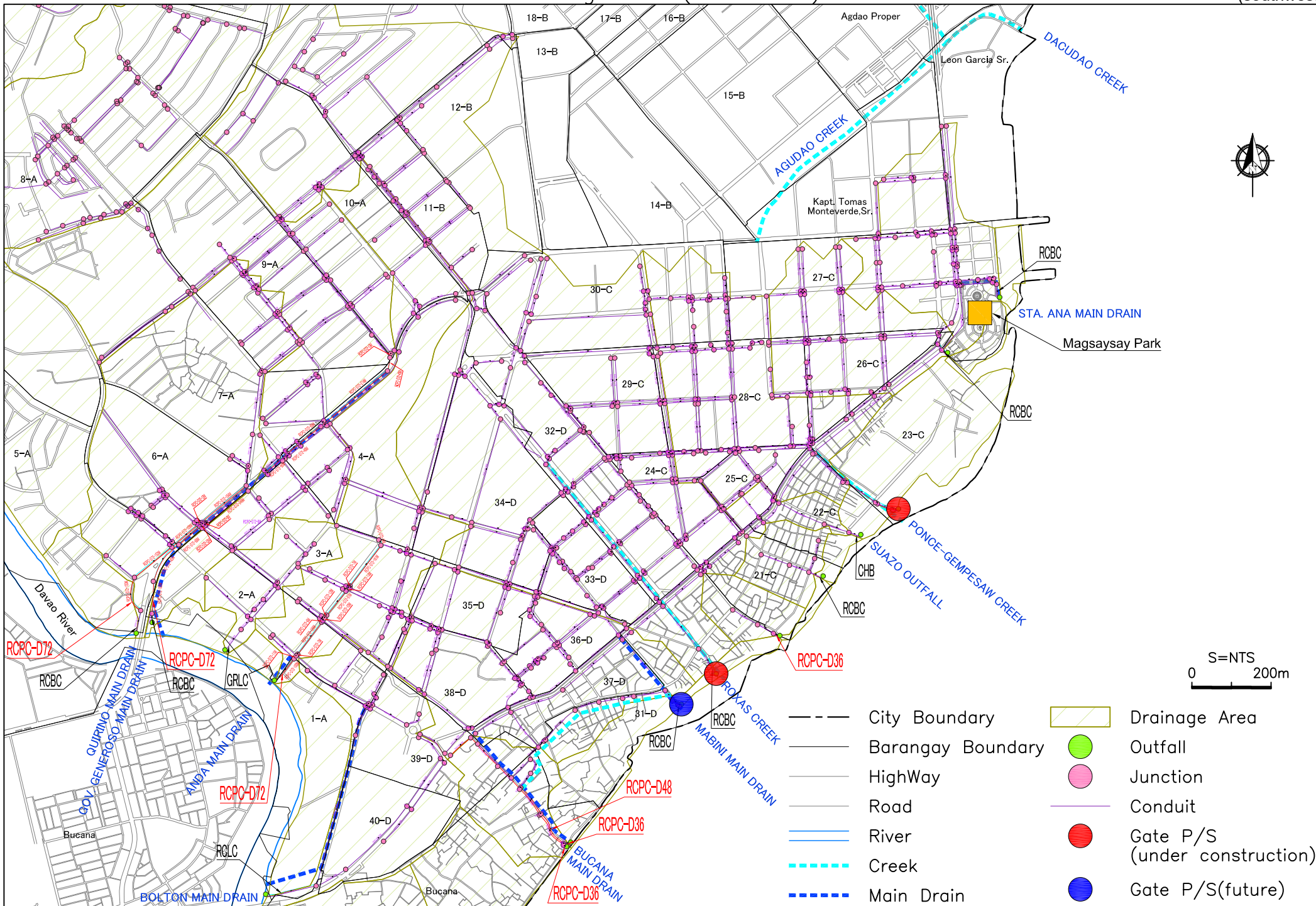
City Government of Davao
General Fund – Development Fund
Supplemental Budget
Infrastructure Projects

Project Code	Title of Projects/Location	Source of Fund	Status	Date Reported/Details	Appropriation	Contract Amount	Date Started	Date Completed
14173	Rehabilitation of Drainage System along Bonifacio Street, from corner Artiaga Street, to corner Aurora Quezon Street, Barangay 36-D Poblacion District (Funded from reversion)	2014, SB 1	Completed	11-Nov-15	1,000,000	996,937.28	7-Sep-15	6-Oct-15
Total SB 2014					1,000,000	996,937		
15354	Construction of Canal at Corner Vinzon and Sobrecarey Streets to corner Lapu-Lapu and Sobrecarey Streets, Barangay 14-B Poblacion District. (Funded from Reversion)	2015, SB 2	completed	30-Jun-16	1,000,000	994,814.60	29-Feb-16	3-Jun-16
15355	Drainage System and Maintenance at Lupo Diaz St. from corner Porras to corner Sobrecarey Sts., Brgy. 16-B, Poblacion District, Davao City	2015, SB 2	completed	9-Aug-18	1,000,000	995,686.35	1-May-18	9-Jul-18
15356	Line Canal at Purok Dusnai, Barangay Dumoy, Talomo District. Dist I-7 (Funded from Reversion)	2015, SB 2	Completed	20-Apr-16	350,000	347,219.72	28-Jan-16	14-Mar-16
15358	Construction of Drainage (Installation of CHB or Canal Riprapping from Burgos Extension to Urduja Extension) Barangay Ponciano Bangoy, (Funded from Reversion)	2015, SB 2	Completed	16-Dec-16	1,000,000	996,642.19	29-Jul-16	21-Nov-16
15359	Drainage System at 2nd Park Avenue, Barangay Wilfredo Aquino, Agdao District. (Funded from Reversion)	2015, SB 2	completed	26-Apr-17	600,000	596,957.34	13-Apr-16	9-Mar-17
15360	Concreting of Alley with Center Canal with Cover at Alley 10 St. Mary Street, Purok South San Juan, Barangay Centro, Agdao District. Dist II-7 (Augmentation)	2015, SB 2	Completed	27-Sep-16	500,000	497,917.03	27-Jun-16	12-Aug-16
15361	Drainage System from Sitio Sodaco to Sitio Ferriols, Barangay Lizada Toril District. (Funded from Reversion)	2015, SB 2	completed	26-Aug-16	1,000,000	996,953.25	27-May-16	1-Aug-16
15362	Drainage System at Sitio Pongot, Barangay Biao Escuela, Tugbok District. (Funded from Reversion)	2015, SB 2	completed	17-Aug-16	1,000,000	995,776.97	30-Mar-16	19-Jul-16
15363	Riprapping of Open Canal along Baganihan to Katandungan Road, Barangay Baganihan, Marilog District. (Funded from Reversion)	2015, SB 2	Completed	27-Jul-16	1,000,000	997,103.17	11-Apr-16	9-Jun-16
15364	Construction of Box Culvert at Purok Lanzones, Barangay Saloy, Calinan District. (Funded from Reversion)	2015, SB 2	completed	17-Aug-16	1,000,000	993,685.59	25-Mar-16	24-Jun-16
15403	Improvement of Canal and Pathway at Purok 3 and Purok 5, Brgy. 4-A, Poblacion District	2015, SB 3	for inspection		500,000			
15404	Construction of Drainage System at Ideal Subd., Bago Aplava, Talomo District	2015, SB 3	for inspection		400,000			
15405	Rehabilitation of Canal (Drainage System) along Nidea St. (Porras/ Nidea up-to Sobrecarey/ Nidea Sts.) for culverting into 24" and Cementing the Pathway at Brgy. 17-B, Poblacion District	2015, SB 3	completed	7-Sep-16	1,000,000	994,551.34	15-Jun-16	5-Aug-16
15406	Riprapping of Drainage Canal to Pomelo Street, Brgy. Tugbok Proper, Tugbok District	2015, SB 3	for inspection		150,000			
Total SB 2015					10,500,000	9,407,308		
16272	Construction of Concrete Top Cover of Existing main Canal at Purok 1 to Purok 7, Barangay 1-A, Poblacion District	2016, SB 1	completed	13-Nov-17	1,000,000	997,190.96	21-Jul-17	3-Oct-17
16273	Construction/Riprapping of Canal with fence at Purok 11, Barangay 5-A, Bankerohan, Poblacion District	2016, SB 1	completed	31-Jan-19	1,000,000	996,693.79	16-Aug-18	7-Dec-18
16274	Construction of Concrete Canal at 477th Alley Malvar Street up to the Portion of Purok 6, Barangay 7-A, Poblacion District	2016, SB 1	for inspection		1,000,000			
16275	Rehabilitation of Drainage System along Nidea Street, Barangay 17-B, Poblacion District	2016, SB 1	completed	31-Jul-17	1,000,000	992,000.00	23-Mar-17	6-Jul-17
16276	Construction of Drainage at Veloso Street, Barangay Bo. Obrero, Barangay 20-B, Poblacion District	2016, SB 1	completed	4-Oct-17	1,000,000	994,525.45	15-Jun-17	23-Aug-17
16277	Riprapping of Canal along Fatima and Aurora Streets, Barangay 25-B, Poblacion District	2016, SB 1	completed	15-Dec-17	1,000,000	994,678.73	21-Nov-17	12-Dec-17
16278	Drainage System along Villa Abrille Street, Barangay 30-C, Poblacion District	2016, SB 1	contract on process	10-May-19	1,000,000	998,278.21		
16279	Drainage System along Simeon de Jesus Street, Puroks 1, 2 and 3, Barangay 35-D, Poblacion District	2016, SB 1	for inspection		1,000,000			
16280	Rehabilitation of Drainage System along Rizal Street, from corner Aries Street going to Quezon Boulevard, Barangay 36-D, Poblacion District	2016, SB 1	completed	27-Feb-18	1,000,000	995,203.25	1-Sep-17	12-Jan-18
16281	Rehabilitation of Line Canal with Cover along Rizal Extension particularly at Purok 1 to Purok 4, Barangay 38-D, Poblacion District	2016, SB 1	site verification (outfall)		1,000,000			
16282	Desilting and Improvement of Canal from Purok 5 to Bolton Isla, Barangay 40-D, Poblacion District	2016, SB 1	completed	5-Dec-17	1,000,000	994,861.83	3-Aug-17	13-Nov-17
16283	Construction of Box Culvert at Purok Akilhan Creek, Barangay Catalunan Pequeño, Talomo District	2016, SB 1	completed	14-Dec-17	1,000,000	997,001.00	4-Jul-17	23-Nov-17
16285	Construction of Open Canal with removable concrete cover at Sitio Sta. Cruz, Sitio San Antonio and Sitio Sto. Niño, Barangay Leon Garcia Sr., Agdao District	2016, SB 1	for inspection		1,000,000			
16286	Improvement of Drainage System along Bangoy Street to Purok 12 Soliman, Barangay Kapitan Tomas Monteverde Sr., Agdao District	2016, SB 1	for inspection		1,000,000			
16287	Continuation of Drainage System at Alzate Extension, Barangay Paciano Bangoy, Agdao District	2016, SB 1	completed	2-Aug-17	500,000	497,669.54	12-Apr-17	10-Jun-17
16288	Installation of Steel Canal Cover at Del Pilar Street, Jerome Extension, Barangay R. Castillo, Agdao District	2016, SB 1	Issued NTP	16-Nov-18	100,000	98,125.00		
16289	Rehabilitation of Drainage at Purok Villanueva and MATS Drive, Barangay Gov. Vicente Duterte, Agdao District	2016, SB 1	completed	2-Jul-18	250,000	245,489.76	12-Apr-18	4-May-18
16290	Rehabilitation of Drainage at Purok Masea, Barangay Gov. Vicente Duterte, Agdao District	2016, SB 1	for inspection		500,000			

Appendix 3.10_Drainage Projects by City (FY2014-2019)

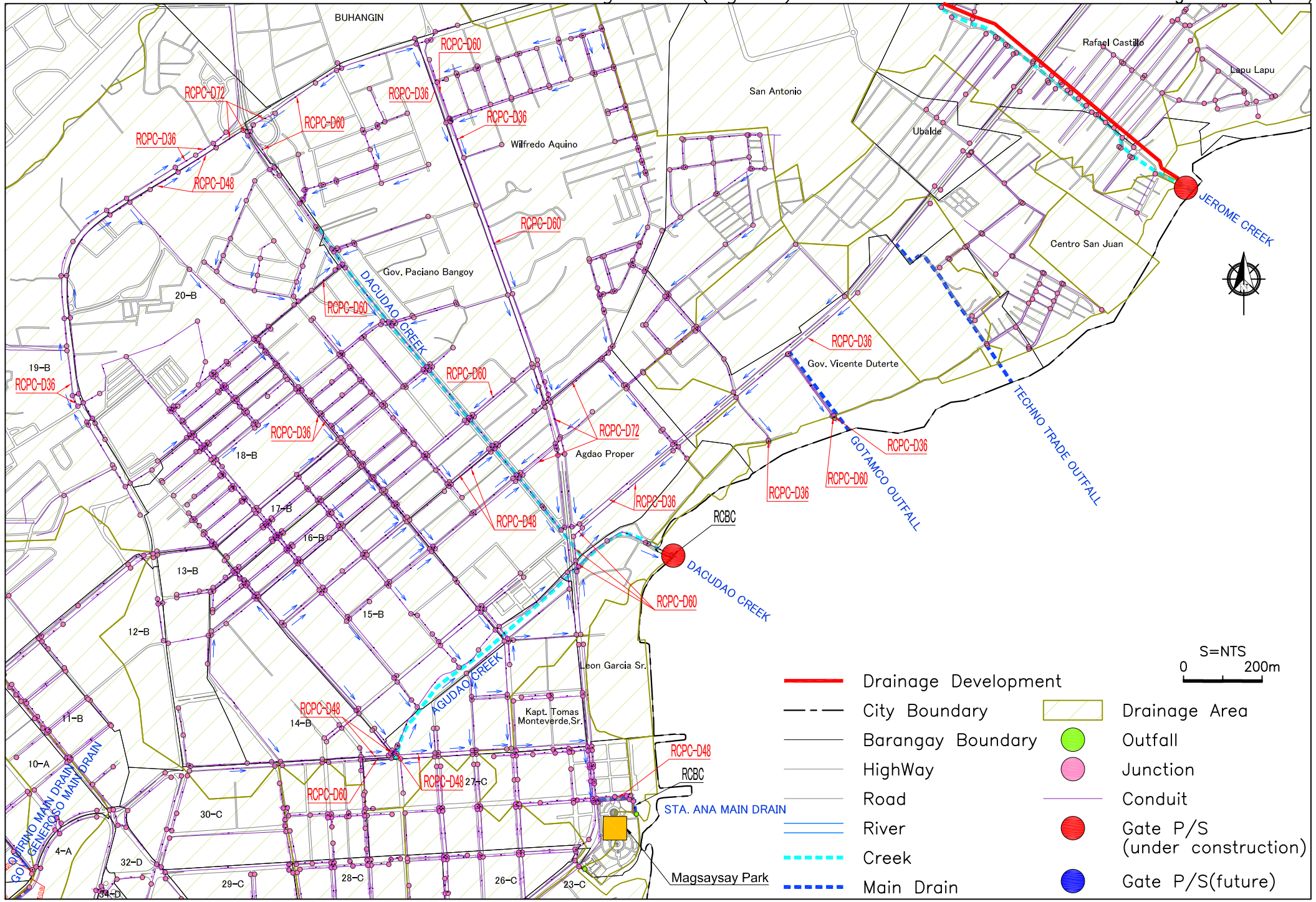
Project Code	Title of Projects/Location	Source of Fund	Status	Date Reported/Details	Appropriation	Contract Amount	Date Started	Date Completed
16291	Construction of Canal at Jasmin Street, Barangay Ubalde, Agdao District (Funded from Reversion)	2016, SB 1	for inspection		100,000			
16292	Construction and Rehabilitation of Drainage System of main Road, Barangay Cawayan, Calinan District	2016, SB 1	Completed	1-Dec-16	1,000,000	996,913.25	4-Aug-16	17-Oct-16
16294	Riprapping of Canal at Purok 3, Pomelo Street, Barangay Tugbok Proper, Tugbok District - Dist. III-4	2016, SB 1	completed	14-Dec-17	200,000	197,778.99	14-Aug-17	20-Nov-17
16329	Construction of Line Canal along N. Monteverde St., Purok 17-A, New Argao, Barangay Ma-a, Talomo District - (PRDP Counterpart) (Funded from Reversion - Part of Project Code 16038 - Annex D)	2016, SB 2	completed	7-Sep-18	1,000,000	994,499.77	25-May-18	30-Aug-18
16330	Construction of Line Canal and Riprapping along Marfori II, Villarosa Subdivision, Purok 8, Barangay 9-A, Poblacion District (Funded from Reversion - Annex D)	2016, SB 2	Inspected for POW		1,000,000			
16331	Improvement of Drainage at Purok 5, Barangay 4-A, Poblacion District (Funded from Reversion - Annex D)	2016, SB 2	for inspection		300,000			
16351	Drainage System at Purok 1, Brgy. San Isidro, Bunawan District (Funded from Reversion)	2016, SB 3	Inspected for POW		1,000,000			
16352	Riprapping of canal at corner Lapu-Lapu St. to Teacher's Village, Brgy. Toril Proper, Toril District - DC-1 (Funded from Reversion)	2016, SB 3	Inspected for POW		1,000,000			
				Total SB 2016	20,950,000	11,990,910		
17345	Concreting of Drainage and Sidewalk Pavement along Purok 4 and 5, Padre Gomez Street to Palma Gil Street, Barangay 34-D, Poblacion District	2017, SB 1	for inspection		1,000,000			
17434	Installation of Covered Canals at Padre Faura and Padre Gomez Sts., Brgy. 32-D, Poblacion District (Funded from Reversion of Project Code 17154)	SB3, 2017			1,000,000			
17435	Construction of Drainage System at Purok 26, Riverside, Brgy. Ma-a, Talomo District (Funded from Reversion of Project Code 17215)	SB3, 2017			5,000,000			
17436	Drainage Riprapping at Purok 1 going to Purok 5 and Purok 4, Barangay Tagurano, Toril District (Funded from Reversion)	SB3, 2017			16,000,000			
17437	Riprapping of Road Canal at Purok Everlasting, Brgy. Tagakpan, Tugbok District (Funded from Reversion of Project Code 17273)	SB3, 2017	completed	as per const. div. monthly report for april 2019	500,000	497,170.82	5-Dec-18	8-Apr-19
				Total SB 2017	23,500,000	497,171		
18253	Installation of 18" RCCP with manhole at Jacinto Extension (infront of Assumption Church) beside the Davao City National High School	SB 1, 2018	Reported to CPDO : Inadequate design	Brgy. Council is proposing for the reversion	800,000			
18254	Drainage System at Urduja St. and Generoso St., Brgy. 18-B, Bo. Obrero, Poblacion District (Funded from Reversion - Project Code 17072)	SB 1, 2018	on-going POW		3,100,000			
18255	Rehabilitation of canal at the back side of the Activity Center of Fortune Executive Homes, Barangay Vicente Hizon Sr., Buhangin District (Funded from Reversion - Project Code 14124)	SB 1, 2018	issued NTP	17-May-19	150,000	149,842.38		
18256	Seawall / Slope Protection at Brgy. Centro, Agdao District	SB 1, 2018	For Inspection		6,200,000			
				Total SB 2018	10,250,000	149,842		

Drainage Area(Poblacion)



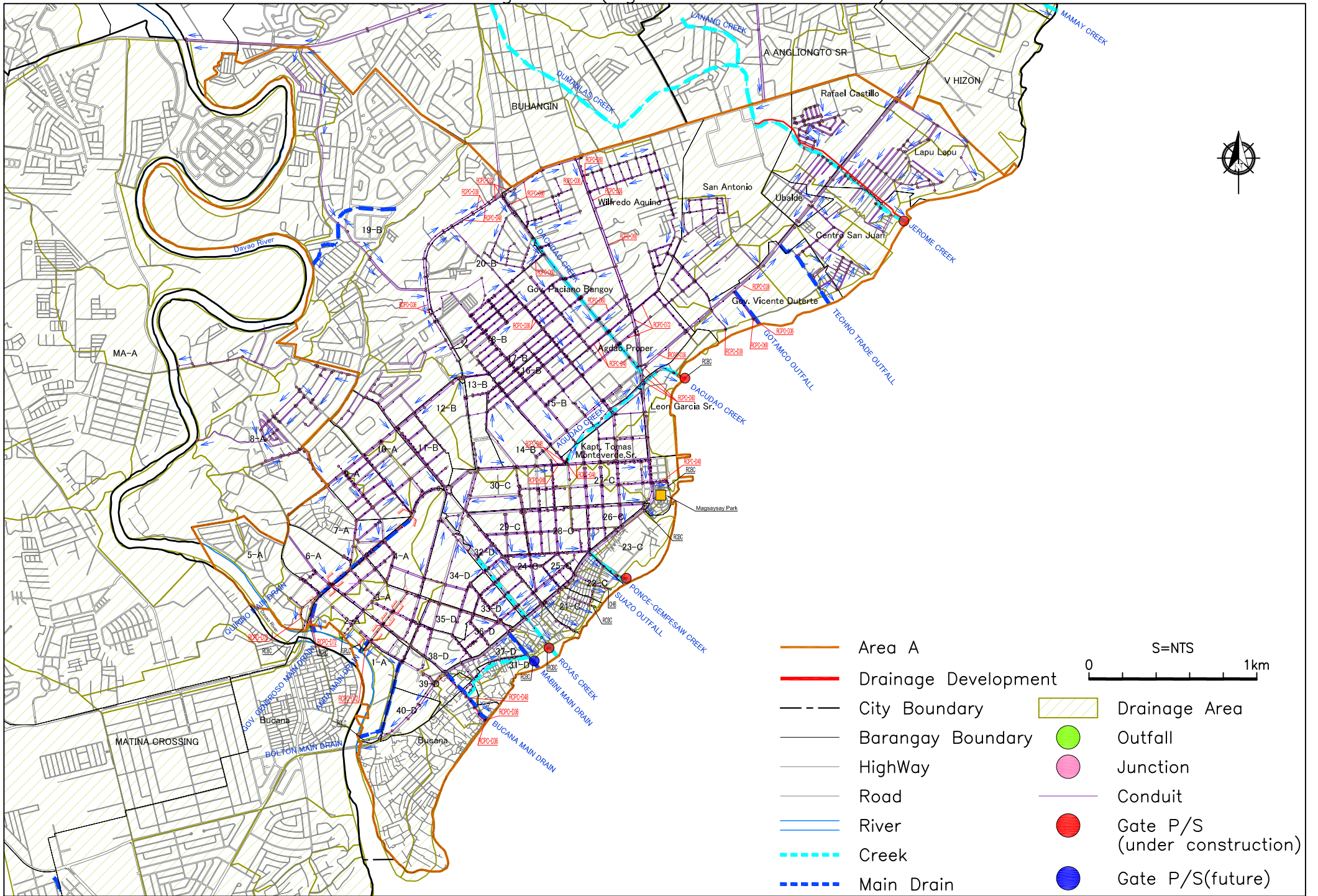
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|-----|-------------------|--|-------------------------------|
| --- | City Boundary | | Drainage Area |
| --- | Barangay Boundary | | Outfall |
| --- | HighWay | | Junction |
| --- | Road | | Conduit |
| --- | River | | Gate P/S (under construction) |
| --- | Creek | | Gate P/S(future) |
| --- | Main Drain | | |

Drainage Area(Agdao)

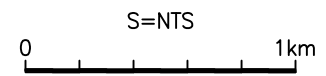


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|--|----------------------|--|-------------------------------|
| | Drainage Development | | Drainage Area |
| | City Boundary | | Outfall |
| | Barangay Boundary | | Junction |
| | HighWay | | Conduit |
| | Road | | Gate P/S (under construction) |
| | River | | Gate P/S(future) |
| | Creek | | |
| | Main Drain | | |

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- Area A
- Drainage Development
- City Boundary
- Barangay Boundary
- Highway
- Road
- River
- Creek
- Main Drain
- Drainage Area
- Outfall
- Junction
- Conduit
- Gate P/S (under construction)
- Gate P/S (future)



277

5th City Council of Davao
11th Regular Session
Series of 1974

Republic of the Philippines
CITY OF DAVAO
Office of the City Council
-oOo-

EXCERPT FROM THE MINUTES OF THE REGULAR SESSION OF THE CITY
COUNCIL, CITY OF DAVAO, HELD ON WEDNESDAY, FEBRUARY 13, 1974.

PRESENT:

Hon. Cornelio P. Maskariño,	Vice Mayor, Presiding Officer
Hon. Vicente M. Albay,	City Councilor
Hon. Victorio S. Advincula,	City Councilor
Hon. Domingo R. Vidanes,	City Councilor
Hon. Benigne S. Bangoy,	City Councilor
Hon. Bonifacio Tamaye,	City Councilor
Hon. Bienvenido O. Amora,	City Councilor
Hon. Felicidad C. Santos,	City Councilor
Hon. Antonio S. Castillo,	City Councilor
Hon. Pantaleon V. Pelayo, Jr.,	City Councilor
Hon. Valentino C. Banzon,	City Councilor
Hon. Dominador B. Zuño, Jr.,	City Councilor
Hon. Tomas Monteverde, Jr.,	City Councilor
Hon. Zafire L. Respicio,	City Councilor

ABSENT:

Hon. Gaudioso M. Tiongco,	City Councilor - In Manila on official business
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RESOLUTION NO. 1283

RESOLUTION FORMING THE DAVAO CITY WATER DISTRICT PURSUANT TO THE PROVISIONS OF PRESIDENTIAL DECREE NO. 198, OTHERWISE KNOWN AS THE PROVINCIAL WATER UTILITIES ACT OF 1973.

On motion of Councilor Bienvenido O. Amora, co-sponsored by Councilor Domingo R. Vidanes and duly seconded by Councilors Pantaleon V. Pelayo, Jr., Benigne S. Bangoy, Victorio S. Advincula and Domingo R. Vidanes, the following resolution was adopted by the City Council of Davao in session assembled:

WHEREAS, Chapter 11, Title 11 of Presidential Decree No. 198, otherwise known as the Provincial Water Utilities Act of 1973, authorizes a city, municipality or province to form or create by resolution a water district subject to the provisions of said act;

WHEREAS, in compliance with the said Presidential Decree No. 198, the Davao City Water District is being formed in order to achieve the purposes on policies laid down in said Presidential Decree No. 198;

Resolution No. 1283, series of 1974, continued:

1. That the Davao City Water District shall be composed of the territory of the City of Davao as fixed in Section 2, Article 1 of Republic Act 4354, otherwise known as the Revised Charter of the City of Davao;

2. That the City of Davao declares its intention to transfer any and all waterworks and/or sewerage facilities to the Davao City Water District and the actual transfer thereof shall be effected pursuant to a contract after the Davao City Water District shall have been legally constituted;

3. That the Davao City Water District is formed for the purpose of:

- a) Acquiring, installing, improving, maintaining and operating water supply and distribution systems for domestic, industrial, municipal and agricultural uses for the residents and lands within the boundaries of the district;
- b) Providing, maintaining and operating wastewater collection, treatment and disposal facilities, and
- c) Conducting such other functions and operations incidental to the water resource development, utilization and disposal within such districts, as are necessary or incidental to said purpose.

4. That the names of the initial directors of the Davao City Water District with the dates of expiration of the term of offices of each are as follows:

- a) Mr. Adolfo Arguna whose term shall expire on December 31, 1974;
- b) Rev. Fr. Ben Benedicto, S. J. whose term shall expire on December 31, 1974;
- c) Engr. Vicente C. Garcia, whose term shall expire on December 31, 1976;
- d) Atty. Eugenia M. Celi, whose term shall expire on December 31, 1976;
- e) Dr. Alex Panuncialman, whose term shall expire on December 31, 1978.

5. That the Davao City Water District may only be dissolved on the grounds and under the conditions set forth in Section 44 of Presidential Decree No. 198;

6. That the City of Davao acknowledge the powers, rights and obligations of the Davao City Water District as set forth in Section 36 of Presidential Decree No. 198.

Resolution No. 1283, series of 1974, continued:

GONZALO G. LATORILLA
Secretary of the Council

ATTESTED:

[Signature]
CORNELIO P. MASKARINO
Vice Mayor
Presiding Officer
29/028

APPROVED: _____, 1974

[Signature]
LUIS T. SANTOS
Mayor, City of Davao

ATTESTED:

BY AN OFFICER OF THE CITY CLERK
[Signature]
ADOLFO S. ...
City Secretary

Appendix 3.13 Detailed Tables and Figures on Institutions

(1) Number of Staff in Each Department in DCWD

OFFICES/ DEPARTMENTS/DIVISIONS/UNITS	No. of Personnel
Board Secretariat	6
OFFICE OF THE GENERAL MANAGER	1
1. Special Projects	1
Office of the General Manager	7
CORPORATE PLANNING DEPARTMENT	3
Planning & Monitoring Division	1
1. Planning & Monitoring Unit	5
Management Information Services Division	1
1. Management Information Services Unit	6
LEGAL DEPARTMENT	1
Investigation & Litigation Division	2
1. Investigation and Litigation Unit	4
Legal Services Division	1
1. Legal Services Unit	4
INTERNAL AUDIT DEPARTMENT	2
Management Audit Division	2
1. Financial Unit	3
2. Operations Unit	3
Operations Audit Division	1
2. Systems Audit Unit	2
COMMUNITY RELATIONS & EXTERNAL AFFAIRS DEPARTMENT	2
Environment and Watershed Protection Division	2
1. Watershed Management Unit	14
2. Environmental Management Unit	2
Public information/Relations Division	3
1. Central Information Unit	11
2. Public Information Unit	6
Community Relations Division	2
1. Community Relations Unit	8
2. Community Development Unit	7
ASSISTANT GENERAL MANAGER FOR ADMINISTRATION	4
OFFICE OF THE SPOKESPERSON	2
HUMAN RESOURCE DEPARTMENT	2
Human Resource Management Division	2
1. Management Planning Unit	13
2. Welfare and Benefits Unit	10
Human Resource Development Division	1
1. Human Resource Development Unit	10
GENERAL SERVICES DEPARTMENT	3
Transport Operations & Equipment Maintenance Division	2
1. Transport Operations Unit	21

OFFICES/ DEPARTMENTS/DIVISIONS/UNITS	No. of Personnel
2. Equipment Maintenance Unit	16
Procurement Division	1
1. Procurement Division	14
Building & Ground Maintenance Division	4
1. Building & Ground Maintenance Unit	34
2. Communication Operation Unit	2
INFORMATION AND COMMUNICATIONS TECHNOLOGY DEPARTMENT	4
Systems Development Division	1
1. Technical Support Group	9
2. Developer Team 1	5
3. Developer Team 2	5
Systems Application Division	1
1. Data Management Unit	5
Geographic Information System Division	0
1. Geographic Information System (GIS) Support and Development Unit	4
2. Mapping and Data Collection Unit	5
ASSISTANT GENERAL MANAGER FOR FINANCE	3
ACCOUNTING DEPARTMENT	1
General Accounting Division	5
1. Subsidiary Ledger Unit	4
2. General Ledger Unit	7
Payroll and Subsidiary Division	2
1. Payroll Unit	4
2. Budget and Cost Unit	10

FINANCIAL MANAGEMENT DIVISION	4
Treasury Division	5
1. Matina Collection Center	12
2. Toril Collection Center	3
3. SM Lanang Premier Collection Center	3
4. Felcris Centrale Collection Center	1
5. Bajada Collection Center	4
Treasury Division- Victoria Plaza Collection Center	1
1. Victoria Plaza Collection Center	5
Property and Warehousing Division	1
1. Property Unit	13
2. Materials Quality Control Unit	13
COMMERCIAL SERVICES DEPARTMENT	4
Customer Care Division	2
1. Disconnection / Illegal Detection Unit	23
2. Illegal Connection Detection and Apprehension Unit	3
3. Investigation & Reconnection Unit	21
4. New Service Connection unit	36
5. Customer Request and Complaints Section	17
Billing and Accounts Division	1
1. Meter Reading and Bill Handling Unit	58
2. Accounts Unit	13
Water Meter Maintenance Division	2
1. Water Meter Maintenance Unit	15
2. Calibration Laboratory Unit	5
3. Office of the Quality Management Representative (OQMR)	3
ASSISTANT GENERAL MANAGER FOR OPERATIONS	4
Sanitation Division	13
ENGINEERING AND CONSTRUCTION DEPARTMENT	3
Planning & Design Division	3

OFFICES/ DEPARTMENTS/DIVISIONS/UNITS	No. of Personnel
1. Planning Unit	10
2. Design Unit	17
3. Material Testing and Quality Control Unit	8
4. ME/MI Survey & Investigation Unit	10
Construction Division	8
1. Mainline Extension/Mainline Improvement – Unit 2	31
2. Mainline Extension/Mainline Improvement – Unit 1	28
General Improvement & Civil Works Division	20
PRODUCTION DEPARTMENT	5
Water Quality Division	1
1. Treatment Unit	21
2. Laboratory Unit	1
2.1 Physical - Chemical Laboratory Sub-Unit	10
2.2 Microbiological Laboratory Sub-Unit	6
Operation and Maintenance Division	15
1. Maintenance Unit – Plant Mechanic	24
2. Maintenance Unit – Electrician	3
3. Operation Unit	22
4. shifting Unit A	7
5. shifting Unit B	19
6. shifting Unit C	8
7. shifting Unit D	20

PIPELINES AND APPURTENANCES MAINTENANCE DEPARTMENT	2
Mainline Operation Division	2
1. Restoration, Backfilling, & Pull-out Waste Unit	38
2. Special Projects Unit	36
3. Maintenance of Valves Unit	7
Utility Maintenance Division (North & South)	1
Utility Maintenance Division – South	9
1. Emergency Repair Crew - South Zone- Area 1 -6	25
2. Emergency Repair Crew - South Zone- Area 7 – 12	29
3. Caretaker System Project - South Area	1
Utility Maintenance Division – North	9
1. North Area 13 - 18	28
2. North Area 19 - 24	24
3. Change Meter Unit	14
4. Emergency Crew – North Area 1	2
5. Emergency Crew – North Area 2	1
Non-Revenue Water Management Division	3
1. Investigation and Data Analysis Unit	5
2. Establishment and Management Unit	31

Total: 1181

Note: as of July 5, 2019

Source: DCWD

(2) Water Tariff of DCWD

RESIDENTIAL / GOVERNMENT						
FACTOR RATE	SIZE	MINIMUM CHARGE 0-10 cu.m.	COMMODITY CHARGE			
			11-20 cu.m.	21-30 cu.m.	31-40 cu.m.	above 40 cu.m.
1	3/8"	54.90	14.40	18.60	24.70	36.00
1	1/2"	137.30	14.40	18.60	24.70	36.00
1	3/4"	219.65	14.40	18.60	24.70	36.00
1	1"	439.30	14.40	18.60	24.70	36.00
1	1 1/2"	1,098.40	14.40	18.60	24.70	36.00
1	2"	2,746.00	14.40	18.60	24.70	36.00
1	3"	4,942.80	14.40	18.60	24.70	36.00
1	4"	9,885.60	14.40	18.60	24.70	36.00
1	6"	16,476.00	14.40	18.60	24.70	36.00
1	8"	26,361.60	14.40	18.60	24.70	36.00
1	10"	37,894.60	14.40	18.60	24.70	36.00
COMMERCIAL / INDUSTRIAL						
FACTOR RATE	SIZE	MINIMUM CHARGE 0-10 cu.m.	COMMODITY CHARGE			
			11-20 cu.m.	21-30 cu.m.	31-40 cu.m.	above 40 cu.m.
2	3/8"	109.80	28.80	37.20	49.40	72.00
2	1/2"	274.60	28.80	37.20	49.40	72.00
2	3/4"	439.30	28.80	37.20	49.40	72.00
2	1"	878.60	28.80	37.20	49.40	72.00

2	1 1/2"	2,196.80	28.80	37.20	49.40	72.00
2	2"	5,492.00	28.80	37.20	49.40	72.00
2	3"	9,885.60	28.80	37.20	49.40	72.00
2	4"	19,771.20	28.80	37.20	49.40	72.00
2	6"	32,952.00	28.80	37.20	49.40	72.00
2	8"	52,723.20	28.80	37.20	49.40	72.00
2	10"	75,789.60	28.80	37.20	49.40	72.00

COMMERCIAL A

FACTOR RATE	SIZE	MINIMUM CHARGE 0-10 cu.m.	COMMODITY CHARGE			
			11-20 cu.m.	21-30 cu.m.	31-40 cu.m.	above 40 cu.m.
1.75	3/8"	96.05	25.20	32.55	43.20	63.00
1.75	1/2"	240.25	25.20	32.55	43.20	63.00
1.75	3/4"	384.35	25.20	32.55	43.20	63.00
1.75	1"	768.75	25.20	32.55	43.20	63.00
1.75	1 1/2"	1,922.20	25.20	32.55	43.20	63.00
1.75	2"	4,805.50	25.20	32.55	43.20	63.00
1.75	3"	8,649.90	25.20	32.55	43.20	63.00
1.75	4"	17,299.80	25.20	32.55	43.20	63.00
1.75	6"	28,833.00	25.20	32.55	43.20	63.00
1.75	8"	46,132.80	25.20	32.55	43.20	63.00
1.75	10"	66,315.90	25.20	32.55	43.20	63.00

COMMERCIAL B

FACTOR RATE	SIZE	MINIMUM CHARGE 0-10 cu.m.	COMMODITY CHARGE			
			11-20 cu m	21-30 cu m	31-40 cu m	above 40 cu m

1.5	3/8"	82.35	21.60	27.90	37.05	54.00
1.5	1/2"	205.95	21.60	27.90	37.10	54.00
1.5	3/4"	329.45	21.60	27.90	37.10	54.00
1.5	1"	658.95	21.60	27.90	37.10	54.00
1.5	1 1/2"	1,647.60	21.60	27.90	37.10	54.00
1.5	2"	4,119.00	21.60	27.90	37.10	54.00
1.5	3"	7,414.20	21.60	27.90	37.10	54.00
1.5	4"	14,828.40	21.60	27.90	37.10	54.00
1.5	6"	24,714.00	21.60	27.90	37.10	54.00
1.5	8"	39,542.40	21.60	27.90	37.10	54.00
1.5	10"	56,842.20	21.60	27.90	37.10	54.00

COMMERCIAL C

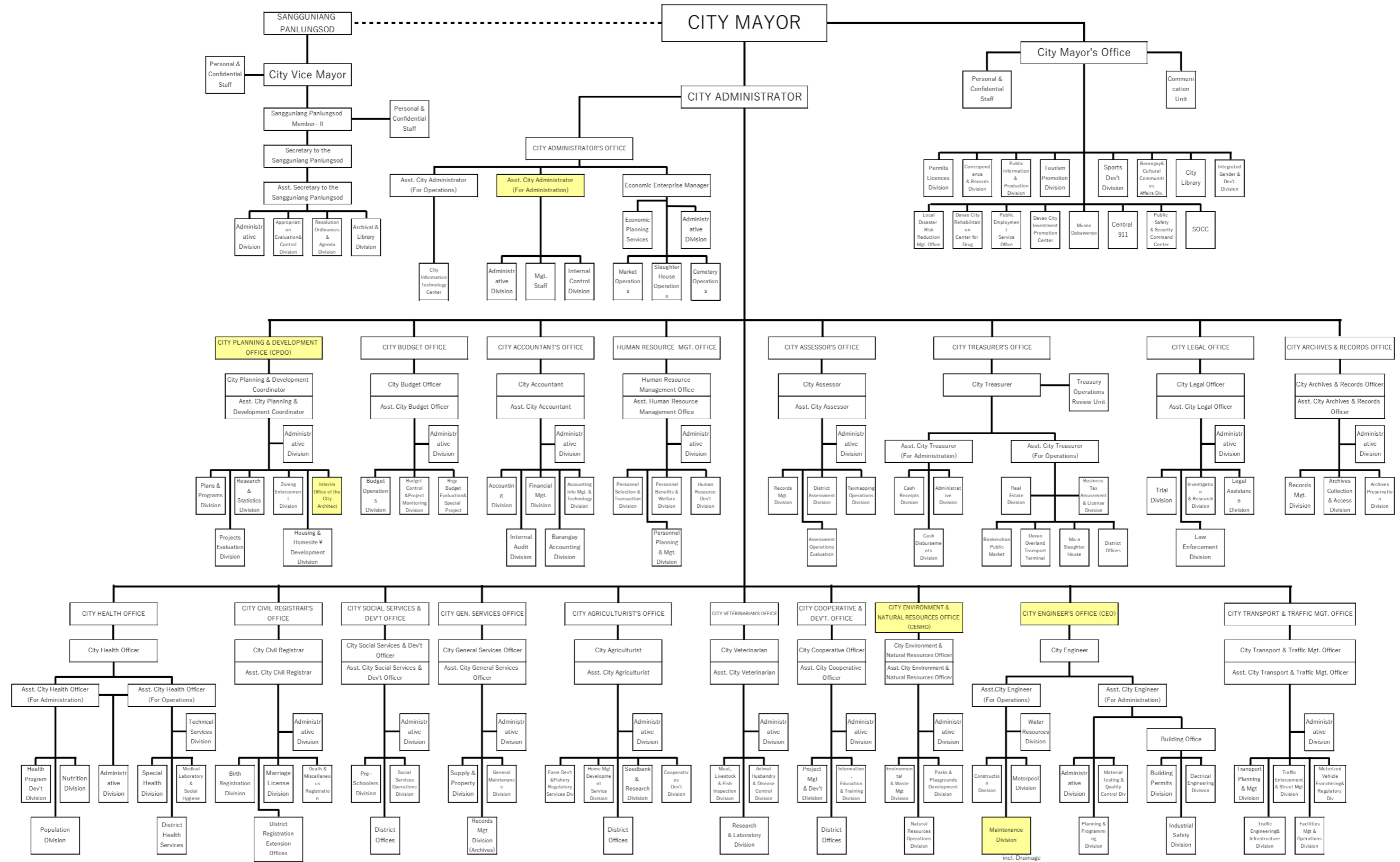
FACTOR RATE	SIZE	MINIMUM CHARGE 0-10 cu.m.	COMMODITY CHARGE			
			11-20 cu.m.	21-30 cu.m.	31-40 cu.m.	above 40 cu.m.
1.25	3/8"	68.60	18.00	23.25	30.85	45.00
1.25	1/2"	171.60	18.00	23.30	30.90	45.00
1.25	3/4"	274.55	18.00	23.25	30.85	45.00
1.25	1"	549.10	18.00	23.25	30.85	45.00
1.25	1 1/2"	1,373.00	18.00	23.25	30.85	45.00
1.25	2"	3,432.50	18.00	23.25	30.85	45.00
1.25	3"	6,178.50	18.00	23.25	30.85	45.00
1.25	4"	12,357.00	18.00	23.25	30.85	45.00
1.25	6"	20,595.00	18.00	23.25	30.85	45.00
1.25	8"	32,952.00	18.00	23.25	30.85	45.00

1.25	10"	47,368.50	18.00	23.25	30.85	45.00
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BULK / WHOLESALE

FACTOR RATE	SIZE	MINIMUM CHARGE 0-10 cu.m.	COMMODITY CHARGE			
			11-20 cu.m.	21-30 cu.m.	31-40 cu.m.	above 40 cu.m.
3	3/8"	164.70	43.20	55.80	74.10	108.00
3	1/2"	411.90	43.20	55.80	74.10	108.00
3	3/4"	658.95	43.20	55.80	74.10	108.00
3	1"	1,317.90	43.20	55.80	74.10	108.00
3	1 1/2"	3,295.20	43.20	55.80	74.10	108.00
3	2"	8,238.00	43.20	55.80	74.10	108.00
3	3"	14,828.40	43.20	55.80	74.10	108.00
3	4"	29,656.80	43.20	55.80	74.10	108.00
3	6"	49,428.00	43.20	55.80	74.10	108.00
3	8"	79,084.80	43.20	55.80	74.10	108.00
3	10"	113,684.40	43.20	55.80	74.10	108.00

(3) Detailed Organization Structure of Davao City Government



Source: Davao City Government compiled by JICA Survey Team

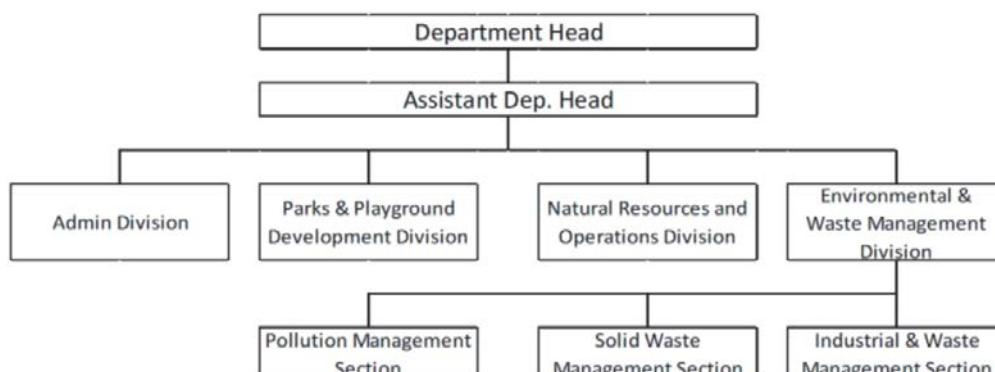
(4) City Environment and Natural Resources Office (CENRO) in the City of Davao

The City Environment and Natural Resources Office (CENRO) in the City of Davao was originally created as an Ad Hoc City Environment and Natural Resources Office in the City of Davao by virtue of the Executive Order No.6 signed by City Mayor on February 12, 1993. The creation was in compliance with Sections 16 and 17 of Republic Act No. 716 otherwise known as the “Local Government Code of 1991”. Table 1 summarizes the purpose and activities of CENRO in the City of Davao and Figure 1 shows the organization.

Table 1 CENRO in the City of Davao

Item	Description
Purpose of the establishment	<ul style="list-style-type: none"> To promote proper management and utilization of its natural resources, implement mitigating measures to prevent and control land, air, and water pollution in coordination with government and non-government agencies and organizations, and maintain, protect, and preserve communal forests, watersheds, tree parks, mangroves, greenbelts, and similar forest projects and commercial forests like industrial tree farms and agro-forestry projects.
Main Activities of CENRO	<ul style="list-style-type: none"> To collect and dispose garbage in 3 shifting in the 112 barangays of the City of Davao To establish bio-diesel projects in Maa composting area. To maintain 21 parks and playgrounds, roadsides, 7 monuments and 8 nurseries within the City’s jurisdiction. To undertake watershed management activities, such as monitoring and massive planting of trees. To monitor activities that implement measures to prevent and control the land, air and water pollution. To undertake intensified information campaigns on households, offices, schools, barangays and business establishments relative to the environmental awareness and management. To assist in the verification of all the requests for cutting or trimming of trees since the office is one of the recommendatory agencies for the issuing of cutting/ trimming permit of the DENR. To conduct clean up drive to the different areas of the barangays within the Davao City. To undertake rehabilitation of the existing sanitary landfill in Barangay New Carmen, Poblacion District. To be tasked in the rehabilitation of upland areas and re-greening of the urban areas to ensure the continuous. To issue solid waste management certification as one of the requirements in applying business permit. To cater application as well as quarry permit for earth-fill sand and gravel and limestones. To contribute seedlings and composts during caravans since it is one of the Mayor’s prioritized programs.

Source: CENRO of Davao City
<https://www.davaocity.gov.ph/departments/public-administration/city-environment-and-natural-resources-office/>









Source: JICA Survey 2017





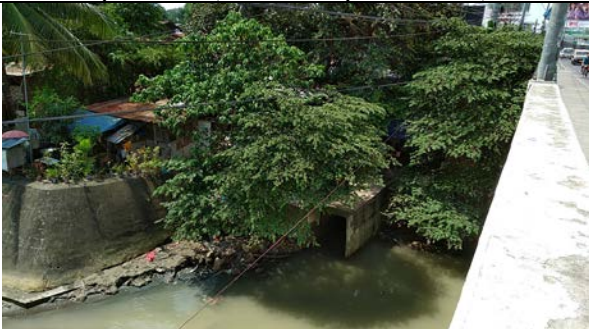
Figure 1 CENRO Office in the City of Davao

Appendix 3.14: Photos of the Sites in Davao City

Area A

WWTP Candidate Site	
Magsaysay Park	
	
<p>Ramon Magsaysay Monument</p>	<p>Northeast side</p>
	
<p>Flag Pole</p>	<p>Covered Amphitheatre</p>
	
<p>Open space in south side</p>	<p>Davao Gulf and Illegal Settlers outside park</p>
<p>Santa Ana Port</p>	

	
<p>Santa Ana Port SouthWest (cleared)</p>	<p>Santa Ana Port Southeast (south) parking</p>
	
<p>Public Assistance Counter and Comfort Room to be demolished (northwest)</p>	<p>Southeast (north) Asian Fruit Market</p>
	
<p>Existing office building in northwest (Coast Guard Station Davao)</p>	<p>Northeast side with almost open land</p>
	
<p>Entrance</p>	<p>Seaside road</p>

Creeks/Drainage Work	
	
<p>On-going construction of the drainagewater pump station (Brgy 23-C)</p>	<p>New drainage pump station under construction (Ponce-Gempesaw Creek between Brgy 22-C and 23-C)</p>
	
<p>Study Team with other participants inspecting the open canal (Ponce-Gempesaw Creek)</p>	<p>Ponce-Gempesaw Creek downstream</p>
	
<p>Outlet of Quirino Drain to Davao River (Brgy 5A)</p>	

	
<p>Outlet of Bolton Main Drain beside Bolton Bridge (Brgy 1-A in Poblacion)</p>	<p>Bolton Main Drain (open part to outlet)</p>
	
<p>Outlet of Mabini Drain to Davao Gulf (Brgy 76-A Bucana)</p>	<p>Open drain in north of Poblacion 31-D (stagnant)</p>
	
<p>Roxas Creek (Brgy 32-D)</p>	<p>Area A: Agdao Creek (direct discharges from nearby almost illegal houses) (Brgy Agdao Proper)</p>



Dacudao Creek in Brgy Agdao Proper



Dacudao Creek (many outfalls of almost submerged)



Dacudao Creek with outlet (Brgy Leon Garcia)



Outlet of Dacudao Creek to Davao Gulf
 (Brgy Leon Garcia)



Jerome Creek (Brgy Rafael Castillo)



Pumping Station under Construction in Jerome Creek
 (Brgy Centro San Juan)

<p>Agdao District</p>	
	
<p>Area A: Brgy Tomas Monteverde: street outside slum area</p>	<p>Area A: Brgy Tomas Monteverde: slum area</p>
	
<p>Barangay Tomas Monteverde: ditch with gray water in slum area</p>	<p>Brgy Tomas Monteverde: One exit of wastewater in Barangay Tomas Monte Verde in Area-A Agdao</p>
	
<p>Brgy. Leon Garcia: drains with cover and grating</p>	<p>Brgy. Leon Garcia: drain from congested area</p>
	
<p>Brgy. Leon Garcia: Back pond with drain</p>	<p>Brgy Leon Garcia: outlet from back pond</p>



Agdao Dist. Brgy. Agdao Proper: Street



Brgy Agdao Proper: drain with gray water



Agdao Dist. Brgy Paciano Bangoy: street and drain



Brgy Paciano Bangoy: drain



Brgy. Wilfred Aquino: road with underground drain



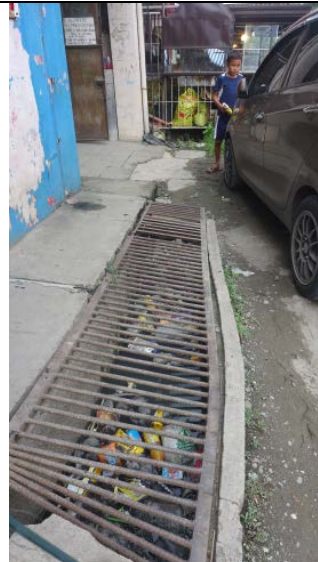
Agdao Dist. Brgy. Vicente Duterte: street, open drain, covered drain, drain manhole



Brgy. Vicente Duterte drain



Agdao Dist. Brgy. San Antonio: open stagnant drain



Brgy. San Antonio: stagnant drain with garbage



Brgy. Ubalde: Street with covered drain



Brgy. Ubalde: Road with open drain



Agdao Dist. Brgy Centro San Juan: street with underground drain



Brgy Centro San Juan: drain in rural area with some flow but with scum and garbage



Brgy. Rafael Castillo: street and Jerome Creek



Brgy. Rafael Castillo: clogged drain and gray water outlet



Brgy. Lapu-Lapu: street with open drain



Brgy. Lapu-Lapu: Azuela Cove (developer's area) inundation occurs in high tide

<p>Area A: Direction to Davao Farms Subdivision (Brgy Lapu-Lapu)</p>	<p>Area A: Direction to Davao Farms Subdivision (already many illegal residents)</p>
<p>Poblacion District</p>	
<p>Side drain with garbage and no slope, and discharge to drain in Poblacion</p>	<p>Garbage in side drain</p>
<p>Stagnant water in open drain in Poblacion Dist.</p>	<p>New Drainage Ditch by DPWH (Poblacion Dist.)</p>



Brgy 1-A: large street with covered drain



Brgy. 1-A residential area (covered drain)



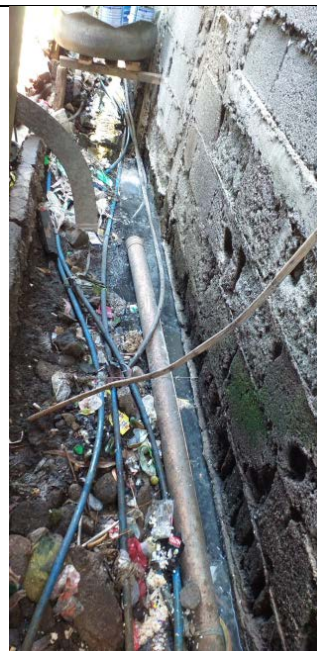
Poblacion Dist. Brgy 1-A: small road beside Davao River with covered drain



Brgy 2-A: direct discharge of gray water to Davao River



Brgy 2-A: Gate at exist of drain



Brgy 2-A: gray water in congested area



Bangoy Street between Brgy 4A and 34D



Brgy 4A: path with drain from inside slum



Brgy 4A: large apartment under construction



Brgy 5-A: street with some slope partly. Drains underground



Brgy 5-A: slum area beside Davao River

<p>Brgy 7A: Mount Apo Street with almost covered drain</p>	
<p>Brgy 8-A (Area B): Street with slope and partly open drain</p>	<p>Brgy 8-A (Area B): Small street with covered drain</p>
<p>Brgy 9-A: Stagnant water and garbage in the drain</p>	<p>Brgy 9-A: Stagnant drain with fallen leaves and garbage</p>
<p>Brgy 12-B (Area B): Small street with drain with stagnant gray water</p>	<p>Brgy 13-B: Gray water stagnation in small path</p>

	
<p>Brgy. 15-B beside Agdao Creek</p>	<p>Brgy 15-B drain in small pathway</p>
	
<p>Poblacion Dist. Brgy 19-B: large street with slope and covered drain</p>	<p>Brgy 19-B outlet to Davao River</p>
	
<p>Poblacion Brgy 20-B: Residential Complex under construction near Abreeza Mall</p>	<p>Brgy 20-B: Existing sewage treatment plant in Abreeza Complex</p>



Brgy 20-B: inlet pumping station and blower room in STP



Brgy 20-B: Open drain with discharge from STP



Poblacion Brgy 22-C: street



Poblacion Brgy 22-C: highly congested and small drain



Poblacion Dist. Brgy 23-C: Illegal settlers outside Santa Ana Port



Brgy 23-C: road with covered drain



Poblacion Dist. Brgy 25-C: Open side drain with stagnant water



Brgy 27-C: Street in commercial area with covered side drain



Brgy 30-C: commercial area with covered drain



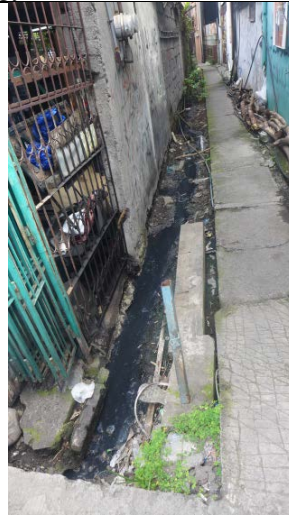
Brgy 31-D: Open drain and road, houses



Brgy 31-D: Seaside towards 21-C












Brgy 32-D Drain



Brgy 32-D Drain

	
<p>Brgy 34-D street</p>	<p>Brgy 34-D drain</p>
	
<p>Brgy 34-D: Oil trap tank in Royal Mandaya Hotel (for laundry, kitchen water)</p>	<p>Brgy 34-D: Three septic tanks in Royal Mandaya Hotel (collection of septage every half a year)</p>
	
<p>Poblacion Brgy 37-D: Road side drain without cover and stagnant water</p>	<p>Poblacion Brgy 37-D: Road side drain with cover</p>

		
<p>Poblacion Dist. Brgy 38-D: Street (open road side drain)</p>	<p>Open drain with gray water</p>	<p>Partly covered drain</p>
		
<p>Brgy 39-D: Main street (covered drain)</p>	<p>Brgy 39-D: street and side drain with grating cover</p>	
		
<p>Brgy 39-D: no covered drain with stagnant gray water</p>	<p>Brgy 39-D: small drain between houses</p>	
<p>Talomo District (only East of Brgy 76A Bucana)</p>		
		
<p>Brgy 76A: San Pedro Street (interceptor)</p>	<p>Brgy 76A: Seaside road in eastend</p>	



Brgy 76A: clogged outlet of Bucana Main Drain



Brgy 76A: enough wide street in land side of Bucana



Brgy 76A Bucana: Drain from slum area in seaside road




Brgy 76A Bucana: small outlet in seaside road



Brgy 76A Bucana: Open drain towards Davao River

Area B

	
<p>Area B: Barangay Cabantian (covered side drain) Hilly area</p>	<p>Area B: Cabantian Country Homes Rd (discharge from road side drain)</p>
	
<p>Cabantian Indangan Road</p>	<p>Mandug Road</p>
	
<p>DPWH drainage work between Buhangin and Tigatto</p>	<p></p>



Area B: Barangay Tigatto
 (no road side drain)



Area B: Brgy. Tigatto – Narra Park Residences



Brgy Tigatto open channel



Brgy Tigatto road side drain



Brgy Tigatto: good openland for community
 treatment plant



Brgy Tigatto: outlet from open channel to Davao River



Area B: Brgy. Buhangin (covered side drain)



Area B: Brgy. Buhangin (under path)



Brgy Buhangin: Residential area (hilly land)



Brgy Buhangin: overflow of gray water from drain due to clogging









Cacao field in the middle of STP Area B Candidate Site in IM4D



Access road to STP Area B Candidate Site

Area C

	
<p>Area C Brgy Bucana: Agro Football Field (STP-A Candidate site when crossing Davao River)</p>	<p>Davao River (beside Agro Football Field in Brgy Bucana)</p>
	
<p>Brgy Bucana (76-A) Bolton Bridge Main Drain (West)</p>	<p>Brgy Bucana (76-A): Bolton Bridge Main Drain upstream</p>
	
<p>Area C Brgy Bucana: Drainage Construction in Ecoland Drive</p>	<p>Area C Brgy Bucana: Open drain</p>

	
<p>Area C: Barangay MA-A (covered side drain)</p>	<p>Area C: Barangay MA-A (open drain)</p>
	
<p>Area C: Barangay MA-A (open road side drain)</p>	
	
<p>Area C Matina Pangi: street</p>	<p>Area C Matina Pangi: direct discharge of graywater to Matina River</p>

<p>Area C Matina Pangí: street and side drain with small graywater</p>	<p>Area C Matina Pangí: graywater without ditch</p>
<p>Area C Matina Crossing: open channel with graywater to Matina River</p>	<p>Area C Matina Crossing: street and side drain with much gargabe</p>
<p>Area C Brgy Matina Aplaya: Shanghai Creek and discharge of gray water from road side drain</p>	<p>Brgy Matina Aplaya: street and open drain</p>
<p>Brgy Matina Aplaya: direct discharge of graywater beside sea</p>	<p>Brgy Matina Aplaya: Coastal Road under construction</p>



Area C Brgy Talomo: Talomo Bridge on Talomo River with outfall



Area C Brgy Talomo: west of Talomo Bridge (covered side drain)



Area C Brgy Bago Aplaya: street with new drain



Area C Brgy Bago Aplaya: street with open drain









Area C: AH26 Bangkal



Area C: AH26 Ulas

Area D

	
<p>Area D Brgy Panpanga: open channel with graywater</p>	<p>Area D Brgy Panpanga: open drain with graywater</p>
	
<p>↑Area D: Kilometer 9 Sasa (stagnant water in creek)</p>	<p>↑Area D: Barangay Sasa Hall</p>
	
<p>Area D: Barangay Sasa, Km. 11, Zone 3 (large slope to sea) open ditch with garbage</p>	<p>Area D: Barangay Sasa, Km. 11, Zone 3 (slum area beside sea)</p>

	
<p>Area D Brgy Communal: small open ditch</p>	<p>Area D Brgy Panacan: open dran</p>
	
<p>Area D Brgy Ilang: small street and open drain</p>	<p>Area D Brgy Ilang: open drain with gray water</p>
	
<p>Area D: Barangay Tibungco: Illegal house beside sea</p>	<p>Area D: Barangay Tibungco: graywater under illegal house beside sea</p>



Area D: Barangay Tibungco: drain without cover



Area D: Davao City-Panabo City Road



Area D: Daang-Maharlika Highway

Area E



Area E: Brgy. Mintal Hall



Area E: Brgy. Mintal (covered side drain)



Area E: Brgy. Tugbok Hall



Area E: Brgy. Tugbok (irrigation channel, covered side drain, heavy traffic)



Area E: Brgy. Los Amigos Hall



Area E: Brgy. Los Amigos (many open drain, resettled illegal residents)

Area F


	
<p>AH26 Pan Philippine Highway_Davao Digos Road (Barangay Dumoy)</p>	
	
<p>Area F: Brgy. Toril Hall</p>	<p>Area F: Brgy. Toril (almost covered side drain)</p>
	
<p>Area F: Brgy. Crossing Bayabas Hall</p>	<p>Area F: Brgy. Crossing Bayabas central – covered side drain</p>
	
<p>Area F: Brgy. Crossing Bayabas (near Brgy. Office) open side drain</p>	<p>Area F: Brgy. Bago Oshiro</p>

Solid Waste Landfill Site

	
<p>Solid Waste Landfill Site in Barangay New Carmen</p>	<p>Davao Sanitary Landfill Leachate Pond</p>

Septic Tanks/Graywater Discharge from Household Interview Survey (HIS)

	
<p>Opening of septic tank (Poblacion 26-C)</p>	<p>Septic tank outside house (Poblacion 26-C)</p>
	
<p>Ventilation pipe from septic tank (Poblacion 26C)</p>	<p>Vacuum/ventilation hole on the septic tank (Brgy Buhangin)</p>

	
<p>Overflow pipe from septic tank according to household (not sure if it's only ventilation)</p>	<p>Opening of septic tank with cover (for vacuuming? Sometimes for reducing liquid?)</p>
	
<p>Graywater discharge pipe (Poblacion 12-B)</p>	<p>Direct discharge of graywater to the channel</p>