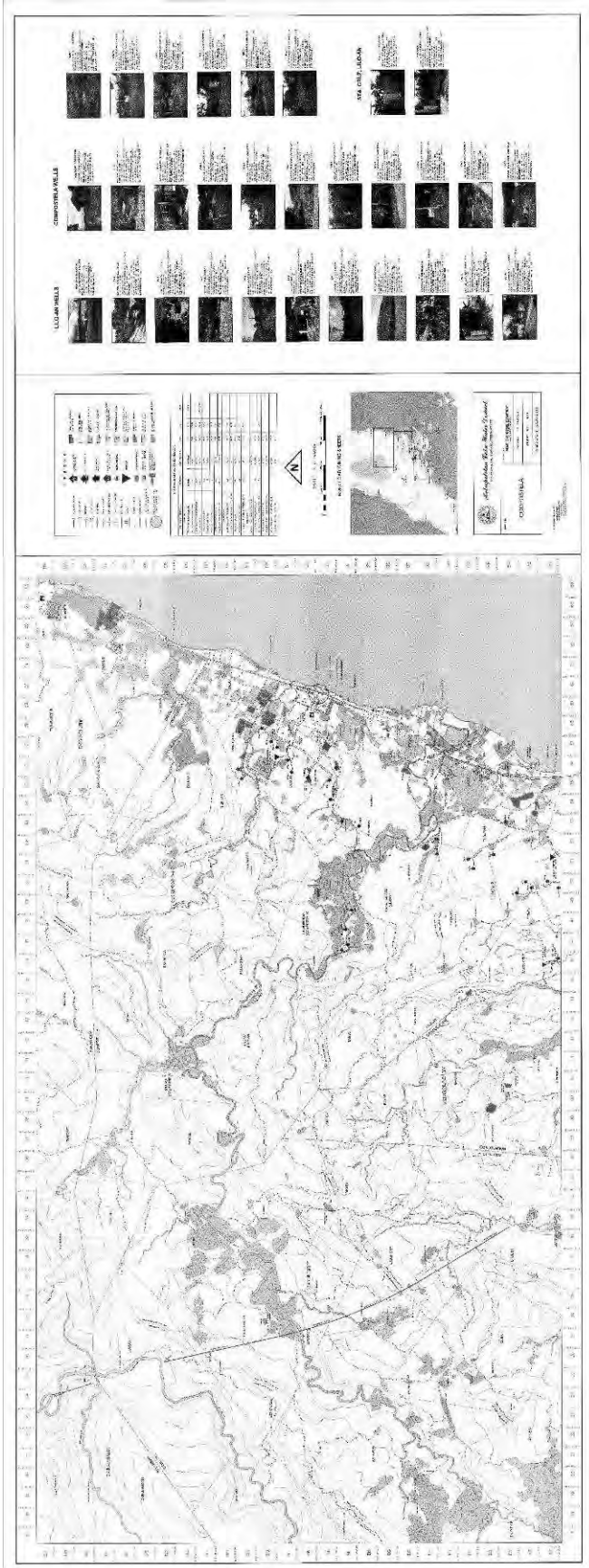
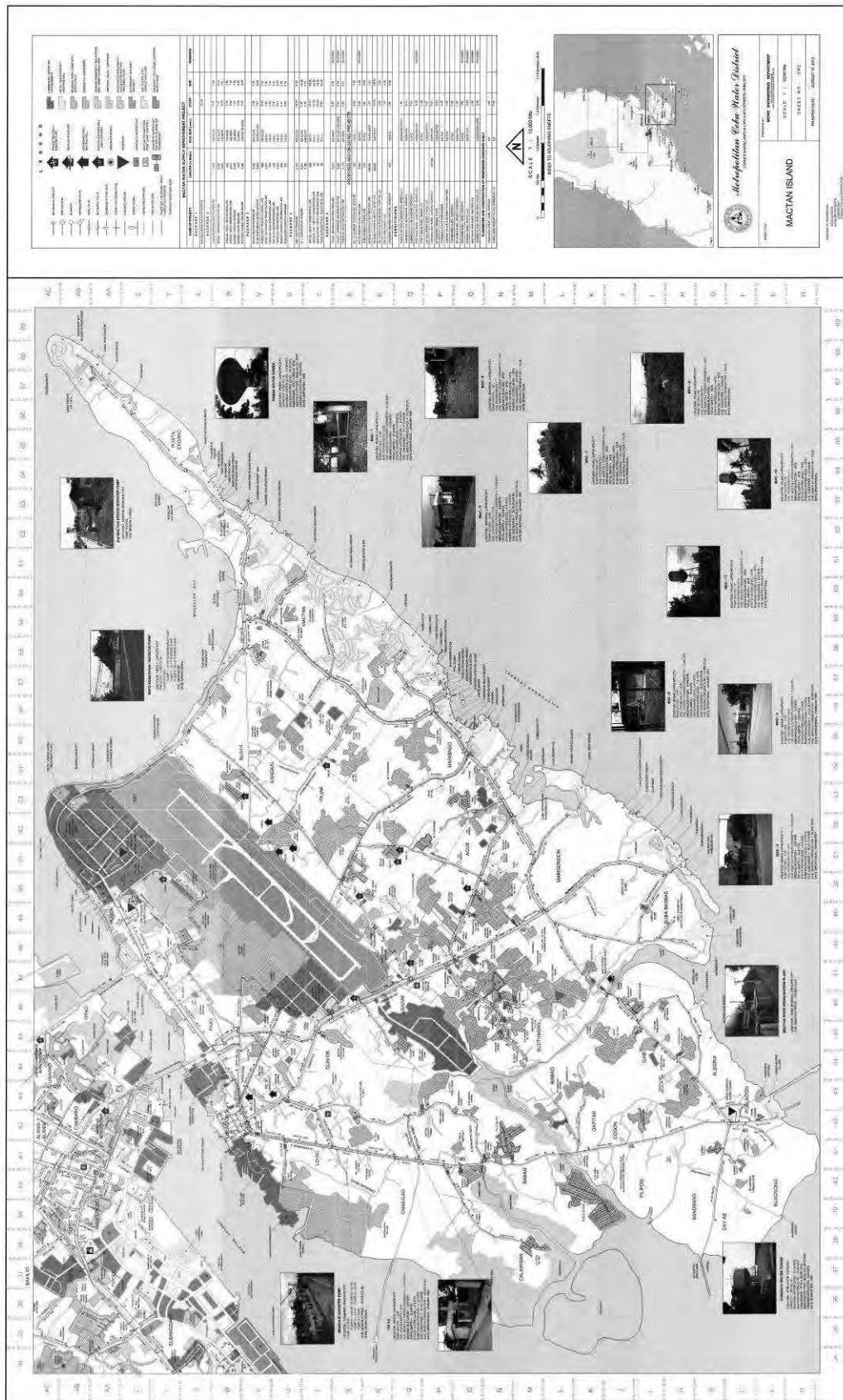


# 資料-6 参考資料

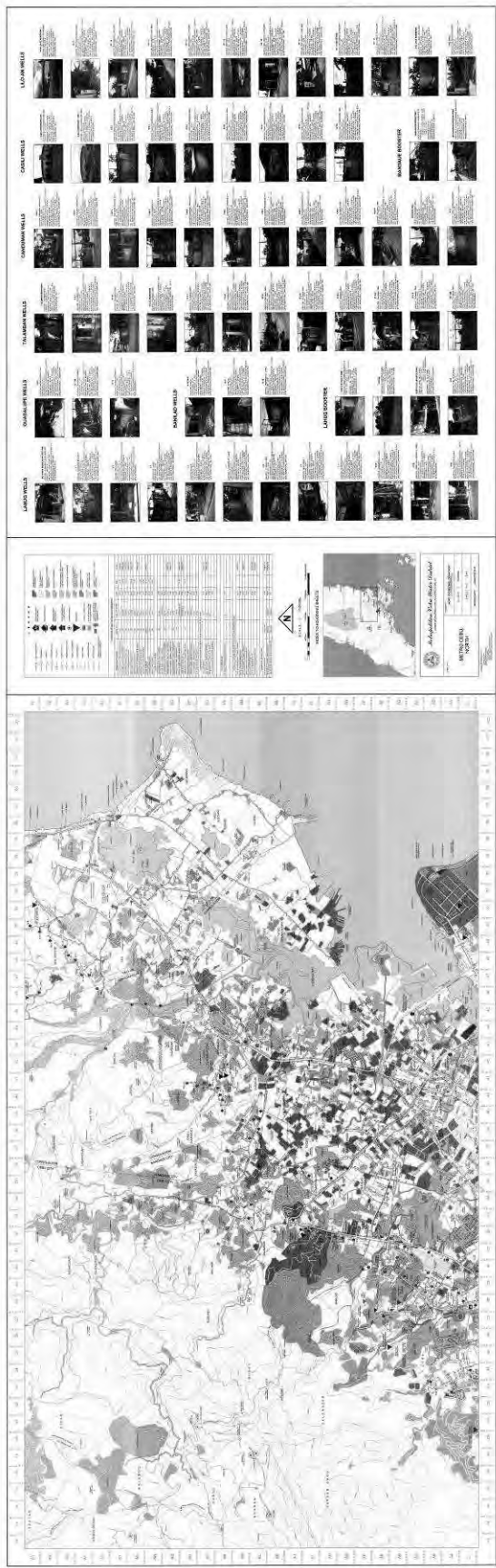
## 資料 6-1 MCWD 施設図 (コンポステラ地区)



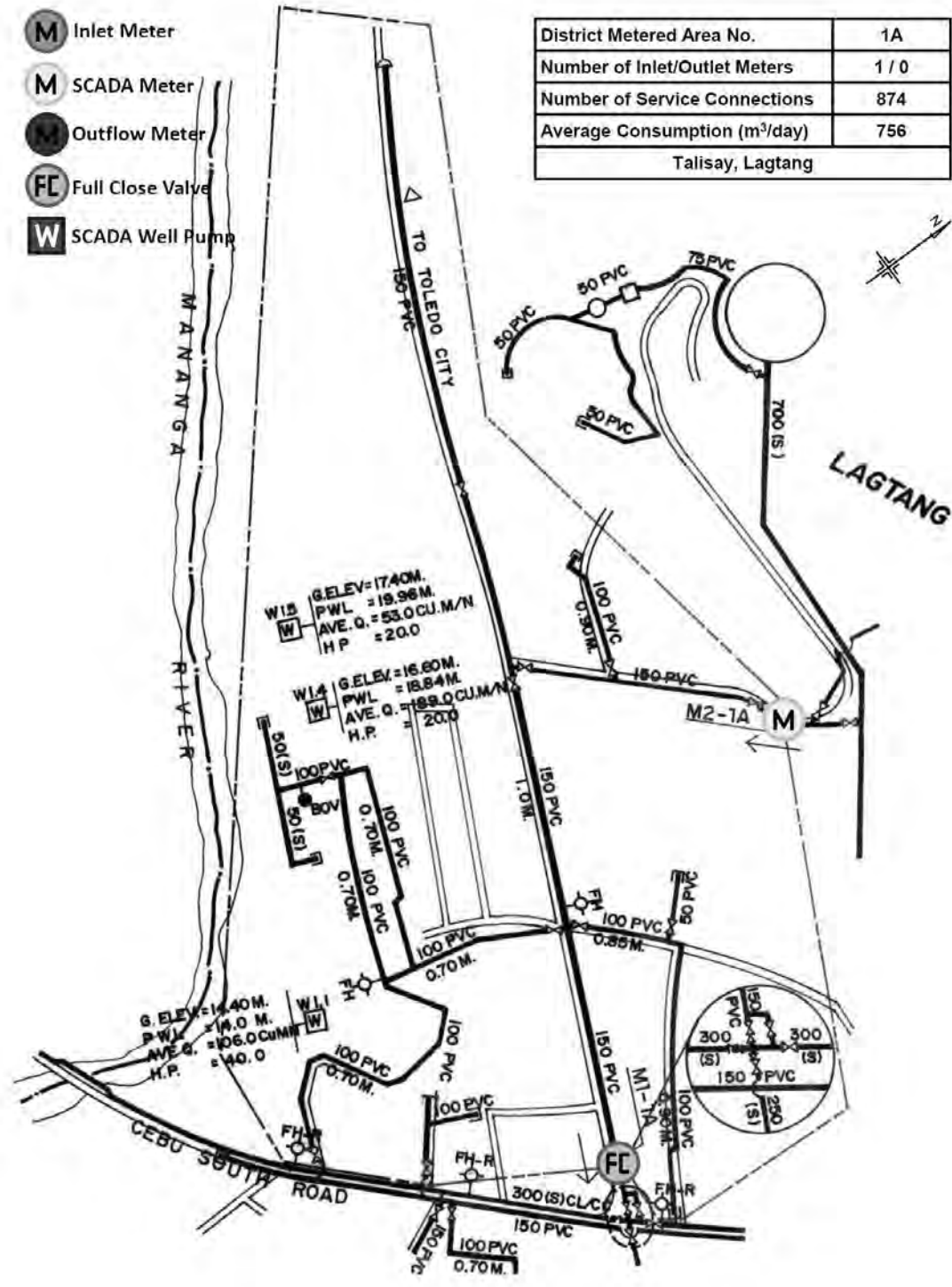
資料 6-2 MCWD 施設図 (マクタン島)

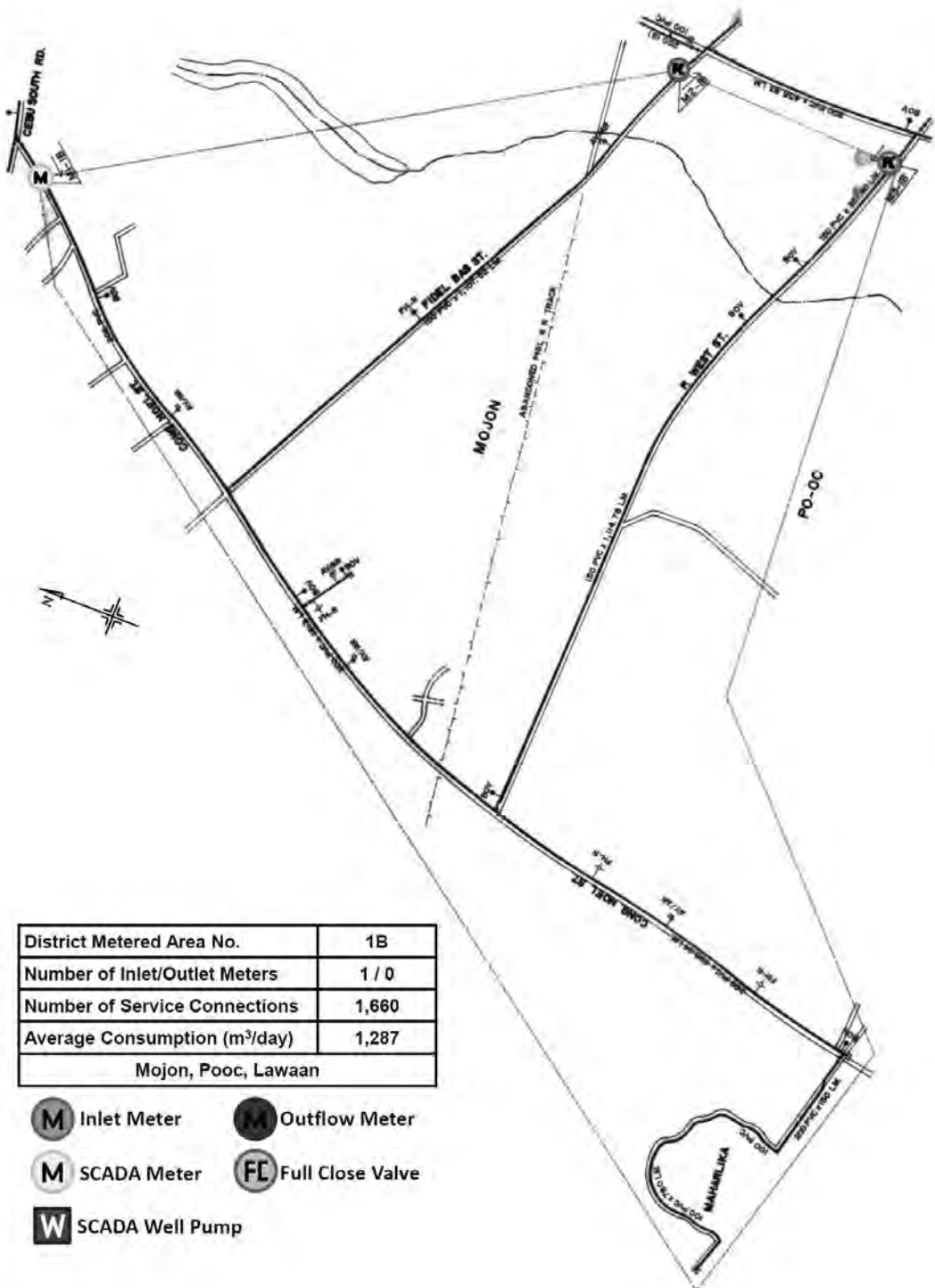


資料 6-3 MCWD 給水区域内の施設図 (メトロセブ北)



資料 6-4 SCADA 対象 流量計の位置図

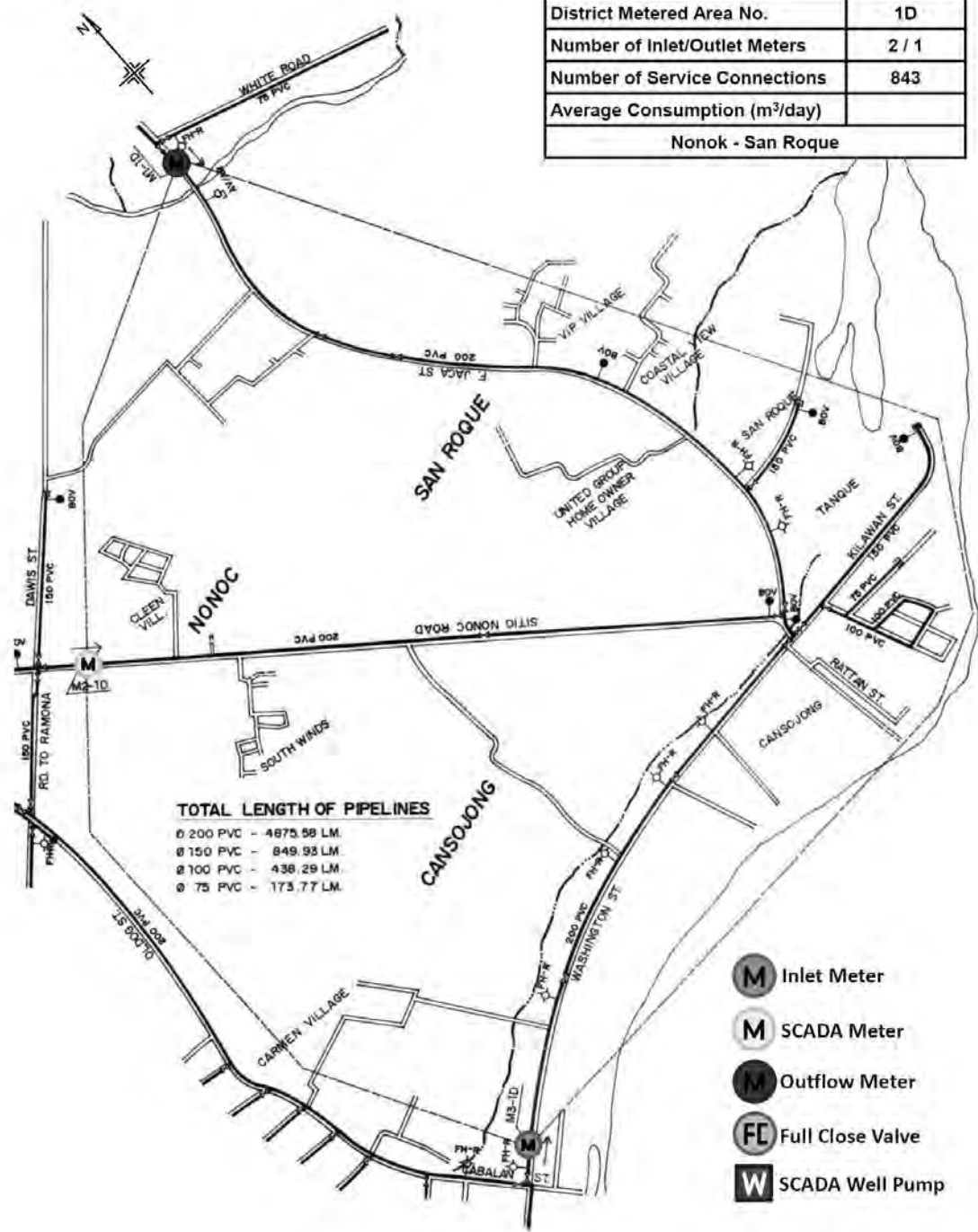


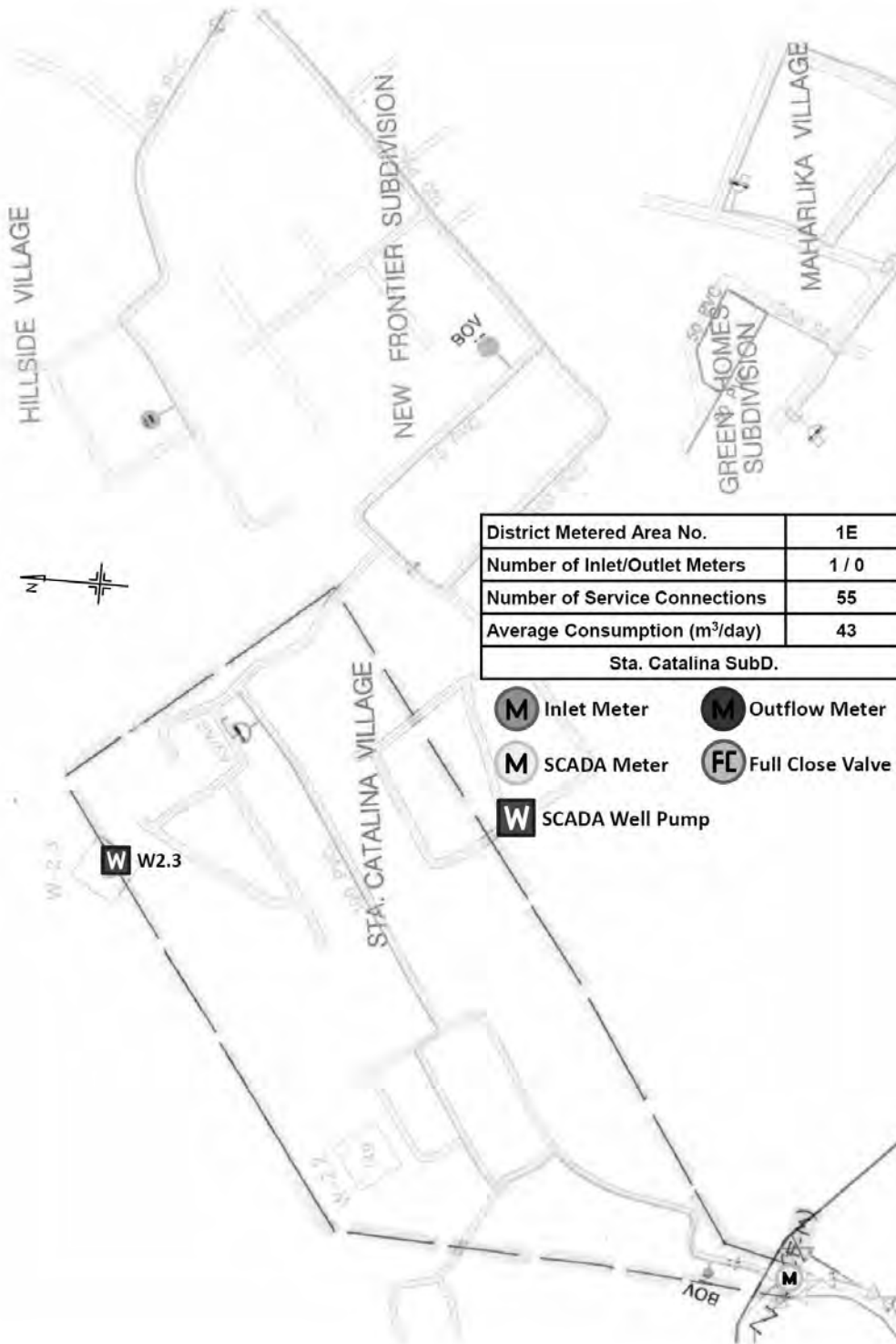


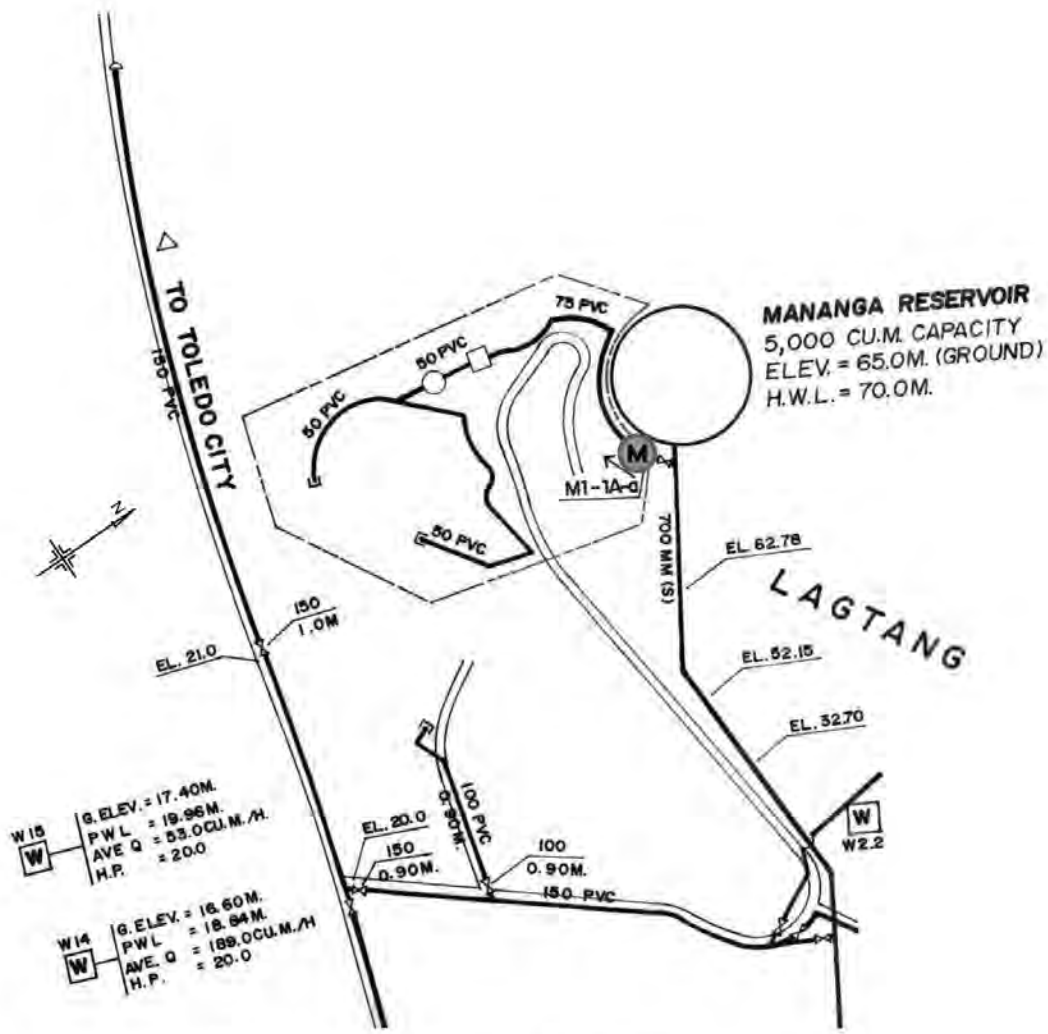
District Metered Area No.	1B
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	1,660
Average Consumption (m <sup>3</sup> /day)	1,287
Mojon, Poo, Lawaan	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FL** Full Close Valve
- W** SCADA Well Pump

District Metered Area No.	1D
Number of Inlet/Outlet Meters	2 / 1
Number of Service Connections	843
Average Consumption (m <sup>3</sup> /day)	
Nonok - San Roque	







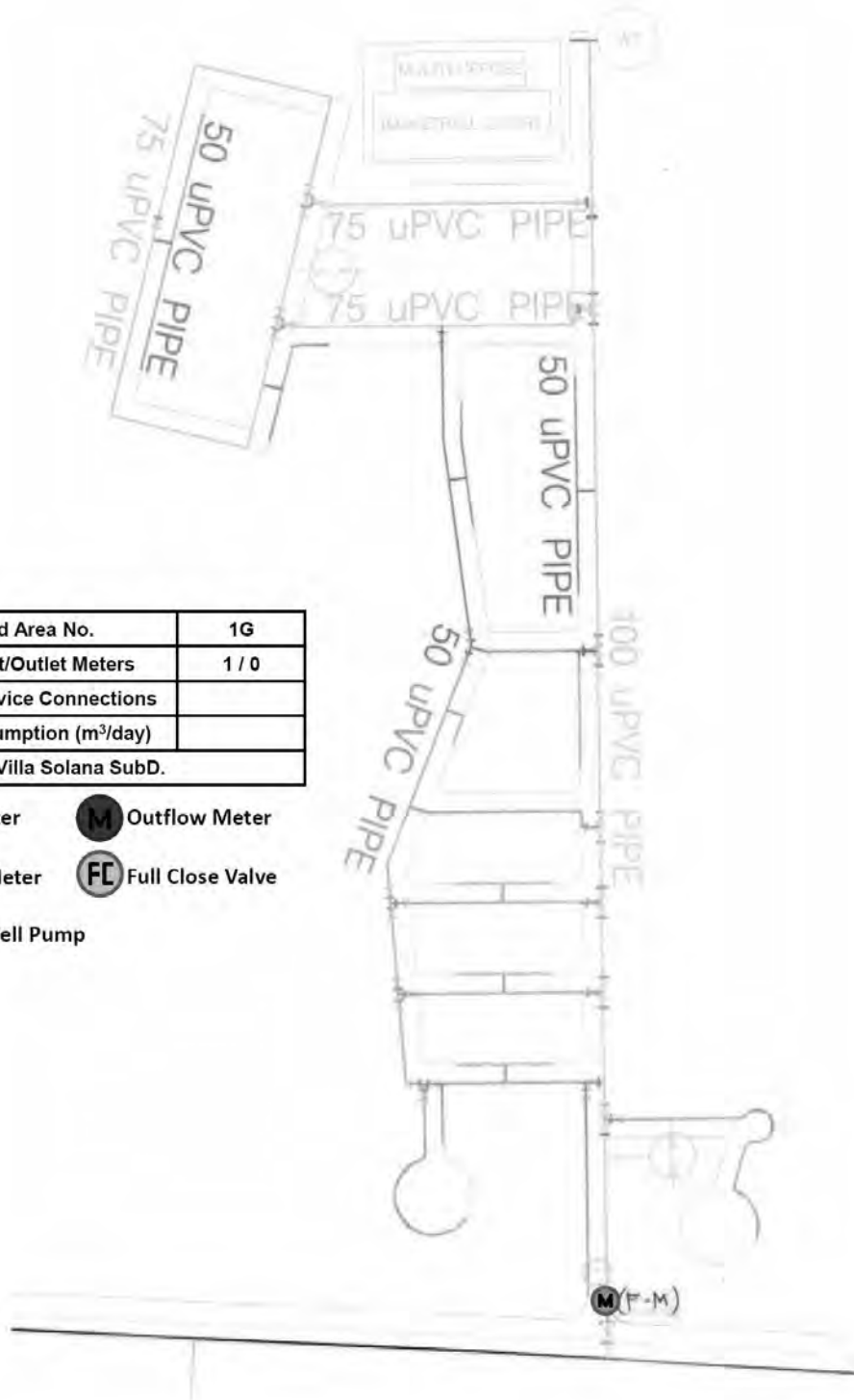
District Metered Area No.	1F
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Lagtang	

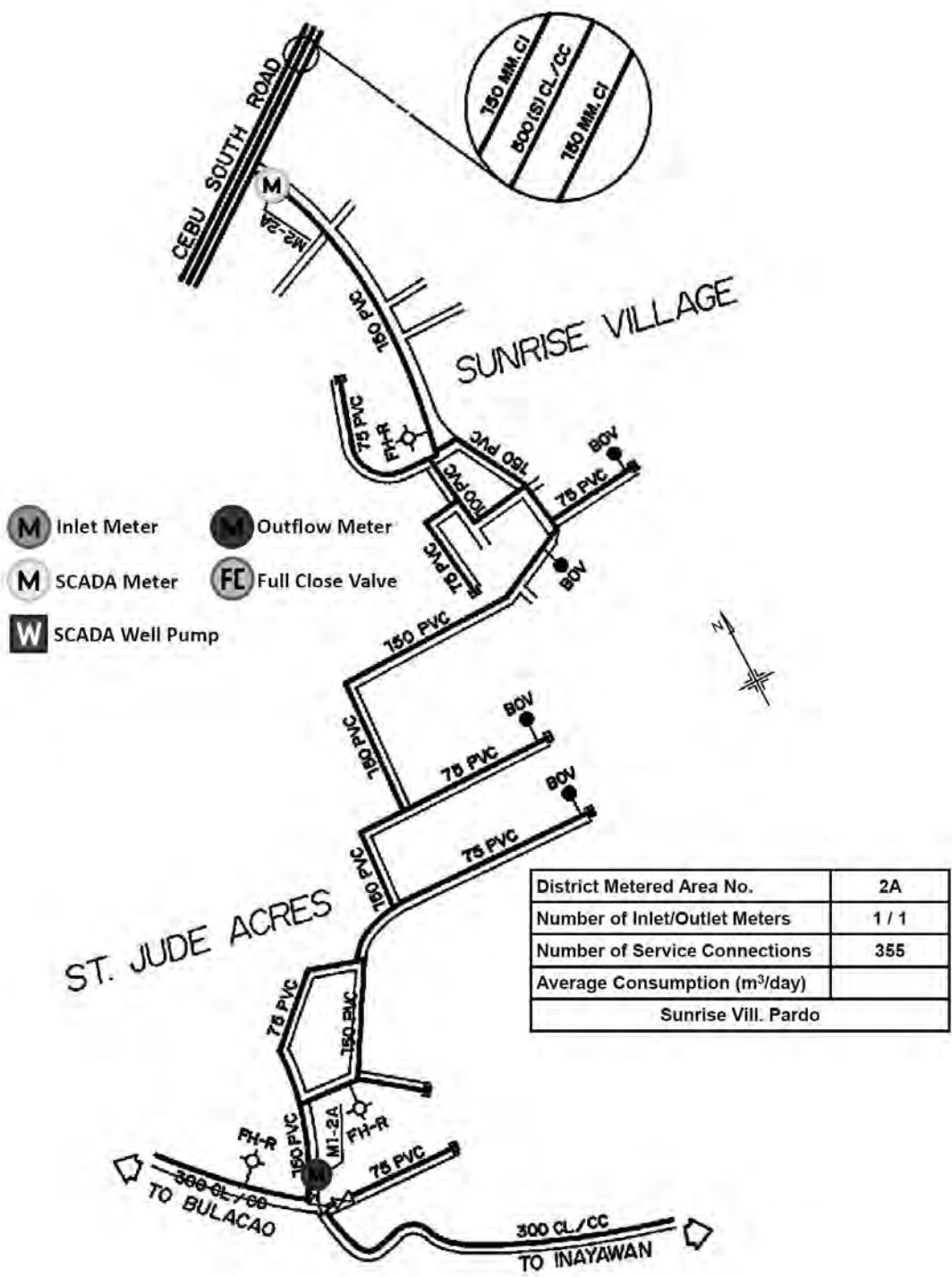
- M Inlet Meter      M Outflow Meter
- M SCADA Meter      FC Full Close Valve
- W SCADA Well Pump



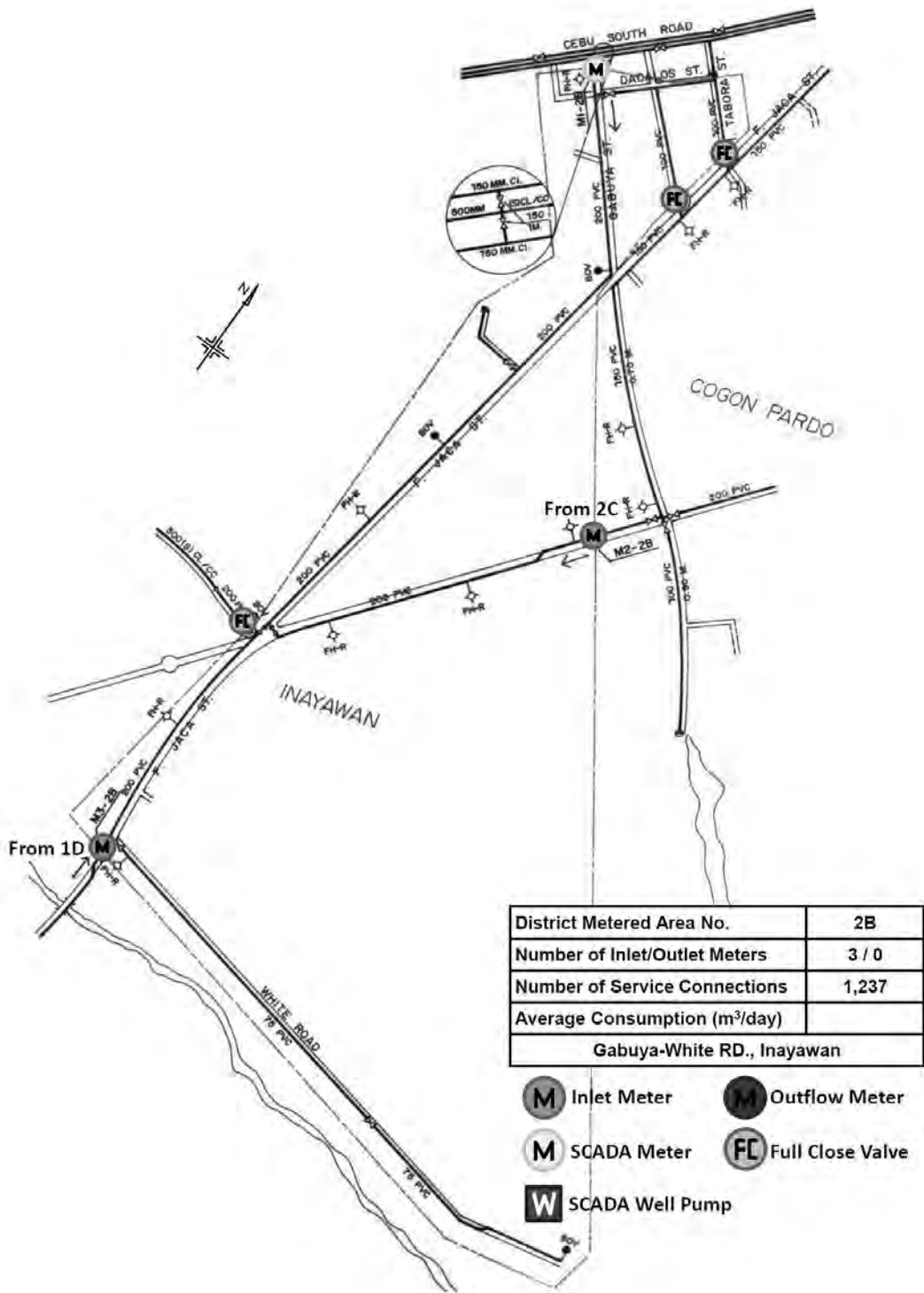
District Metered Area No.	1G
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Villa Solana SubD.	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump



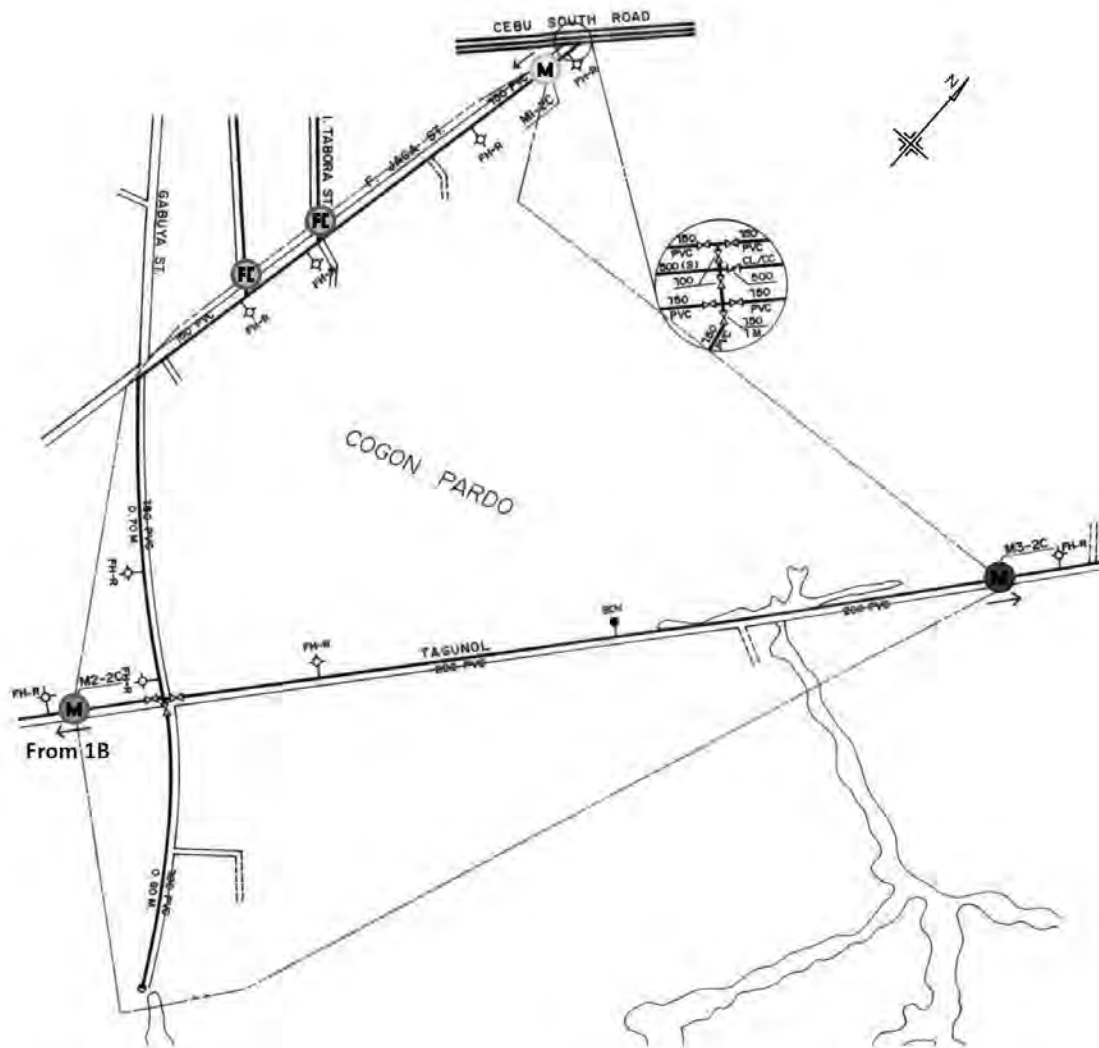


District Metered Area No.	2A
Number of Inlet/Outlet Meters	1 / 1
Number of Service Connections	355
Average Consumption (m <sup>3</sup> /day)	
Sunrise Vill. Pardo	



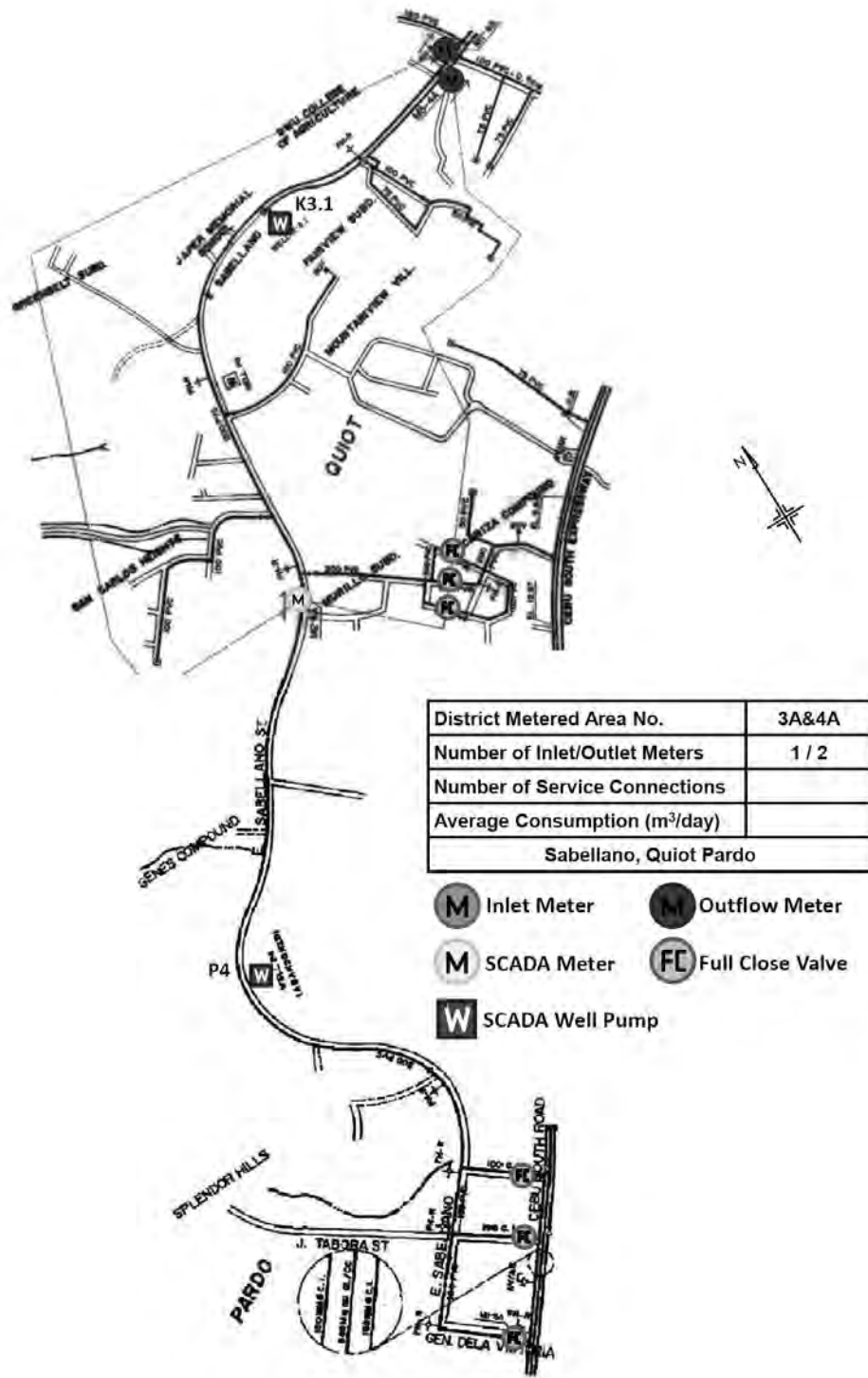
District Metered Area No.	2B
Number of Inlet/Outlet Meters	3 / 0
Number of Service Connections	1,237
Average Consumption (m <sup>3</sup> /day)	
Gabuya-White RD., Inayawan	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

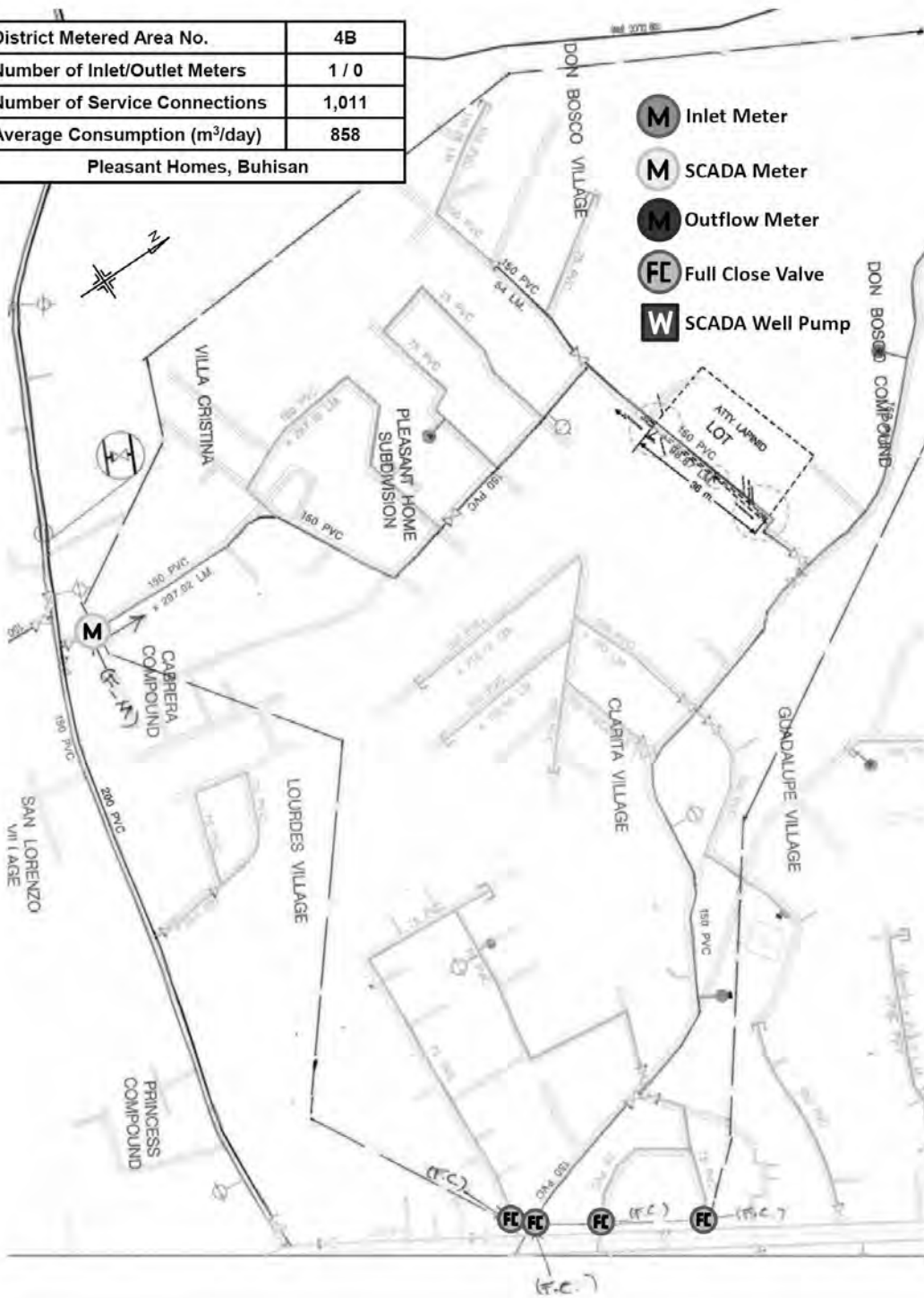


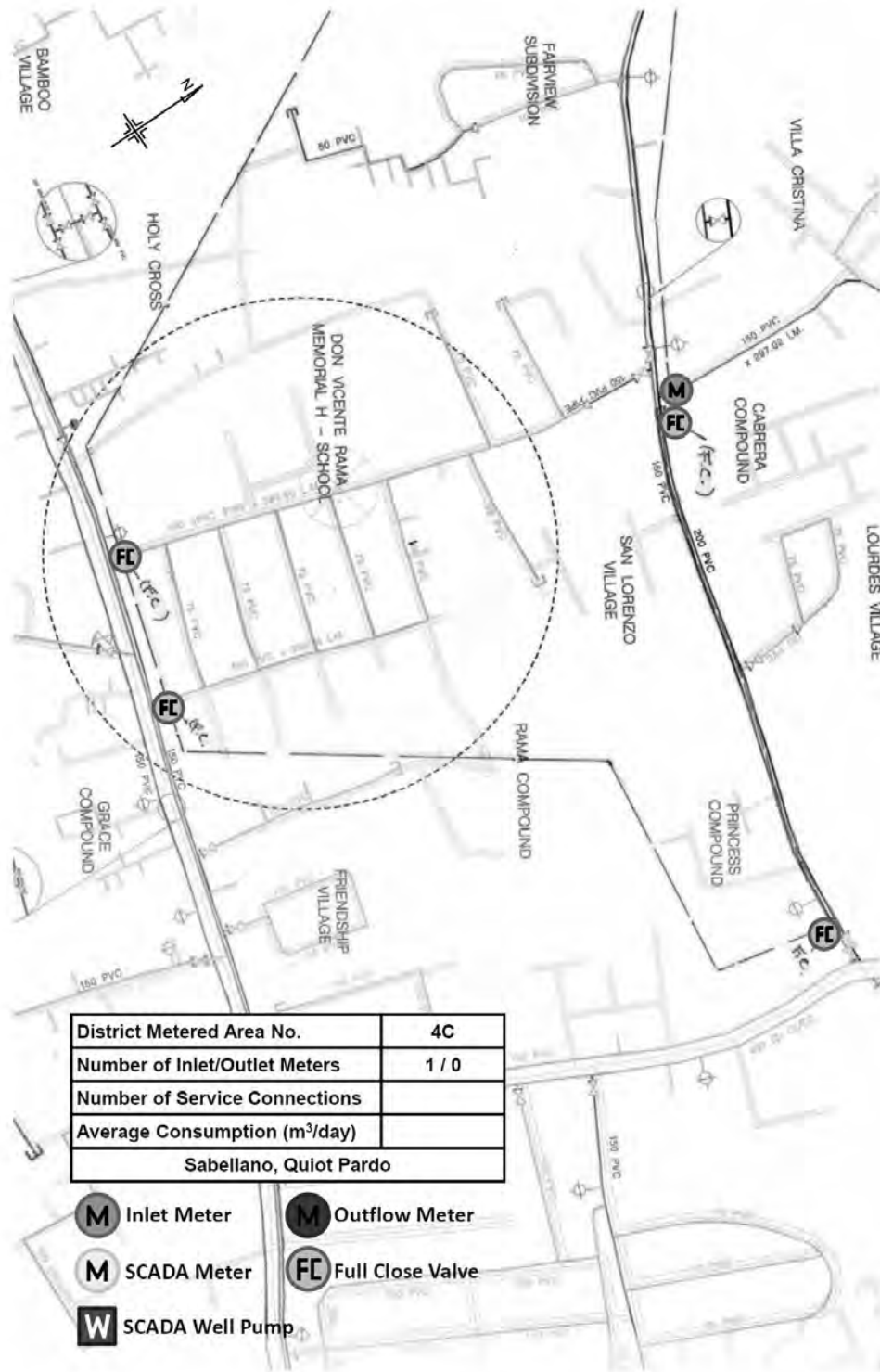
District Metered Area No.	2C
Number of Inlet/Outlet Meters	2 / 1
Number of Service Connections	663
Average Consumption (m <sup>3</sup> /day)	
F. Jaca, Cogon, Tagunol	

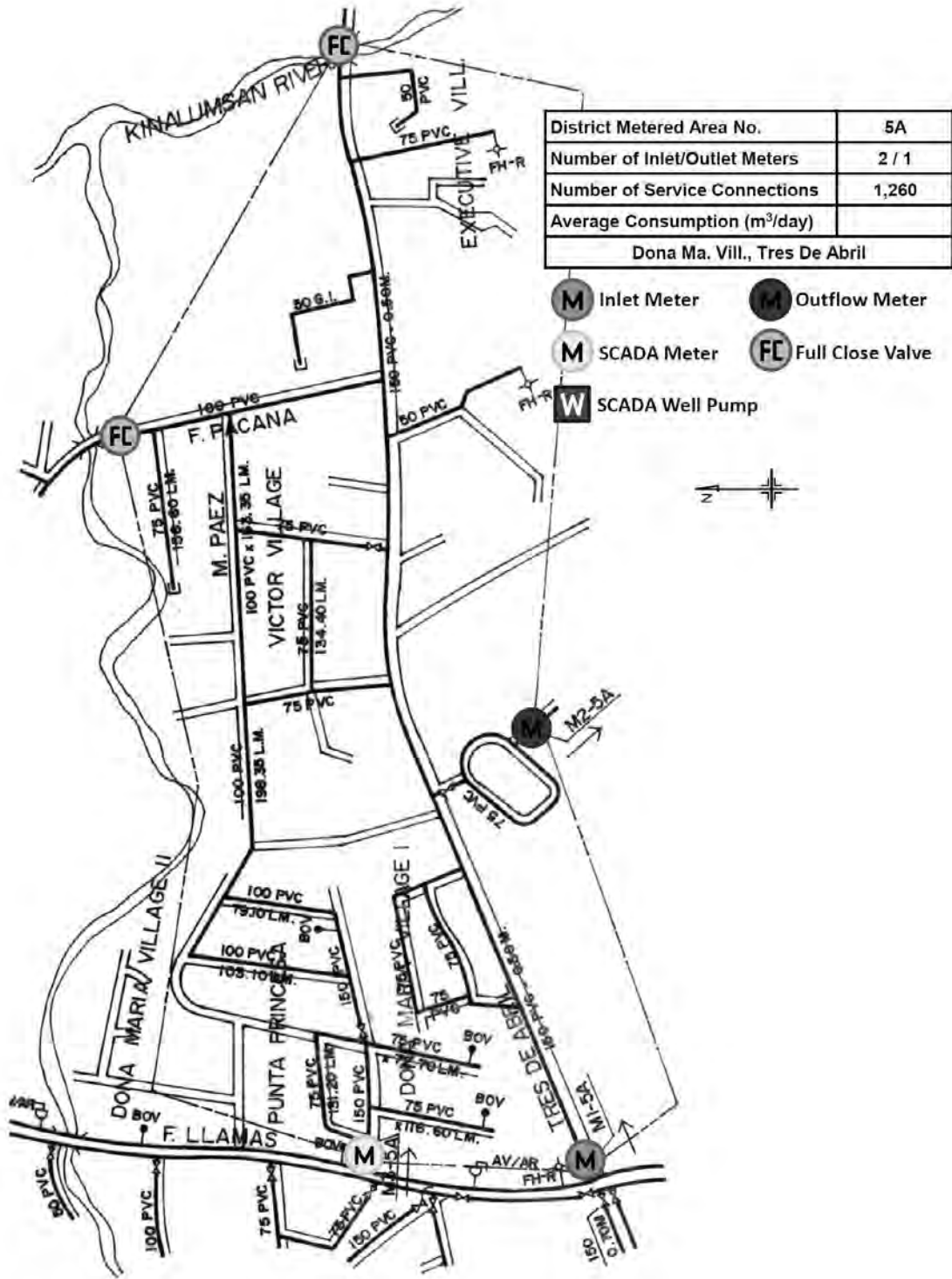
- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FL** Full Close Valve
- W** SCADA Well Pump



District Metered Area No.	4B
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	1,011
Average Consumption (m <sup>3</sup> /day)	858
Pleasant Homes, Buhisan	



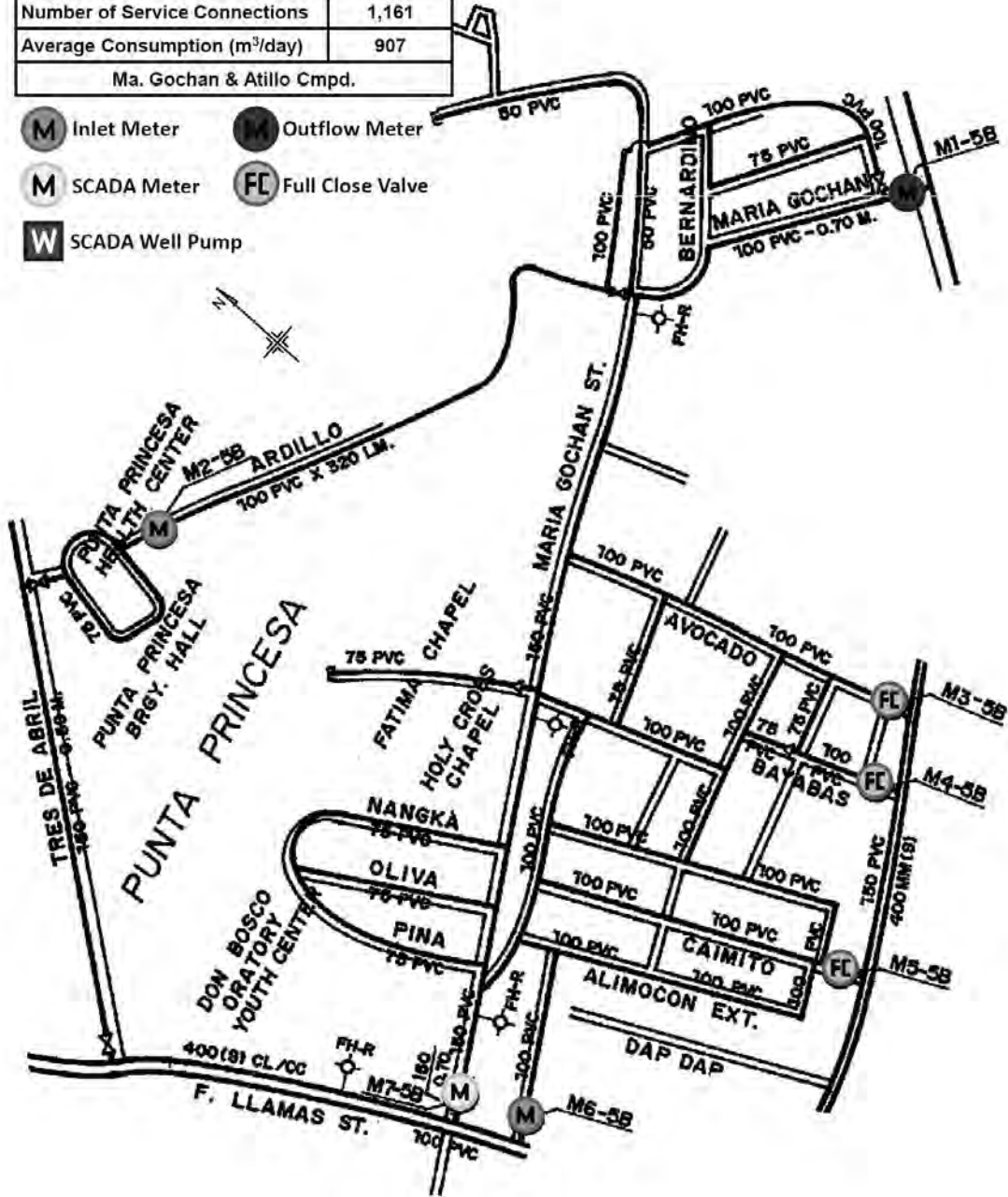


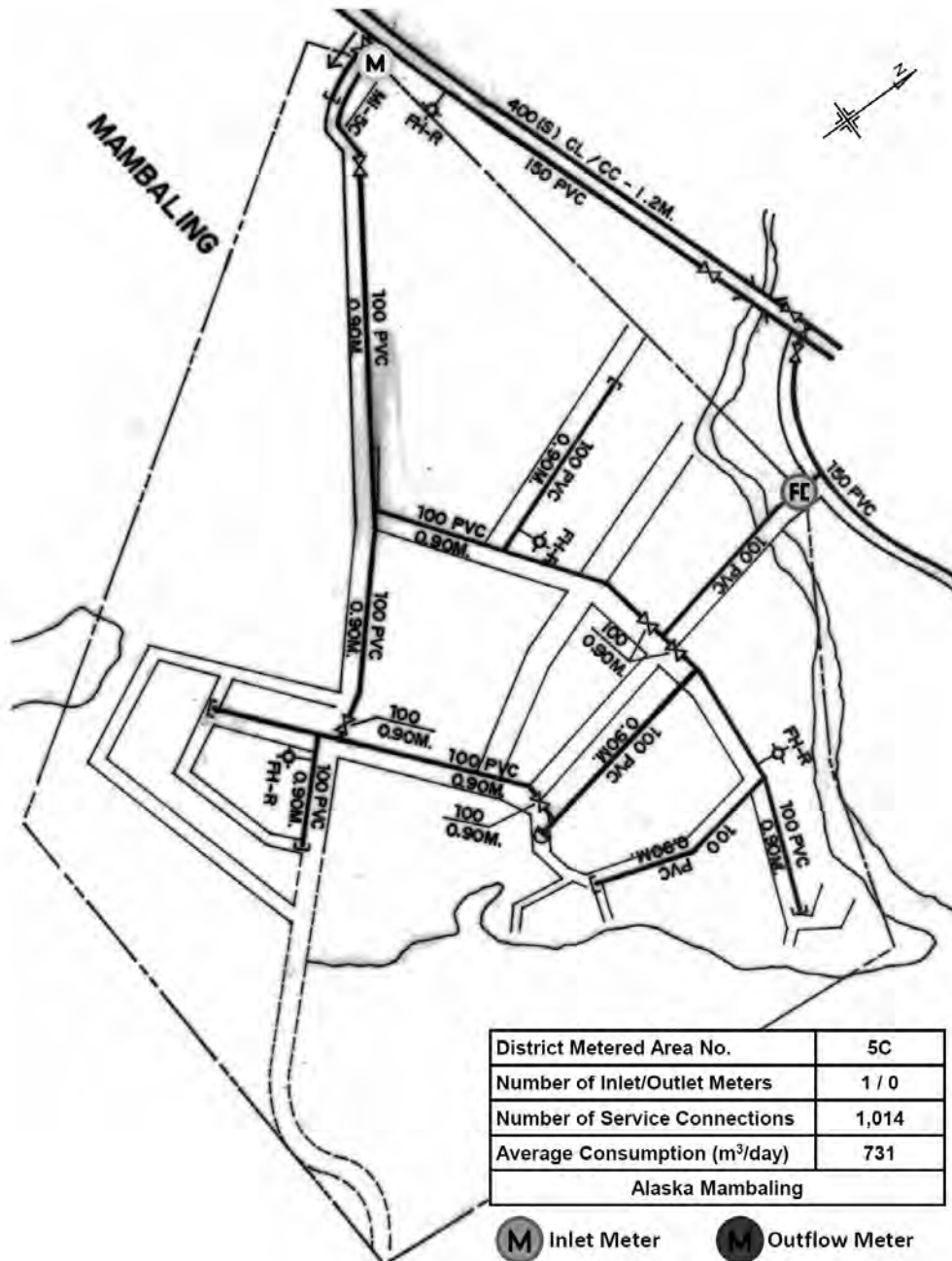




District Metered Area No.	5B
Number of Inlet/Outlet Meters	3 / 1
Number of Service Connections	1,161
Average Consumption (m <sup>3</sup> /day)	907
Ma. Gochan & Atillo Cmpd.	

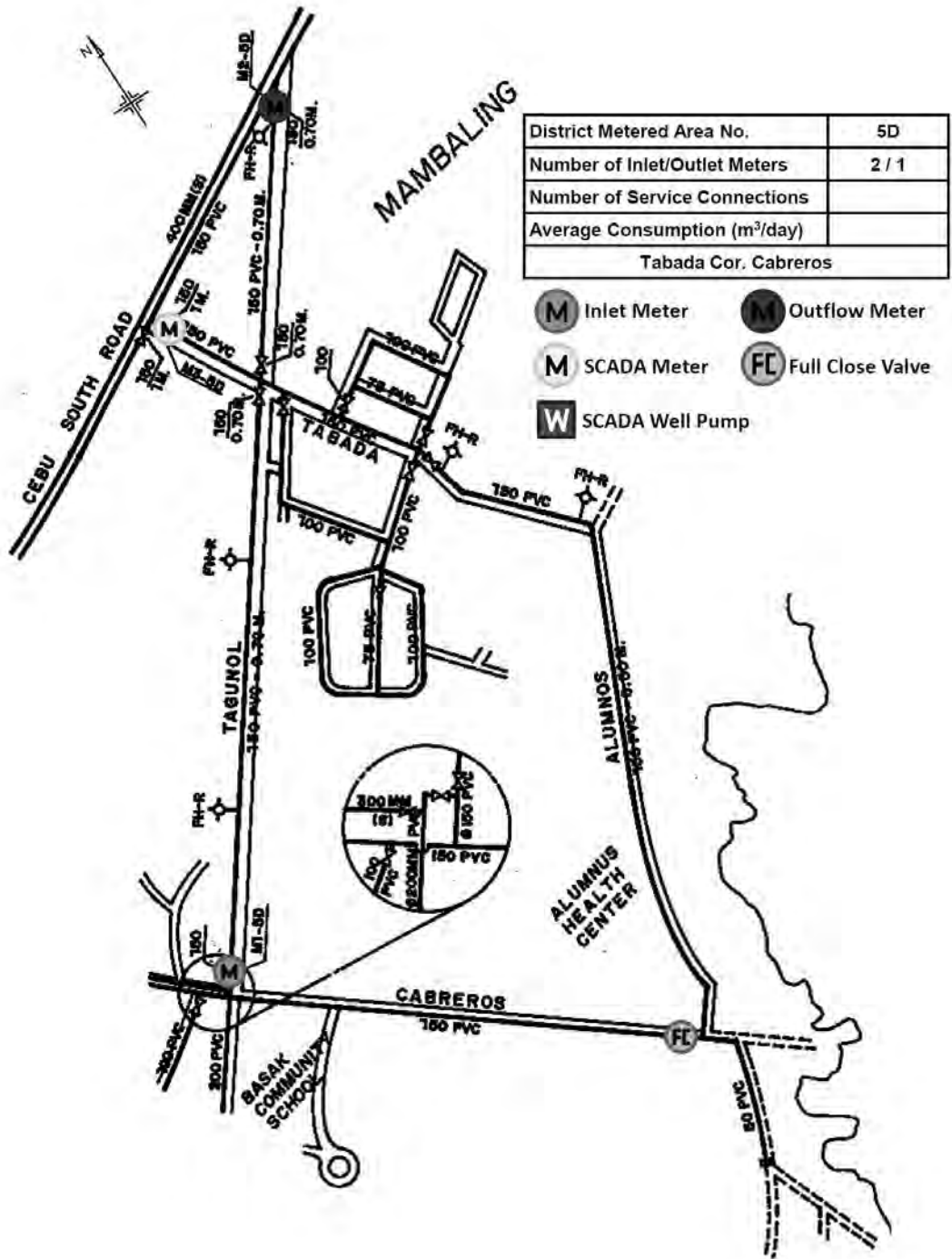
-  Inlet Meter
-  Outflow Meter
-  SCADA Meter
-  Full Close Valve
-  SCADA Well Pump





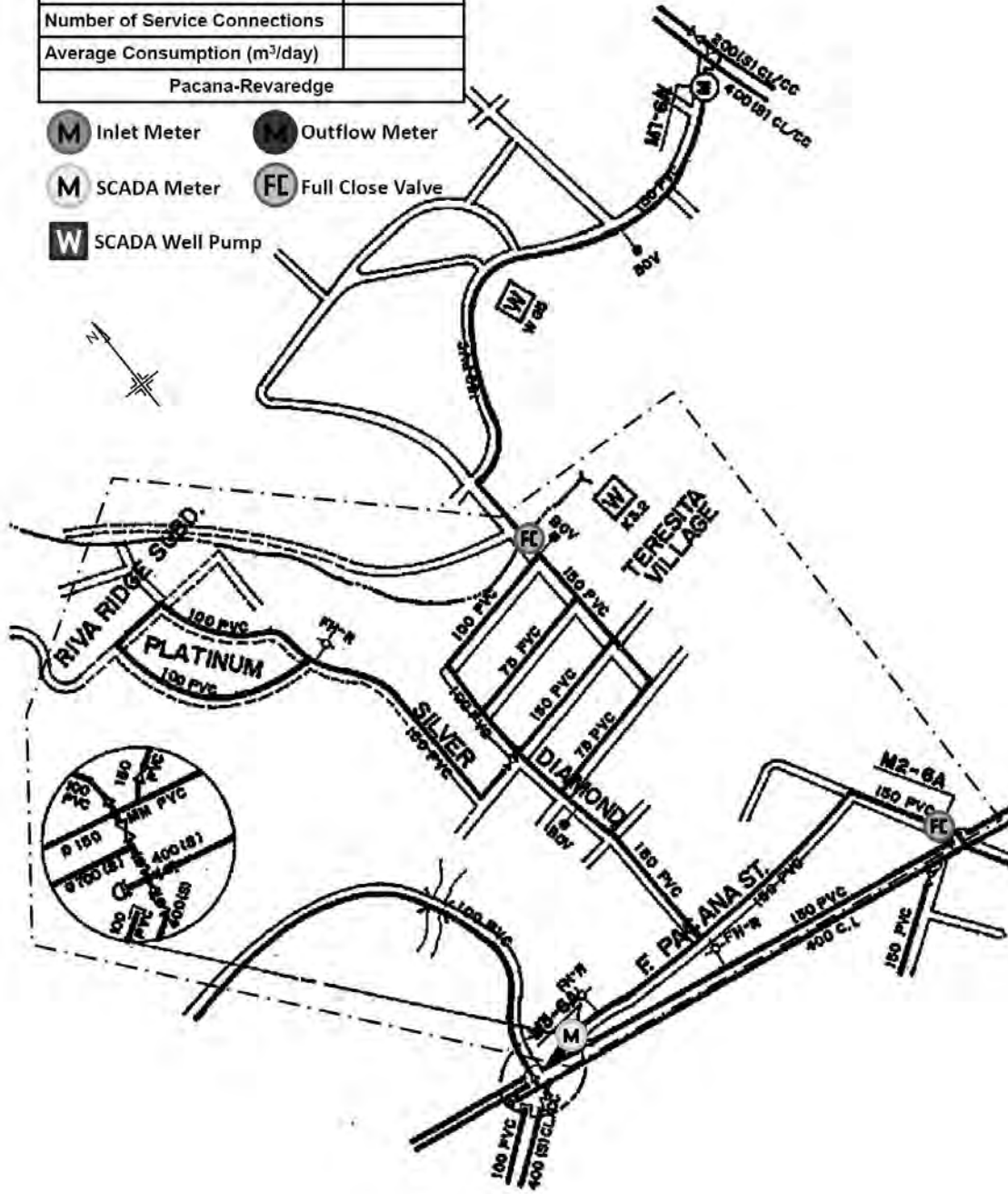
District Metered Area No.	5C
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	1,014
Average Consumption (m <sup>3</sup> /day)	731
Alaska Mambaling	

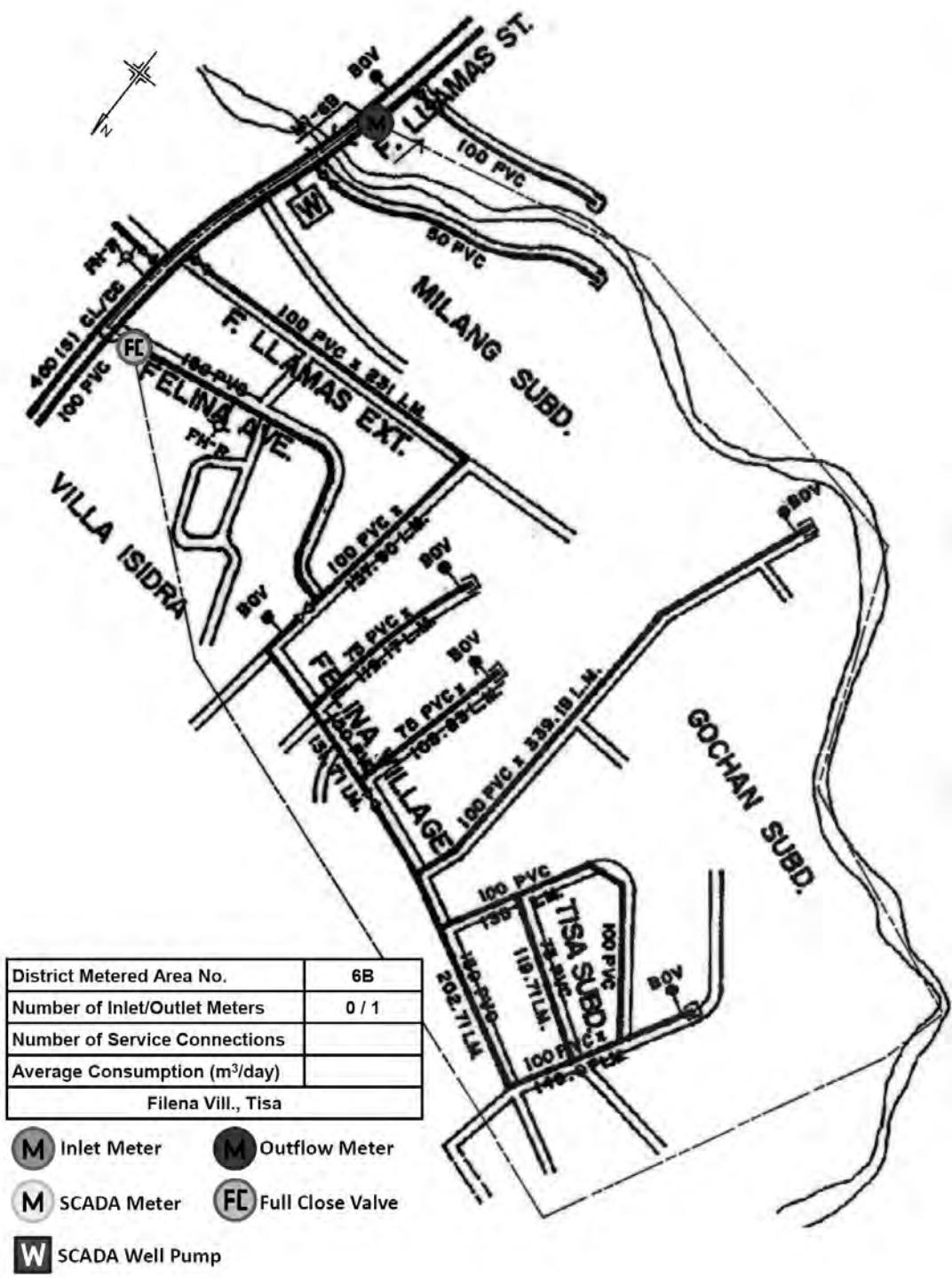
- M Inlet Meter
- M Outflow Meter
- M SCADA Meter
- FC Full Close Valve
- W SCADA Well Pump



District Metered Area No.	6A
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Pacana-Revaredge	

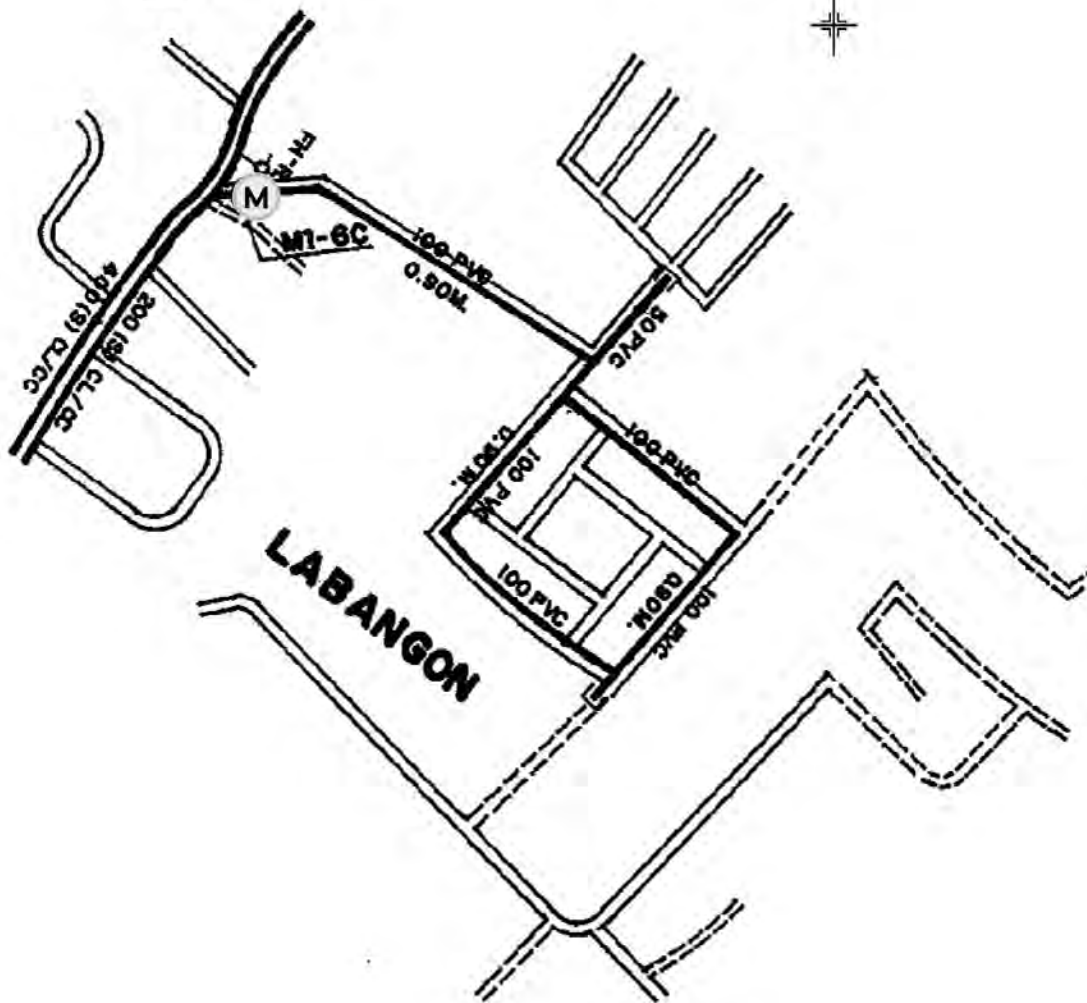
- M** Inlet Meter      **OM** Outflow Meter
- SM** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

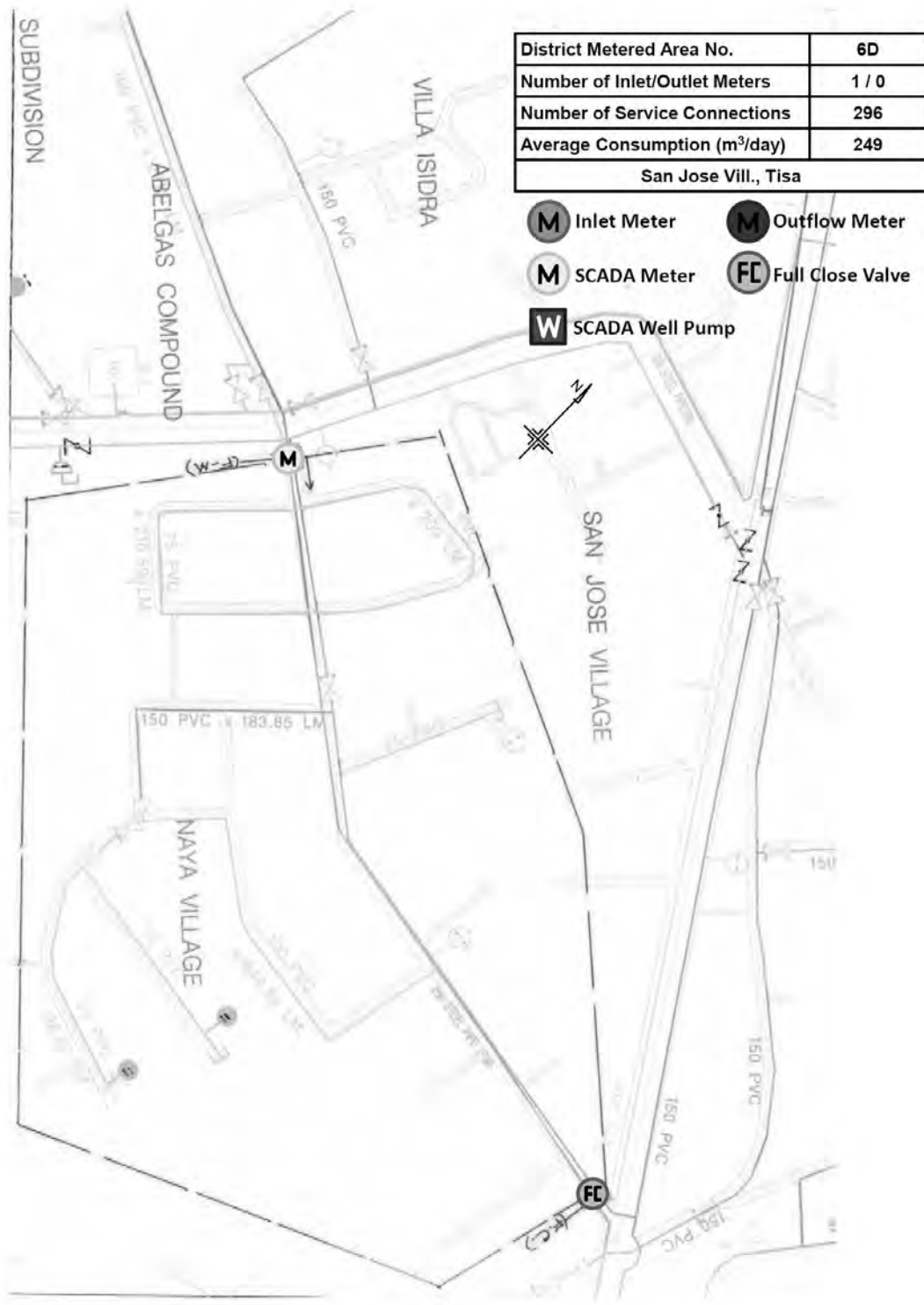




District Metered Area No.	6C
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	496
Average Consumption (m <sup>3</sup> /day)	402
Bless Housing	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FL** Full Close Valve
- W** SCADA Well Pump



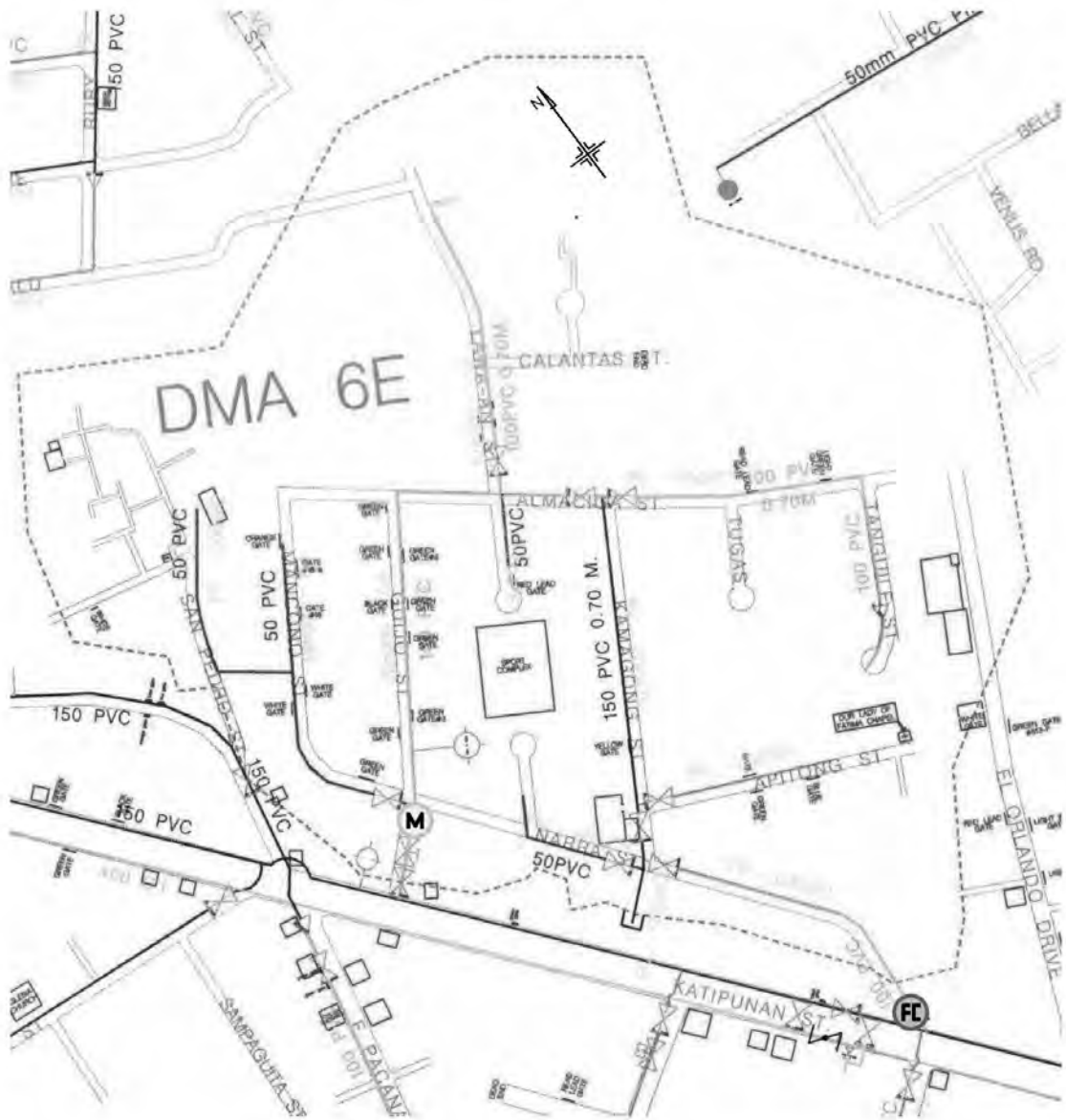


District Metered Area No.	6D
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	296
Average Consumption (m <sup>3</sup> /day)	249
San Jose Vill., Tisa	

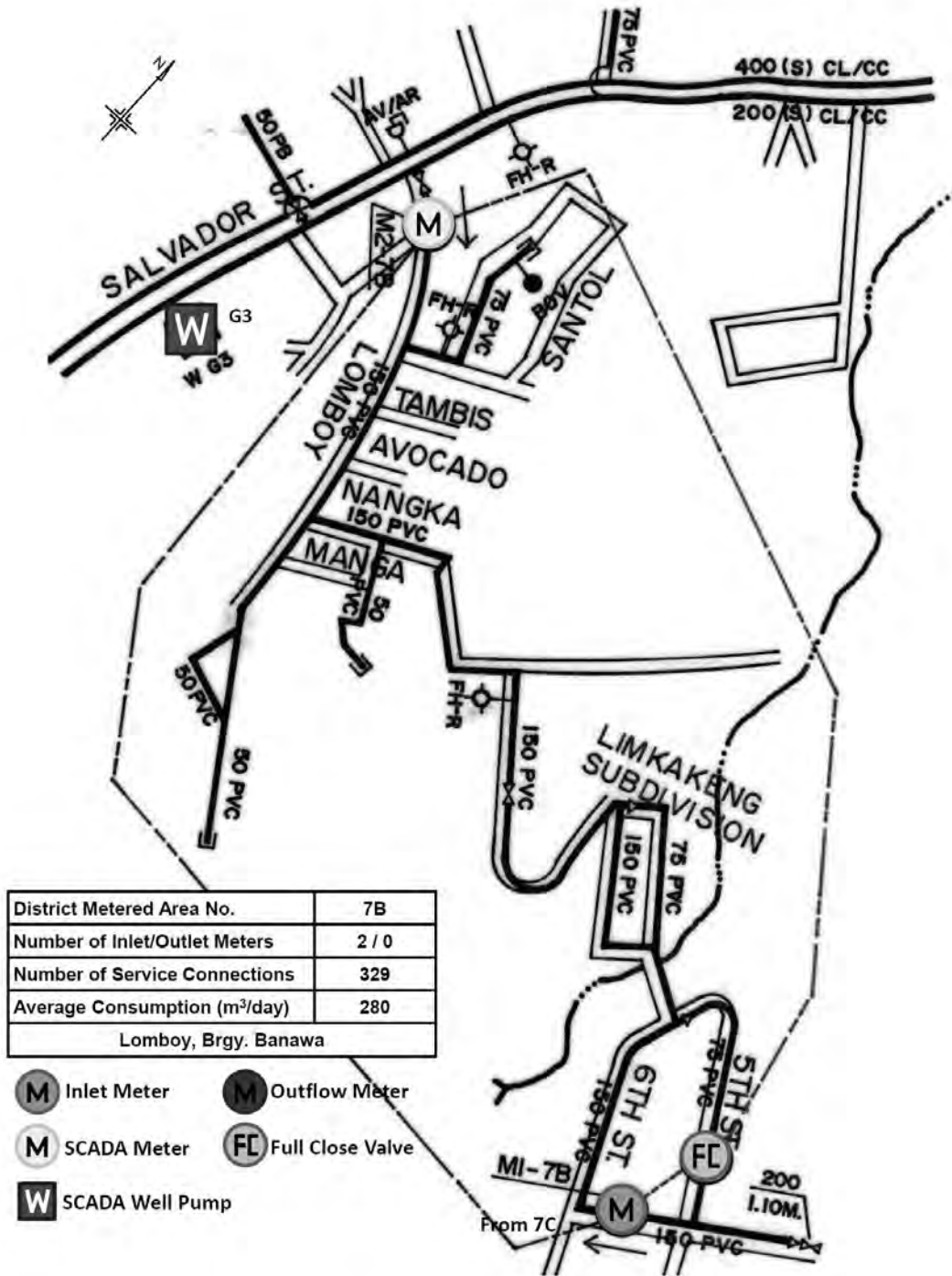
- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

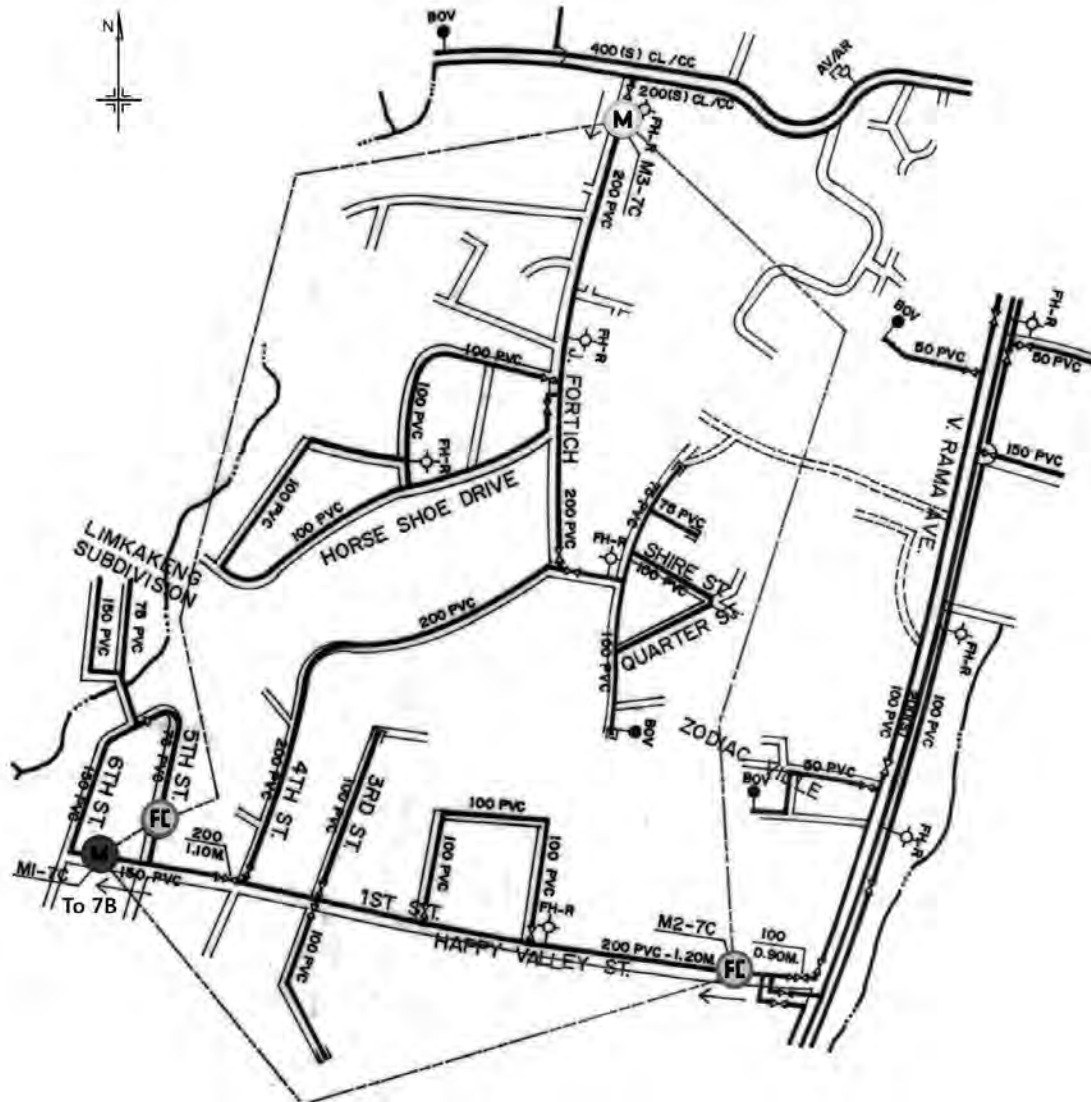
District Metered Area No.	6E
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	297
Average Consumption (m <sup>3</sup> /day)	243
La Paloma Vill.	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FL** Full Close Valve
- W** SCADA Well Pump









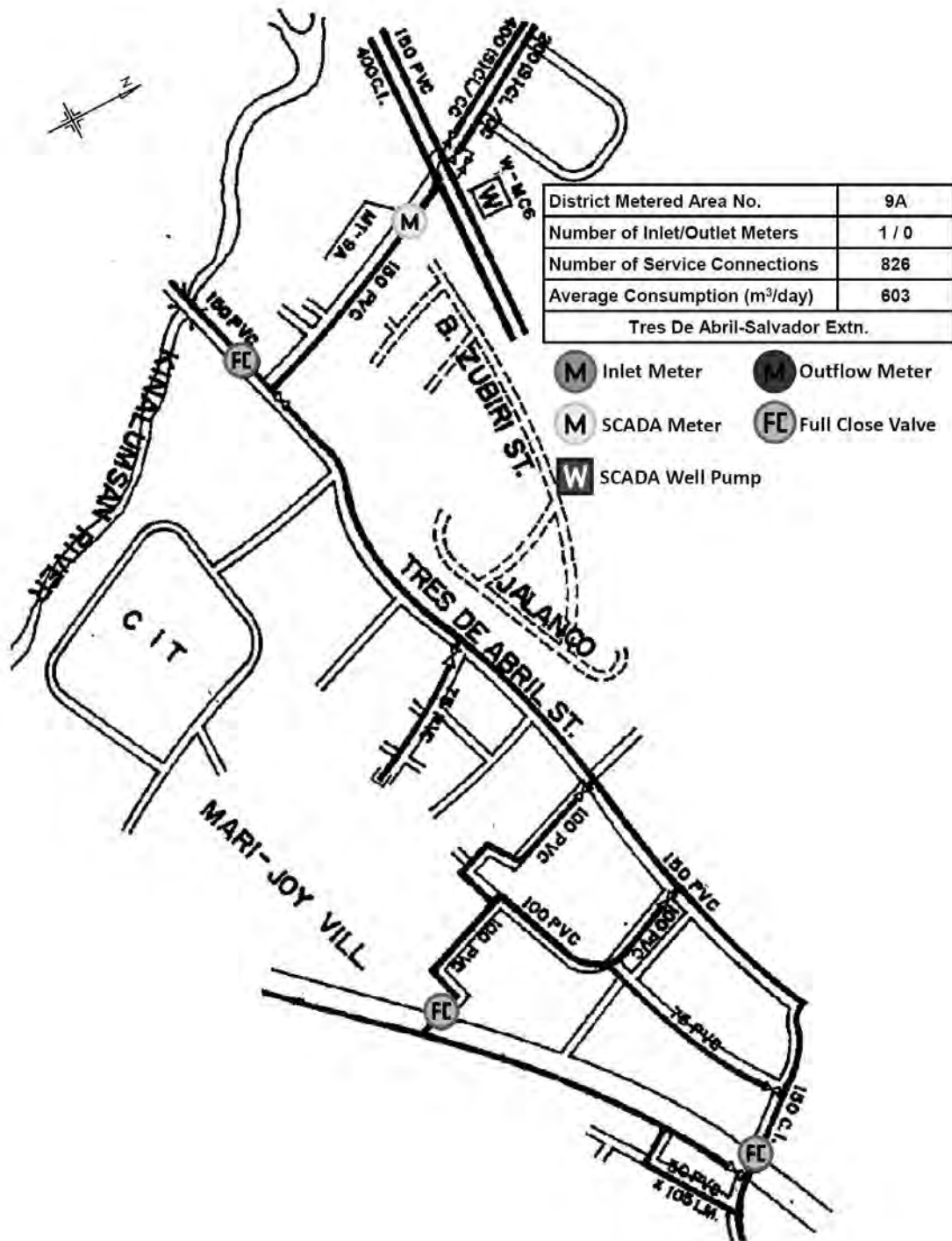
District Metered Area No.	7C
Number of Inlet/Outlet Meters	1 / 1
Number of Service Connections	411
Average Consumption (m <sup>3</sup> /day)	357
Happy Valley, J. Fortich St - V. Rama	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

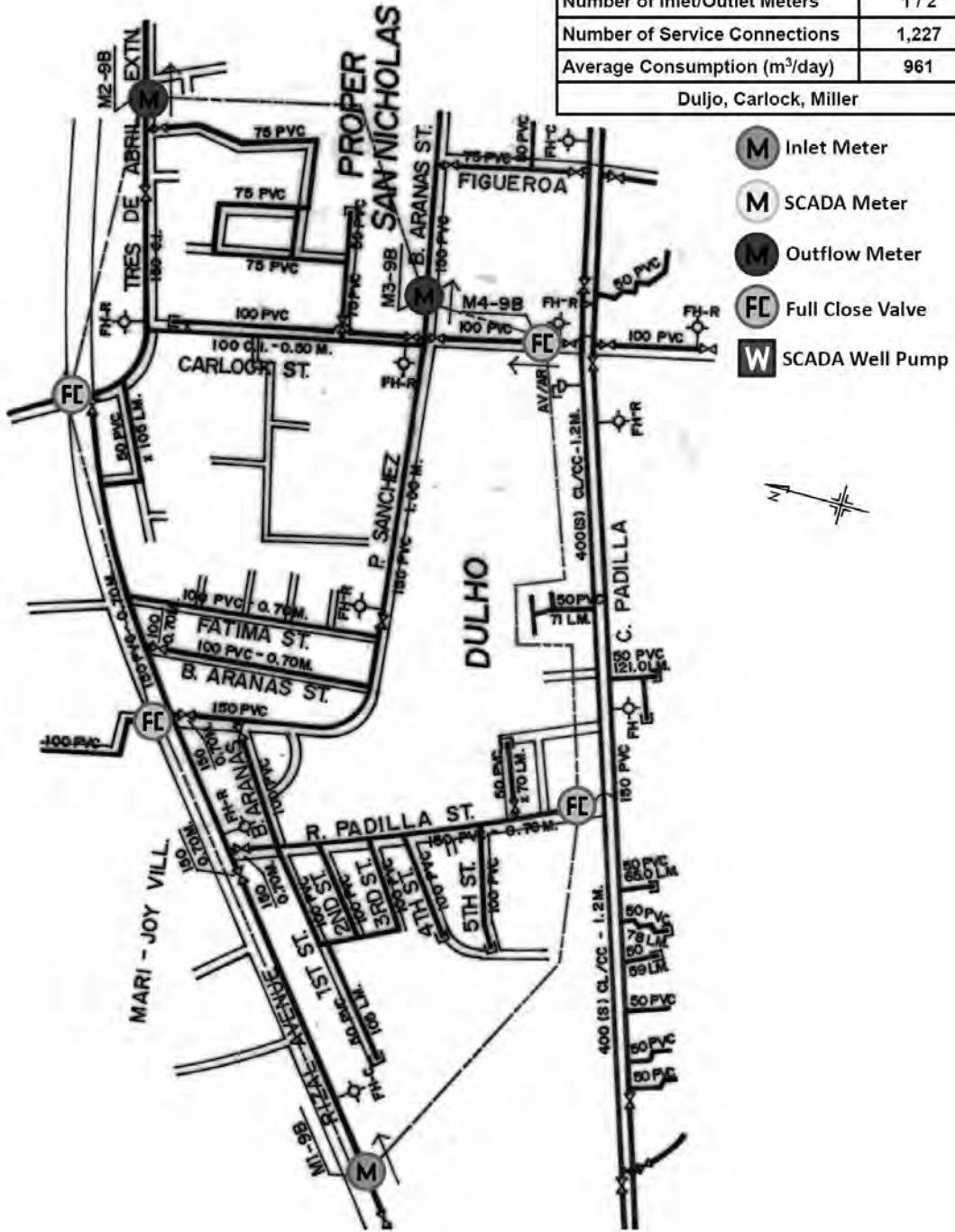


District Metered Area No.	8A
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	912
Average Consumption (m <sup>3</sup> /day)	665
Lucio Drive, A. Lopez St. Brgy. Calamba	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

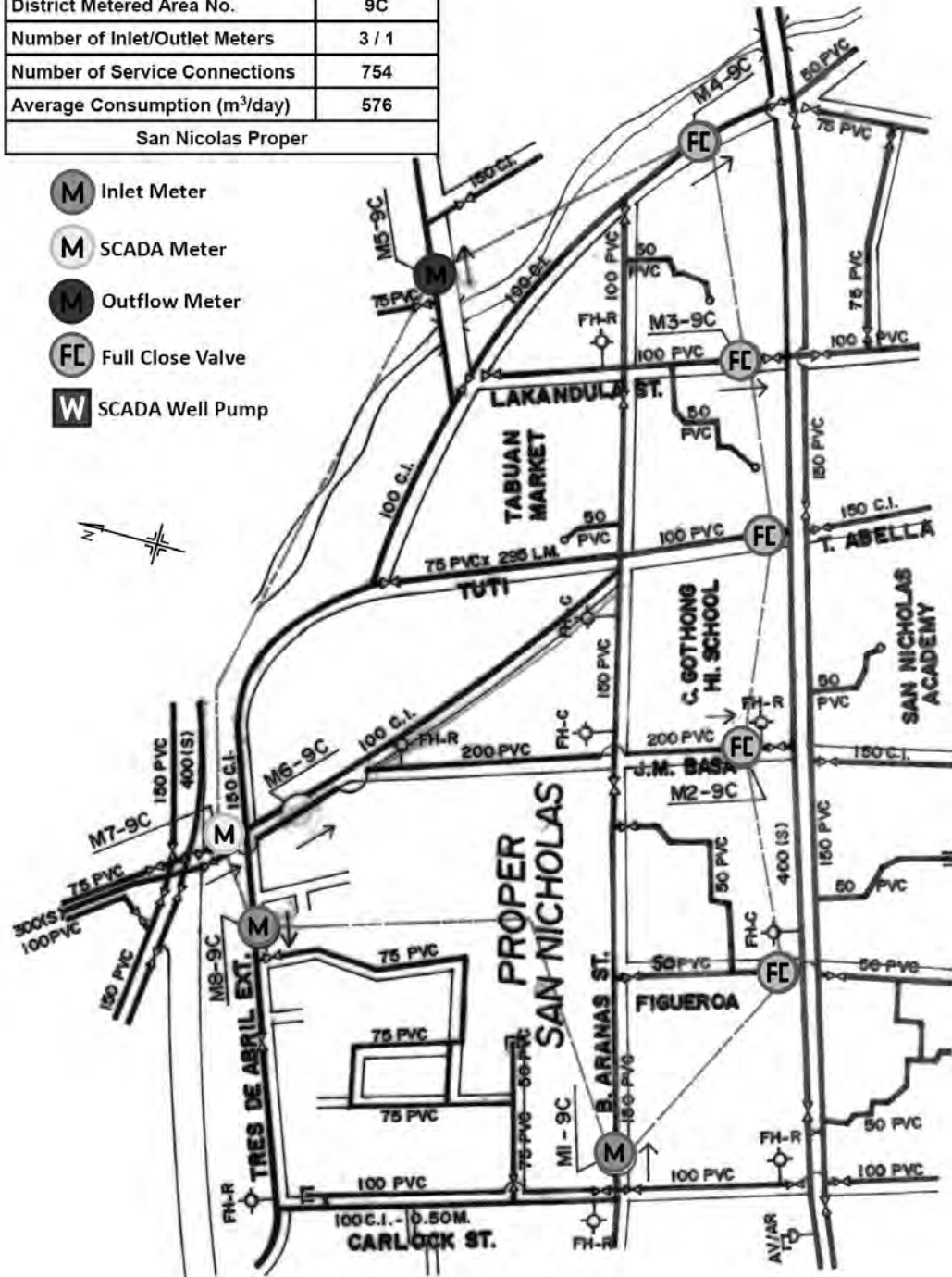


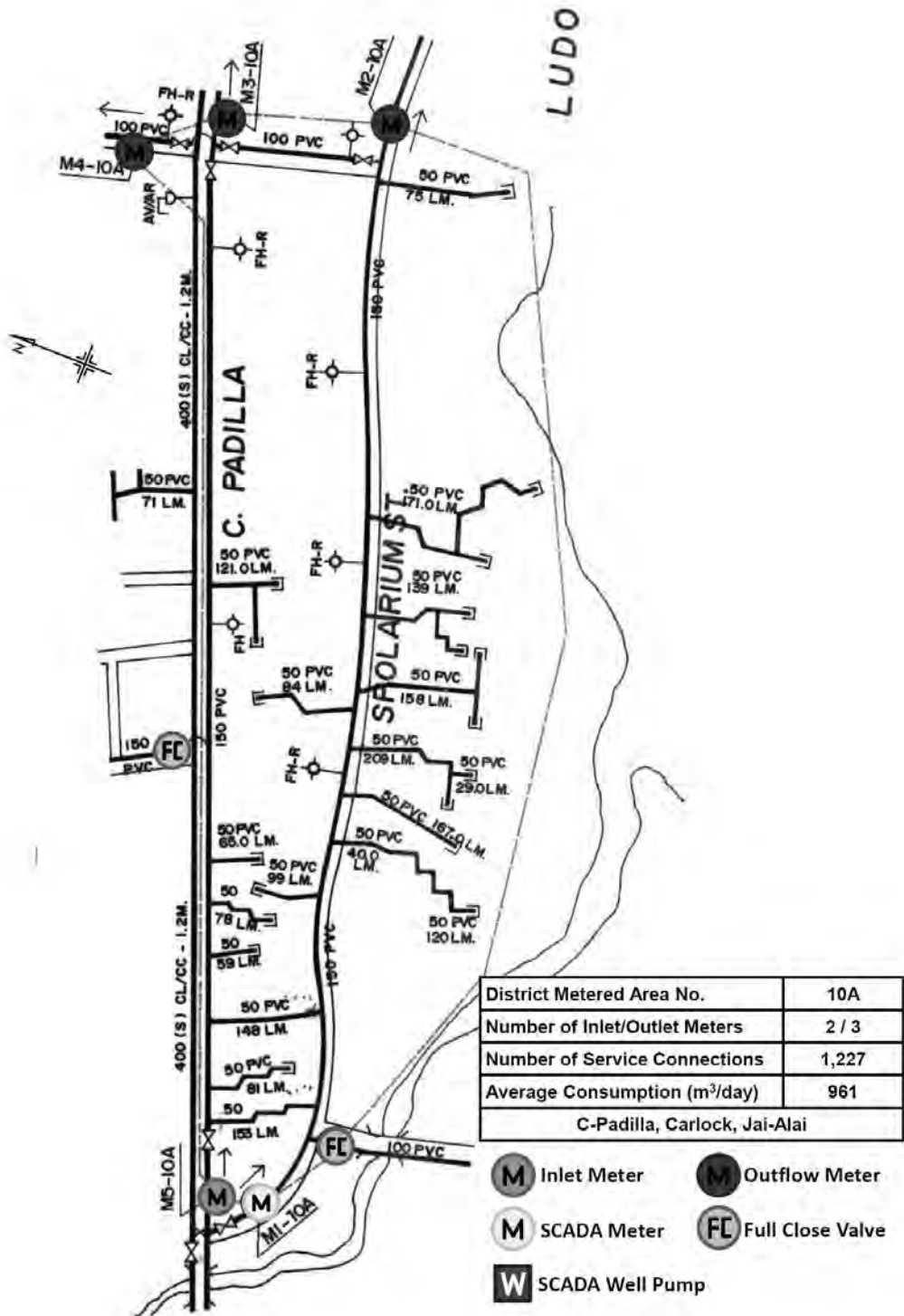
District Metered Area No.	9B
Number of Inlet/Outlet Meters	1 / 2
Number of Service Connections	1,227
Average Consumption (m <sup>3</sup> /day)	961
Duljo, Carlock, Miller	

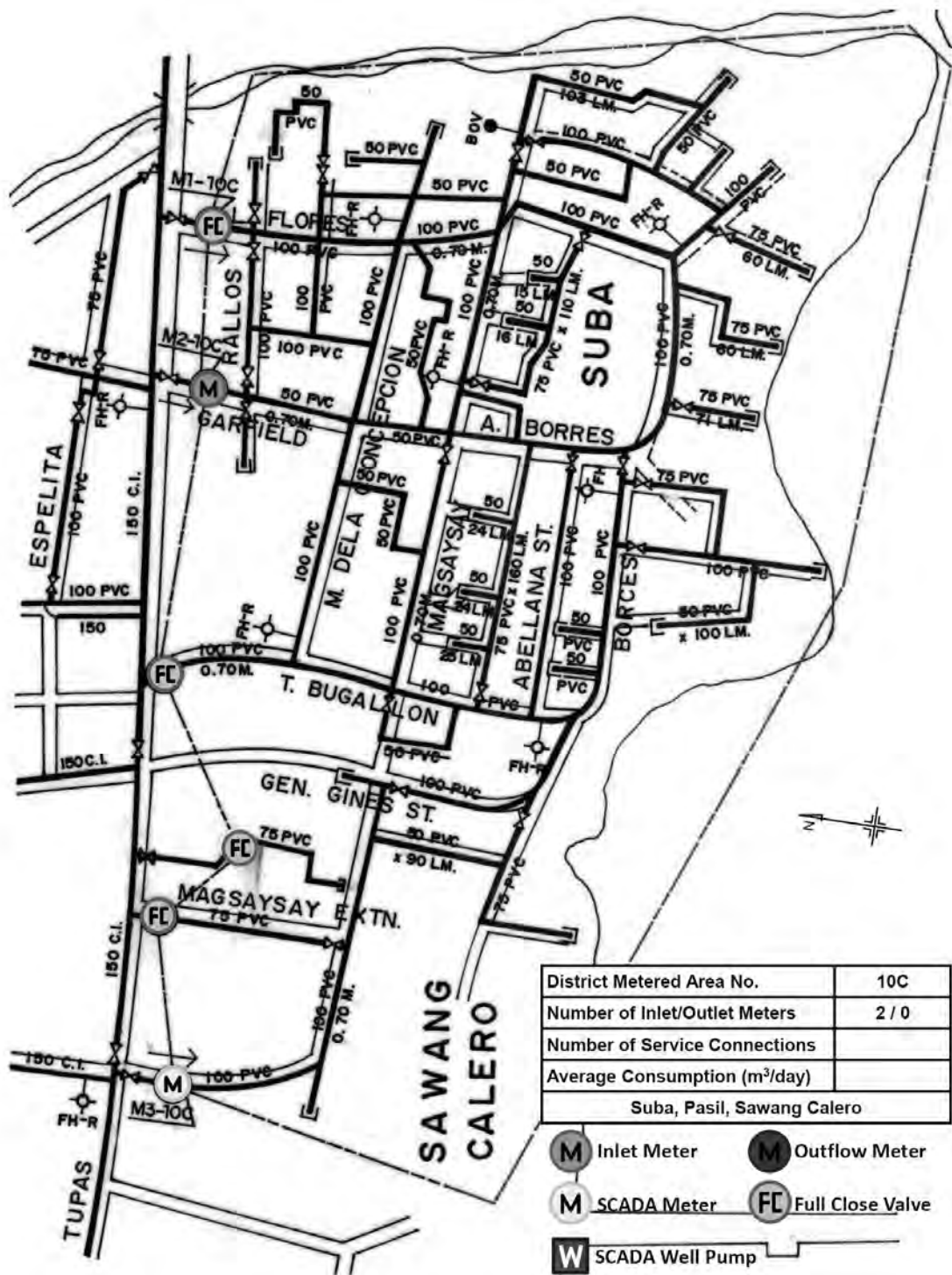


District Metered Area No.	9C
Number of Inlet/Outlet Meters	3 / 1
Number of Service Connections	754
Average Consumption (m <sup>3</sup> /day)	576
San Nicolas Proper	

-  Inlet Meter
-  SCADA Meter
-  Outflow Meter
-  Full Close Valve
-  SCADA Well Pump



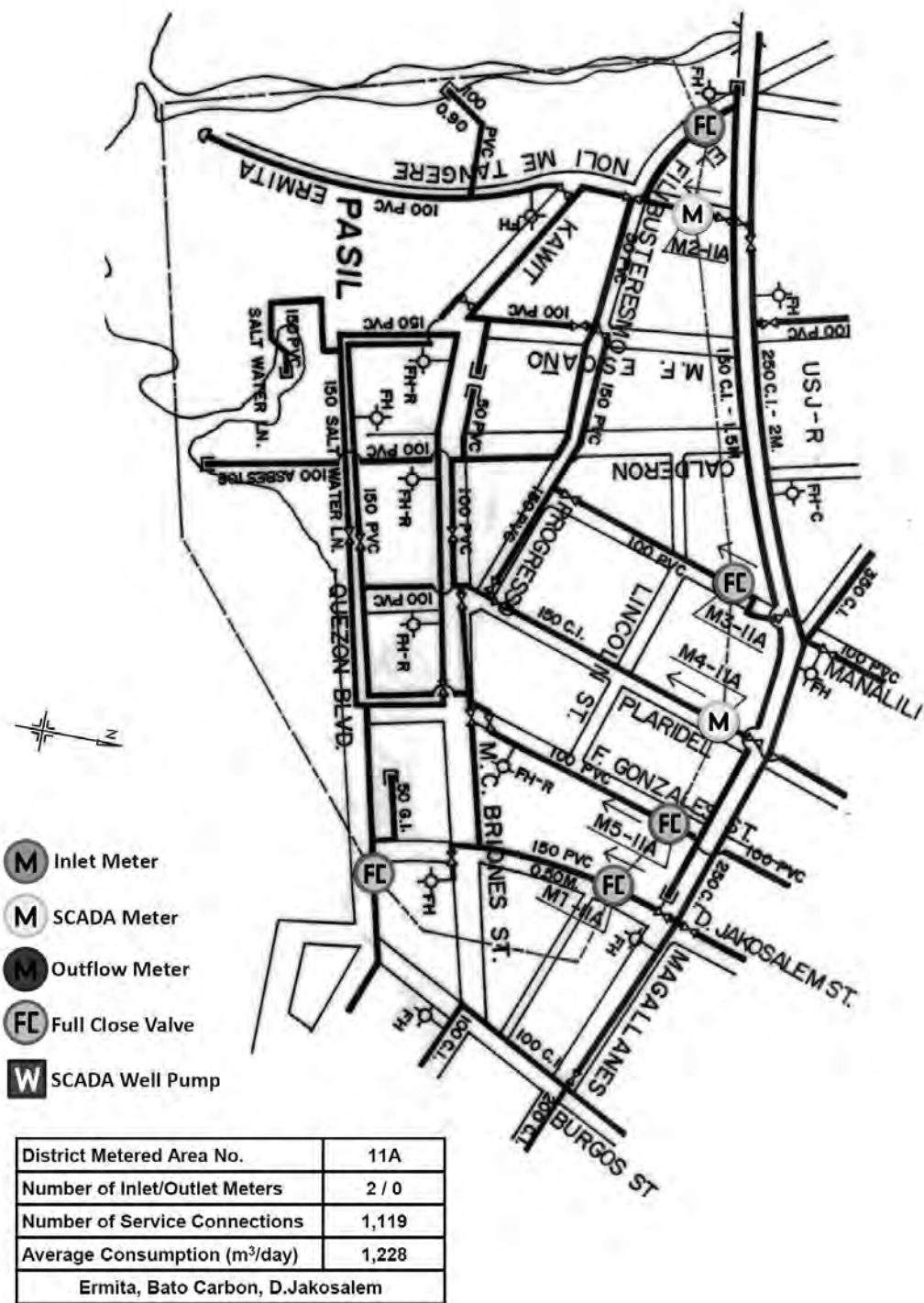




District Metered Area No.	10C
Number of Inlet/Outlet Meters	2 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Suba, Pasil, Sawang Calero	

- Inlet Meter      Outlet Meter
- SCADA Meter      Full Close Valve
- SCADA Well Pump





- M** Inlet Meter
- M** SCADA Meter
- M** Outflow Meter
- FC** Full Close Valve
- W** SCADA Well Pump

District Metered Area No.	11A
Number of Inlet/Outlet Meters	2 / 0
Number of Service Connections	1,119
Average Consumption (m <sup>3</sup> /day)	1,228
Ermita, Bato Carbon, D.Jakosalem	



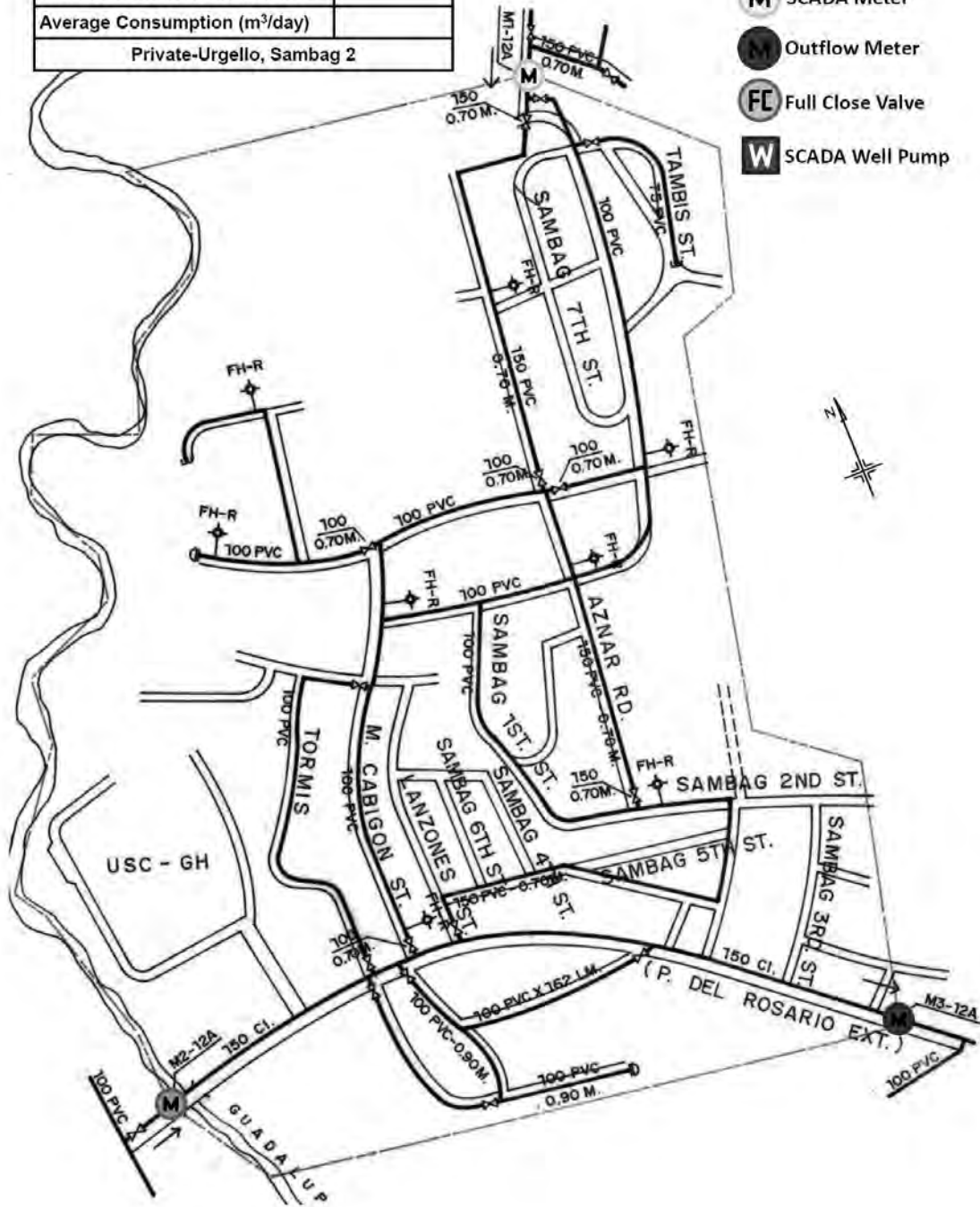
District Metered Area No.	11C
Number of Inlet/Outlet Meters	2 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Sanctiango Colon	

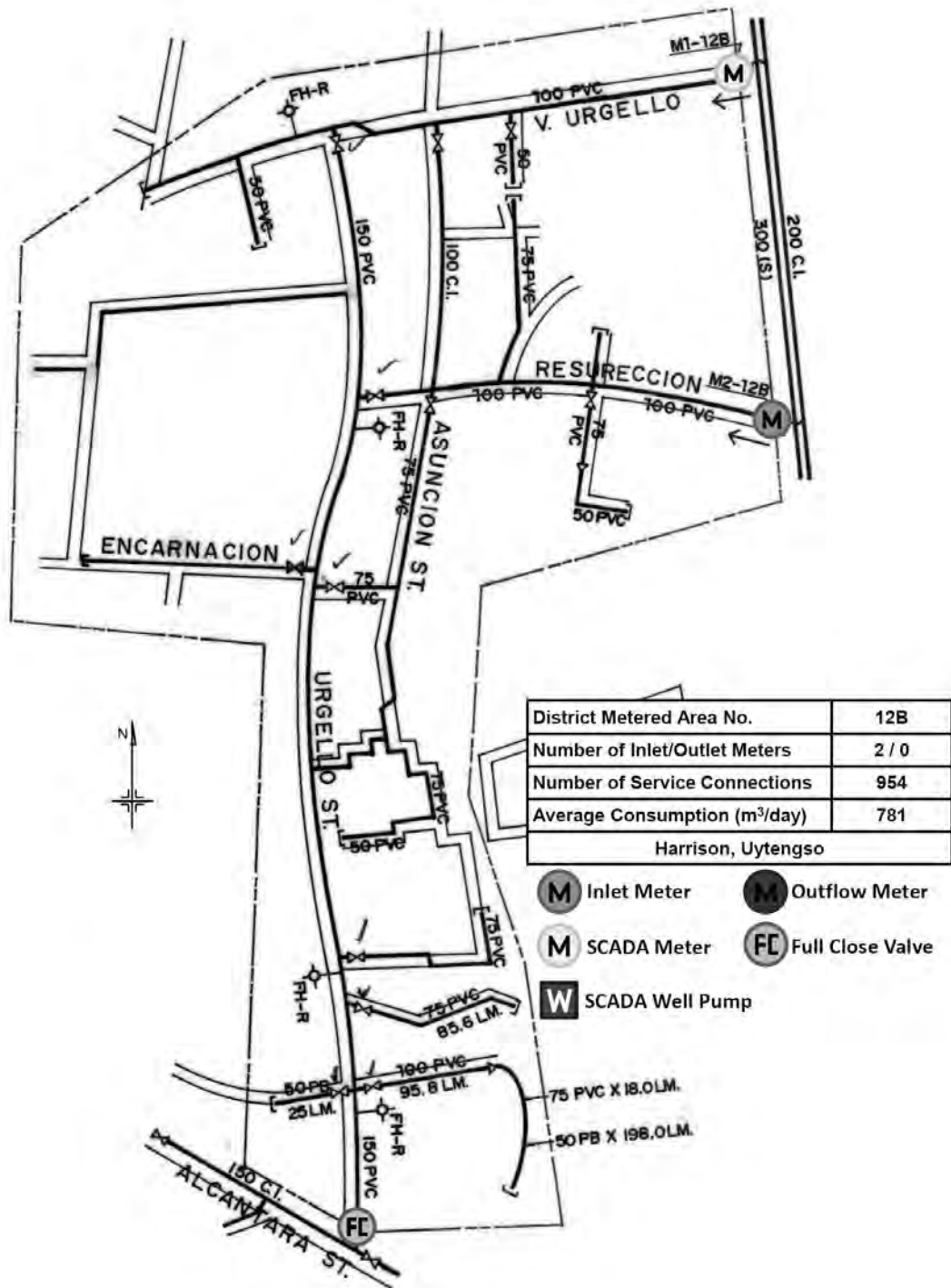
- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump



District Metered Area No.	12A
Number of Inlet/Outlet Meters	2 / 1
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Private-Urgello, Sambag 2	

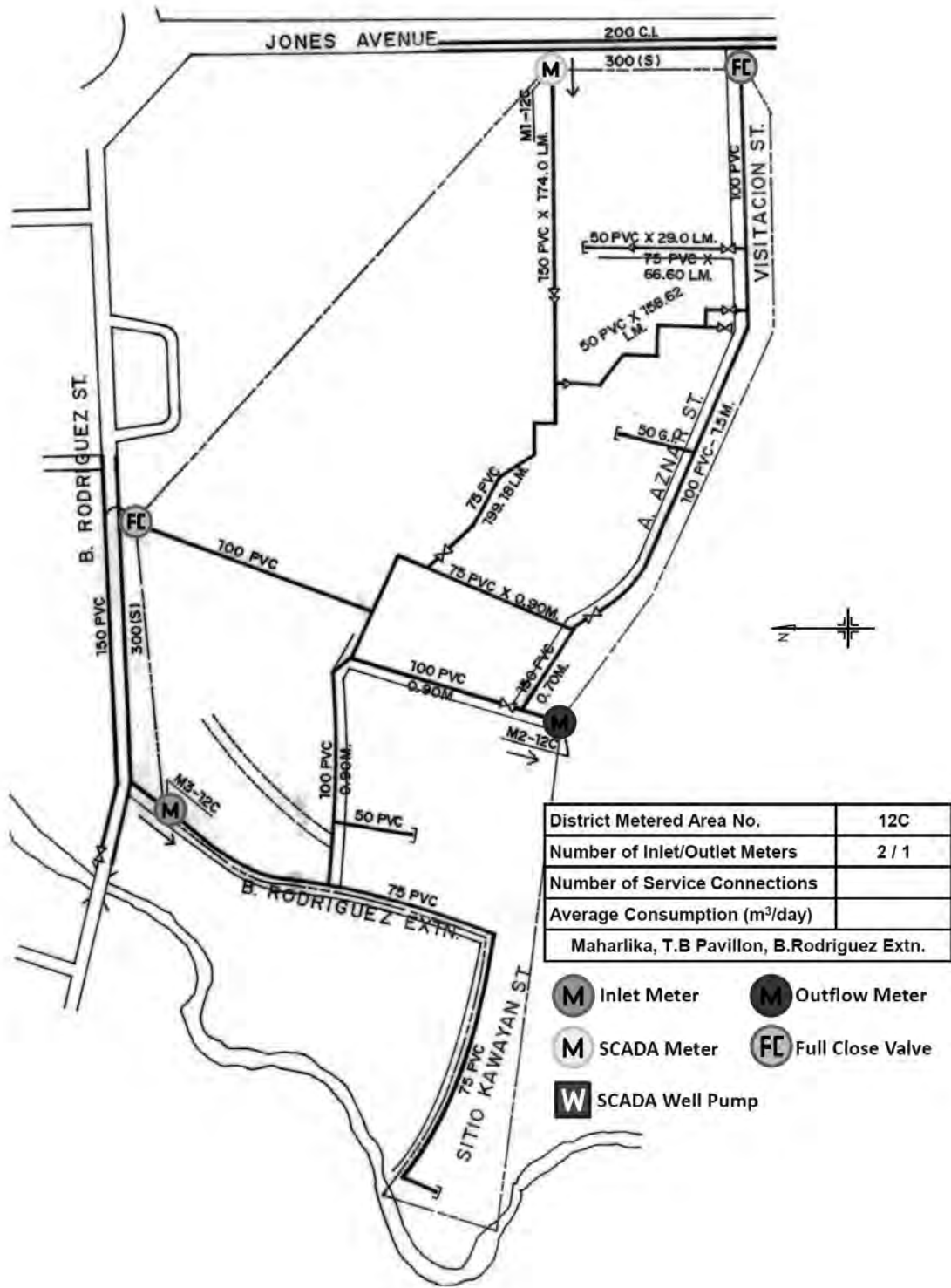
-  Inlet Meter
-  SCADA Meter
-  Outflow Meter
-  Full Close Valve
-  SCADA Well Pump





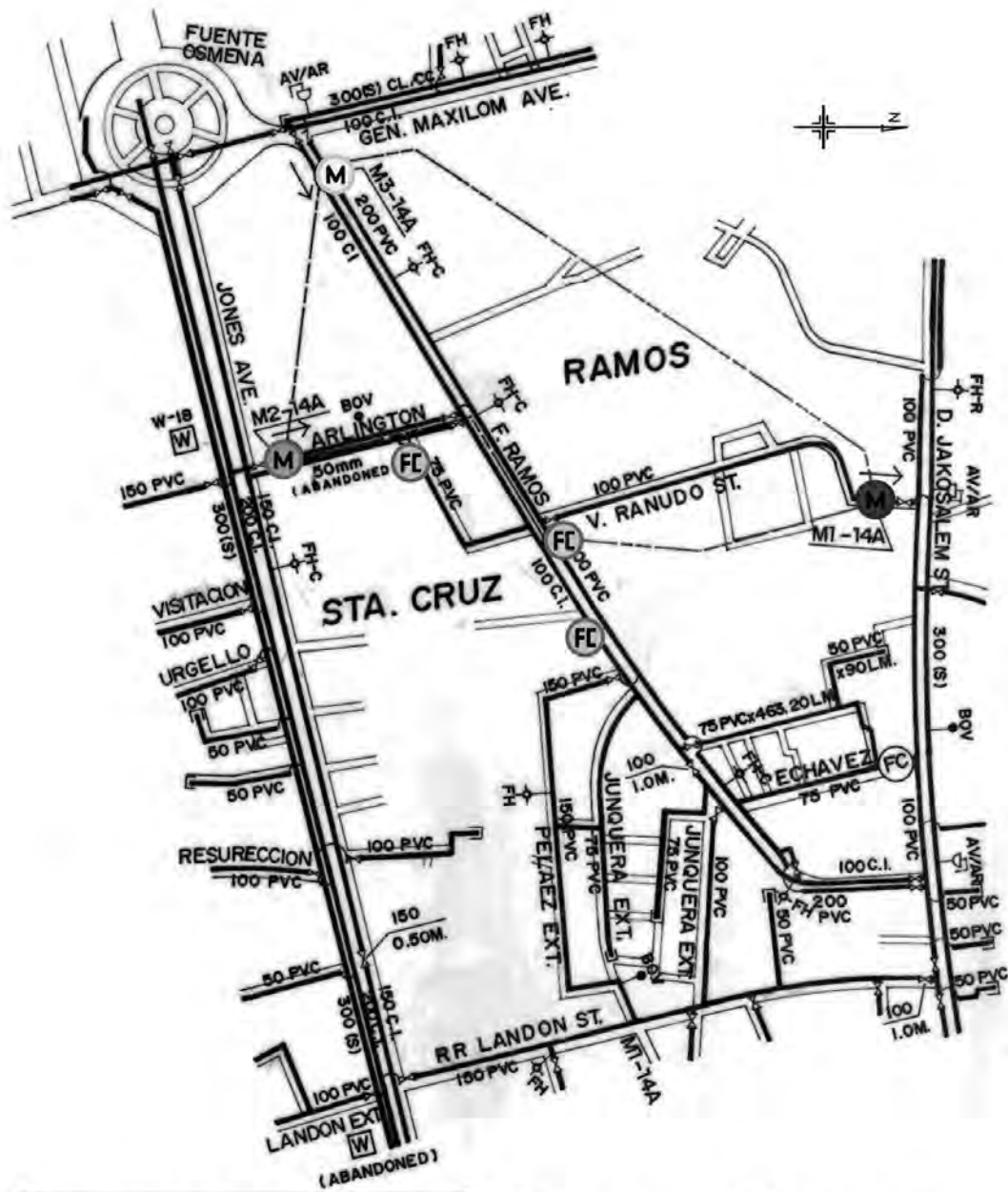
District Metered Area No.	12B
Number of Inlet/Outlet Meters	2 / 0
Number of Service Connections	954
Average Consumption (m <sup>3</sup> /day)	781
Harrison, Uytengso	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump



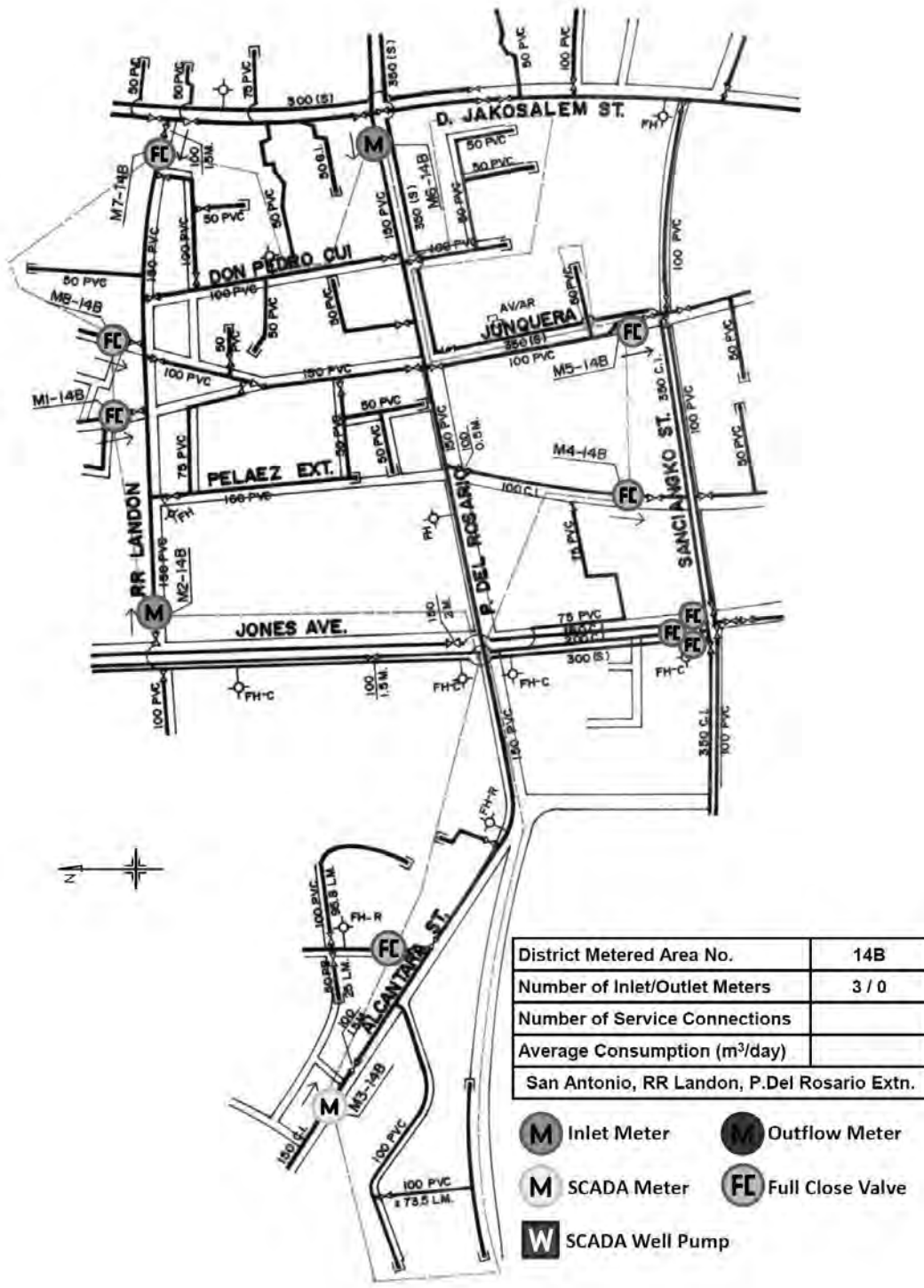
District Metered Area No.	12C
Number of Inlet/Outlet Meters	2 / 1
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Maharlika, T.B Pavillon, B.Rodriguez Extn.	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump



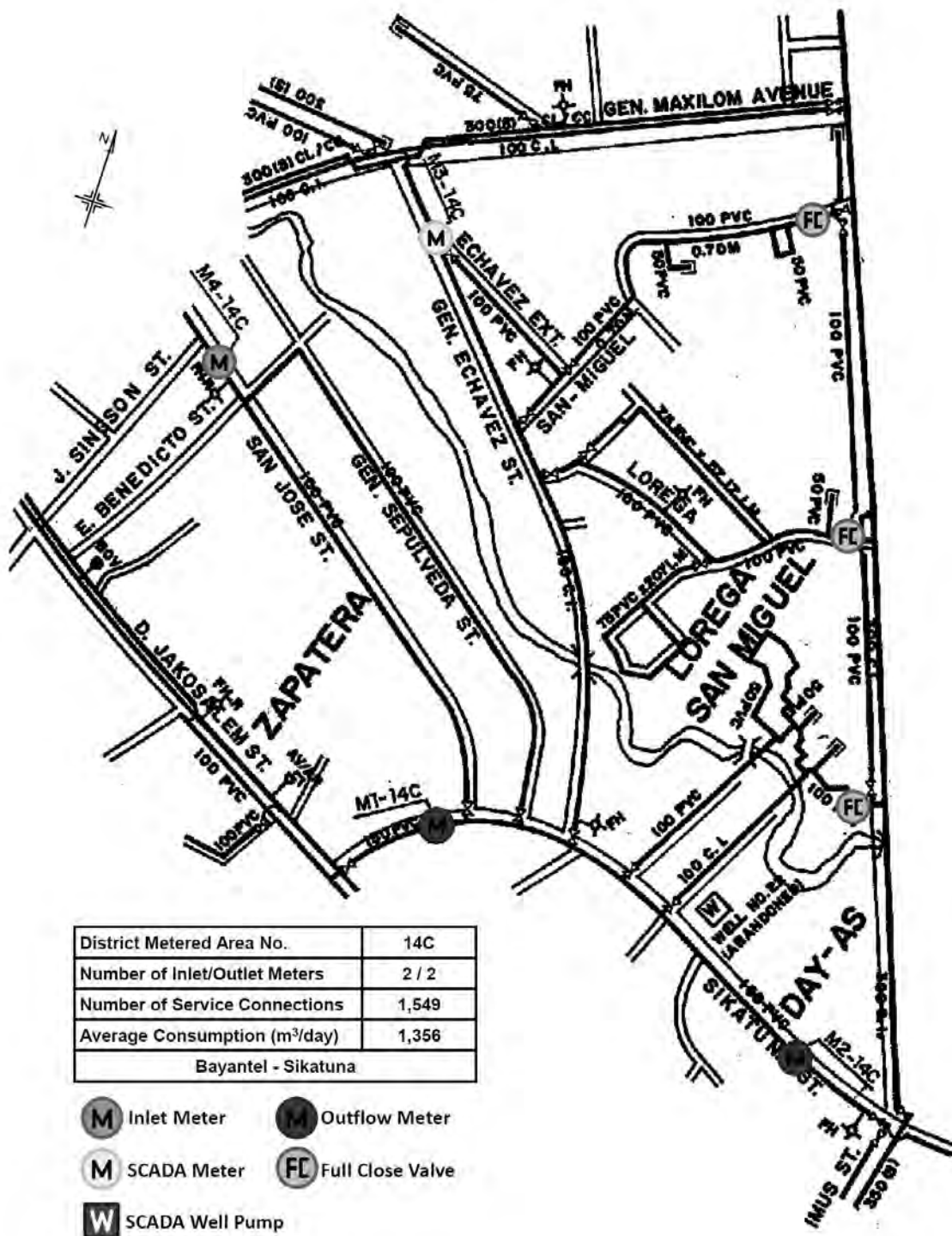
District Metered Area No.	14A
Number of Inlet/Outlet Meters	2 / 1
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Ramos St. Cebu City	

- M Inlet Meter      M Outflow Meter
- M SCADA Meter      FC Full Close Valve
- W SCADA Well Pump

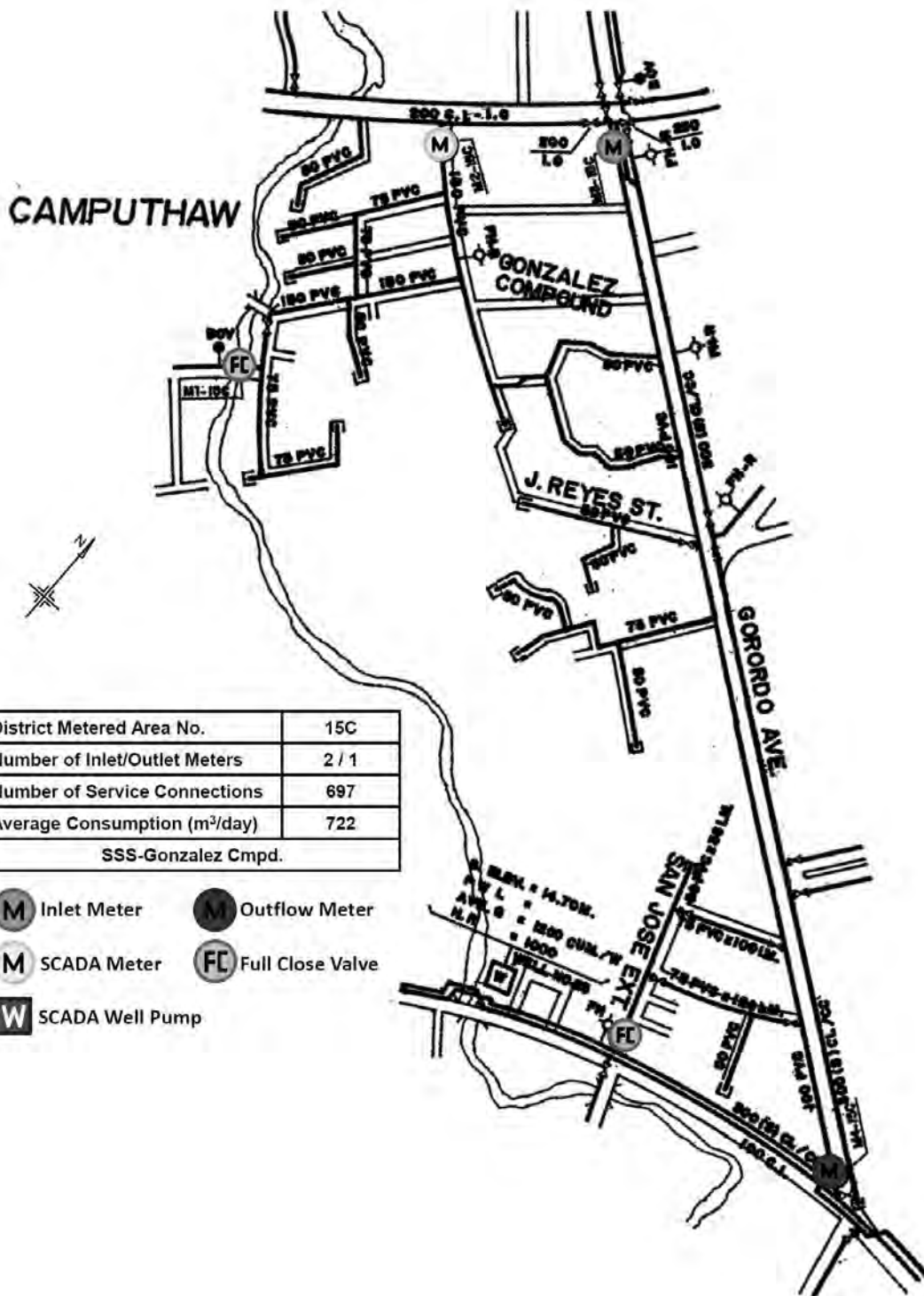


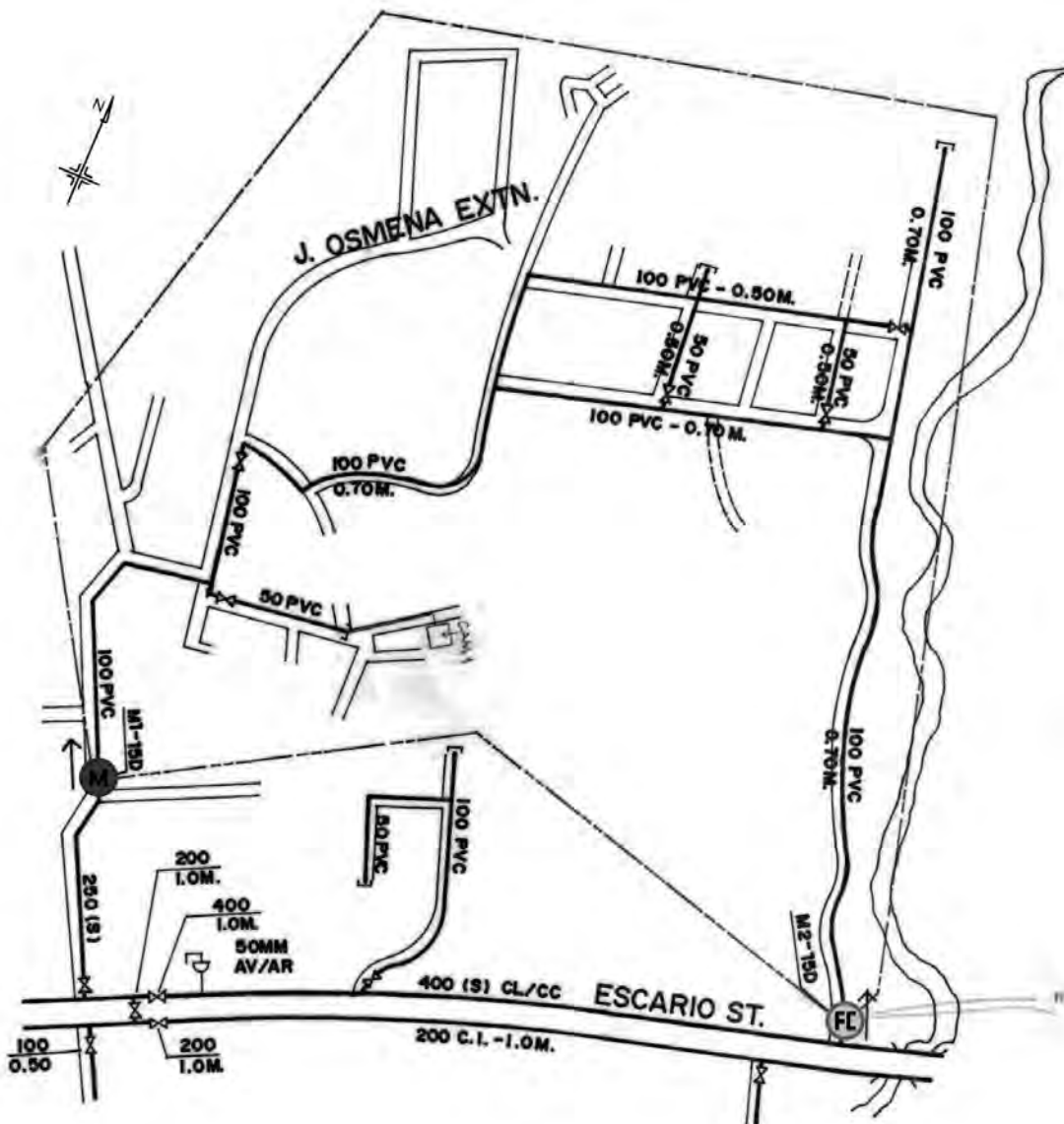
District Metered Area No.	14B
Number of Inlet/Outlet Meters	3 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
San Antonio, RR Landon, P. Del Rosario Extn.	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump







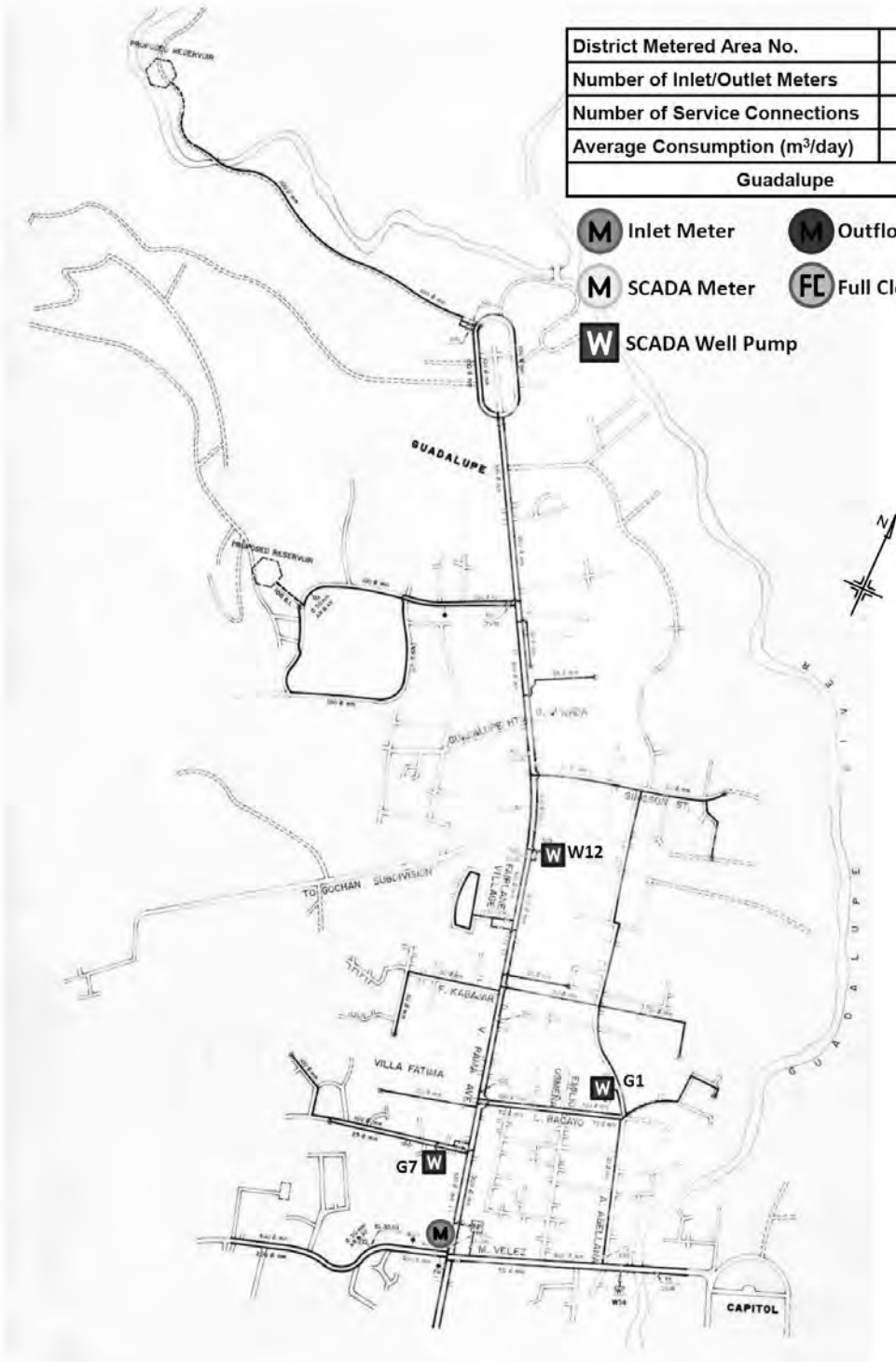


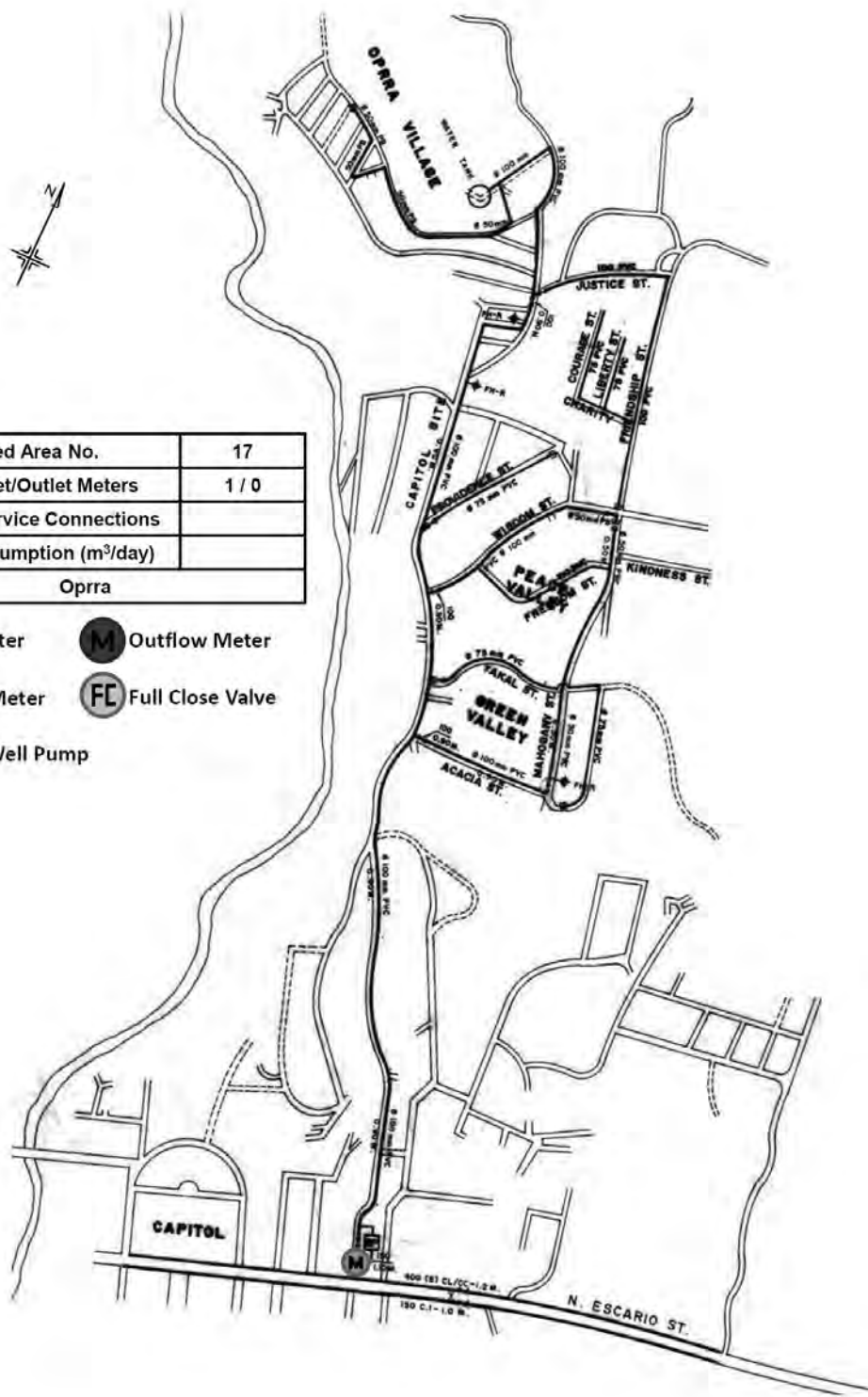
District Metered Area No.	15D
Number of Inlet/Outlet Meters	0 / 1
Number of Service Connections	1,001
Average Consumption (m <sup>3</sup> /day)	758
Upper Camputhaw	

- M Inlet Meter      M Outflow Meter
- M SCADA Meter      FL Full Close Valve
- W SCADA Well Pump

District Metered Area No.	16
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Guadalupe	

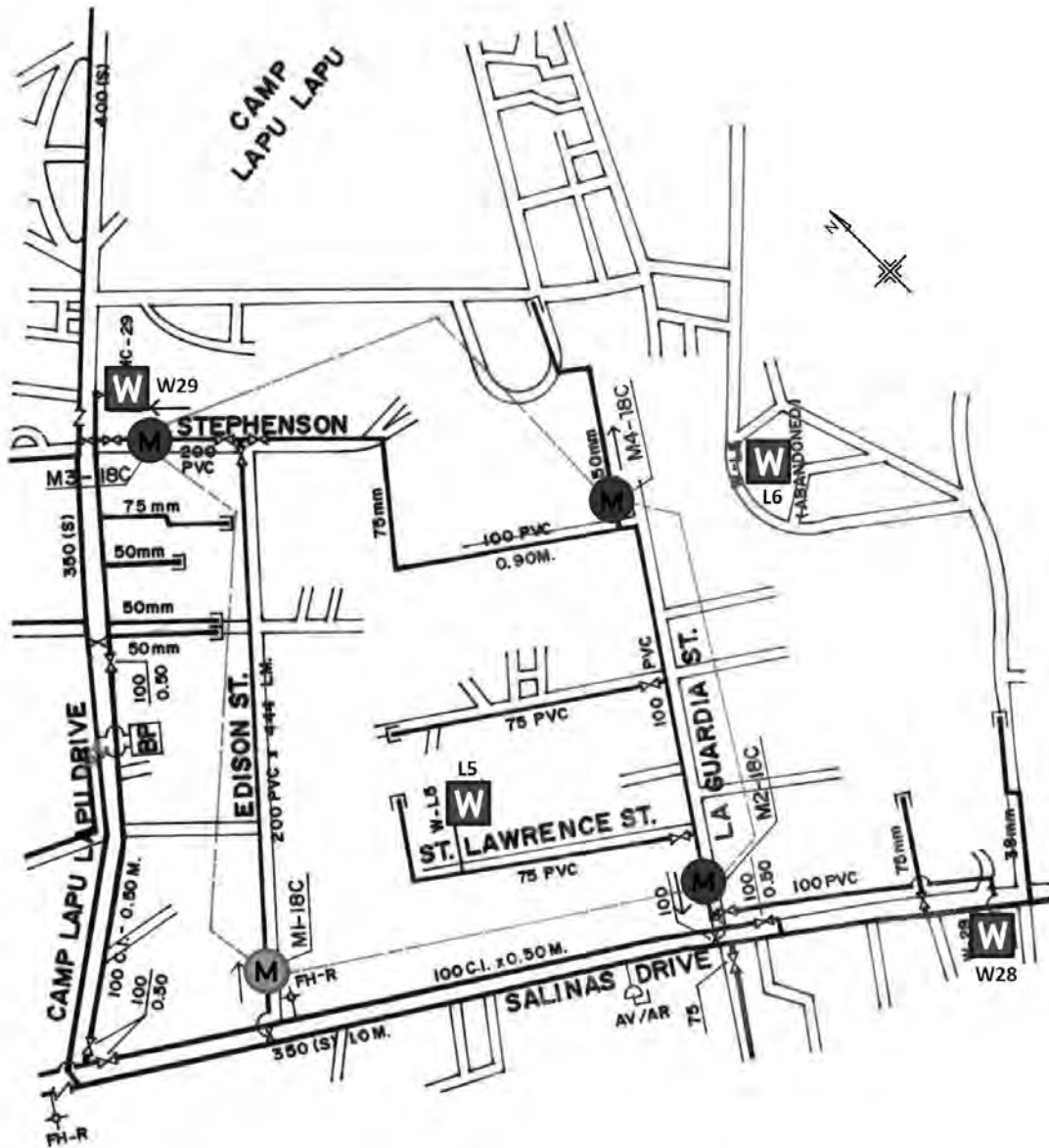
- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump







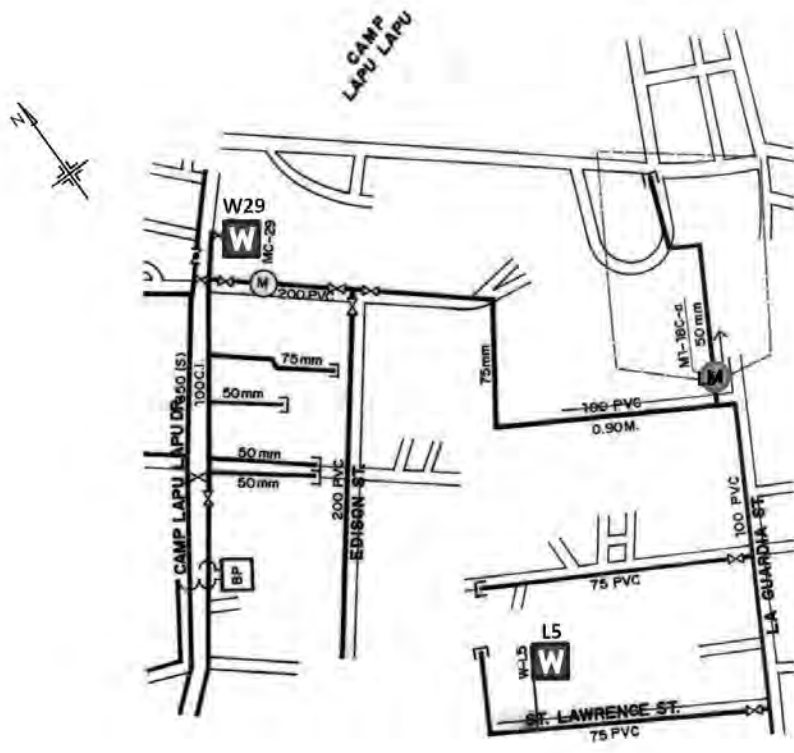
District Metered Area No.	17
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Oprra	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump



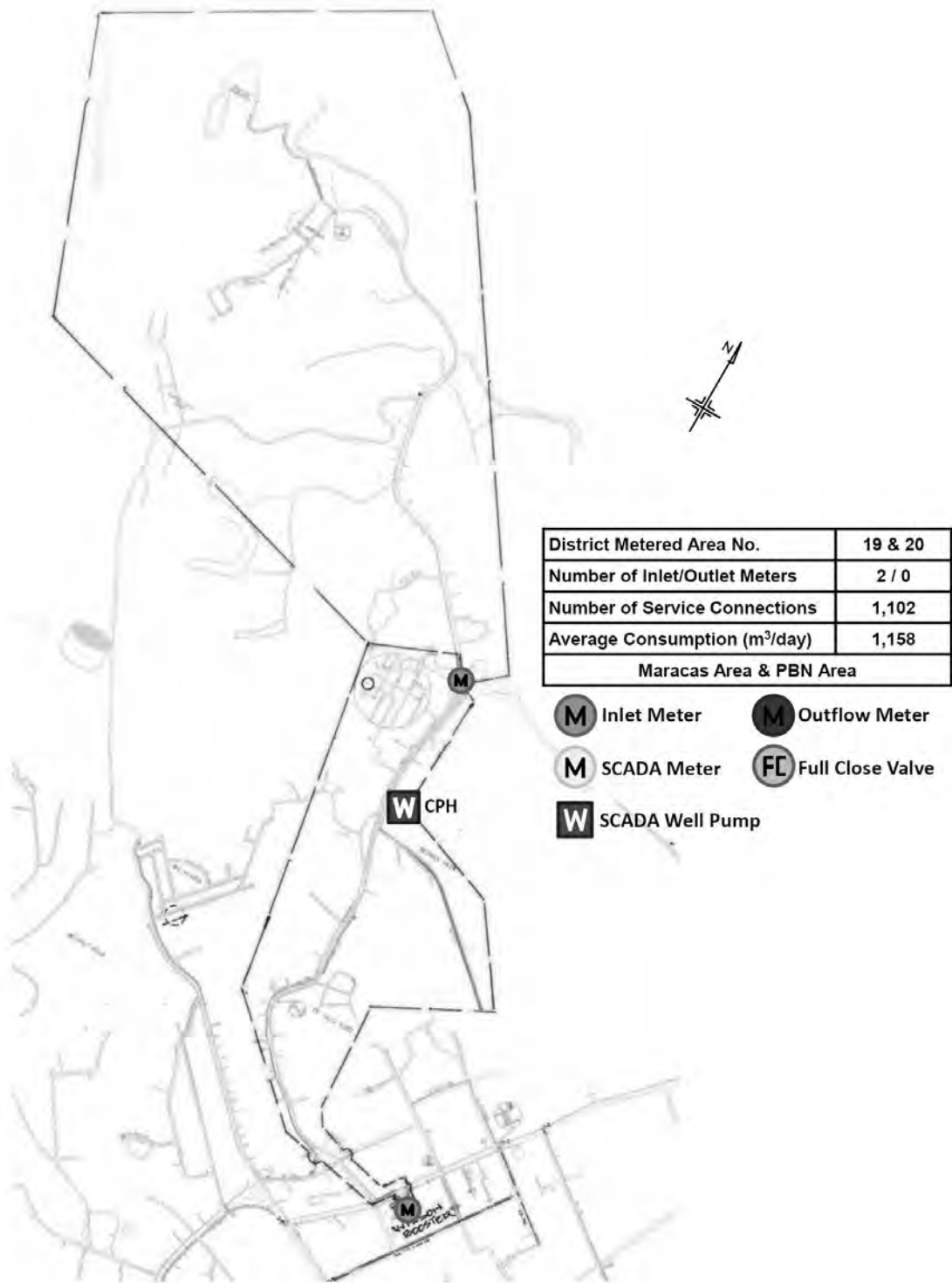
District Metered Area No.	18C
Number of Inlet/Outlet Meters	1 / 3
Number of Service Connections	450
Average Consumption (m <sup>3</sup> /day)	405
La Guardia, Edison St., Lahug	

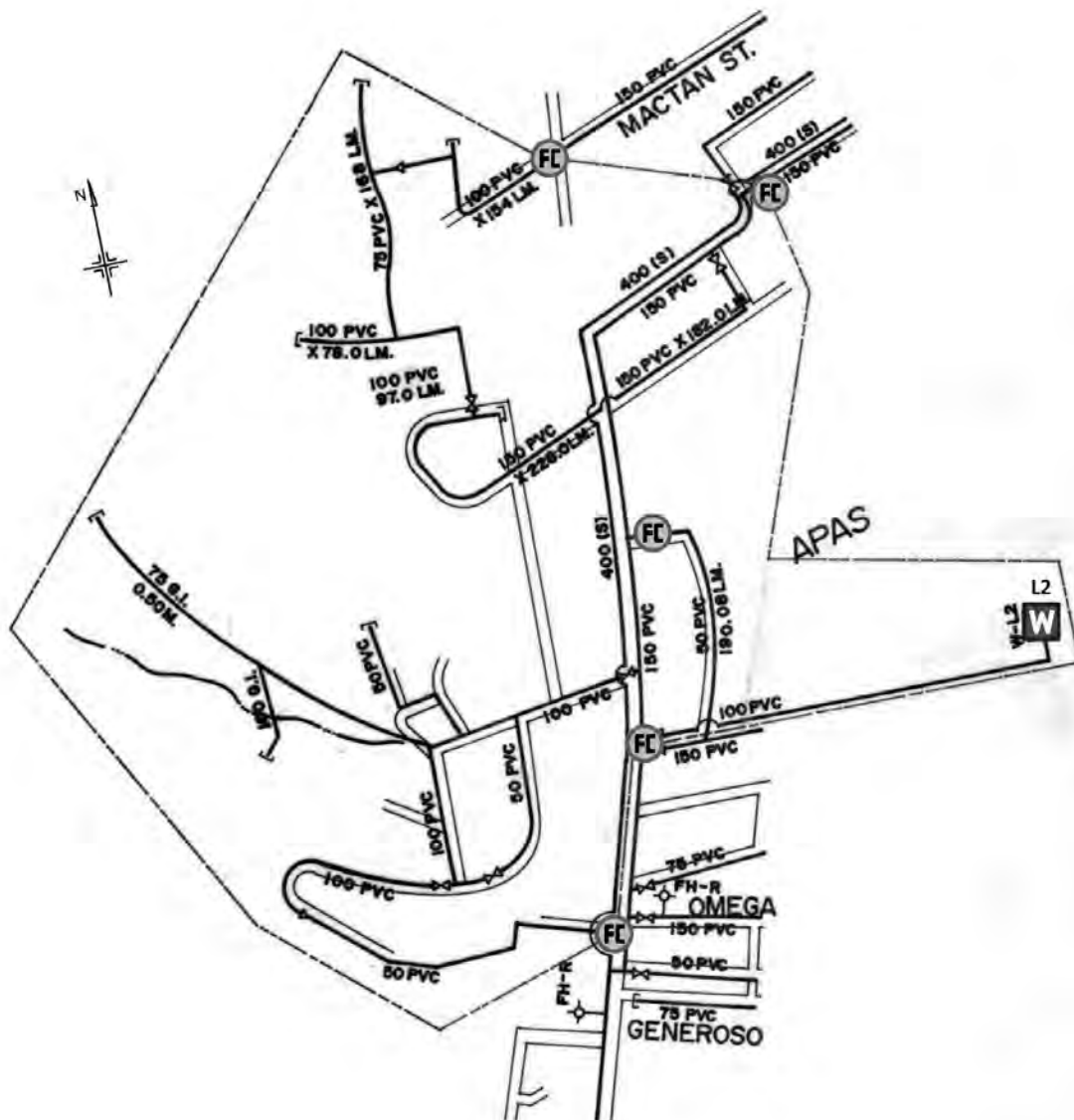
-  Inlet Meter
-  Outlet Meter
-  SCADA Meter
-  Full Close Valve
-  SCADA Well Pump



District Metered Area No.	18C-A
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Camp Lapulapu	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

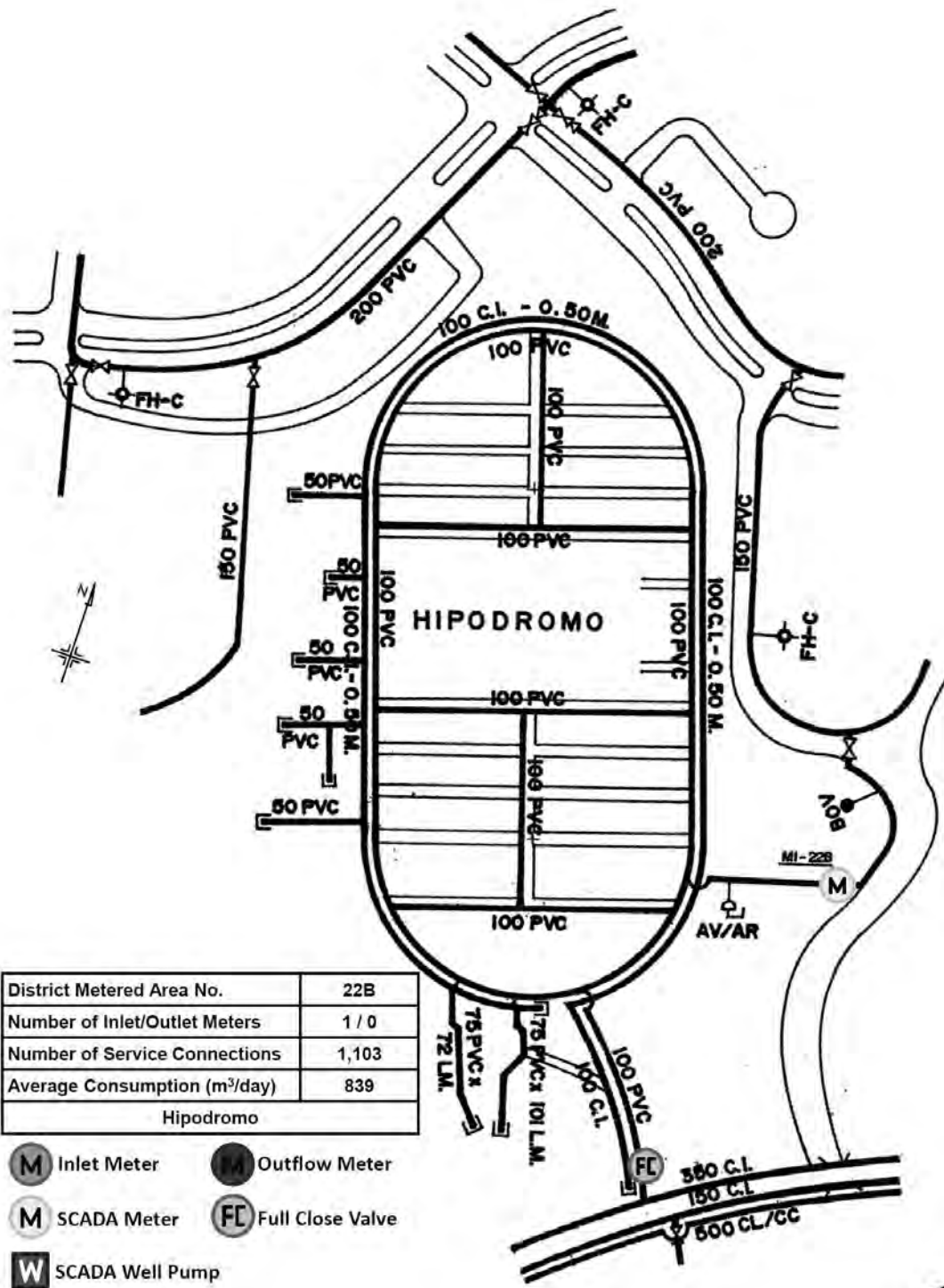




District Metered Area No.	21A
Number of Inlet/Outlet Meters	0 / 0
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
Apas Area	

- M Inlet Meter
- M Outflow Meter
- M SCADA Meter
- FC Full Close Valve
- W SCADA Well Pump





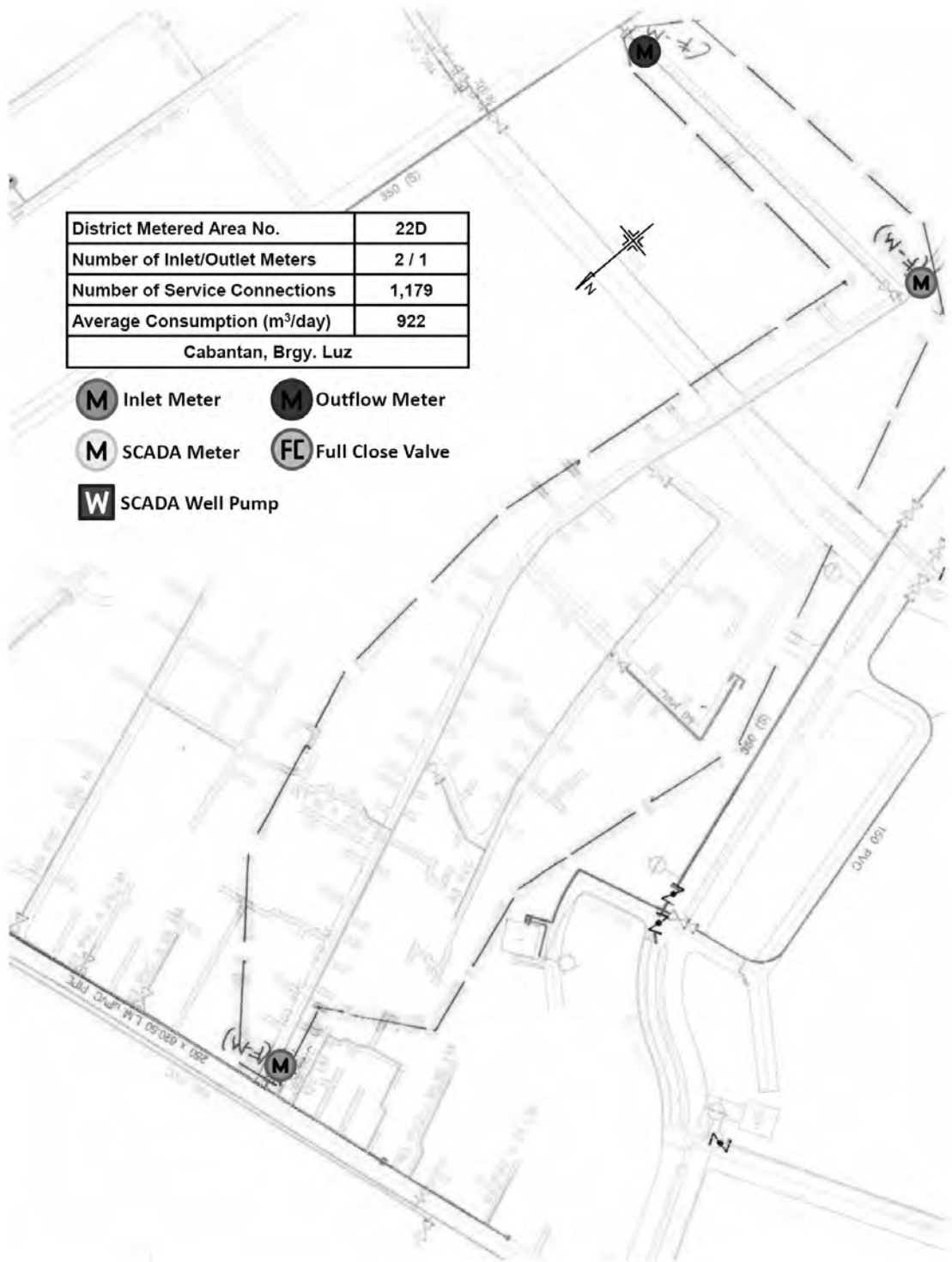
District Metered Area No.	22B
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	1,103
Average Consumption (m <sup>3</sup> /day)	839
Hipodromo	

- M Inlet Meter      M Outflow Meter
- M SCADA Meter      FL Full Close Valve
- W SCADA Well Pump

District Metered Area No.	22C
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	856
Average Consumption (m <sup>3</sup> /day)	681
L. Tutud Mabolo	

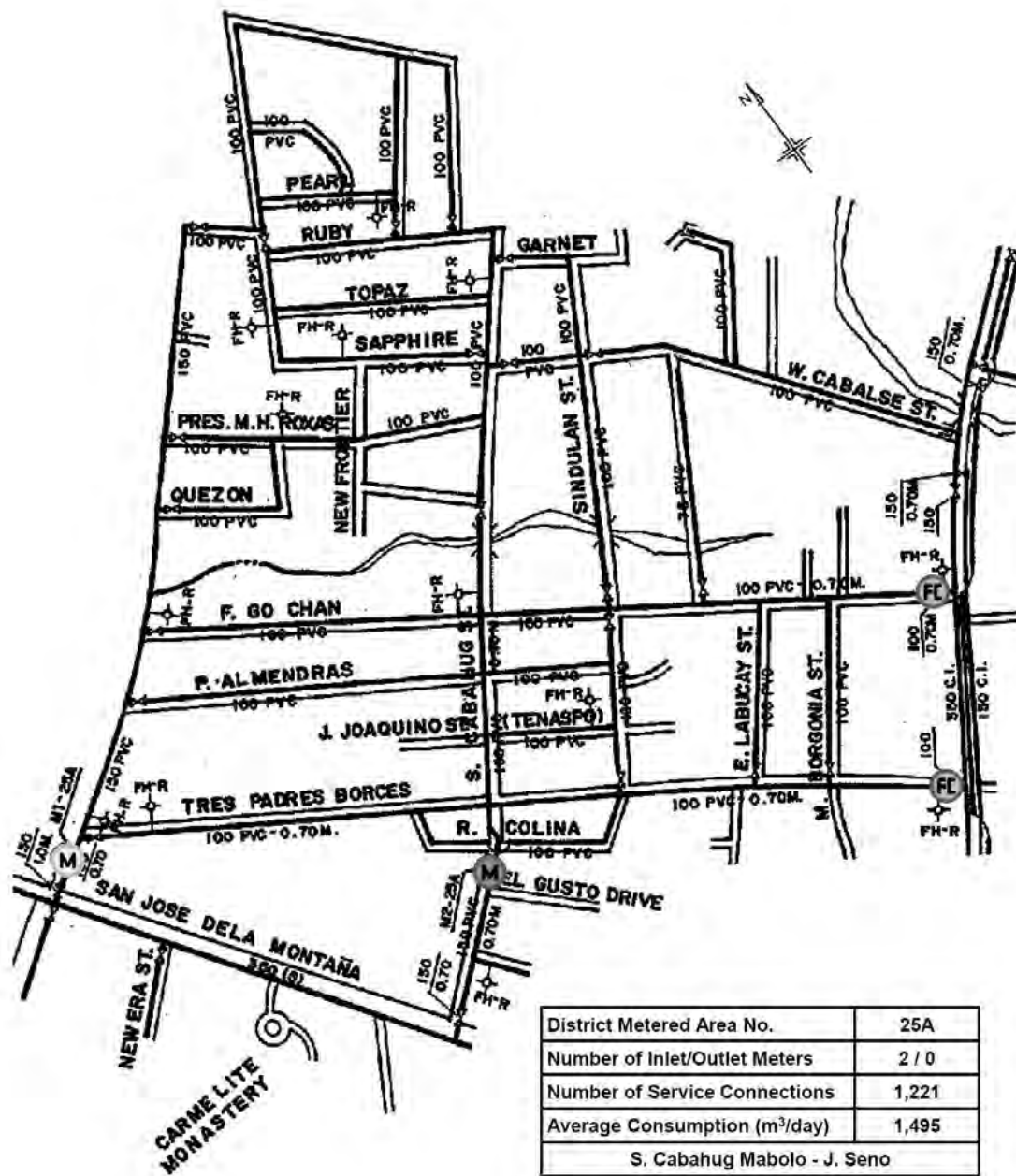
- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump



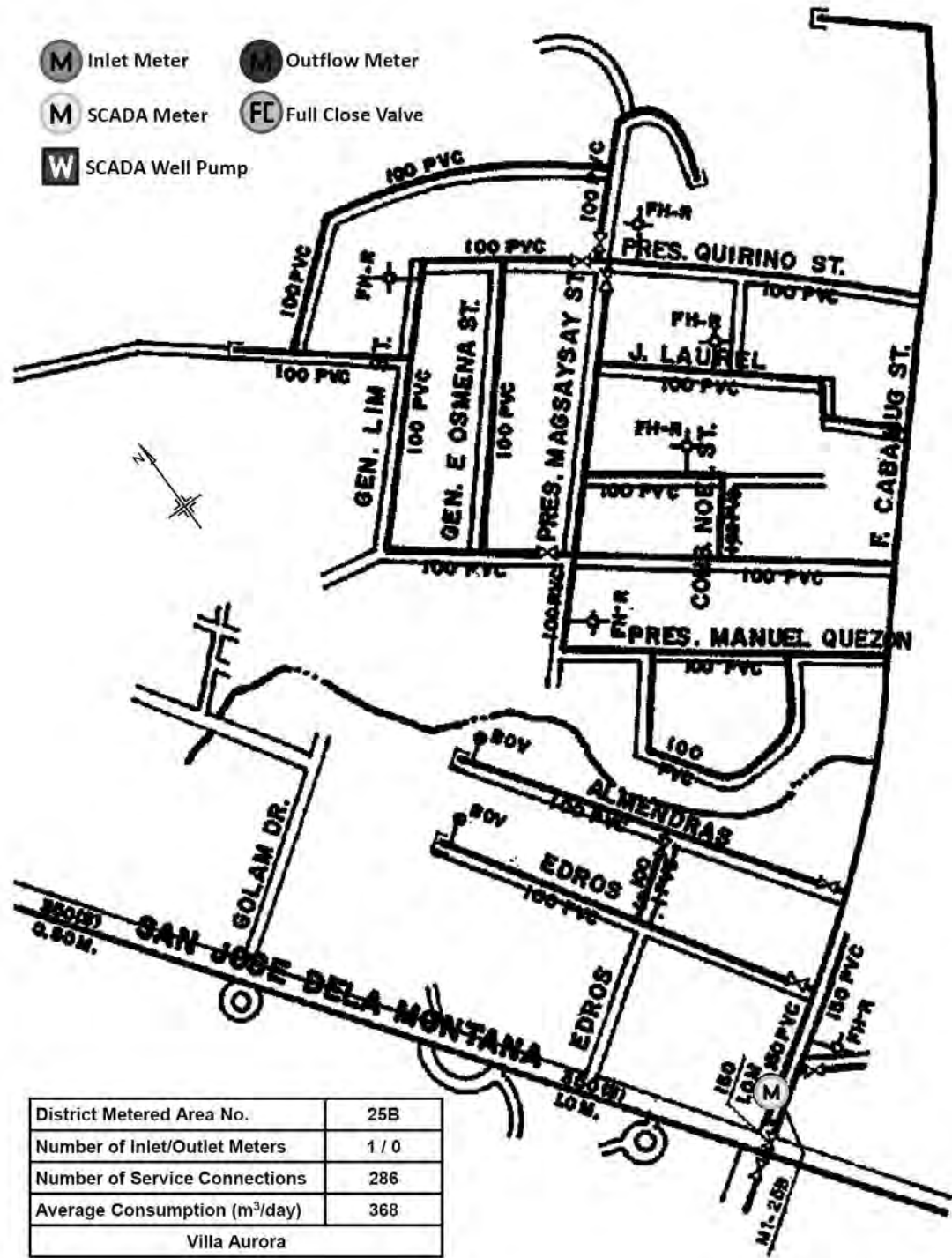


District Metered Area No.	22D
Number of Inlet/Outlet Meters	2 / 1
Number of Service Connections	1,179
Average Consumption (m <sup>3</sup> /day)	922
Cabantan, Brgy. Luz	

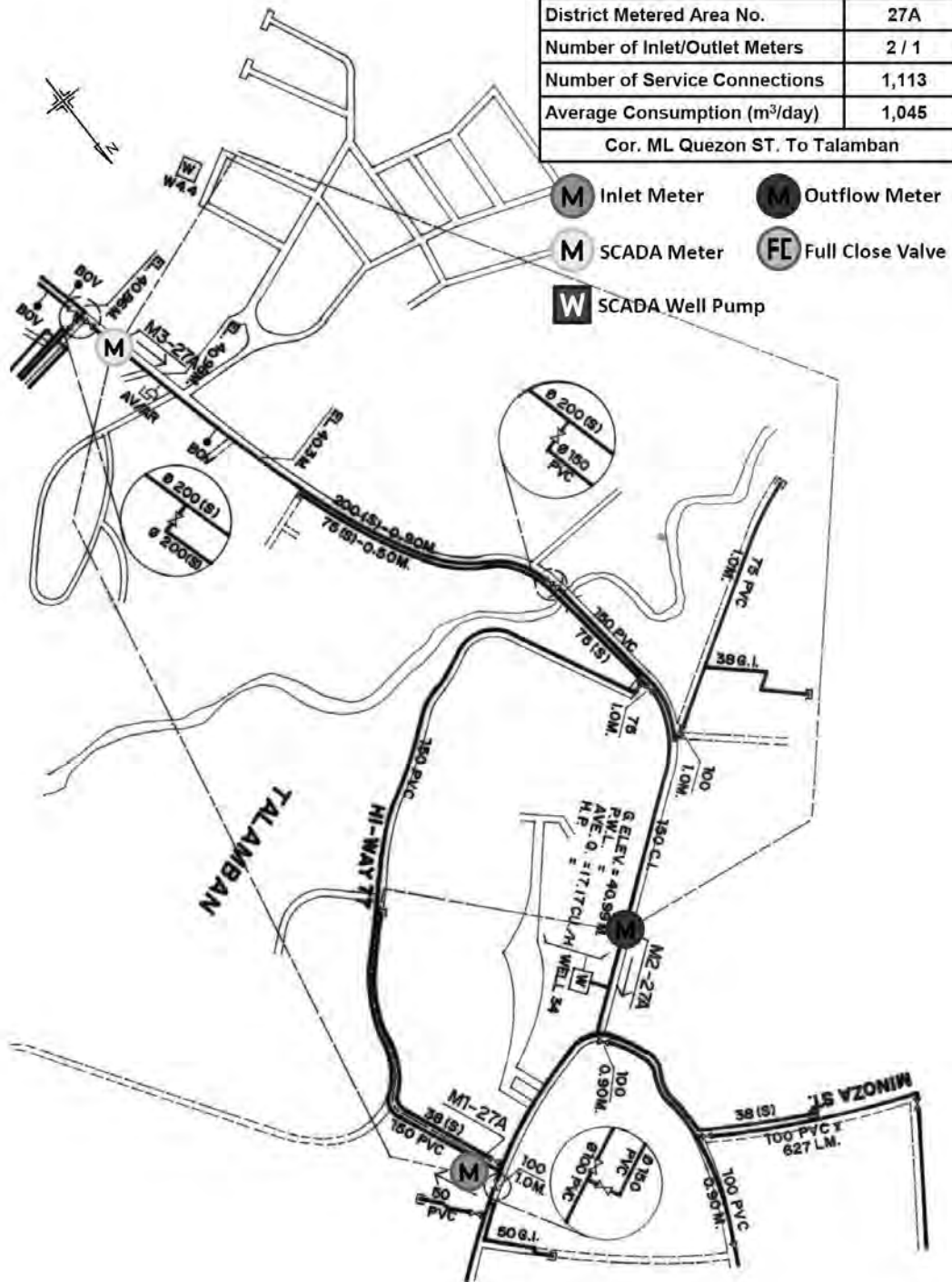
- M Inlet Meter      M Outflow Meter
- M SCADA Meter      FC Full Close Valve
- W SCADA Well Pump



- M Inlet Meter      M Outflow Meter
- M SCADA Meter      FC Full Close Valve
- W SCADA Well Pump



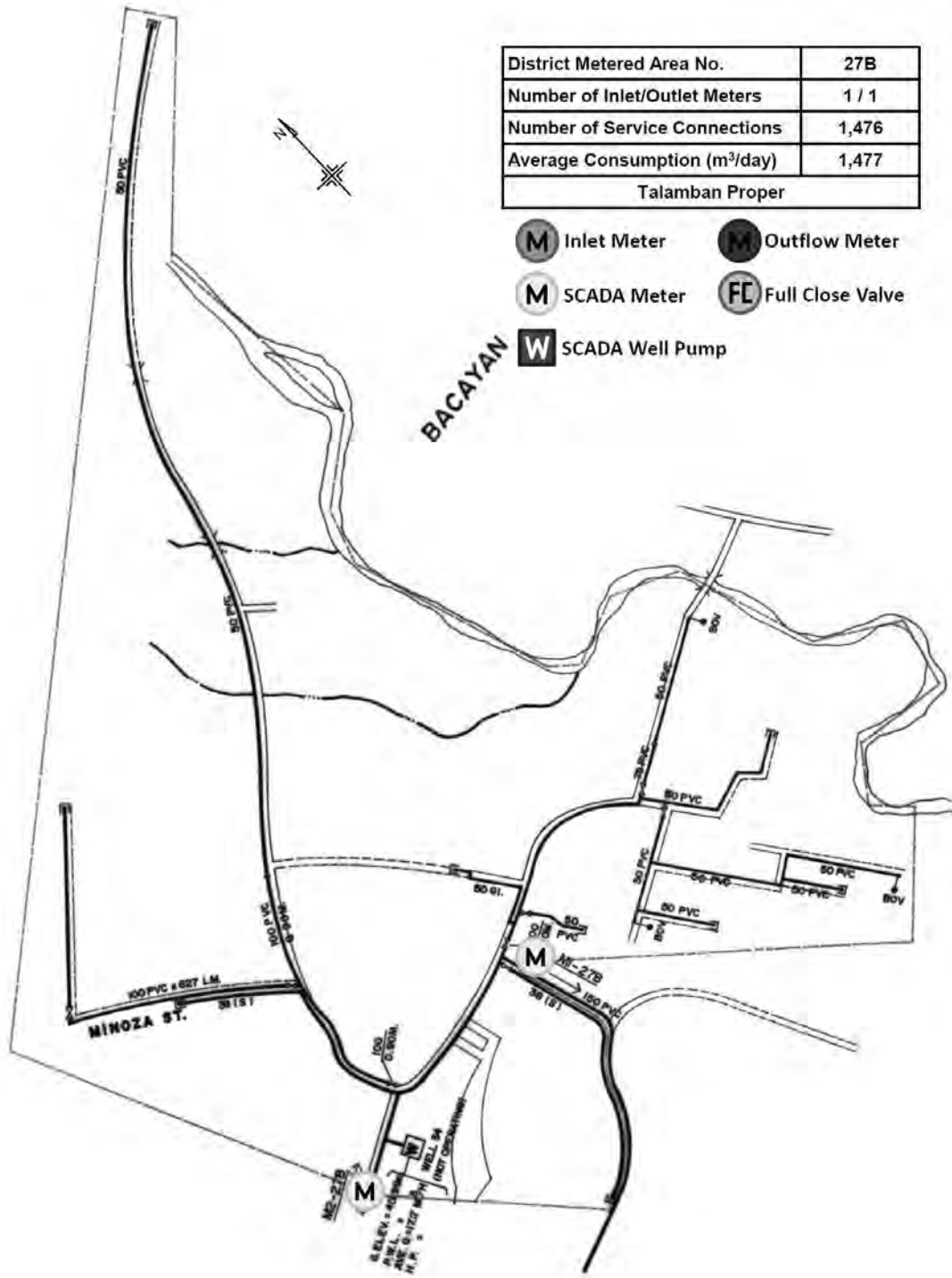
District Metered Area No.	27A
Number of Inlet/Outlet Meters	2 / 1
Number of Service Connections	1,113
Average Consumption (m <sup>3</sup> /day)	1,045
Cor. ML Quezon ST. To Talamban	



- M** Inlet Meter
- M** SCADA Meter
- M** Outflow Meter
- FC** Full Close Valve
- W** SCADA Well Pump

District Metered Area No.	27B
Number of Inlet/Outlet Meters	1 / 1
Number of Service Connections	1,476
Average Consumption (m <sup>3</sup> /day)	1,477
Talamban Proper	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

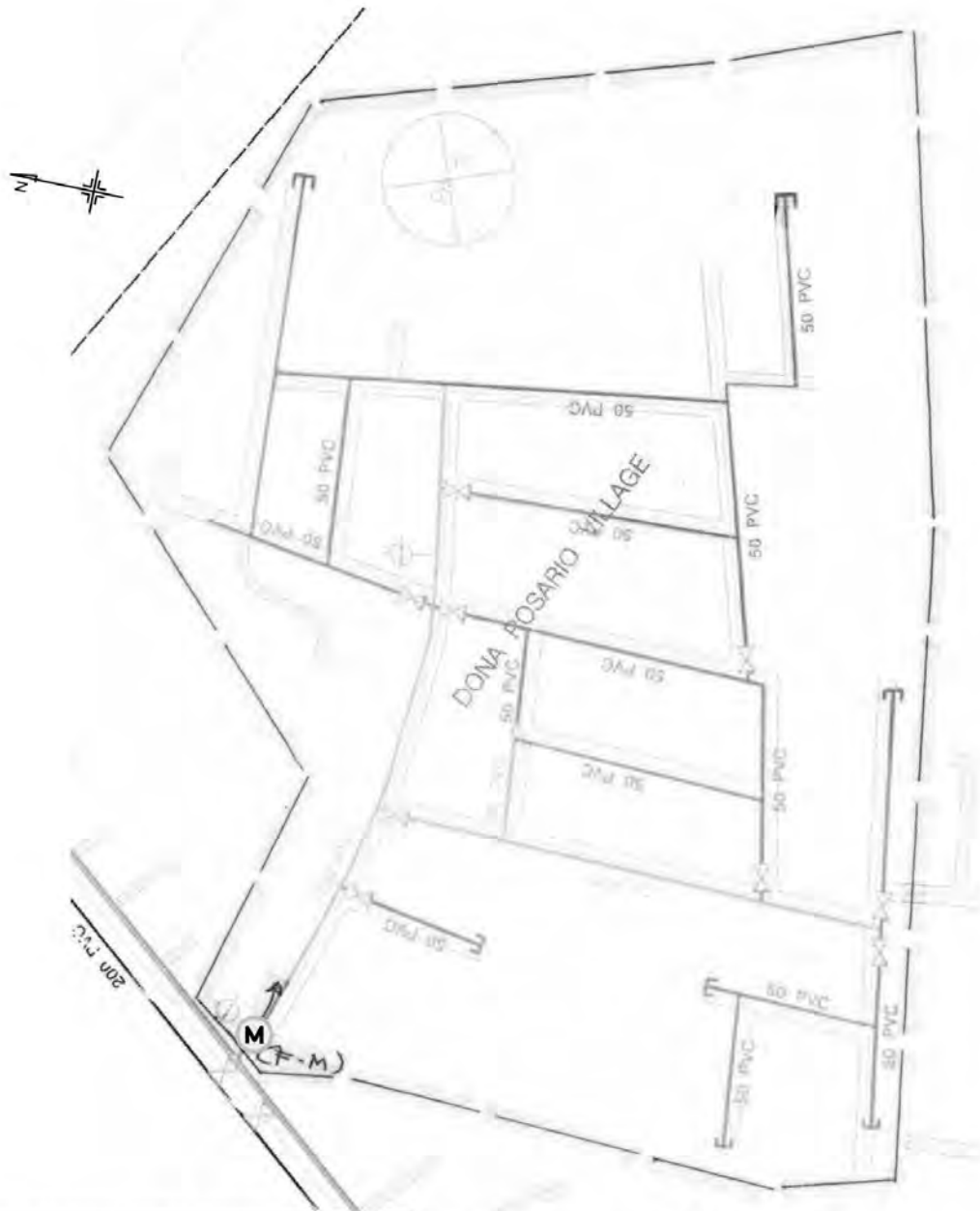


District Metered Area No.	28
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	847
Average Consumption (m <sup>3</sup> /day)	527
Gerardo Ouano, Mandaue City	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

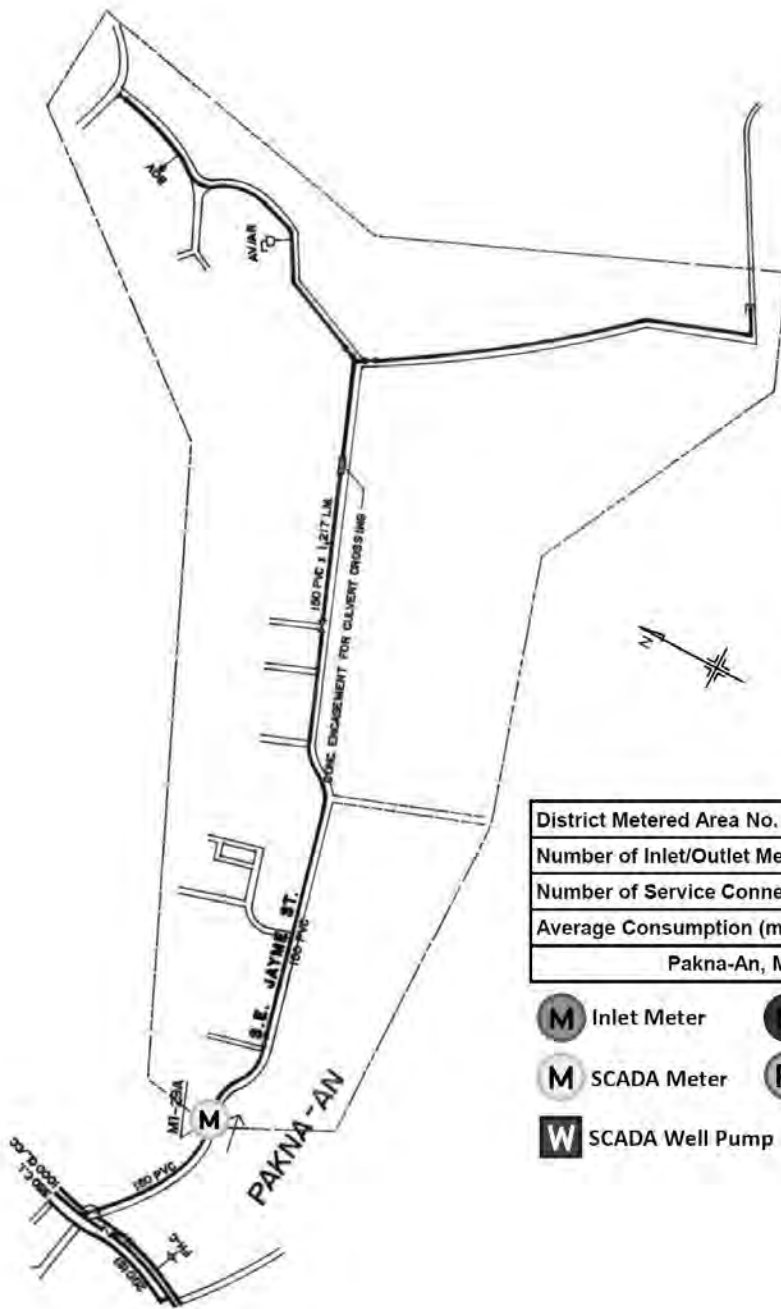






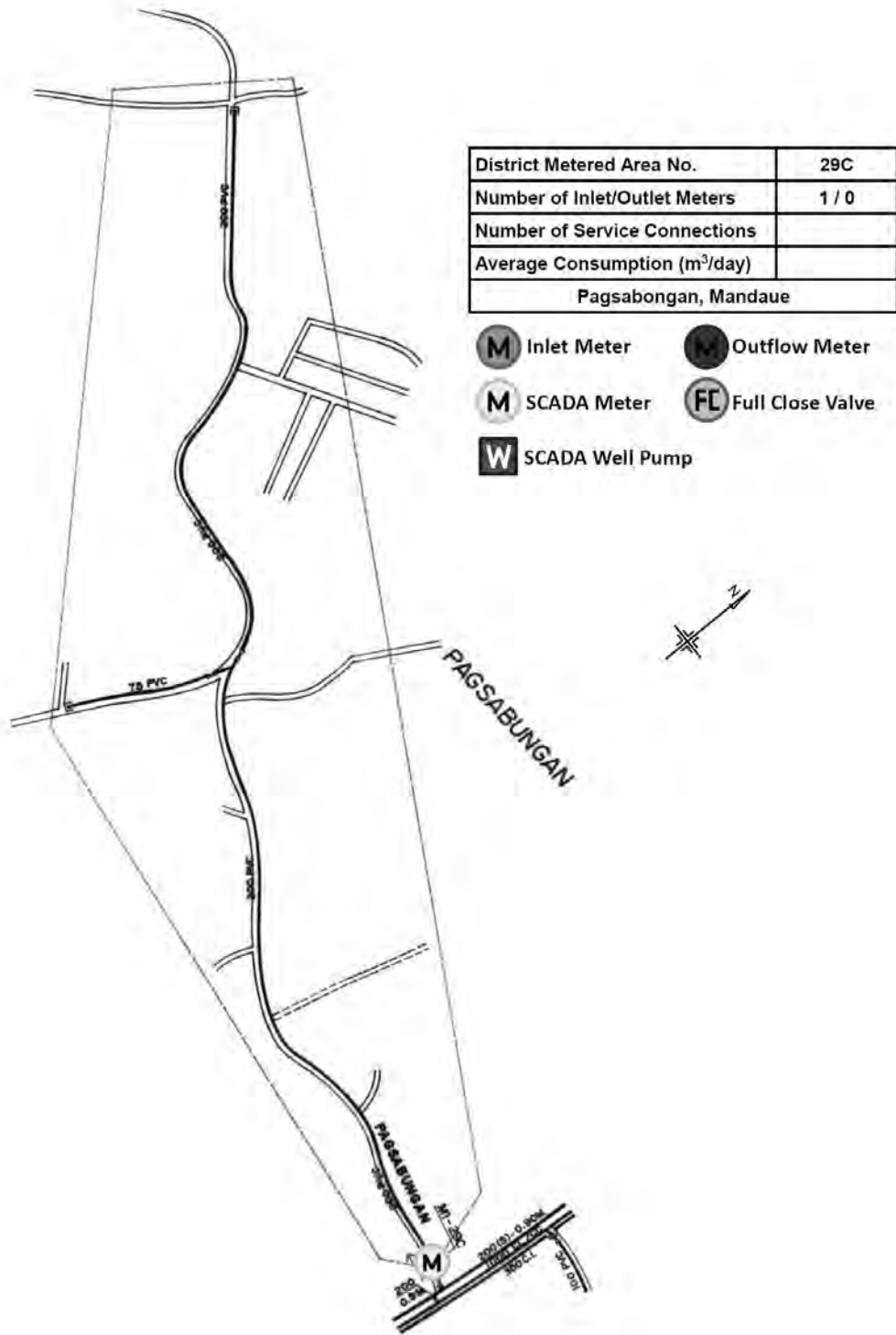
District Metered Area No.	29
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	344
Average Consumption (m <sup>3</sup> /day)	304
Dona Rosario Vill., Mandaue	

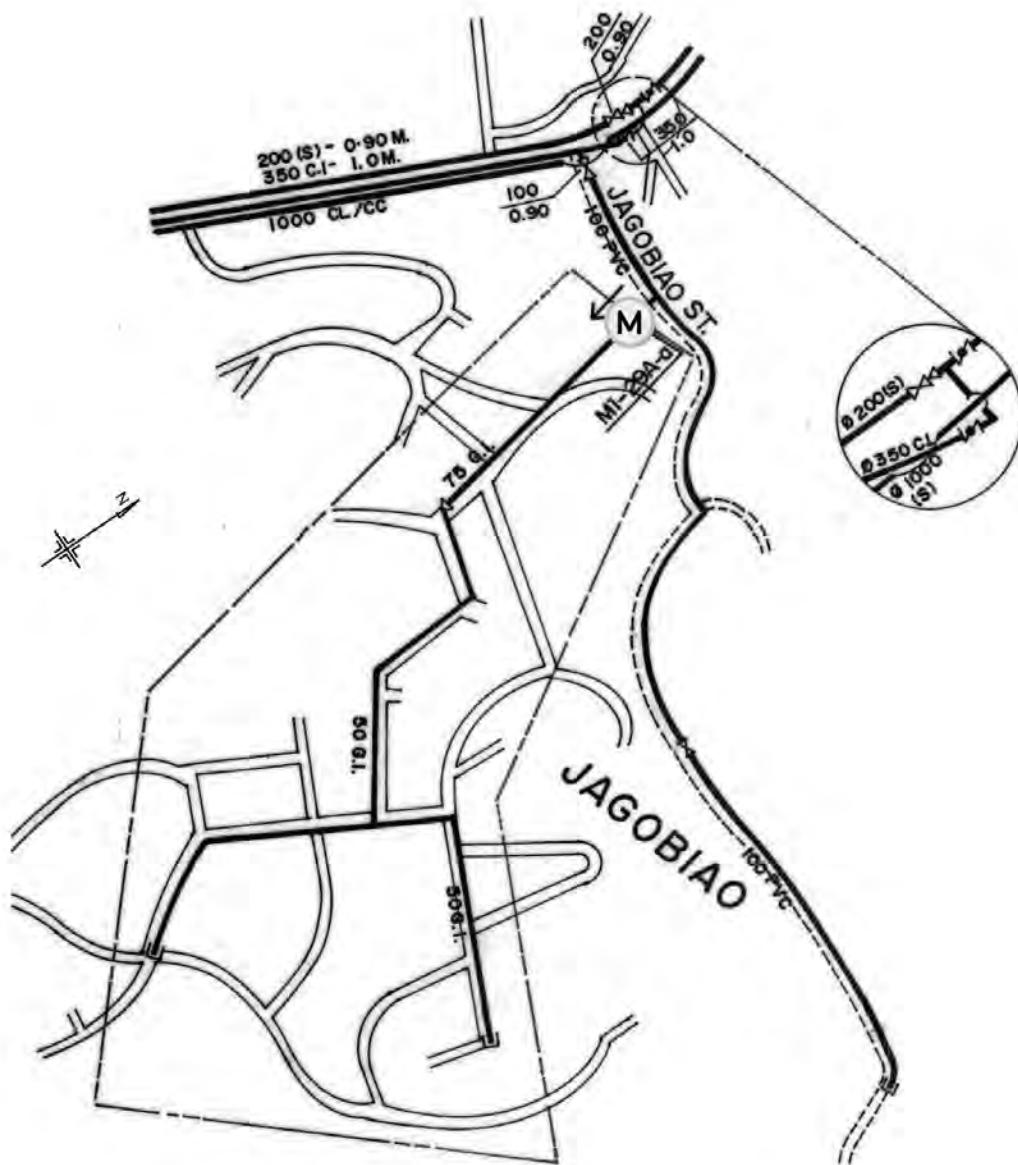
- M Inlet Meter
- M SCADA Meter
- W SCADA Well Pump
- M Outflow Meter
- FC Full Close Valve



District Metered Area No.	29A
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	1,425
Average Consumption (m <sup>3</sup> /day)	1,086
Pakna-An, Mandaue	

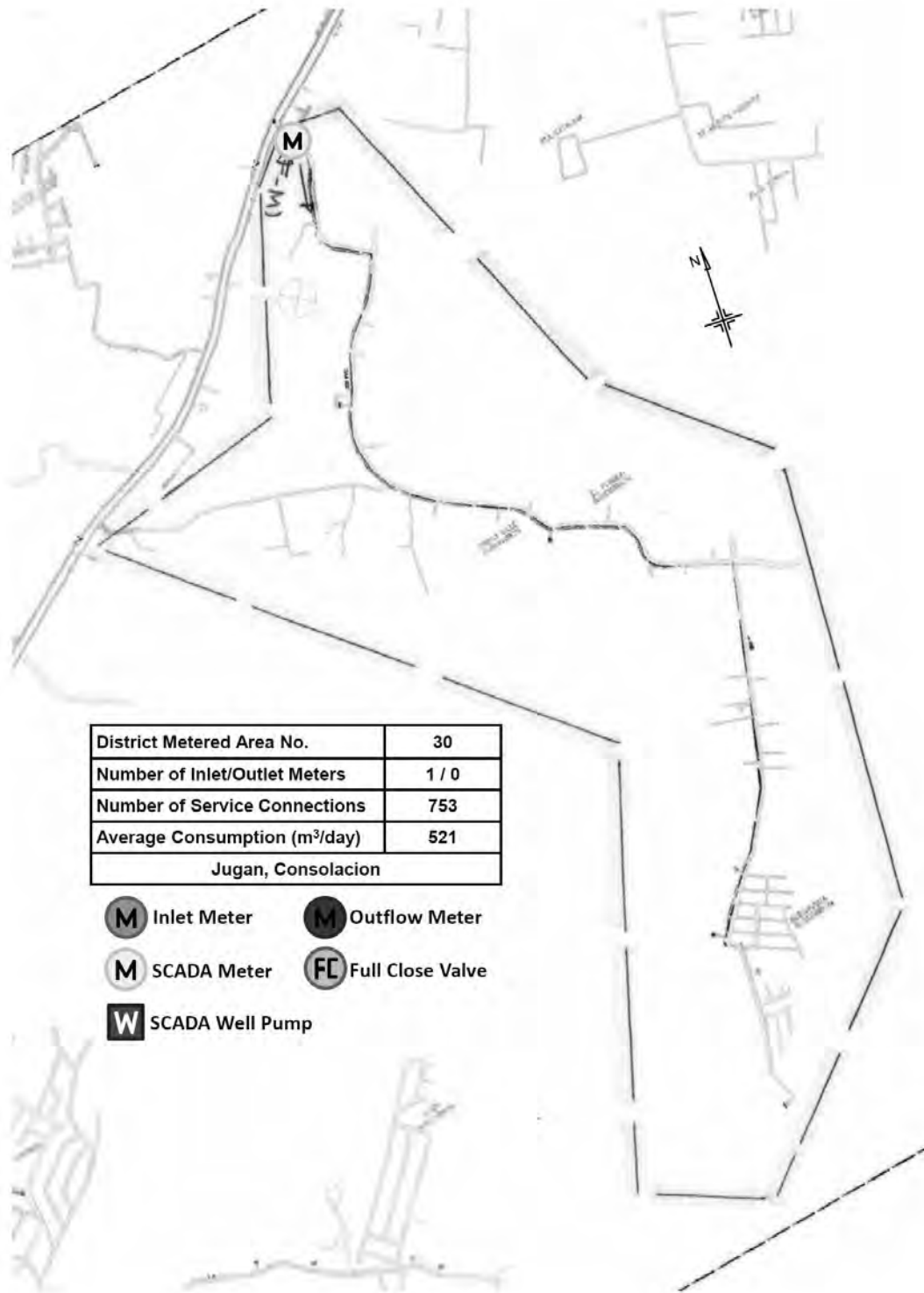
- M Inlet Meter
- M SCADA Meter
- FC Full Close Valve
- W SCADA Well Pump
- M Outflow Meter





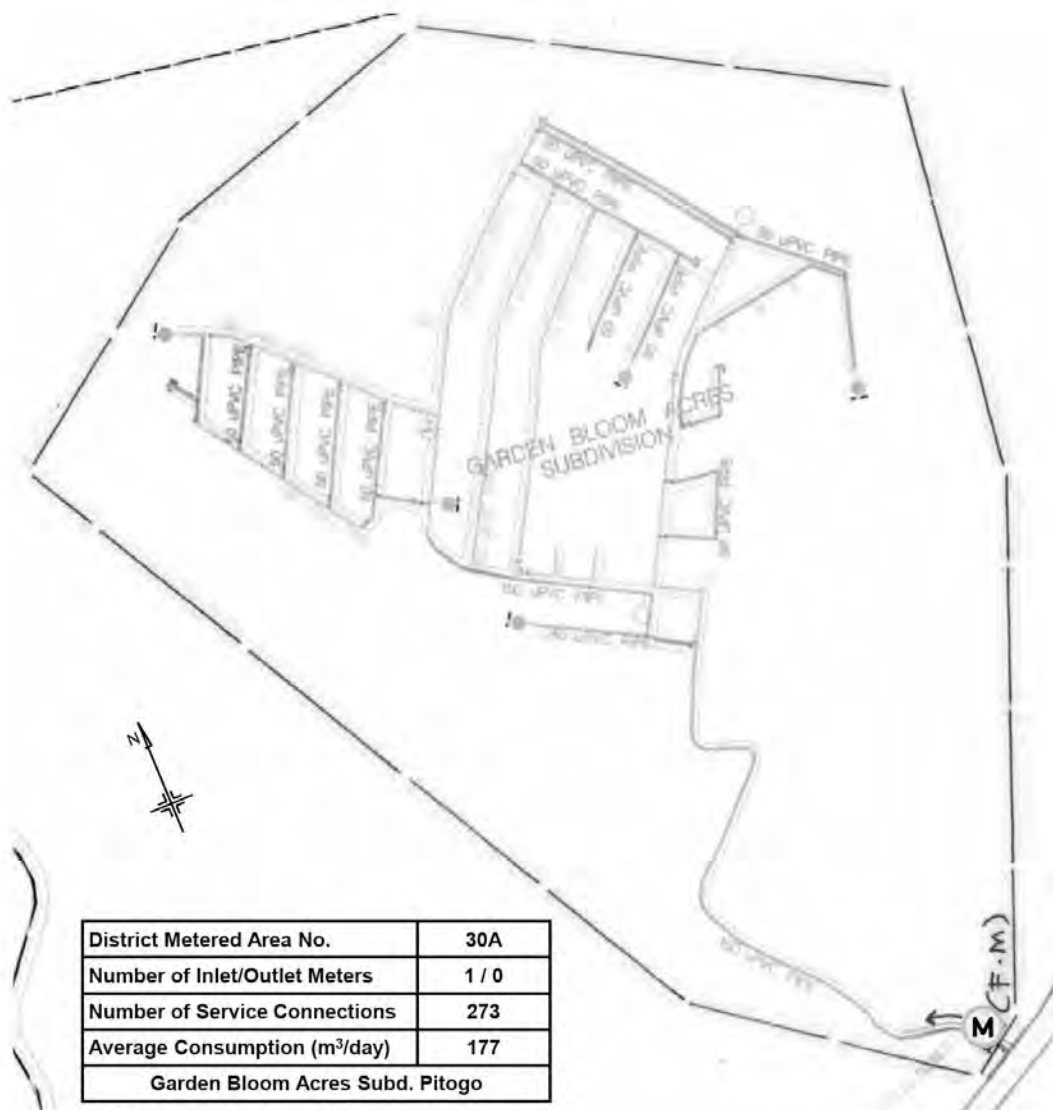
District Metered Area No.	29D
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	275
Average Consumption (m <sup>3</sup> /day)	362
Eversely, Jagobiao	

- M Inlet Meter
- M Outflow Meter
- M SCADA Meter
- FC Full Close Valve
- W SCADA Well Pump



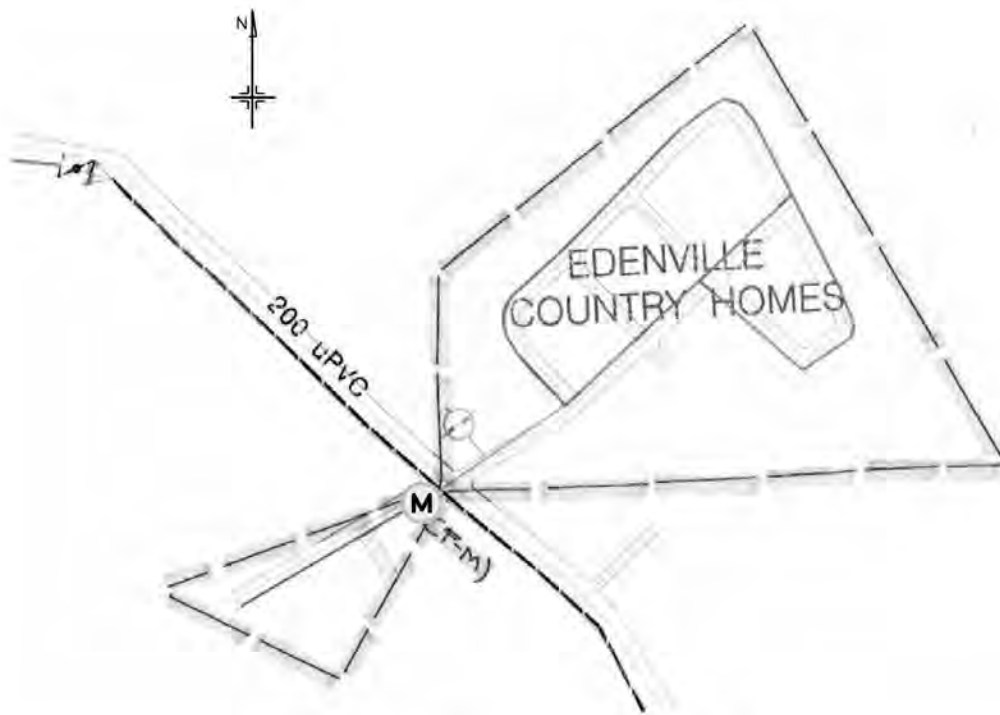
District Metered Area No.	30
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	753
Average Consumption (m <sup>3</sup> /day)	521
Jugan, Consolacion	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter    **FC** Full Close Valve
- W** SCADA Well Pump



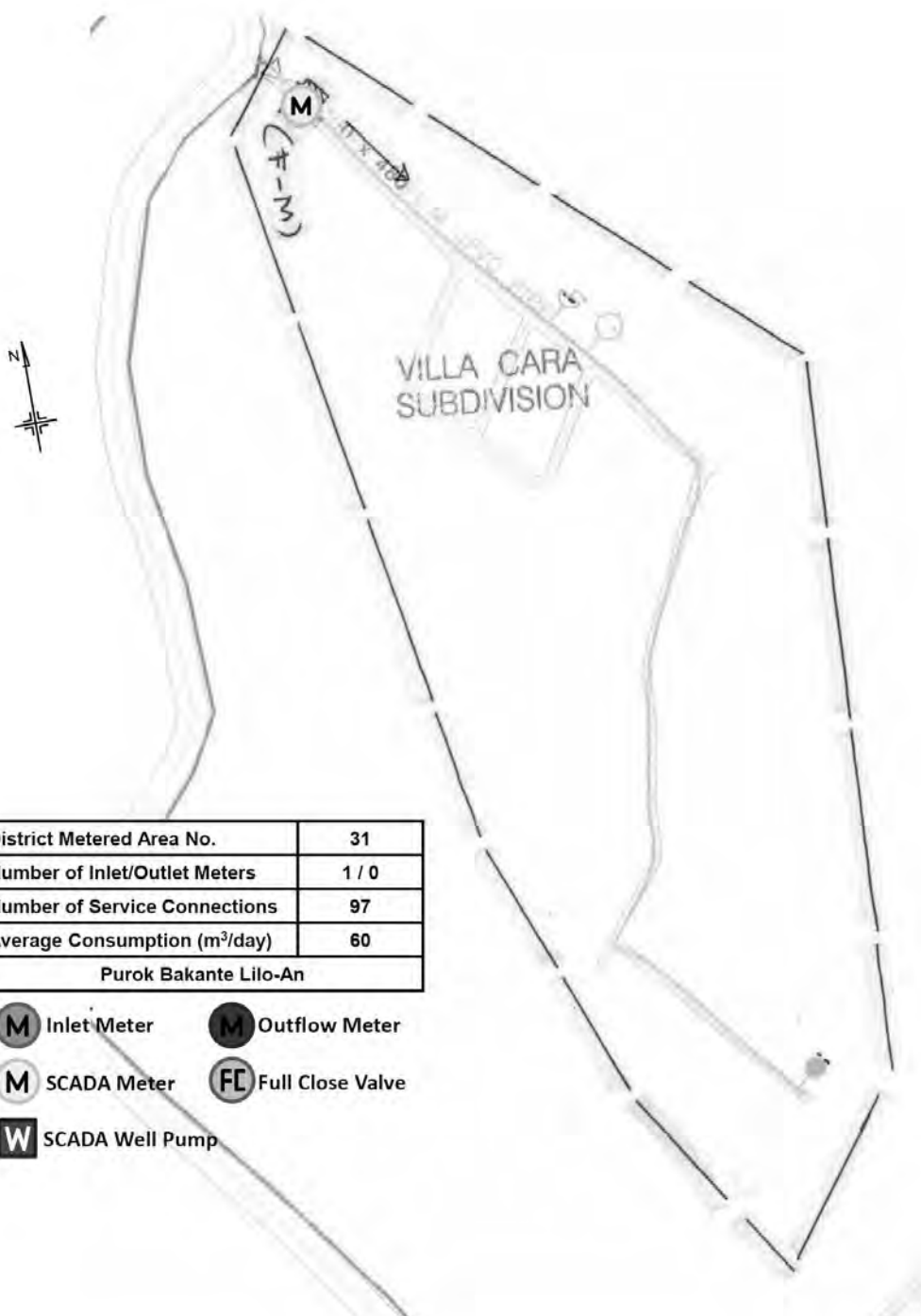
District Metered Area No.	30A
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	273
Average Consumption (m <sup>3</sup> /day)	177
Garden Bloom Acres Subd. Pitogo	

- M Inlet Meter
 M Outflow Meter
- M SCADA Meter
 FC Full Close Valve
- W SCADA Well Pump



District Metered Area No.	30B
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	51
Average Consumption (m <sup>3</sup> /day)	33
Eden Vill. Countryside Subd. Tugbungan	

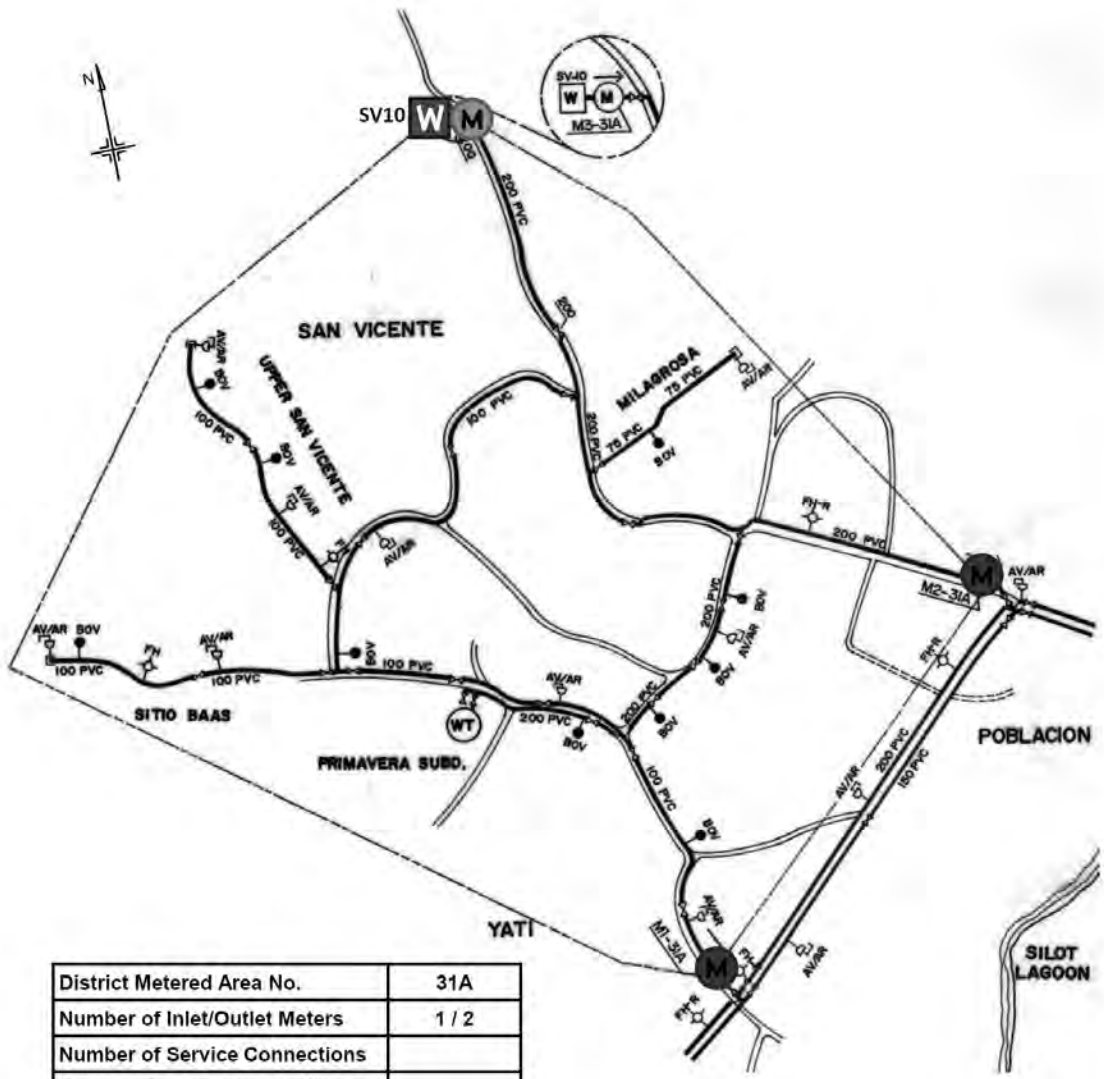
- M Inlet Meter
- M Outflow Meter
- M SCADA Meter
- FC Full Close Valve
- W SCADA Well Pump



District Metered Area No.	31
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	97
Average Consumption (m <sup>3</sup> /day)	60
Purok Bakante Lilo-An	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump



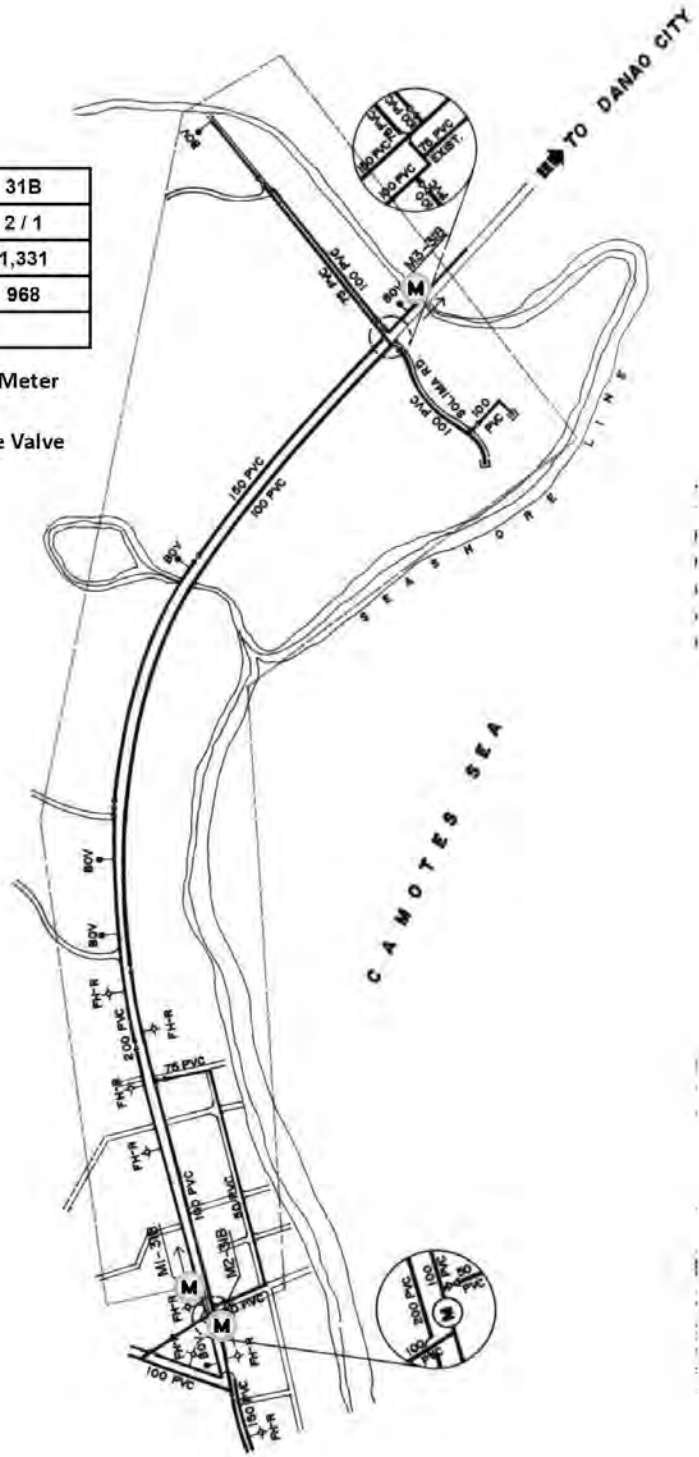


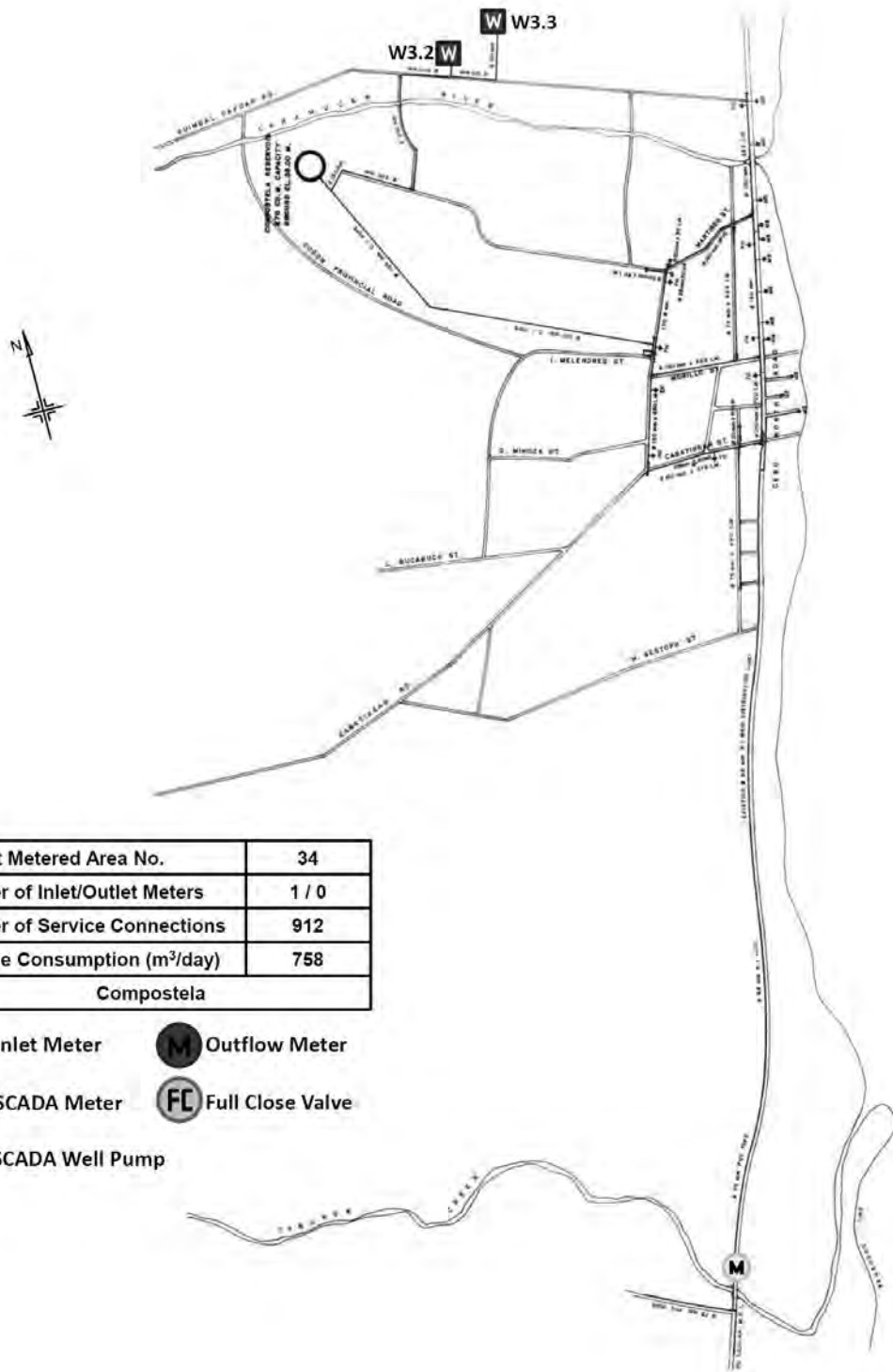
District Metered Area No.	31A
Number of Inlet/Outlet Meters	1 / 2
Number of Service Connections	
Average Consumption (m <sup>3</sup> /day)	
San Vicente Yati Lilo-An	

- (M)** Inlet Meter      **(M)** Outflow Meter
- (M)** SCADA Meter    **(FC)** Full Close Valve
- (W)** SCADA Well Pump

District Metered Area No.	31B
Number of Inlet/Outlet Meters	2 / 1
Number of Service Connections	1,331
Average Consumption (m <sup>3</sup> /day)	968
Lilo-An - Cotcot Bridge	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump



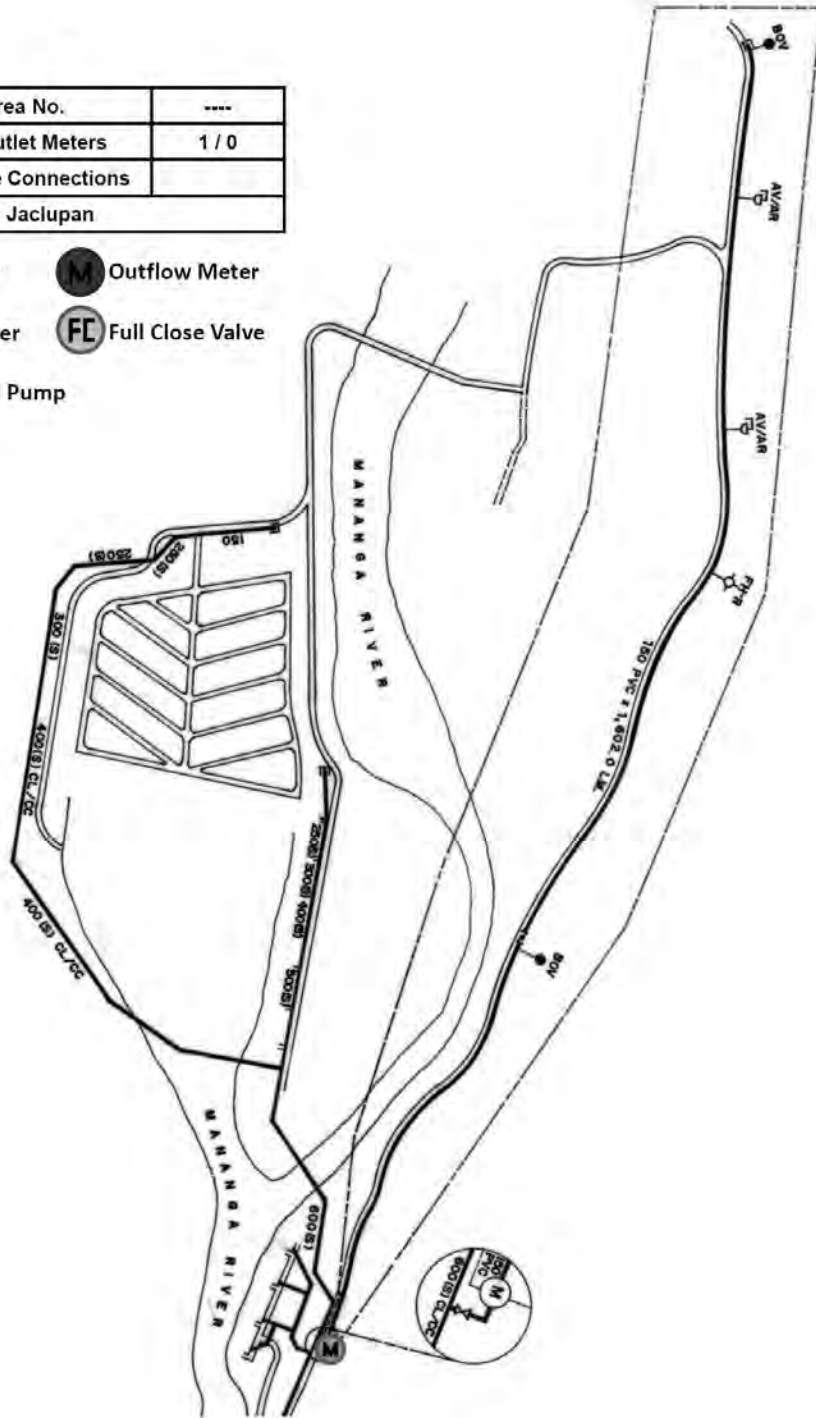


District Metered Area No.	34
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	912
Average Consumption (m <sup>3</sup> /day)	758
Compostela	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FC** Full Close Valve
- W** SCADA Well Pump

District Metered Area No.	----
Number of Inlet/Outlet Meters	1 / 0
Number of Service Connections	
Jaclupan	

- M** Inlet Meter      **M** Outflow Meter
- M** SCADA Meter      **FL** Full Close Valve
- W** SCADA Well Pump



資料 6-5 SCADA 対象 DMA

DMA No.	Water Meter (Inlet pipe)			DMA Information (2013 May, 31 days)							NO. OF POINTS PROPOSED	
	Diameter (mm)	Installed year	Location (Address) or Mesh number	No. of Connection	Average Consumption (m3/M)	total no of district meter	NRW %			NRW results / remarks	MCWD	JICA
							PREVIOUS	PRESENT	VARIANCE			
1A	150 mm	Dec-10	Lagtang	874	23,448	1	31.58	28.66	-2.92	NRW down	1	1
1B	200 mm	Dec-10	Pooc Talisay, Fidel St.	1,660	39,896	1	44.99	43.05	-1.94	NRW down	1	1
1C	no established dma										1	0
1D	200 mm	no data	Nonoc, Cansongon, San Roque - Talisay City	643	no data	3	0.00	0.00	0.00	no batteries in flow meters	1	1
1E	100 mm	Oct-12	Sta Catalina Village, Lagtang	55	1,323	1	32.45	27.98	-4.47	NRW down	1	1
2A	150 mm	no data	Sunrise Village, part of St. Jude Acres, Pardo	355	8,882	2	23.80	21.00	-2.80	NRW down	1	1
2B	200 mm	Dec-10	White Road, F. Jaca, Gabuya, I Tabora	1,237	0	3	0.00	0.00	0.00	no batteries in flow meters	1	1
2C	150 mm	Dec-12	F. Jaca, Tagumel, Cogon - Pardo	863	0	3	0.00	0.00	0.00	no batteries in flow meters	0	1
2D	no established dma										0	0
3A	200 mm	no data	E. Sabeliano, Macopa, I. Tabora St. Outlet Pardo	1,542	39,405	2	34.59	51.09	16.50	NRW up	1	1
4B	150 mm	Oct-12	Pleasant Homes, Clarita Village, Don Bosco	1,011	26,598	1	17.61	18.97	1.36	NRW up	1	1
5A	150 mm	Dec-10	Dona Maria VIII, Tres de Abril	1,260	no data	3	0.00	0.00	0.00	no batteries in flow meters	1	1
5B	100 & 150 mm	no data	Mana Cochon and Atillo - Labangon	1,161	38,114	6	0.00	0.00	0.00	selective flowmeters	1	1
5C	100 mm	Dec-10	Alaska Mambaling	1,014	22,650	1	27.34	27.58	0.24	NRW up	1	1
5D	no flowmeter										1	1
6A	150 mm	no data	F. Pacana, Riveridge Subd, Teresita VIII	no	0	0	0.00	0.00	0.00	no batteries in flowmeters	1	1
6B	no established dma										0	0
6C	100 mm	no data	Bliss housing, Labangon	496	12,454	1	32.04	27.04	-5.00	NRW down	1	1
6D	150 mm	Oct-12	San Jose Village Labangon	296	7,718	1	4.98	18.73	13.74	NRW up	1	1
6E	100 mm	no data	La Paloma VIII., Labangon	297	7,528	1	31.62	29.85	-1.77	NRW down	0	1
7A	no established dma										0	0
7B	150 mm	Dec-10	Lombay St Limkakeng Subd, Banawa	329	6,680	2	21.75	15.28	-6.47	NRW down	1	1
7C	200 mm	Dec-10	Happy Valley, Fortich, V. Rams	411	11,053	3	24.27	21.49	-2.78	NRW down	1	1
8A	150 mm	Oct-12	Lucio Drive, A. Lopez St, Enay, Calamba	912	20,506	1	24.00	11.93	-12.07	NRW down	1	1
9A	150 mm	no data	Part of Tres de Abril and Salvador Extension	826	18,582	1	13.47	15.71	2.24	NRW up	2	1
9B	150 mm	Dec-10	Dujoc, Carlock, Miller, R. Padilla, B. Aranas Ext.	1,227	29,780	3	0.00	0.00	0.00	no batteries in flow meters	2	0
9C	150 mm	Dec-10	San Nicholas Proper, B. Aranas St., Taboan Market	754	17,841	4	42.65	46.93	4.28	NRW up	1	1
10A	150 mm	Dec-10	Cor. Carlock, Javelier, Spolarium	1,227	29,780	5	0.00	0.00	0.00	no batteries in flow meters	1	1
10C	100 mm & 50 mm	Dec-10	Suba Pasil, Sawang Calero			3	0.00	0.00	0.00	no batteries in flow meters	1	1
11A	150 mm	Dec-10	Ermila, Balo Carbon, Jabosalem	1,119	38,067	2	0.00	0.00	0.00	no batteries in flow meters	2	2
11B	no dma established										0	0
11C	100 mm	Dec-10	D. Jskosalem, Bourneco St, Sanclanico St, Celon St			1	0.00	0.00	0.00	temporarily standby dma	2	2
12A	150 mm	Dec-10	Private, P. del Roseno ext Aznar Rd			3	0.00	0.00	0.00	temporarily standby dma	1	1
12B	100 mm	Dec-10	Urgello St, Hamson, Uylangsu Rd	954	24,202	2	0.00	0.00	0.00	temporarily standby dma	3	1
12C	150, 100 & 75 mm	Dec-10	T. B. Pavilion, B. Rodriguez Ext, Villafacion St			3	0.00	0.00	0.00	temporarily standby dma	1	1
13B	no dma established										1	0
14A	no dma established										1	1
14B	150 mm	Dec-10	San Antonio			5	0.00	0.00	0.00	temporarily standby dma	1	1
14C	150 mm	no data	Lorego, San Miguel-Sibaluna, Echavez St.	1,549	4,203	4	0.00	0.00	0.00	no batteries in flow meters	1	1
15C	100 mm	no data	Part of Gorordo Ave, C/O, Gonzales Compound	697	22,388	4	0.00	0.00	0.00	no batteries in flow meters	1	1
15D	100 mm	Dec-10	Juana osmena ext., Upper Campulhaw	1,001	23,484	2	30.67	26.63	-4.04	NRW down	0	0
16	no dma established										0	0

DMA No.	Water Meter (Inlet pipe)			DMA Information (2013 May, 31 days)							NO. OF POINTS PROPOSED	
	Diameter (mm)	Installed year	Location (Address) or Mesh number	No. of Connection	Average Consumption (m3/M)	total no of district meter	NRW %				MCWD	JICA
							PREVIOUS	PRESENT	VARIANCE	NRW results / remarks		
17	no dma established									0	0	
18C	200 & 100 mm	Dec-10	La-guardia, Edison St. Lahug	450	12,557	4	43.01	22.84	-20.17	NRW down	0	0
18C-A	200 mm	Dec-10	Campo Lapu-Lapu			1	0.00	0.00	0.00	temporarily standby gms	0	0
19	100 mm	Oct-12	Margosas, PC Hills, Betania Hills	421	12,432	1	42.54	46.13	-2.55	NRW up	0	0
20	100 & 75 mm	Oct-12	Nivef, PBN, Plaza Vill.	691	23,455	1	26.36	25.79	0.43	NRW up	0	0
21A	100 mm	Dec-10	Calvary, Mahayahay, San Antonio, Plaza, Apas			0					0	0
22B	100 mm	no data	HIPODROMO	1,103	25,015	1	14.42	13.38	-1.04	NRW down	1	1
22C	100 mm	no data	L. Tudud, Gil Tudud, C. Mina, Mabolo	856	21,118	1	25.56	25.64	-2.92	NRW down	1	1
22D	100 mm	Oct-12	Cabantan, Bo. Luz, New Era Mabolo	1,179	29,572	3	23.98	19.09	-4.89	NRW down	1	1
25A	150 & 100 mm	no data	F. Cabahug, S. Cabahug, Casals Vill., Lower Mabolo	1,221	45,337	2	39.11	31.61	-7.30	NRW down	1	1
25B	150	no data	Villa Aurora, Kasambagan Mabolo	286	11,399	1	15.03	19.14	4.11	NRW up	1	1
27A	150 & 200 mm	no data	Cor. M.L. Quezon, Highway 77, Tac-an Rd, Talamban	1,113	32,410	3	Erroneous reading of flowmeters				3	3
27B	150 & 100 mm	no data	Talamban Proper, Kauswagan, Tigbao	1,476	45,781	2	23.58	22.49	-1.09	NRW down	1	1
28	100 mm	Oct-12	Plaridel cor. G. Ouano St. Queo Mandaue City	847	15,324	1	25.00	24.44	-0.56	NRW down	1	1
29	100 mm	Oct-12	Doña Rosario Vill., Basak Mandaue City	344	9,426	1	16.13	14.99	-1.14	NRW down	1	1
29A	150 mm	Dec-10	L. Jaime St. Pakno-an St. Mandaue City	1,425	33,653	1	abnormal flowmeter reading				1	1
29C	200 mm	Dec-10	Pagsabungan Mandaue City				defective flowmeter				1	1
29D	100 mm	Dec-10	Eversely (Jagobiao)	275	11,230	1	12.11	-5.39	-20.50	NRW down	1	1
30	200 mm	Oct-12	Jugan, Consolacion	753	15,177	1	abnormal flowmeter reading				1	1
30A	150 mm	Oct-12	Garden Bloom Subdivision, Pitogo Consolacion	273	5,495	1	36.71	45.31	8.60	NRW up	1	1
30B	75 mm	Oct-12	Edenville Country Homes, Tugbongan Consolacion	61	1,011	1	74.08	84.13	10.05	NRW up	1	1
31	100 mm	Oct-12	Purok Bakante, Yati Lilo-an	97	1,857	1	19.30	15.69	-2.61	NRW down	1	1
31A	no established dma									0	0	
31B	200, 150, 100 mm	Dec-10	Lilo-an Church to Cotcot Bridge	1,331	30,012	3	17.49	17.49	0.00	stable	3	3
33	no established dma									0	0	
33A	100 mm	Oct-12	Villa del Rio, Babag II, Lapulapu				defective flowmeter				0	0
34	75 mm	no data	Cotcot Bridge to Compostela	912	23,495	1	27.05	27.23	0.15	NRW up	1	1
TOTAL:										55	55	

資料 6-6 SCADA 対象 深井戸

No.	Well No.	Pipe Size (mm)	SCADA A=1	Direct supply (DMA number) / To Reservoir (Reservoir name)	Over All Remarks	Installed year	Pump Lifting Capacity (m <sup>3</sup> /hr)	Residual Pressure (PSI or m)	Pump specification			Location (Address)
									Diameter (mm)	Output (kW)	Discharge volume (m <sup>3</sup> /hr)	
1	SV1	150		To Liloan HLR reservoir	OPERATIONAL	2007	79.6	95.0	200	30	101.6	Tabunok, Liloan
2	SV2	150		To Liloan HLR reservoir	OPERATIONAL	2012	73.6	87.0	150	5.5	22.5	Tabunok, Liloan
3	SV3	150		To Liloan HLR reservoir	OPERATIONAL	2011	61.3	60.0	200	30	77.8	Jabay, Pamulongan, Liloan
4	SV4	150		To Liloan HLR reservoir	OPERATIONAL	2010	60.8	52.0	150	30	89.1	Jabay, Pamulongan, Liloan
5	SV5	150		To Liloan HLR reservoir	OPERATIONAL	2012	76.5	64.0	200	30	87.7	Jabay, Pamulongan, Liloan
6	SV6	150		To Liloan HLR reservoir	OPERATIONAL	2010	111.3	62.0	200	30	56.1	Sambag, San Vicente, Liloan
7	SV8	100		To Liloan HLR reservoir	OPERATIONAL	2010	81.0	49.0	150	11	34.4	Sambag, San Vicente, Liloan
8	SV9	100		To Liloan HLR reservoir	OPERATIONAL	2008	81.2	62.0	150	15	50.0	Sambag, San Vicente, Liloan
9	SV10	150	1	To Liloan HLR reservoir and DMA 31, 31B	OPERATIONAL	2011	87.1	50.0	200	30	84.8	Sambag, San Vicente, Liloan
10	SV11	150		To Liloan HLR reservoir	OPERATIONAL	2011	73.3	72.0	150	11	38.2	Sambag, San Vicente, Liloan
11	SV12	150		To Liloan HLR reservoir	OPERATIONAL	2008	72.5	74.0	150	7.5	23.3	Sambag, San Vicente, Liloan
12	SV13	150		To Liloan HLR reservoir	OPERATIONAL	2013	72.1	52.0	150	11	27.7	Tabay, Lavoan, San Vicente, Liloan
13	SV14	150		To Liloan HLR reservoir	OPERATIONAL	2008	75.5	86.0	150	15	59.5	Tabay, Lavoan, San Vicente, Liloan
14	SV15	150		To Liloan HLR reservoir	OPERATIONAL	2010	77.8	77.0	150	11	36.9	Tabay, Lavoan, San Vicente, Liloan
15	SV16	150		To Liloan HLR reservoir	non-operational							
16	SV17	150		To Liloan HLR reservoir	OPERATIONAL	2012	92.7	88.0	200	30	82.5	Tabay, Lavoan, San Vicente, Liloan
17	Sita cruz	100		To sba cruz sub-system	no meter installed							
18	WS.1	150		To Casili Reservoir	OPERATIONAL	2008	73.6	52.0	200	30	106.1	Sito Bato, Casili
19	WS.2	150		To Casili Reservoir	OPERATIONAL	2007	64.1	70.0	200	30	66.9	Sito Bato, Casili
20	WS.3	150		To Casili Reservoir	OPERATIONAL	2004	82.8	41.0	150	15	46.3	Inside Sta. Lucia Village
21	WS.4	150		To Casili Reservoir	OPERATIONAL	2007	131.4	110.0	150	7.5	11.7	Inside Sta. Lucia Village
22	WS.5	150		To Casili Reservoir	OPERATIONAL	2009	84.7	62.0	200	30	95.0	Sta. Nino I, Casili
23	WS.6	100		To Casili Reservoir	OPERATIONAL	2012	63.6	73.0	200	30	87.6	Cubscob, Mandave
24	WS.7	100		To Casili Reservoir	OPERATIONAL	2010	91.5	67.0	150	22	49.9	Cubscob, Mandave
25	CAN1	150	1	To DMA 26, 26A, 26C	OPERATIONAL	2000	76.0	56.0	150	22	56.9	Sta. Nino I, Casili
26	CAN2	150	1	To DMA 26, 26A, 26C	OPERATIONAL	2007	81.1	65.0	200	30	76.5	Caratuman, Mandave City
27	CAN3	150	1	To DMA 26, 26A, 26C	OPERATIONAL	2010	84.9	80.0	200	30	88.1	Caratuman, Mandave City
28	CAN5	150	1	To DMA 26, 26A, 26C	OPERATIONAL	2010	77.7	58.0	150	11	33.8	Caratuman, Mandave City
29	CAN6	150	1	To DMA 26, 26A, 26C	OPERATIONAL	2011	54.9	37.0	200	45	160.0	Pit, Calacalan, Mandave City
30	CAN7	100	1	To DMA 26, 26A, 26C	OPERATIONAL	2012	86.9	40.0	200	30	100.9	Caratuman, Mandave City
31	W4.2	150		To Talamban Reservoir	OPERATIONAL	2013	62.5	51.0	200	30	78.2	Caratuman, Mandave City
32	W4.7	150		To Talamban Reservoir	OPERATIONAL	2013	85.9	64.0	200	75	224.0	USC Talamban Gate
33	W4.8	150		To Talamban Reservoir	OPERATIONAL	2012	80.4	50.0	200	75	213.4	USC Talamban Post Office
34	W4.9	100	1	To Transmission Line	OPERATIONAL	2011	82.8	13.0	150	7.5	37.1	MCWD Talamban Compound
35	W4.10	150	1	To Talamban Reservoir and Direct supply to neighbor	OPERATIONAL	2010	87.2	70.0	200	55	171.2	Nestyl Commercial Plaza
36	W4.11	150		To Talamban Reservoir	OPERATIONAL	2010	95.1	78.0	200	75	201.5	Dona Rita, Talamban
37	W4.12	150		To Talamban Reservoir	OPERATIONAL	2013	88.1	76.0	200	37	101.5	Across Sto. Nino Village
38	W4.14	100	1	To Transmission Line	OPERATIONAL	2013	77.5	39.0	150	30	113.1	Bunlar Elementary School
39	W4.2	150		To Talamban Reservoir	OPERATIONAL	2010	75.8	27.0	150	45	116.8	NGCP Cabangalen
40	W34R	150	1	To DMA 27A, 27B	OPERATIONAL	2012	116.9	86.0	150	18.5	25.0	MCWD Talamban Compound
41	W34B	100	1	To DMA 27A, 27B	OPERATIONAL	2012	88.3	86.0	150	7.5	18.0	Cadahan, Talamban
42	W35	100		To DMA 27A, 27B	commissioning	2012	71.5	70.0	150	11	30.7	Tigasa, Talamban

No.	Well No.	Pipe Size (mm)	SCADA	Direct supply (DMA number) / To Reservoir (Reservoir name)	Over All Remarks	Installed year	Pump Lifting Capacity (lit)	Residual Pressure (PSI or m)	Diameter (mm)	Output (KW)	Discharge rate (m <sup>3</sup> /hr)	Location (Address)
43	CAD1	150		To DMA 27A, 27B as Booster Pump	OPERATIONAL	2013	67.1	30.0	150	15	50.6	Cebu, Talamban
44	CPWell	75		To DMA 19, 20 as Booster Pump	OPERATIONAL	2010	143.1	34.0	150	15	23.1	Marco Polo Hotel, Nivel Hills
45	L1	100	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2011	60.8	33.0	150	11	21.4	Kanagong, Lahug
46	L2	100	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2010	126.4	56.0	150	15	28.9	San Antonio Village, Apas
47	L3	100	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2010	68.0	27.0	150	7.5	19.1	UP Lahug
48	L4	150	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	1997	60.3	22.0	150	22	30.9	Beside Banilad Town Center
49	L5	100	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2012	137.3	75.0	150	11	16.6	La Gasista, Lahug
50	L6	100	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2012	105.3	64.0	150	22	53.0	L.T. Park, Salinas Drive, Lahug
51	L7	100	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2012	54.6	80.0	150	18.5	38.3	San Miguel, Apas, Lahug
52	L8	100	1	To Transmission Line	OPERATIONAL	2010	64.3	29.0	150	22	79.7	Basement, North Gate Building
53	CAM1	100	1	To DMA 15D	OPERATIONAL	2012	65.4	36.0	150	15	50.8	Campuhaw, Cebu City
54	W25	100	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2011	77.6	20.0	150	7.5	18.8	UP Lahug
55	W27	75	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2011	83.0	56.0	150	7.5	15.1	Campo Lapulapu Gate
56	W28	100	1	To DMA 18C, 19, 20, 21A	OPERATIONAL	2011	91.4	50.0	150	11	23.5	Salinas Drive, Lahug
57	W29	100	1	To Transmission Line	OPERATIONAL	2011	66.5	29.0	150	22	69.8	Bairo Luz, Grand Convention
58	W30	100	1	To Transmission Line	OPERATIONAL	2011	86.6	60.0	150	22	59.4	N/A Compound
59	W31	100	1	To Transmission Line	OPERATIONAL	2012	72.4	30.0	100	11	33.5	Cebu Country Club
60	W32	100	1	To Transmission Line	OPERATIONAL	2011	75.3	37.0	150	22	49.1	In front of Chevrolet
61	AYALA1	150	1	To Transmission Line and To DMA 22B	OPERATIONAL	2008	56.3	39.0	200	30	94.7	Ayala Parking Lot
62	W11	100	1	To DMA 7B, 7C	OPERATIONAL	2008	67.7	34.0	150	11	39.6	Happy Valley cor. V. Rama
63	W12	100	1	To DMA 16	OPERATIONAL	2011	71.9	25.0	150	7.5	19.5	Guadalupe Barangay Hall
64	W13	75		To DMA 16	OPERATIONAL	2011	71.9	22.0	150	11	27.8	Guadalupe Church
65	W13B	75		To DMA 16	stop well operation	2012	99.4	65.0	150	11	34.6	Langub, Guadalupe
66	G1	100	1	To DMA 16	OPERATIONAL	2013	60.8	42.0	150	7.5	25.7	Andres Abellana
67	G2	100	1	To Transmission Line	OPERATIONAL	2009	61.3	42.0	150	15	40.0	Forest Hills, Bantawa
68	G3	100	1	To DMA 7B, 7C	OPERATIONAL	2010	74.3	50.0	150	15	36.1	Dulente St., Bantawa
69	G4	75	1	To DMA 7B, 7C	OPERATIONAL	2008	105.9	90.0	150	7.5	11.7	Dulente St., Bantawa
70	G5B	100	1	To Transmission Line	OPERATIONAL	2009	62.4	39.0	150	11	46.0	Asam Arts, Bantawa
71	G7	75	1	To DMA 16	OPERATIONAL	2010	67.7	80.0	150	7.5	19.4	Nichols Heights, Guadalupe
72	G9	100		direct supply well	stop well operation							
73	W15	100	1	To Transmission Line	OPERATIONAL	2008	76.0	50.0	150	11	33.2	Capitol Site, Cebu City
74	W17	100	1	To Transmission Line	OPERATIONAL	2012	57.3	33.0	150	15	40.9	J. Lorena St., Cebu City
75	W16B	100	1	To Transmission Line	OPERATIONAL	2012	64.2	32.0	150	11	45.1	DOH Regional Office, Cebu City
76	W9	100	1	To DMA 12A	OPERATIONAL	2011	41.0	10.0	150	5.5	25.5	P. del Rosario Ext., Cebu City
77	W4B	100	1	To Transmission Line		2012	61.7	52.0	150	11	36.9	F. Llanas St., Cebu City
78	W2	100	1	To Transmission Line	mixed to transmission pipe	2012	29.9	20.0	150	22	102.2	Kinabangsan, Pardo
79	W2B	100	1	To Transmission Line		2011	35.0	28.0	150	15	92.0	Kinabangsan, Pardo
80	K3.2	75		To DMA 6A	stop well operation	2013	83.4	90.0	150	15	38.9	Tambasan, Tisa
81	K3.1	150	1	To DMA 3A, 3B, 4A	OPERATIONAL	2010	67.1	60.0	200	50	35.4	Sabellano St., Dulot
82	T2	150		To Transmission Line and DMA 6A, 6C, 6A, 9A, 9B		2010	83.0	60.0	200	30	93.6	F. Palcanal St., Tisa
83	T5	150		To Transmission Line and DMA 6A, 6C, 6A, 9A, 9B		2000	73.3	80.0	200	30	109.3	Tisa Public Market
84	MC5	150		To Transmission Line and DMA 6A, 6C, 6A, 9A, 9B	mixed to transmission pipe	2007	82.2	60.0	200	30	89.1	Karapunan, Tisa
85	MC6	150		To Transmission Line and DMA 6A, 6C, 6A, 9A, 9B		2012	76.9	99.0	150	15	54.9	Old Labangon Barangay Hall

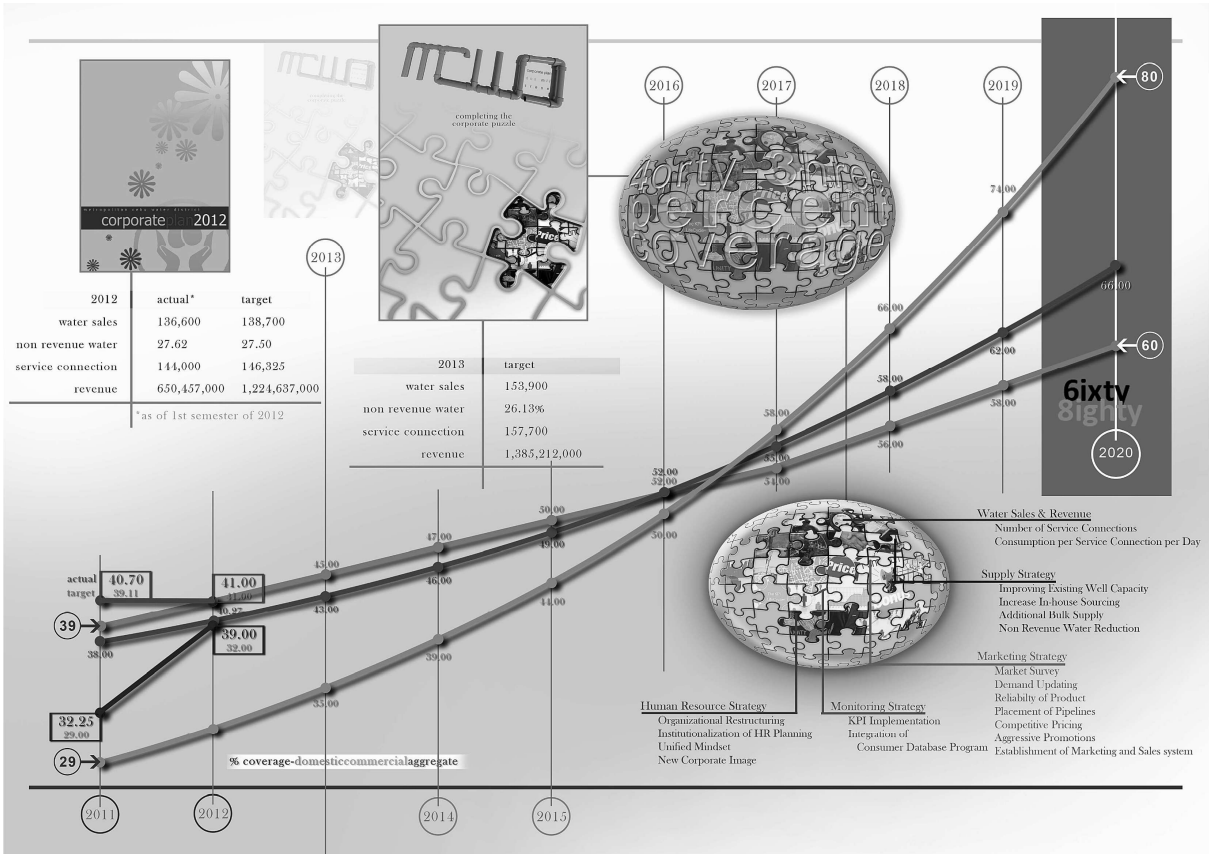


No.	Well No	Pipe Size (mm)	SCAD A=1	Direct supply/DMA number/ To Reservoir (Reservoir name)	Over All Remarks	Installed year	Pump Lifting Capacity (m)	Residual Pressure (PSI or m)	Pump Specification			Location (Address)
									Diameter (mm)	Output (KW)	Discharge (m <sup>3</sup> /hr)	
86	P2	100		To Tisa Reservoir	OPERATIONAL	2013	80.5	75.0	150	15	35.0	Cebocan Drive Pando
87	P4	150	1	To DMA 3A, 3B, 4A	OPERATIONAL	2011	57.8	35.0	150	11	45.2	Quart. Pando
88	P6	150		To Tisa Reservoir	OPERATIONAL	2006	81.6	40.0	150	15	43.5	Sabellano St. Cebu City
89	W1.1	150		To Lagtang Reservoir	OPERATIONAL	2012	81.4	72.0	200	15	42.5	Lagtang, Talisay
90	W1.2	150		To Lagtang Reservoir	OPERATIONAL	2013	88.9	73.0	200	30	69.6	Lagtang, Talisay
91	W1.3	150		To Lagtang Reservoir	OPERATIONAL	2011	83.7	70.0	200	30	102.1	Lagtang, Talisay
92	W1.4	150		To Lagtang Reservoir	OPERATIONAL	2012	75.1	70.0	150	22	80.0	Lagtang, Talisay
93	W1.5	150		To Lagtang Reservoir	OPERATIONAL	2012	85.6	66.0	150	22	29.1	Lagtang, Talisay
94	K2.4	100	1	To Transmission Line	OPERATIONAL	2012	12.4	12.0	150	3.7	32.7	Basak, Mactan near Brgy. Hall
95	MAC1	75	1	To Transmission Line	OPERATIONAL	2011	50.6	48.0	150	3.7	17.7	Mactan Airport Road
96	MAC3	75		Direct supply to neighbor	OPERATIONAL	2012	19.2	10.0	150	3.7	24.2	Basak, Agus Road, Mactan
97	MAC4	100		Direct supply to neighbor	OPERATIONAL	2009	13.0	10.0	150	3.7	37.7	Silo Maglayay, Basak, Lapusapu
98	MAC5	75		Direct supply to neighbor	OPERATIONAL	2010	27.2	24.0	100	3.7	25.9	Silo Mahayathay, Bantat Road
99	MAC8	75		Direct supply to neighbor	OPERATIONAL	2011	9.2	0.0	100	3.7	19.8	Fajak Road, Lapusapu
100	MG-1	200		To Lagtang and Tisa Reservoir	OPERATIONAL	2009	49.5	50.0	200	75	232.6	Jacuppan, Talisay
101	MG-2	200		To Lagtang and Tisa Reservoir	OPERATIONAL	2012	83.2	60.0	200	55	160.0	Jacuppan, Talisay
102	MG-5	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2009	54.8	52.0	200	30	105.5	Jacuppan, Talisay
103	MG-6	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2011	60.1	60.0	200	30	108.6	Jacuppan, Talisay
104	MG-7	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2007	61.5	52.0	200	55	168.8	Jacuppan, Talisay
105	MG-8	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2012	55.8	52.0	200	30	69.5	Jacuppan, Talisay
106	MG-9	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2011	66.5	45.0	200	30	60.3	Jacuppan, Talisay
107	MG-10	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2006	52.9	50.0	200	30	63.4	Jacuppan, Talisay
108	MG-11	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2011	62.6	66.0	200	30	66.5	Jacuppan, Talisay
109	MG-12	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2011	58.2	48.0	150	30	104.9	Jacuppan, Talisay
110	MG-14	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2012	75.9	70.0	200	30	69.0	Jacuppan, Talisay
111	MG-16	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2007	56.6	60.0	200	30	64.2	Jacuppan, Talisay
112	MG-18	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2005	53.0	60.0	200	30	65.1	Jacuppan, Talisay
113	MG-19	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2006	55.5	60.0	200	30	104.8	Jacuppan, Talisay
114	MG-20	150		To Lagtang and Tisa Reservoir	OPERATIONAL	2005	65.7	50.0	200	55	184.0	Jacuppan, Talisay
115	NAZ1	100	1	To Transmission Line	OPERATIONAL	2012	105.4	88.0	150	7.5	16.4	Buhuan Road, Labangon
116	W3.2	100	1	To DMA 34	OPERATIONAL	2009	57.0	42.0	150	5.5	21.5	Canamucan, Compostela
117	W3.3	100	1	To DMA 34	OPERATIONAL	2001	62.8	51.0	150	11	18.6	Canamucan, Compostela
118	W2.2	100		To Lagtang Reservoir	OPERATIONAL	2013	66.6	40.0	150	11	39.3	Ilang-Ilang, Lagtang, Talisay
119	W2.3	100	1	To DMA 1A, 1E	OPERATIONAL	2010	93.3	50.0	150	11	25.1	Sra Catalina, Lagtang, Talisay
120	ALPHA	100	1	To proposed DMA	OPERATIONAL	2012	59.7	8.0	100	1.5	5.3	Lawaan, Talisay
Total												53

資料 6-7 SCADA 対象 配水池

No.	Reservoir (Tank) Name	Capacity (m <sup>3</sup> )	Installed year	Location (Address) or Mesh number	Supply to DMA
1	Casili 1 (Old)	5,000	1978	Casili Consolacion	From K2.1, W5.1-7 To DMA 28, 29, 29A, 29C, 29D, 30, 30A, 30B, 31, 31B, 33, 34
2	Casili 2 (New)	5,000	1997		
3	Liloan (High Level)	2,000	1997	Jubay Liloa-an	Pumping water coming from SV1-17 to Casili Reservoir 1 & 2
4	Talamban	5,000	1980	Nasipit Talamban (inside Family Park)	From K2.2, W4.2, W4.7, W4.8, W4.11, W4.12 To DMA 14C, 15C, 17, 22C, 22D, 25A, 25B, 27B
5	Mactan MEPZ	3,200	1983	MEPZA 1, Compound	Supplied from Casili Reservoir to DMA 33
6	Mactan Saucer	2,000	1997	Pusok, Lapu-lapu	Balance Tank supplied from Casili Reservoir
7	Lagtang	5,000	1980	Lagtang alisay City	From Jaclupan, W1.1-5, W2.2 To DMA 1A, 1B, 1D, 2A, 2B, 2C, 5C, 5D, 10A, 10C, 11A, 11C
8	Tisa	5,000	1995	Upper Tisa, Labangon	From Jaclupan, MC5, P2, P6 To DMA 4B, 5A, 5B, 6A, 6C, 6D, 6E, 7B, 7C, 8A, 9A, 9B, 9C, 12A, 12B, 12C, 14B
9	Compostela	270	1934	Inside Sta Lucia Real Estate	From W3.2, W3.3 to DMA 34
10	BC Homes	500	2012		Balance Tank from wells
--	Cordova	200	1993	Cordova Cebu, near Municipal Hall	Not in used





## WATER SALES TARGET

MCWD aims for a 43% demand coverage by 2013. This coverage translates to a water sales of 53,398,000 cubic meters or 153,900 cubic meters per day by year end.

The projected daily water sales volume is higher by 7% compared to the actual for the first half of 2012. This projection is also higher than the value pegged in the vision 60/80 for the same year by 1% or an increase of 1,800 cubic meters per day. It is the outstanding performance in 2012 that

### WATER SALES

Jan	4,342,800
Feb	3,949,800
Mar	4,347,400
Apr	4,266,800
May	4,433,500
Jun	4,382,800
Jul	4,570,200
Aug	4,630,200
Sep	4,513,300
Oct	4,682,600
Nov	4,509,400
Dec	4,769,600

### CONSUMPTION PER SERVICE CONNECTION PER DAY

The average aggregate CSD for 2013 is 0.95378. This projection is lower than the actual CSD of the 1st half of 2012. This is brought by the change in the percentage distribution of residential and commercial consumers.

Previous year's target setting in CSD was based on meter size in which 1/2 inch service connections were considered residential consumers while larger meter sizes are commercial service connections. In 2013, CSD projection is based on consumption classification namely residential, commercial, subdivision, condominium and government.

For residential classification, CSD is pegged at 0.8134. This projection is based on the actual CSD for the 1st half of 2012 while its monthly trend is based on the average monthly CSD for the past 18 months. Unlike the actual decreasing CSD trend from 2008 till 2010, this year's projection is higher than that of last year. However, monitoring will be continually enhanced to capture the real CSD for this type of consumers.

Though consumption is still residential, subdivision is classified separately due to its connection type which is bulk in nature. Subdivision's CSD is projected to be 53.773 which is also based on the actual CSD for the 1st half of 2012. Its monthly trend is the same with that of the residential classification. However, subdivision's consumption will not only be monitored per connection but on a per household basis as well.

Condominium and government are expected to attain a CSD of 21.966 and 11.730 respectively which are both based on the actual CSD for the 1st half of 2012. However, the monthly trend is based on the average monthly CSD for the past 18 months for government while for condominium, trend is the same with that of the residential classification.

The commercial classification has a complex manner of CSD projection. The existing and additional service connections have different projected CSD per industry type. For existing commercial consumers, projected aggregate CSD is 4.853 which is based on the actual CSD for the 1st half of 2012. Additional commercial connections are expected to reach a CSD of 42.27 based on the average CSD of the different target market. The marketing unit of MCWD aims to capture bulk consumers like condominium, hotels, manufacturing, malls or supermarkets and industrial estate with a total accumulated volume of 2,500 cubic meters per day. With these commercial CSD combined, the aggregate CSD would be 5.73.

Jan	148,889
Feb	149,694
Mar	150,499
Apr	151,304
May	152,109
Jun	152,914
Jul	153,719
Aug	154,524
Sep	155,329
Oct	156,134
Nov	156,939
Dec	157,744

### SERVICE CONNECTIONS

Jan	109,460,200
Feb	101,736,600
Mar	114,727,100
Apr	108,062,000
May	113,283,300
Jun	112,039,100
Jul	118,468,200
Aug	119,880,100
Sep	117,644,700
Oct	124,740,300
Nov	117,709,700
Dec	127,160,600

### REVENUE

### SERVICE CONNECTIONS

In 2013, the additional service connections is pegged at 9,639 which will result in a total SC of 157,744 by year end. This figure is based on the assumption that by the end of 2012, MCWD's total service connection will reach 148,100.

As of June 2012, Customer Services Group (CSG) has been adding an average of 675 net service connections per month for small meters. In 2013, the group aims to further surpass its previous year's accomplishment by targeting 800 per month or 9,600 for the entire year.

The remaining 39 service connections are the target commercial consumers. This target is more than double than the accomplishment in 2012. Though translated into number of service connection, the marketing and sales team of MCWD aspires to capture 2,500 cubic meters per day of the commercial demand.

### REVENUE

The 53,397,500 cu.m. of water sales is equivalent to a year-end net revenue of P=1,385,212,000 or an equivalent daily revenue of P=3,800,000. This is an increase of 6% from the projected year end revenue in 2012.

This revenue assumes an effective rate of P=25.93, on-time collection of 68% and a year to date collection of 96%. The increase of 1% of the year to date collection efficiency added about 13M to the net revenue.

The implementation of the water levy and the automatic adjustment for labor cost and inflation can be a source of additional revenue above the target.

“AGAS NA  
WORLD  
CLASS”



## SUPPLY STRATEGY

In 2013, average capacity will be approximately 208,400 CMD. This is an increase of about 6% or 12,400 CMD from 2012. The increase in the capacity to supply will come from the improvement in the yield of the existing sources, in-house source, bulk supply and from the reduction of NRW to 26.13%

### IMPROVING EXISTING PRODUCTION CAPACITY

MCWD existing groundwater sources' capacity, which includes the Jacupan wellfield, is pegged at an average capacity volume of 164,200 CMD which is 81% of the total existing capacity. This capacity is higher by 3,200 CMD from the previous year. This improvement is brought about by the well rehabilitation and upgrading of pumping stations to be carried out by Environment and Water Resource - Knowledge Center (EWRKC) and Maintenance Support Services Department (MSSD). EWRKC plans to rehabilitate 12 wells by 2013. MCWD utilizes 116 groundwater wells in which 51 wells are directly feed into the water district's distribution system and the rest are directed to the seven different reservoir locations.

Further, MCWD does not only have the drive to improve its capacity but also to operate its wells at optimum efficiency. The MSSD has been evaluating and making the necessary modifications of the mechanical set up of existing wells for energy efficiency improvement.

The Bulisan Dam which is the only surface water source of the district shall only yield an average volume of 7,092 CMD which is approximately 3.4% of the existing MCWD water source. This surface water source is assumed to yield this capacity under a normal weather condition.

Month	Production (CMD)
Jan	5,560,600
Feb	5,702,300
Mar	5,502,300
Apr	5,826,600
May	5,984,800
Jun	6,067,800
Jul	6,112,500
Aug	6,407,200
Sep	6,023,400
Oct	6,441,600
Nov	5,981,400
Dec	6,703,400

PRODUCTION

At the start of 2013, MCWD will have a capacity of around 32,000 CMD from 8 private suppliers where 4 are coming from bulk supply contracts namely Mactan Rock, Foremost, Abejo North and South and 4 are from newly commissioned joint venture project located in Talamban, BC homes, Apas and Banawa. Such volume accounts for 15.7% of the total existing sources capacity of MCWD.

### ADDITIONAL IN-HOUSE SOURCING

By the end of 2013, 4 additional wells are expected to be commissioned through in-house sourcing. Its total capacity is 2,600 CMD. Below are the details of the volume and date of commissioning of the different in-house sourcing projects.

- W34R (1200 cmd) - January 2013
- NAZ1 (650 cmd) - January
- W34B (480 cmd) - January
- W35 (600 cmd) - March

### PT-OS SUPPLY

To increase our service coverage, certain expansion projects have been initiated and under construction. One very strategic location is the expansion in Picos Talamban which transits from Barangay Bacayan. Specific in-house sources have been identified to supply this expansion namely: CLUB 1, CAN 8, W34R, W34B, W35 and the excess from CAN 2 accumulating an additional 8,200 CMD. Permit problems of CLUB 1 and CAN 8 should be addressed in time with the expected completion of the uplaying this 1st quarter of 2013.

### ADDITIONAL BULK SUPPLY

Only 1 additional Joint Venture Project is expected to be operational in 2013- the 3,000 CMD in Guadalupe.

Several bulk supply offers are being entertained from Rio Verde, JICO for the supply from Carmen and Uldemna and Abejo. The supply from Abejo in Mactan will commence by the end of 2013. Other bulk supply proposals will likely be operational beyond 2013 considering negotiation, bidding leadtimes and the time to implement the infrastructure requirements.

Other supply strategies considered are acquisition of private wells and construction of artificial lakes.

Considering the water sales target, planned production as enumerated usually is about 96% of the capacity.

### NON-REVENUE WATER REDUCTION

Though it is not the sole gauge, the Non Revenue Water (%) is an important indicator of the water district's operational efficiency. Over the years, MCWD's non revenue water has been improving with 2012 having an outstanding leap in the water district's performance.

The aspired efficiency for 2013 is 26.13%. This is in accordance to the 2013 - 2020 strategic goals, wherein by 2020, the water district is expected to have 15% efficiency in its distribution system. This level of efficiency is expected to provide an additional supply capability of about 3,900 cmd.

Supporting MCWD's NRW strategic goals is the NRW reduction programs which is more focused on reducing the physical losses which comprise approximately 90% of the entire NRW of the water district. While focus is given to physical losses, other NRW programs related to the reduction of commercial losses shall be sustained like the meter maintenance program and metering of LGU withdrawals.

### NRW REDUCTION PROGRAM

#### METER MAINTENANCE

The meter maintenance program is the most established among the NRW reduction programs. The meter maintenance unit has already established the standards and life span of the meters MCWD is using. Meter accuracy for both production and consumer meters have been maintained within the acceptable level of accuracy which is 98% based on the usual random field meter testing. This success is attributable to corrective and preventative meter maintenance program employed by the water district.

The district is generally using ARAD meters. Lately though, there are other meter brands which passed the rapid meter testing, which the district is about to purchase for installation or use. This shall be at regulated quantity until such time the first batch of each meter brand shall pass the standard efficiency on the field.

Also, part of the action plan in the NRW reduction roadmap is the random field meter testing which will be

conducted on 5% of the total service connections. Though this meter testing has already been an on-going activity by MSSD, however, the population of the sample size is only less than 2%. This activity is required to attain higher confidence of the company's meter accuracy.

### METERED LGU WITHDRAWAL

Negotiations for the purpose of metering LGU withdrawal from hydrants are ongoing with PDD at the helm. The district intends to forge an MOU with the eight (8) LGU's that will allow them only to withdraw at specific metered hydrants by 2013.

### PIPELINE DECOMMISSIONING

There are 20 identified locations with pipelines to be decommissioned. This activity started in 2012 spearheaded by PMG.

### PRESSURE MANAGEMENT

Pressure management is one scheme of an effective water distribution. The Production and Distribution Department (PDD) has been quarterly monitoring the average pressure of the different areas in the distribution network. Much of these activities are only spot reading using pressure gauges installed in strategic locations. Though the results used as a reference in the operation of the distribution system, it is not entirely reflective of the actual condition. To deliver a real time pressure pattern of the entire distribution system, data loggers will be installed at strategic points that will automatically transmit data into a repository station for analysis.

The PDD together with the Hydraulic Team is currently on the process of procuring 8 pressure loggers from different manufacturers. This is to determine which type of logger is deemed appropriate and effective for the water district's use. The data derived from these loggers will be used also as reference for hydraulic network model calibration. Trial monitoring will be conducted and completed before the year ends. By then, the PDD can already determine the total quantity of loggers for procurement. These will be installed at strategic points and thereby allowing the formulation of a holistic pressure management program.



Month	Non Revenue Water (%)
Jan	26.13%
Feb	26.13%
Mar	26.13%
Apr	26.13%
May	26.13%
Jun	26.13%
Jul	26.13%
Aug	26.13%
Sep	26.13%
Oct	26.13%
Nov	26.13%
Dec	26.13%

NON REVENUE WATER

### ASSET INVENTORY

MCWD already has an established Geographic Information System (GIS) map with the geographic and attribute details. However, in several occasions, this was found to be incomplete and not entirely accurate. To bring consistency and accuracy of data between GIS and what is actually in the field, a thorough inventory of assets is required and reflected accordingly into the GIS. This strategy is the main reason for the conceptualization of the Asset Inventory Project.

The asset inventory project was approved in 2011 with a scope of locating all the existing operating assets in Mactan area with an expected duration of 10 months. The team will determine the GPS coordinates of all MCWD assets primarily the pipelines at an average of 50 meter distance per point.

However, with the unavailability of equipment for pipe location, the project was forced to conduct the activity manually. For a duration of 9 months, one survey team accomplished 12,900 linear meters of surveyed pipelines with an average distance per coordinates of 30 meters.

In 2013, a more efficient scheme for implementing asset inventory will.

For the upcoming expansion and future assets, TSG headed by the Engineering department is in the process of formulating a system that will fully ensure proper recording and mapping of these assets into the GIS map. Currently, all additional assets as well as its performance like leakage shall be outlined with a sketch map. Also, these assets will be included in the survey for its GPS coordinates by the asset inventory team.

### MAINLINE RENEWAL

Program on mainline renewal has already been established in MCWD. However, for the past years, the rate of renewal does not correspond to the rate of deterioration of the water district's distribution system.

Currently, the NRW committee has proposed a total of 16.6 kilometers of pipelines for renewal. Out of which around 7 kilometers of mainlines were already approved and expected to be implemented within the year.

There will be three batches of pipeline renewal scheduled to be implemented in 2013. However, after the evaluation of the hydraulic team, changes were made on the pipe length and sizes. Nonetheless, the implementation and completion of the said mainlines will push through as scheduled. The other batches namely batch 4 and 5 are still for hydraulic analysis evaluation and survey.

The following are the details of the mainline renewal projects:

LOCATION	PIPE SIZE (mm)	LENGTH (IAM)	BUDGET COST (PHP)
<b>BATCH 1</b>			
I Tabura St. Pardo Cebu City	200	228	4,500,000
Hb-Way Cansaga Consolacion	150	1,077	13,900,000
Alaska Mansiling, Cebu City	100	1,728	18,000,000
Magsaysay St. Pasil, Cebu City	150	366	5,000,000
P. Sanchez St. Mandlone City	200	266	
<b>BATCH 2</b>			
Campung Calero Likom	100	480	4,500,000
MEPZ, Lapulapu City	150-250	756	9,900,000
Road to Tambuh, Lapulapu City	200	354	6,800,000
Pulgoan Consolacion	100	330	3,300,000
Road to Mactan Rock, Lapulapu	200	210	3,471,000
<b>BATCH 3</b>			
Jubay Likon	200	432	6,500,000
Looc-Litson (decommissioning)	100	150	1,700,000
Poblacion, Compostela	150	480	5,400,000
Datag, Lapulapu City	200	324	6,100,000
Pajay, Lapulapu City	200	516	9,300,000

### LEAK DETECTION PROGRAM

Currently, Pipeline Maintenance Group utilizes 3 teams to leak detect a total length of more than 900 kilometers of pipelines. Its main target is to complete this activity twice a year. However, with all the factors affecting the condition of the pipelines, it is not strategic to just conduct the same frequency of detection on all areas of the distribution network. This leads to a "mesh system" strategy by first dividing the whole network into equal areas called mesh. Secondly, profile existing performances and assets of the MCWD distribution network like number of leakages, pressure, number of tapping points within each mesh. With this data, MCWD can determine which certain mesh areas may require frequent leak detection activity.

The dimension of mesh boundaries is set at 600 by 800 meters with approximately 700 meshes in the entire MCWD service area. The Mesh System strategy is expected to be completed and implemented on 1st quarter of 2013.

Also, with the aid of the newly procured leak detection equipment particularly the noise loggers, leak detection teams are expected to have higher accuracy of their leak detection activity.

### HYDRAULIC MODELING

The hydraulic model has been proven to be an indispensable tool in any water utility. Its effectiveness and efficiency in delivering information of the network's behavior in any given circumstance and moment is used primarily to manage water system and plan for expansion. With the acquisition of the WaterGems software last June 2012, it is expected that the entire MCWD network will be completely modeled by the end of 2012.

The development of the hydraulic network model is only the first stage followed by its calibration. Starting 2013, activities will be focused on calibration and fine tuning of the model to replicate actual field condition.

Though the hydraulic model is in the development stage, it is currently being used in the study of injection points of proposed bulk supplies, and in planning infrastructure projects.



## MARKETING STRATEGY

For the water district to concentrate its limited resources on great opportunities to increase sales and achieve a sustainable competitive advantage, the formulation of marketing strategies with short-term and strategic import is crucial. In 2012 majority of the effort to increase sales is through new demand. By 2013 the marketing and sales team will expand its coverage to capture a considerable part of the market, currently served by the competitors. Of the 2500 CMD target sales for commercial, 40% will come from this market or 1000 CMD.

### MARKET SURVEY



Survey is an effective tool used to gather information on product demand, usage behavior, customer perception, competitor's profile and other relevant informations useful for the development of strategies that help move the business forward.

The factors affecting the market is dynamic, it changes overtime. This for the organization to be able to have a timely response to these changes, the conduct of surveys is continual in nature, done on regular basis.

For 2013, the customer satisfaction survey shall be conducted by PAD; EWRKC shall continue with the well inventory in cities of Cebu and Talisay, as part of the competitors mapping project. CPD shall do a survey to determine the percentage of the population with access to MCWD's water supply.

### DEMAND UPDATING



MCWD has already determined the total demand within its service area starting 2011 up until 2030. It was classified into Domestic and Commercial demand and was based from National Statistics Office population, Comprehensive Land Use Plan (CLUP) of each LGU and MCWD consumption database. The study is a very important input to sourcing, expansion and distribution strategies. In 2013, MCWD will update the demand simply incorporating the updated CLUP per LGU.

Demand projection for both commercial and domestic connections will be improved. This will now include profiling and mapping of potential and existing consumers. This will start on the last quarter of 2012 to the end of 2013. This feat will further enhance our demand study which will eventually result to balanced distribution of water supply which we know is limited.

### RELIABILITY OF PRODUCT



Reducing the gap between supply and demand is the ultimate objective of the District while at the same time providing satisfying water service to existing service connections. To attain product satisfaction required by the consumers, three areas will be the point of focus, namely:

- Supply Reliability wherein 100% of existing consumers will enjoy 24/7 of service availability at a minimum pressure of 10psi.
- Water quality conforming or better than national standards stipulated in PNSDW
- Improve customer service that highlights convenience to customers from application, billing, payment, repairs, complaints resolution, technical assistance and other after sales services. The concept of one-stop shop, customer feedback system and text messaging for info dissemination to customers were among the things considered for implementation in 2013.

### PLACEMENT OF PIPELINES



Through the demand study, areas with underutilized distribution lines and unreached potential consumers were identified.

To complement the output of the promotion efforts for the underutilized pipelines, an estimated 66,000 linear meters of distribution lines were identified for expansion.

The basis of identifying these areas is basically the demand consistent with the profile as specified in the vision 60/80 in 2020.

Prioritization for expansion pose a big challenge to the

district. This time, prioritization will be linked to the result of the hydraulic analysis. The hydraulic team is working on a distribution strategy that assumes the specific source locations and divides the distribution system into different supply areas. This activity will be completed in December 2012. The development of the holistic expansion plan until 2020 will then commence which is set to be completed in the 1st quarter of 2013.

However there are expansion projects that will be implemented in 2013 with an estimated cost of 225M pesos as follows:

#### Ongoing Infrastructure Projects (Contract)

1. Proposed Pipeline expansion for Calabunan Bulk Water Supply
2. Proposed Mactan Water System Improvement Program (Package 9)
3. Proposed 300mm diameter D.I. Distribution line along Picos, Talamban
4. Proposed D.I. Distribution line along Unipaad-Opao, Mandaue City

#### Ongoing by administration projects

1. Lagtang Distribution Line at Lagtang, Talisay
2. Cash Estate Distribution Line

#### Others

1. Monterrazas (pipe-laying)
2. Mactan Bubbles - MAC 6 & 7 Connecting pipelines
3. Mactan Bubbles - MAC 8 Connecting pipeline
4. MAC 10 and MAC 11 Pipeline network
5. Proposed 300 mm dia. D.I. water distribution mains along Brgy. Canduman, Mandaue City to Niño Tighao, Talamban, Cebu

o 75 mm pe X 280 LM D.I. Dist. Line Project at LTHAI, Tipolo, Mandaue City

o 150 mm distribution line for Modena subdivision

o 150 mm and 75 mm distribution line for Eastgate residences

o Distribution system for St. Anthony Village

o Distribution system for Berjane subdivision

o 250 mm X 600 LM expansion line at Malinao, Agus, Lapulapu City

o Distribution main project inside Biosang relocation site, Talisay City

“EVERY SITE WITH A PIPE”



• One key contributor to the realization of our 60/80 vision in 2020 specifically on the achievement of our 60% domestic coverage target is the WASEC expansion projects.

• The following WASEC projects were already approved by CAPEX committee for implementation in 2013:

### COMPETITIVE PRICING



To attract and retain big consumers, the first 30 cubic meters' tariff will be increased while at the same time increasing the discount for 31 cum and up consumption applying the same rate structure. This will decrease subsidy for small consumers contrasted proportionately with lower effective rate for commercial consumers thereby maintaining the same effective rate.

Upon approval from the Local Water Utilities Administration and completing required public hearings, the following will be implemented:

- Increase the rate for first 30 cum by 1.8% and reduce on-time payment discount for 3/8-inch, 1/2-inch and 3/4-inch from 5% to 2%.
- Maintaining the rate for the uppermost bracket while increasing the discount for big SC's who pay on-time at maximum of 2.5% based on consumption level. The increase in discount shall be taken from the fresh revenues that will result from the rates increase.
- The increased discount will be offered to SC's with meter size 1-inch and up, based on the assumption that these SC's consume high volume, and as such are classified as MCWD's commercial consumers.
- Create implementing guidelines for the discount scheme for implementation in 2013.

“RISE WITH BEST PRICE”

### AGGRESSIVE PROMOTIONS



Being a government entity automatically connotes lousy and inefficient service with a smudge of corruption always associated to the system. To change this perception, a new corporate image will be projected thru promotional programs taking into account the holistic projection of the company's image towards its consumers, stakeholders and the public in general.

All promotions will be focused on market awareness and corporate branding using different media means. Promotional programs will be coordinated with scheduled projects such as distribution line expansion, bulk water supply, and suspension lifting. This will be a localized activity targeting specific and predetermined market to allow optimum impact at minimal cost. The activities detailed in the upcoming release of Marketing Plan by CPD will be jointly implemented by CSC-headed by PAD and supported by concerned unit from PDD, ED, PMO, EWRKC, GSD. Major activities would include the following:

- TV Commercial. Designed to promote corporate image as a whole while at the same time differentiating our product from competitors. TV commercial promoting MCWD water service, environment protection and sanitation will be the focal point of the story behind each ad.
- Radio Program. Continuing the usual presence on the air, the program will be coordinated with the ongoing projects, promotions and related activities to target and connect to consumers directly benefiting from the project.
- Internet Access. With the proliferation of mobile devices and social media, people are more connected to the web more than ever. It is a ripe promotional avenue commonly tapped by corporation around the world for brand recognition and means also as a customer feedback mechanism.
- Billboard and Signage. Strategically located facilities are ideal for billboard and signage placement. The locations initially identified for placement will be the following:
  - o MCWD main office building wall facing the harbor targeting those inbound and outbound seafarers and passengers. Also, the wall facing Magellan's Cross for all tourist and passersby to see.

o Pusok reservoir due to its towering height and proximity to international airport.

o Strategic production wells and facilities located beside roads, urban and commercial areas.

#### SCHOOL BRIGADE

An activity intended primarily to educate elementary and high school students of the source, production, usage, cost and impact of water. The medium of delivery will be designed such that it will be interactive, audio-visual and science based. A year round schedule will be linked to areas with upcoming or on-going infra or supply projects taking into consideration that all pertinent permits and clearances has been approved and granted by school administrators. CSB-PAD will lead the preparation, coordination and implementation assisted by technical departments during the conduct of the program.

#### LGU LINKAGE

The Local Government Units is an effective ally of the district in its push to expand its business and services but on the flipside could be a significant hindrance for advancement. To improve relationship and foster cooperation with LGUs, top level coordination must be initiated bypassing the usual circuits channel for projects to be granted support and permits.

Major achievement has been reach for the year 2012 allowing the District to enter into a tripartite agreement with the City of Mandaue and NWRB that will bring more control on the management of the underground water source to MCWD. There is also advance negotiation with Talisay City on similar agreement that if fully realized by 2013 will bring four working infra or supply projects within the service area including cities of Cebu, Lapulapu and Mandaue.

Two programs and activities will be designed and implemented to bring about mutually beneficial projects to LGUs.

- High level collaborative meeting between MCWD top management and LGU leadership to lay down MCWD's plans and projects within their locality. This activity is aimed to solicit cooperation among LGUs, create multilateral agreements for sustainable water supply and eliminate impediments in upcoming projects. With the positive reception given by Lapulapu City Mayor when Execom presented projects, on-going and planned in the locality, this brought a clearer understanding of what the District is doing. The Execom will take the lead in replicating the same activity to other LGU as CPD and PAD takes the responsibility in coordination and preparations.

• Institutionalize and standardize the Corporate Social Responsibility (CSR) intended for special projects to extending water service to isolated or marginalized constituents within the LGU. CSR budget allocation will be provided to LGUs that have signed tripartite agreement with the District. CPD will be responsible in providing decision support information and implementing guidelines for Execom's approval and will be implemented starting 2013 by CSB-PAD.

### ESTABLISHMENT OF MARKETING & SALES SYSTEM



Considering that marketing and sales are two separate functions but mutually supporting each other, the boundary between the two can cross at times needing a clear delineation of functions and responsibilities. Presently, the marketing function is under Corporate Planning Department (CPD) while partly taking the responsibilities of directly selling to commercial (bulk) consumers. The selling part of CPD covers the prospecting, negotiation, closing the deal and related facilitation between concerned departments. Public Affairs Department (PAD) is taking the responsibilities of maintaining relationship with key accounts and perform minor marketing activities. Service Connection Installation Department (SCID) is responsible for all service connection related function but yield some of it to CPD as mentioned earlier. The delineation of functions and responsibilities will be considered in the organizational restructuring.

The process from prospecting to water service delivery shall be reviewed with the objective of improving its efficiency and effectiveness. "Exit interviews" for those who opt for water service disconnection shall form part of the process.



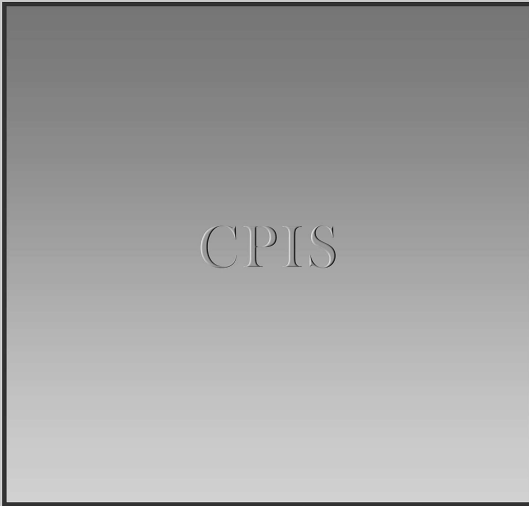
## MONITORING STRATEGY

### CPIS



The corporate performance has been monitored through four parameters namely production, water sales, number of service connection and NRW. Starting 2013, revision in the point system and target setting scheme shall be adapted for bonus purposes.

In the table shown below the third tier is the corporate target while the fifth tier is an improvement of the previous year's performance. The rest of the tiers are pegged proportionately.



**“YOU CAN'T CONTROL WHAT YOU CAN'T MEASURE”**

## KPI IMPLEMENTATION



An effective performance measurement system helps to drive an organization towards the achievement of its strategic goals and is the basis for management decision making and Key Performance Indicators measure the achievement of strategy implementation. A strategy should be cascaded down the organization to measure its achievement at both corporate-wide and unit levels and to define a decision-making framework to motivate management and employees. It is foremost to determine and define each KPI of all organizational units taking into account that it aligns to the Vision 60/80 in 2020.

A KPI Manual will be created to serve as a guide to the reader and all personnel who are responsible in aspects of performance management. The manual shall also define the process of performance management from collecting the required data and calculating the KPI measure, reporting actual performance to senior management and the Board of Directors, interpreting the measure results and deciding what action to take, and updating the measurement method as the business changes.

In 2013, CPD shall also formulate the system for the KPI monitoring, establish KPI baseline information and coordinate with MIS for an automated implementation.

- Integrated new service connection installation. This is to centralize to one unit all new sc installation activities regardless of meter size. With the availability of technical standard on design, installation and materials, SCID will be equipped with needed resources to install large meter.

- Application process simplification. The aim is to improve efficiency and decrease further the lead time from receipt of application to installation and commissioning.

- Reclassification of our domestic and commercial connections. Current practice is done by classifying domestic and commercial connections based on meter sizes (1/2 inch diameter - domestic; more than 1/2 inch diameter - commercial). After years of monitoring, it is determined that accurate classification should be based on consumption. Connections that are consuming 30 cu. m or less per month are considered domestic and those that are consuming more than 30 cu.m per month will be considered commercial.

- Cleansing of the existing data. MISD in coordination with CPD will start the process on November 2012 until October of 2013 focusing first on commercial service connections based on the new classification followed by domestic connections.

There will be a continual evaluation of new data processes which will set off every January of the year. This will further develop the data monitoring resulting to more factual and accurate forecast.

## INTEGRATION OF CUSTOMER DATABASE PROGRAM



The application process is the doorway to a lasting and vibrant customer relationship offering convenient and satisfying customer service. Getting the needed consumer information correct and complete from the moment they apply will result to an efficient and effective delivery of water services right from the start. The same consumer information is vital for accurate monitoring and future operational planning. The objective is to have a more realistic CSD per type of meter use.

Improvements in the application process will be introduced with an objective to bring increase efficiency and accurate database. The following will be the focus for improvement:

**“QUANTIFY TO QUALIFY”**



## HUMAN RESOURCE STRATEGY

It is the combination of effective & efficient system and competent employees that will push the organization forward. To date, system improvements have its share of accomplishment though others are still “work-in-progress”. But we are yet to formulate an HR program not only to complement the systems' changes but support the District's strategic goal in general. The following HR strategies must be in place:

### ORGANIZATIONAL RESTRUCTURING



- The current organization structure nor the recent model structure cannot support our goal in 2020. There are functions that are not included in both structures which are very important and have strategic impact.

- There is a need to review the groupings to ensure clustering of the same mandates to enhance information and communication flow within the organization.

- There is a need to redefine unit functions to become output oriented.

### INSTITUTIONALIZATION OF HR PLANNING



This concerns the development of human resource in the right quantity, at the right place, with right utilization, with the right skill and with the right approach to the development of its potential. The following initiatives also support manpower planning:

- Improve Training and Development Strategy

While the competency gap is one input in formulating the training program, it is also vital that HR considers trainings that support the following:

- o Creating a pool of readily available & adequate replacements for personnel who leave or move up in the organization (specially for key functions).

- o Enhancing the company's ability to adapt to advances in technology and process improvements.

- o Culture change having output oriented and unified mindset.

- Institutionalize the System for Job and Accountabilities Updating

In light with the changes brought about by process upgrading, technology changes, output requirement changes, etc.

- Review and Update of Position Leveling

To match up with the changes in functions and to correct the current distortion in position against function which has been the subject of complaints of several employees.

- Improve the Performance Appraisal System

To reflect real outputs and not merely a PAR which measures efforts. Adopting the KPIs as a performance measure is a good point to start.

- As to the number of employees, the district aims to hit an SC-to-Employee ration of 200:1 from the current ratio of 108:1. Outsourcing of other non-core processes/activities is considered to provide significant improvement in the productivity ratio.

### UNIFIED MINDSET



The challenge ahead is set by the corporate directives for a Vision 60/80 in 2020. The success of this vision rest on the shoulders of not only the Leaders of MCWD but also on all employees of MCWD. There needs to be common understanding and coordinated actions to reach a common objective. With this, there must be a program to inculcate in every heart and mind of each employee the following:

- Vision 60/80 in 2020 - each group and all its personnel will undergo a series of seminar to explain the vision, strategies required to achieve such vision and their individual responsibility and contribution to the vision.

- Moral and values enhancement program. A person can only be truly changed if the change happens from the heart. Moral standards must be clearly set and values established in a more spiritual and personal level.

## NEW CORPORATE IMAGE



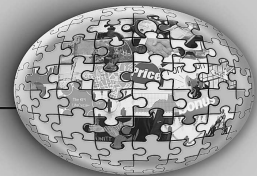
A new corporate image will be instituted taking into account the holistic projection of the company's image towards its consumers, stakeholders and the public in general. As reinforcement to the unified mindset program, the new corporate image will be the embodiment of the corporate changes happening from the inside. Related programs and accountable units will be as follows:

- Continual improvement in the delivery of services.

- Corporate signature in the form of employee uniform.

- MCWD Mascot with the attributes of water, environment and with local cultural touch.

- Corporate presence in industry and business related events.



## 2013 FISCAL PROGRAM

### I. COST MANAGEMENT

In 2013 Opex per SC is projected to stand at 599 or 1.9% higher than that of last year. This will give MCWD a net income ratio of 11.5%. To reduce the Opex per SC, cost control measures shall be implemented in 2013 as follows:

- Reduction of Personnel Costs
  - Reduction of Overtime
  - Reorganization and Review of Staffing Pattern
- Review of processes that can be outsourced
- Focused monitoring of major Opex
  - Power Cost
  - Professional Services
  - Fuel
  - Repairs and Maintenance
- Availment of purchase discounts for early payment

### II. INCREASE CAPEX UTILIZATION

MCWD spent an estimated Php67 Million for capital expenditures in 2012 for a utilization rate of 10%. For 2013, management is hopeful it will significantly increase capex disbursements to Php631 Million by addressing the following implementation issues:

- Setting a maximum period of budget availment
- Hastening BAC processing
- Speeding up Lot/ROW acquisition or clearance
- Improving LGU coordination
- Stricter project supervision and monitoring

## 資料 7 参考資料

### 資料 7-1 資料収集リスト

番号	資料内容	詳細	資料形態			入手先
6-1	MCWD 施設図 (コンポステラ地区)	MCWD 給水区域内の施設図 (北部)	1set	JPEG	コピー	MCWD
6-2	MCWD 施設図 (マクタン島)	MCWD 給水区域内の施設図 (東部)	1set	JPEG	コピー	MCWD
6-3	MCWD 施設図 (メトロセブ北)	MCWD 給水区域内の施設図 (中部)	1set	JPEG	コピー	MCWD
6-4	SCADA 対象 流量計の位置図	各 DMA 内の既存と新規流量計の位置図	1set	PDF	コピー	MCWD
6-5	SCADA 対象 DMA	MCWD 給水区域内の DMA と流量計設置点数	1set	PDF	コピー	MCWD
6-6	SCADA 対象 深井戸	深井戸に設置する流量計数量と深井戸からの送水先	1set	PDF	コピー	MCWD
6-7	SCADA 対象 配水池	配水池に設置する流量計数量、深井戸と DMA の関係	1set	PDF	コピー	MCWD
6-8	2013 企業計画	2020PLAN に向けた単年度 (2013 年)版の施策集	1set	PDF	コピー	MCWD