

Table C.10 (2) Number of Those Who Contracted Major Diseases in the Last Three Years by Kecamatan

(Unit : No. of Cases per 1,000 Population)

CODE NUMBER	NAME OF KECAMATAN	Malaria	Gastro-enteritis	Cholera	Tuberculosis	DHF	Typhoid	Dysentery	Diphtheria	Measles		Hepatitis		Skin Diseases	Total
										A	B	A	B		
5100	MATRAMAN	0.0	3.0	0.0	0.0	3.0	6.0	3.0	0.0	0.0	6.0	3.0	6.0	30.0	
5200	PULO GADUNG	2.5	67.0	5.0	0.0	2.5	7.4	5.0	5.0	0.0	0.0	0.0	27.3	121.7	
5300	JATINEGARA	1.2	15.6	1.2	0.0	2.4	9.6	13.2	6.0	2.4	1.2	1.2	7.2	61.2	
5400	KRAMAT JATI	0.0	18.0	1.5	0.0	1.5	6.0	1.5	4.5	0.0	0.0	0.0	12.0	45.0	
5500	PASAR REBO	1.0	5.0	0.0	0.0	0.0	4.0	5.0	0.0	0.0	0.0	0.0	2.0	17.0	
5600	CAKUNG	0.0	12.2	0.0	2.4	2.4	2.4	0.0	0.0	2.4	0.0	0.0	12.2	34.0	
5000	JAKARTA TIMUR	0.8	17.3	1.1	0.3	1.6	6.0	5.5	2.7	0.8	0.8	0.5	9.3	6.7	
10000	JAKARTA	2.1	25.9	1.0	0.5	3.2	3.9	6.2	2.0	1.4	0.5	0.5	9.3	56.5	

Note : DHF = Dengue haemorrhagic fever; Skin diseases = kadas, panu, bisul, etc.

Source : JICA

Table C.11 Number of Infantile Mortality Cases in the Last Three Years by Kecamatan

(Unit : No. of Cases per 1,000 Infants)

CODE NUMBER	NAME OF KECAMATAN	NO. OF INFANTILE MORTALITY CASES
1100	GAMBIR	0.0
1200	SAWAH BESAR	0.0
1300	KEMAYORAN	0.0
1400	SENEN	0.0
1500	CEMPAKA PUTIH	13.9
1600	MENTENG	0.0
1700	TANAH ABANG	14.3
1000	JAKARTA PUSAT	4.4
2200	PENJARINGAN	46.8
2300	TANJUNG PRIOK	0.0
2400	KOJA	33.5
2500	CILINCING	13.7
2000	JAKARTA UTARA	25.0
3100	CENKARENG	0.0
3200	GROGOL PETAMBURAN	43.2
3300	TAMAN SARI	12.1
3400	TAMBORA	0.0
3500	KEBON JERUK	8.9
3000	JAKARTA BARAT	13.1
4100	TEBET	26.7
4200	SETIA BUDI	24.3
4300	MAMPANG PRAPATAN	9.1
4400	PASAR MINGU	46.4
4500	KEBAYORAN BARU	9.7
4600	KEBAYORAN LAMA	26.9
4700	CILANDAK	40.0
4000	JAKARTA SELATAN	25.7
5100	MATRAMAN	0.0
5200	PULO GADUNG	13.3
5300	JATINEGARA	13.1
5400	KRAMAT JATI	8.1
5500	PASAR REBO	21.6
5600	CAKUNG	13.3
5000	JAKARTA TIMUR	13.4
10000	JAKARTA	16.3

Note : infants = population equal to and under 7 years of age

Source : JICA

Table C.12(I) River Water Quality Standards in DKI Jakarta (Governor's Decree No.1608.1988)

Parameter	Unit	A Drinking Water Source		B Fishery		C Agriculture		D Aquatic Biota	
		Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit
I. PHYSICAL									
- Conductivity	micro-mhos/cm	500	500	500	750	750	750	1000	1500
- Turbidity	NTU	100	150	50	100	100	150	100	150
- Temperature	C	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
- Color	color unit	50	100	50	100	50	100	-	-
- Dissolved solids	mg/l	500	500	-	-	-	-	-	-
II. CHEMICAL									
- NH ₄ - N	mg/l	0.01	2	1	2	-	-	1	1
- Hg	mg/l	0.0005	0.001	0.002	0.002	0.002	0.005	0.002	0.002
- As	mg/l	none	0.05	0.05	0.05	0.05	0.05	0.05	0.05
- Ba	mg/l	none	1	1	1	1	1	1	1
- Fe	mg/l	1	2	1	2	-	-	1	3
- B	mg/l	1	1	-	-	0.7	0.7	-	-
- F	mg/l	0.5-1.5	0.5-1.5	1	1	1	1	1.5	1.5
- H ₂ S	mg/l	none	none	none	0.002	-	-	none	none
- Cd	mg/l	none	0.01	0.01	0.01	0.01	0.01	0.01	0.01
- Cl	mg/l	25	100	12	20	20	50	-	-
- Cr	mg/l	none	0.02	0.05	0.05	0.05	0.05	0.05	0.05
- Hardness	mg/l	100	100	60	100	-	-	60-100	60-100
- Co	mg/l	-	-	0.5	0.5	-	-	-	-
- Mn	mg/l	0.05	1	0.5	0.5	-	-	-	-
- Ni	mg/l	0.1	0.1	0.01	0.01	-	-	-	-
- NO ₃ -N	mg/l	5	10	10	10	10	10	10	10

Table C.12(2) River Water Quality Standards in DKI Jakarta (Governor's Decree No.1608,1988)

Parameter	Unit	A		B		C		D	
		Drinking Water Source		Fishery		Agriculture		Aquatic Biota	
		Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit
II. CHEMICAL (Continued)									
- NO ₂ -N	mg/l	none	2	1	2	-	-	1	1
- Ag	mg/l	none	none	-	-	-	-	-	-
- pH	mg/l	6 - 8.5	6 - 8.5	6 - 8.5	6 - 8.5	6 - 8.5	6 - 8.5	6 - 8.5	6 - 8.5
- PO ₄ -P	mg/l	0.5	0.5	0.2 - 0.5	0.2 - 0.5	0.2	0.2	0.5	0.5
- Se	mg/l	none	none	0.02	0.02	0.01	0.01	0.04	0.04
- Zn	mg/l	1	1	0.2	0.2	1	1	1	1
- SO ₄	mg/l	50	100	12	50	12	25	12	15
- Cu	mg/l	none	0.1	0.02	0.02	0.05	0.05	0.05	0.05
- Pb	mg/l	0.05	0.1	0.03	0.03	0.05	0.05	0.05	0.05
- Ca	mg/l	-	-	-	-	-	-	25-40	25-40
III. ORGANIC									
- Carbon chloroform extract	mg/l	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
- M.Blue active substance	mg/l	none	1	-	-	-	-	-	-
- Oil&grease	mg/l	none	none	none	none	none	none	none	none
- CN	mg/l	none	0.05	0.01	0.01	0.02	0.02	0.2	0.2
- Phenol	mg/l	0.001	0.05	0.01	0.02	0.02	0.2	0.2	0.2
- Detergent	mg/l	-	-	0.1	0.5	0.02	0.25	0.2	0.2
- Pesticide	mg/l	none	none	none	none	none	none	none	none
- Organo-chlorine	mg/l	none	none	none	none	none	none	none	none
- Organo-phosphorou	mg/l	none	none	none	none	none	none	none	none

Table C.12(3) River Water Quality Standards in DKI Jakarta (Governor's Decree No.1608.1988)

Parameter	Unit	A		B		C		D	
		Drinking Water Source		Fishery		Agriculture		Aquatic Biota	
		Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit	Desirable Limit	Permissible Limit
IV. SPECIAL									
- BOD5 (20 °C)	mg/l	5	10	20	20	20	20	30	30
- COD (Cr ₂ O ₇)	mg/l	10	20	30	30	30	30	50	50
- DO	mg/l	>3	>3	>5	>3	>4	>3	>3	>3
- S S	mg/l	100	150	100	100	200	200	200	200
- SAR	meq/l	-	-	-	-	10-18	10-18	-	-
- Na	%	-	-	-	-	40	50	-	-
V. BACTERIOLOGY									
- Total bacteria	MPN/100 ml	10 x 10 ³	10 x 10 ³	20 x 10 ³	20 x 10 ³	-	-	10 x 10 ³	10 x 10 ³
- Fecal coliform	MPN/100 ml	20 x 10 ²	20 x 10 ²	40 x 10 ²	40 x 10 ²	-	-	20 x 10 ²	20 x 10 ²

Parameter	Unit	Tourism and Recreation				Conservation of Marine Biota				Mining and Industry			
		Swimming/ Diving		Public/ Aesthetics		Fishery		Marine Park		Raw Material/ Processing		Cooling Water	
		Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit
I. PHYSICAL													
1. Color	color unit	50	30	50	30	50	30	50	30	50	30	-	
2. Odor		natural	none	natural	none	natural	none	natural	none	natural	none	-	
3. Transparency	m	>10	>30	natural	natural	>3	>5	>10	>30	natural	natural	-	
4. Turbidity	NTU	30	10	-	-	30	5	30	5	-	-	-	
5. SS	mg/l	23	20	-	-	80	25	80	25	200	25	1000	
6. Floating solids		none	none	none	none	none	none	none	none	natural	natural	natural	
7. Oil film		none	none	none	none	none	none	none	none	none	none	none	
8. Temperature	°C	32	26-30	-	-	natural	natural	natural	natural	-	-	natural	
II. CHEMICAL													
1. pH		6-9	6.5-8.5	-	-	6-9	6.5-8.5	6-9	6.5-8.5	6-9	6.5-8.5	6-9	
2. Salinity	%	natural	natural	-	-	natural	natural	natural	natural	natural	natural	-	
3. DO	mg/l	>5	>5	-	-	>4	>6	>4	>6	-	-	-	
4. BOD ₅	mg/l	20	10	-	-	45	25	45	25	20	10	-	
5. COD (Cr ₂ O ₇)	mg/l	40	20	-	-	80	40	80	40	40	20	-	
6. NH ₄ -N	mg/l	4	none	-	-	1	0.3	0.3	0.1	-	-	-	
7. NO ₂ -N	mg/l	none	none	-	-	none	none	none	none	-	-	-	
8. CN	mg/l	0.20	0.05	-	-	0.20	0.5	0.20	0.5	0.20	0.5	-	
9. H ₂ S	mg/l	-	-	-	-	0.03	0.01	0.03	0.01	-	-	-	
10. Crude oil	mg/l	3	none	5	none	5	none	5	none	2	none	-	

Table C.13 (2) Guideline for Marine Water Quality KEP-02/MENKLIH/1/1988

Parameter	Unit	Tourism and Recreation				Conservation of Marine Biota				Mining and Industry			
		Swimming/ Diving		Public/ Aesthetics		Fishery		Marine Park		Raw Material/ Processing		Cooling Water	
		Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit
11. Phenol compound	mg/l	0.002	none	-	-	0.002	none	0.02	none	-	-	-	-
12. DDT	mg/l	0.042	none	-	-	0.02	none	0.02	none	0.02	none	-	-
13. PCB	mg/l	0.001	none	-	-	0.001	none	0.001	none	0.001	none	-	-
14. Surfactants	mg/l												
15. Metal/semi-metal	MBAS	0.5	none	-	-	1.0	none	1.0	none	1.5	none	-	-
- Hg	mg/l	0.005	0.0001	-	-	0.003	0.0001	0.006	0.0001	0.005	0.0001	0.0001	-
- Cr(VI)	mg/l	0.01	0.0004	-	-	0.01	0.0004	0.05	0.0001	0.01	0.0004	0.0004	-
- As	mg/l	0.05	0.0026	-	-	0.01	0.0026	0.01	0.0026	0.05	0.0026	0.0026	-
- Se	mg/l	0.06	0.00045	-	-	0.005	0.00045	0.005	0.00045	0.06	0.00045	0.00045	-
- Cd	mg/l	0.01	0.00002	-	-	0.01	0.00002	0.01	0.00002	0.01	0.00002	0.00002	-
- Cu	mg/l	1	0.001	-	-	0.06	0.001	0.06	0.001	1	0.001	0.001	-
- Pb	mg/l	0.05	0.00002	-	-	0.01	0.00002	0.075	0.00002	0.05	0.00002	0.00002	-
- Zn	mg/l	15	0.002	-	-	0.1	0.002	0.01	0.002	15	0.002	0.002	-
- Ni	mg/l	0.1	0.007	-	-	0.002	0.007	0.1	0.007	0.1	0.007	0.007	-
- Ag	mg/l	0.05	0.0004	-	-	0.05	0.0003	0.05	0.0003	0.05	0.0004	0.0004	-
III BIOLOGY													
1. E. Coliform	cells/ 100ml	1000	none	-	-	1000	none	1000	none	1000	none	1000	none
2. Pathogens	cells/ 100ml	none	none	-	-	none	none	none	none	none	none	none	none
3. Plankton		no bloom	no bloom	-	-	no bloom	no bloom	-	-	no bloom	no bloom	no bloom	-

Table C.13 (3) Guideline for Marine Water Quality KEP-02/MENKHL/I/1988

Parameter	Unit	Tourism and Recreation				Conservation of Marine Biota				Mining and Industry			
		Swimming/ Diving		Public/ Aesthetics		Fishery		Marine Park		Raw Material/ Processing	Cooling Water		
		Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit	Permis- sible Limit	Desir- able Limit		
IV	RADIO- ACTIVITY												
1	Alpha	1	none	-	-	1	none	1	none	1	none	-	-
2	Beta	100	none	-	-	100	none	100	none	100	none	-	-
3	Sr-90	1	none	-	-	1	none	1	none	1	none	-	-
4	Ra-226	3	none	-	-	3	none	3	none	3	none	-	-

Table C.14(1) Effluent Water Quality Standards for Industry
in DKI Jakarta (Governor's Decree No. 1608, 1988)

	Parameter	Unit	Standard Value
I.	PHYSICAL		
	Turbidity	NTU	100
	Temperature	C	38
	Color	color unit	50
II.	CHEMICAL		
	Hg	mg/l	0.002
	NH ₃ -N	mg/l	5.0
	As	mg/l	0.1
	Fe	mg/l	5.0
	B	mg/l	1
	F(total)	mg/l	2
	PO ₄ -P	mg/l	1.0
	Cd	mg/l	0.05
	Cl ₂	mg/l	1
	Cl	mg/l	100
	Cr(total)	mg/l	1.0
	Cr(VI)	mg/l	0.5
	Total hardness	mg/l as CaCO ₃	100
	Ni	mg/l	0.1
	NO ₃ -N	mg/l	10
	NO ₂ -N	mg/l	1.0
	pH	mg/l	6-9
	Zn	mg/l	2
	SO ₄	mg/l	100
	H ₂ S-S	mg/l	0.05
	Cu	mg/l	1
	Pb	mg/l	0.1
III.	ORGANIC		
	- Phenol	mg/l	0.5
	- Oil and grease	mg/l	5.0
	- Methylene blue active substance	mg/l	1
	- CN	mg/l	0.05
	- KMnO ₄ value	mg/l	50
IV.	SPECIAL		
	- BOD	mg/l	75
	- COD (Cr ₂ O ₇)	mg/l	100

(To be Continued)

Table C.14(2) Effluent Water Quality Standards for Industry
in DKI Jakarta (Governor's Decree No. 1608, 1988)

	Parameter	Unit	Standard Value
IV.	SPECIAL(Continue)		
	- SS	mg/l	100
	- Dissolved solids	mg/l	500
	- Settleable solids	mg/l	100
	- Pesticide	according to the Pesticide Commission	
	- Radioactivity	according to BATAN	

Table C.15 Effluent Water Quality Standards for
Electro Plating (Copper and Nickel)
Proposed by OSMPE

Copper

Parameter	Concentration (mg/l)	Monthly Allowable Average Loading (mg/m ²)	N.T.B.E. Loading (mg/m ²)	Sample Type	Minimum Sample Frequency
Cu	3.0	300	900	Composite	1/mo
CN	0.5	50	150	Composite	1/mo
Cd	0.05	5.0	15	Composite	1/mo
Metals(total)	8.0	800	2400	Composite	1/mo
TSS	60.0	6000	18000	Composite	3/wk
pH	6.0-9.0 units	-	-	grab	daily
Effluent Flow	-	-	-	-	daily

NICKEL

Parameter	Concentration (mg/l)	Monthly Allowable Average Loading (mg/m ²)	N.T.B.E. Loading (mg/m ²)	Sample Type	Minimum Sample Frequency
Ni	5.0	500	1500	Composite	1/mo
Cd	0.05	5.0	15	Composite	1/mo
Metals (total)	8.0	800	2400	Composite	1/mo
TSS	60.0	6000	18000	Composite	3/wk
pH	6.0-9.0 units	-	-	grab	daily
Effluent Flow	-	-	-	-	daily

Based on an effluent flow of 100 L per m² of metal plated

Source: Industrial Wastewater Standards for Indonesia (draft),
Background Document, May 1989, Office of State Minister
for Population and Environment

Table C.16 Effluent Water Quality Standards for
Electro Plating (Chromium and Zinc)
Proposed by OSMPE

CHROMIUM

Parameter	Concentration (mg/l)	Monthly Allow- able Average Loading (mg/m ²)	N.T.B.E. Loading (mg/m ²)	Sample Type	Minimum Sample Frequency
Cr6+	0.3	30	90	Composite	1/mo
Cr(total)	2.0	200	600	Composite	1/mo
Metals	8.0	800	2400	Composite	1/mo
Cd	0.05	5.0	15	Composite	1/mo
TSS	60.0	6000	18000	Composite	3/wk
pH	6.0-9.0 units	-	-	grab	daily
Effluent Flow	-	-	-	-	daily

ZINC

Parameter	Concentration (mg/l)	Monthly Allow- able Average Loading (mg/m ²)	N.T.B.E. Loading (mg/m ²)	Sample Type	Minimum Sample Frequency
Cr6+	0.3	30	90	Composite	1/mo
C r (total)	2.0	200	600	Composite	1/mo
Metals	8.0	800	2400	Composite	1/mo
Cd	0.05	5.0	15	Composite	1/mo
TSS	60.0	6000	18000	Composite	3/wk
pH	6.0-9.0 units	-	-	grab	daily
Effluent Flow	-	-	-	-	daily

Based on an effluent flow of 100 L per m² of metal plated

Source: Ibid.

Table C.17 Effluent Water Quality Standards for
Leather Tanning
Proposed by OSMPE

Parameter	Concentration (mg/l)	Monthly Allow- able Average Loading (kg/t)	N.T.B.E. Loading (kg/t)	Sample Type	Minimum Sample Frequency
BOD ₅	100	5.0	15.0	Composite	1/wk
COD	250	12.5	37.5	Composite	3/wk
TSS	100	5.0	15.0	Composite	3/wk
Chromium (total)	2.0	0.1	0.3	Composite	1/mo
Oil&Grease	5.0	0.25	0.75	Composite	3/wk
NH ₄ -N	10.0	0.50	1.5	Composite	1/wk
pH	6.0-9.0 units	-	-	grab	daily
Effluent Flow	-	-	-	-	daily

Based on an effluent flow of 50 m³ per tonne of Hide produced.

Source: Ibid

Table C.18 Effluent Water Quality Standards for
Textile
Proposed by OSMPE

Parameter	Concentration (mg/l)	Monthly Allow- able Average Loading (kg/t)	N.T.B.E. Loading (kg/t)	Sample Type	Minimum Sample Frequency
BOD ₅	85	8.5	25.5	Composite	1/wk
COD	250	25	75	Composite	3/wk
TSS	60	6.0	18	Composite	3/wk
Phenols	1.0	0.1	0.3	Composite	1/wk
Cr (total)	2.0	0.2	0.6	Composite	1/mo
Oil & Grease	5.0	0.5	1.5	Composite	3/wk
pH	6.0-9.0 units	-	-	grab	daily
Effluent Flow	-	-	-	-	daily

Based on an effluent flow of 100 m³ per tonne of Material produced.
Equivalent to approximately 100 m³ per 4090 yards of 44 inch width material
(or approximately 3775 meters of 1.14 meters width material).
Based on the weight of material being 200 g per square yard.

Source: Ibid.

Table C.19 Effluent Water Quality Standards for Hotels (3,4 & 5 Stars) Proposed by OSMPE (DOMESTIC WASTEWATER TREATMENT)

Parameter	Concentration (mg/L)	Sample Type	Sample Frequency
BOD₅	50	Composite	1/wk
TSS	50	Composite	1/wk

Due to the urban locations of most hotels and the resulting space constraints, package biological treatment systems are recommended. There are several package treatment systems all employing some form of modified activated sludge treatment process. These systems do require regular maintenance and operator knowledge to maintain treatment efficiencies.

Source: Ibid.

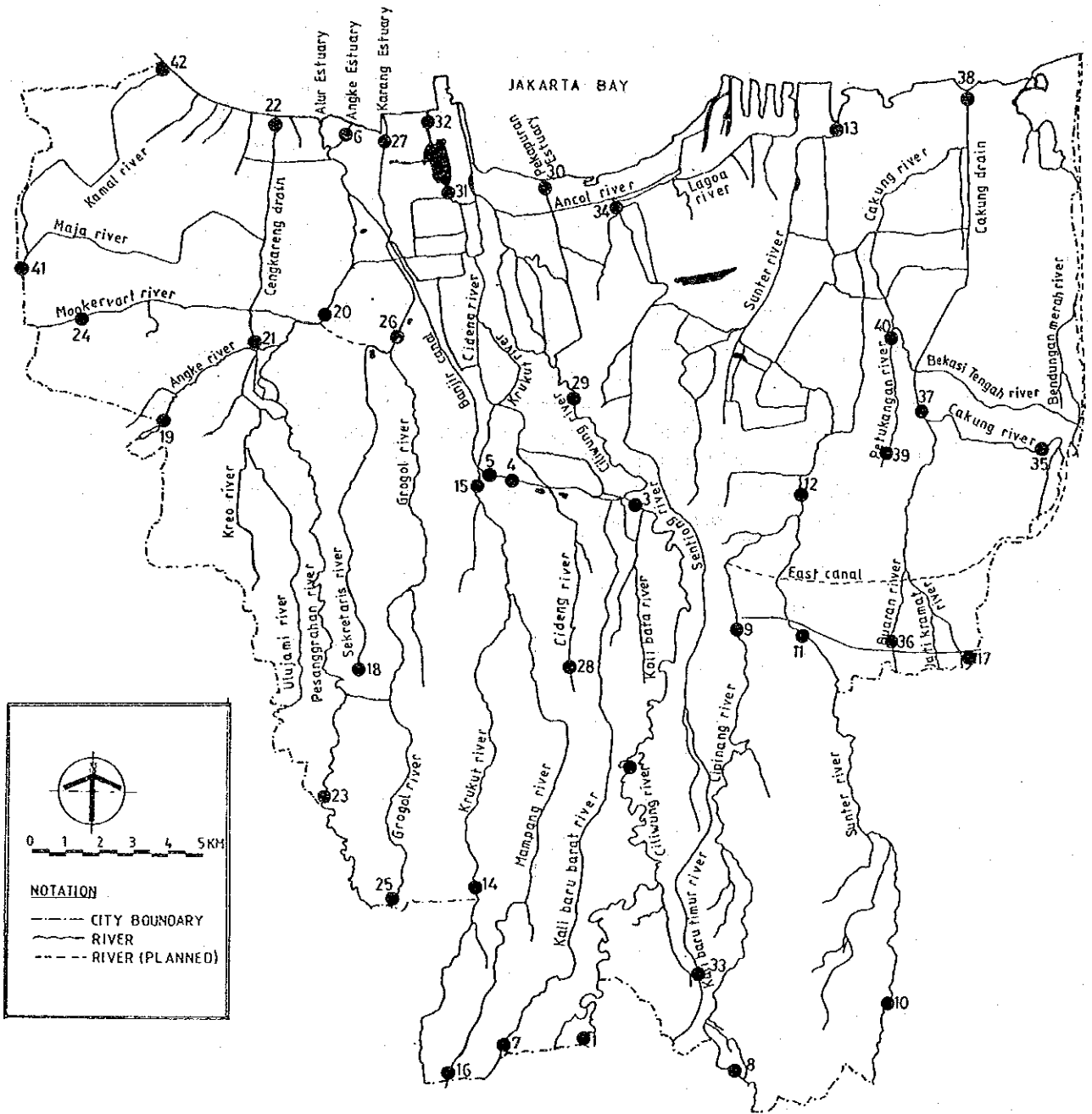


FIG. C.1

RIVER WATER QUALITY MONITORING LOCATIONS OF P4L

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

BOD

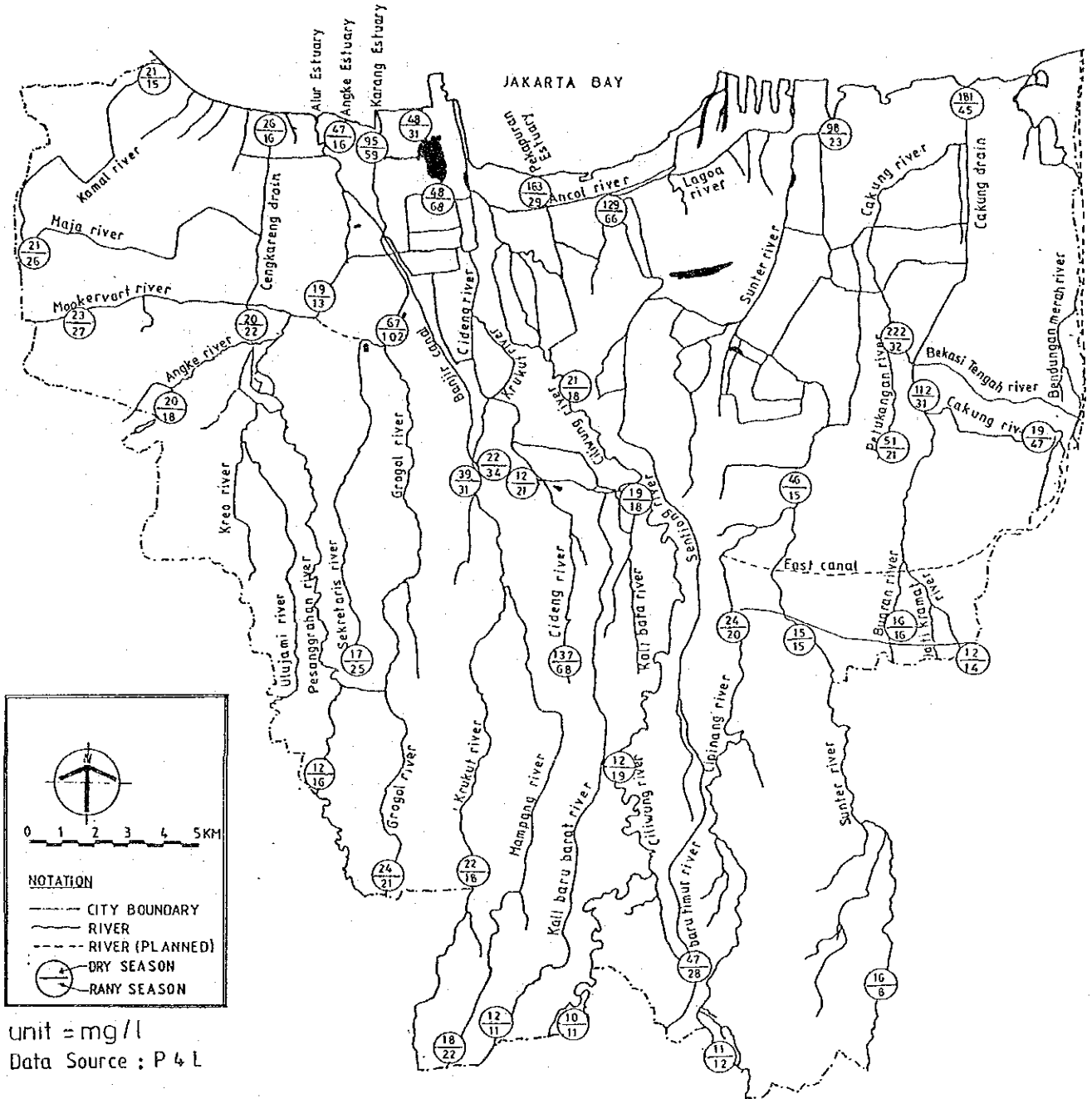


FIG. C.2(1)

AVERAGE VALUE OF RIVER WATER QUALITY

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

COD

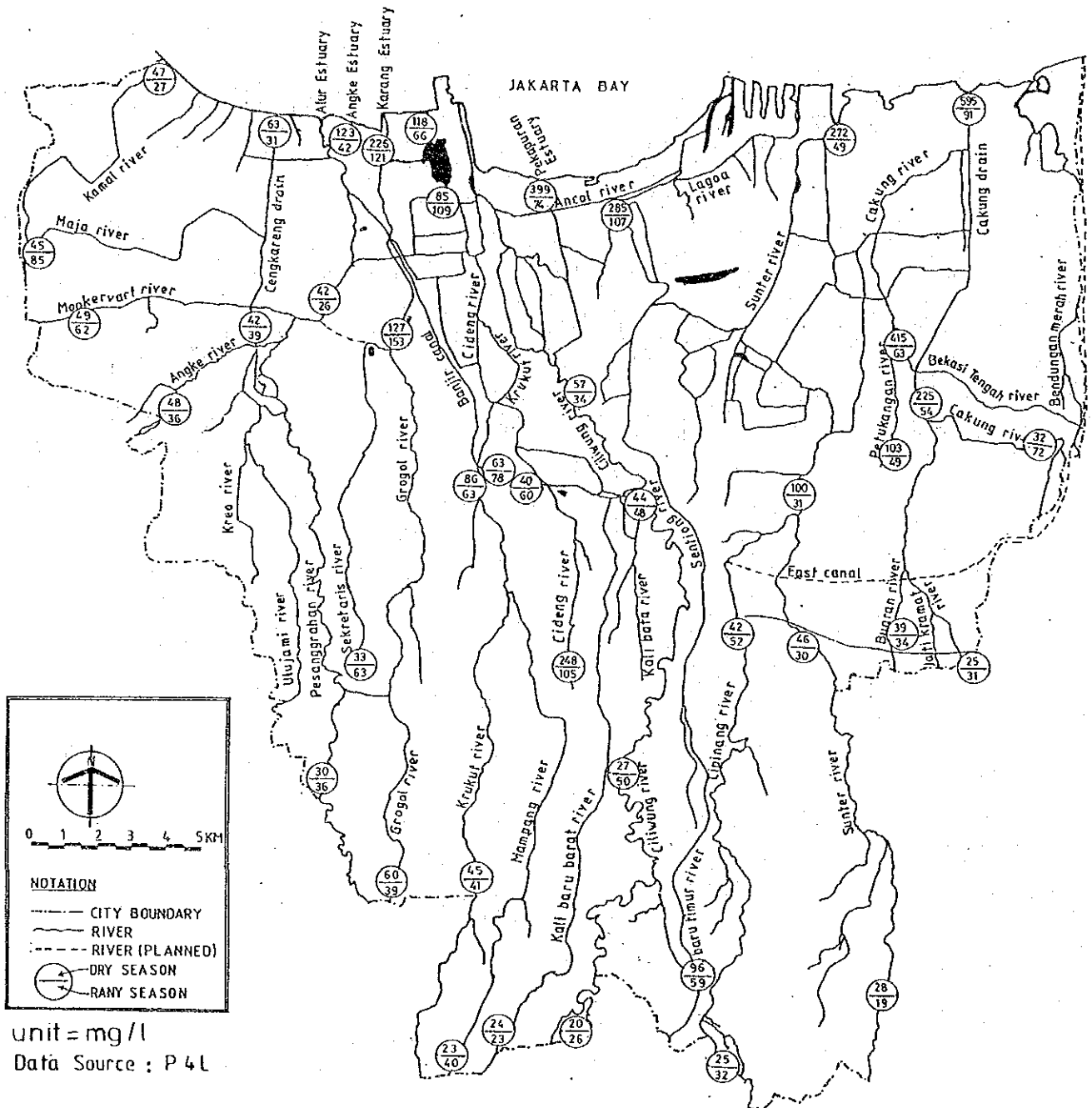
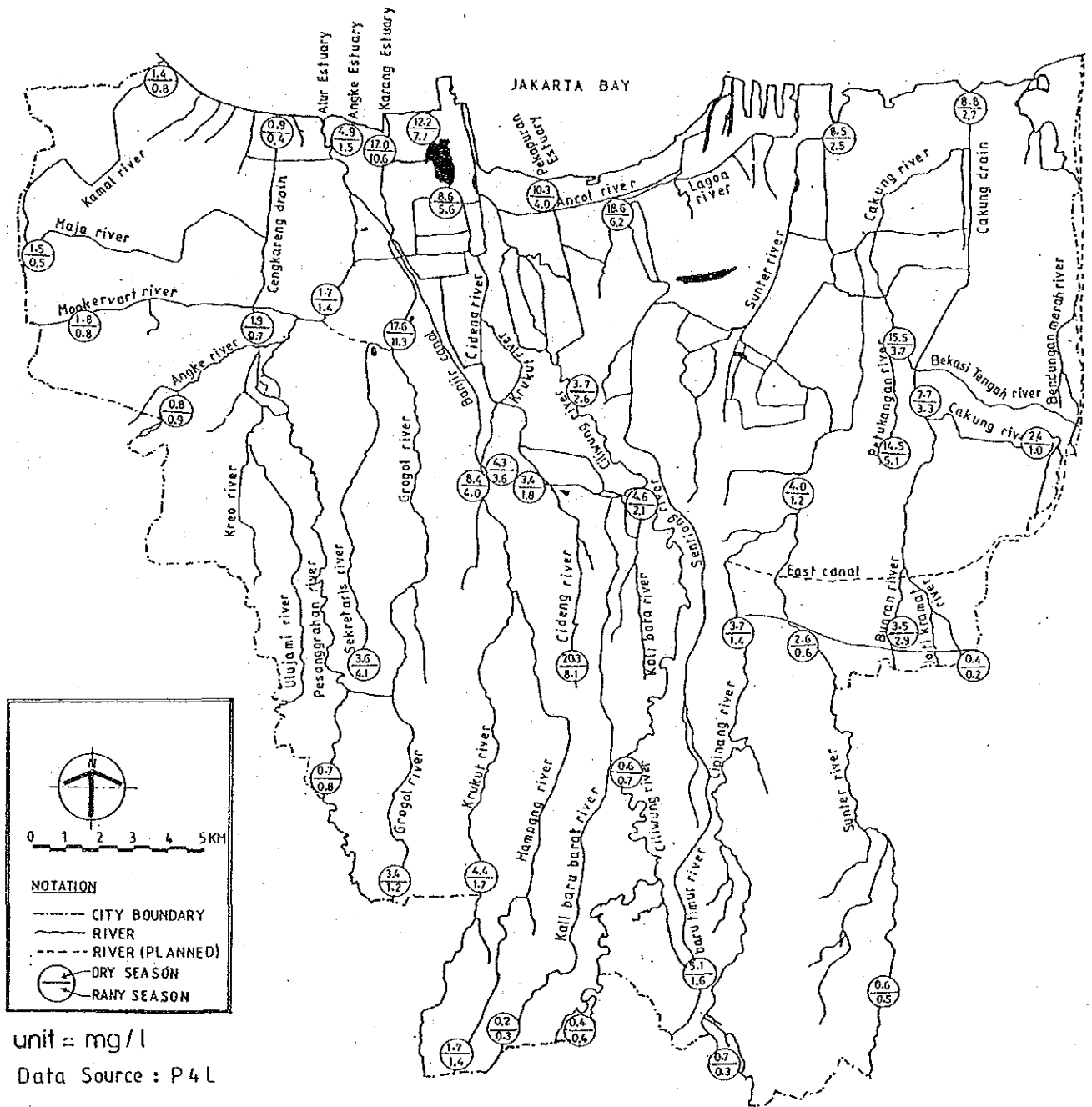


FIG. C.2(2)

AVERAGE VALUE OF RIVER WATER QUALITY

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

NH₄ - N



unit = mg / l
Data Source : P 4 L

FIG. C.2(3) AVERAGE VALUE OF RIVER WATER QUALITY
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Fecal - coliform

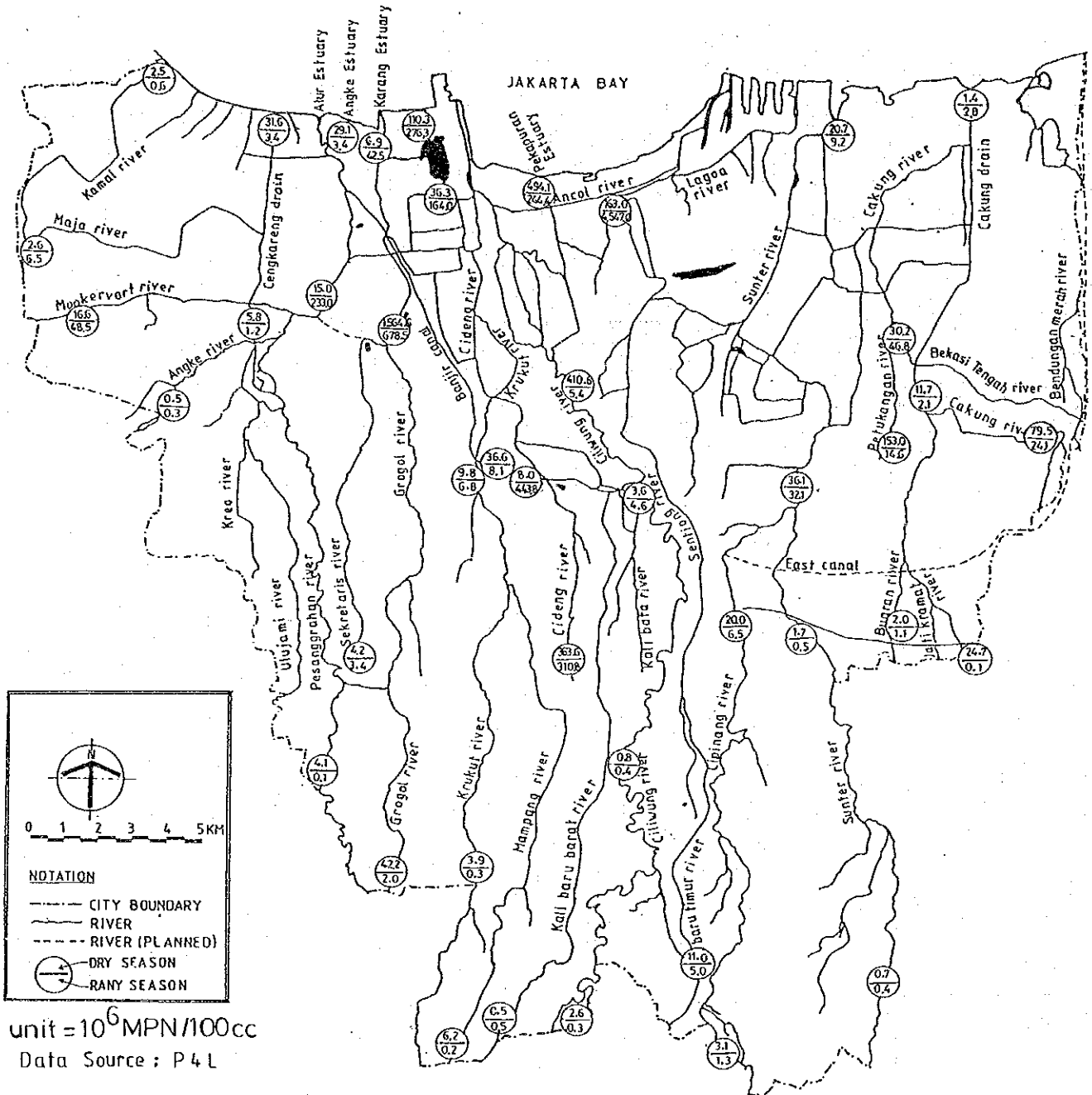
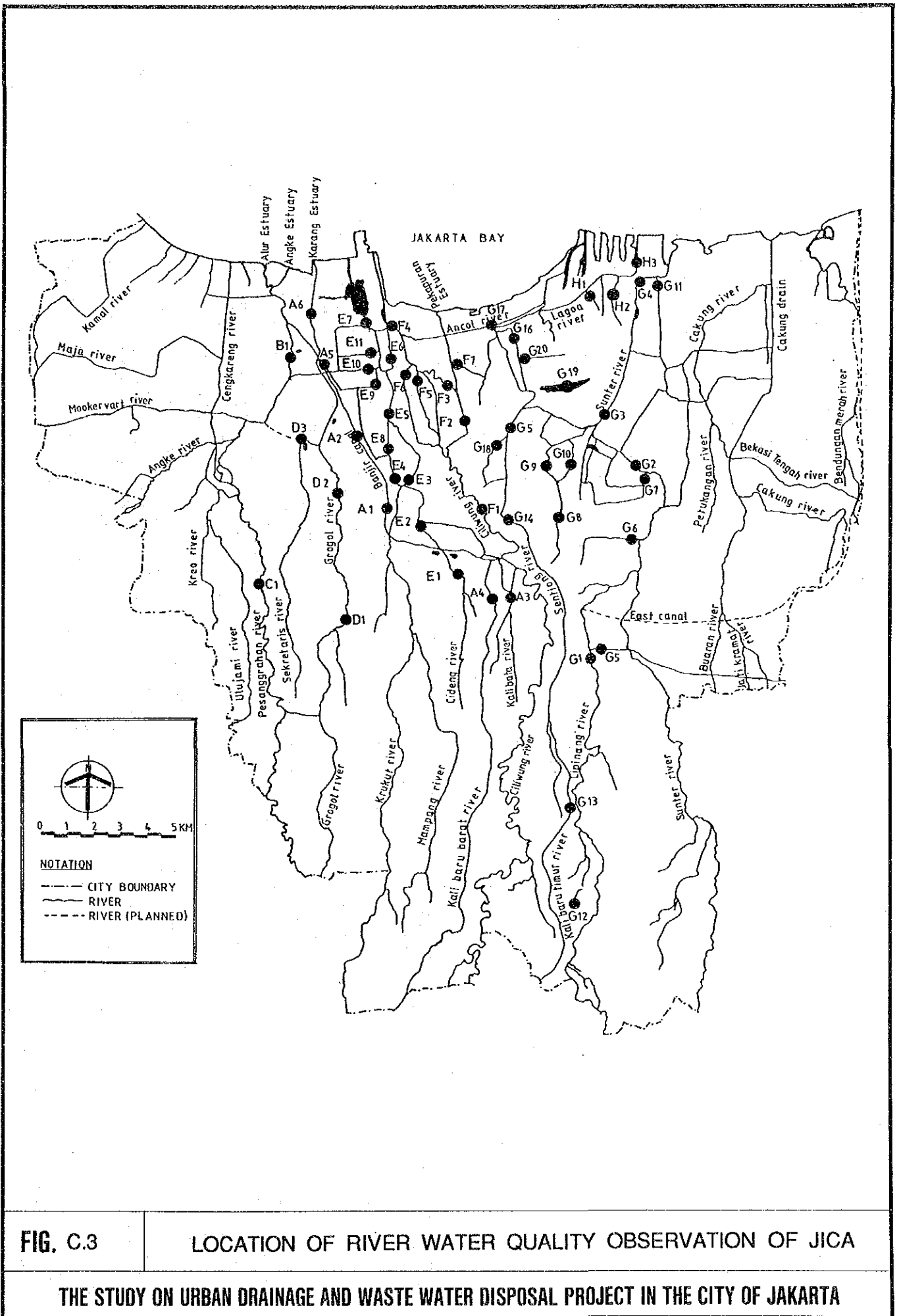


FIG. C.2(4)

AVERAGE VALUE OF RIVER WATER QUALITY

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



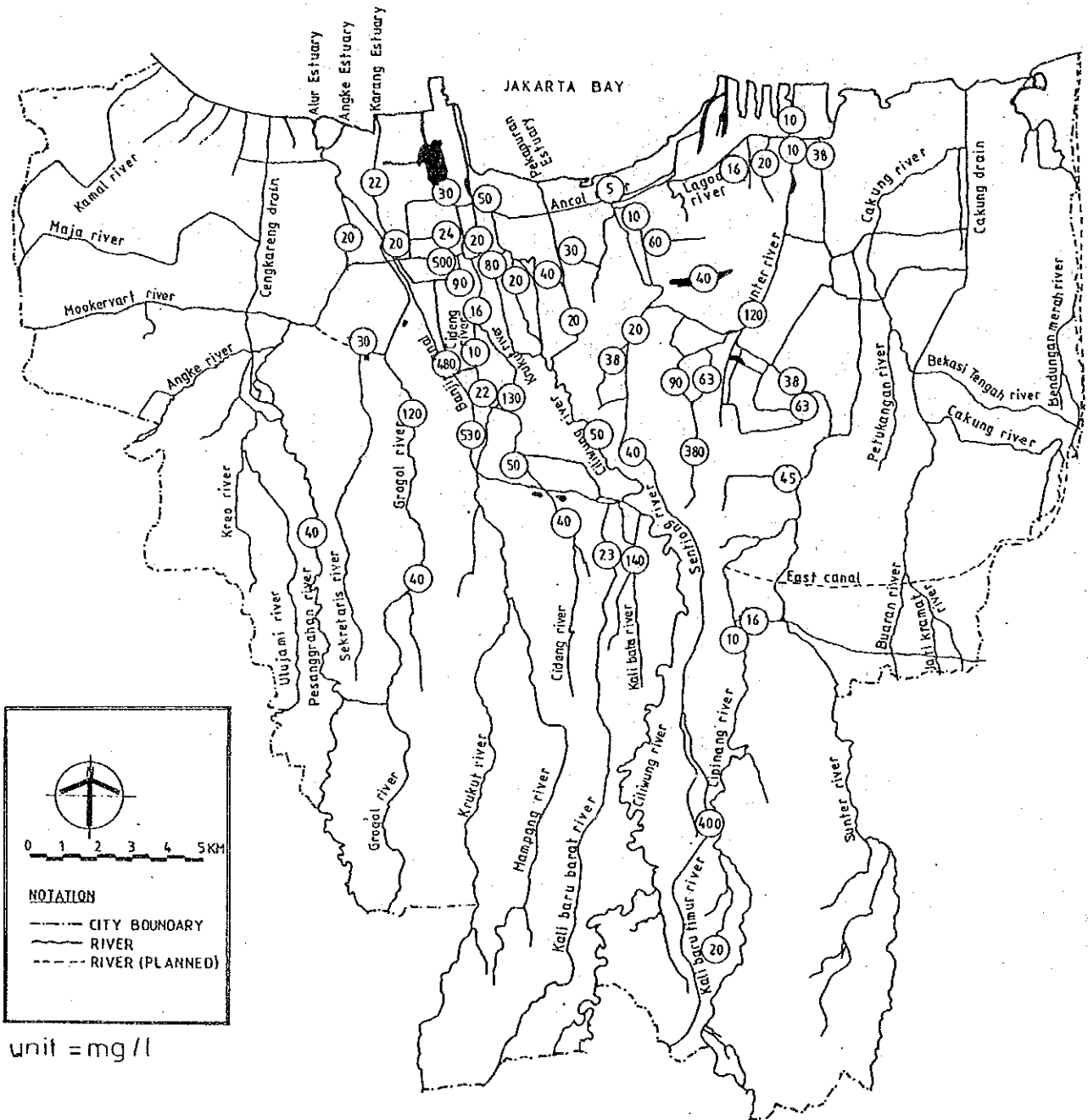


FIG. C.4(1)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

PH

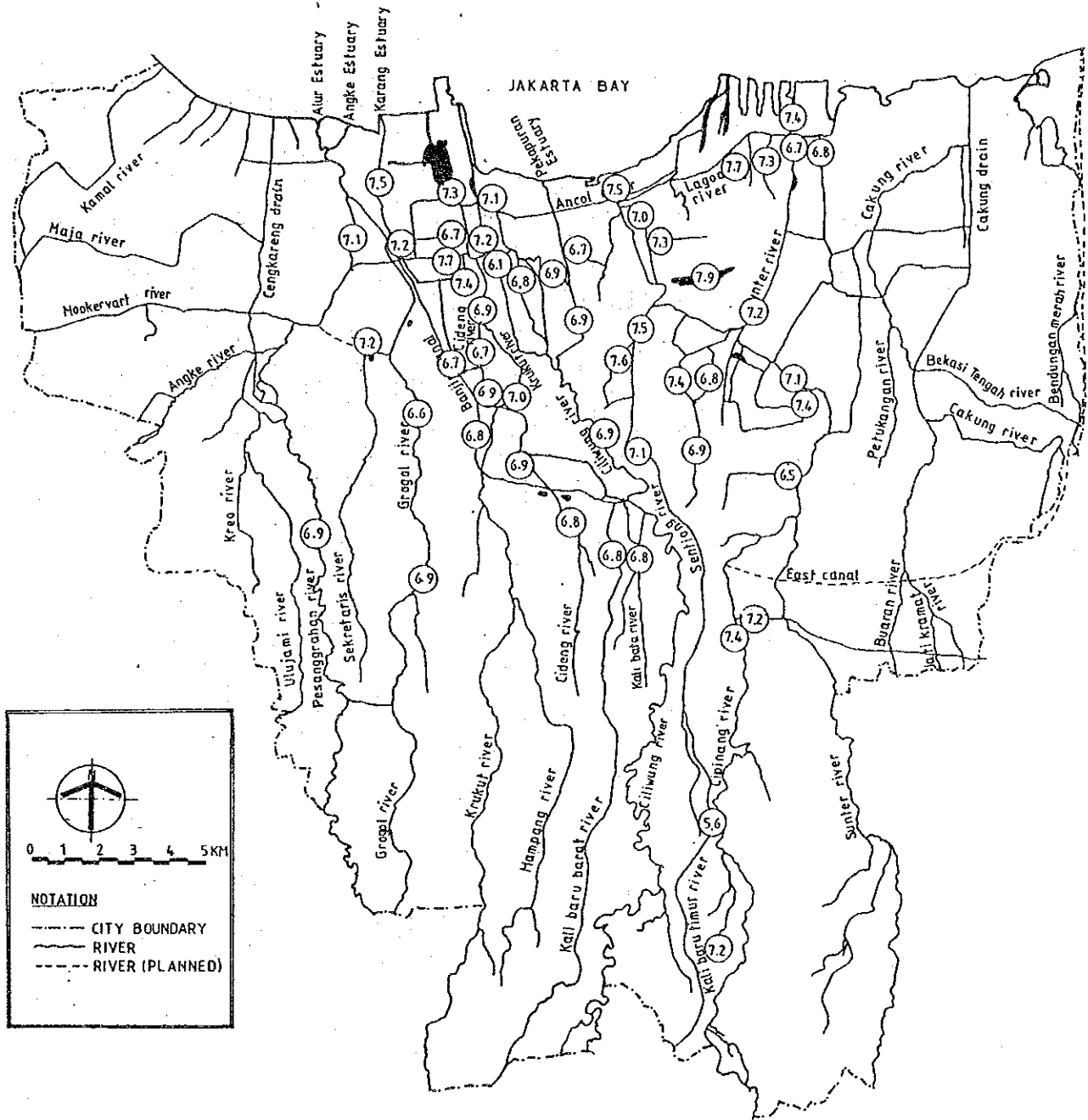


FIG. C.4(2)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

DO

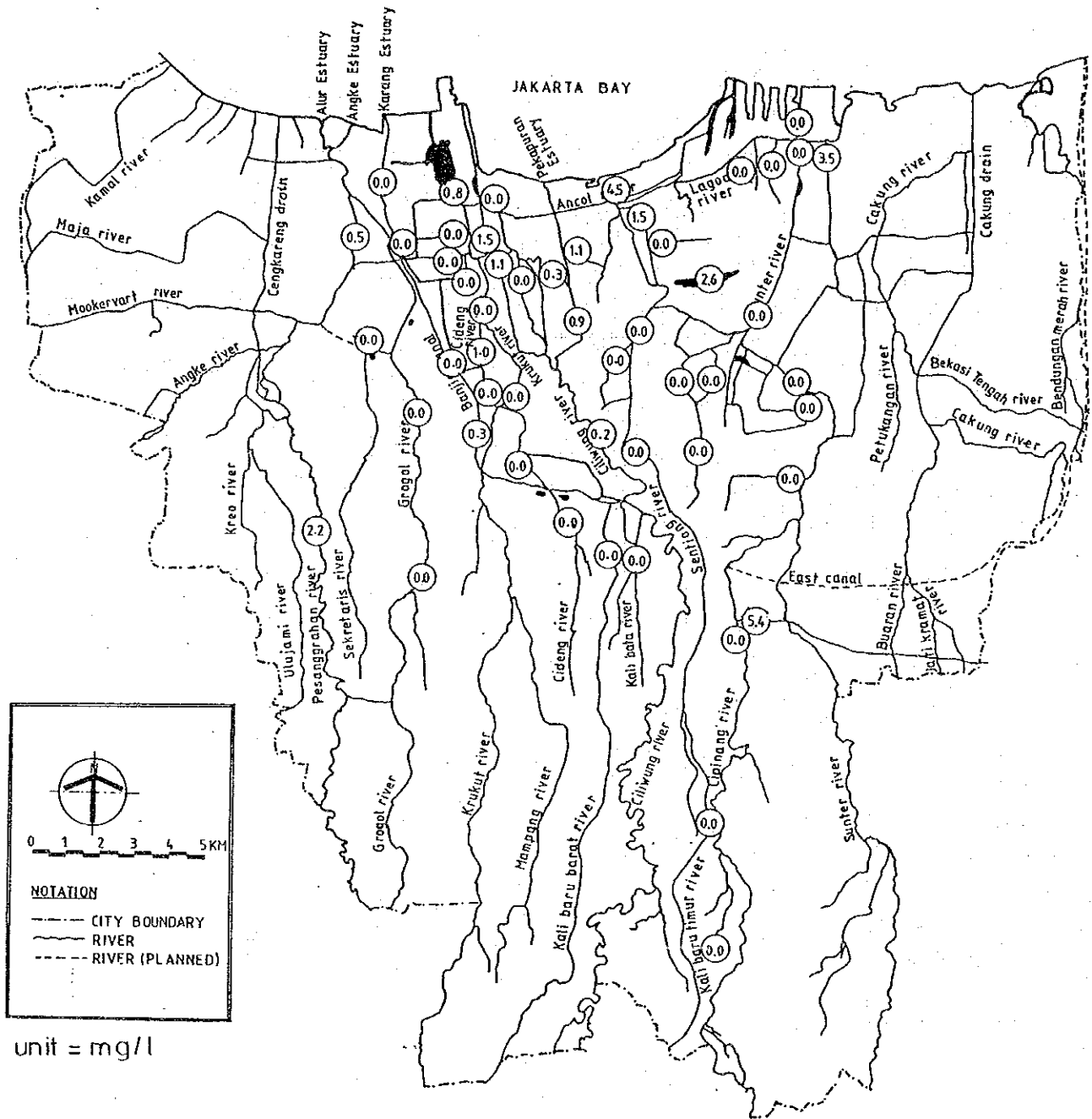


FIG. C.4(3)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

BOD

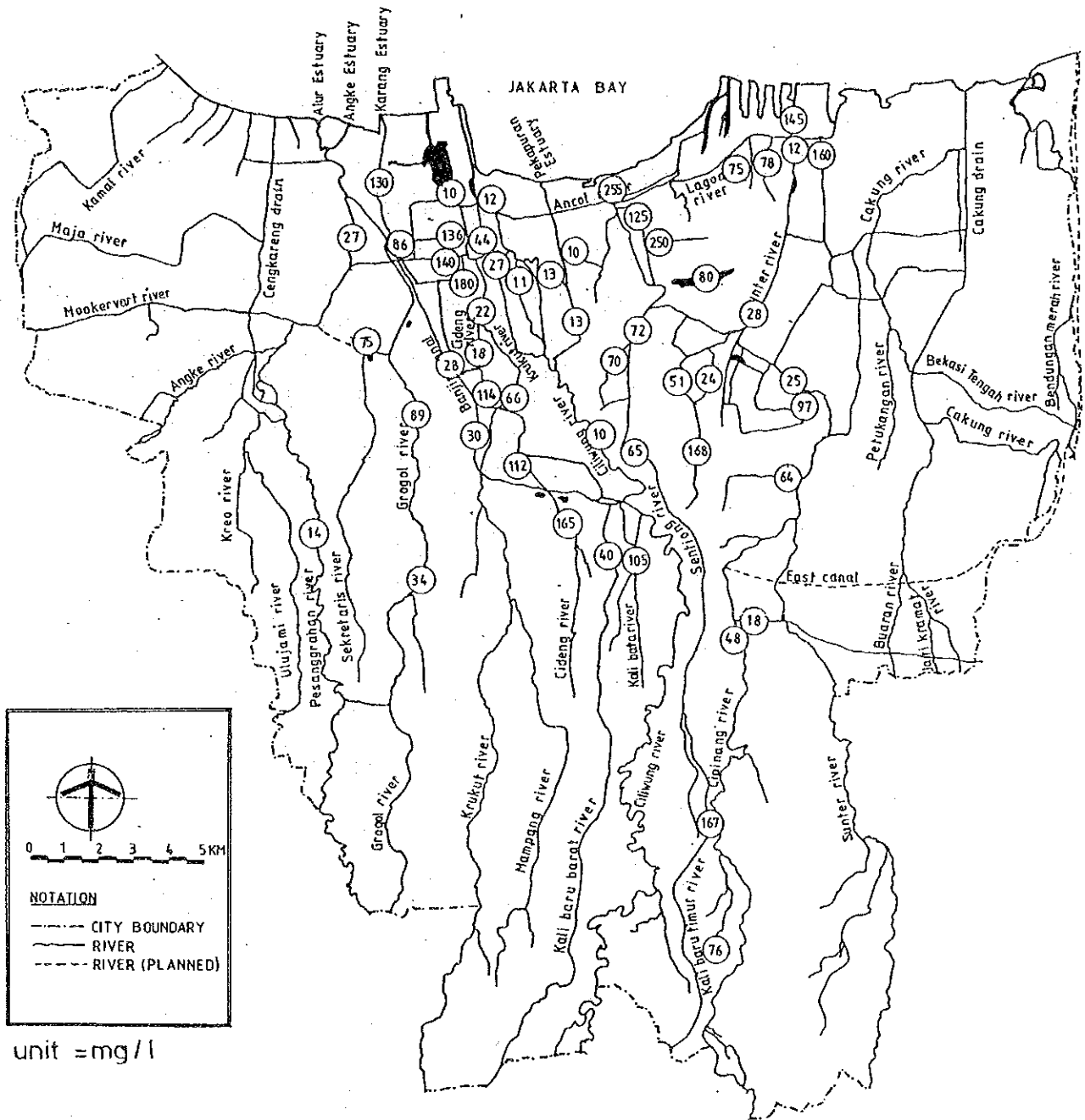


FIG. C.4(4)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

COD

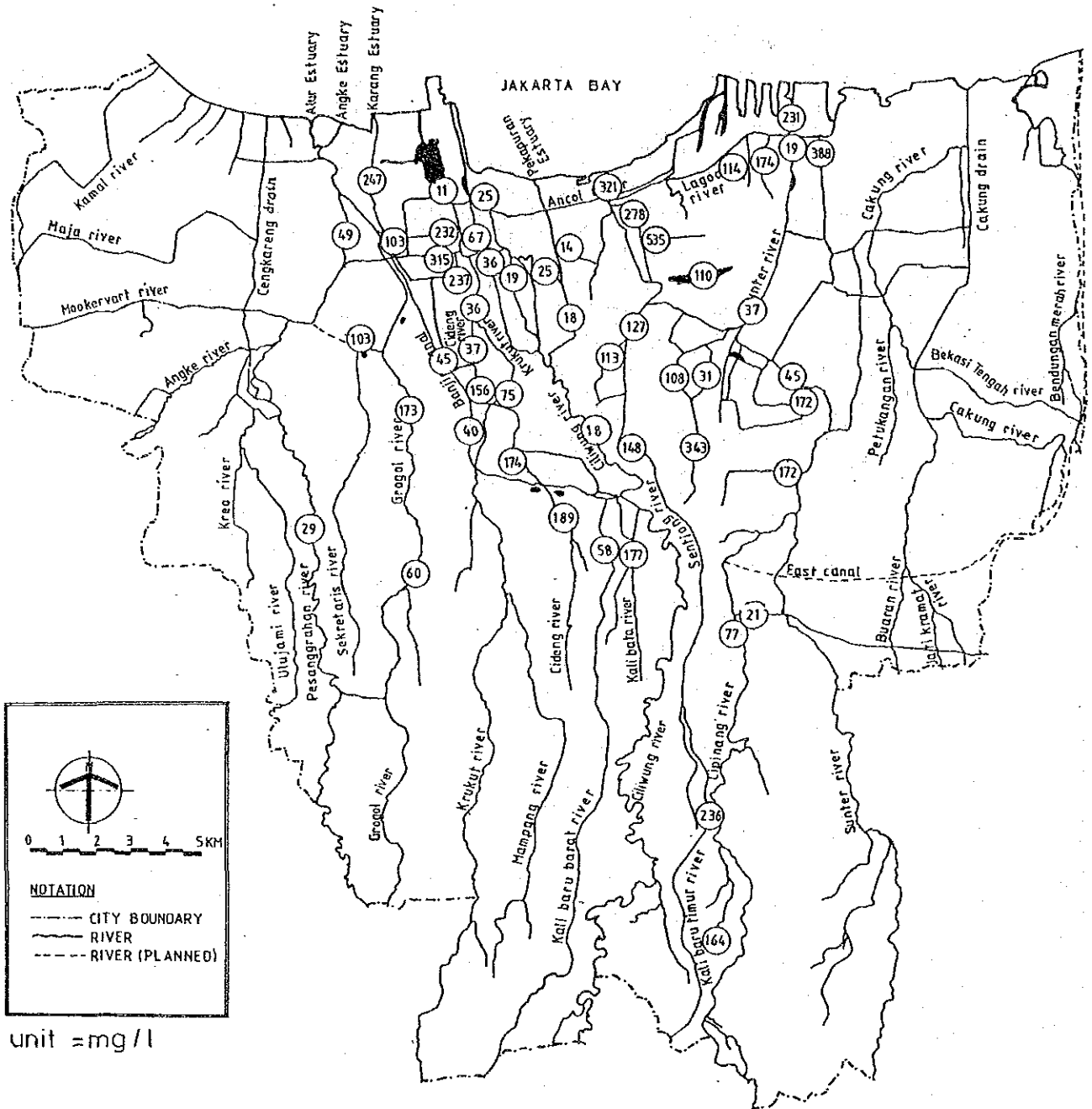


FIG. C.4(5)

OBSERVER RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

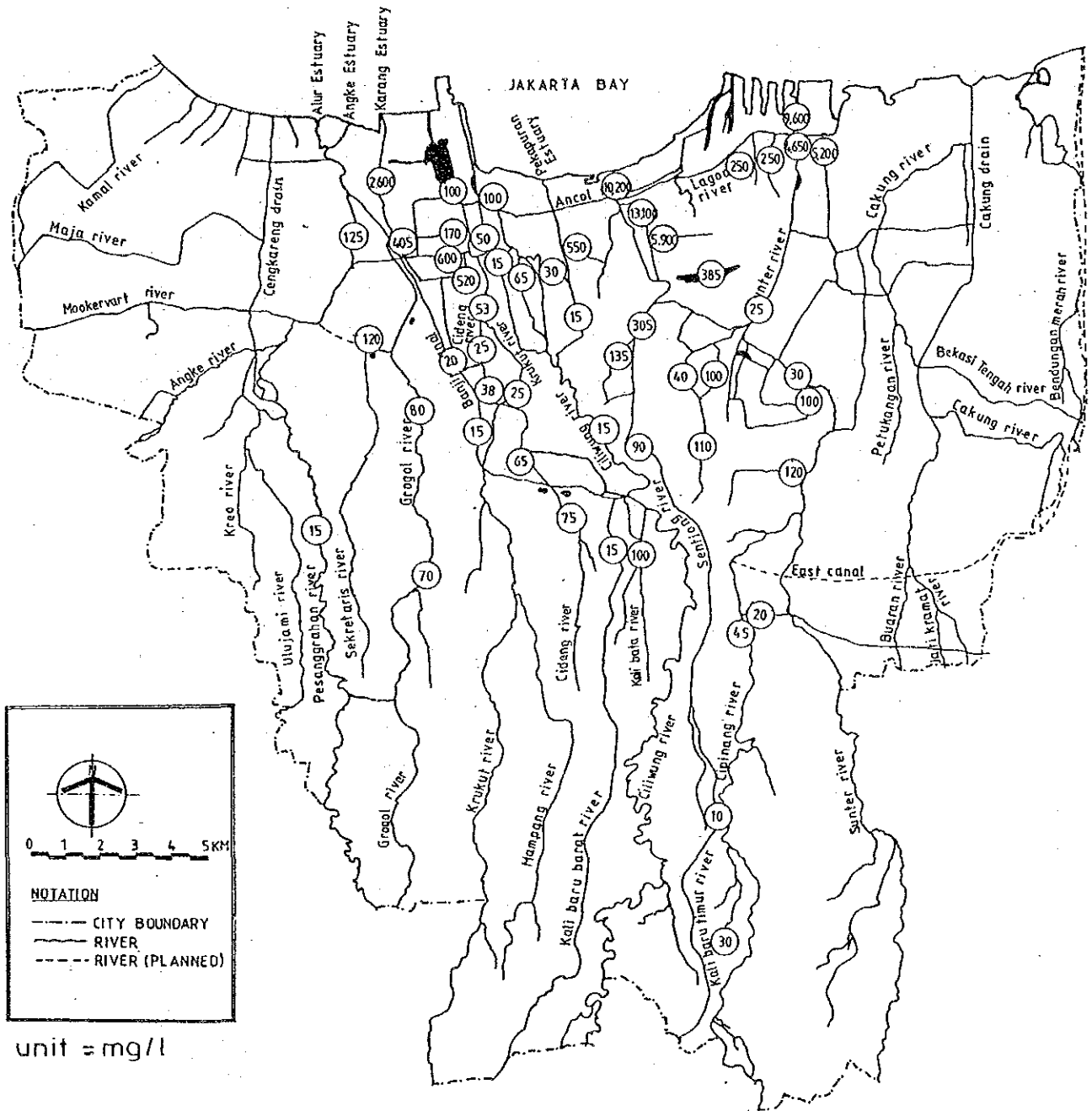


FIG. C.4(6)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

NH₄-N

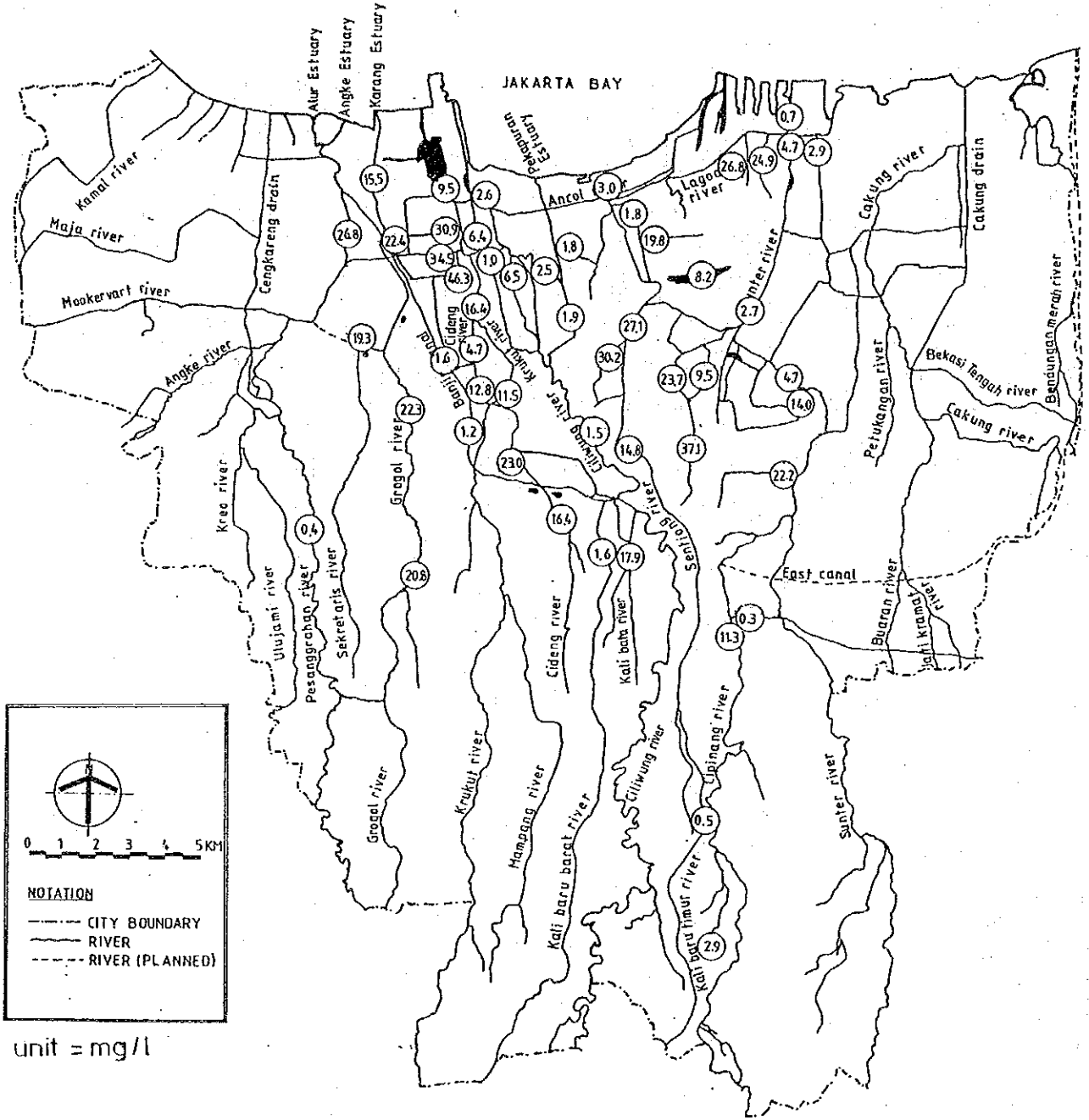


FIG. C.4(7)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

NO₂ - N

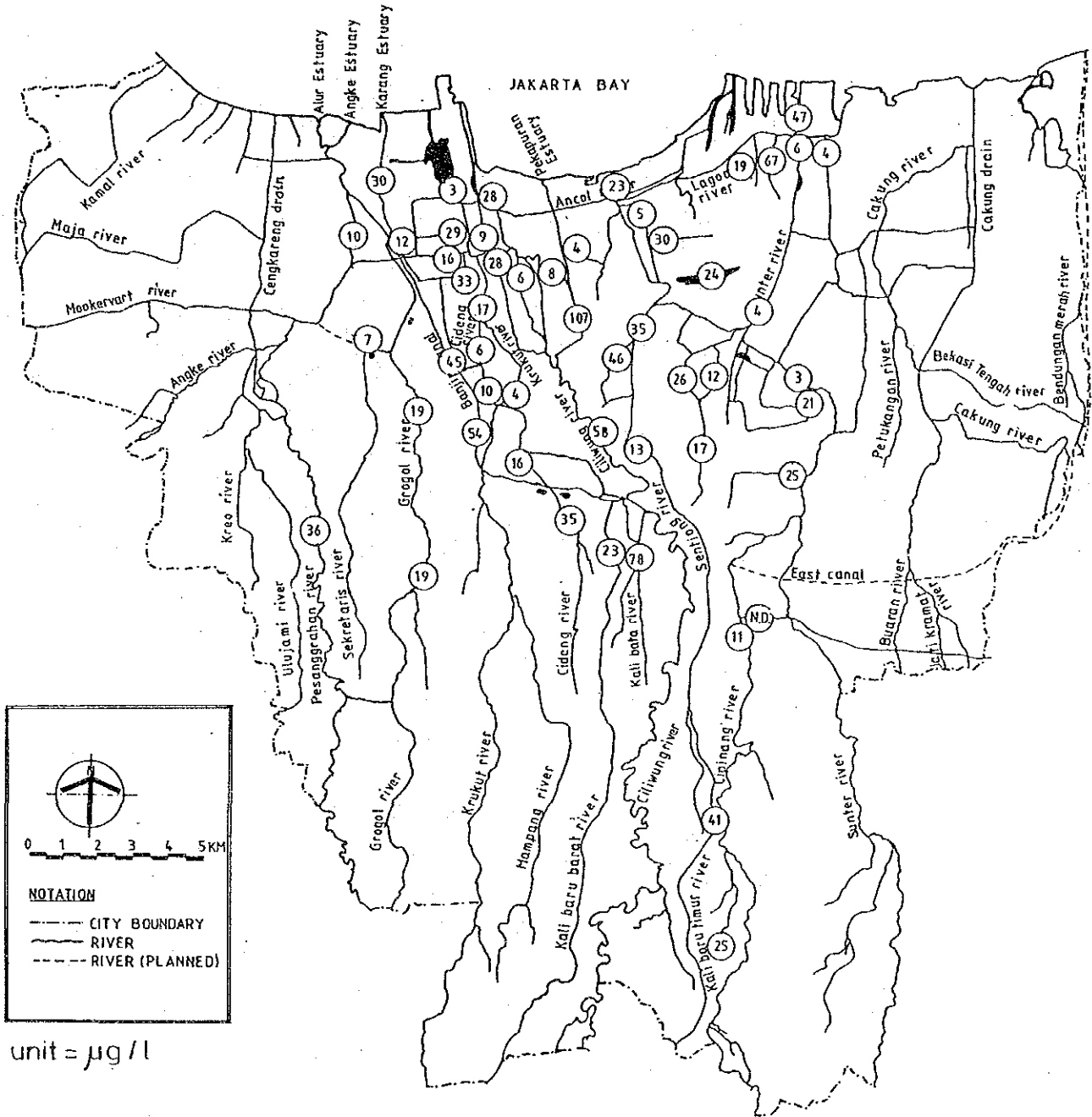


FIG. C.4(8)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

NO₃ - N

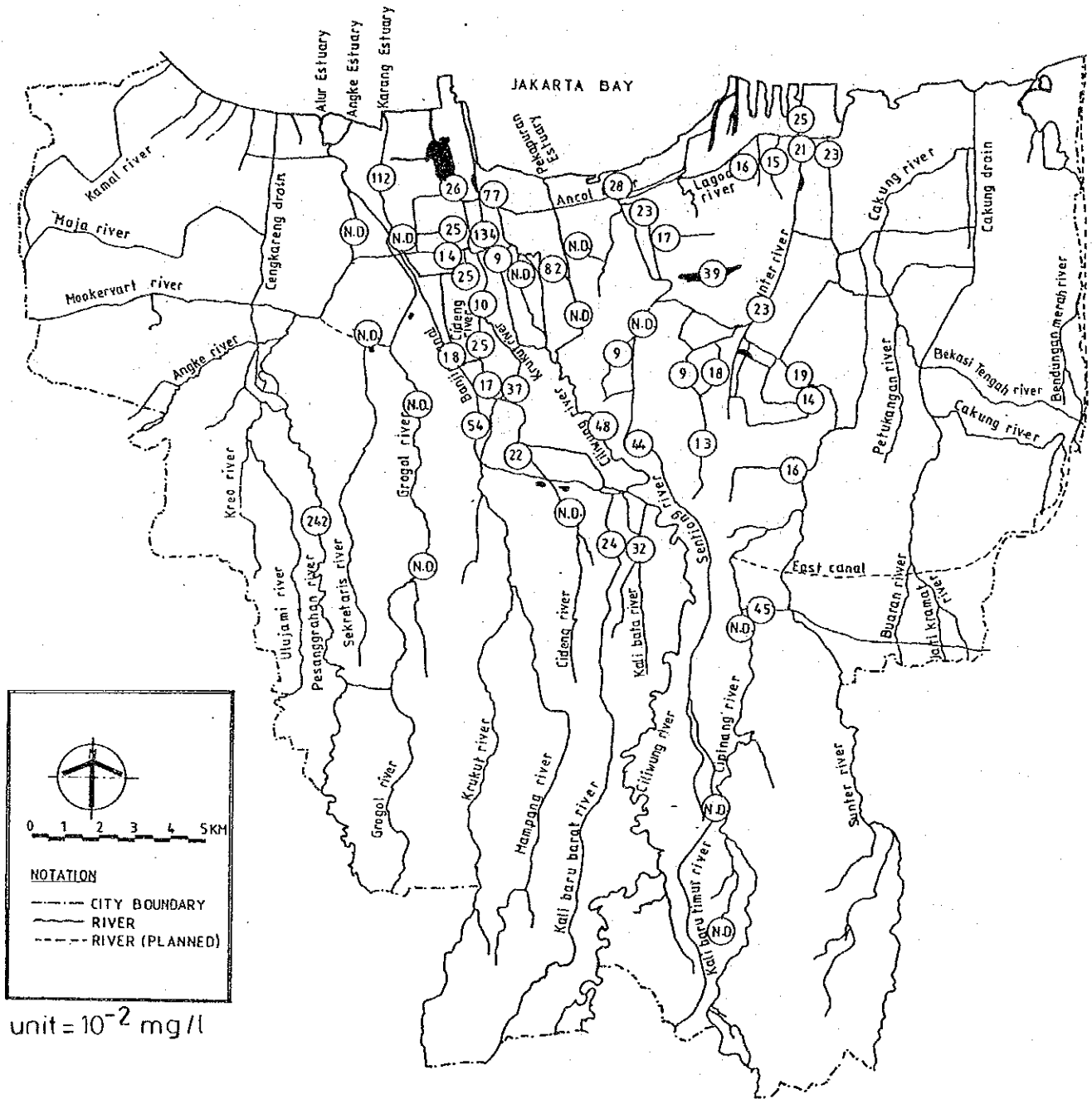


FIG. C.4(9)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Cd

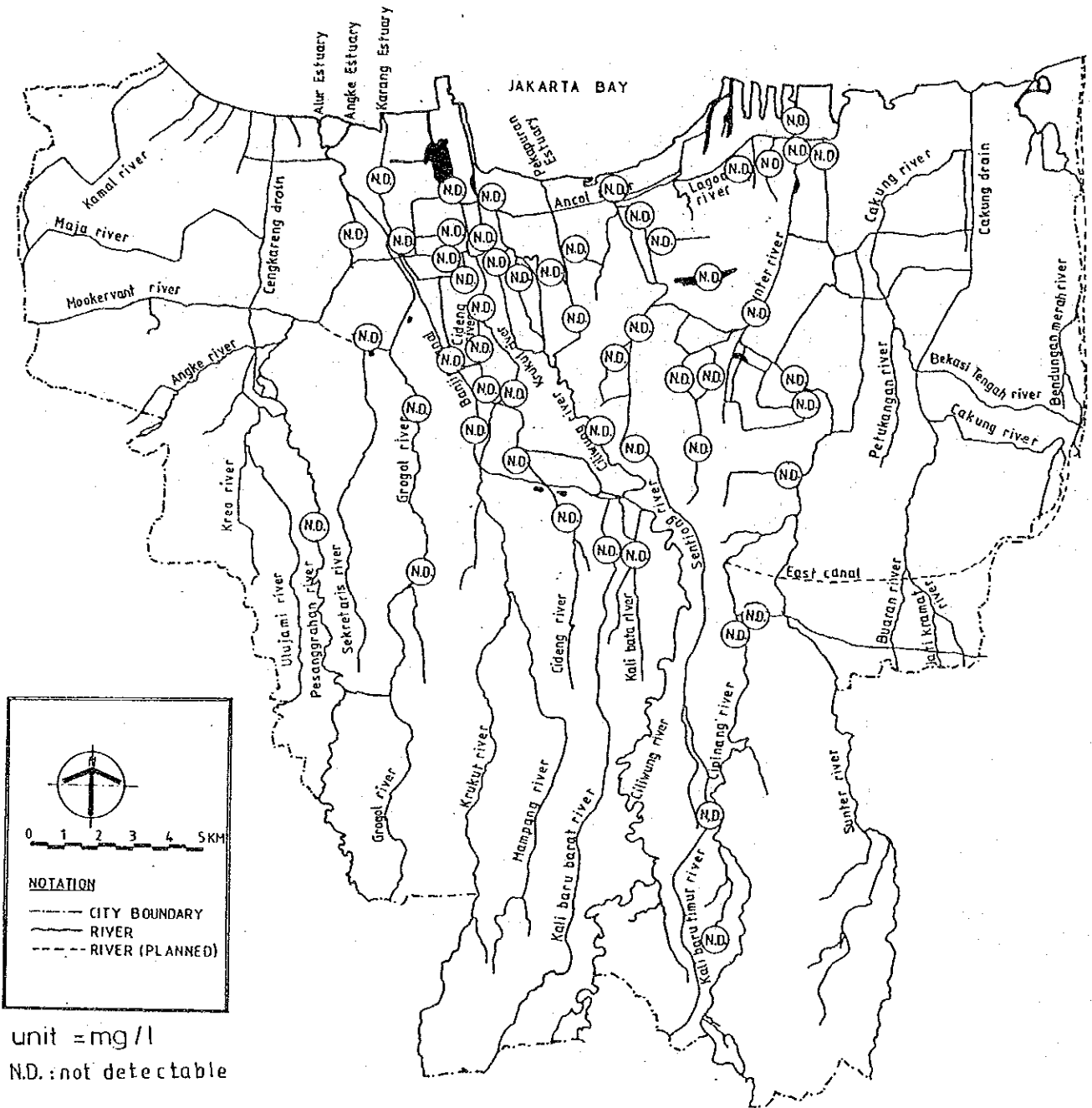


FIG. C.4(11)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Cr

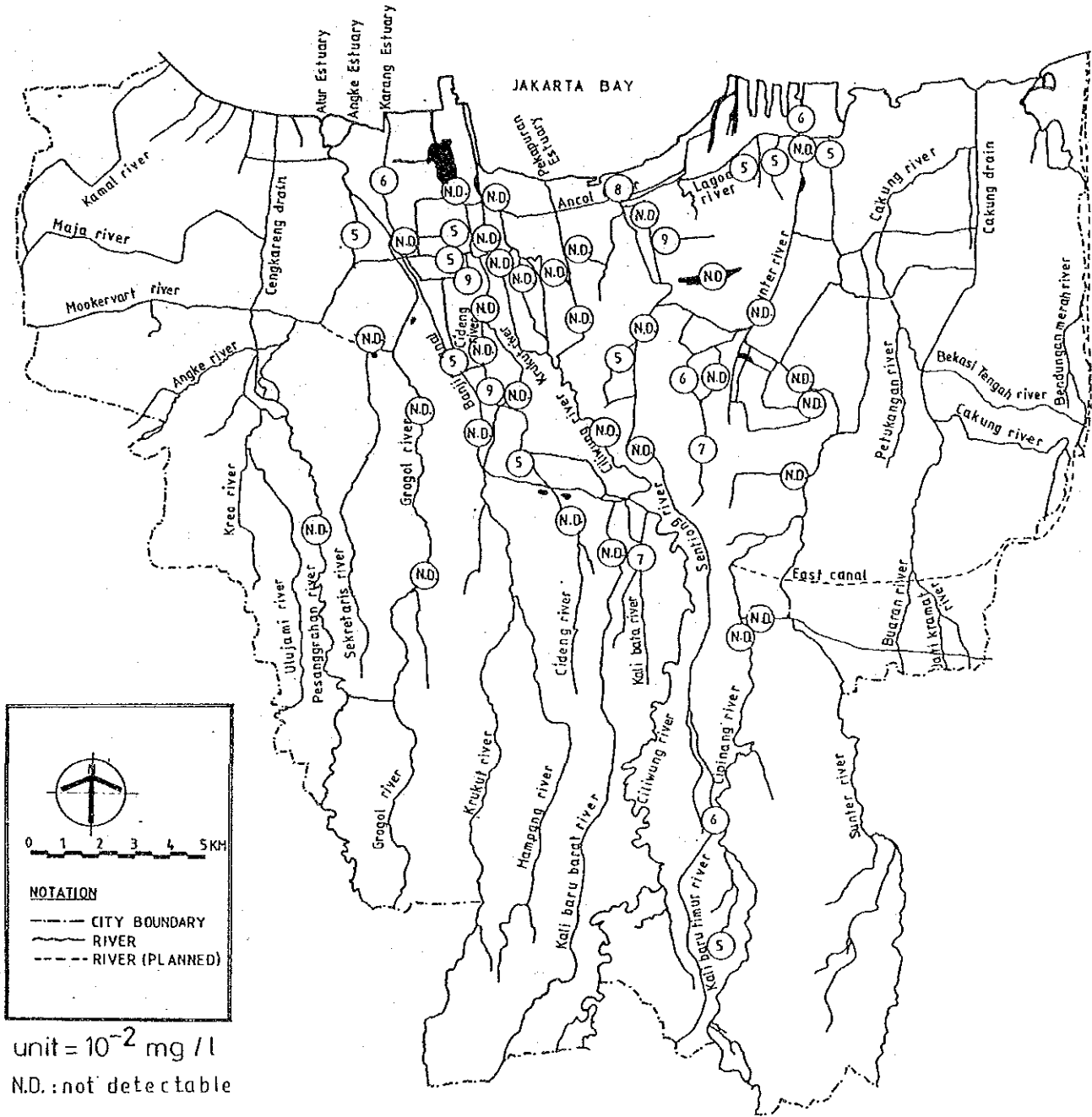


FIG. C.4(12)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Hg

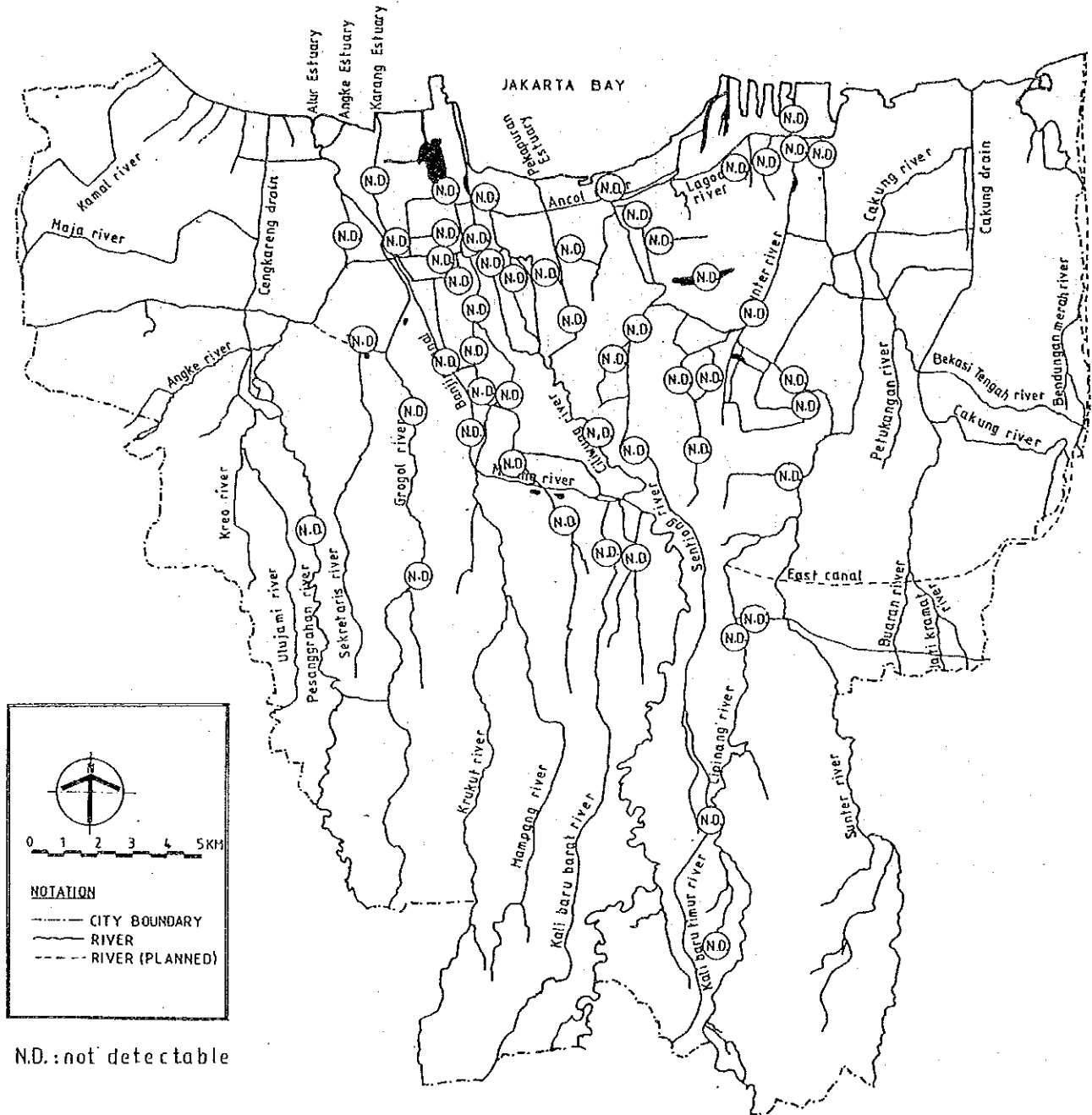


FIG. C.4(13)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Fecal coliform

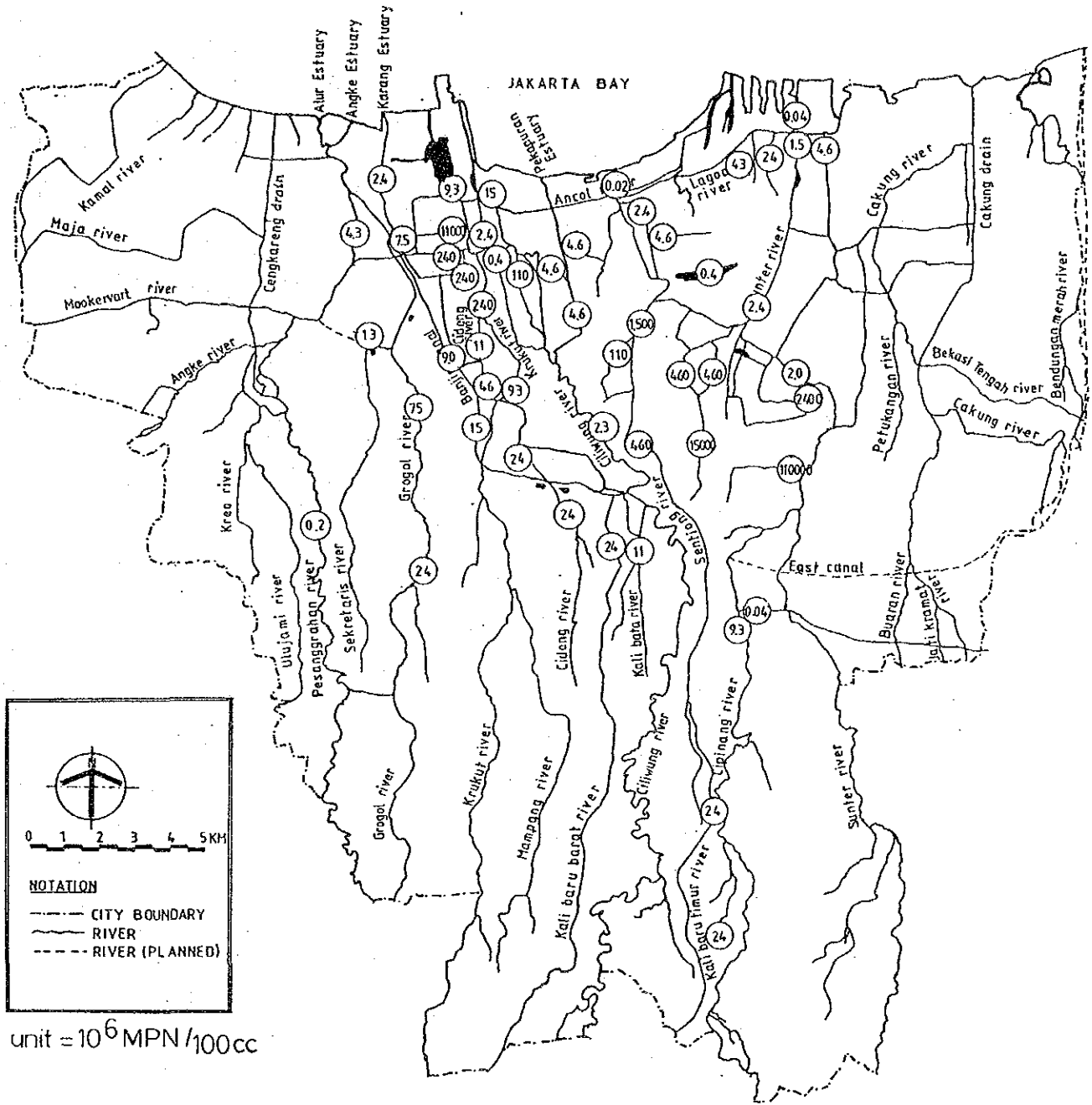
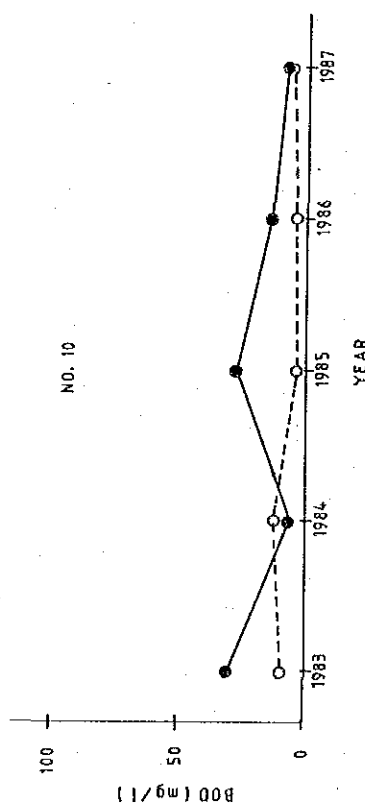
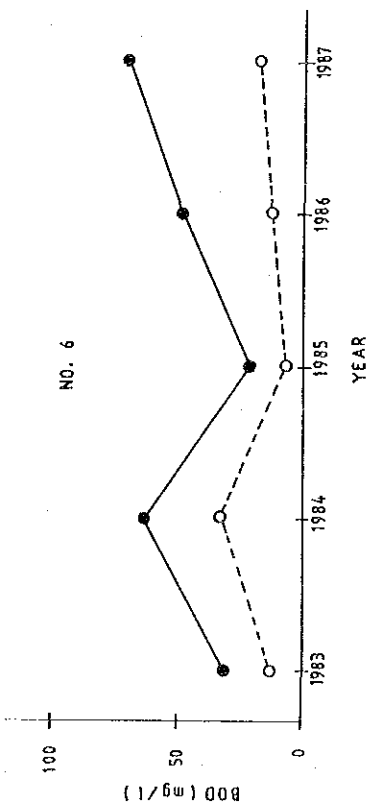
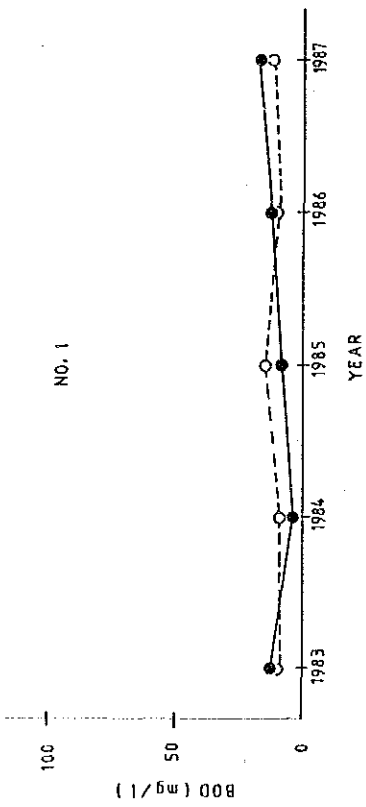


FIG. C.4(14)

OBSERVED RIVER WATER QUALITY BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



Data Source: P 4 L

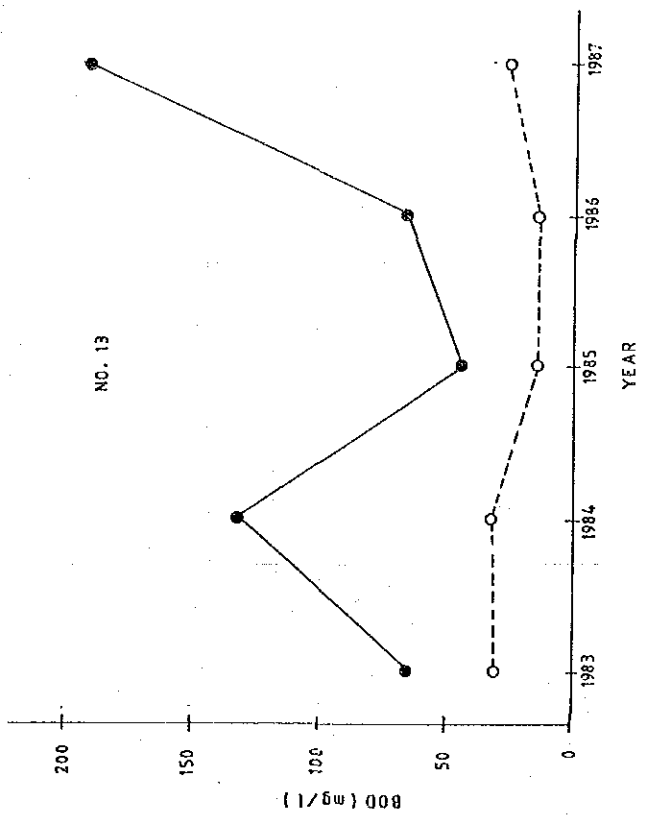
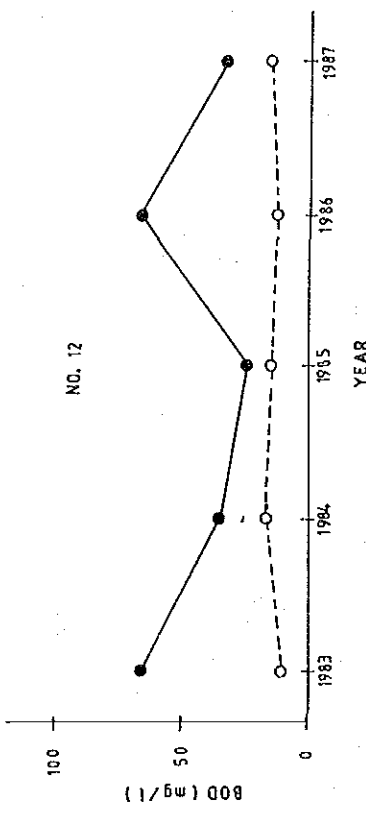
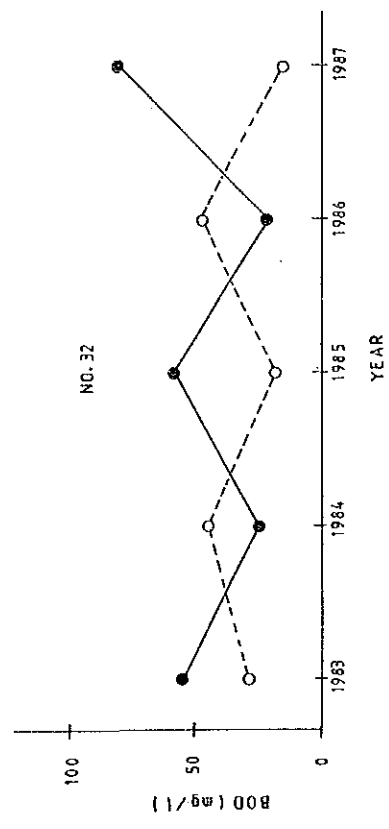
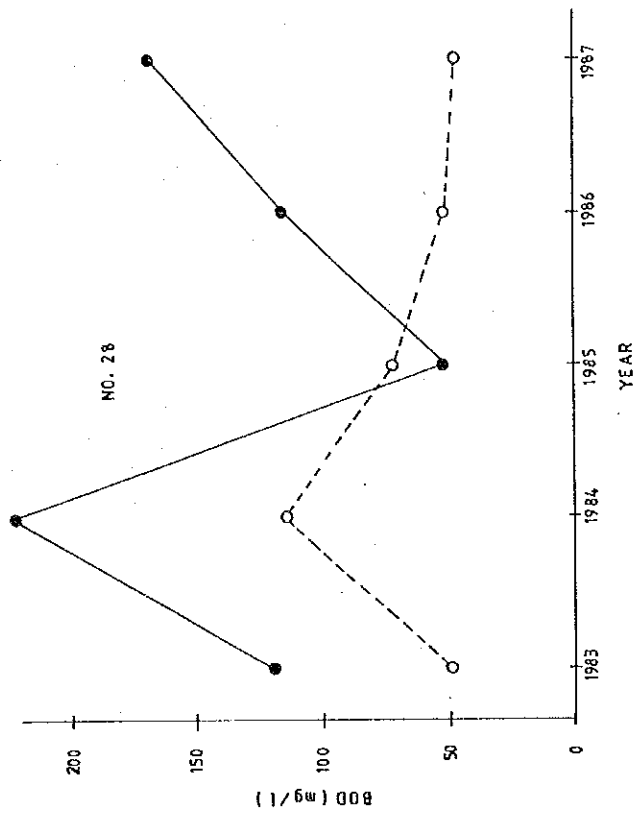
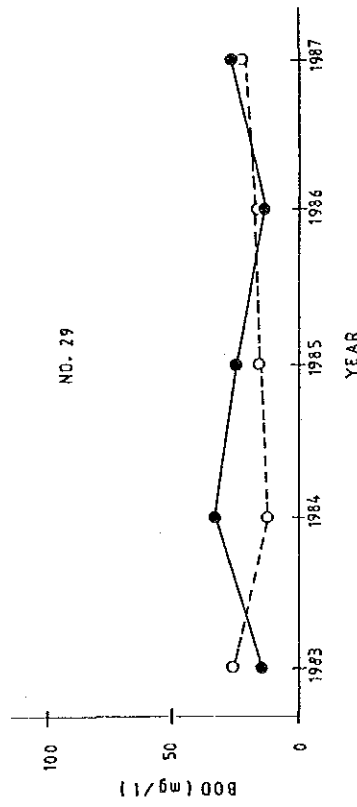
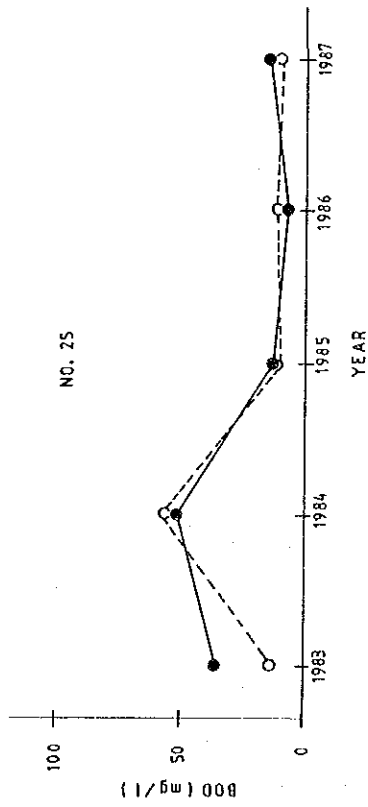
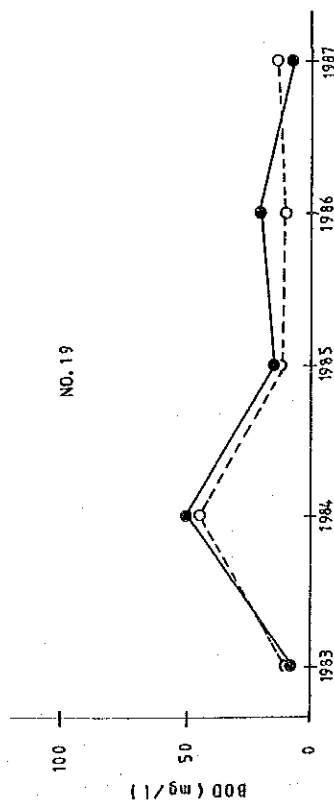


FIG. C.5(1)

YEARLY VARIATION OF BOD

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

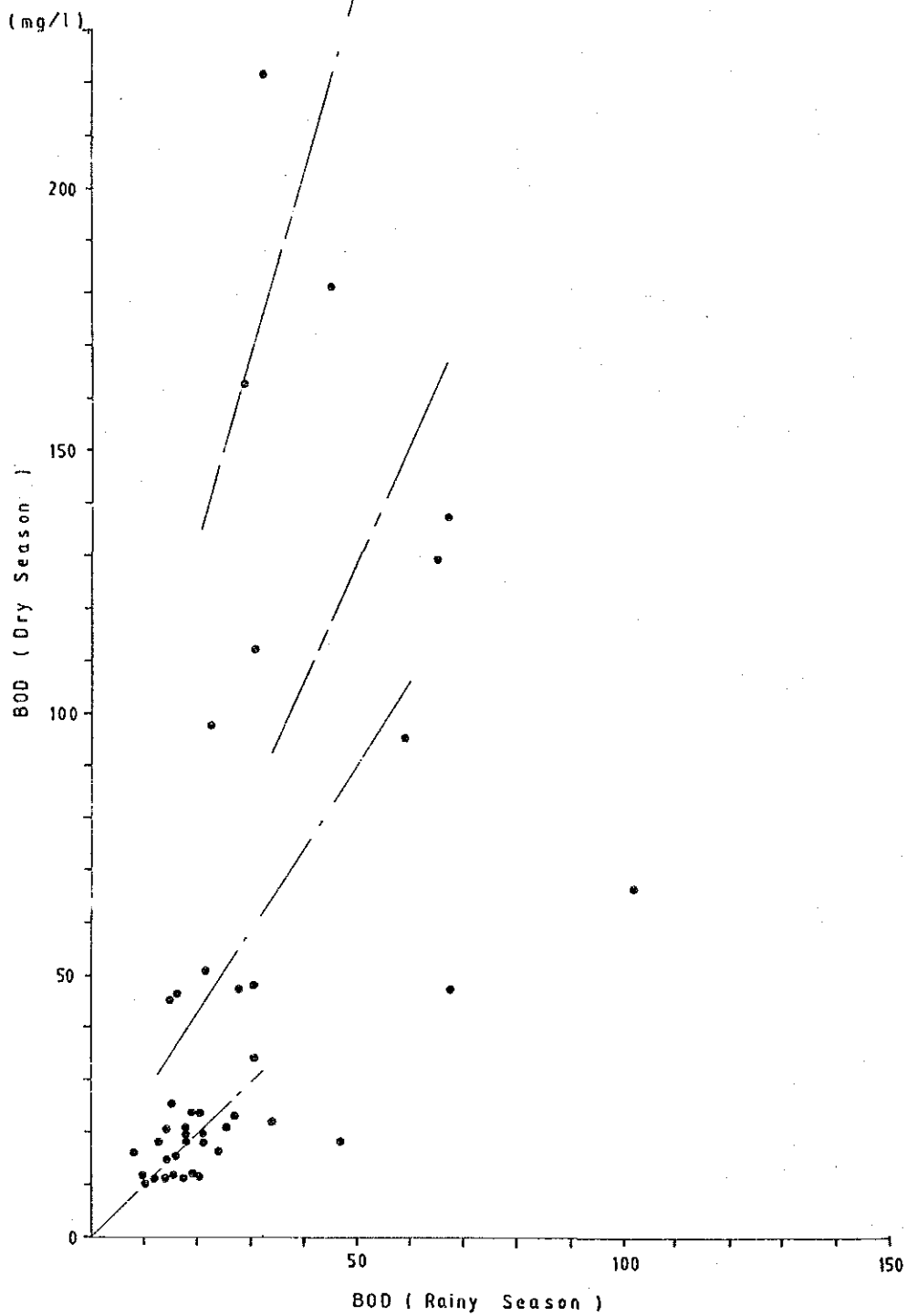


Data Source : P 4 L

FIG. C.5(2)

YEARLY VARIATION OF BOD

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



Data Source : P4L

FIG. C.6

CORRELATION BETWEEN BOD IN DRY SEASON AND RAINY SEASON

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

BOD

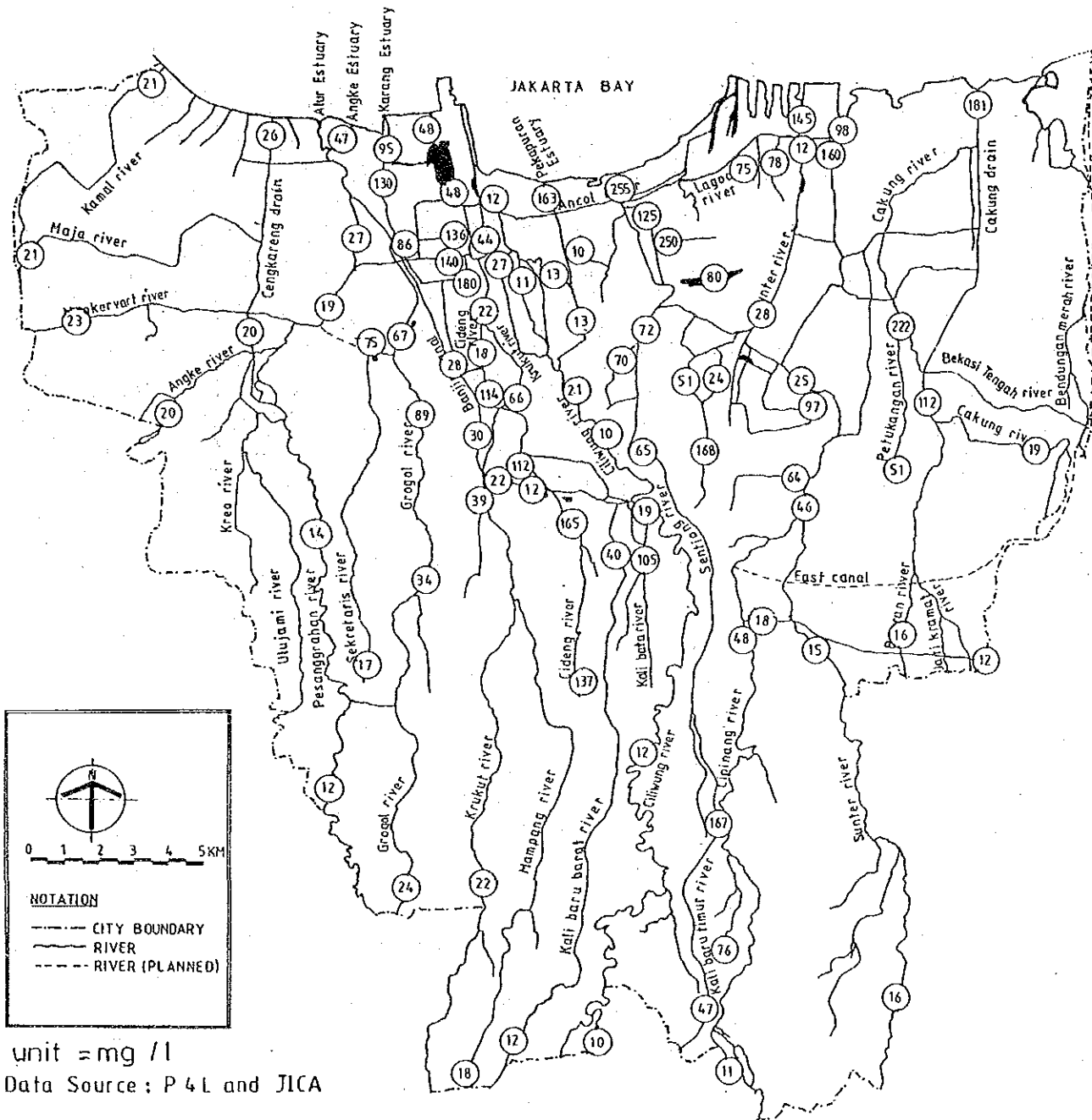


FIG. C.7(1)

REGIONAL DISTRIBUTION OF RIVER WATER QUALITY

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

COD

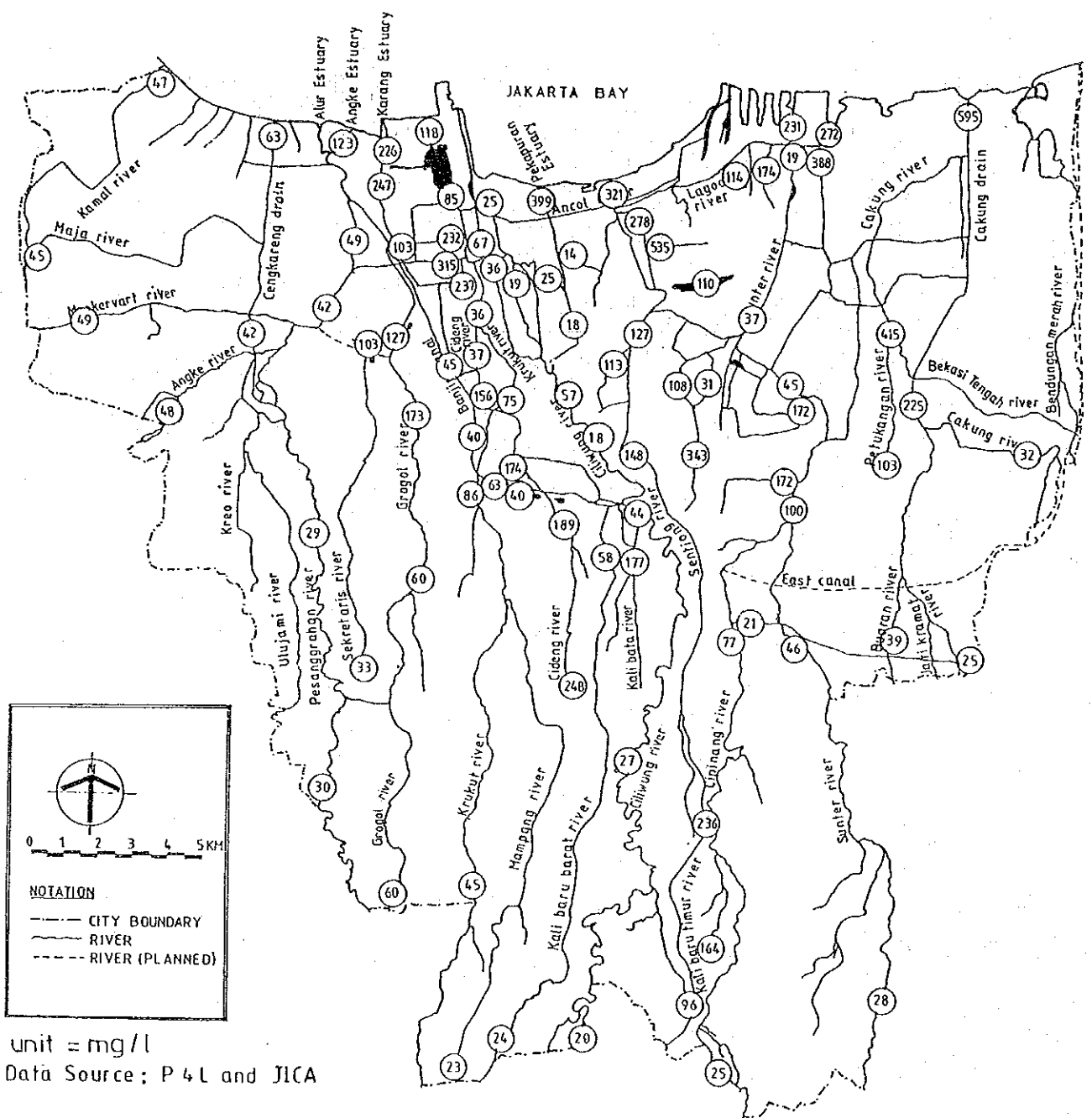


FIG. C.7(2)

REGIONAL DISTRIBUTION OF RIVER WATER QUALITY

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

NH₄ - N

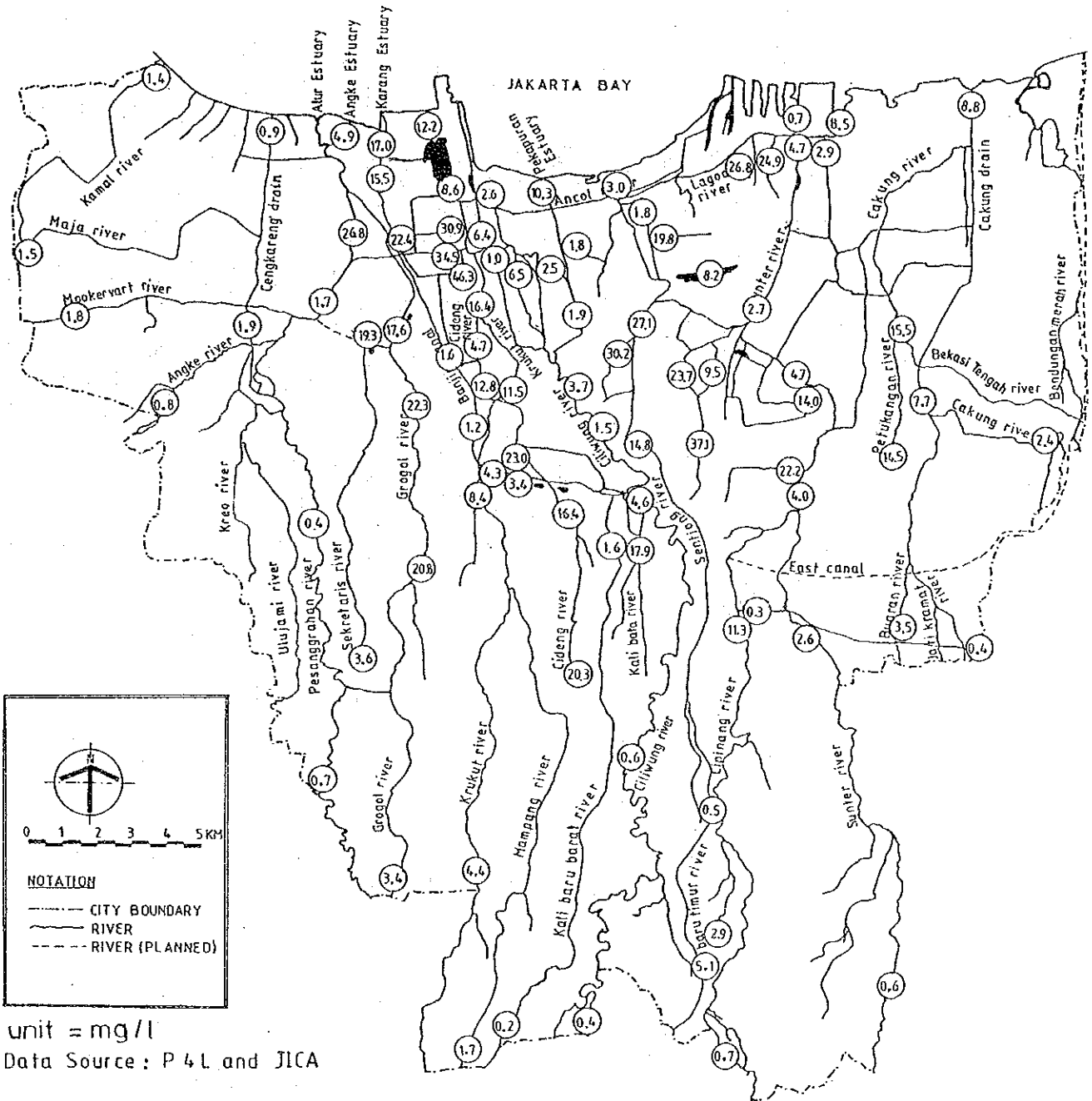


FIG. C.7(3)

REGIONAL DISTRIBUTION OF RIVER WATER QUALITY

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Fecal Coliform

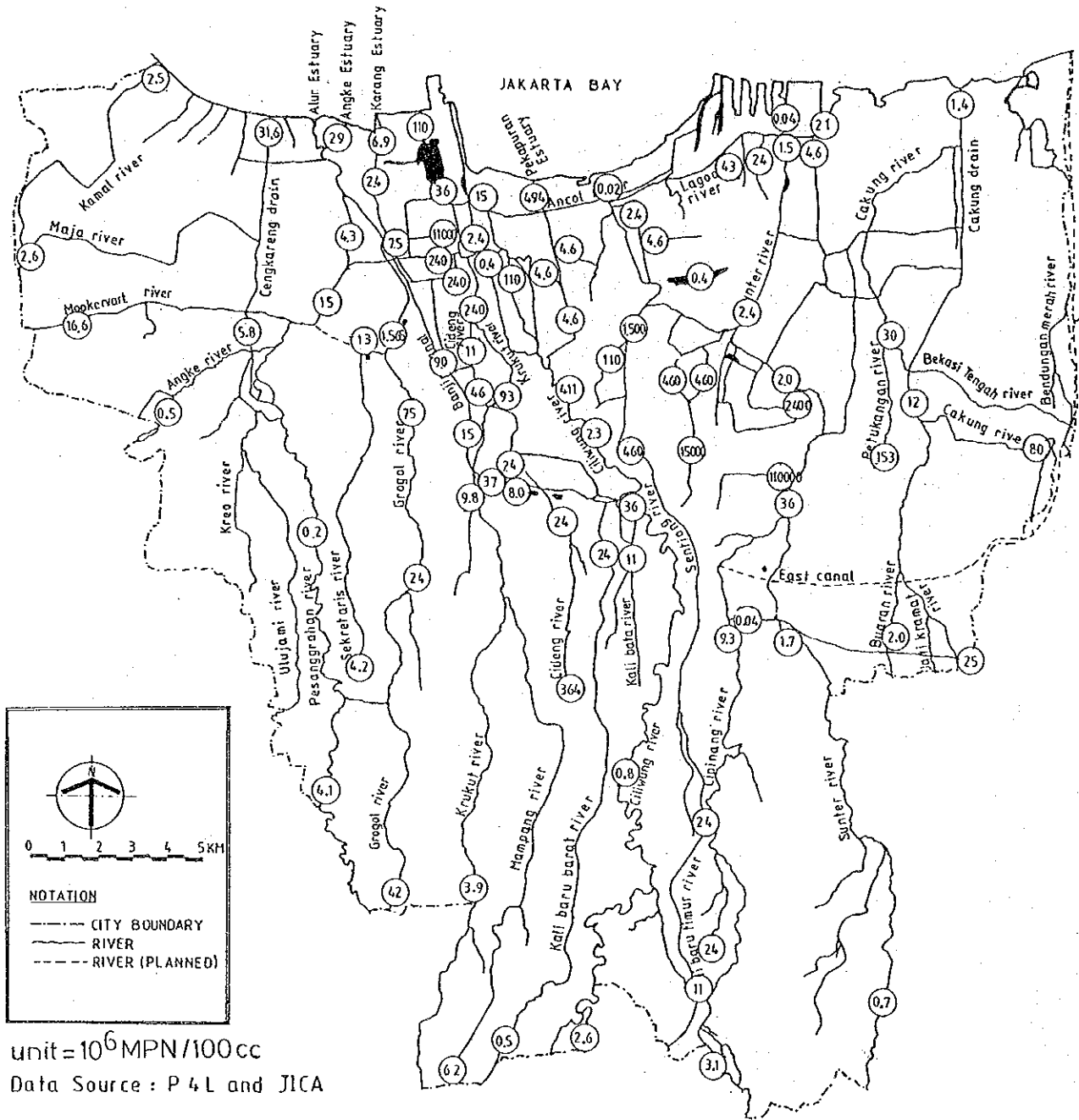
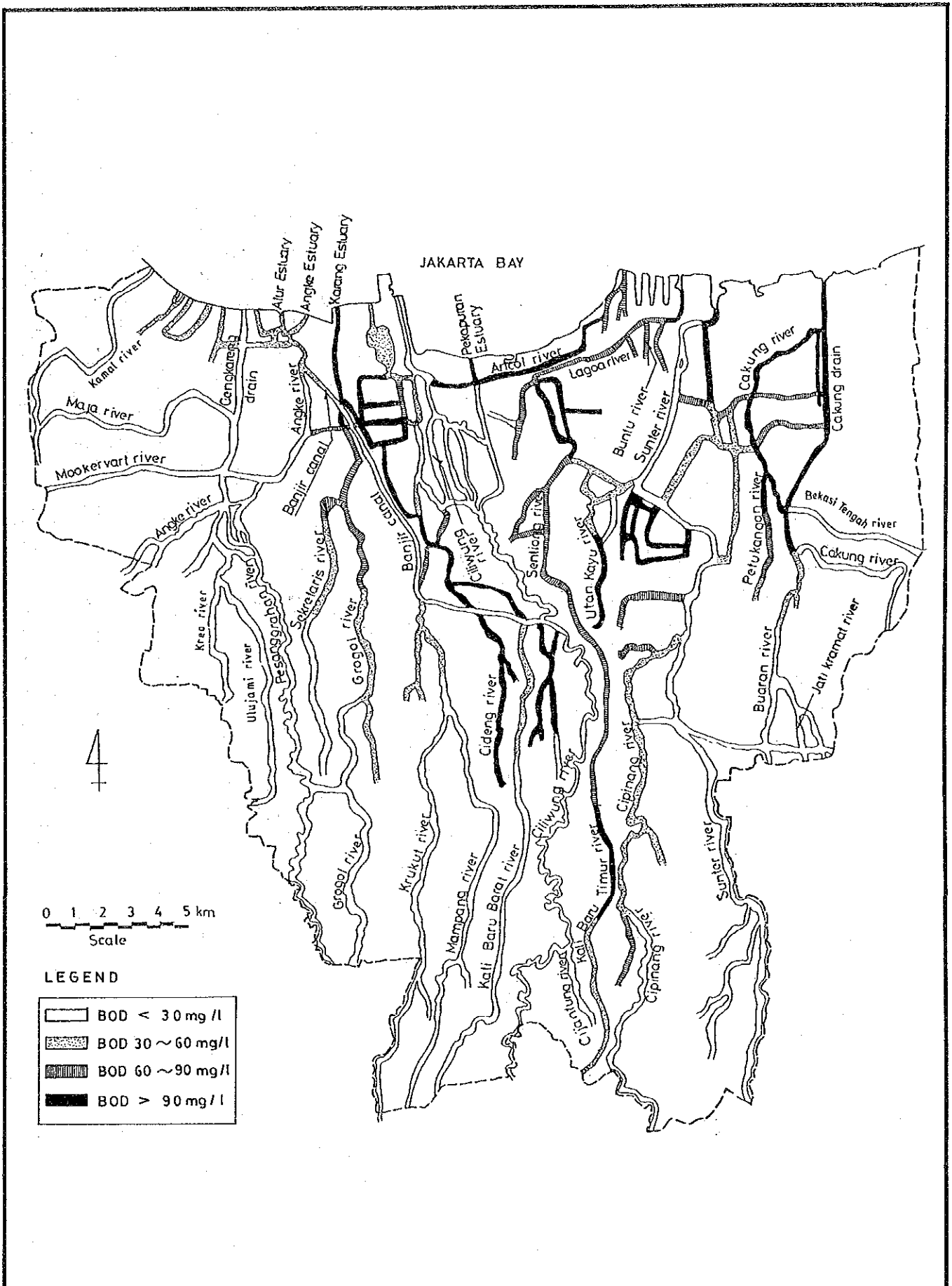


FIG. C.7(4)

REGIONAL DISTRIBUTION OF RIVER WATER QUALITY

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



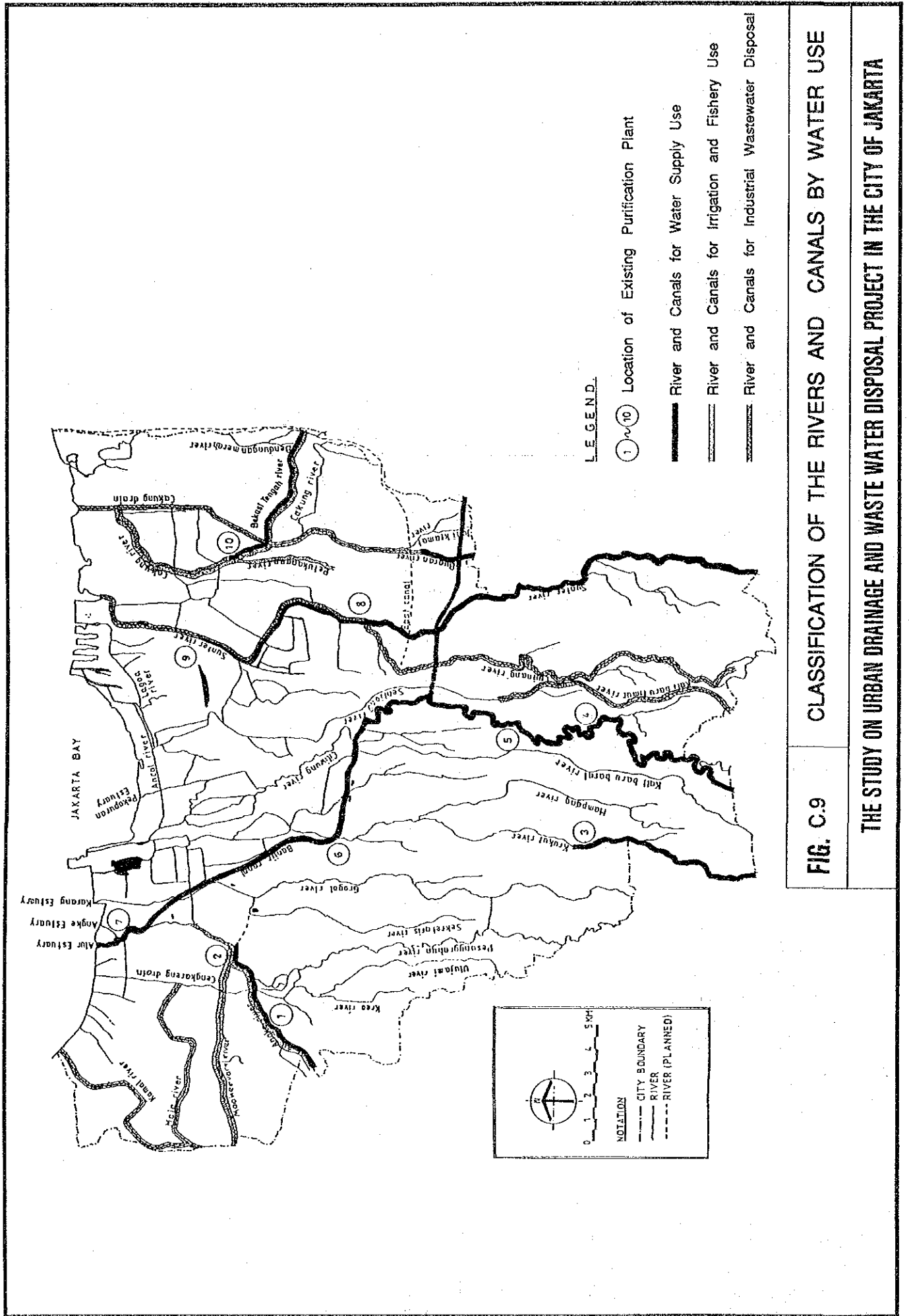
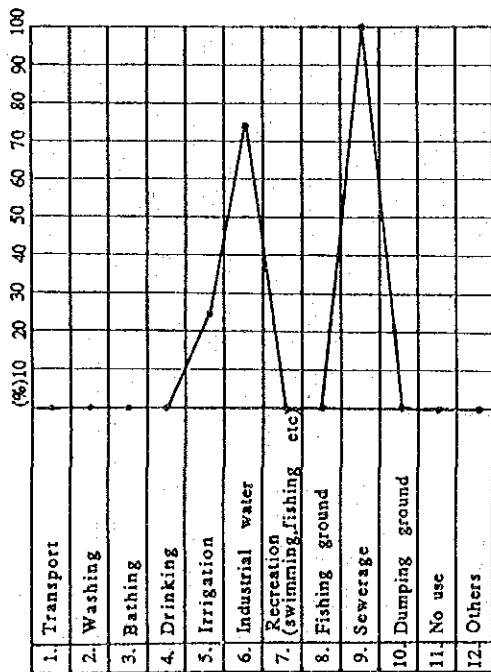


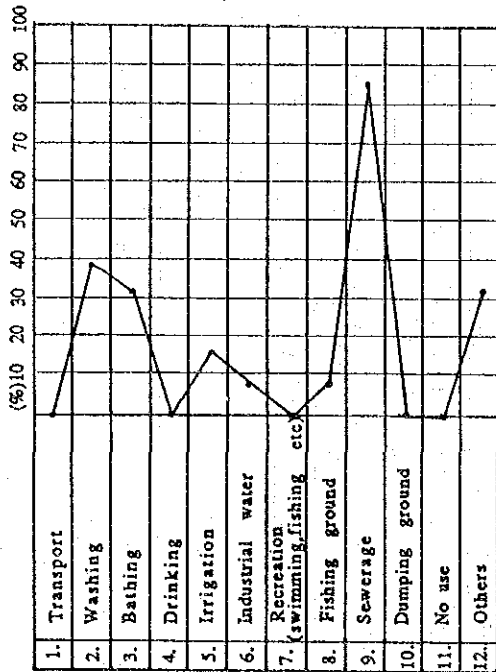
FIG. C.9 CLASSIFICATION OF THE RIVERS AND CANALS BY WATER USE

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

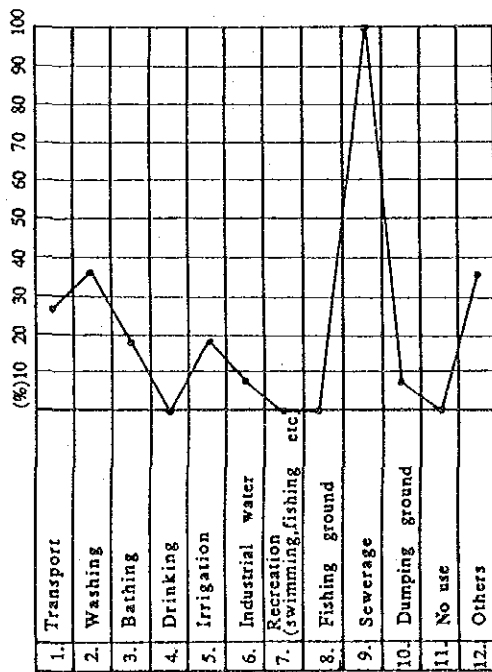
No. 2 NAME OF RIVER/CANAL ANCOL RIVER



No. 2 NAME OF RIVER/CANAL ANGKE RIVER



No. 3 NAME OF RIVER/CANAL BANJIR CANAL



No. 4 NAME OF RIVER/CANAL KALI BARU TIMUR

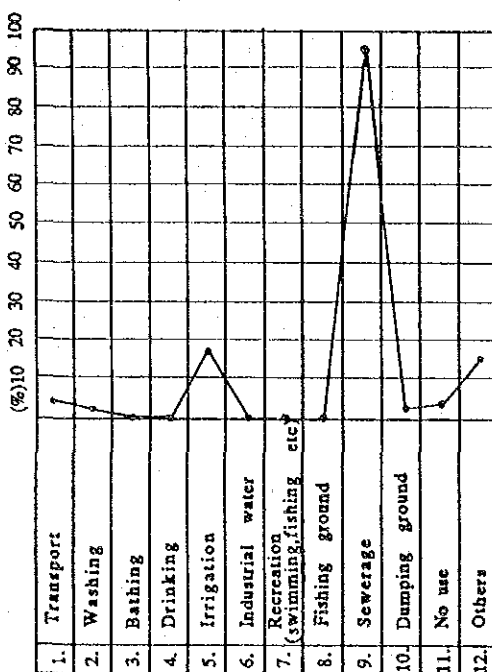


FIG. C.10 (1)

RIVER WATER USE BY RIVER/CANAL IN 1989

Source : JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

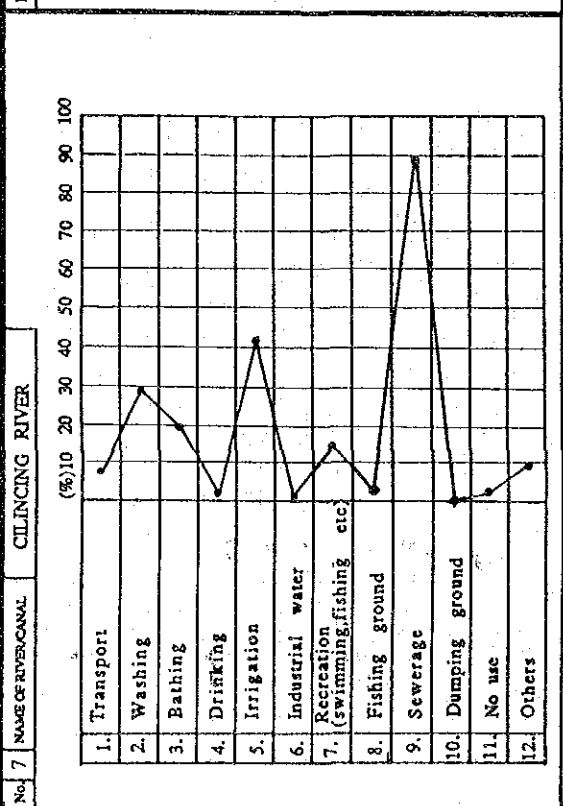
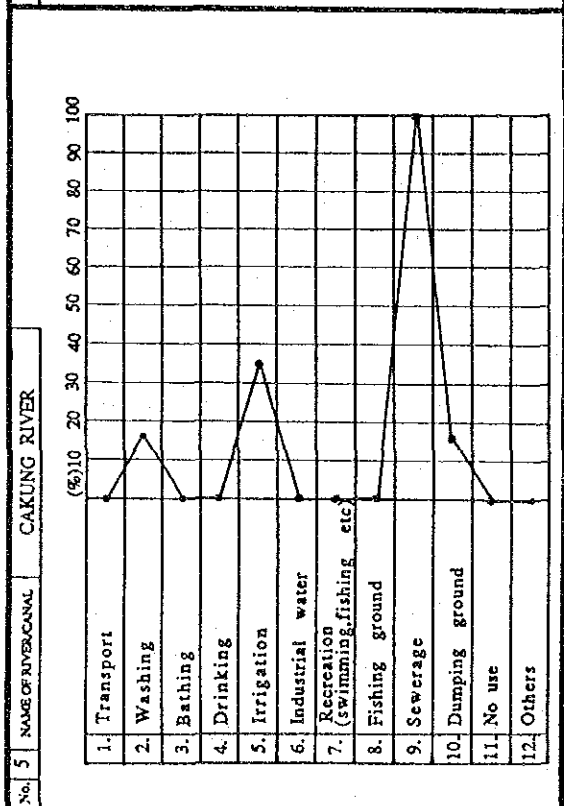
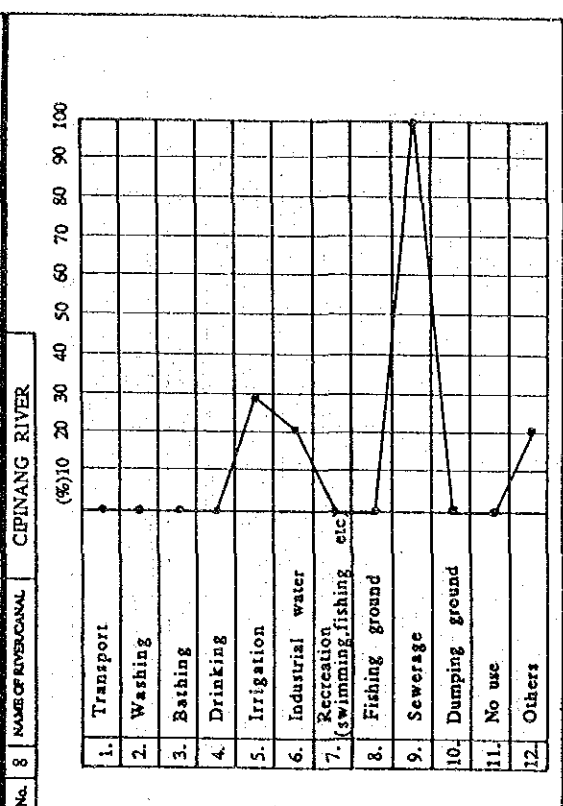
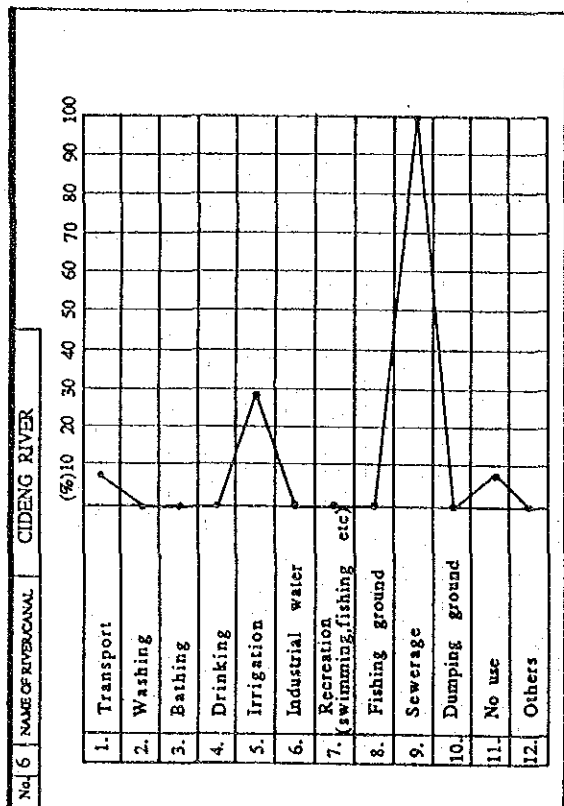


FIG. C.10 (2) RIVER WATER USE BY RIVER/CANAL IN 1989

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Source : JICA

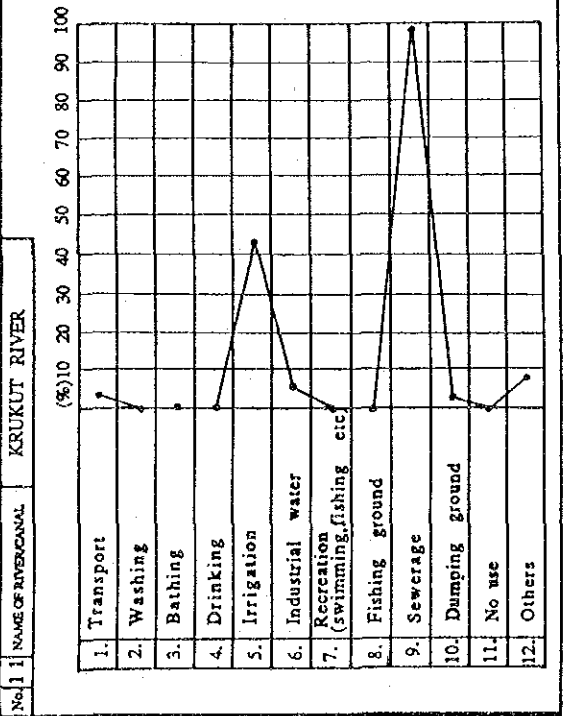
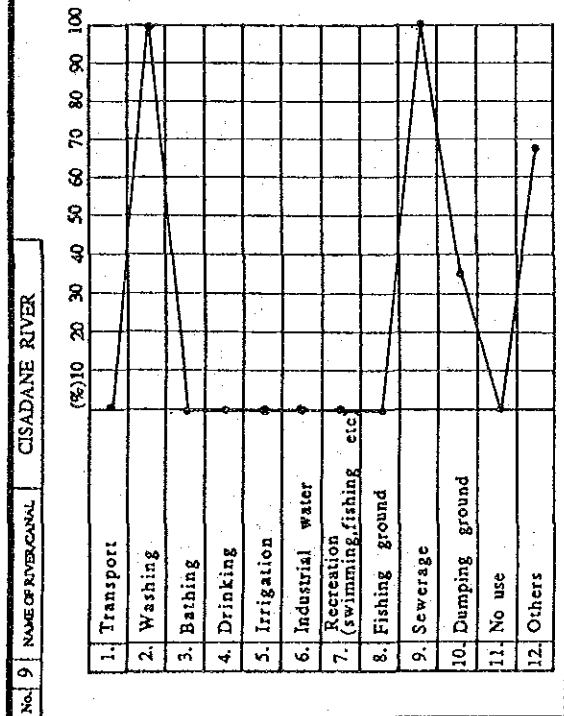
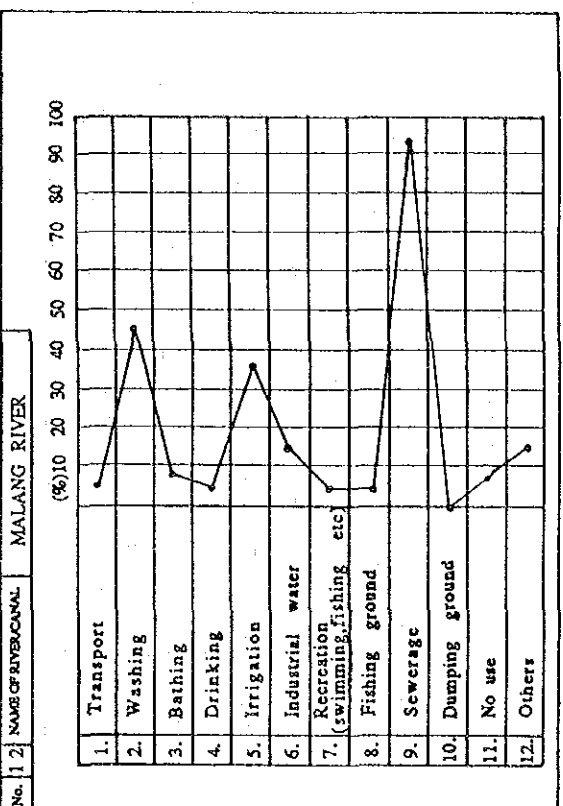
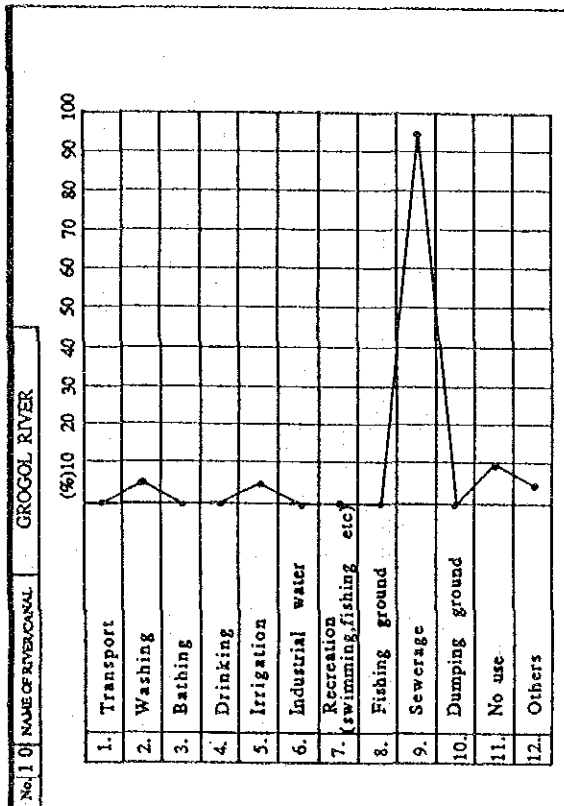
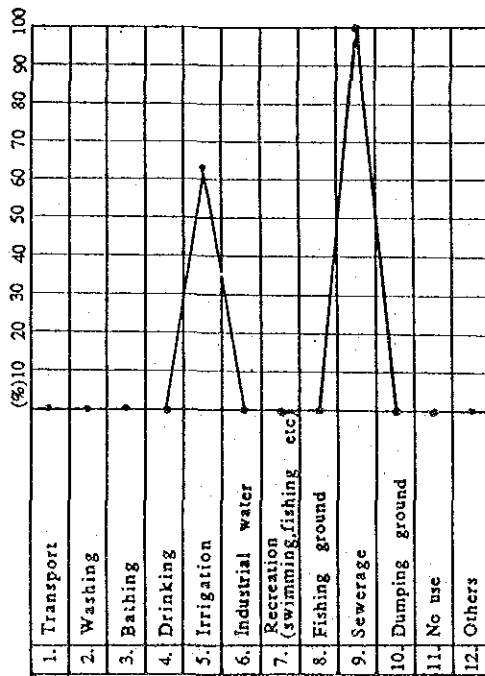


FIG. C.10 (3) RIVER WATER USE BY RIVER/CANAL IN 1989

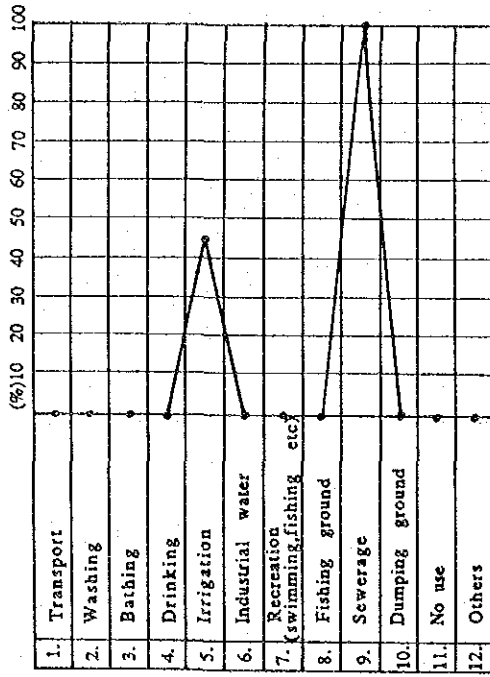
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Source : JICA

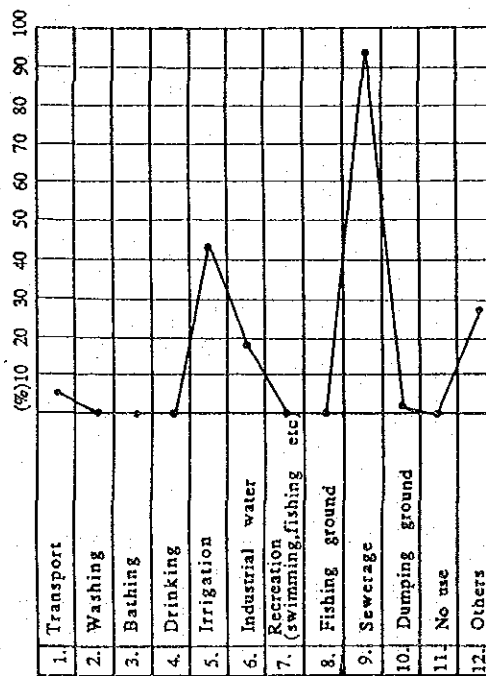
No. 1 3 NAME OF RIVER/CANAL MAMPANG RIVER



No. 1 4 NAME OF RIVER/CANAL SENTIONG RIVER



No. 1 5 NAME OF RIVER/CANAL SUNTER RIVER



No. 1 NAME OF RIVER/CANAL

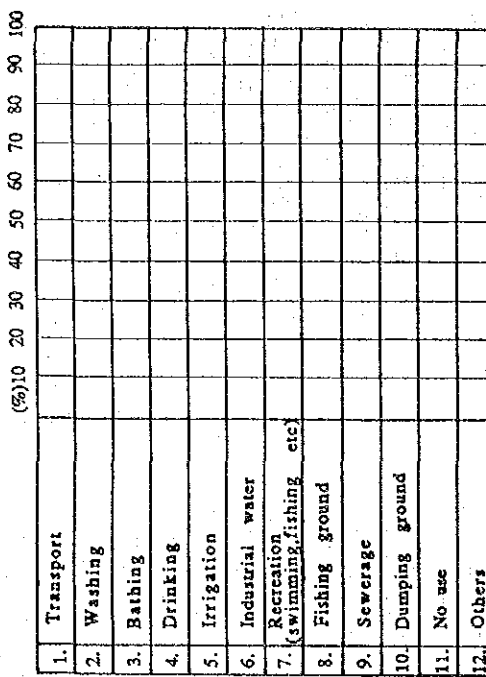


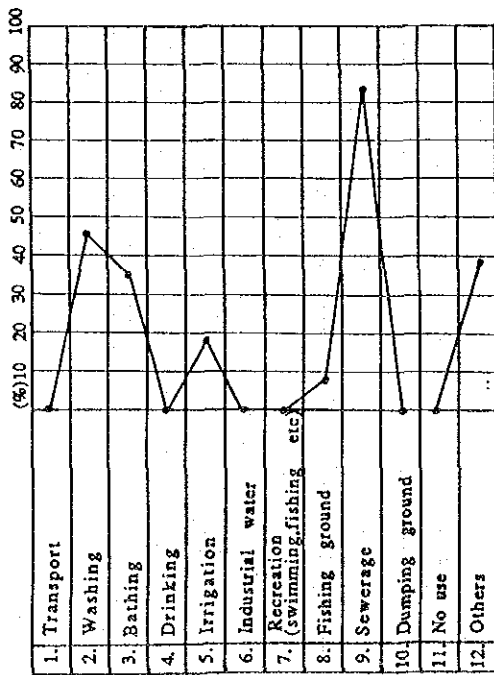
FIG. C.10 (4)

RIVER WATER USE BY RIVER/CANAL IN 1989

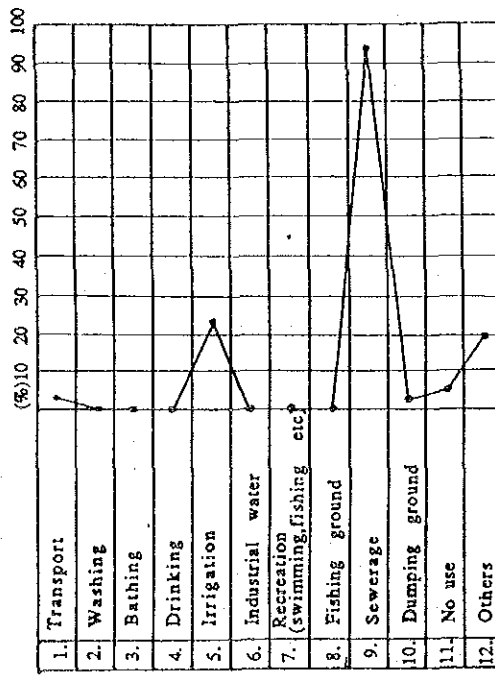
Source : JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

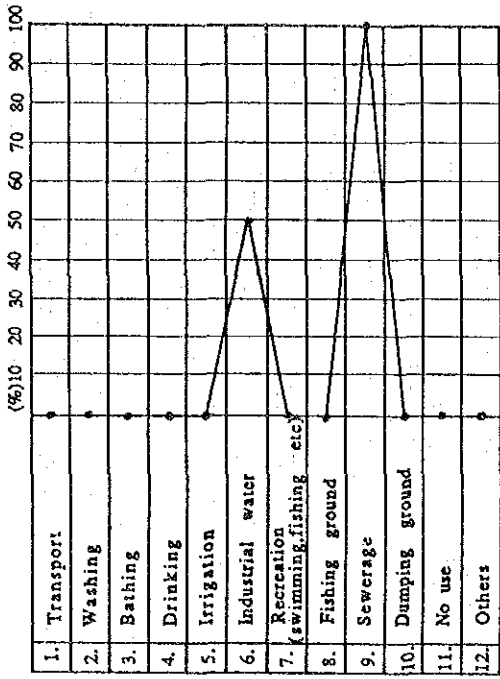
No. 6 NAME OF RIVER/CANAL ANGKE (SOUTH)



No. 8 NAME OF RIVER/CANAL KALI BARU TIMUR (SOUTH)



No. 7 NAME OF RIVER/CANAL ANGKE (NORTH)



No. 9 NAME OF RIVER/CANAL KALI BARU TIMUR (NORTH)

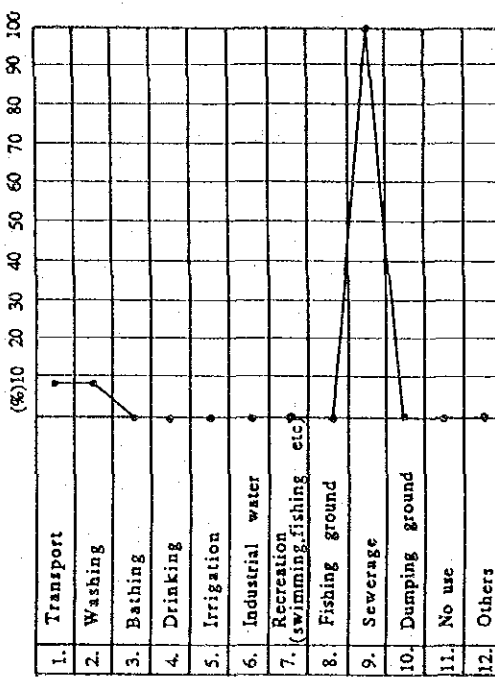


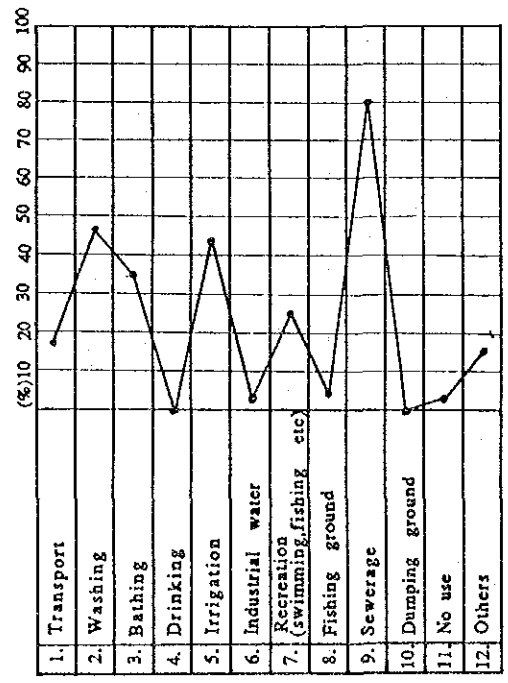
FIG. C.10 (5)

RIVER WATER USE BY RIVER/CANAL IN 1989

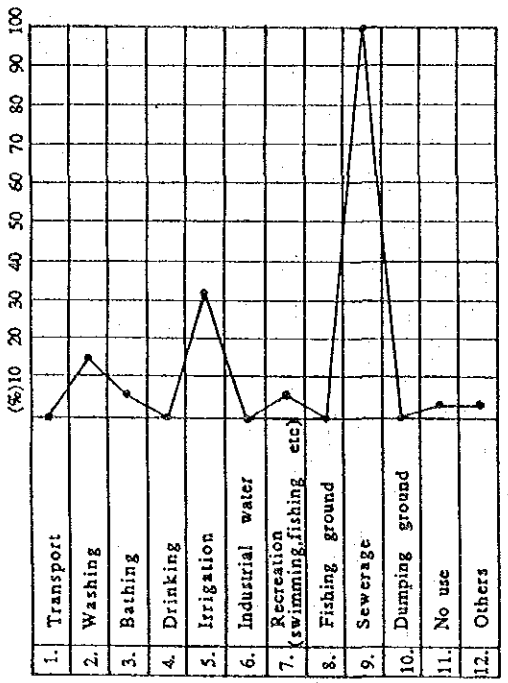
Source : JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

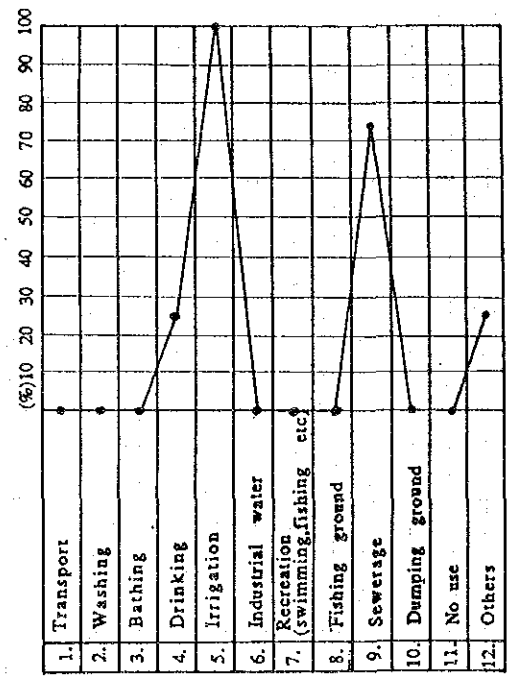
No. 2 0 NAME OF RIVER/CANAL CILIWUNG (SOUTH)



No. 2 1 NAME OF RIVER/CANAL CILIWUNG (MIDDLE)



No. 2 2 NAME OF RIVER/CANAL CILIWUNG (NORTH)



No. 2 3 NAME OF RIVER/CANAL

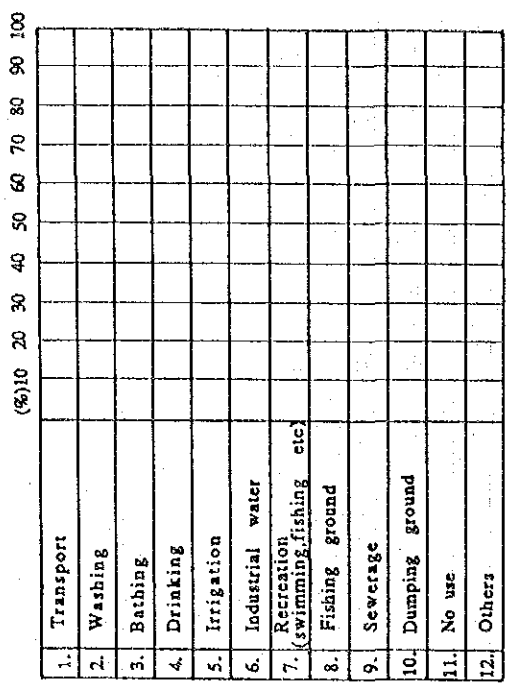


FIG. C.10 (6)

RIVER WATER USE BY RIVER/CANAL IN 1989

Source : JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

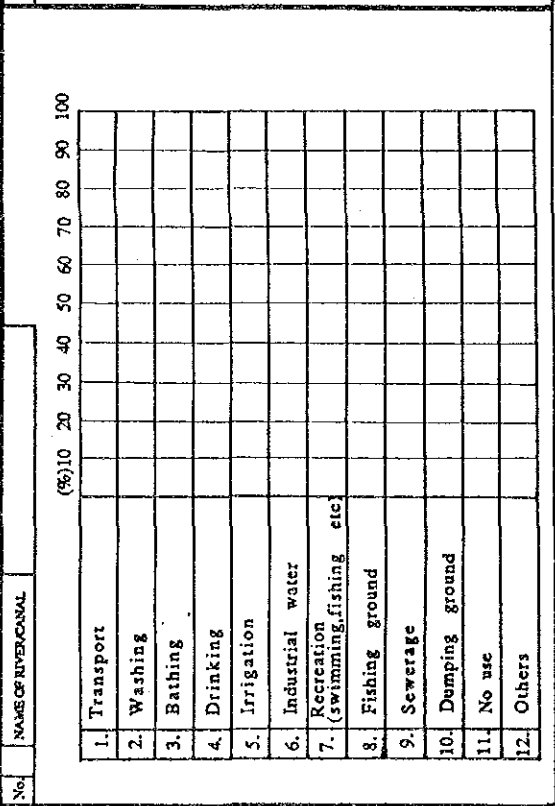
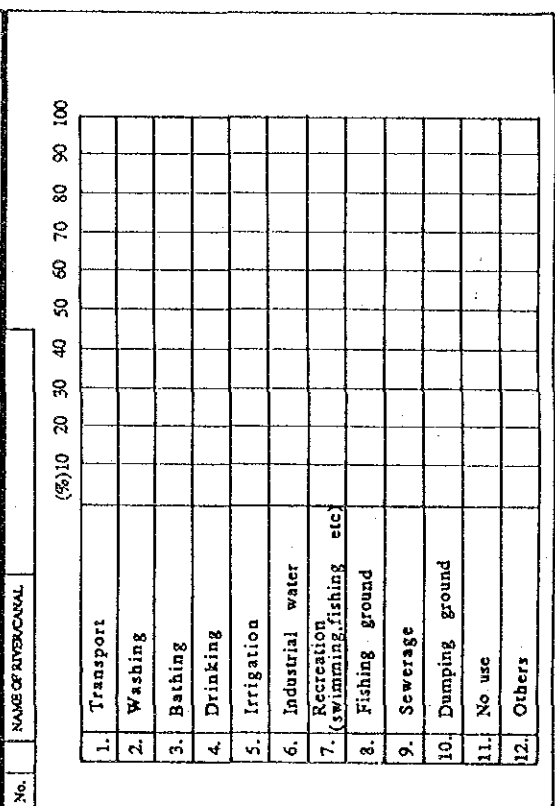
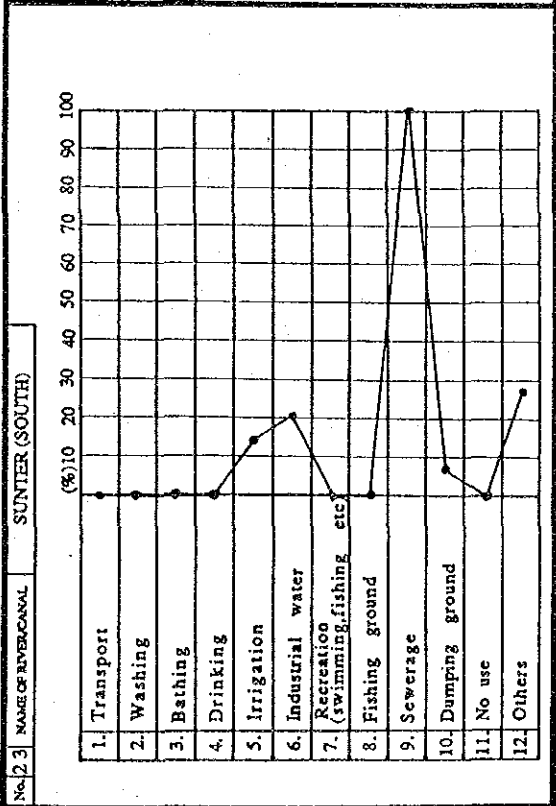
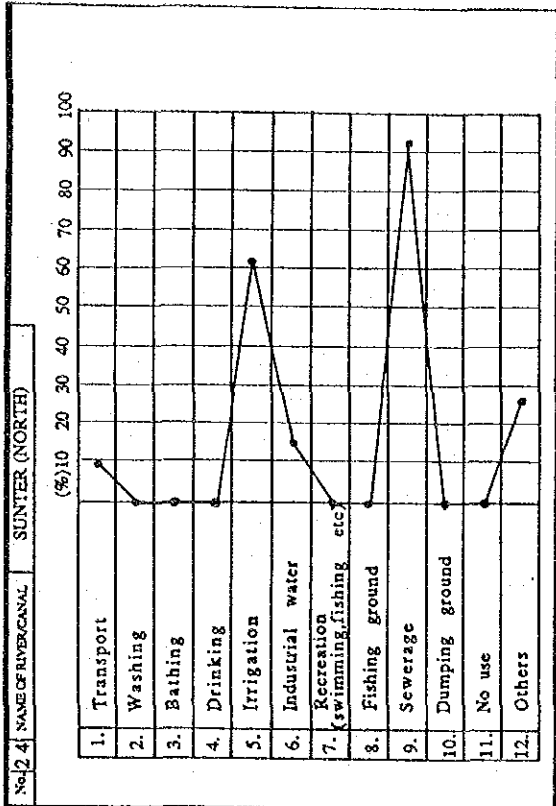


FIG. C.10 (7)

RIVER WATER USE BY RIVER/CANAL IN 1989

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Source : JICA

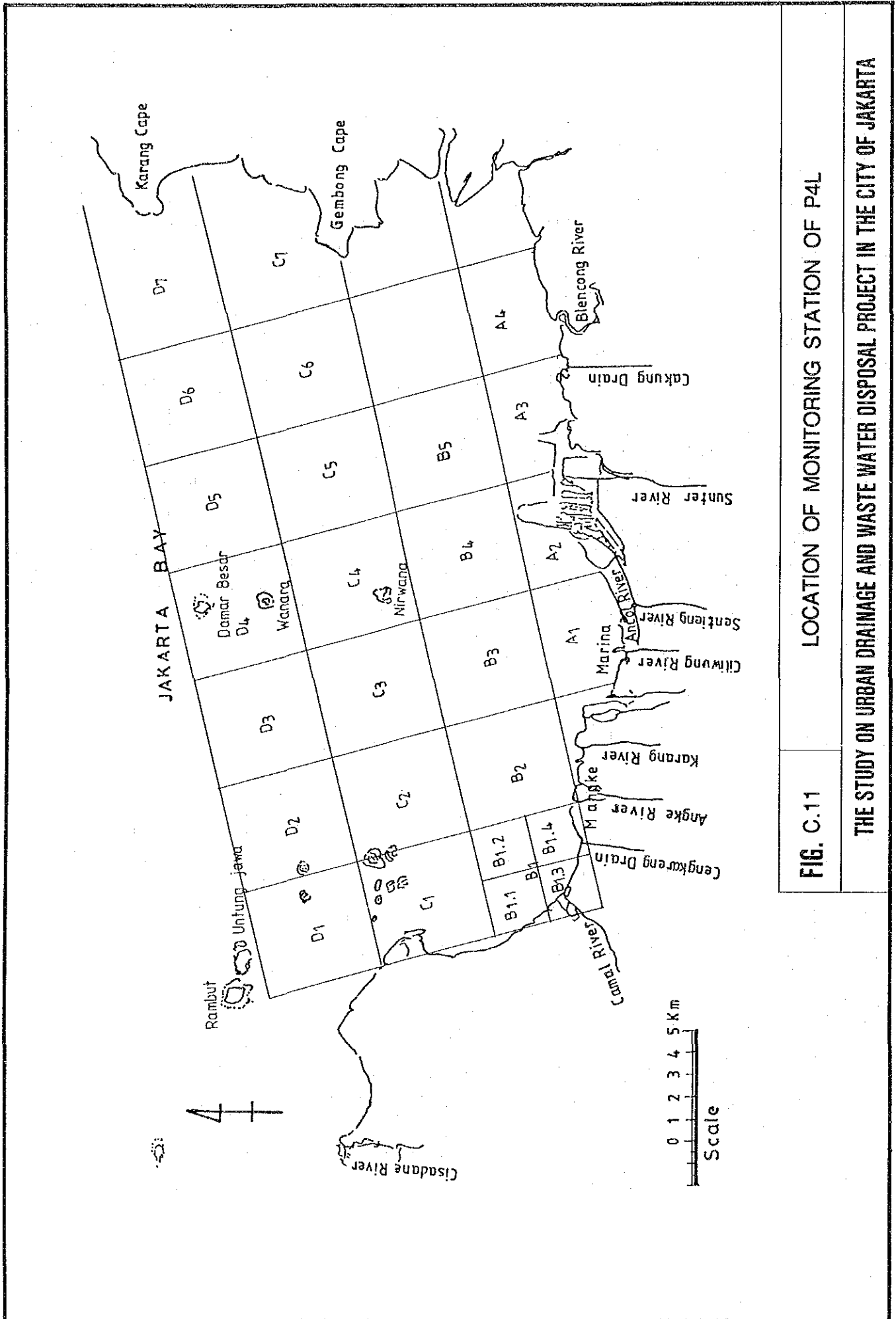
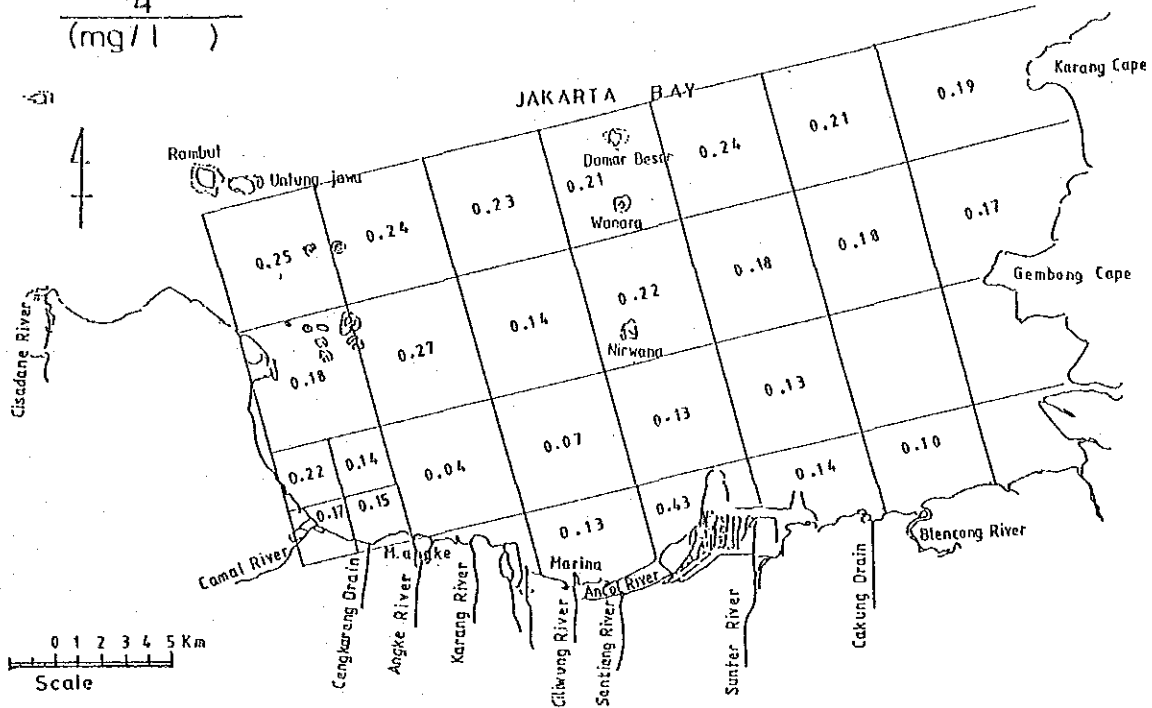


FIG. C.11

LOCATION OF MONITORING STATION OF P4L

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

$\text{NH}_4 - \text{N}$
(mg/l)



$\text{PO}_4 - \text{P}$
(mg/l)

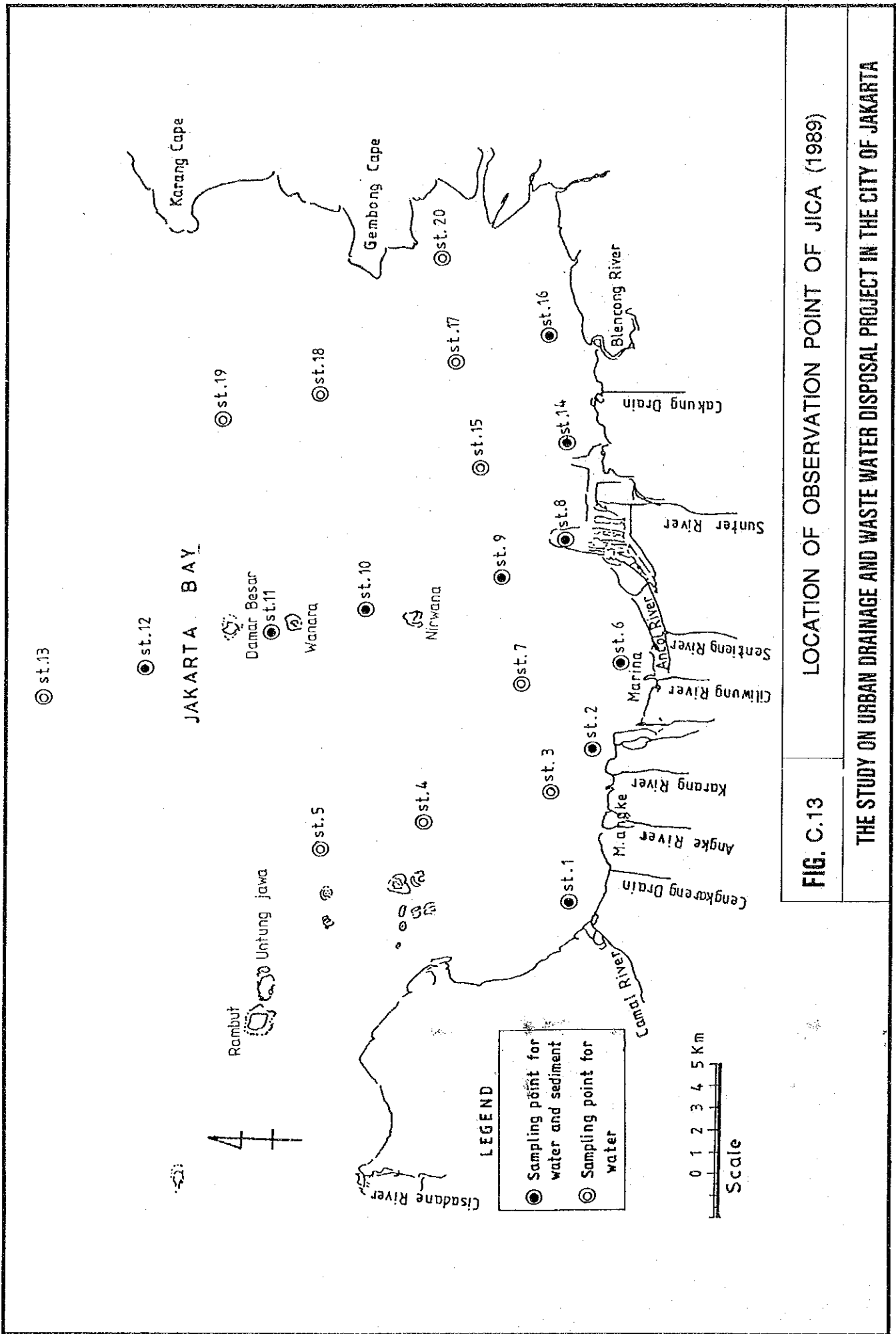


Source : P4L

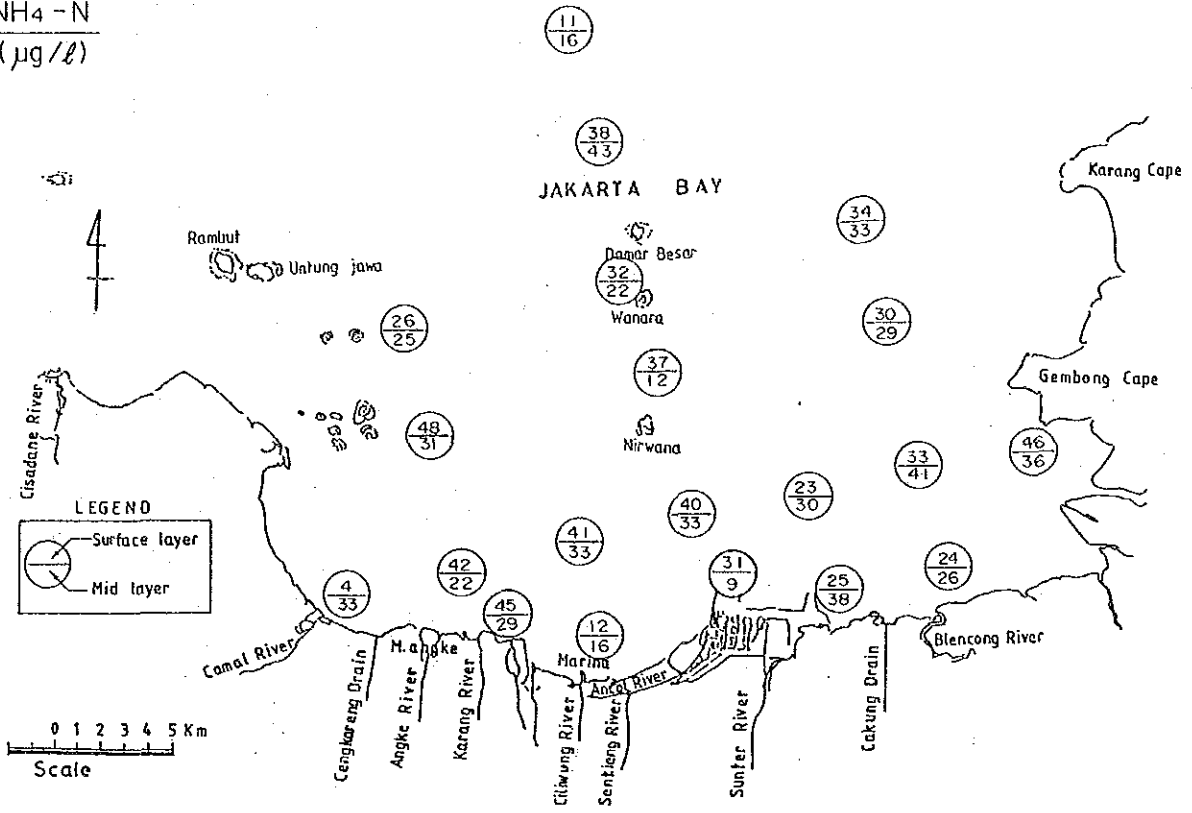
FIG. C.12

REGIONAL DISTRIBUTION OF WATER QUALITY IN 1987/88

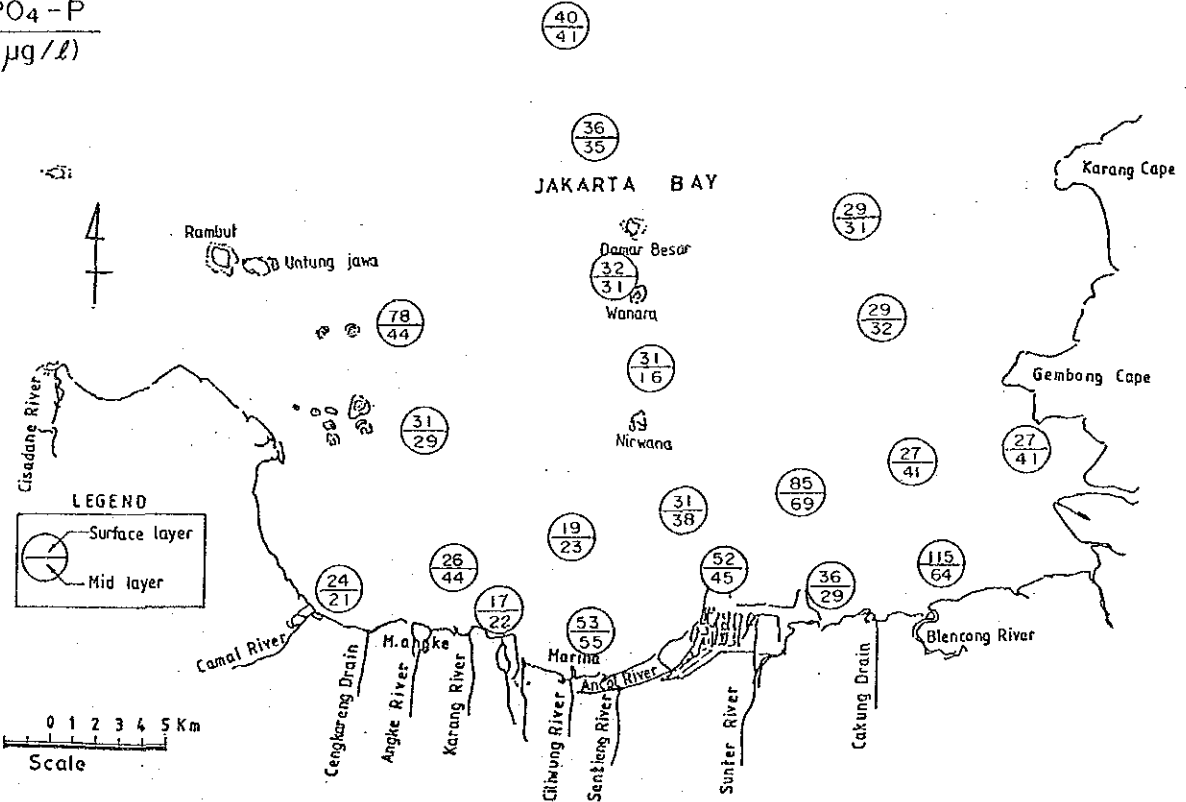
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



NH₄ - N
(µg/l)



PO₄ - P
(µg/l)



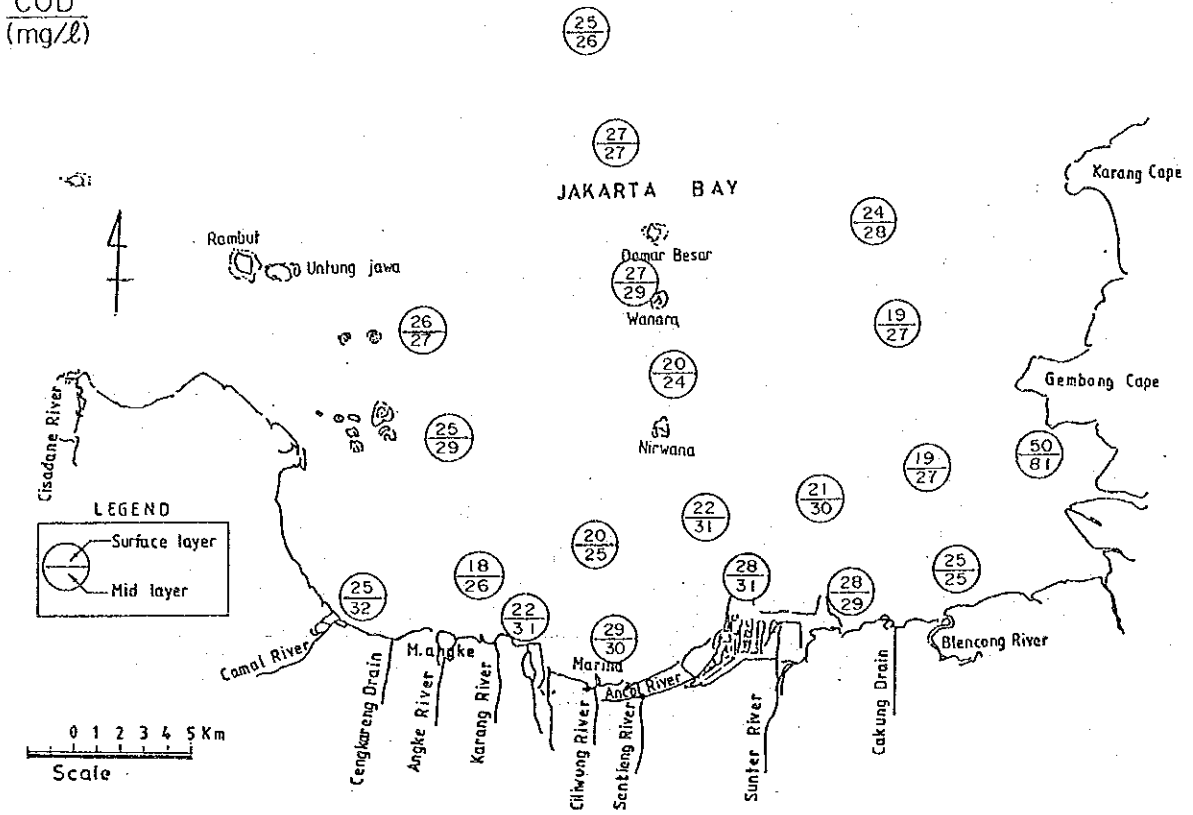
Source : JICA

FIG. C.14

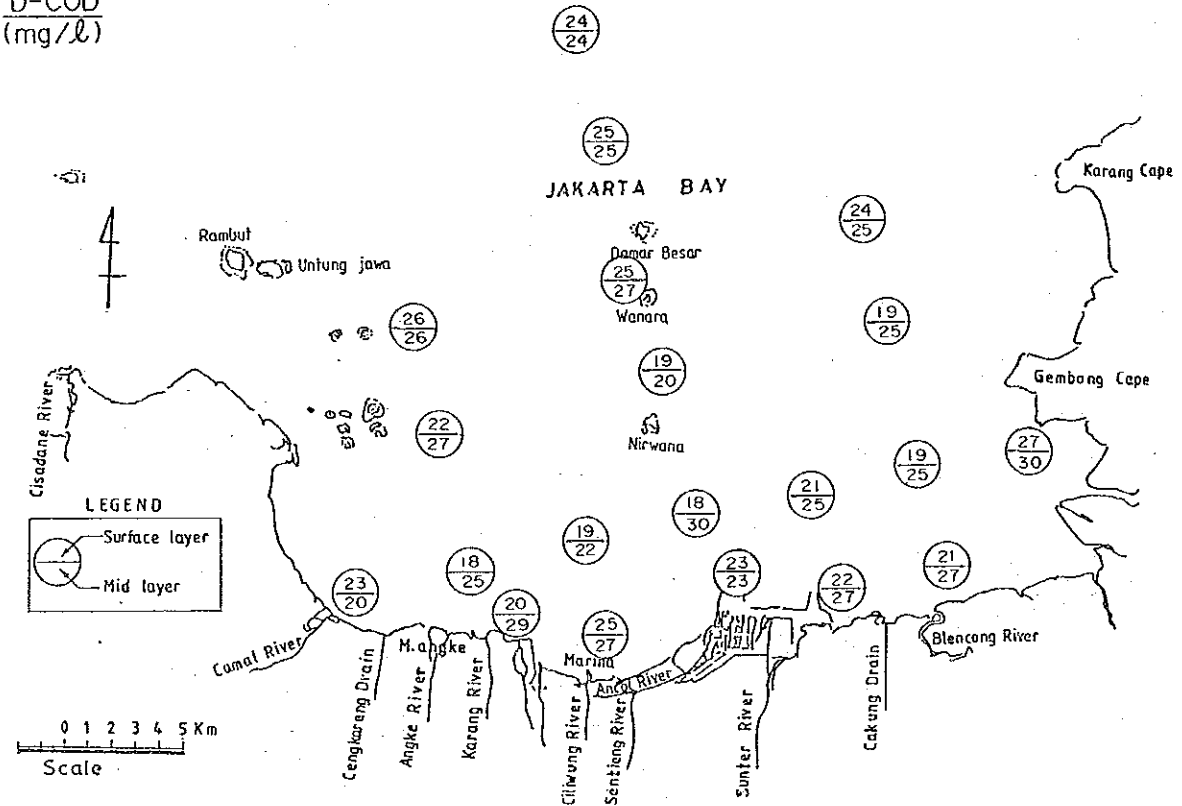
REGIONAL DISTRIBUTION OF WATER QUALITY IN DECEMBER 1989

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

COD
(mg/l)



D-COD
(mg/l)

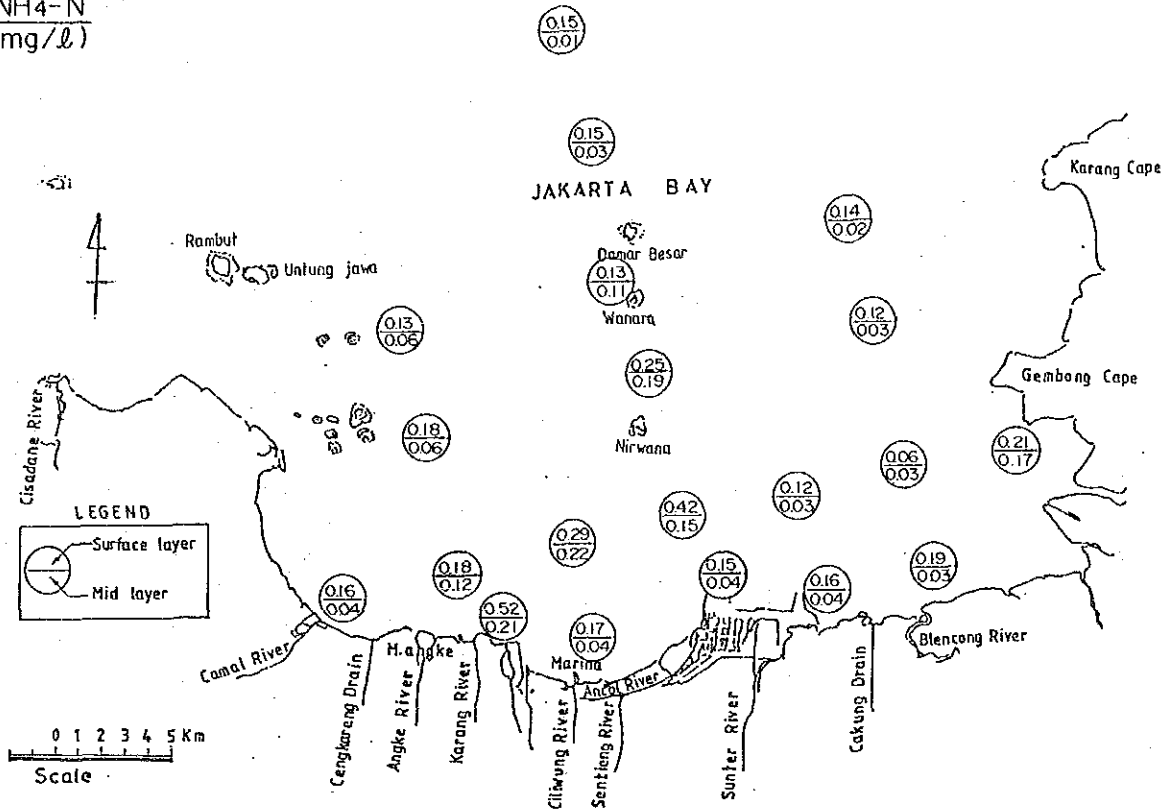


Source : JICA

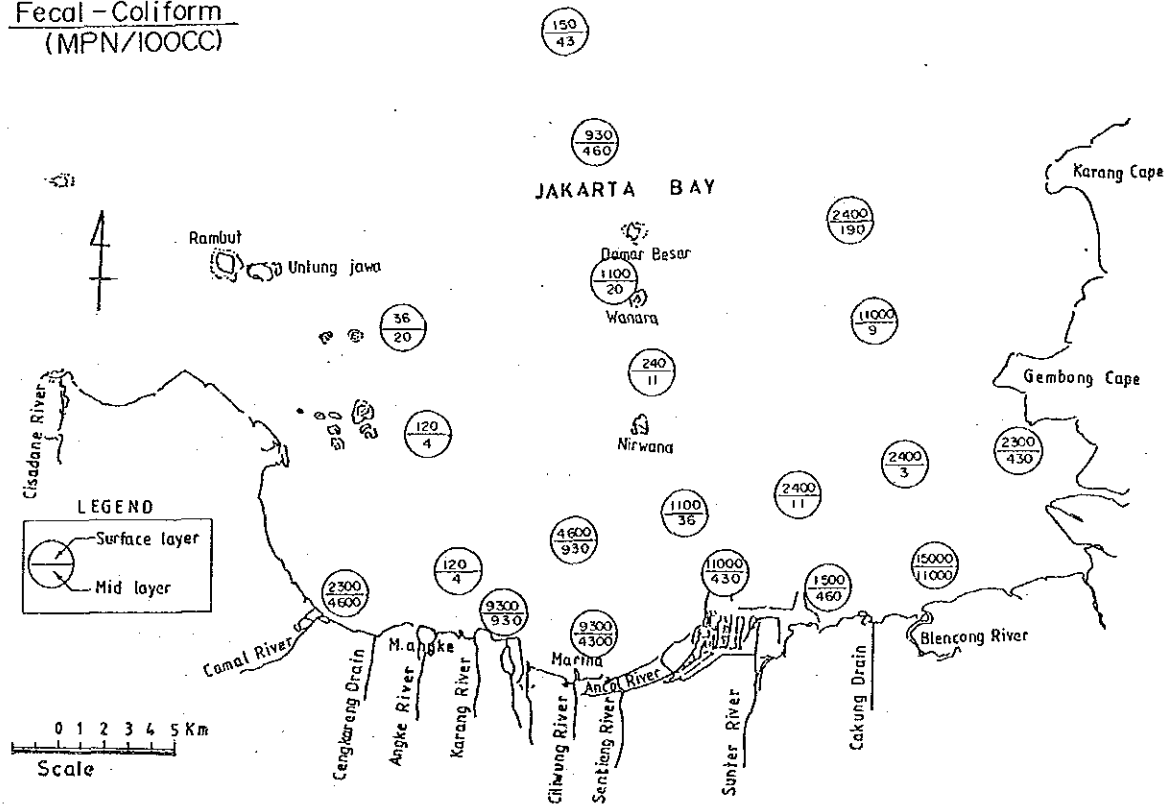
FIG. C.15(1) REGIONAL DISTRIBUTION OF WATER QUALITY IN FEBRUARY 1990

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

NH₄-N
(mg/l)



Fecal - Coliform
(MPN/100CC)

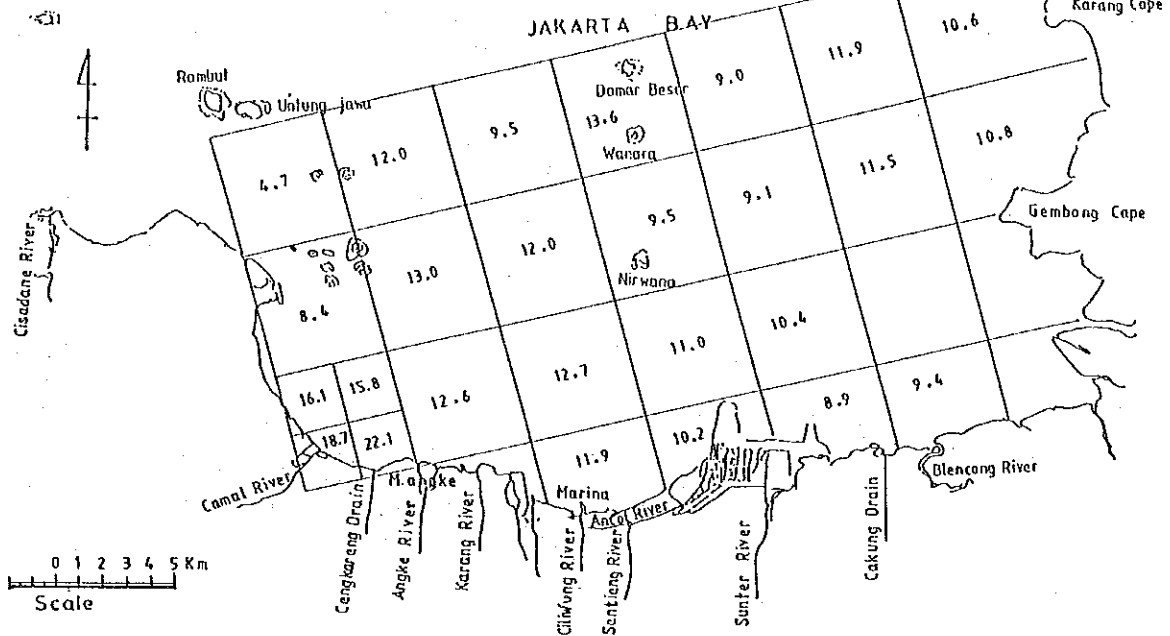


Source : JICA

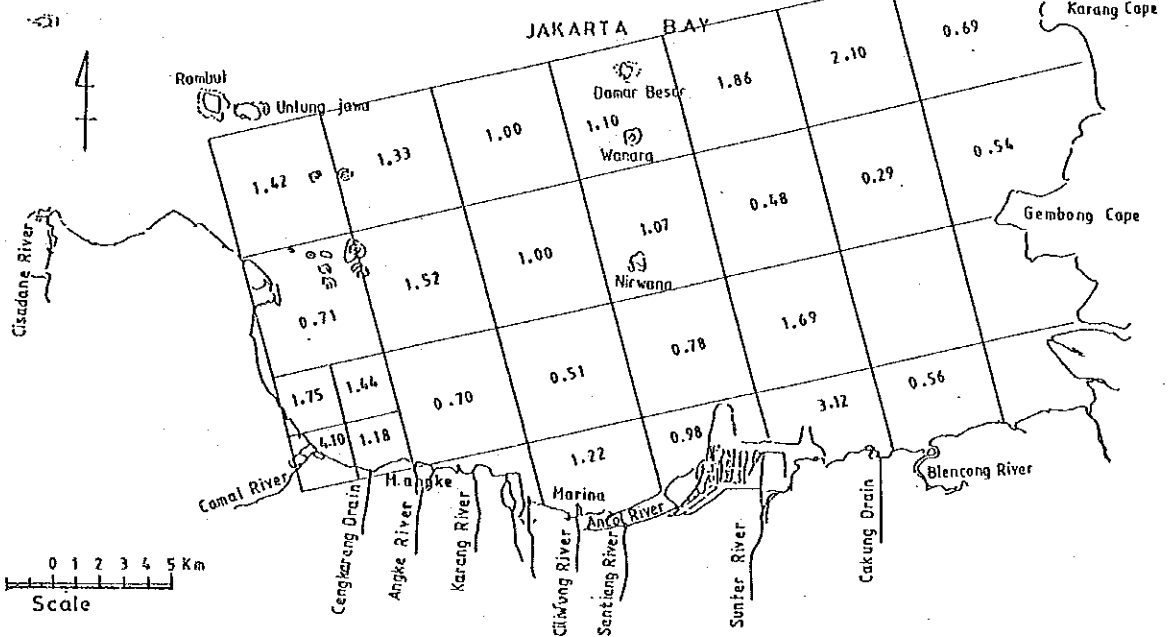
FIG. C.15(2) REGIONAL DISTRIBUTION OF WATER QUALITY IN FEBRUARY 1990

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Cr
(mg/kg)



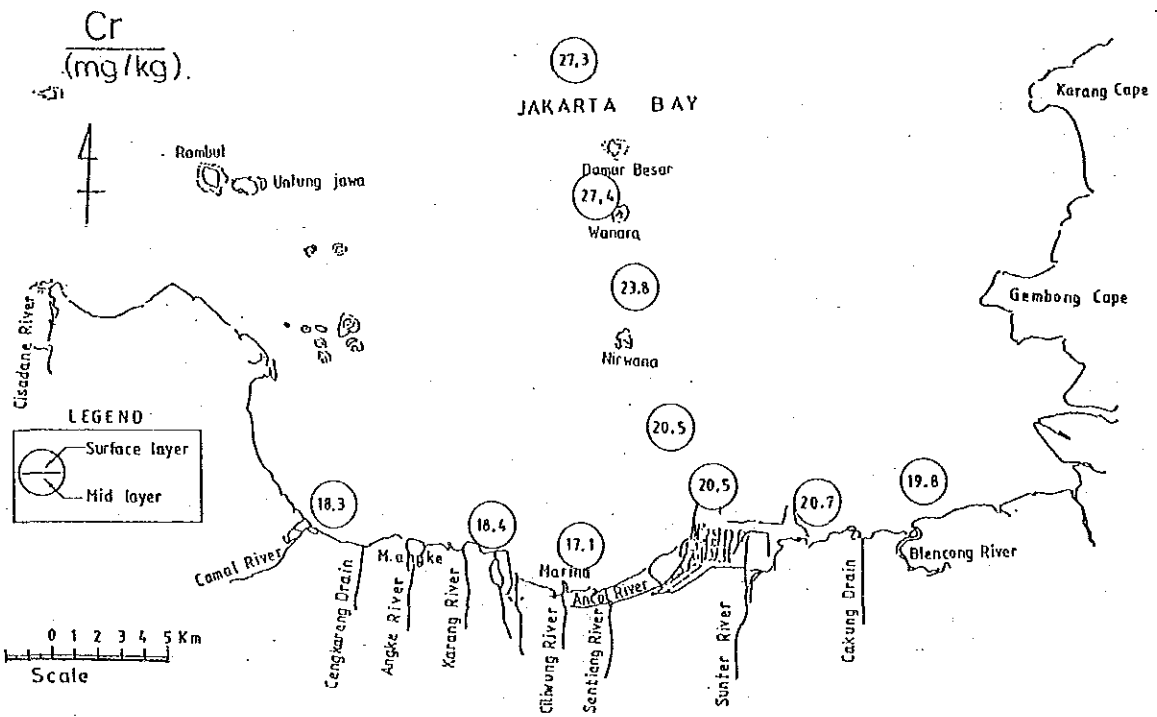
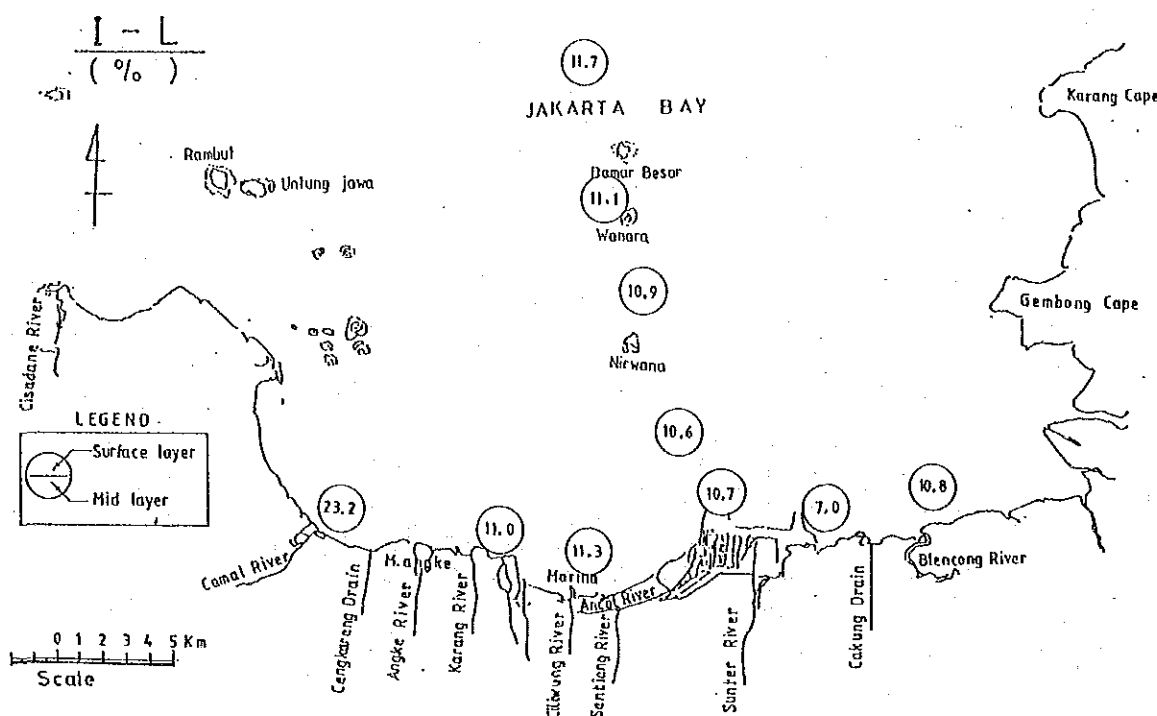
Hg
(mg/kg)



Source : P4L

FIG. C.16(2) REGIONAL DISTRIBUTION OF SEDIMENT QUALITY IN 1987/88

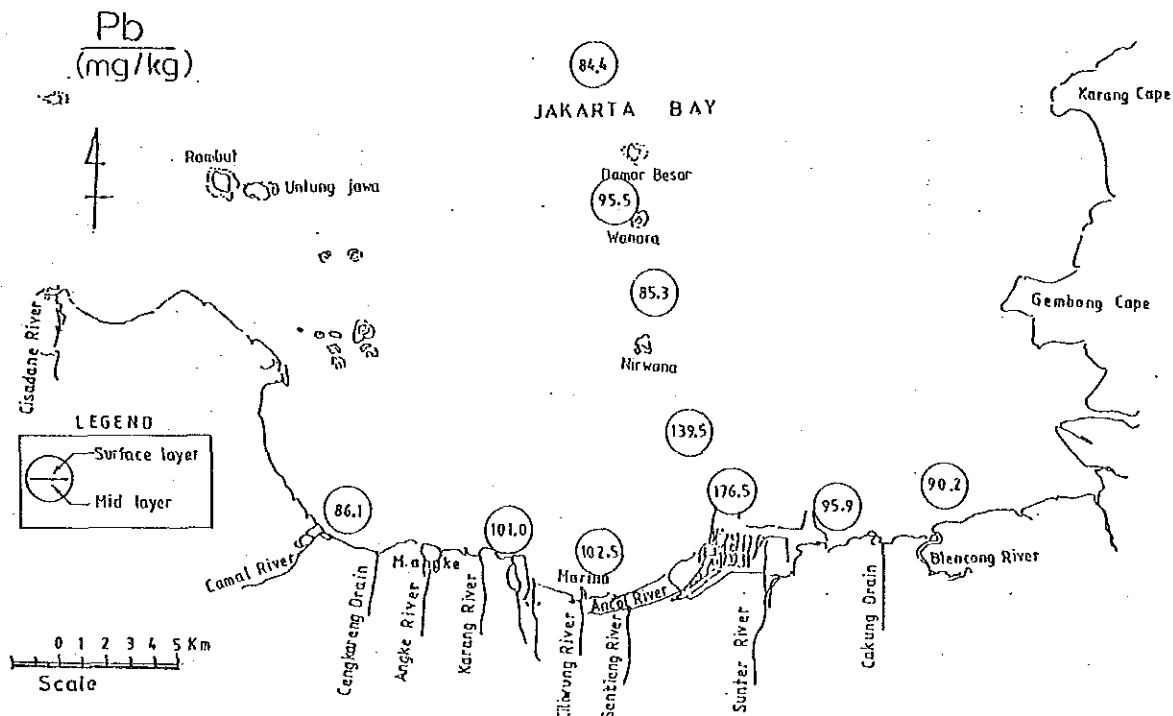
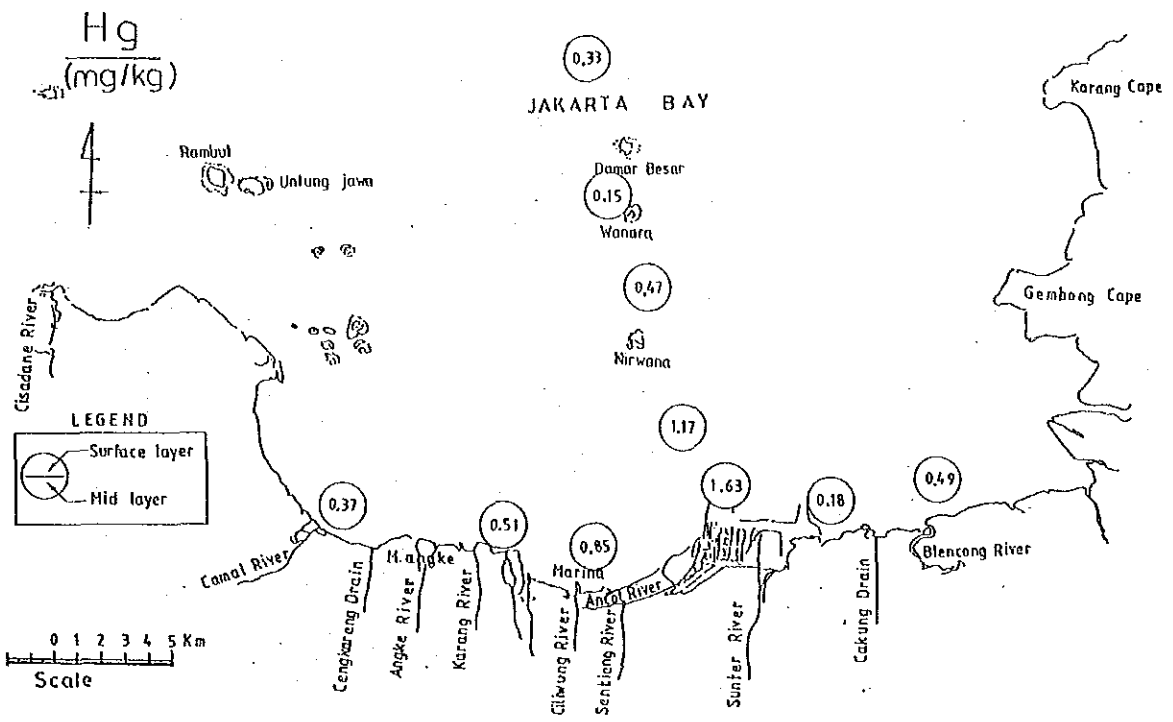
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



Source : JICA

FIG. C.17(1) REGIONAL DISTRIBUTION OF SEDIMENT QUALITY IN DECEMBER 1989

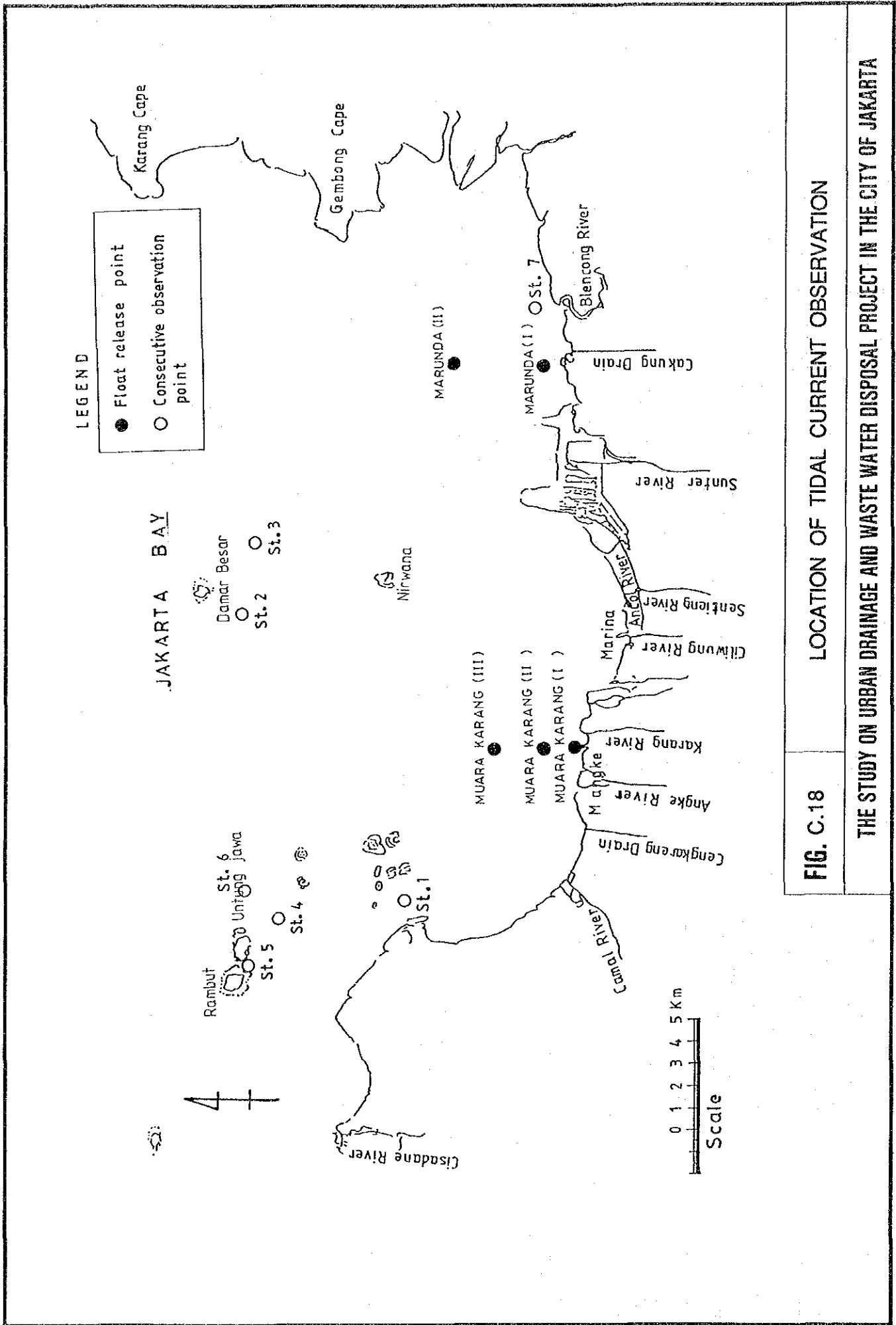
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

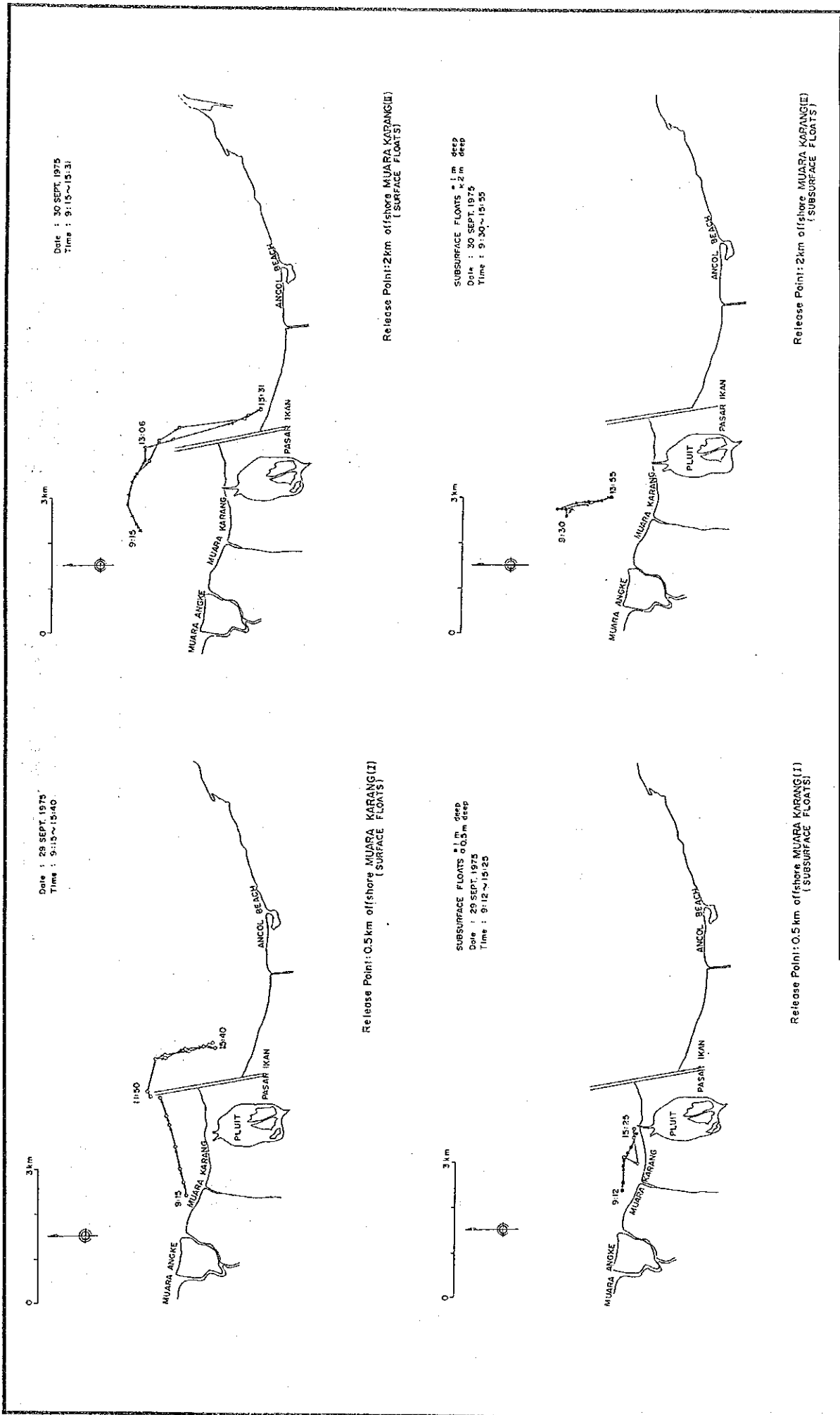


Source : JICA

FIG. C.17(2) REGIONAL DISTRIBUTION OF SEDIMENT QUALITY IN DECEMBER 1989

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



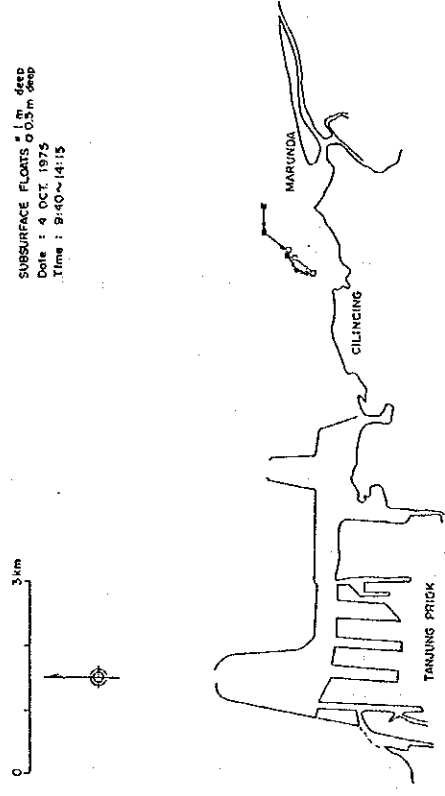
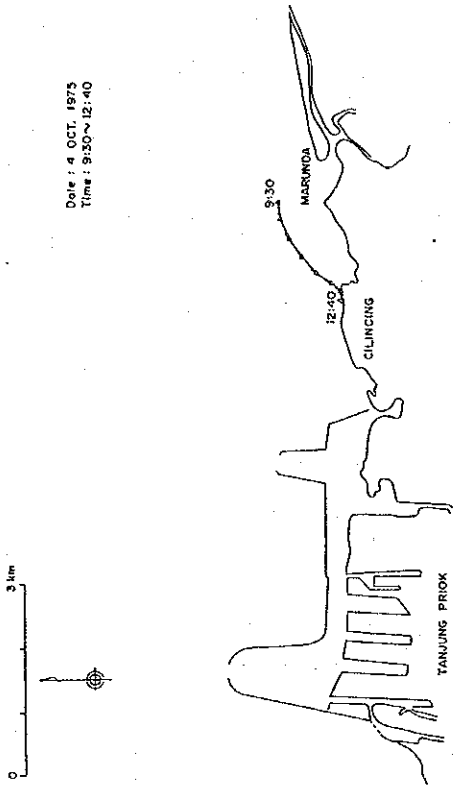
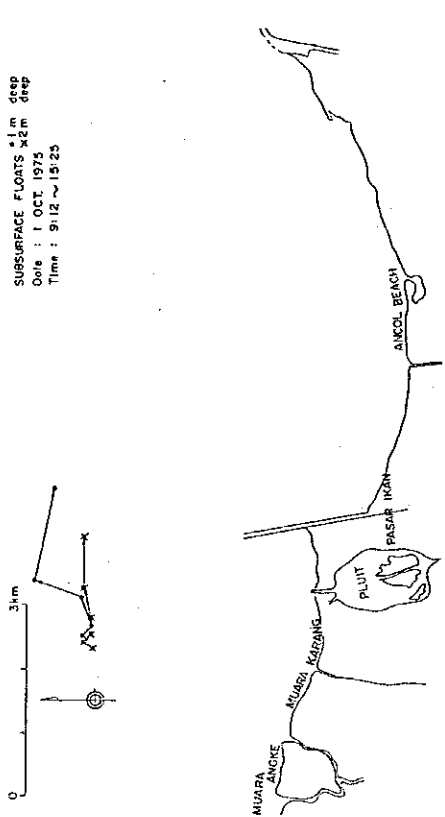
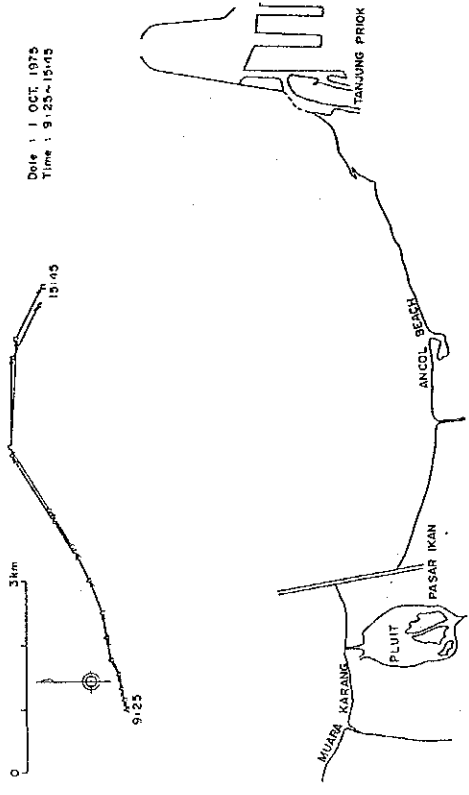


Source : Jakarta Sewerage & Sanitation Project, 1977

FIG. C.19(1)

FLOAT TRACKS

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

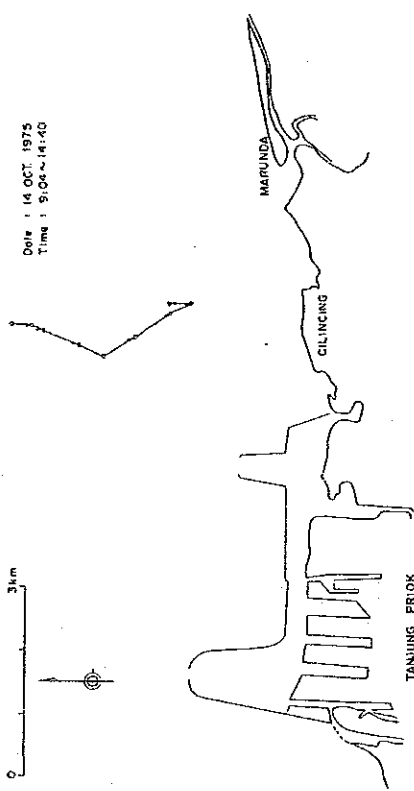


Source : Jakarta Sewerage & Sanitation Project, 1977

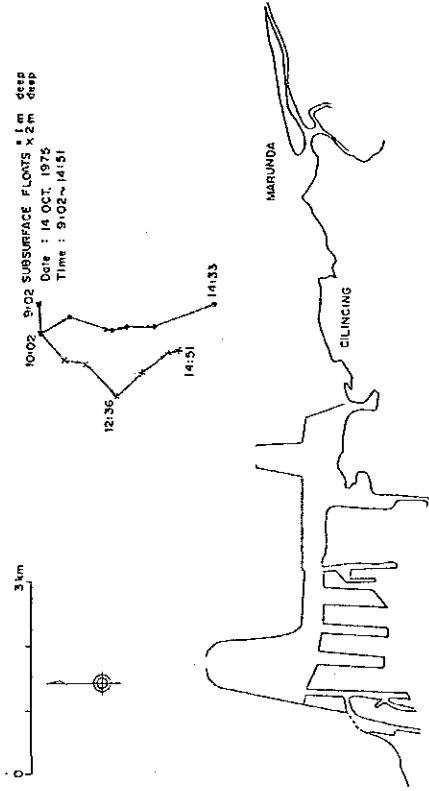
FIG. C.19(2)

FLOAT TRACKS

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



Release Point : 5km offshore MARUNDA(II)
(SURFACE FLOATS)



Release Point : 5km offshore MARUNDA(II)
(SUBSURFACE FLOATS)

FIG. C.19(3)

FLOAT TRACKS

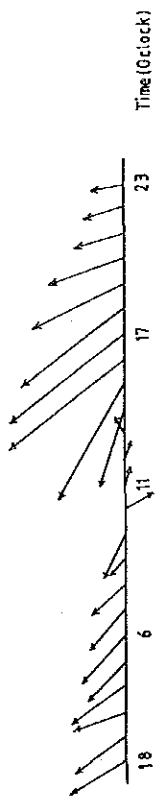
Source : Jakarta Sewerage & Sanitation
Project, 1977

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

st. 1

13 - 14 Jul. 1986

50 cm/sec



st. 2

28 - 29 Aug. 1983

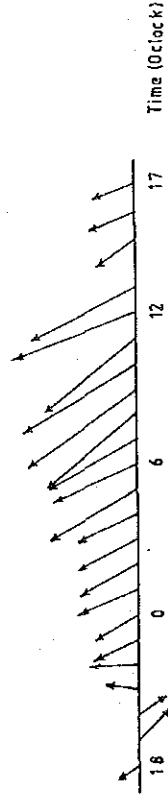
50 cm/sec



st. 1

9 - 10 Feb. 1987

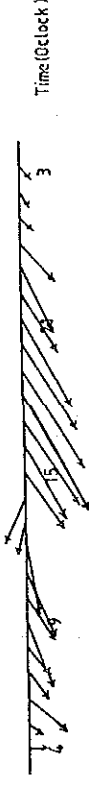
50 cm/sec



st. 2

30 - 31 Aug. 1983

50 cm/sec



Source : P30

FIG. C.20(1)

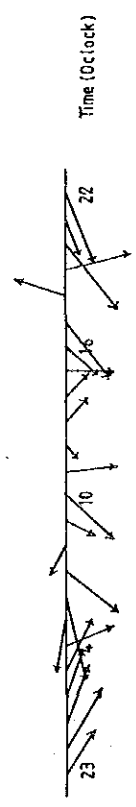
HOURLY VARIATION OF TIDAL CURRENT

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

st. 3

14 - 15 Oct. 1983

50 cm/sec



15 - 16 Oct. 1983

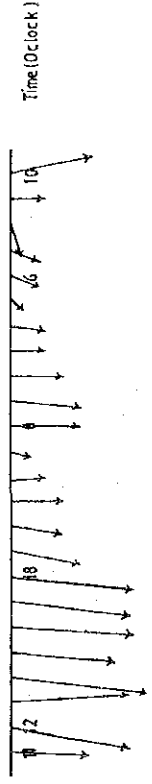
50 cm/sec



st. 4

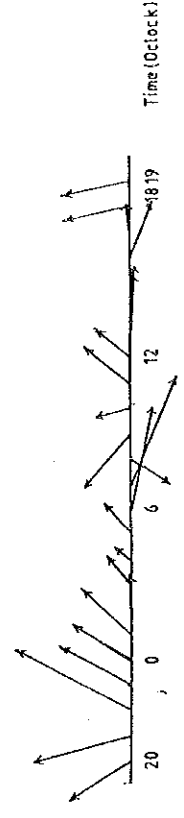
13 - 14 Apr. 1985

50 cm/sec



16 - 17 Apr. 1985

50 cm/sec



Source : P30

FIG. C.20(2)

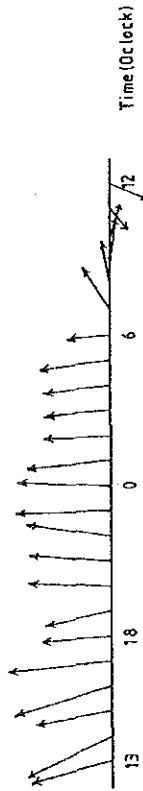
HOURLY VARIATION OF TIDAL CURRENT

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

st. 5

8 - 9 Sep. 1984

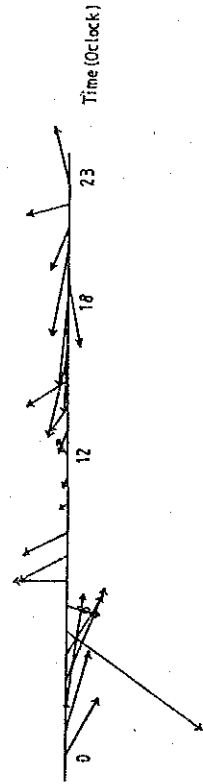
50cm/sec



st. 6

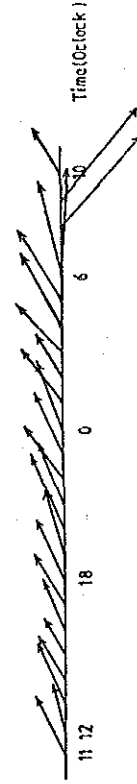
4 - 5 Sep. 1985

50cm/sec



19 - 20 Apr. 1985

50cm/sec

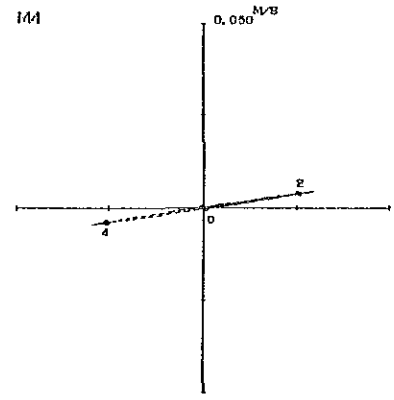
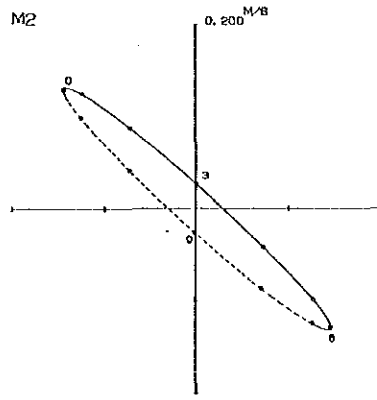
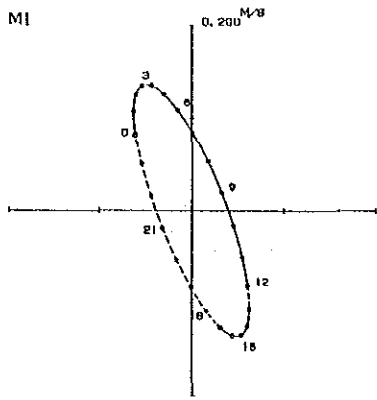


Source : P30

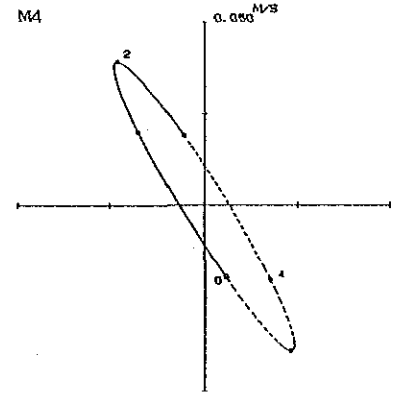
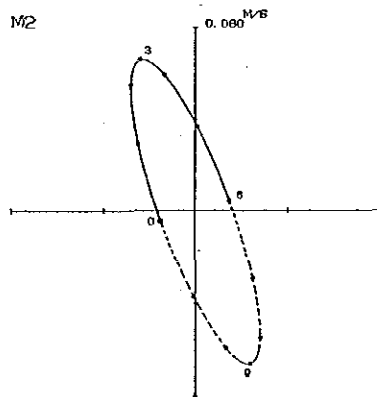
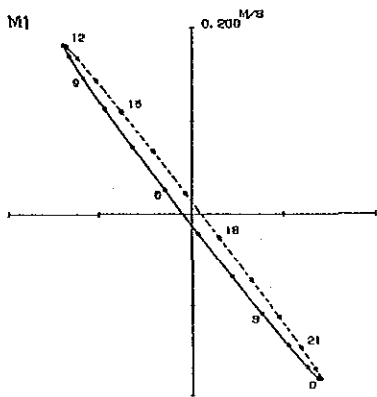
FIG. C.20(3)

HOURLY VARIATION OF TIDAL CURRENT

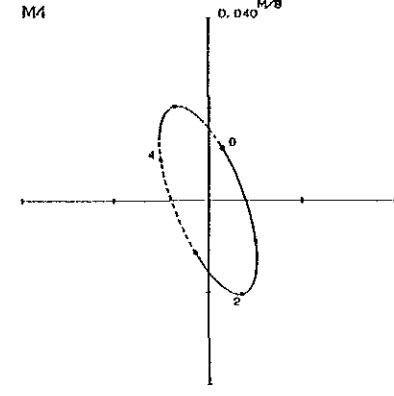
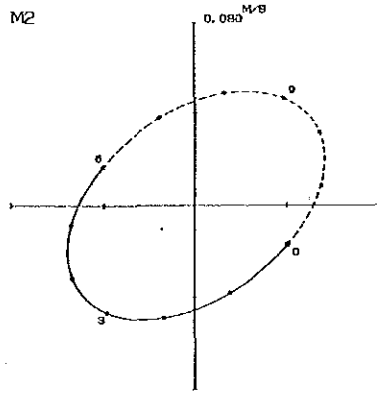
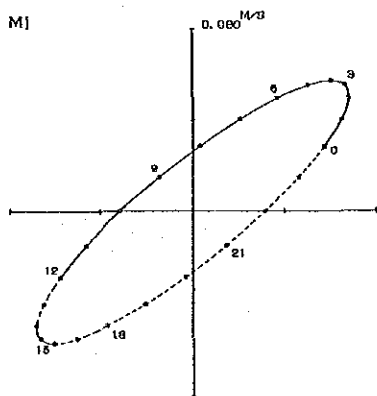
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



ST.1 13-14 JULY 1986



ST.1 9-10 FEBRUARY 1987

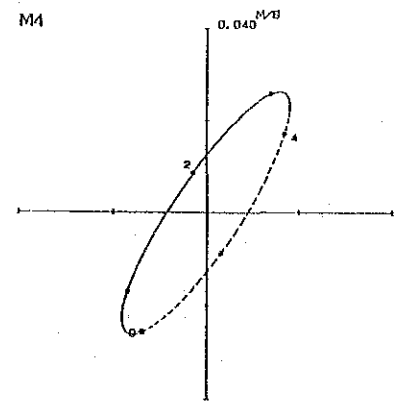
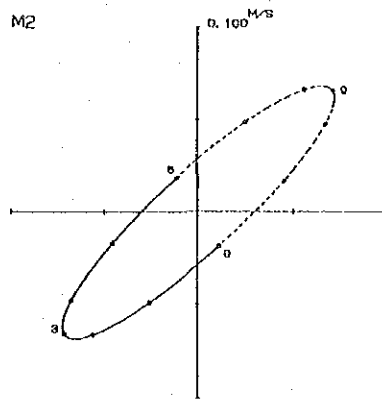
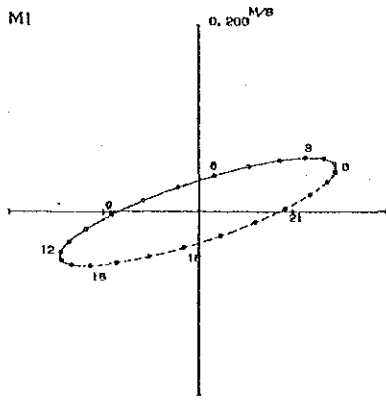


ST.2 28-29 AUGUST 1983

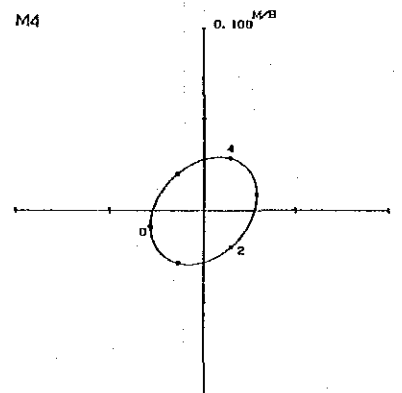
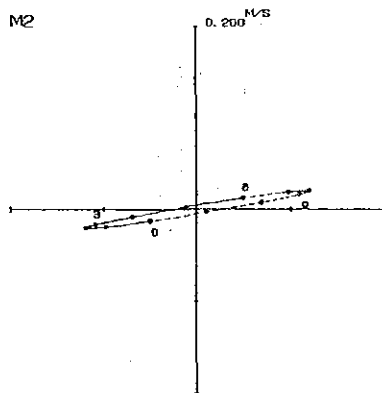
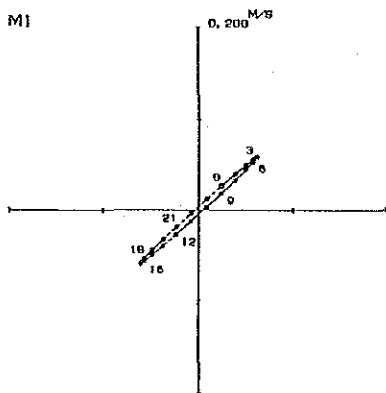
FIG. C.21(1)

RESULTS OF HARMONIC ANALYSIS

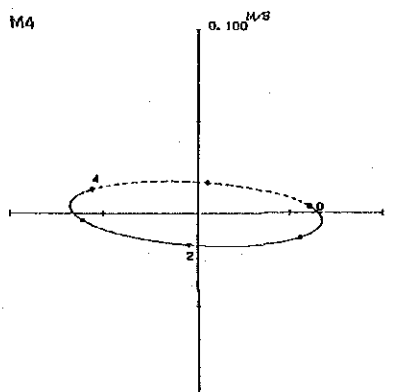
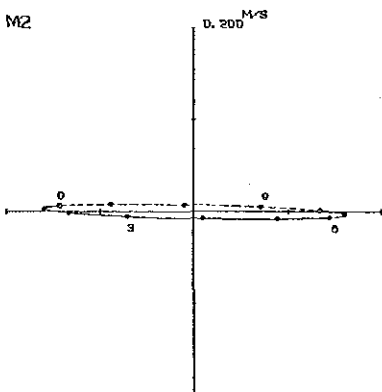
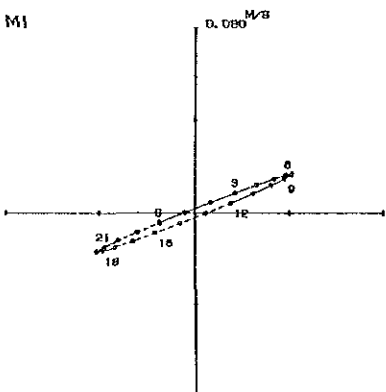
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



ST. 2 30-31 AUGUST 1983



ST. 3 15-16 OCTOBER 1983

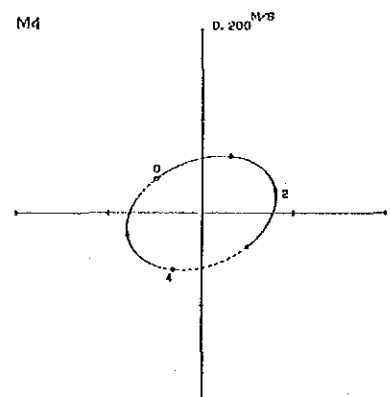
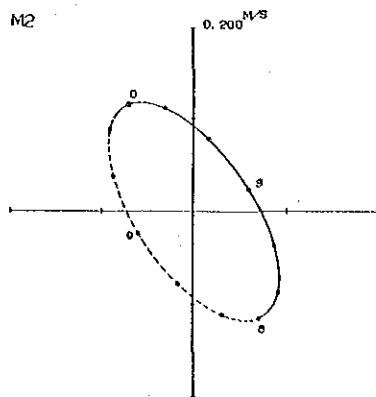
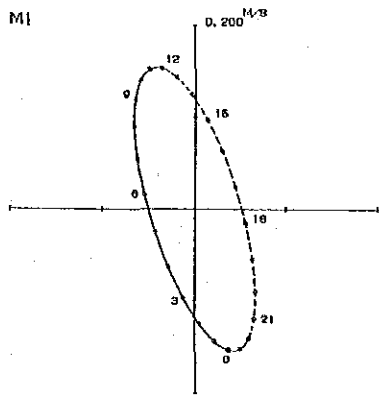


ST. 3 14-15 OCTOBER 1983

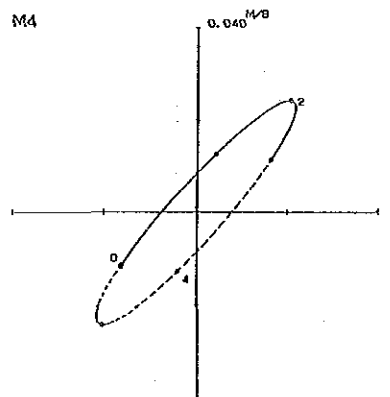
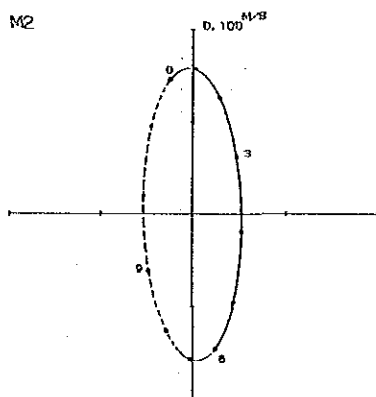
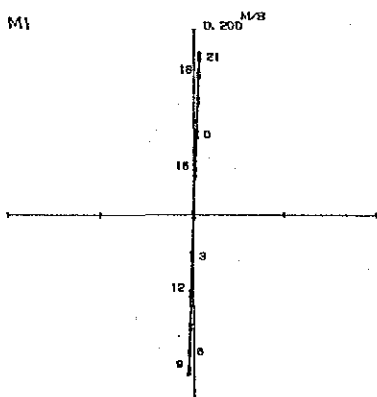
FIG. C.21(2)

RESULTS OF HARMONIC ANALYSIS

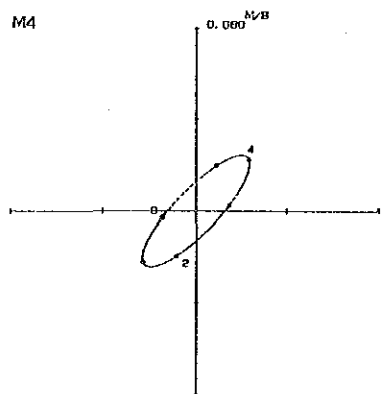
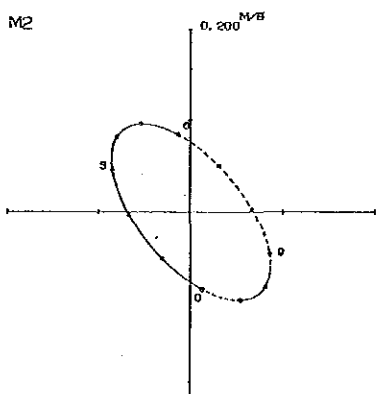
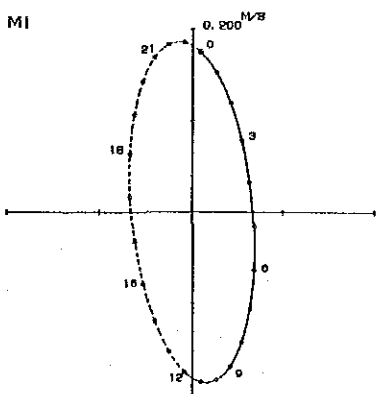
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



ST 4 16-17 APRIL 1985



ST. 4 13-14 APRIL 1985

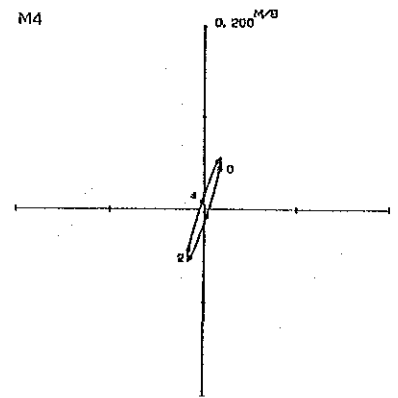
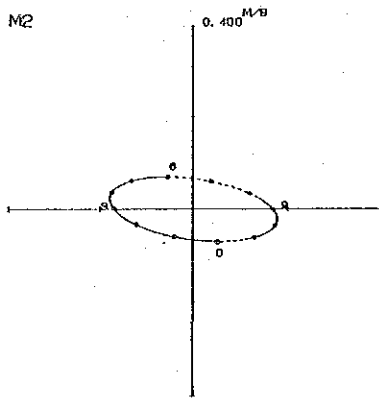
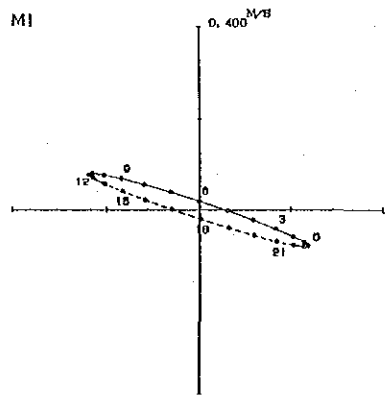


ST. 5 8-9 SEPTEMBER 1984

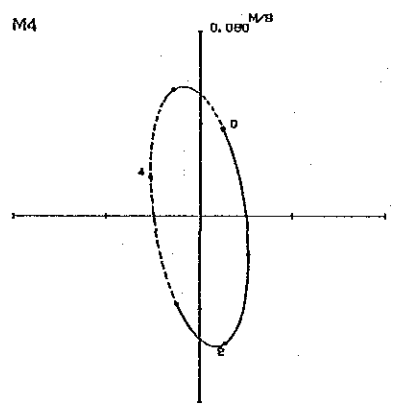
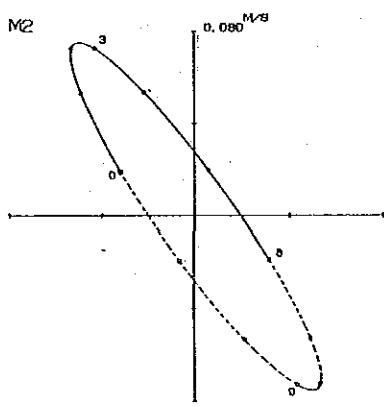
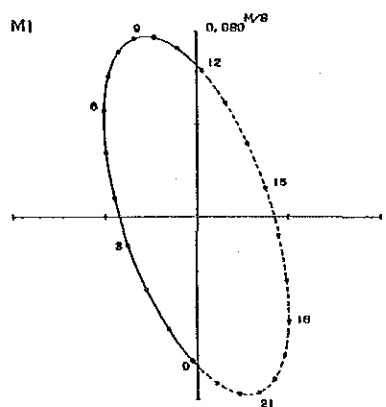
FIG. C.21(3)

RESULTS OF HARMONIC ANALYSIS

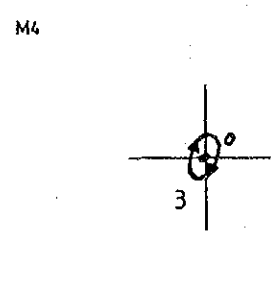
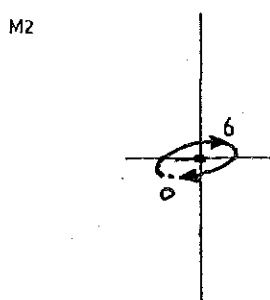
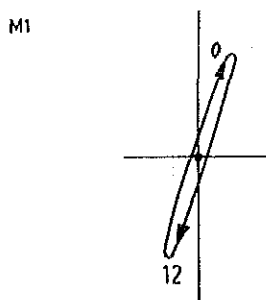
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



ST. 6 4-5 SEPTEMBER 1985



ST. 6 19-20 APRIL 1985

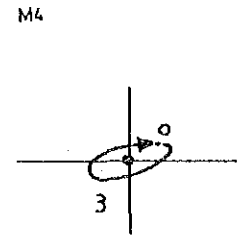
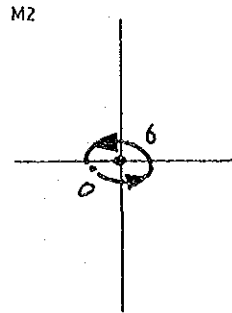
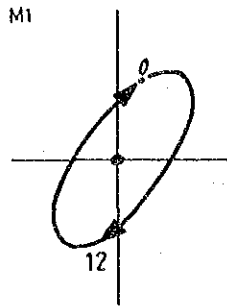


ST. 7 5-6 JULY 1975

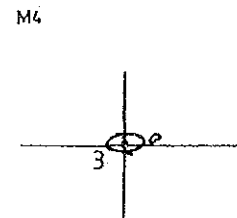
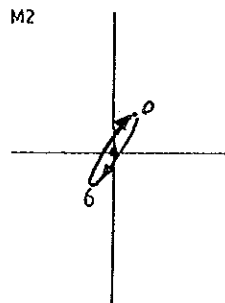
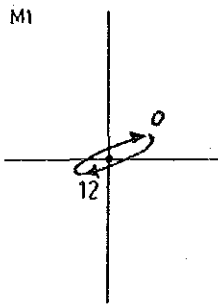
FIG. C.21(4)

RESULTS OF HARMONIC ANALYSIS

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



ST. 7 27 - 28 OCTOBER 1982

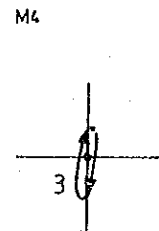
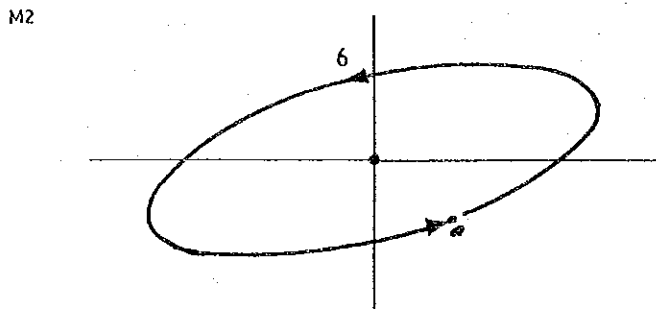
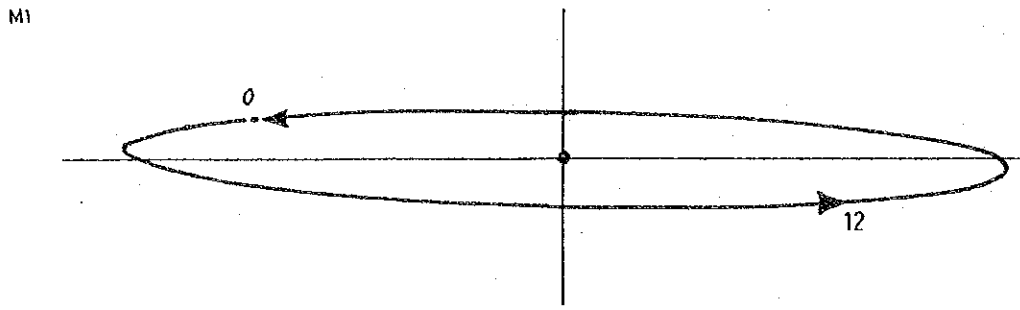


ST. 7 21 - 22 APRIL 1983

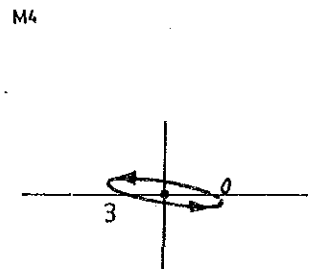
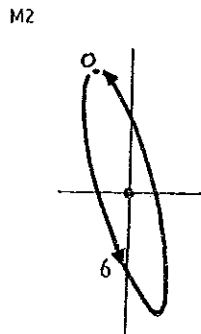
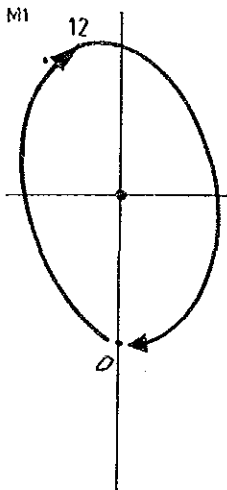
FIG. C.21(5)

RESULTS OF HARMONIC ANALYSIS

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



ST. 7 28 - 29 JANUARY 1987



ST. 7 26 - 27 FEBRUARY 1988

FIG. C.21(6)

RESULTS OF HARMONIC ANALYSIS

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

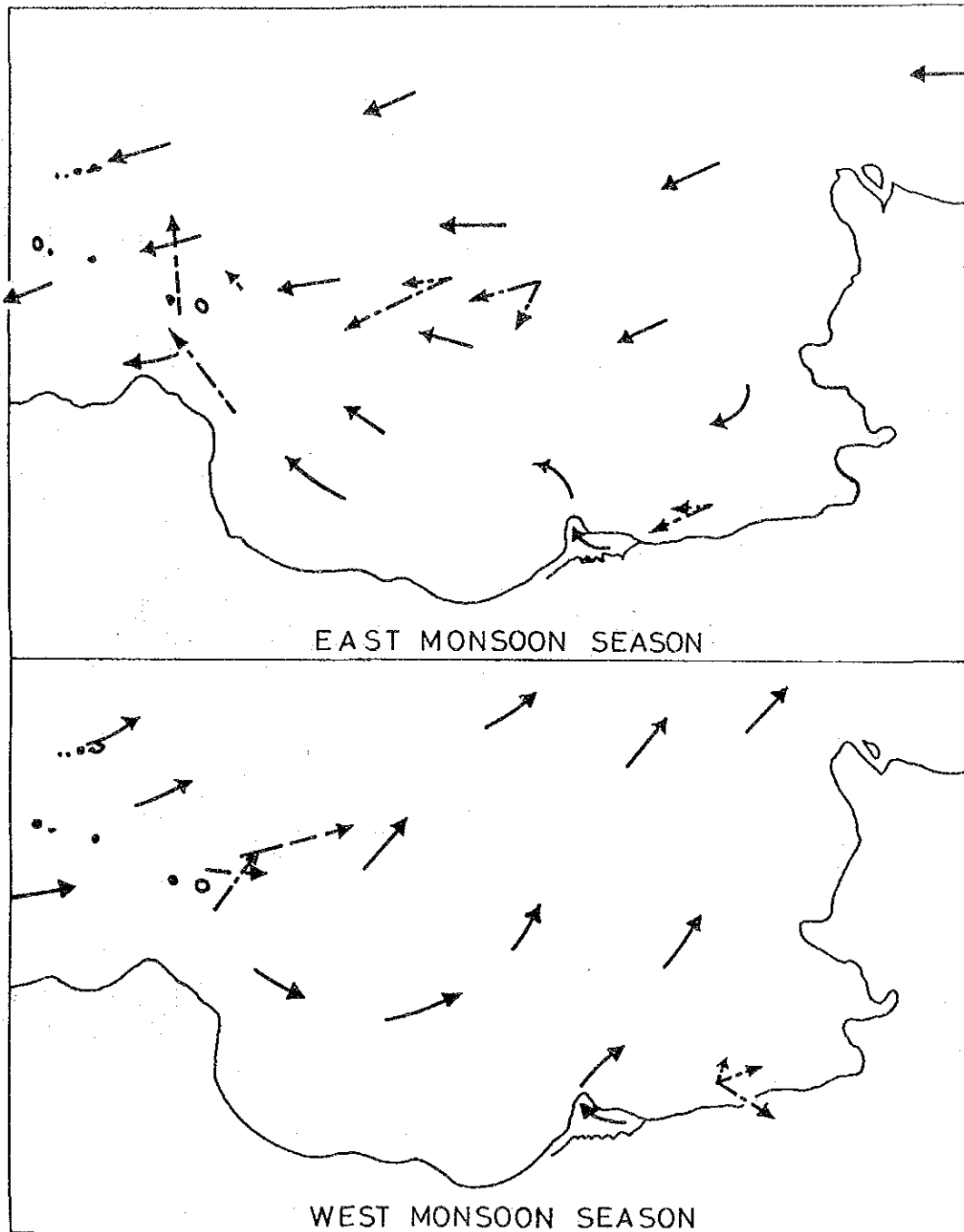


FIG. C.22

COMPARISON OF ANALYZED AND OBSERVED CURRENTS

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

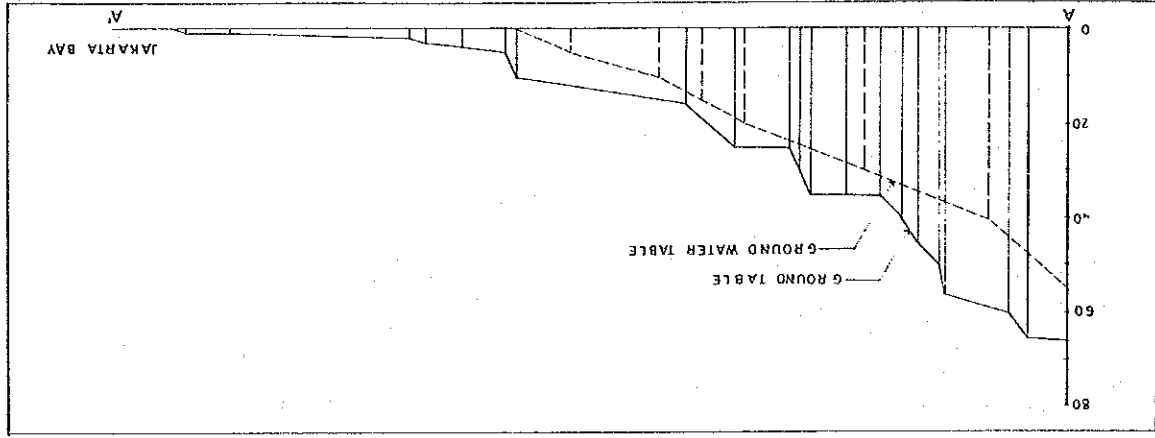
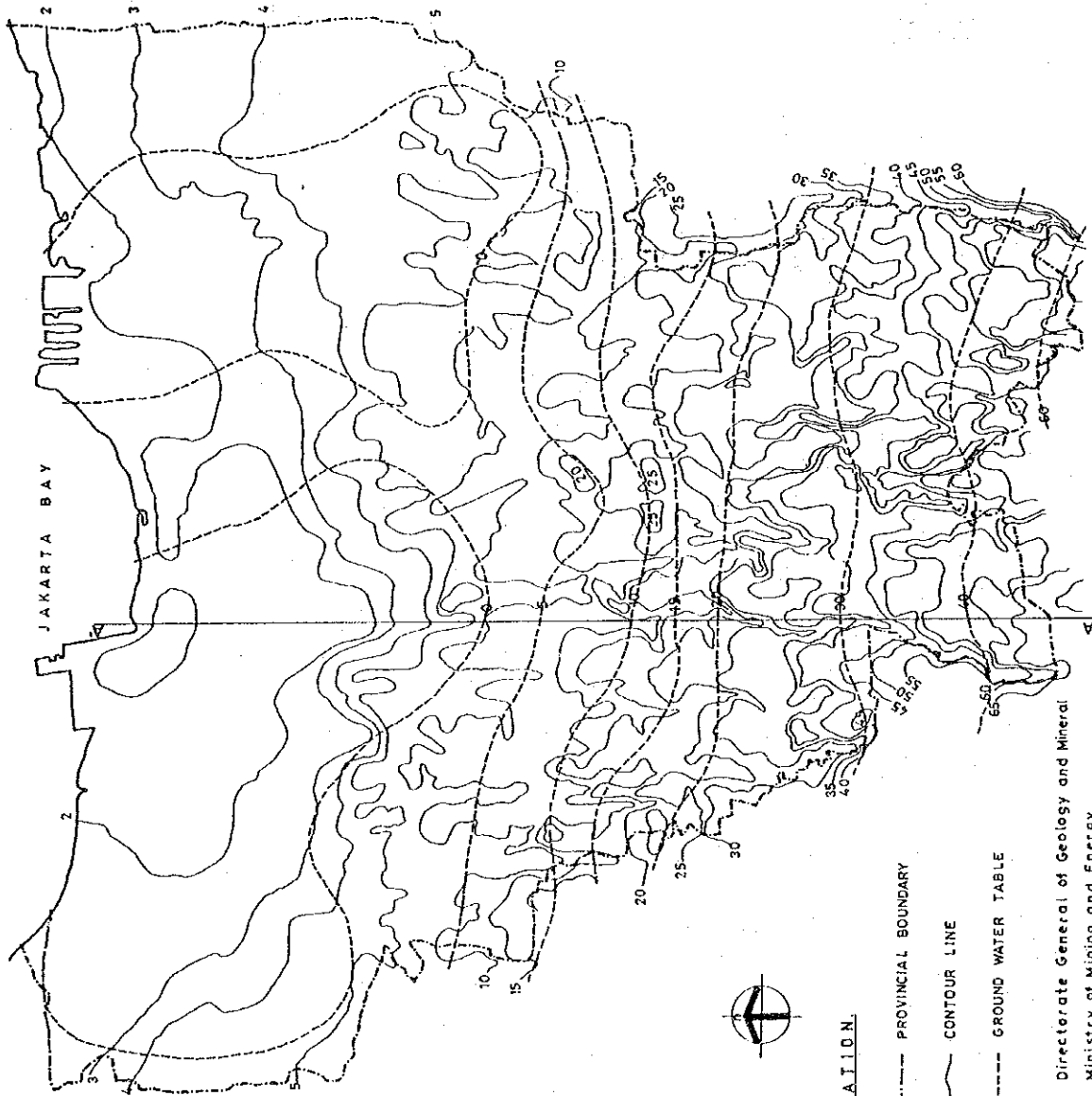


FIG. C.23(1)

GROUNDWATER TABLE (DRY SEASON)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Source: Directorate General of Geology and Mineral
Ministry of Mining and Energy

NOTATION

- PROVINCIAL BOUNDARY
- CONTOUR LINE
- GROUND WATER TABLE

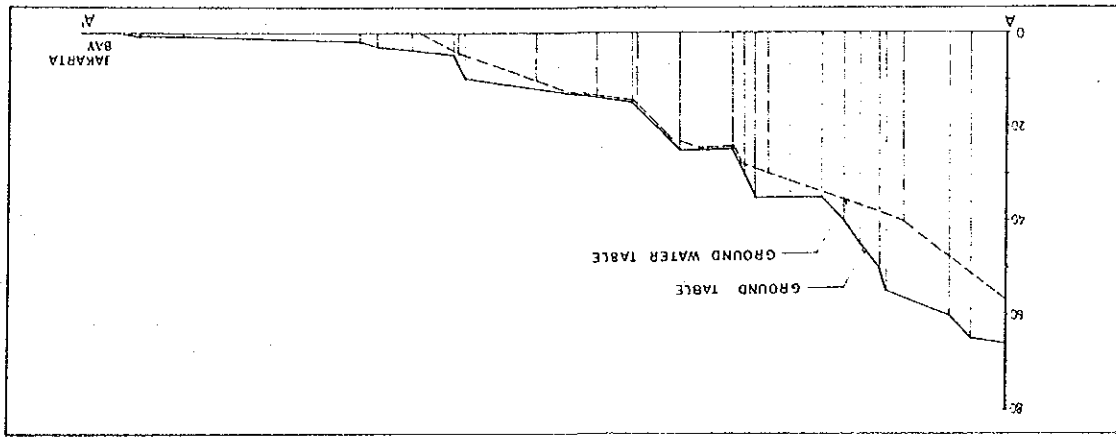
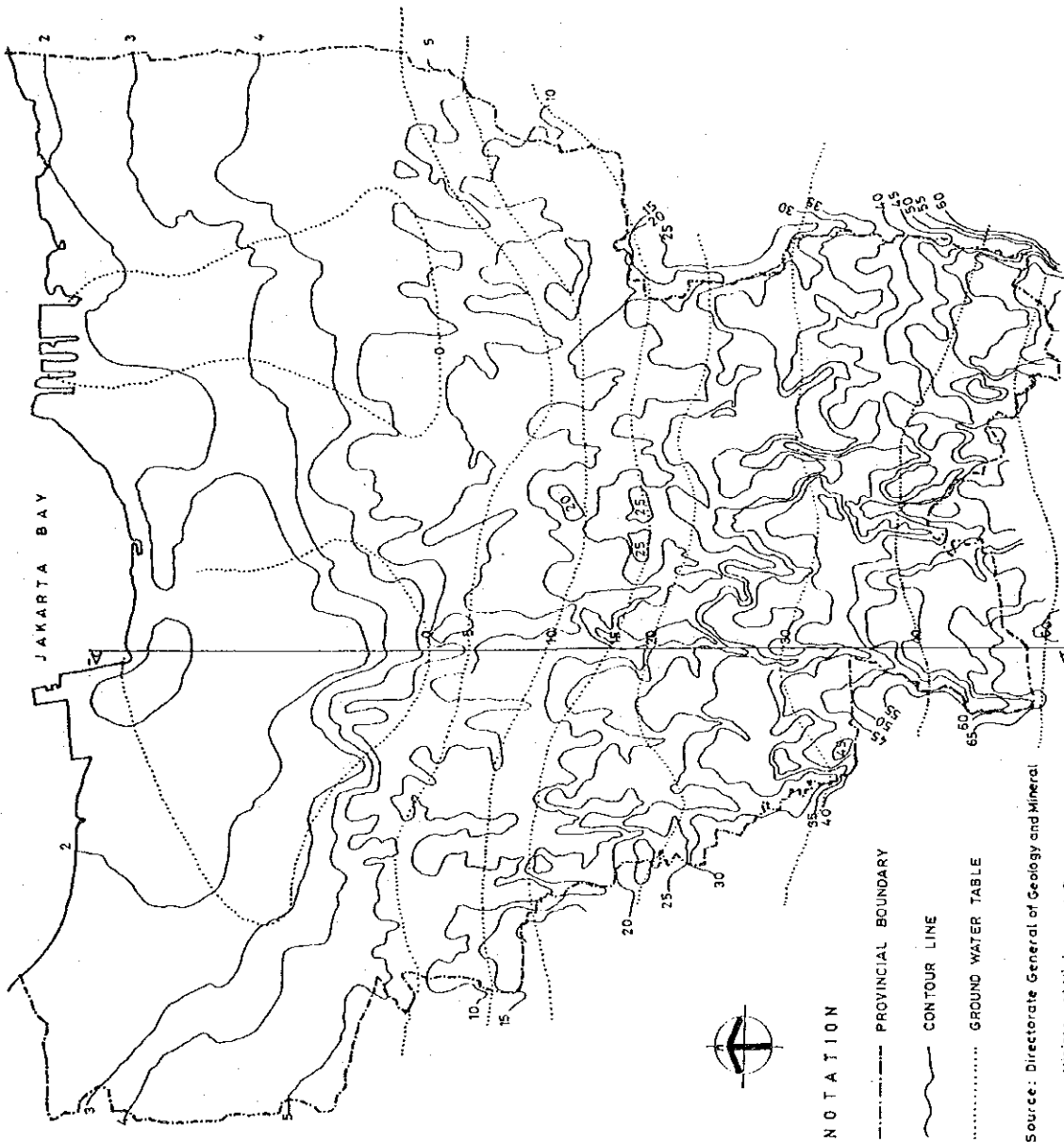


FIG. C.23(2)

GROUNDWATER TABLE (WET SEASON)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

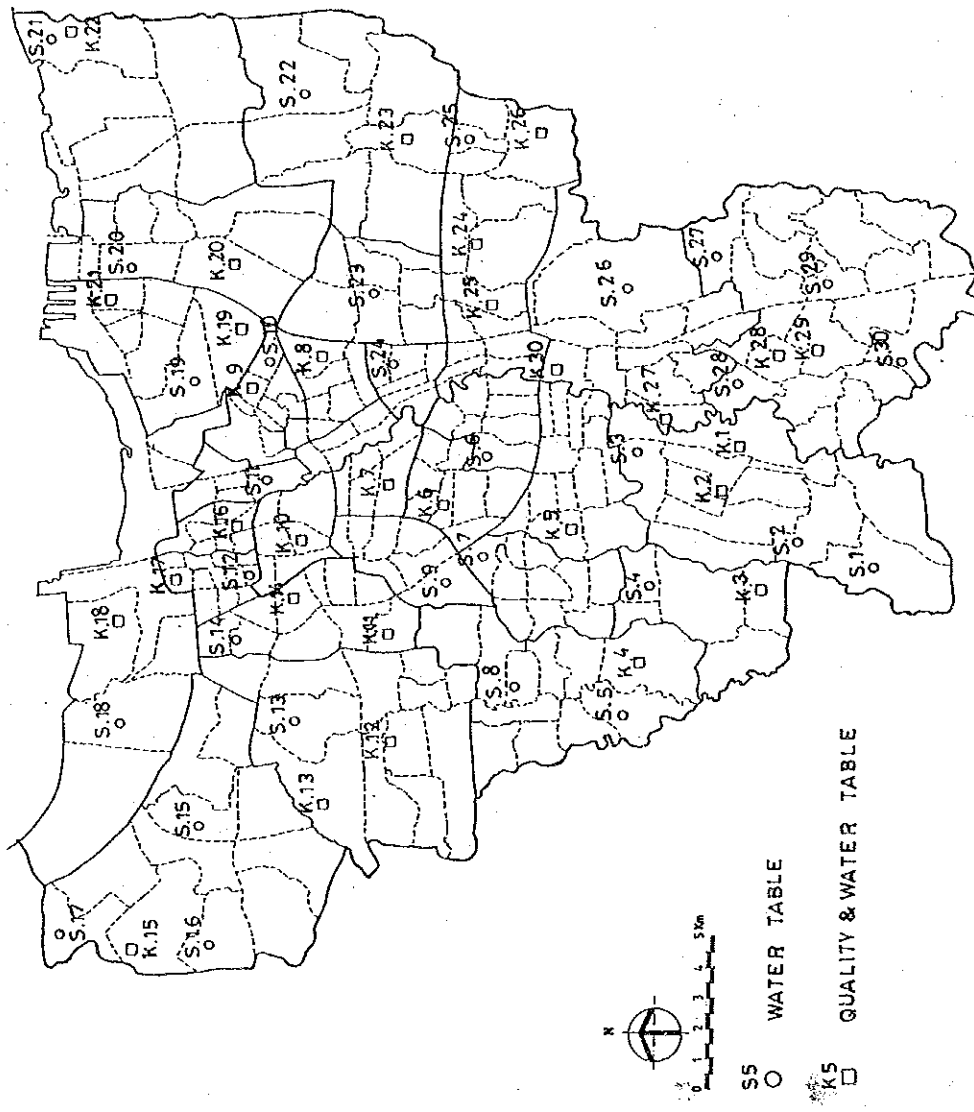


FIG. C.24

LOCATION OF OBSERVED WELL BY JICA

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

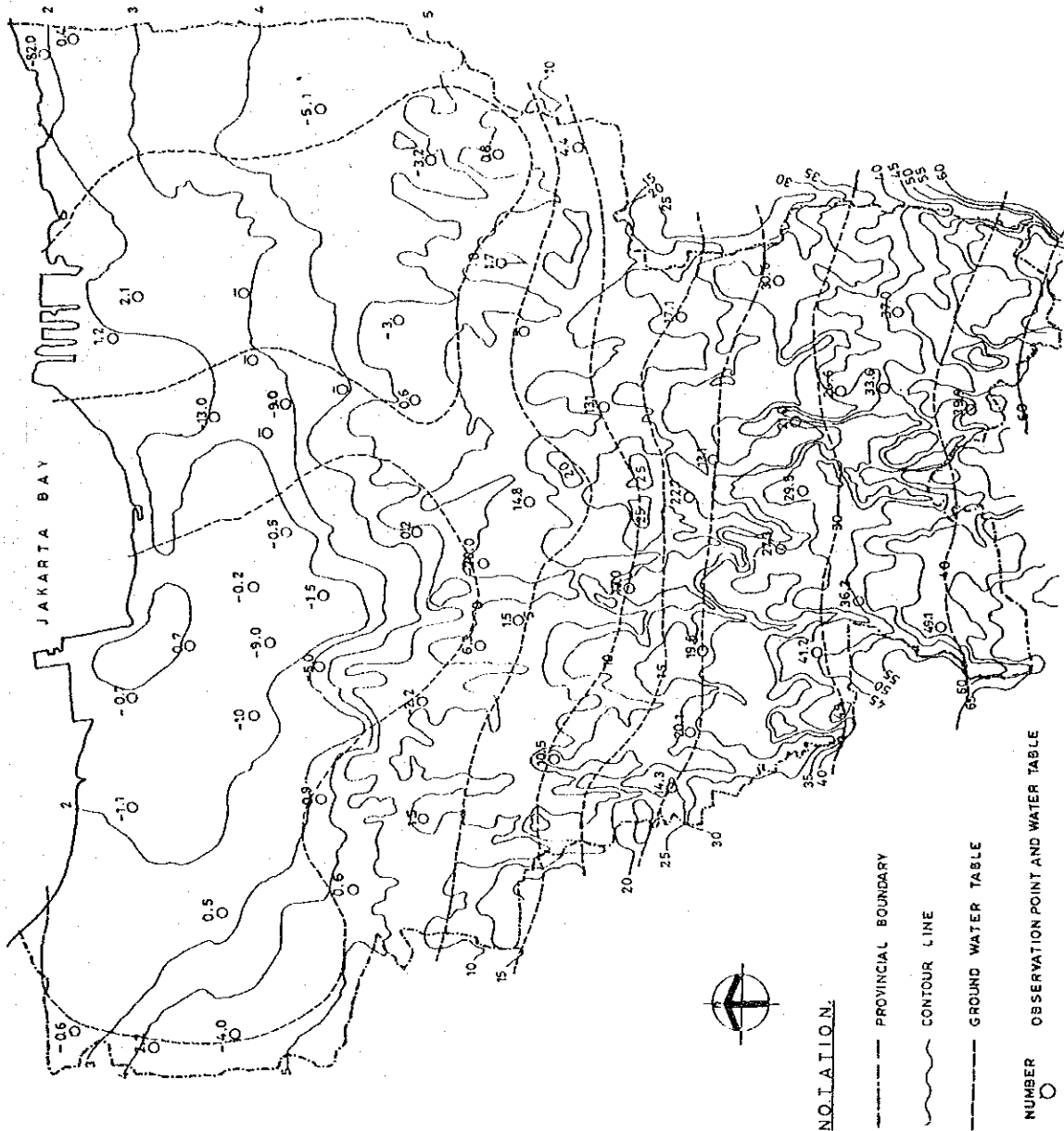
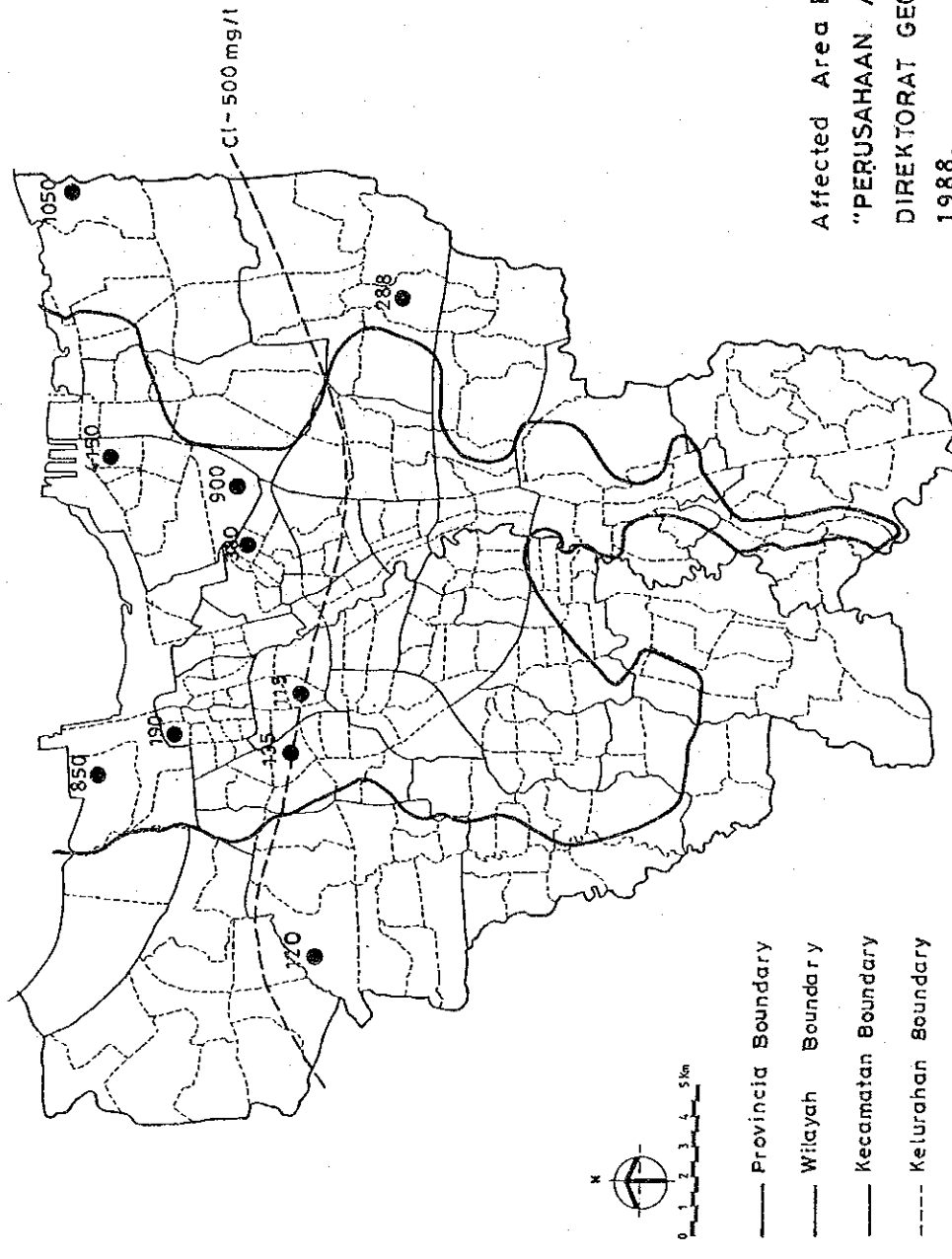


FIG. C.25 OBSERVED GROUNDWATER TABLE (DRY SEASON)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

Source : 1 Directorate General of Geology Mineral
 Ministry of Mining and Energy
 2. Survey Results of Ground water Table
 (1989.10) by JICA

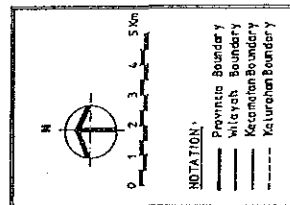
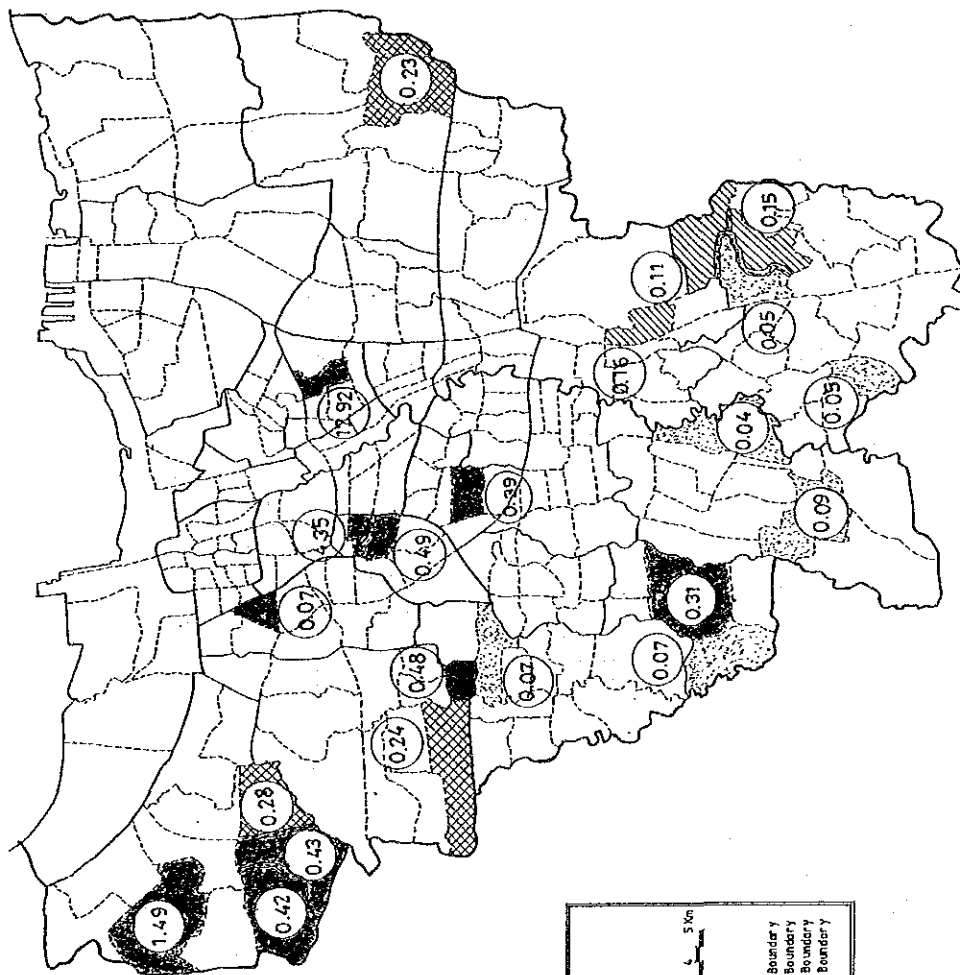


Affected Area by Sea Water is from:
 "PERUSAHAAN AIR MINUM JAYA"
 DIREKTORAT GEOLOGI TATA LINGKUNGAN,
 1988.

FIG. C.26

AFFECTED AREA BY SEA WATER

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

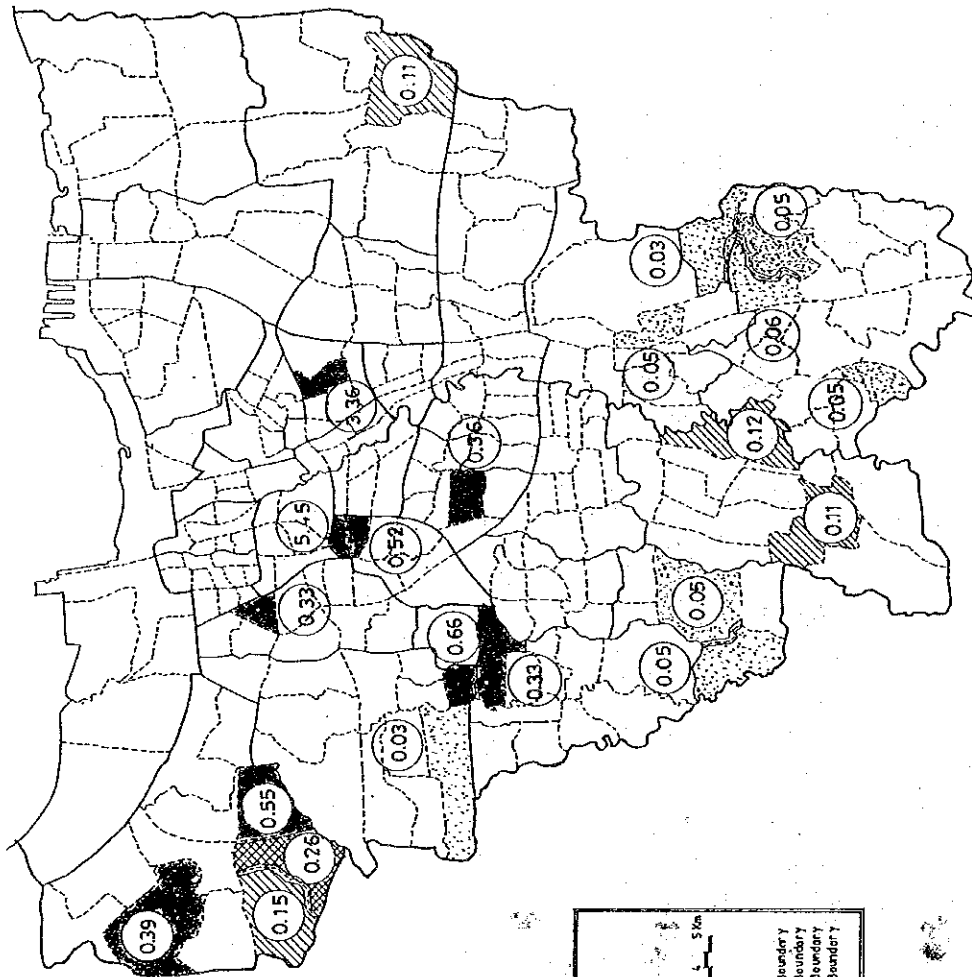


	NH ₄ - N (mg/l)
	0
	0.01 ~ 0.10
	0.11 ~ 0.20
	0.21 ~ 0.30
	0.31 >
	Number = NH ₄ -N(mg/l)

Source: "GROUND WATER 1984-1985" by P4L

FIG. C.27(1) STATE OF GROUNDWATER CONTAMINATION (NH₄-N AUG.1984)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



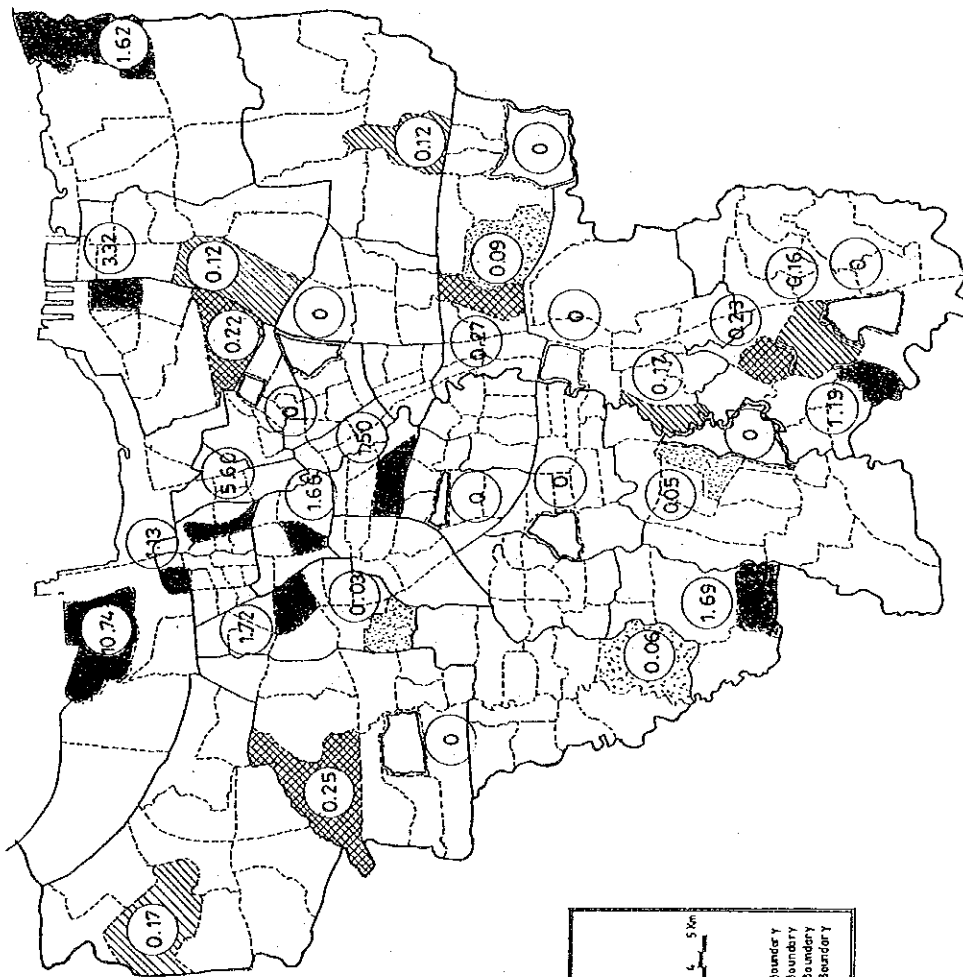
	NH ₄ -N (mg/l)
○	0
◐	0.01 ~ 0.10
◑	0.11 ~ 0.20
◒	0.21 - 0.30
◓	0.31 >
⊖	Number=NH ₄ -N(mg/l)

Source: " GROUND WATER 1984-1985" by P4-L

FIG. C.27(2)

STATE OF GROUNDWATER CONTAMINATION (NH₄-N DEC.1984)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

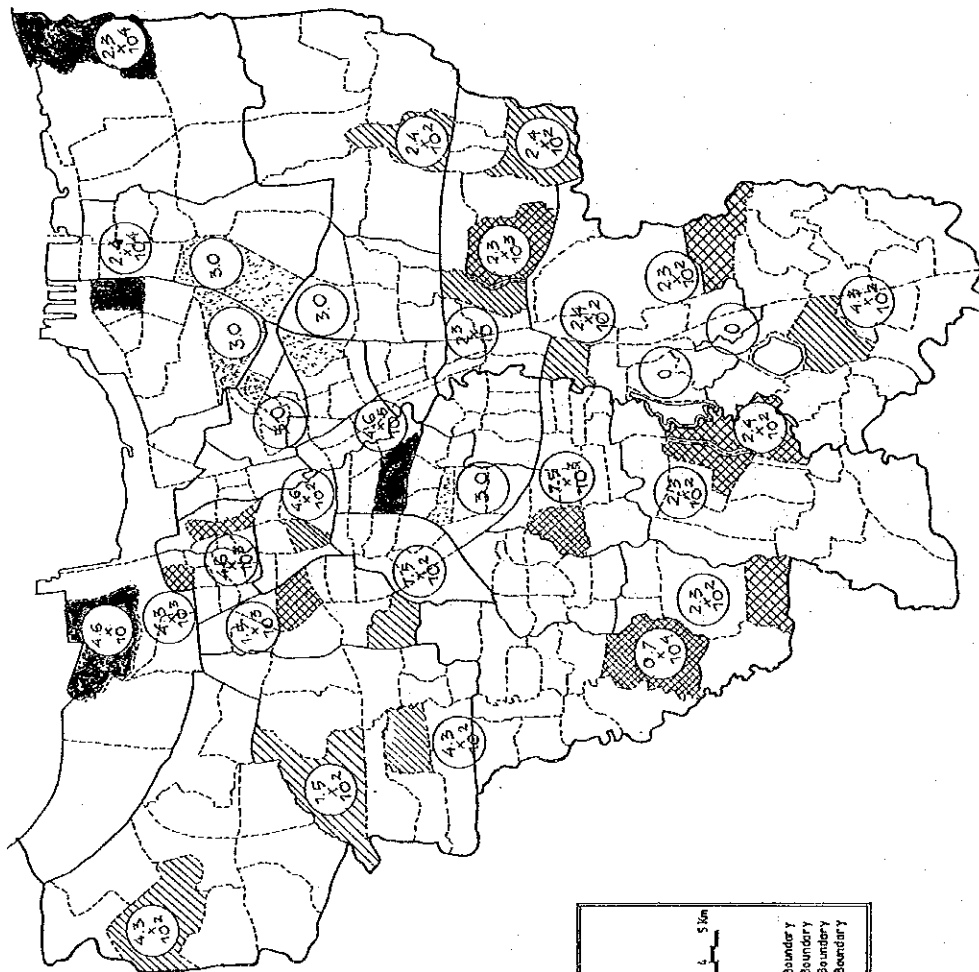


	NH ₄ - N (mg/l)
	0
	0.01 ~ 0.10
	0.11 ~ 0.20
	0.21 ~ 0.30
	0.31 >
	Number = NH ₄ - N (mg/l)

OBSERVED BY JICA STUDY TEAM IN OCT. 1989

FIG. C.28 STATE OF GROUNDWATER CONTAMINATION (NH₄-N)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

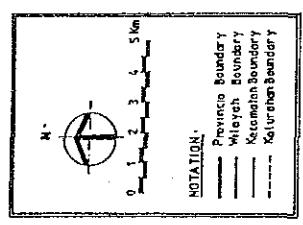
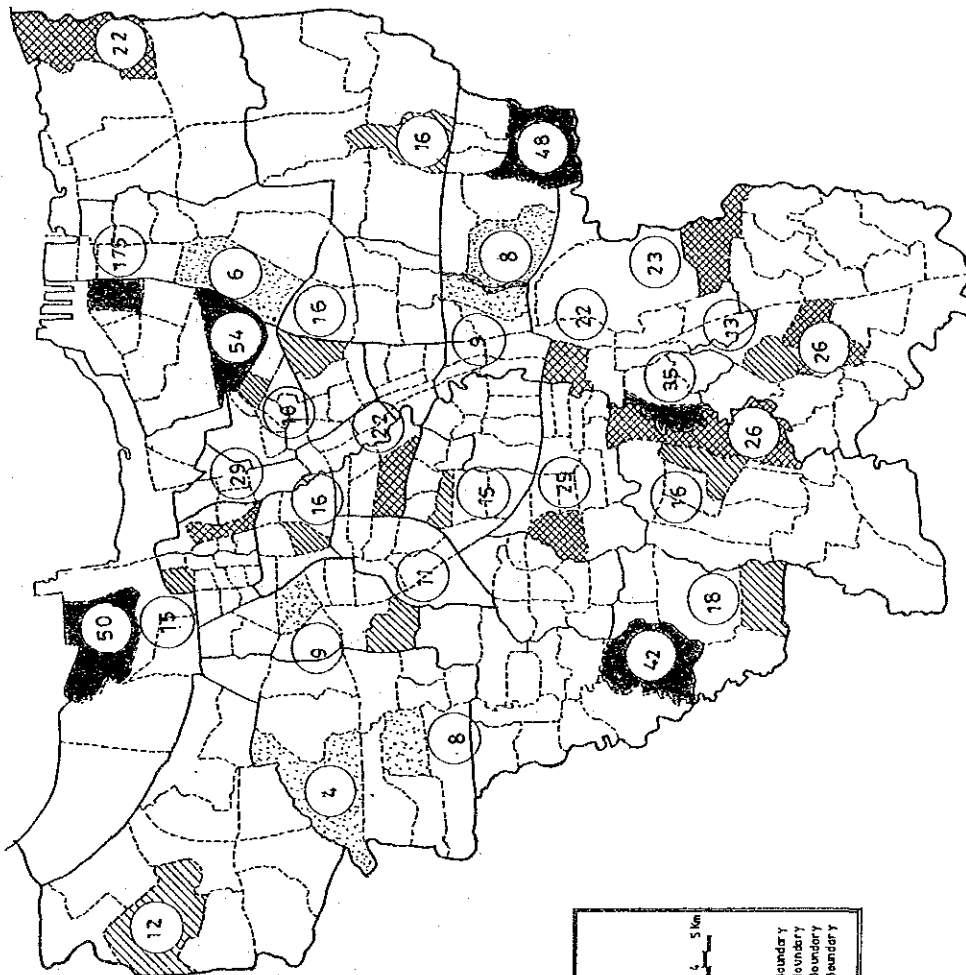


	F. Colli (n/100ml)
	0
	N x 1
	N x 10 ²
	N x 10 ³
	N x 10 ⁴
	Number = F. Colli (n/100ml)

OBSERVED BY JICA STUDY TEAM in OCT. 1989

FIG. C.29 STATE OF GROUNDWATER CONTAMINATION (FECAL COLLI.)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



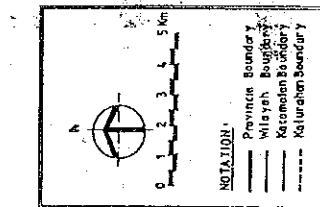
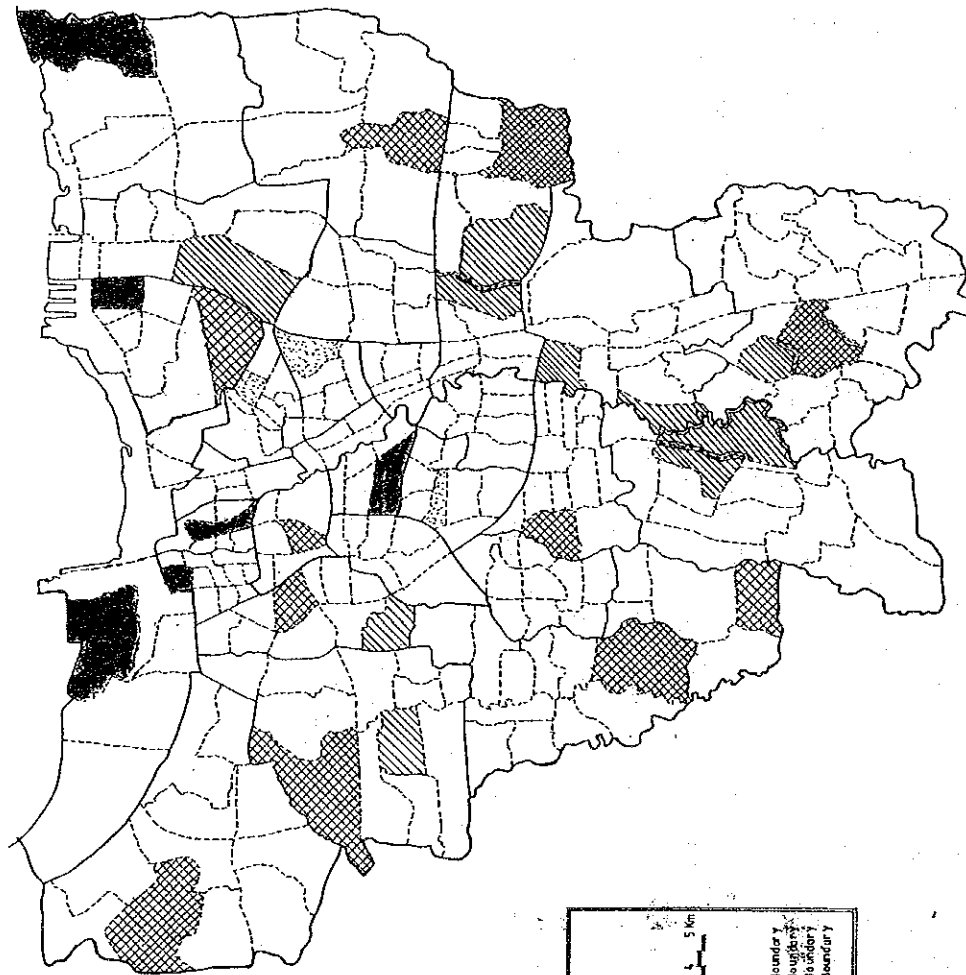
	CO Der (mg/l)
	0
	0.1 ~ 10.0
	10.1 ~ 20.0
	20.1 ~ 30.0
	30.1 >
	Number = CoDer (mg/l)

OBSERVED BY JICA STUDY TEAM In OCT. 1989

FIG. C.30

STATE OF GROUNDWATER CONTAMINATION (CODCR)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



	Pollution Index
	0
	1 - 3
	4 - 6
	7 - 9
	10 - 12

FIG. C.31 STATE OF GROUNDWATER CONTAMINATION
(INTEGRATED POLLUTION INDEX)

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA

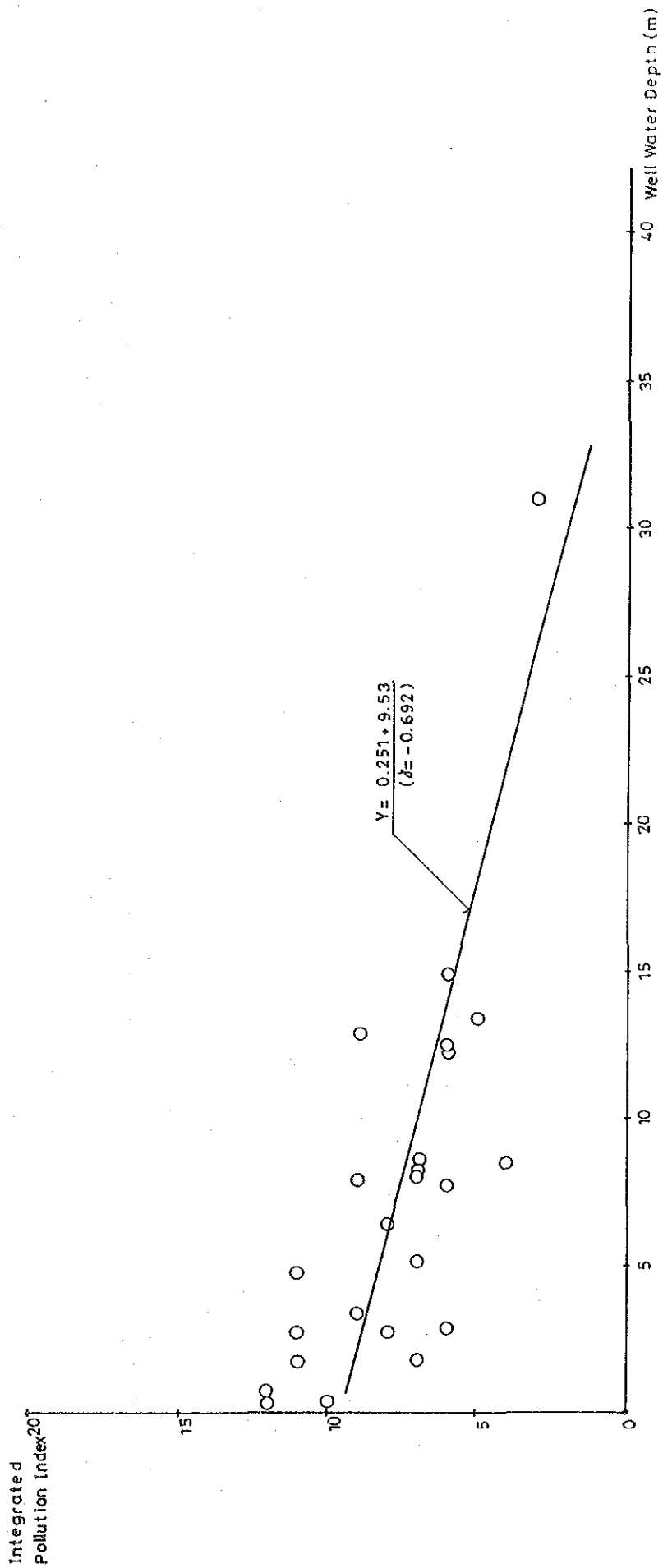
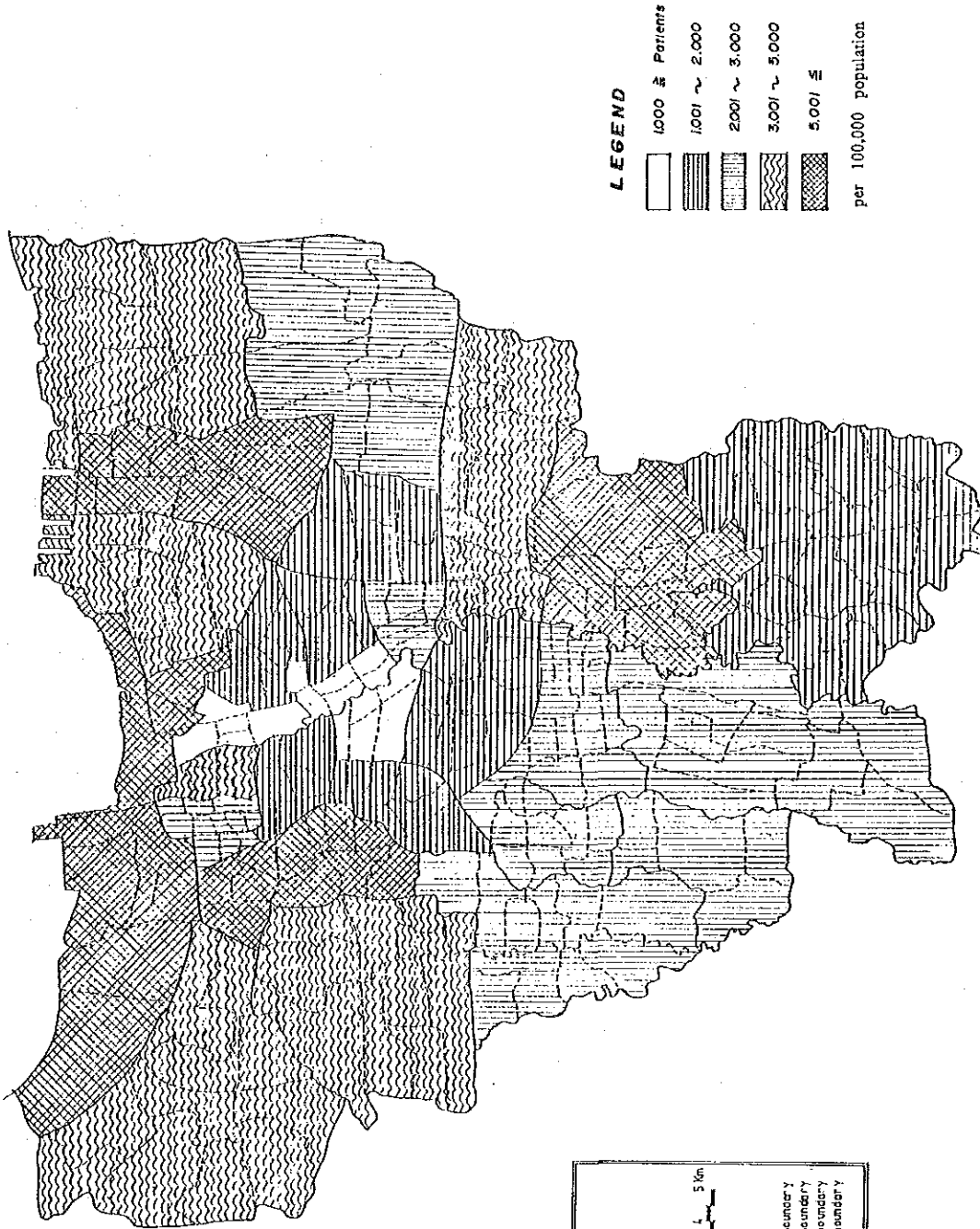


FIG. C.32 CORRELATION BETWEEN WELL WATER DEPTH AND INTEGRATED POLLUTION INDEX

THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



LEGEND

	1000 ± Patients
	1001 ~ 2,000
	2001 ~ 3,000
	3,001 ~ 5,000
	5,001 ±

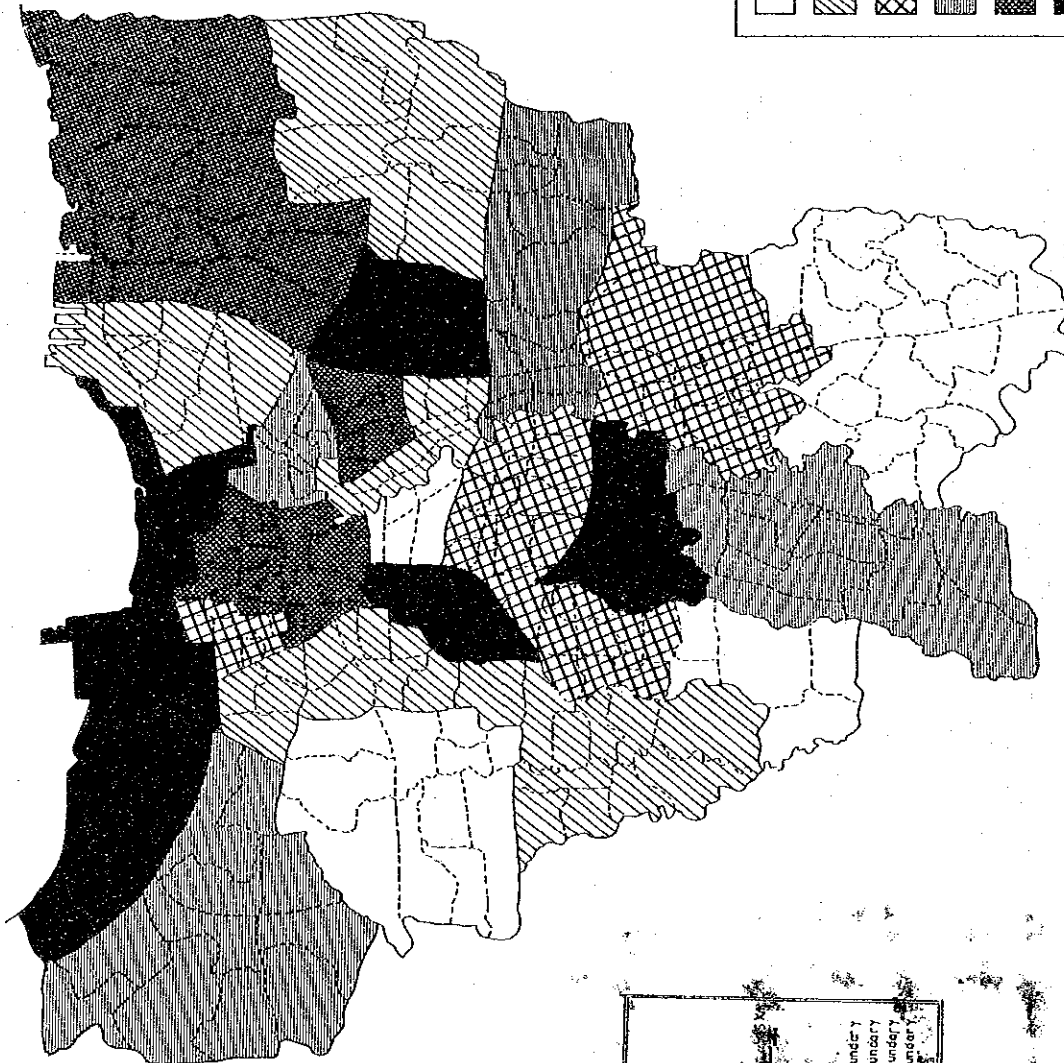
per 100,000 population

NOTATION

	Province Boundary
	Wilayah Boundary
	Kecamatan Boundary
	Kelurahan Boundary

0 1 2 3 4 5 Km

FIG. C.34 ANNUAL AVERAGE RATIO OF PATIENTS BY EACH KECAMATAN
 THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA



LEGEND

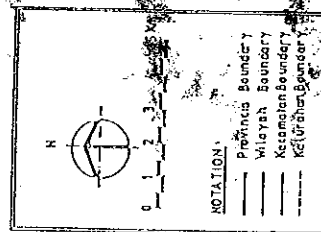
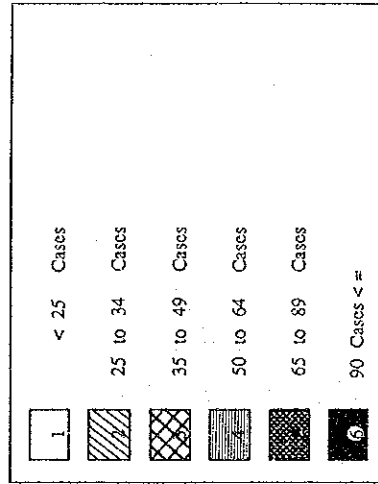


FIG. C.35 NUMBER OF THOSE CONTRACTED MAJOR WATER-BORNE DISEASES IN THE LAST THREE YEARS (PER 1,000 POPULATION)
THE STUDY ON URBAN DRAINAGE AND WASTE WATER DISPOSAL PROJECT IN THE CITY OF JAKARTA