ANNEX 4

TOPOGRAPHIC MAPPING

THE STUDY
ON
COMPREHENSIVE RIVER WATER MANAGEMENT PLAN
IN
JABOTABEK

ANNEX 4 : TOPOGRAPHIC MAPPING

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1 GENERAL

This ANNEX 4 (Topographic Mapping) compiles the outlines of topographic mapping works executed in the Master Plan and Feasibility Studies. All drawings are compiled in attached Data Book.

The contents of this Annex are as follows:

- Chapter 2 describes the outline of topographic mapping conducted in the Master Plan stage; and
- Chapter 3 describes the outline of topographic mapping and topographic survey conducted in the Feasibility Study stage.

2 MASTER PLAN STAGE

2.1 General

The objectives of mapping of aerial photographs are to prepare a map for the analysis of flooding in the flood prone area in DKI Jakarta and to prepare flood risk map.

The objective area of mapping is about 500 km2 wide and is shown in Figure 1. The map has been prepared with a scale of 1:5,000 based on the 1:20,000 aerial photographs in 1993.

The mapping works has been carried out by local contractor under the supervision of the JICA Study Team from August 1995 to February 1996.

2.2 Method

New control points have been be established surrounding the mapping area and the locations are adjusted based on the national coordinates system (SNI),UTM zone 48.

Leveling works has been conducted along roadways to show the spot elevations on the map with an interval of about 500m. The elevations are based on TTG.

2.3 Mapping

The maps has been prepared covering the objective area as shown in Figure 1 with index contour lines of 10m interval. The main contour line is drawn by 2m interval and the supplemental contour line by 1m.

Spot heights are also shown on the map. Longitude and latitude are drawn on the map with an interval of 30 second. Neat lines of the existing topographic maps with a scale of 1:25.000 are also drawn on the map.

The quantities of works are as shown below:

Work Item	Unit	Quantity	
Control point survey by GPS	points		25
Leveling	km		224
Photo classification	km^2		500
Aerial triangulation	models	1/20,000	90
		1/10,000	69
Stereo plotting	km^2	1/5,000	500
Compilation	km^2	1/5,000	500
Drafting	sheets		79

2.4 Result

Final results are topographic maps with a scale of 1:5,000.

3 FEASIBILITY STUDY STAGE

3.1 Topographic Mapping

3.1.1 Outline

The objective river is the Cisadane River in the reaches downstream of Pasar Baru Barrage located in Tangerang City to the estuary. The objective area of mapping is 25 km^2 with the longitudinal length of about 25 km and the width of about 1 km. The maps are prepared with a scale of 1/5,000 with main contour line interval of 2m based on the aerial photographs taken at a scale of 1:10,000 in 1994.

The mapping works were conducted by a local contractor under the supervision of the Study Team in the period from June to August 1996.

The objective area of mapping is shown in Figure 2.

3.1.2 Method

New control points are established surrounding the mapping area and the locations are adjusted based on the national coordinates system Bessel UTM Zone 48.

Leveling work is conducted along roadway to plot the spot height on the map. The elevations are based on the TTG.

Plotting is carried out by using stereo-plotter.

3.1.3 Result

Final result is the topographic map with a scale of 1:5,000.

3.2 Topographic Survey

3.2.1 Outline

The objective area is the area along the proposed Ciliwung Floodway route and Ciliwung and Cisadane Rivers in the reaches near the inlet and outlet facilities of the Ciliwung Floodway. The objective area of survey is 0.25 km^2 as shown in Figure 2. The maps are prepared with a scale of 1:500 with main contour line interval of 1m.

The survey works were conducted by a local contractor under the supervision of the Study Team in the period from June to August 1996.

3.2.2 Method

The metric system is used as the unit. National coordinates system Bessel UTM Zone 48 is

referred to for the horizontal location. The mean sea level (TTG) is referred to for the elevation.

The topographic survey is carried out based on the ground survey method using total station system.

3.2.3 Result

Final result is topographic map with a scale of 1:500.

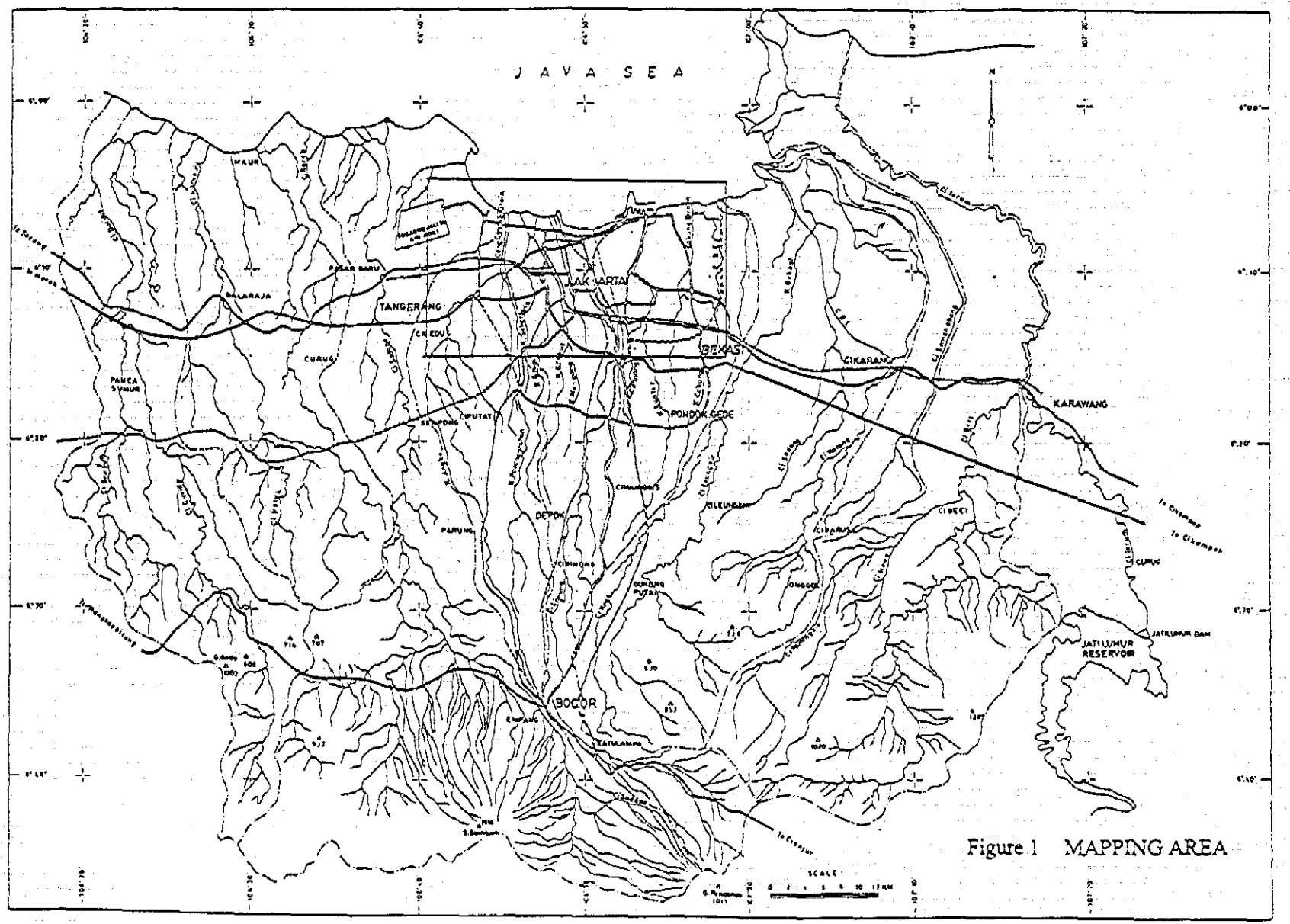

Figure 1 MAPPING AREA

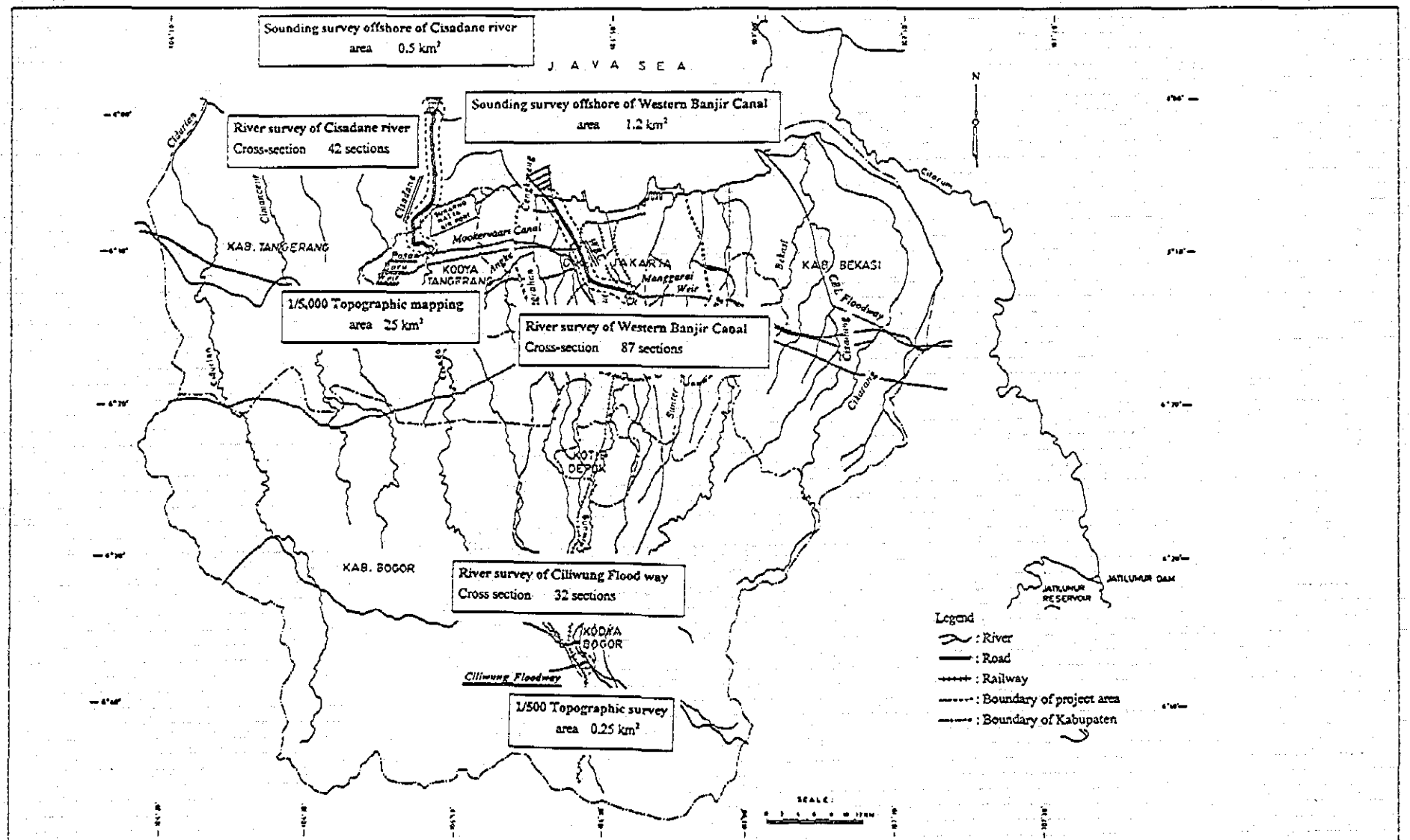

Figure 2 LOCATION OF TOPOGRAPHIC SURVEY

ANNEX 5

HYDROLOGY

THE STUDY ON
COMPREHENSIVE RIVER WATER MANAGEMENT PLAN
IN
JABOTABEK

ANNEX 5 : HYDROLOGY

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1. INTRODUCTION

This ANNEX presents the hydrological study results concerned with flood control M/P in the Study Area.

Meteorology and tide are discussed first in order to clarify the present situation of the Study Area. Subsequently, available rainfall and runoff data are investigated for the objective hydrological study on flood control M/P. Based on the available data and findings, rainfall and runoff analysis are carried out to estimate design discharges for alternative flood control plans. Finally, flood inundation analysis is conducted to estimate the flood damages due to probable floods.

2. METEOROLOGY AND TIDE

2.1 Meteorology

The Study Area is located at the latitude 6°00'S to 6°50'S, the longitude 106°15'E to 107°15'E and the altitude 0 to 2,500 m shown in Figure 2.1. The observation of meteorological elements in the Study Area is mainly operated by Badan Meteorologi dan Geofisika (BMG). Monthly meteorological data, such as air temperature, rainfall, sunshine duration, air pressure, relative humidity, wind velocity and wind direction are available in a meteorological yearbook published by BMG. Newest yearbooks of recent 5 years from 1985 to 1989 are collected and meteorological data at 15 stations in Jabotabek are examined and summarized in Table 2.1 to 2.10. Locations of these 15 meteorological stations are shown in Figure 2.2 with graphed average monthly rainfall and air temperatures.

(1) Air Temperature

Monthly data on specific air temperature, mean maximum, mean and mean minimum, at 13 stations are tabulated in Table 2.1 to 2.3 and average of 5 years monthly data at each station is shown in Figure 2.2. The annual average of monthly mean maximum, mean and mean minimum air temperatures at 12 stations in Jabotabek area are 22°C, 26°C and 31°C, respectively.

(2) Rainfall

Monthly rainfall at 13 stations are shown in Table 2.4 and average of 5 years monthly rainfall at each station is illustrated in Figure 2.2. It has much rainfall in January and December and less rainfall in June to August in a year. Annual rainfall depth is about 1,800 mm in the coastal plain, 2,500 mm in the highland and more than 3,500mm in the mountainous area in Jabotabek.

Mean annual rainfall was examined in the "Cisadane River Basin Development Feasibility Study, 1987" report and summarized in Figure 2.3. According to this report, annual rainfall depth in the Study Area is ranging approximately from 1,500 mm to 5,500 mm. Further

analysis on the rainfall is conducted in Section 4. based on the collected rainfall data.

(3) Sunshine Duration

Monthly mean sunshine duration is summarized in Table 2.5. Average annual sunshine duration at each station in the Study Area varies from 46 % to 66 % of 8 hours in a day and the average of 10 stations is 58 %. Annual pattern of sunshine duration corresponds to rainfall days. It has long sunshine duration in dry season and short duration in rainy season.

(4) Air Pressure

Monthly mean air pressure is shown in Table 2.6. These monthly values are based on a daily measurement of once a day at a fixed time. It is not clear but some annual characteristic is found that a lower and higher air pressure periods are found in around April and August, respectively.

(5) Relative Humidity

Monthly mean relative humidity is presented in Table 2.7. Annual mean relative humidity is 77 % to 88 % at stations in Jabotabek, and an average of annual value at 12 stations is 82 %.

(6) Wind Velocity and Directions

Monthly maximum and mean wind velocity and frequent wind directions are shown in Table 2.8 to 2.10. Annual mean wind velocity varies from 2 to 9 knot (1 to 5 m/s: 1 knot = 1852 m/hr). The strongest wind during 1985 to 1989 was 70 knot (36 m/s) that was observed in Tanjung Priok.

2.2 Tide

(1) Significant Tide Level

According to the Master Plan Report for Drainage and Flood Control of Jakarta prepared in December 1973 by NEDECO (p.17), tidal measurements were analyzed and a mean sea level datum was established as a basis for an extensive precision leveling undertaken on Java in 1925. The tidal movement in the Java Sea at Jakarta is mainly a single day tide with one high tide and one low tide in 24 hours, and following data were established and published:

- Spring tide (High High Water) : P.P.+1.15 m
- Average high water (H.W.) : P.P.+0.90 m
- Neap tide high water : P.P.+0.80 m
- Mean Sea Level (M.S.L.) : P.P.+0.60 m
- Neap tide low water : P.P.+0.40 m
- Average low water (L.W.) : P.P.+0.25 m
- Spring tide (Low Low Water) : P.P.+0.00 m

(2) Tide Level Record

The tidal movement in the Study Area has been observed by the office of "P.T. (Persero) Pelabuhan Indonesia II" at 2 stations, Tanjung Priok station in Tanjung Priok port and Sunda Kelapa station in Ancol marina. Hourly tide records from 1985 to 1995 at Tanjung Priok station and from 1988 to 1994 at Sunda Kelapa station are collected and monthly maximum, mean and minimum tide levels are examined. Monthly maximum and minimum sea levels relative to each monthly mean sea level are shown in Figure 2.4 and typical tides are as follows:

Typical Tide	Tanjung Priok Station	Sunda Kelapa Station
Average Monthly Maximum	Mean Sea Level + 0.580 m	Mean Sea Level + 0.620 m
Average Monthly Minimum	Mean Sea Level - 0.558 m	Mean Sea Level - 0.556 m

(3) Tide Table

The hourly predictive tide level at Tanjung Priok Port is available in the book of "Tide Table" published by "Dinas Hidro - Oseanografi TNI-AL". This publication shows a prediction of hourly tide level at 74 ports in whole Indonesia. Figure 2.5 shows a predictive tide level in 1995 at Tanjung Priok.

3. DATA AVAILABLE

Hydrological observations of rainfall and river water-level in the Study Area have been operated by the following agencies:

- Badan Meteorologi dan Geofisika (BMG)
- Agriculture offices
- Pembangkit Listrik Tenaga Air (PLTA) site office
- Irrigation sector, Ministry of Public Works
- Pengembangan Data Sumber Air (PDSA) office under the Ciliwung - Cisadane River Basin Development Project, Ministry of Public Works
- Institute of Hydraulic Engineering (IHE): Pusat Litbang Pengairan, Ministry of Public Works

3.1 Rainfall Record

(1) Hourly Rainfall

A number of stations with automatic rainfall recorder have been installed in the Study Area, but some of them are not functioning now. It is conformed that hourly rainfall records at the following stations in the Study Area are available in various data sources, such as previous study reports, yearbooks, monthly summary sheets and original recorded charts, with limited periods:

- Jakarta meteorological station (under BMG), Jakarta: yearbooks from 1959 to 1979
- Halim Perdana station (under BMG), Jakarta: monthly sheet
- Ciledug meteorological station (under BMG), Tangerang: monthly sheet
- Citeko meteorological station (under BMG), Bogor: monthly sheet
- Darmaga meteorological station (under BMG), Bogor: monthly sheet
- Cawang station (under PDSA), Jakarta: recording chart (under repair)
- Sawangan meteorological station (under PDSA), Bogor: recording chart
- Ranca Bungur station (under PDSA), Bogor: recording chart
- Pasirjaya station (under PDSA), Bogor: recording chart (under repair)
- Cilember meteorological station (under IHE), Bogor: monthly sheet
- Ciomas meteorological station (under IHE), Bogor: monthly sheet
- Kracak station (under PLTA), Bogor: a previous study report

Locations of above Automatic Rainfall Recording (ARR) stations in the Study Area are shown in Figure 3.1. The most of these ARR stations are continuously operated with good condition. Hourly rainfall records with several specific periods are collected for the analysis of rainfall characteristics such as duration, hyetograph pattern and the others.

(2) Daily Rainfall

Daily rainfall data are mainly collected from BMG's computer center in Jakarta where daily rainfall records in whole Indonesia are stored in magnetic-tapes as the database. Each

station was coded with 2 digits numeric for the region code and 3 or 4 digits alphanumeric for the station code. Table 3.1 shows the list of rainfall stations on the region code "02" that means the location is in and around of Jakarta area. There are 330 stations in and around of Jakarta and daily rainfall records at 301 stations are available in the BMG's database. Available daily rainfall records on the region "02" are graphically shown in Figure 3.2. Among those, 81 stations are selected for the data collection in consideration of the location and elevation of the station, continuation of records and the others. Daily rainfall records at 81 stations, of which the total number is more than 25,000 station-months, are collected for the rainfall analysis on probability and areal characteristics. The rainfall analysis based on the collected daily rainfall data is discussed in the section 4. Locations of these 81 stations are shown in Figure 3.3.

3.2 Runoff Record

Formerly, many water level gauging stations with automatic water-level recorder were constructed in the Study Area, but some of them are not functioning well. Table 3.2 shows a list of major water-level gauging stations in the Study Area and locations of these stations are shown in Figure 3.1. Since 1994 when PDSA was established, water-level measurements of these stations have been mainly conducted by the PDSA office.

(1) Hourly Flow Data

Hourly flow data, records of the discharge or water level hydrograph, on the limited flood events are collected. These data are used for the study of runoff characteristics and calibration of the runoff model. The situation of the collected data on the flood events is discussed in the section 5. Results of discharge measurements at several stations are also obtained from various sources. In short, accuracy of the rating curve is not adequate to estimate the discharge on big flood events, because the numbers of measurements are insufficient and the measurements of the discharge are mostly conducted in the low flow condition.

(2) Daily Flow Data

Daily flow records at stations in the Study Area with a total number of 308 station-years have been collected mainly from previous study reports. Most of those data are summarized in yearly table with the daily mean discharge. Collected daily flow data are listed in Table 3.3.

4. RAINFALL ANALYSIS

4.1 Rainfall Characteristics

Rainfall characteristics, such as annual rainfall depth, annual rainy days, mean daily rainfall on the rainy day and annual maximum daily rainfall, are analyzed based on the collected daily rainfall records at 81 stations and the average of those annual value at the each station is summarized in Table 4.1. The average values are also plotted by the altitude at the station which has sample size more than 10 years as shown in Figure 4.1 to 4.4.

The average annual rainfall depth - elevation relationships (Figure 4.1) shows that the annual rainfall depth increases with its elevation and ranges from 1,500 mm in coastal plain to 5,500 mm in mountainous area. The average annual rainy day - elevation relationships (Figure 4.2) also shows the same characteristic as annual rainfall depth - elevation relationships that it has more rainy days in the mountainous area with higher altitude. It has more than 200 rainy days at the elevation higher than 300 m.

Annual mean daily rainfall on the rainy day is calculated based on the annual rainfall and the annual rainy days in each year and the average annual mean daily rainfall -elevation relationships are shown in Figure 4.3. The mean daily rainfall ranges from 15 to 30 mm and it has no relation with the elevation.

The annual maximum daily rainfall - elevation relationships is also examined and shown in Figure 4.4. The average of annual maximum daily rainfall at each station ranges from 80 to 220 mm and it has no relation with the elevation.

In conclusion, the characteristics of the daily rainfall are as same as the other in the Study Area but the total number of rainy days in a year is different depending on its altitude. Therefore, it has much annual rainfall in the mountainous area and less annual rainfall in coastal plain in proportion to those annual rainy days.

4.2 Annual Maximum Daily Rainfall - Frequency Analysis

Frequency analysis of annual maximum daily rainfall and 24-hour rainfall in Jabotabek was examined in previous studies. Those study reports are reviewed and the results of frequency analysis are reexamined based on the statistical parameters such as sample size, average and standard deviation. The results of the frequency analysis at each station using Gumbel method on several return periods are shown in Table 4.2. And the results of the station that has sample size more than 30 years are plotted in Figure 4.5 (1/3) to (3/3) in accordance with the elevation at each station.

Additionally, frequency analysis of annual maximum daily rainfall in 25 stations are examined based on the collected daily rainfall records. The available data and those statistical parameters are shown in Table 4.3. The results of the frequency analysis at each station using Gumbel method on several return periods are given in Table 4.4. And the results are plotted in Figure 4.6 (1/3) to (3/3) in accordance with the elevation at each station.

Figure 4.5 and 4.6 show a probable daily rainfall of specific return periods with elevation 0 to 100 m, 100 to 300 m and higher than 300 m respectively. These figures show that probable daily rainfall has no relation with its elevation.

4.3 Areal Rainfall

Areal rainfall characteristics in Jabotabek were examined in previous studies. Those study reports are also reviewed and the conclusion of areal rainfall characteristics in several studies are summarized below.

- "Master Plan for Drainage and Flood Control of Jakarta", Annex I, 1973:

Areal rainfall reduction factors related to the surface (km^2) of catchment area

t	Catchment area									
(hr)	0 km^2	5 km^2	10 km^2	30 km^2	50 km^2	70 km^2	90 km^2	100 km^2	150 km^2	200 km^2
1/6	1	0.94	0.91	0.81	0.74	0.69	0.65	0.63	0.56	0.50
1/2	1	0.95	0.92	0.83	0.77	0.73	0.69	0.67	0.60	0.55
1	1	0.96	0.93	0.86	0.81	0.76	0.73	0.71	0.64	0.59
2	1	0.96	0.94	0.88	0.82	0.79	0.75	0.74	0.67	0.62
3	1	0.96	0.94	0.87	0.83	0.79	0.75	0.74	0.68	0.63
4	1	0.96	0.94	0.88	0.83	0.79	0.76	0.74	0.68	0.63
5	1	0.97	0.94	0.88	0.84	0.80	0.77	0.75	0.69	0.64
12	1	0.98	0.97	0.92	0.89	0.87	0.84	0.83	0.79	0.75
24	1	0.99	0.98	0.96	0.94	0.93	0.91	0.90	0.87	0.85

- "Cisadane - Jakarta - Cibeet Water Resources Development Plan", Complementary Report, Annex C, 1980:

$P(A, F) = 1.07\, e^{-0.00160A} \times P(0, F)$ for $A \leqq 140\ km^2$

$P(A, F) = 0.88\, e^{-0.00038A} \times P(0, F)$ for $A \geqq 140\ km^2$

where, P(A, F) : 24-hour areal rainfall for catchment area A and of frequency F; (mm)

P(0, F) : 1-day point rainfall of frequency F; (mm)

- "Extreme Rainfall Records for Probable Maximum Precipitation and Intensity-Duration-Frequency Analysis in Indonesia", Working Paper No.15, BMG Jakarta, 1981:

This result was graphically shown in the report of "Cisadane River Basin Development Feasibility Study", Hydrology Volume 2, 1987.

- "User's Guide Flood Estimation for Ungaged Catchments of Java and Sumatera", 1994:

Catchment area (km^2)	Area Reduction Factor
1 - 10	0.99
10 - 30	0.97
30 - 30,000	$1.152 - 0.1233 \times \log_{10}(\text{Area})$

These results are graphically shown in Figure 4.7 and some actual areal daily rainfall areal patterns on the past flood events, based on the observed daily rainfall record shown in Cisadane River Basin F/S Report, are also plotted in the same figure.

The analysis of areal rainfall characteristics is conducted based on the collected data. Annual maximum areal daily rainfall using Thiessen polygon method is examined for Cisadane (1,411 km²) and Ciliwung (421 km²) basin. Relative study results on Ciliwung basin (215 km²) are also referred since the availability of the data is very limited. The following table shows the series of annual maximum areal rainfall examined.

Year	Ciliwung 215 km²	Ciliwung 421 km²		Cisadane 1411 km²		Year	Ciliwung 215 km²	Ciliwung 421 km²		Cisadane 1411 km²	
	(mm)	Date	(mm)	Date	(mm)		(mm)	Date	(mm)	Date	(mm)
1970	41.0	-	-	-	-	1983	73.0	02-10-83	55.9	03-04-83	37.3
1971	62.0	-	-	-	-	1984	113.0	27-10-84	62.5	13-08-84	41.7
1972	58.0	-	-	-	-	1985	58.0	15-01-85	89.9	15-01-85	64.4
1973	43.0	-	-	-	-	1986	61.0	08-10-86	68.0	06-08-86	50.7
1974	55.0	05-09-74	59.1	15-02-74	64.6	1987	69.0	19-10-87	58.0	15-12-87	50.3
1975	42.0	08-04-75	58.1	06-06-75	43.3	1988	64.0	-	-	-	-
1976	56.0	02-01-76	64.9	30-01-76	46.2	1989	108.0	04-02-89	92.3	08-05-89	86.1
1977	64.0	26-12-77	127.7	20-01-77	59.2	1990	67.0	08-08-90	68.0	-	-
1978	51.0	19-08-78	68.8	15-11-78	49.6	1991	65.0	-	-	17-02-91	29.6
1979	63.0	03-10-79	61.1	-	-	1992	109.0	23-08-92	67.5	02-12-92	65.3
1980	66.0	28-02-80	63.8	28-02-80	44.1	1993	101.0	22-04-93	63.9	07-02-93	30.2
1981	47.0	26-12-81	70.0	26-12-81	84.2	1994	-	-	-	-	-
1982	57.0	04-03-82	53.2	06-01-82	55.9	1995	-	-	-	-	-

Design rainfall is prepared based on the above careful analysis of rainfall, in consideration of these aspects of rainfall.

4.4 Basic Design Storm

(1) Probable Areal Rainfall

In consideration of the availability of rainfall data, probability analysis of annual maximum daily areal rainfall has been conducted for the basins of the Ciliwung river including that of the Krukut river and of the Cisadane river. At the same time, the probability analysis of annual maximum daily point rainfall at BMG station has been also conducted. These probable rainfalls and for several return periods are shown in Figure 4.8 and summarized below:

(Unit: mm)

Area	2-year	5-year	10-year	25-year	50-year	100-year
Point Rainfall	98 (100%)	135 (100%)	160 (100%)	192 (100%)	215 (100%)	238 (100%)
Ciliwung (215km²)	63 (65%)	85 (62%)	99 (61%)	116 (61%)	129 (60%)	142 (60%)
Ciliwung (421km²)	67 (69%)	86 (63%)	98 (61%)	114 (59%)	125 (58%)	137 (57%)
Cisadane (1411km²)	49 (50%)	67 (50%)	79 (49%)	94 (49%)	105 (49%)	116 (49%)

According to these results, the relation between point rainfall and areal rainfall in the Study Area is estimated by following equations as shown in Figure 4.9 ;

$P(A, F) = P(0, F)$ for $0 \leqq A < 3\ km^2$

$P(A, F) = 1.0935\ A^{-0.1098} \times P(0, F)$ for $3 \leqq A < 1{,}500\ km^2$

where $P(A, F)$: Areal rainfall for catchment area A and of frequency F; (mm)

$P(0, F)$: Point rainfall of frequency F; (mm)

(2) Design Hyetographs

The design rainfall duration is determined to be 24 hours taking into account the rainfall characteristics and the scale of river basin in the Study area. Time distribution patterns are assumed to have the peak intensity occurring in the beginning of the storm due to limited available hourly rainfall data. These patterns were adopted in the previous Jakarta Drainage and Flood control Master Plan. These patterns are derived from rainfall mass curve patterns prepared by the previous master plan. Rainfall mass curves for several return periods are shown in Figure 4.10.

5. RUNOFF ANALYSIS

Objectives of the runoff analysis are to construct a flood runoff model of the each river system in Jabotabek based on the available hydrological data and to estimate the probable flood runoff for the flood control plans.

The appropriate runoff calculation method must be selected according to the purpose of the calculations and the hydrological data required. Storage function method is selected as runoff calculation model for the following reasons;

- The method will give the runoff hydrograph in consideration of non-linearity of runoff.
- The method can express the changes of land use conditions.
- The rainfall and runoff records are limited and the method is simple and standardized.

The runoff calculation model using storage function method is developed through calibration of coefficients from the available hydrological data.

5.1 Basin and River System Model

The basin and river system model is a necessary tool for the flood runoff calculation. The model compiles all the elements of flood runoff mechanism such as river basins, channel and dam/reservoirs. These elements are linked together by the calculation points. The calculation points, at which the flood runoff is calculated, are determined at locations where significant changes in flood runoff peak are expected.

Design control points, which are selected among the calculation points, are the principal points for estimating the probable flood runoff and for determining the flood distribution along the river.

The Study area is largely divided into the 8 river systems. Each river system is further divided into sub-basins for the flood runoff analysis taking into account the topography, river system, flood control facilities, design control points, etc. The sub-basins divided are shown in Figure 5.1. The catchment areas of the each river system are summarized as follows:

River system	Catchment area (km^2) at design control point
Cidurian	596
Cimanceuri	415
Cirarab	147
Cisadane	1,248
Cengkareng Floodway	459
Western Banjir Canal	421
Eastern Banjir Canal	207
C.B.L. Floodway	877

5.2 Storage Function Method

A storage function model method is employed for calculation of flood runoff from each sub-basin and river channel. In general, there are some differences in runoff characteristics among basins. The parameters of storage function method can express those differences based on topographic data and land use. Schematic diagram of the basin and river channel model for each river system is illustrated in Figure 5.2.

(1) Basin Runoff Model

The storage function of basin is expressed by the following equations:

$$S_l = K' \cdot Q_l^p$$

$$\frac{dS_l}{dt} = \frac{1}{3.6} \cdot f \cdot r_{ave} \cdot A - Q_l$$

Where,
S_l : apparent storage in basin (m3/s·hr)
$Q_l(t) = Q(t + T_l)$: direct runoff from basin with lag time (m3/sec)
K', p : constants
t : time interval (sec)
f : runoff ratio
r_{ave} : average basin rainfall (mm/hr)
A : catchment area (km2)
T_l : lag time (hr)

Constants of K' and p in the equation are estimated employing the following empirical formula:

$K' = \alpha \cdot K = \alpha \cdot 7.35 \cdot (N \cdot L \cdot I^{-1/2})^{0.6}, p = 0.6$ for low plain area

$K' = \alpha \cdot K = \alpha \cdot 43.4 \cdot C \cdot L^{1/3} \cdot I^{-1/3}, p = 1/3$ for mountainous area

Where,
K : initial constant by empirical formula
α : parameters determined by try and error
N, C : constant depending on the land use condition as follows;

Land Use	N	C
Urban area	0.02	0.012
Cultivated land, Green area	0.30	0.056
Forest, Bush	0.70	0.120
Paddy field, Pond	1.00	0.120

L : river length (km)
I : average river bed slope

Flood runoff from is adjusted taking lag time into consideration. The lag time is estimated

by empirical formula expressed below:

$$T_l = 0.047 \cdot L - 0.56$$

Where, T_l : lag time in basin (hr)
L : river length (km)

(2) River Channel Model

Flood runoff through a river channel is estimated by the following equations:

$$S_l = K \cdot Q_l^p$$
$$\frac{dS_l}{dt} = Q_{in} - Q_l$$

Where, S_l : apparent storage in basin ($m^3/s \cdot hr$)
$Q_l(t) = Q(t + T_l)$: discharge at lower boundary of channel with lag time (m^3/sec)
K, p : constants
t : time interval (sec)
Q_{in} : inflow to river channel (m^3/s)
T_l : lag time (hr)

Constants of K and p are estimated by uniform flow calculation, the river cross-section, river bed gradient and river length.

The lag time in river channel is estimated by the empirical formula expressed below:

$$T_l = 7.36 \times 10^{-4} \cdot L \cdot I^{-0.5}$$

Where, T_l : lag time in river channel (hr)
L : river length (km)
I : average river bed slope

5.3 Calibration of parameters

(1) Availability of Hydrological Data on Flooding

Hyetographs and flow hydrographs of past flood events are collected from various sources at 10 rainfall recording stations and 20 water-level recording stations. Dates of flood for the data collection are selected based on various information sources such as previous investigation reports on flood, annual summary reports, interview surveys at sites and review of recorded charts. Available hydrological information on the flood events are summarized in Table 5.1.

(2) Calibration

The primary runoff coefficient (f_1) and saturated rainfall depth (R_{sa}) are assumed to be 0.65 and 150 mm in consideration of the geological conditions.

The constants of K, p and lag time (T_l) for each sub-basin with the condition of present and future land use are estimated as tabulated in Table 5.2 and 5.3, respectively. And the relations between S and Q for river channel are also estimated as shown in Table 5.4.

The following 4 flood events subject to calibration of the model are selected from the past floods in consideration of those availability and accuracy of hydrological data.

Flood	Date	Peak Discharge (m^3/s)
Cisadane, Batu Beulah	Mar. 18 - 19, 1981	930
- do.-	Jun. 14 - 15, 1984	701
- do.-	Feb. 06 - 07, 1985	728
- do.-	Mar. 13 - 14, 1986	690

The parameter of α in the basin runoff model are calibrated by the above actual floods in Cisadane river basin. Figure 5.3 shows comparison of the observed and simulated hydrograph at Batu Beulah on several flood events. In this case, the simulated hydrograph are calculated with the parameter $\alpha = 0.52$. According to the simulation, both observed and simulated hydrographs coincide well, and parameters of the model are judged applicable.

5.4 Probable Flood Runoff

The probable flood runoff for each river system which becomes inputs for the flooding model is estimated based on the design rainfalls and flood runoff model calibrated.

The calculated hydrographs at the respective design control points under the future land use conditions are given in Figure 5.4. The design peak discharge before regulation at the design control point for the design scale of each river system and those specific discharge are also summarized in Figure 5.5.

The probable flood runoff for each alternative plan is also estimated using the flood runoff model. These results are used for a design of flood control facilities.

6. FLOOD INUNDATION ANALYSIS

Flood inundation analysis is conducted by using a flooding model in order to hydraulically simulate the flood runoff in the inundation and flooding areas.

6.1 Basin Model

The basin model for the computation is constructed based on the available 1:25,000 topographic map and the objective area is divided into mesh blocks as shown in Figure 6.1.

Each mesh block has a size of 30 seconds of latitude × 30 seconds of longitude (approximately, 919 m × 919 m ≒ 84.4 ha). Average ground elevation of each mesh is also determined using contour lines and point elevations shown in 1:25,000 topographic map.

6.2 Pond Model Method

In this analysis, Pond Model Method is applied as flooding model to simulate a wide-spreading flood in the areas extending in the downstream reaches of each river system in the Study Area.

This model simulates the two dimensional flood flow propagation between divided mesh blocks by solving the movement and continuity equations given below;

$$\frac{L}{g}\cdot\frac{dv}{dt} = (h_1 + z_1) - (h_2 + z_2) - L\cdot\frac{n^2\cdot v\cdot|v|}{h^{4/3}}$$

$$F\cdot\frac{dH}{dt} = Q_{in} - Q_{out}$$

Where,
- L : interval between mesh blocks (m)
- g : acceleration of gravity (m/sec^2)
- v : flow velocity (m/sec)
- t : time (sec)
- h : water depth of mesh (m)
- z : average ground elevation (m)
- n : Manning's roughness coefficient
- F : area of mesh block (m^2)
- H : water level of mesh (m)
- Q_{in} : inflow into mesh (m^3/sec)
- Q_{out} : outflow from mesh (m^3/sec)

6.3 Input Data of The Model

The input for the objective area covered by the pond model consists of runoff hydrograph at flooding point calculated by the storage function method. The following cases of probable floods with present and future land use condition are used in the calculation.

River System	Return period (years)
Cidurian	: 2, 5, 10 and 25
Cimanceuri	: 2, 5, 10 and 25
Cirarab	: 2, 5, 10 and 25
Cisadane	: 2, 5, 10, 25 and 50
Cengkareng Floodway	: 2, 5, 10, 25, 50 and 100
W.B.C.	: 2, 5, 10, 25, 50 and 100
E.B.C.	: 2, 5, 10, 25, 50 and 100
C.B.L. Floodway	: 2, 5, 10, 25 and 50

The flood runoff exceeding the channel capacity is assumed to overflow onto the land area from a specific flooding point of the low bank elevation. The flood water runs over the land area and finally returns to the river or debouches into the sea directly.

Probable flooding point on each river system is assumed based on the past flood and inundation records and discharge carrying capacities of present river channel.

6.4 Simulation Results

Using the developed pond model, simulation for probable flood runoff is carried out for each river system with following conditions:

River System	Design Scale	Carrying Capacity	Probable Flood Peak (m^3/s)											
			Return Period (Present Land Use)						Return Period (Future Land Use)					
	(year)	(m^3/s)	2	5	10	25	50	100	2	5	10	25	50	100
Cidurian	25	220	93	183	263	380	-	-	166	322	457	645	-	-
Cimanceuri	25	210	77	137	183	249	-	-	90	158	210	282	-	-
Cirarab	25	25	7	11	14	18	-	-	28	45	57	74	-	-
Cisadane	50	700	387	672	872	1157	1368	-	483	810	1036	1339	1571	-
Cengkareng F.W.	100	300	58	96	121	167	203	242	168	270	341	448	530	616
W.B.C.	100	300	82	168	230	313	376	444	134	246	324	433	517	602
E.B.C. (Cipinang)	100	10	10	15	20	25	30	34	24	39	51	67	78	90
E.B.C. (Sunter)	100	19	8	13	17	22	25	30	33	54	70	91	107	124
E.B.C. (Buaran)	100	14	5	8	10	13	15	17	12	20	26	33	39	45
E.B.C. (Jatikramat)	100	2	4	7	9	12	14	16	12	18	24	31	37	42
E.B.C. (Cakung)	100	9	5	9	11	15	17	20	23	37	48	62	73	84
C.B.L.	50	210	117	215	298	421	521	-	194	340	459	637	774	-

Note) ☐ : indicates no flooding

The simulation results of the probable maximum inundation depth in condition of above calculation cases are shown in Figure 6.2 to 6.9. These results are used for economic evaluation of the alternative flood control plans.

7. Hydrological Observation

The following five rainfall gauging stations and three water level gauging stations have been newly constructed during the M/P Study period as reported in the Interim Report. The observation at these new stations has been being conducted by Pengembangan Data Sumber Air (PDSA) office under the Ciliwung - Cisadane River Basin Development Project, Ministry of Public Works.

Rainfall Gauging Station

(1) Ranca Sumur ARR station, Ranca Sumur weir site in Tangerang
(2) Bekasi ARR station, Bekasi
(3) Cikarang, Cikarang weir site in Bekasi
(4) Cigudeg ARR station, Bogor
(5) Cariu ARR station, Bogor

Water-Level Gauging Station

(1) Cipinang Muara AWLR station, Sunter river in Jakarta
(2) Kutruk AWLR station, Cimanceuri river in Tangerang
(3) Cileungsi AWLR station, Cileungsi River (upper reach of Bekasi river) in Tangerang

Conditions of these automatic recorders on above stations are good. Periodical manual observations are also conducted at every 07:00 for daily rainfall reading at each rainfall gauging station, and at every 06:00, 12:00 and 18:00 for water level reading at each water level gauging station. And observation records including original recorded charts are kept in the PDSA office in Jakarta.

8. Floods in 1996

8.1 General

In January and February in 1996, the Ciliwung river basin and the city of Jakarta suffered from serious flood damage. Additional data collection and field reconnaissance on floods in 1996 have been carried out during the feasibility study period in Indonesia.

8.1.1 Flood in January 1996

The flood occurred in Jakarta and Bogor on 6 and 7 January 1996 mainly due to the heavy rainfall in the mountainous area of the upstream basin of the Ciliwung river.

The peak water level at the Katulampa weir was recorded as 2.5 m above Katulampa weir crest which gives the discharge of more than 700 m^3/s.

The water level at the Depok station in the Ciliwung river rose to 4.35 m on the staff gauge, well above the critical level of 3.5 m. Usually the water level ranges from 1.2 m to 1.5 m during the rainy season from November to March.

The areas along the Ciliwung river suffered from serious flood damage. The flood also overflowed in the lower Ciliwung river in the reaches downstream of the Manggarai Barrage. The water level in Western Banjir Canal reached to the dangerous level and overflow occurred at some places. The water level recorded at the Setiabudi pumping station was higher than the Design High Water Level of pumping station due to the overflow of the back water from the Western Banjir Canal.

8.1.2 Flood in February 1996

The flood that occurred in the city of Jakarta on 10 and 11 February 1996 was due to the torrential rainfall in the city and also in the catchment area of rivers that flow through Jakarta except the Ciliwung river.

The rain which started at 2:00 am on 10 February 1996 caused overflow in the rivers and canals. Inundation in some areas occurred at 5:00 am and continued to spread throughout the city of Jakarta till the afternoon. The inundation depth was from 30 cm to 150 cm covering an area of approximately 5,000 ha

The recorded daily rainfall depth at the BMG Jakarta station was 216 mm which is almost the daily rainfall depth for 50-year return period as daily rainfall. But when it is considered that this rainfall was during only about 5 hours, this rainfall may corresponds to more than 100-year return period.

The rivers overflowed were reported as follows;

- Angke river around Rawa Buaya, Angke downstream Teluk Gong
- Sepak river around Maruya Ilir, Taman Aries and Puri Indah
- Pesanggrahan river around IKPN Bintaro, Kampung Ulujami Cileduk Raya
- Sekretaris river around Kelapa Dua, Batu Sari as far as Tomang Barat reservoir
- Krukut river around Pulo Raya Tarakanita, Pondok Karya and Jalan Kapten Tendean and Bendungan Hilir
- Cideng Barat around Setiabudi reservoir, Cideng river downstream around Jalan MH. Thamrin
- Cipinang and Sunter river around Cipinang Besar, Cipinang Muara, Alu-alu, Palad, Pulomas as far as Yos Sudarso and Rawa Badak
- Western Banjir Canal around Melati reservoir, Jati Pinggir, Pondok Bandung, Tanah Abang, Tanjung Selor, Rawa Kepah, Rawa Bahagia and Jelembar Hilir

The flood overflowed at some places along the Western Banjir Canal but the river flow from the upper Ciliwung river at Manggarai Barrage was relatively small compared with the flood in January 1996.

8.1.3 Hydrological Condition on Floods in January and February in 1996

Hydrological data such as rainfall, water level, discharge and tide level on the January and

February floods in 1996, mainly on the Ciliwung river basin, are collected from the following agencies:

- Balai Meteorologi dan Geofisika (BMG) Wilayah II
- Pengembangan Data Sumber Air (PDSA) office under the Ciliwung - Cisadane River Basin Development Project, Ministry of Public Works
- Pekerjaan Umum (PU) Jakarta
- Pekerjaan Umum (PU) Bogor

The summary of data collected is shown in Table 8.1 and the locations of the stations are also plotted in Figure 8.1.

Data on hourly rainfall at 3 stations and daily rainfall at 16 stations are collected. Hourly rainfall for the specific 7 days on January and February in 1996 are listed in Table 8.2 and graphically shown in Figure 8.2. Daily rainfall on January and February in 1996 are also summarized in Table 8.3. And the specific 2-day rainfall, on 6-7 January and 9-10 February 1996 are shown in Figure 8.3.

As shown in Figure 8.3, it had much rainfall in the area of upstream Ciliwung basin and less rainfall around the Jakarta area of lower Ciliwung basin on 6-7 January. On the other hand, it has less rainfall depth in the upper basin and much rainfall depth in the lower basin on 9-10 February 1996. These data shows that floods in January and February had different rainfall characteristics.

Data on hourly water level hydrograph at 21 stations and hourly tide level at Tanjung Priok are collected and the specific 4-days water level hydrograph at the several stations in the Ciliwung river and the tide level on 5-8 January and 9-12 February are graphically shown in Figure 8.4.

The peak water levels of the flood in January at the station of Katulampa and Depok are quite high compared with those in the flood in February 1996. The peak discharges of the flood in January and February at the Katulampa weir were recorded as approximately 730 m^3/s on 6 January and 240 m^3/s on 10 February 1996 respectively.

However, the peak water level at the Karet Barrage in the Western Banjir Canal in the February flood is higher than the peak water level in the January flood. It can be assumed that the water level in the downstream reaches of Karet Barrage has risen due to some factor different from the discharges from the upstream of Manggarai Barrage.

8.1.4 Inundation in Jakarta During Floods in Jan. and Feb. 1996

(1) Flood in January 1996

The inundation which occurred during January 5th and 6th in Jakarta was caused mainly due to flooding of rivers. In particular the Ciliwung river seriously caused inundation at many places with large scale in the area along the Ciliwung river itself, the Western Banjir Canal

and the old Ciliwung.

The locations of inundation area and these scale are summarized in Table 8.4. It is clearly observed that the inundation places were concentrated in the areas related to the Ciliwung river and the Western Banjir Canal. The areas other than the above are in and around the Polder Sunter Barat in North Jakarta as well as the Cipinang/Sunter in North and East Jakarta.

Figure 8.5 shows the above places by overlaying on the habitual inundation area in DKI Jakarta.

(2) Flood in February 1996

The inundation which occurred over DKI Jakarta area on February 10 have been observed that it is due to various problems of the urban drainage and that the intensity of a daily rainfall on the day exceeded the designed capacity. Most of the habitual inundation area suffered from damage except in the area along the Ciliwung river and old Ciliwung river. According to the survey report prepared by the DPU shows that areas along the Grogol Sekretaris, the Western Banjir Canal, the Cideng river and the Sunter river suffered from rather serious scale of inundation than the habitual ones.

The locations of inundation area and these scale are summarized in Table 8.4 in the same manner as for the January flood. Figure 8.6 shows the above places by overlaying on the habitual inundation area in DKI Jakarta.

9. STUDY ON CILIWUNG RIVER

9.1 Flow Regime of Ciliwung River

A flow regime of the Ciliwung river is examined to clarify the present flow regime characteristics of the Ciliwung river for the appropriate facility design of proposed Ciliwung Floodway to preserve the present low flow regime characteristics in the downstream reaches.

Daily discharge data at the Katulampa weir station, that is located in the near upstream of proposed Ciliwung Floodway in the Ciliwung river, are collected. The available annual daily discharge series from 1980 to 1990 at the Katulampa station are arranged graphically in Figure 9.1 in order of magnitude.

The specific discharge such as plenty water discharge, ordinary water discharge and low water discharge are examined based on the collected data at the Katulampa station, and the average of those discharges from 1980 to 1990 are summarized below;

- Plenty water discharge (discharge of the 95th rank) : 18 m^3/s
- Ordinary water discharge (discharge of the 185th rank) : 13 m^3/s
- Low water discharge (discharge of the 275th rank) : 9 m^3/s

9.2 Retarding Effect of Ciliwung Valley Plain

The Ciliwung valley plain lies upstream of the Manggarai barrage and it is about 15 km long along the Ciliwung river. This valley plain is habitual inundation area and that has function of natural retarding basin.

In the M/P study, the retarding function of this valley plain is considered to be kept from the viewpoint of flood control to decrease a flood peak discharge in the urban area of lower reaches. However, inundation problem around this valley plain area will be decreased with a completion of the proposed Ciliwung floodway.

Two cases of flood runoff, to keep the retarding function or to confine the flood water with river improvement, are calculated to clarify the effect of retarding function in this valley plain using the runoff calculation mode developed in the M/P study stage.

Figure 9.2 shows calculated runoff hydrographs of above two cases at the Manggarai point. This figure shows that to keep retarding function of the Ciliwung valley plain will decrease the flood peak discharge of 100-year return period by about 50 m^3/s at the Manggarai.

10. Reference Datum

The TTG datum is applied as elevation datum in this study. TTG datum "0" has been established which is equal to the Mean Sea Level (MSL). The relation between the significant tide level, such as HHW, MSL, LLW, etc., and the elevation datum is very important for a channel design. Leveling survey works were carried out by the JICA Study Team to confirm a exact relation with TTG datum "0" and tide level records in Tanjung Priok.

The tide level in Tanjung Priok has been observed by the office of "P.T. (Persero) Pelabuhan Indonesia II". The location of gauging house was changed in February 1996. The gauging house was moved to about 1 km south of the former gauging point.

Observation at the new gauging station was started on 13, February 1996. The relation with former recording and new recording is not clear because the bench mark for previous recording datum was already demolished. Tide level records at the new gauging station are additionally collected.

Tide level recording has been observed on the basis of the floor level of gauging house as +2.578 m. On its basis, the average of monthly maximum, mean and minimum tide level from March to June 1996 are +1.298 m, 0.865 m and 0.408 m respectively.

On the other hand, the floor level of gauging house on the TTG datum measures TTG +1.756 m through the leveling survey from the bench mark TTG 246 conducted by JICA in May 1996. Therefore, the average of monthly mean sea level from March to June 1996 is TTG

+0.043 m converted into the TTG datum. The relation between TTG datum and the tide recording datum are shown in Figure 10.1. The difference between the TTG "0" and the recorded MSL for recent 4 months is 43 mm and it is tolerably small. In conclusion, It is confirmed that TTG datum "0" according to the bench mark TTG 246 still keeps a good relation with MSL at Tanjung Priok.

11. Preparation of Flood Risk Map

The objective area of flood risk map is covered with the latitude 6°04'30"S to 6°14'00"S, the longitude 106°04'30"E to 106°56'30"E and is an area of about 500 km^2 as shown in Figure 11.1.

The basin model for the computation has been constructed based on the 1:5,000 topographic map that is prepared by JICA Study Team during the master plan study stage and the objective area is divided into mesh blocks as shown in Figure 11.1.

Each mesh block has a size of 30 seconds of latitude × 30 seconds of longitude (approximately, 919 m × 919 m ≒ 84.4 ha) that is the same as that used in the flood inundation analysis of the master plan study. Average ground elevation of each mesh block is also determined using contour lines and point elevations shown in 1:5,000 topographic map. Figure 11.2 shows an average ground elevation of each mesh block on the TTG datum.

The final result of flood risk map is summarized in 1:50,000 scale map that includes whole objective area with colored mesh blocks depending on the calculated conceivable maximum inundation depth of each mesh block. The prepared flood risk map is shown in Figure 11.3 with A-4 size here. The flood risk map with original size is separately prepared.

Table 2.1 MONTHLY MEAN AIR TEMPERATURE (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : °C)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	26.4	-	-	-	-	26.0	25.9	26.4	26.7	27.3
1986	25.5	25.7	25.8	-	26.8	26.5	25.8	25.5	25.8	26.6	25.9	26.6
1987	23.2	25.6	-	-	-	-	-	-	-	-	25.6	24.2
1988	26.5	26.4	26.3	26.9	26.8	26.2	26.0	26.0	26.5	26.5	26.4	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	25.1	25.9	26.2	26.9	26.8	26.4	25.9	25.8	26.1	26.5	26.2	26.0

09008 : CIBINONG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	25.6	25.9	26.3	26.3	26.3	25.8	25.2	26.0	26.1	26.5	26.6	26.3
1986	25.2	25.4	25.7	26.2	26.7	26.5	25.9	25.8	26.0	26.4	26.1	26.1
1987	25.2	24.9	25.9	26.3	26.4	26.3	26.2	26.1	26.7	26.9	26.7	25.7
1988	25.9	26.3	26.0	26.6	26.5	26.2	26.4	26.7	27.2	26.9	26.5	25.6
1989	25.6	24.8	26.3	26.5	26.4	26.6	26.7	27.0	27.1	26.9	26.5	26.0
Ave.	25.5	25.5	26.0	26.4	26.5	26.3	26.1	26.3	26.6	26.7	26.5	25.9

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	24.8	24.6	25.7	-	-	25.4	24.7	25.2	25.3	25.5	25.8	25.6
1986	24.6	24.4	24.8	25.2	26.6	25.3	25.1	24.9	25.1	25.6	25.4	25.6
1987	24.7	24.5	25.6	26.0	25.7	25.5	25.3	25.4	26.0	26.5	26.1	25.4
1988	25.4	25.5	-	26.1	-	-	-	25.5	-	-	-	-
1989	-	-	-	-	-	-	-	25.6	25.4	25.7	25.8	25.1
Ave.	24.9	24.8	25.4	25.8	26.2	25.4	25.0	25.3	25.5	25.8	25.8	25.4

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	24.9	25.5	25.6	25.7	25.9	25.4	24.7	25.3	25.5	25.5	25.8	25.6
1986	24.6	-	24.8	25.7	26.2	25.7	25.1	25.0	25.1	25.8	25.0	25.7
1987	24.9	24.6	25.5	26.1	25.7	26.9	25.7	25.7	26.4	26.6	26.2	25.5
1988	25.7	25.4	25.5	26.3	26.1	25.4	25.7	25.6	26.1	26.0	25.8	24.7
1989	25.3	24.4	25.0	25.8	25.6	26.8	25.2	25.7	25.6	25.7	25.9	25.4
Ave.	25.1	25.0	25.3	25.9	25.9	26.0	25.3	25.5	25.7	25.9	25.7	25.4

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	25.7	26.3	26.4	26.5	26.6	25.9	25.6	26.3	26.3	26.4	26.9	26.3
1986	25.4	25.6	25.8	26.5	27.0	26.8	26.0	25.8	26.2	26.6	25.9	26.6
1987	25.5	25.5	26.2	26.8	26.9	27.1	26.8	26.8	27.2	27.8	27.2	26.3
1988	26.5	26.4	26.5	27.3	27.0	26.7	26.7	26.7	27.5	27.1	26.8	-
1989	-	25.3	-	-	26.6	25.7	26.6	26.6	27.1	26.1	27.0	26.2
Ave.	25.8	25.8	26.2	26.8	26.8	26.4	26.3	26.4	26.9	26.8	26.8	26.4

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	26.1	26.7	26.6	26.7	27.1	26.4	26.0	26.5	26.6	26.9	27.4	22.6
1986	25.9	26.1	26.3	26.8	27.3	27.0	26.2	26.0	26.4	27.1	26.4	26.9
1987	25.9	25.9	26.2	26.8	26.9	27.1	26.8	26.8	27.2	27.8	27.2	26.3
1988	26.7	26.4	26.9	27.4	27.4	26.7	26.6	26.5	27.3	27.3	27.0	22.5
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	26.2	26.3	26.5	26.9	27.2	26.8	26.4	26.5	26.9	27.3	27.0	24.6

09414 : CITEKO

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	21.2	21.7	21.2	21.6	21.7	21.1	20.7	21.8	20.5	21.1	21.5	21.0
1986	19.8	20.5	20.7	21.8	21.9	21.9	20.6	20.8	21.1	21.9	21.6	22.3
1987	20.4	22.7	22.2	22.2	22.5	22.9	22.5	23.3	23.0	22.7	21.9	21.4
1988	21.7	21.9	21.7	22.4	22.7	22.0	21.7	21.2	21.2	21.4	21.5	20.8
1989	-	-	21.5	-	-	21.2	21.6	21.2	-	21.8	21.6	20.6
Ave.	20.8	21.7	21.5	22.0	22.2	21.8	21.4	21.7	21.5	21.8	21.6	21.2

Table 2.1 MONTHLY MEAN AIR TEMPERATURE (2/2)

09421 : KEBON CURUG (Unit : °C)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	23.8	24.0	23.8	24.3	24.5	24.4	23.5	24.3	24.5	24.7	24.7	23.9
1986	23.6	23.4	23.6	24.6	25.0	30.5	24.0	23.7	24.5	24.8	-	-
1987	23.4	-	24.3	24.8	-	25.1	24.6	-	25.1	24.7	-	-
1988	24.0	-	24.4	25.1	25.3	24.9	24.8	-	25.3	25.5	-	-
1989	23.8	21.8	-	-	-	-	-	-	-	-	-	-
Ave.	23.7	23.1	24.0	24.7	24.9	26.2	24.2	24.0	24.9	24.9	24.7	23.9

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	26.8	27.7	27.8	27.8	28.6	27.6	27.0	-	28.2	28.1	28.6	-
1986	26.6	26.9	27.3	28.0	28.4	28.1	27.5	27.4	27.3	28.1	27.6	-
1987	-	26.5	27.7	28.6	27.8	28.4	-	28.0	-	28.7	28.7	27.3
1988	27.2	27.5	27.9	28.6	28.6	27.7	27.9	27.9	28.6	28.1	27.9	26.7
1989	27.2	26.1	27.4	27.9	28.3	27.9	28.2	28.1	27.3	28.4	28.1	-
Ave.	27.0	26.9	27.6	28.2	28.3	27.9	27.7	27.9	27.9	28.3	28.2	27.0

10004 : JAKARTA OBSERVATORIUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	26.3	27.0	27.0	27.2	27.6	27.0	26.4	27.3	27.3	27.1	27.5	27.0
1986	25.8	26.4	26.7	27.2	28.1	27.8	27.7	27.1	27.2	27.6	26.8	27.6
1987	26.2	26.4	27.5	27.8	28.3	28.5	28.2	27.7	-	28.5	27.8	27.0
1988	27.0	27.1	27.4	28.4	28.0	27.7	28.0	27.6	28.4	27.7	-	-
1989	26.9	25.9	27.3	27.5	27.5	27.5	27.8	28.0	28.1	28.0	27.8	26.9
Ave.	26.4	26.6	27.2	27.6	27.9	27.7	27.6	27.5	27.8	27.8	27.5	27.1

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	25.7	27.0	-	27.2	27.6	-	26.3	27.0	-	-	-	27.0
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	25.7	27.0	-	27.2	27.6	-	26.3	27.0	-	-	-	27.0

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	26.0	26.6	26.5	26.7	27.1	26.2	25.8	26.5	26.9	26.8	27.3	26.7
1986	-	26.0	26.3	26.8	27.2	26.8	26.2	26.3	26.3	27.1	26.3	26.6
1987	25.8	-	26.5	27.0	26.9	27.0	26.9	26.6	27.2	28.0	27.6	26.7
1988	26.6	26.7	26.7	27.4	-	26.6	26.7	-	27.6	27.3	27.3	26.0
1989	26.2	25.5	26.7	26.6	26.8	26.8	26.5	26.4	27.2	27.4	27.9	26.2
Ave.	26.2	26.2	26.5	26.9	27.0	26.7	26.4	26.5	27.0	27.3	27.3	26.4

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	26.9	26.4	25.8	26.1	27.9	26.9	27.4	26.8
1986	26.0	26.1	-	26.9	27.1	-	26.0	25.7	26.1	-	26.3	26.8
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	26.5	26.5	26.9	27.3	27.3	26.6	26.4	26.4	26.9	26.9	27.1	25.9
1989	26.2	25.4	26.3	26.8	26.8	26.5	26.5	26.5	26.8	27.1	27.2	-
Ave.	26.2	26.0	26.6	27.0	27.0	26.5	26.2	26.2	26.9	27.0	27.0	26.5

Table 2.2 MONTHLY MEAN MAXIMUM AIR TEMPERATURE (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : °C)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	32.5	-	-	-	-	32.6	32.5	32.7	32.6	32.0
1986	29.5	31.0	31.3	-	32.8	32.8	32.3	31.7	31.8	32.1	31.8	31.6
1987	26.1	30.0	-	-	-	-	-	-	-	-	29.7	24.8
1988	31.6	31.7	31.8	32.9	32.5	32.2	32.7	32.4	33.7	32.8	32.4	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	29.1	30.9	31.9	32.9	32.7	32.5	32.5	32.2	32.7	32.5	31.6	29.5

09008 : CIBINONG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	30.3	30.9	31.8	31.1	32.1	31.3	30.7	31.7	31.6	31.9	31.8	31.7
1986	29.4	30.6	31.1	31.6	32.6	32.2	31.8	31.5	31.6	31.9	31.4	31.6
1987	28.8	29.8	31.8	32.2	32.6	32.3	32.6	33.2	33.7	33.6	32.9	32.0
1988	31.3	31.5	31.5	32.5	32.5	31.9	32.6	32.5	33.8	32.6	31.9	30.1
1989	30.7	29.2	31.6	32.7	32.0	31.8	32.3	32.7	33.3	32.7	32.1	30.4
Ave.	30.1	30.4	31.6	32.0	32.4	31.9	32.0	32.3	32.8	32.5	32.0	31.2

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	30.1	30.6	31.1	-	-	30.7	30.5	31.3	31.3	31.2	31.6	30.9
1986	28.8	29.3	30.1	31.2	31.2	31.5	30.9	30.7	31.0	31.1	30.7	31.0
1987	31.0	31.4	32.6	33.0	32.8	32.8	32.6	33.4	33.9	34.2	34.8	32.2
1988	30.4	30.5	-	32.0	-	-	-	31.7	-	-	-	-
1989	-	-	-	-	-	-	-	31.6	31.8	31.8	31.2	25.1
Ave.	30.1	30.5	31.3	32.1	32.0	31.7	31.3	31.7	32.0	32.1	32.1	29.8

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	29.5	30.5	30.9	30.7	31.3	30.6	29.9	31.3	31.3	31.2	31.1	30.8
1986	29.7	-	30.0	31.2	31.8	31.3	30.9	30.8	30.7	31.2	30.6	30.9
1987	28.4	28.7	31.0	31.3	31.4	31.3	31.5	32.6	33.0	32.8	31.9	29.7
1988	30.2	30.3	30.6	31.6	31.3	30.9	31.6	31.5	32.8	31.6	30.8	29.0
1989	29.7	28.0	30.1	31.4	30.8	30.7	31.3	31.5	31.7	31.4	30.8	29.8
Ave.	29.5	29.4	30.5	31.2	31.3	31.0	31.0	31.5	31.9	31.6	31.0	30.0

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	30.1	31.7	32.9	31.3	32.0	31.2	30.6	32.2	31.8	32.0	31.9	31.5
1986	29.2	30.4	30.9	31.8	32.2	32.0	31.9	31.4	31.4	31.5	31.3	31.4
1987	29.0	29.8	31.6	31.9	32.4	32.6	32.6	33.2	33.6	33.5	33.0	30.9
1988	31.0	31.4	31.9	32.7	32.2	32.3	32.5	32.4	33.8	32.8	32.1	-
1989	-	29.3	-	-	31.9	32.2	32.2	32.3	32.8	32.6	32.3	30.3
Ave.	29.8	30.5	31.8	31.9	32.1	32.1	32.0	32.3	32.7	32.5	32.1	31.0

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	29.9	-	-	-	-	31.2	31.4	31.8	31.6	31.1
1987	29.1	29.9	31.7	31.9	32.2	32.3	32.2	32.5	33.2	33.9	33.0	30.9
1988	30.9	30.9	31.5	32.4	32.3	31.7	32.0	32.0	33.3	32.7	32.0	30.3
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	30.0	30.4	31.0	32.2	32.3	32.0	32.1	31.9	32.6	32.8	32.2	30.8

09414 : CITEKO

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	23.2	24.8	25.3	24.8	24.8	25.2	25.1	25.5	25.2	25.4	25.9	25.4
1986	23.6	24.2	24.3	25.6	26.6	26.2	24.8	25.2	24.7	25.3	25.6	26.7
1987	23.3	22.8	25.5	26.4	26.3	26.5	26.6	27.1	26.9	26.5	25.1	25.2
1988	25.3	26.2	25.9	27.0	26.8	26.7	27.1	27.1	27.3	26.4	25.7	25.1
1989	-	-	25.9	-	-	25.5	26.0	25.1	-	26.3	26.0	23.8
Ave.	23.9	24.5	25.4	26.0	26.1	26.0	25.9	26.0	26.0	26.0	25.7	25.2

Table 2.2 MONTHLY MEAN MAXIMUM AIR TEMPERATURE (2/2)

09421 : KEBON CURUG (Unit : °C)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	26.8	27.0	26.9	27.4	28.2	27.7	27.2	28.1	28.7	28.4	28.1	27.0
1986	26.6	26.5	26.6	26.8	28.7	27.0	27.6	27.6	28.5	28.7	-	-
1987	26.3	-	27.2	28.1	-	28.4	28.6	-	30.7	31.1	-	-
1988	25.9	-	27.5	28.2	28.6	27.9	28.2	-	30.2	29.2	-	-
1989	28.1	25.8	25.6	27.2	27.2	27.0	23.3	24.3	24.2	28.3	27.1	26.9
Ave.	26.7	26.4	26.8	27.5	28.2	27.6	27.0	26.7	28.5	29.1	27.6	27.0

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	30.4	31.7	32.2	32.6	34.1	32.7	32.2	-	33.9	33.4	33.2	-
1986	29.4	30.6	31.5	33.0	33.8	33.2	33.0	33.1	31.5	32.8	32.5	-
1987	-	29.9	32.8	33.6	33.7	33.5	-	33.9	-	34.2	33.6	30.9
1988	30.7	31.5	31.9	33.4	33.8	32.7	33.5	33.1	33.9	32.7	31.9	29.7
1989	30.9	29.1	31.5	33.0	33.7	33.0	33.9	33.4	33.3	33.1	31.3	-
Ave.	30.4	30.6	32.0	33.1	33.8	33.0	33.2	33.4	33.2	33.2	32.5	30.3

10004 : JAKARTA OBSERVATORIUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	30.7	31.7	32.0	31.8	32.7	32.0	31.3	32.5	32.4	32.5	32.4	31.6
1986	29.3	30.5	31.1	32.0	32.9	36.2	32.4	31.9	31.9	32.2	31.8	31.7
1987	29.7	30.0	32.6	32.7	33.4	33.4	33.6	33.5	-	33.2	32.8	31.3
1988	31.0	31.4	31.9	33.0	32.6	32.4	32.7	32.4	33.7	32.4	-	-
1989	30.7	29.5	32.1	32.4	31.9	32.3	32.9	32.7	32.6	32.3	32.3	30.4
Ave.	30.3	30.6	31.9	32.4	32.7	33.3	32.6	32.6	32.7	32.5	32.3	31.3

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	28.6	31.0	-	31.3	31.8	-	30.7	31.7	-	-	-	30.9
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	28.6	31.0	-	31.3	31.8	-	30.7	31.7	-	-	-	30.9

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	30.3	31.4	31.7	31.8	24.4	31.3	30.7	32.0	32.3	32.2	32.5	31.6
1986	-	30.5	31.1	30.9	32.5	32.1	31.8	31.2	31.3	31.8	31.6	31.1
1987	29.3	-	31.7	32.1	32.2	32.2	32.7	32.9	33.1	33.6	33.0	34.2
1988	33.8	33.2	29.0	32.5	-	31.6	32.2	-	33.6	32.7	32.2	30.4
1989	30.3	30.0	31.8	32.4	32.0	32.2	32.4	32.1	32.6	32.9	32.5	30.4
Ave.	30.9	31.3	31.1	31.9	30.3	31.9	32.0	32.1	32.6	32.6	32.4	31.5

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	31.8	31.8	31.0	31.6	32.3	32.3	32.4	31.6
1986	29.1	30.2	-	31.5	32.2	-	31.5	30.8	31.2	-	31.6	30.9
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	30.6	30.8	31.7	32.4	32.0	31.4	31.8	31.8	32.8	32.4	32.3	32.1
1989	30.0	29.0	31.3	32.2	31.4	31.7	31.9	31.9	32.2	32.4	32.3	-
Ave.	29.9	30.0	31.5	32.0	31.9	31.6	31.6	31.5	32.1	32.4	32.2	31.5

Table 2.3 MONTHLY MEAN MINIMUM AIR TEMPERATURE (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : °C)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	23.1	-	-	-	-	21.8	22.3	22.5	22.9	22.7
1986	23.2	22.8	23.1	-	23.3	22.9	21.6	21.4	22.3	23.1	22.7	23.2
1987	21.7	23.2	-	-	-	-	-	-	-	-	24.0	24.1
1988	23.2	23.0	23.3	22.9	23.4	22.2	21.5	21.7	22.3	22.7	23.2	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	22.7	23.0	23.2	22.9	23.4	22.6	21.6	21.6	22.3	22.8	23.2	23.3

09008 : CIBINONG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	21.8	21.5	21.8	21.7	22.0	21.7	21.4	21.2	21.8	21.9	22.4	21.9
1986	22.1	21.5	22.0	21.9	21.6	21.6	21.0	21.0	21.6	22.5	22.0	21.9
1987	22.3	21.7	21.8	22.3	21.9	22.1	21.2	20.5	21.5	22.4	23.0	22.4
1988	22.8	22.3	22.7	22.6	22.8	21.2	21.4	21.7	22.0	22.9	22.4	21.5
1989	22.1	21.8	21.9	22.4	22.4	21.8	21.6	21.6	22.0	22.3	22.5	22.2
Ave.	22.2	21.8	22.0	22.2	22.1	21.7	21.3	21.2	21.8	22.4	22.5	22.0

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	21.4	21.4	20.8	-	-	21.0	20.5	20.5	20.5	21.1	20.8	21.0
1986	21.1	20.2	21.3	21.6	21.5	21.3	20.9	20.0	20.8	21.2	21.2	21.8
1987	21.0	20.0	18.3	19.8	18.4	22.1	19.8	18.6	18.9	20.4	20.2	21.0
1988	22.4	21.2	-	21.3	-	-	-	21.3	-	-	-	-
1989	-	-	-	-	-	-	-	21.4	21.3	21.7	21.9	22.2
Ave.	21.5	20.7	20.1	20.9	20.0	21.5	20.4	20.4	20.4	21.1	21.0	21.5

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	21.7	21.8	21.8	22.5	22.6	21.8	21.1	20.2	21.3	21.6	21.7	21.5
1986	21.5	-	22.0	22.6	22.4	22.1	20.9	20.8	21.5	22.1	22.0	22.3
1987	22.5	21.9	22.4	22.8	22.1	22.6	21.4	20.7	21.6	22.1	21.7	22.4
1988	22.7	22.2	22.7	22.3	22.8	21.6	21.4	21.5	21.4	22.2	22.4	21.4
1989	22.3	21.9	21.7	22.1	22.4	22.3	21.2	21.5	21.4	21.8	22.1	22.2
Ave.	22.1	22.0	22.1	22.5	22.5	22.1	21.2	20.9	21.4	22.0	22.0	22.0

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	22.7	23.3	23.0	23.5	23.2	22.4	21.8	22.0	22.1	22.1	22.6	22.4
1986	23.3	22.6	23.0	23.3	23.2	23.0	22.1	22.2	22.6	23.2	22.8	23.0
1987	23.0	22.7	23.1	23.5	23.3	23.4	22.6	22.2	22.7	23.5	23.6	23.6
1988	23.8	23.3	24.0	23.9	24.1	23.0	22.7	22.8	23.2	23.6	23.6	-
1989	-	22.6	-	-	23.0	22.8	22.6	23.1	23.1	23.7	23.6	23.5
Ave.	23.2	22.9	23.3	23.6	23.4	22.9	22.4	22.5	22.7	23.2	23.2	23.1

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	24.3	-	-	-	-	21.4	22.3	23.3	22.4	22.7
1987	23.2	22.6	23.5	23.9	23.4	23.2	21.3	21.4	22.9	23.8	24.0	23.9
1988	23.6	23.7	24.2	24.0	24.2	23.0	22.5	22.6	23.0	23.6	23.7	22.3
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	23.4	23.2	24.0	24.0	23.8	23.1	21.9	21.8	22.7	23.6	23.4	23.0

09414 : CITEKO

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	24.0	-	-	-	-	-	-	-	23.6	23.8	24.3
1986	17.8	17.7	18.3	18.8	18.5	18.2	17.2	16.9	19.9	17.2	17.0	17.0
1987	16.6	17.4	17.4	17.9	17.9	18.0	17.9	17.9	17.5	16.8	17.1	17.9
1988	18.6	18.3	18.7	18.6	17.9	17.9	17.6	17.0	17.0	16.9	17.4	17.1
1989	-	-	17.4	-	-	17.8	17.6	17.4	-	17.4	17.7	18.1
Ave.	17.7	19.4	18.0	18.4	18.1	18.0	17.6	17.3	18.1	18.4	18.6	18.9

Table 2.3 MONTHLY MEAN MINIMUM AIR TEMPERATURE (2/2)

09421 : KEBON CURUG (Unit : °C)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	22.6	23.0	22.5	22.9	23.7	22.7	21.8	22.4	22.4	23.2	23.1	22.4
1986	25.2	22.0	25.2	23.0	23.1	22.1	22.0	21.1	22.9	23.1	-	-
1987	20.2	-	23.4	22.0	-	22.4	22.0	-	20.7	23.0	-	-
1988	22.5	-	22.7	22.8	22.7	19.6	17.7	-	20.0	20.9	-	-
1989	19.9	17.4	15.2	14.6	14.7	14.7	16.9	19.3	16.8	15.4	15.6	15.7
Ave.	22.1	20.8	21.8	21.1	21.1	20.3	20.1	20.9	20.6	21.1	19.4	19.1

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	24.0	25.0	24.5	24.3	24.8	24.2	23.5	-	24.3	24.4	24.8	-
1986	23.8	23.9	24.5	24.7	24.8	24.5	23.6	23.5	24.9	24.7	24.7	-
1987	-	24.2	24.4	24.8	24.9	24.8	-	23.7	-	24.9	25.1	24.6
1988	24.6	24.6	25.0	25.4	25.1	24.3	24.3	24.3	24.5	24.8	24.9	24.4
1989	25.5	23.7	23.3	24.3	24.6	24.2	24.2	24.6	25.0	24.9	24.7	-
Ave.	24.5	24.3	24.3	24.7	24.8	24.4	23.9	24.0	24.7	24.7	24.8	24.5

10004 : JAKARTA OBSERVATORIUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	23.4	24.2	23.8	24.1	24.2	23.8	23.2	23.4	23.6	24.0	24.1	23.8
1986	23.4	23.4	23.8	24.1	24.4	24.3	23.3	23.1	23.5	24.4	24.1	24.4
1987	23.7	23.7	24.2	24.8	24.8	25.1	24.5	23.6	-	24.8	24.5	24.1
1988	24.2	24.2	24.5	25.0	24.3	24.2	24.0	23.9	24.4	24.4	-	-
1989	24.2	23.3	24.1	24.0	24.2	24.0	23.9	24.1	24.1	24.4	24.3	23.9
Ave.	23.8	23.8	24.1	24.4	24.4	24.3	23.8	23.6	23.9	24.4	24.3	24.1

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	23.4	24.2	-	24.1	24.5	-	23.5	23.6	-	-	-	24.0
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	23.4	24.2	-	24.1	24.5	-	23.5	23.6	-	-	-	24.0

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	21.7	22.3	22.1	22.6	21.6	21.5	21.1	21.0	21.5	21.6	22.2	21.9
1986	-	21.5	22.0	22.0	22.0	21.7	20.7	20.7	20.3	21.3	21.5	21.8
1987	23.1	-	22.8	23.4	23.0	22.9	22.4	21.2	22.2	22.8	23.5	21.6
1988	21.4	22.0	23.8	23.6	-	23.0	21.0	-	21.8	23.3	23.6	22.6
1989	23.2	22.8	23.2	23.3	23.3	22.1	22.3	22.5	22.8	23.1	23.2	23.0
Ave.	22.4	22.2	22.8	23.0	22.5	22.2	21.5	21.4	21.7	22.4	22.8	22.2

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	22.8	22.2	21.7	21.6	21.7	22.3	22.5	22.3
1986	22.8	22.9	-	23.3	22.9	-	21.7	21.6	22.0	-	23.0	23.2
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	23.8	23.5	23.7	23.6	24.1	22.9	22.6	22.5	22.5	23.2	23.6	22.9
1989	23.3	22.8	23.2	23.3	23.5	22.9	22.5	22.6	22.6	23.2	23.5	-
Ave.	23.3	23.1	23.5	23.4	23.3	22.7	22.1	22.1	22.2	22.9	23.2	22.8

Table 2.4 MONTHLY RAINFALL (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : mm)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	176	-	-	-	-	147	304	126	174	186
1986	394	120	241	-	72	84	136	114	187	267	314	198
1987	664	231	-	-	-	-	-	-	-	-	172	288
1988	269	198	394	181	351	42	67	110	109	261	396	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	442	183	270	181	212	63	102	124	200	218	264	224

09008 : CIBINONG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	411	300	199	218	256	343	473	100	304	265	262	299
1986	408	286	219	496	115	150	260	353	465	370	333	574
1987	277	301	337	405	470	225	68	170	159	446	312	220
1988	366	234	342	174	429	124	85	138	47	232	178	262
1989	383	419	207	344	468	213	111	75	106	214	385	699
Ave.	369	308	261	327	348	211	199	167	216	305	294	411

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	349	385	222	-	-	208	474	257	329	209	254	312
1986	412	314	401	233	292	223	190	231	316	238	486	383
1987	235	296	360	359	393	202	240	81	47	397	461	224
1988	303	357	-	325	-	-	-	216	-	-	-	-
1989	-	-	-	-	-	-	-	186	193	415	424	478
Ave.	325	338	328	306	343	211	301	194	221	315	406	349

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	375	354	231	337	321	156	514	285	298	241	279	213
1986	436	-	526	233	241	281	232	264	687	252	543	528
1987	295	282	404	290	460	218	235	103	50	413	436	231
1988	434	380	344	445	371	148	89	200	80	240	151	307
1989	464	506	281	150	554	254	147	230	255	367	346	444
Ave.	401	381	357	291	389	211	243	216	274	303	351	345

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	226	211	192	122	318	199	242	52	199	140	208	200
1986	278	227	231	227	232	125	104	285	285	285	336	344
1987	482	250	331	290	159	150	82	0	94	53	296	386
1988	325	234	185	109	324	96	84	92	32	268	121	-
1989	-	463	-	-	300	94	112	160	24	94	211	260
Ave.	328	277	235	187	267	133	125	118	127	168	234	298

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	256	187	313	164	97	34	172	33	84	174	74	163
1986	380	236	112	191	48	22	87	161	85	43	186	212
1987	615	326	151	145	86	49	43	1	7	18	112	345
1988	323	186	139	35	360	46	36	77	5	157	123	370
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	394	234	179	134	148	38	85	68	45	98	124	273

09414 : CITEKO

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	197	-	-	-	-	-	-	-	475	776	379
1986	501	377	405	271	70	146	198	210	364	293	546	256
1987	520	444	253	56	282	102	21	8	82	57	377	457
1988	389	269	663	171	149	27	4	77	95	273	182	316
1989	-	-	209	-	-	146	130	195	-	141	85	441
Ave.	470	322	383	166	167	105	88	123	180	248	393	370

Table 2.4 MONTHLY RAINFALL (2/2)

09421 : KEBON CURUG (Unit : mm)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	256	507	346	314	293	239	157	141	111	250	261	355
1986	622	453	622	773	132	297	198	16	135	175	-	-
1987	417	-	244	313	-	50	82	-	10	13	-	-
1988	673	-	655	166	316	109	297	-	87	-	-	-
1989	279	777	384	410	-	219	164	10	-	566	156	181
Ave.	449	579	450	395	247	183	180	56	86	251	209	268

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	472	60	139	178	100	120	113	-	28	50	66	-
1986	610	278	141	125	54	56	116	108	108	169	81	-
1987	-	448	190	102	22	58	-	-	-	53	116	400
1988	535	128	64	54	31	20	-	15	2	96	69	279
1989	226	483	93	71	62	63	18	27	98	35	126	-
Ave.	461	279	125	106	54	63	82	50	59	81	92	340

10004 : JAKARTA OBSERVATORIUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	148	174	51	114	190	157	131	8	44	148	64	173
1986	370	240	163	137	64	116	109	207	189	52	93	195
1987	497	280	104	105	90	53	-	6	-	25	186	339
1988	463	193	195	71	157	36	11	57	1	195	-	-
1989	248	399	119	114	198	139	89	23	31	26	133	363
Ave.	345	257	126	108	140	100	85	60	66	89	119	268

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	299	81	-	71	225	-	158	4	-	-	-	206
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	299	81	-	71	225	-	158	4	-	-	-	206

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	396	156	208	247	131	150	181	28	93	159	96	126
1986	-	240	189	213	148	79	112	305	153	137	432	222
1987	309	-	348	297	147	146	3	36	97	47	201	271
1988	329	241	265	58	-	79	27	-	21	141	135	302
1989	329	341	191	241	221	21	211	79	34	59	272	306
Ave.	341	245	240	211	162	95	107	112	80	109	227	245

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	96	56	190	37	49	107	41	181
1986	503	369	-	164	77	-	93	268	124	-	114	237
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	371	227	106	73	276	67	17	50	17	98	52	313
1989	209	441	155	68	208	41	51	4	64	35	35	-
Ave.	361	346	131	102	164	55	88	90	64	80	61	244

Table 2.5 MONTHLY MEAN SUNSHINE DURATION (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : %)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	65	-	-	-	-	85	75	59	55	56
1986	23	48	46	-	82	74	79	64	56	53	50	53
1987	2	40	-	-	-	-	-	-	-	-	2	3
1988	45	54	49	64	64	70	76	72	80	55	49	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	23	47	53	64	73	72	78	74	70	56	39	37

09008 : CIBINONG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	50	65	71	60	81	72	67	82	76	62	64	53
1986	17	51	45	65	84	75	86	68	64	63	50	61
1987	23	36	68	69	81	70	87	88	80	81	60	30
1988	39	54	49	68	60	66	77	78	88	68	46	40
1989	53	16	60	72	70	75	83	89	88	71	63	41
Ave.	36	44	59	67	75	72	80	81	79	69	57	45

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	47	48	60	-	-	54	55	85	78	62	60	57
1986	28	52	47	67	83	75	77	72	60	59	49	65
1987	19	37	69	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	31	46	59	67	83	65	66	79	69	61	55	61

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	50	48	56	51	70	67	69	87	80	62	60	52
1986	46	-	43	63	78	73	79	65	50	65	55	63
1987	19	34	67	67	80	71	90	90	79	80	61	26
1988	41	48	41	68	64	71	76	72	82	54	44	40
1989	47	18	53	67	65	66	76	7	77	59	60	55
Ave.	41	37	52	63	71	70	78	64	74	64	56	47

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	46	53	63	52	61	59	58	79	67	53	51	50
1986	19	46	43	58	72	67	71	64	60	55	48	53
1987	22	38	59	56	71	63	80	86	78	71	59	35
1988	40	51	50	63	57	68	73	73	81	54	51	-
1989	-	23	-	-	62	61	76	73	67	53	54	41
Ave.	32	42	54	57	65	64	72	75	71	57	53	45

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	62	61	67	53	81	63	69	86	74	59	55	56
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	26	41	71	65	78	71	90	94	83	76	68	35
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	44	51	69	59	80	67	80	90	79	68	62	46

09421 : KEBON CURUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	37	34	32	42	54	62	58	54	65	44	43	31
1986	31	34	31	41	59	36	51	54	42	48	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	2	-	38	24	67	80	87	-	86	50	-	-
1989	33	33	8	58	54	48	59	64	64	44	30	50
Ave.	26	34	27	41	59	57	64	57	64	47	37	41

Table 2.5 MONTHLY MEAN SUNSHINE DURATION (2/2)

10003 : TANJUNG PRIOK (Unit : %)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	56	53	58	49	66	66	68	-	85	65	58	-
1986	19	55	61	70	90	72	86	76	70	68	54	-
1987	-	39	73	70	78	73	-	94	-	86	67	36
1988	39	58	55	72	67	52	72	54	56	36	38	6
1989	25	10	53	69	79	72	82	81	84	61	45	-
Ave.	35	43	60	66	76	67	77	76	74	63	52	21

10004 : JAKARTA OBSERVATORIUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	42	43	55	42	61	50	27	78	69	52	84	40
1986	11	54	45	54	71	55	66	64	51	46	26	42
1987	60	40	40	30	30	30	30	30	-	30	30	-
1988	40	40	40	40	40	40	40	40	40	40	-	-
1989	38	17	52	64	36	36	69	75	72	48	51	32
Ave.	38	39	46	46	48	42	46	57	58	43	48	38

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	55	56	-	57	74	-	68	71	-	-	-	53
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	55	56	-	57	74	-	68	71	-	-	-	53

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	47	48	56	48	68	58	62	86	70	65	58	57
1986	-	49	42	62	76	68	77	65	55	53	47	54
1987	19	-	63	57	77	66	89	95	79	79	60	33
1988	38	54	47	67	-	66	78	-	81	57	47	42
1989	41	25	56	73	66	65	75	77	75	60	60	38
Ave.	36	44	53	61	72	65	76	81	72	63	54	45

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	100	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	-	-	100	-	-	-	-	-	-	-	-

Table 2.6 MONTHLY MEAN AIR PRESSURE (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : millibar)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	1009.7	-	-	-	-	1010.8	1010.8	1011.3	1010.2	1010.3
1986	1010.2	1010.9	1009.9	-	1010.6	1009.7	1012.5	1011.9	1012.8	1012.7	1012.2	1012.7
1987	1010.5	1013.4	-	-	-	-	-	-	-	-	-	-
1988	1011.0	1011.3	1009.6	1011.0	1010.7	1011.7	1011.9	1011.8	1011.2	1011.1	1010.6	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	1010.6	1011.9	1009.7	1011.0	1010.7	1010.7	1012.2	1011.5	1011.6	1011.7	1011.0	1011.5

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	1010.5	1006.2	1009.4	-	-	1009.7	1010.1	1010.0	1010.5	1010.4	1009.4	1009.5
1986	1009.3	1010.4	1008.7	1009.1	1009.8	1008.7	1010.8	1010.0	1009.4	1010.5	1010.4	1010.8
1987	1009.6	1010.9	1010.4	1010.2	1010.2	1010.5	1011.1	1011.2	1011.5	1010.8	1010.0	1010.6
1988	1009.2	1009.6	-	1009.1	-	-	-	1010.1	-	-	-	-
1989	-	-	-	-	-	-	-	1009.9	1010.4	1010.1	1010.2	1010.8
Ave.	1009.7	1009.3	1009.5	1009.5	1010.0	1009.6	1010.7	1010.2	1010.5	1010.5	1010.0	1010.4

09010 : DARMAGA BOGOR *)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	990.3	987.2	989.1	988.5	988.4	987.0	990.6	990.5	990.3	990.3	989.6	989.9
1986	990.5	-	989.3	989.3	989.9	989.0	990.8	990.1	991.1	991.1	990.6	991.1
1987	991.1	991.1	990.8	990.9	990.7	990.4	991.4	991.0	991.0	990.8	990.2	991.0
1988	989.7	990.0	988.6	989.4	989.4	990.2	990.2	990.3	989.8	989.7	989.5	990.7
1989	988.8	990.1	989.9	989.0	988.8	990.2	957.9	989.9	990.2	990.1	990.1	990.7
Ave.	990.1	989.6	989.5	989.4	989.4	989.4	984.2	990.4	990.5	990.4	990.0	990.7

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	1010.6	1006.8	1009.3	1005.7	1005.5	1007.3	1007.7	1007.5	1007.9	1007.9	1007.1	1007.2
1986	1006.9	1007.8	1006.7	1006.8	1007.4	1006.4	1008.4	1007.6	1008.7	1008.1	1007.7	1008.2
1987	1008.2	1009.1	1008.0	1007.6	1008.7	1007.1	1008.6	1008.8	1009.1	1007.4	1007.5	1007.4
1988	1006.5	1006.4	1005.1	1006.2	1006.2	1007.2	1007.3	1007.1	1006.7	1006.5	1006.1	-
1989	-	1006.8	-	-	1005.7	1007.2	1006.8	1007.1	1007.5	1007.5	1007.1	1007.9
Ave.	1008.1	1007.4	1007.3	1006.6	1006.7	1007.0	1007.8	1007.6	1008.0	1007.5	1007.1	1007.7

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	1011.9
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	1011.9

09421 : KEBON CURUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	1001.5	1001.8	1002.0	1002.0	1002.5	1002.8	1002.9	1004.1	1003.3	1002.9	1001.7	1002.1
1986	1003.5	1001.3	1003.5	1002.0	1002.8	1001.9	1001.9	1001.8	1001.9	1001.4	-	-
1987	1001.5	-	1001.1	1000.7	-	1002.3	1002.5	-	1003.7	1004.1	-	-
1988	1000.7	-	1000.9	1000.9	1001.6	1002.7	1002.9	-	1008.4	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	1001.8	1001.6	1001.9	1001.4	1002.3	1002.4	1002.6	1003.0	1004.3	1002.8	1001.7	1002.1

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	1011.5	1007.3	1010.2	1009.1	1009.1	1010.8	1011.4	-	1011.7	1011.5	1010.8	-
1986	1010.2	1011.3	1010.0	1010.1	1010.7	1009.8	1011.8	1011.1	1012.2	1012.1	1011.6	-
1987	-	1012.8	1011.6	1011.4	1011.2	1010.9	-	1012.5	-	1011.8	1012.6	1011.2
1988	1010.0	1010.4	1008.4	1009.8	1009.3	1010.1	1010.5	1010.9	1010.0	1009.9	1009.4	1010.7
1989	1008.7	1009.7	1009.4	1009.2	1009.0	1010.6	1009.9	1010.3	1010.2	1010.5	1010.5	-
Ave.	1010.1	1010.3	1009.9	1009.9	1009.9	1010.4	1010.9	1011.2	1011.0	1011.2	1011.0	1011.0

Table 2.6 MONTHLY MEAN AIR PRESSURE (2/2)

10004 : JAKARTA OBSERVATORIUM (Unit : millibar)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	1013.7	1006.7	1009.2	1008.4	1008.2	1010.1	1010.6	1010.5	1010.5	1010.3	1009.7	1009.9
1986	1005.5	1010.3	1009.1	1009.4	1009.9	1008.9	1010.9	1010.1	1011.9	1010.9	1010.6	1010.9
1987	1011.2	1012.1	1011.0	1010.8	1010.6	1010.4	1011.5	1011.4	-	1010.7	1009.9	-
1988	1009.7	1009.9	1008.4	1009.4	1009.4	1010.3	1010.0	1010.3	1009.5	1009.4	-	-
1989	1008.5	1010.9	1009.0	1008.9	1008.8	1010.4	1010.0	1010.0	1010.2	1010.0	1010.1	1010.7
Ave.	1009.7	1010.0	1009.3	1009.4	1009.4	1010.0	1010.6	1010.5	1010.5	1010.3	1010.1	1010.5

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	1010.8	1007.0	-	1008.5	1008.5	-	1011.1	1010.3	-	-	-	1010.0
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	1010.8	1007.0	-	1008.5	1008.5	-	1011.1	1010.3	-	-	-	1010.0

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	1011.8	1007.5	1010.3	1009.3	1009.2	1011.0	1011.5	1011.4	1011.8	1011.7	1010.7	1011.0
1986	-	1011.4	1010.0	1010.3	1010.9	1009.9	1009.8	1011.3	1012.3	1012.2	1011.7	1012.2
1987	1012.0	-	1011.7	1011.4	1011.4	1011.1	1012.5	1012.5	1012.7	1011.9	1011.0	1013.6
1988	1010.4	1010.3	1012.3	1009.9	-	1010.8	1010.8	-	1010.2	1010.2	1010.0	1011.0
1989	1009.0	1010.4	1010.1	1009.6	1009.3	1010.7	1010.4	1010.7	1011.1	1011.0	1011.0	1011.5
Ave.	1010.8	1009.9	1010.9	1010.1	1010.2	1010.7	1011.0	1011.5	1011.6	1011.4	1010.9	1011.9

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	1008.5	1010.3	1010.8	1010.5	1010.5	1010.5	1009.6	1009.8
1986	1009.5	1010.4	-	1009.3	1009.9	-	1011.0	1010.2	1011.1	-	1010.9	1011.2
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	1009.8	1010.1	1008.3	1009.6	1009.3	1010.2	1010.3	1010.2	1009.4	1009.4	1009.1	1010.3
1989	1008.6	1010.0	1009.2	1009.1	1008.9	1010.4	1009.9	1010.2	1010.5	1010.1	1010.2	-
Ave.	1009.3	1010.2	1008.8	1009.3	1009.2	1010.3	1010.5	1010.3	1010.4	1010.0	1010.0	1010.4

Table 2.7 MONTHLY MEAN RELATIVE HUMIDITY (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : %)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	82	-	-	-	-	79	82	81	81	77
1986	88	80	86	-	81	82	81	80	82	83	85	84
1987	78	88	-	-	-	-	-	-	-	-	78	82
1988	84	84	87	83	86	83	79	81	78	81	82	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	83	84	85	83	84	83	80	80	81	82	82	81

09008 : CIBINONG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	84	83	78	82	80	81	84	75	79	79	78	78
1986	88	83	83	84	78	80	78	77	80	79	83	84
1987	88	87	84	83	81	80	76	74	72	76	78	83
1988	84	81	86	79	81	80	75	73	68	75	79	82
1989	84	87	77	78	81	78	77	74	74	75	79	84
Ave.	86	84	82	81	80	80	78	75	75	77	79	82

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	87	83	82	-	-	85	84	76	77	78	80	77
1986	87	84	86	85	80	82	79	78	82	81	84	80
1987	87	85	87	85	83	83	78	71	74	75	81	84
1988	86	84	-	82	-	-	-	78	-	-	-	-
1989	-	-	-	-	-	-	-	77	79	81	82	87
Ave.	87	84	85	84	82	83	80	76	78	79	82	82

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	89	86	85	88	86	86	86	82	83	85	85	84
1986	88	-	89	1	84	85	82	81	84	85	88	87
1987	90	91	88	87	87	85	82	77	77	81	84	87
1988	87	87	88	85	88	85	80	82	77	83	85	88
1989	88	91	87	83	88	95	83	81	82	83	85	89
Ave.	88	89	87	69	87	87	83	81	81	83	85	87

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	88	86	84	86	86	85	84	77	80	82	80	82
1986	89	87	87	86	81	82	79	79	82	83	86	85
1987	89	89	86	86	83	82	78	73	74	76	81	84
1988	86	85	87	81	86	80	76	76	72	79	81	-
1989	-	89	-	-	86	80	77	77	75	77	81	87
Ave.	88	87	86	85	84	82	79	76	77	79	82	85

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	87	88	85	86	83	86	86	80	81	81	81	82
1986	88	86	86	86	83	83	81	81	82	82	84	84
1987	89	89	86	86	84	82	80	77	78	76	78	85
1988	87	88	87	84	87	82	79	81	76	80	82	84
1989	-	-	-	-	-	-	-	77	79	81	82	87
Ave.	88	88	86	86	84	83	82	79	79	80	81	84

09414 : CITEKO

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	93	90	88	88	91	90	90	84	92	91	89	90
1986	96	91	93	90	84	86	85	86	88	88	90	82
1987	93	92	90	88	87	88	86	87	86	89	89	88
1988	88	87	89	86	88	85	83	85	83	84	86	88
1989	-	-	87	-	-	86	88	89	-	84	87	91
Ave.	93	90	89	88	88	87	86	86	87	87	88	88

Table 2.7 MONTHLY MEAN RELATIVE HUMIDITY (2/2)

09421 : KEBON CURUG (Unit : %)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	86	87	86	85	82	79	76	74	75	80	82	85
1986	89	88	89	83	68	80	78	73	78	78	-	-
1987	93	-	81	84	-	77	74	-	-	69	-	-
1988	55	-	82	81	83	72	73	-	69	77	-	-
1989	79	91	-	-	-	-	-	-	-	-	-	-
Ave.	80	89	85	83	78	77	75	74	74	76	82	85

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	81	78	76	78	76	77	78	-	72	73	72	-
1986	81	78	79	78	75	76	73	72	75	75	75	-
1987	-	86	78	77	74	76	-	69	-	72	73	79
1988	82	78	73	73	78	76	71	71	68	74	73	87
1989	80	82	77	75	77	74	73	71	71	73	76	-
Ave.	81	80	77	76	76	76	74	71	72	73	74	83

10004 : JAKARTA OBSERVATORIUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	82	79	78	80	77	76	77	71	72	74	74	76
1986	84	82	82	82	76	77	74	74	73	75	77	78
1987	84	83	78	78	73	72	70	68	-	73	77	-
1988	84	82	82	58	81	76	72	74	70	77	-	-
1969	83	86	78	79	81	77	74	72	72	75	77	83
Ave.	83	82	80	75	78	76	73	72	72	75	76	79

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	88	83	-	84	83	-	84	80	-	-	-	83
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	88	83	-	84	83	-	84	80	-	-	-	83

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	86	84	83	84	83	83	83	76	77	79	76	80
1986	-	83	84	84	81	81	78	76	81	80	83	84
1987	87	-	85	85	83	83	78	73	74	75	78	83
1988	86	84	85	82	-	81	76	-	71	77	78	83
1989	86	87	79	82	84	78	79	79	74	76	81	87
Ave.	86	85	83	83	83	81	79	76	75	77	79	83

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	85	84	84	82	83	83	81	82
1986	88	86	-	85	83	-	82	82	83	-	84	83
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	86	86	85	84	86	83	80	81	78	81	81	85
1989	87	88	84	82	86	83	81	80	80	79	80	-
Ave.	87	87	85	84	85	83	82	81	81	81	82	83

Table 2.8 MONTHLY MEAN WIND VELOCITY (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : knot)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	4	-	-	-	-	4	4	4	4	4
1986	4	3	3	-	3	4	4	3	3	3	3	3
1987	-	3	-	-	-	-	-	-	-	-	-	-
1988	3	4	4	4	3	3	3	3	3	3	4	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	4	3	4	4	3	4	4	3	3	3	4	4

09008 : CIBINONG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	8	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	8	-	-	-	-	-	-	-	-	-	-

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	4	4	3	-	-	2	3	3	4	3	3	3
1986	3	3	3	3	3	2	2	3	3	4	3	4
1987	3	3	5	3	4	3	4	3	3	2	3	3
1988	3	4	-	3	-	-	-	4	-	-	-	-
1989	-	-	-	-	-	-	-	3	3	3	3	3
Ave.	3	4	4	3	4	2	3	3	3	3	3	3

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	2	2	2	2	1	1	1	2	2	2	2	2
1986	2	-	2	-	1	1	2	2	2	2	2	2
1987	2	2	2	2	1	1	1	2	2	2	2	2
1988	-	2	2	2	1	1	1	2	2	3	3	3
1989	3	3	3	1	2	3	2	3	2	2	3	2
Ave.	2	2	2	2	1	1	1	2	2	2	2	2

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	5	5	5	4	3	4	4	4	3	3	3	3
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	4	5	3	2	3	3	3	3	4	3	2	2
1988	2	2	3	3	2	2	2	3	3	3	4	-
1989	-	2	-	-	1	2	2	2	2	1	2	2
Ave.	4	4	4	3	2	3	3	3	3	3	3	2

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	3
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	3

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	10	9	10	5	7	7	7	-	7	7	9	-
1986	7	12	-	-	14	9	10	13	12	11	9	-
1987	-	9	6	6	10	9	-	9	-	7	4	8
1988	8	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	13	11	9	11	12	-
Ave.	8	10	8	6	10	8	10	11	9	9	9	8

Table 2.8 MONTHLY MEAN WIND VELOCITY (2/2)

10004 : JAKARTA OBSERVATORIUM (Unit : knot)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	2	3	3	3	3	2	4	3	3	3	3	4
1986	3	3	3	3	2	3	3	2	4	3	3	3
1987	4	4	4	4	4	4	4	4	-	4	3	4
1988	3	4	4	4	3	4	4	4	4	3	-	-
1989	3	3	4	3	3	3	4	4	4	4	4	3
Ave.	3	3	4	3	3	3	4	3	4	3	3	4

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	5	4	-	4	3	-	3	5	-	-	-	4
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	5	4	-	4	3	-	3	5	-	-	-	4

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	2	3	3	3	2	2	3	3	3	2	3	3
1986	-	3	2	2	2	2	2	3	3	2	3	2
1987	2	-	2	2	2	2	2	2	2	2	3	3
1988	3	3	3	2	-	2	2	-	3	3	4	3
1989	2	3	3	3	2	3	3	2	3	3	3	3
Ave.	2	3	3	2	2	2	2	3	3	2	3	3

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	2	2	3	2	4	5	5	5
1986	6	4	-	4	4	-	4	4	4	-	5	4
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	4	4	5	6	5	5	5	5	6	6	8	7
1989	4	6	8	7	5	6	6	6	5	5	7	-
Ave.	5	5	7	6	4	4	5	4	5	5	6	5

Table 2.9 MONTHLY MAXIMUM WIND VELOCITY (1/2)

09002 : CURUG TANGERANG WEST JAVA (Unit : knot)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	18	-	-	-	-	16	15	15	15	15
1986	20	13	12	-	15	14	15	12	10	14	15	14
1987	-	10	-	-	-	-	-	-	-	-	-	-
1988	20	10	15	25	15	10	15	12	24	15	17	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	20	11	15	25	15	12	15	13	16	15	16	15

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	20	60	20	-	-	20	25	30	20	20	20	25
1986	26	20	27	25	54	25	15	25	27	20	20	25
1987	19	21	25	27	24	20	20	20	21	20	22	25
1988	22	18	-	20	-	-	-	23	-	-	-	-
1989	-	-	-	-	-	-	-	18	18	25	22	20
Ave.	22	30	24	24	39	22	20	23	22	21	21	24

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	15	-
1988	-	-	-	-	-	-	6	9	7	5	9	-
1989	7	7	9	7	5	7	7	7	14	14	14	-
Ave.	7	7	9	7	5	7	7	8	11	10	13	-

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	17	35	24	22	28	17	17	16	24	20	18	16
1986	14	17	14	16	16	12	14	12	16	16	24	12
1987	20	23	12	10	14	18	12	12	14	12	9	14
1988	10	12	15	12	8	10	10	14	15	12	16	-
1989	-	6	-	-	5	5	7	6	5	5	5	5
Ave.	15	19	16	15	14	12	12	12	15	13	14	12

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	10
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	10

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	45	-	70	57	53	52	54	-	45	46	43	-
1986	25	50	-	-	45	46	39	42	56	54	-	-
1987	-	7	46	34	55	50	-	40	-	36	34	44
1988	50	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	31	-	27	21	31	-
Ave.	40	29	58	46	51	49	41	41	43	39	36	44

10004 : JAKARTA OBSERVATORIUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	12	20	11	10	10	10	15	15	12	12	11	12
1986	10	12	19	6	14	13	12	16	19	17	20	18
1987	15	14	18	18	25	18	20	15	-	15	15	17
1988	15	15	15	18	13	17	19	18	15	14	-	-
1989	15	20	17	13	12	16	15	15	15	20	14	14
Ave.	13	16	16	13	15	15	16	16	15	16	15	15

Table 2.9 MONTHLY MAXIMUM WIND VELOCITY (2/2)

10005 : KEMAYORAN (Unit : knot)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	16	20	-	22	25	-	15	20	-	-	-	15
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	16	20	-	22	25	-	15	20	-	-	-	15

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	13	20	15	15	15	10	14	14	10	8	12	14
1986	-	15	10	12	14	12	14	12	10	13	12	15
1987	10	-	15	12	12	12	12	9	10	15	13	13
1988	15	18	15	12	-	10	10	-	15	14	18	12
1989	13	12	15	18	12	12	15	10	13	20	15	10
Ave.	13	16	14	14	13	11	13	11	12	14	14	13

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	10	10	12	18	22	16	28	24
1986	18	24	-	16	18	-	18	20	20	-	28	16
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	18	18	28	22	24	22	22	24	24	34	28	34
1989	20	28	42	36	18	28	26	24	24	22	26	-
Ave.	19	23	35	25	18	20	20	22	23	24	28	25

Table 2.10 MONTHLY FREQUENT WIND DIRECTION (1/2)

09002 : CURUG TANGERANG WEST JAVA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	SW	-	-	-	-	NE	SW	SW	W	W
1986	W	NW	SW	-	NE	NE	SW	N	SE	SW	SW	NE
1987	-	NW	-	-	-	-	-	-	-	-	-	-
1988	NW	W	SW	NE	SW	E	NE	N	N	SW	W	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

09008 : CIBINONG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	S	-	NW	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

09009 : ATANG SENJAYA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	NW	W	W	-	-	NE	NE	NE	SE	NE	NE	NW
1986	W	NW	NW	NW	NW	NE	NW	NE	NE	NE	N	S
1987	NW	NW	N	N	N	N	N	N	N	N	SE	N
1988	NW	NW	-	SE	-	-	-	N	-	-	-	-
1989	-	-	-	-	-	-	-	N	S	S	NW	N
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

09010 : DARMAGA BOGOR

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	W	W	-
1988	-	-	-	-	-	-	W	E	W	W	W	-
1989	W	W	W	E	W	W	W	W	W	W	W	W
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

09029 : STA. KLIMATOLOGI CILEDUG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	NE	NW	W	W	E	W	E	E	NE	NE	W	NE
1986	N	N	NW	E	E	NE	NE	N	E	N	W	NW
1987	NW	N	NE	N	N	E	S	N	N	N	W	S
1988	W	S	W	N	W	N	N	W	N	N	SW	-
1989	-	W	-	-	-	W	N	N	N	N	N	N
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

09054 : TANGERANG (STA. GEOFISIKA)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	-	-	-	-	-	-	-	-
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	NW
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

10003 : TANJUNG PRIOK

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	NW	NW	NW	NW	NE	-	-	-	NW	NW	NW	-
1986	NW	NW	-	-	NE	NE	S	NE	NE	SW	S	-
1987	-	NW	N	NE	NE	NE	-	N	-	N	N	-
1988	NW	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	SE	SE	SE	NW	SE	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.10 MONTHLY FREQUENT WIND DIRECTION (2/2)

10004 : JAKARTA OBSERVATORIUM

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	W	W	W	W	N	N	E	E	N	N	N	W
1986	W	W	W	N	E	E	N	E	E	N	W	N
1987	W	W	N	N	E	E	E	E	-	N	SW	-
1988	W	W	W	E	E	E	E	E	N	E	-	-
1989	W	W	W	SW	N	SW	N	E	N	N	N	W
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

10005 : KEMAYORAN

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	N	N	-	N	N	-	E	E	-	-	-	N
1986	-	-	-	-	-	-	-	-	-	-	-	-
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	-	-	-	-	-	-	-	-	-	-	-	-
1989	-	-	-	-	-	-	-	-	-	-	-	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

10006 : HALIM PERDANA KUSUMA

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	VAR	NW	VAR	VAR	VAR	VAR	VAR	VAR	VAR	VAR	VAR	N
1986	-	VAR	VAR	VAR	VAR	VAR	VAR	VAR	VAR	VAR	VAR	N
1987	VAR	-	VAR	VAR	VAR	VAR	VAR	VAR	N	VAR	VAR	VAR
1988	VAR	VAR	VAR	VAR	-	VAR	VAR	-	VAR	VAR	VAR	VAR
1989	NW	NW	SW	SW	N	S	N	N	N	S	W	NW
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

10422 : CENGKARENG

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1985	-	-	-	-	N	NW	N	E	N	SW	SW	W
1986	NW	NW	-	NE	NE	-	NE	N	NE	-	SW	NW
1987	-	-	-	-	-	-	-	-	-	-	-	-
1988	NW	W	W	E	SW	E	NE	S	NE	SW	W	W
1989	N	W	W	W	S	SW	S	S	N	S	W	-
Ave.	-	-	-	-	-	-	-	-	-	-	-	-

Table 3.1 LIST OF RAINFALL STATION

Region Code: 01 (in and around of Jakarta)

No.	Code	*	Station Name	Elevation	Latitude	Longitude	*1	*2	*3	*4	Data Collected	Remarks
1	02001X		-	-	- - -	- - -	9	13	14	163	-	
2	02002	*	JASINGA	90	6° 28' S	106° 17' E	4	14	27	229	1974-1994	
3	02002A	*	CIKOPOMAYAK	110	6° 41' S	106° 40' E	14	22	33	326	1974-1994	PERKEBUNAN
4	02002B		HAJERE	-	- - -	- - -	0	0	4	19	-	
5	02002X		-	-	- - -	- - -	2	5	16	102	-	
6	02003X		BABAJANG	-	- - -	- - -	9	16	23	233	-	
7	02005		SIMPANGAN	190	6° 30' S	106° 27' E	0	0	2	3	-	
8	02005A		CURUG	140	6° 30' S	106° 25' E	0	0	3	3	-	
9	02005X		-	-	- - -	- - -	8	14	20	214	-	
10	02006		CIGELUNG	175	6° 32' S	106° 25' E	1	1	5	20	-	
11	02006A	*	CIMARACA	120	6° 28' S	106° 25' E	1	2	12	56	-	
12	02007		CILEKSA	465	6° 37' S	106° 27' E	0	0	2	9	-	
13	02008		PASIRMADANG	723	6° 36' S	106° 29' E	1	1	4	33	-	PERKEB. CENGKEH
14	02009		CIBRANI	761	6° 37' S	106° 29' E	0	0	4	4	-	
15	02011		CISARUA	1000	6° 39' S	106° 28' E	0	0	7	13	-	
16	02012	*	CIPEUNDEY	782	6° 39' S	106° 29' E	6	7	13	92	1974-1994	
17	02013	*	BOLANGHILIR	100	6° 29' S	106° 30' E	4	4	11	70	-	PTP CIKASUNGKA
18	02013A	*	TENJO	52	6° 20' S	106° 28' E	1	1	2	35	-	
19	02014	*	TOGE (PERK)	1541	6° 31' S	106° 30' E	4	6	23	151	-	PTP CIKASUNGKA
20	02015	*	CIRANGSAD	680	6° 32' S	106° 33' E	-	-	-	-	-	
21	02016	*	CIGUDAG/CIKASUN	320	6° 33' S	106° 32' E	4	6	22	148	-	PTP CIKASUNGKA
22	02017A	*	BAKNILA	450	6° 36' S	106° 35' E	-	-	-	-	-	
23	02018	*	CIBEBER	550	6° 38' S	106° 36' E	0	0	7	7	-	
24	02019A	*	CIHIRIS	650	6° 39' S	106° 36' E	-	-	-	-	-	
25	02019B	*	PONGKOR	762	6° 40' S	106° 37' E	-	-	-	-	-	
26	02020A		PELOKWARU	865	6° 34' S	106° 34' E	12	12	14	147	-	
27	02021	*	NIRMALA	1350	6° 44' S	106° 31' E	32	34	42	433	All data	
28	02021A	*	CIANTEN	942	6° 45' S	106° 36' E	12	18	36	303	1974-1994	PERKEBUNAN
29	02021B	*	KRACAK (PLTA)	380	6° 37' S	106° 38' E	9	19	30	284	1974-1994	
30	02021C		CIWALEN	1350	6° 42' S	106° 31' E	12	12	14	153	-	
31	02021D	*	CITALAHAB	1200	6° 45' S	106° 32' E	12	12	14	153	-	
32	02021F		LEUWILIANG	-	- - -	- - -	1	1	4	18	-	
33	02021X		CIHUNI	-	- - -	- - -	4	5	17	138	-	
34	02022		EDAM	0	5° 58' S	106° 51' E	1	2	9	56	-	
35	02023A		KUIPER II	0	6° 02' S	106° 45' E	2	4	6	52	-	
36	02024	*	PANGKALAN	6	6° 04' S	106° 39' E	1	1	8	26	-	
37	02024A	*	TELUKNAGA	5	6° 05' S	106° 38' E	2	6	19	115	-	
38	02024B		KAMAL MUARA	-	6° 04' S	106° 42' E	1	1	13	63	-	PERIKANAN
39	02025	*	MAUK	5	6° 03' S	106° 30' E	5	15	25	221	1974-1994	PEMDA
40	02025A	*	KRESEK	15	6° 08' S	106° 23' E	7	20	31	309	1974-1994	PENGAIRAN (DPU)
41	02025B	*	BALARAJA	27	6° 12' S	106° 26' E	4	19	36	337	1974-1994	PENGAIRAN (DPU)
42	02025C	*	CILONGOK GANDU	22	6° 09' S	106° 30' E	3	3	7	45	-	
43	02025E	*	BUMIAYU	-	6° 08' S	106° 27' E	5	9	16	133	1974-1994	PENGAIRAN (DPU)
44	02025F		PASARKEMIS	-	6° 10' S	106° 32' E	4	5	12	84	-	PEMDA-CAMAT
45	02025G		SEPATAN	-	6° 08' S	106° 35' E	4	13	24	229	1974-1994	PENGAIRAN (DPU)
46	02025H	*	LONTAR/BENYAWAK	-	6° 04' S	106° 27' E	7	20	37	333	1974-1994	
47	02025I		KARANGKOBONG	-	6° 04' S	106° 26' E	4	9	21	183	-	PENGAIRAN (DPU)
48	02025J		BEBOJONG	-	- - -	- - -	4	8	17	131	-	
49	02025K	*	BABOJONG	-	- - -	- - -	3	3	5	41	-	PENGAIRAN (DPU)
50	02026	*	TANJUNGPRIOK (M	2	6° 06' S	106° 53' E	9	12	24	201	1974-1994	
51	02026A	*	KAPUK	9	6° 10' S	106° 42' E	10	19	33	307	1974-1994	PENGAIRAN (DPU)
52	02026B		PAKULITAN	7	6° 09' S	106° 47' E	0	0	7	10	-	
53	02026C		PASAR IKAN	1	6° 07' S	106° 49' E	10	11	20	173	-	
54	02026D	*	CILINCING	0	6° 06' S	106° 56' E	4	7	18	136	-	
55	02026H	*	SUKAPURA	-	- - -	- - -	1	1	5	23	-	DPU
56	02027	*	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	7	22	50	377	1961-1994	
57	02027A		TANAH ABANG	4	6° 12' S	106° 48' E	9	11	16	150	-	
58	02027B	*	KEMAYORAN (METE	5	6° 09' S	106° 51' E	14	24	34	351	-	
59	02028	*	MANGGARAI (PA)	-	6° 10' S	106° 50' E	2	2	7	31	-	
60	02028A	*	MANGGARAI	13	6° 10' S	106° 50' E	6	12	20	187	-	
61	02028B	*	MANGGARAI(PA)	-	- - -	- - -	1	1	3	14	-	PENGAIRAN (DPU)
62	02028C	*	SETIABUDI(PA)	-	6° 10' S	106° 49' E	7	7	12	105	1974-1994	PENGAIRAN (DPU)
63	02028D	*	WADUK MELATI	-	6° 10' S	106° 49' E	3	5	10	85	1974-1994	PENGAIRAN (DPU)
64	02028E		KARET (PA)	-	6° 07' S	106° 48' E	3	8	16	151	1974-1994	PENGAIRAN (DPU)
65	02028X	*	-	-	- - -	- - -	2	2	5	47	-	
66	02029	*	JATINEGARA	20	6° 15' S	106° 52' E	0	0	7	24	-	
67	02029A		CIPINANG	18	6° 14' S	106° 53' E	7	13	21	201	-	
68	02029B		PONDOK BAMBU	-	- - -	- - -	2	2	21	122	-	PERTANIAN
69	02029C	*	PULOGADUNG(PA)	-	- - -	- - -	0	0	2	12	-	PENGAIRAN (DPU)
70	02030	*	SUKASARI	18	6° 10' S	106° 40' E	10	64	101	974	-	PEMDA-CAMAT
71	02030A	*	CURUG I (BPMD)	41	6° 16' S	106° 33' E	4	30	61	583	-	

Table 3.1 LIST OF RAINFALL STATION (continued)

Region Code: 02 (in and around of Jakarta)

No.	Code	*	Station Name	Elevation	Latitude	Longitude	*1	*2	*3	*4	Data Collected	Remarks
72	02030B	*	TIGARAKSA	39	6° 16' S	106° 28' E	9	28	58	477	-	PEMDA-CAMAT
73	02030C	*	PARUNG PANJANG	60	6° 21' S	106° 34' E	9	27	61	567	-	PEMDA-CAMAT
74	02030D	*	CISAUK	-	- - -	- - -	1	2	6	34	-	
75	02030E	*	LENGKONG TIMUR	40	6° 17' S	106° 37' E	6	27	54	486	-	PTP XI
76	02030F	*	TANAH TINGGI	20	6° 11' S	106° 38' E	3	5	13	110	-	
77	02030H	*	PORIS TENGAH	13	6° 11' S	106° 38' E	14	27	45	467	1974~1994	PENGAIRAN (DPU)
78	02030I	*	TANGERANG II	3	6° 20' S	106° 38' E	4	8	19	149	1974~1994	
79	02030J		CURUG II (METEO	50	6° 14' S	106° 39' E	12	22	36	324	-	
80	02030X	*	ROROTAN/CILINCI	-	- - -	- - -	2	2	8	58	-	DPU
81	02031A	*	PONDOK JAGUNG	30	6° 18' S	106° 36' E	5	16	25	257	-	PTP XI
82	02031B	*	KARAWACI	15	6° 12' S	106° 38' E	9	15	32	240	-	
83	02031C	*	BENCONGAN	15	6° 13' S	106° 39' E	2	5	11	120	-	
84	02032A	*	KEBAYORAN LAMA	25	6° 14' S	106° 47' E	11	24	36	353	-	PEMDA-CAMAT
85	02032B	*	KEBAYORAN BARU	-	6° 14' S	106° 46' E	3	6	21	151	-	DPU
86	02032C	*	PONDOK BETUNG	-	6° 15' S	106° 45' E	2	4	15	120	1974~1994	
87	02032D	*	CILANDAK	-	6° 14' S	106° 48' E	2	3	12	72	-	DIPERTAN
88	02033	*	PASAR MINGGU	35	6° 17' S	106° 50' E	5	30	83	770	-	
89	02033A	*	RAGUNAN	50	6° 17' S	106° 50' E	13	38	63	617	-	PERTANIAN
90	02033B	*	JATIPADANG	30	6° 17' S	106° 51' E	18	41	53	563	-	PERTANIAN
91	02033C	*	HALIM PERDANAKU	30	6° 18' S	106° 54' E	13	30	45	465	1974~1994	
92	02033D	*	PONDOK GEDE	28	6° 17' S	106° 55' E	10	18	38	303	-	
93	02033E	*	TANJUNG BARAT	36	6° 16' S	106° 51' E	-	-	-	-	-	
94	02033F	*	KAMPUNG KANDANG	40	6° 19' S	106° 49' E	7	14	18	202	-	
95	02033G		KALIBATA	-	6° 15' S	106° 51' E	6	6	8	86	-	
96	02034	*	BPP JOMBANG	-	- - -	- - -	-	-	-	-	-	PERTANIAN
97	02034A	*	SERPONG	50	6° 19' S	106° 40' E	5	21	36	351	1974~1994	PTP XI
98	02034B	*	KALIMATI	6	6° 04' S	106° 36' E	8	26	46	441	1974~1994	PENGAIRAN (DPU)
99	02034C	*	SERPONG	-	6° 19' S	106° 39' E	3	8	19	146	-	PENGAIRAN (DPU)
100	02035	*	CIPUTAT	50	6° 18' S	106° 45' E	7	22	45	388	-	PEMDA-CAMAT
101	02035A	*	PASAR REBO	57	6° 18' S	106° 52' E	5	14	29	234	-	
102	02036	*	DEPOK	95	6° 24' S	106° 51' E	8	44	99	891	-	PENGAIRAN (DPU)
103	02036A	*	PARUNG	103	6° 25' S	106° 44' E	11	32	65	574	-	
104	02036B	*	SAWANGAN	100	6° 25' S	106° 47' E	7	23	54	455	-	PENGAIRAN (DPU)
105	02036C	*	GUNUNG SINDUR	90	6° 22' S	106° 42' E	14	33	51	491	-	PTP XI
106	02037	*	BOJONG GEDEH	148	6° 28' S	106° 50' E	20	73	95	1028	All data	PTP XI
107	02037A	*	BOJONGGEDE	140	6° 30' S	106° 46' E	17	24	37	352	All data	
108	02037B	*	CITAYAM	110	6° 27' S	106° 47' E	14	24	45	403	-	
109	02037C	*	CIBINONG	-	6° 24' S	106° 41' E	6	21	39	359	1974~1994	PERK.PERCOBAAN
110	02038B	*	ATANG SANJAYA	170	6° 33' S	106° 45' E	8	21	40	345	-	BMG
111	02039	*	CILUAR	180	6° 32' S	106° 49' E	0	0	1	1	-	
112	02039A	*	CITA RINGGUL	-	- - -	- - -	1	1	5	25	-	
113	02040	*	KEDUNGHALANG	200	6° 33' S	106° 49' E	0	0	2	16	-	
114	02040A	*	PASIR MAUNG	218	- - -	- - -	2	8	27	216	1974~1994	PTP XI
115	02041	*	TEGALKEMANG	314	6° 34' S	106° 38' E	0	0	1	2	-	
116	02041A		RUMPIN	-	- - -	- - -	3	5	15	105	-	PEMDA-CAMAT
117	02041B		PASIR AWI/CIAMP	-	- - -	- - -	1	1	6	36	-	
118	02041C		BENTENG	-	- - -	- - -	4	4	10	73	-	
119	02043	*	CIMULANG	150	- - -	- - -	22	57	65	722	-	PTP XI
120	02044	*	DRAMAGA (METEO)	220	6° 18' S	106° 39' E	4	5	18	142	-	
121	02044A		SINDANGBARANG	211	6° 35' S	106° 45' E	0	0	9	51	-	DIPERTAN
122	02045	*	CIBALAGUNG	244	- - -	- - -	1	1	14	88	-	
123	02045A	*	CIOMAS (PERK)	244	6° 37' S	106° 46' E	18	37	54	560	All data	
124	02045B	*	PANLASAN	280	- - -	- - -	12	20	27	264	-	
125	02046	*	BOGOR (EMPANG)	266	6° 36' S	106° 48' E	63	78	99	1030	All data	PENGAIRAN (DPU)
126	02046A	*	EMPANG	-	6° 37' S	106° 47' E	4	8	32	199	-	PENGAIRAN (DPU)
127	02046B	*	KEBUNRAYA BOGOR	280	6° 36' S	106° 47' E	14	29	39	411	-	
128	02048	*	BOGOR (PERTA)	237	6° 35' S	106° 46' E	13	34	52	540	-	DIPERTAN
129	02048A	*	SUKA SARI	-	- - -	- - -	1	1	3	24	-	
130	02048B	*	HAMBALANG	225	6° 32' S	106° 52' E	17	36	59	555	All data	PTP XI
131	02048C	*	PASIRGADUNG	354	6° 34' S	106° 56' E	-	-	-	-	-	
132	02048D	*	BOGOR BPP	250	6° 33' S	106° 50' E	16	42	59	636	All data	PERKEBUNAN
133	02048E	*	BARANANGSIANG	-	6° 35' S	106° 48' E	1	2	12	84	-	
134	02049A	*	MUARA	260	6° 38' S	106° 50' E	19	34	39	421	All data	
135	02049B	*	ASTANAGEDE	310	6° 38' S	106° 48' E	0	0	3	4	-	
136	02049C	*	CIMANGLID	400	6° 39' S	106° 47' E	-	-	-	-	-	
137	02049D		PALASARI	740	6° 40' S	106° 48' E	0	0	5	19	-	
138	02049X		BPO II CEPLIK	-	- - -	- - -	2	4	8	64	-	PENGAIRAN (DPU)
139	02052	*	CIAPUS	540	6° 41' S	106° 47' E	14	16	19	215	-	
140	02053		CICALABAK	568	6° 40' S	106° 47' E	-	-	-	-	-	
141	02054	*	WARUNGLOA	646	6° 41' S	106° 46' E	1	2	10	42	-	
142	02055	*	PASIRKARET	470	6° 35' S	106° 55' E	15	19	36	290	-	

Table 3.1 LIST OF RAINFALL STATION (continued)

Region Code: 02 (in and around of Jakarta)

No.	Code	*	Station Name	Elevation	Latitude	Longitude	*1	*2	*3	*4	Data Collected	Remarks
143	02056	*	GUNUNG GEULIS	600	6° 39' S	106° 52' E	1	2	17	119	-	
144	02057	*	PASIR ANGIN	480	6° 39' S	106° 53' E	0	0	3	17	-	
145	02058	*	CIOGROK	450	6° 40' S	106° 52' E	0	0	4	5	-	
146	02059A	*	CIAWI	480	6° 40' S	106° 51' E	10	25	40	393	1974-1994	PEMDA
147	02060	*	PASIR POGOR (PE	640	6° 42' S	106° 47' E	14	28	52	443	-	
148	02060A	*	CURUGAGUNG	480	6° 43' S	106° 48' E	-	-	-	-	-	
149	02061	*	CIBURAYUT	734	6° 43' S	106° 46' E	17	36	48	497	All data	
150	02063	*	SROGOL	490	6° 45' S	106° 50' E	15	37	57	533	All data	PERKEBUNAN
151	02064		CINEGARA	570	6° 45' S	106° 53' E	0	0	1	1	-	
152	02065		KIPARE	795	6° 44' S	106° 53' E	0	0	2	3	-	
153	02065A		PANCAWATI	900	6° 45' S	106° 55' E	1	1	2	13	-	
154	02066	*	TAPOS	806	6° 43' S	106° 53' E	15	27	45	423	All data	
155	02067	*	CIDAKOM (PERK)	800	6° 40' S	106° 52' E	10	34	55	533	1974-1994	
156	02068	*	CIKOPO	690	6° 42' S	106° 54' E	10	19	60	533	1974-1994	
157	02069	*	ARCADOMAS (PERK	910	6° 48' S	107° 07' E	3	8	22	187	1974-1994	
158	02070	*	CICAPI II/DEMAH	1075	- - -	- - -	6	21	40	345	-	
159	02070A	*	PANJANG (PERK)	1021	6° 47' S	107° 07' E	15	38	57	559	All data	
160	02070B	*	BABAKAN/SUKAGAL	-	- - -	- - -	0	0	2	3	-	PERKEBUNAN
161	02071	*	CISARUA	1071	6° 40' S	106° 55' E	0	0	4	7	-	
162	02072A		BALAI KAMBANG	-	- - -	- - -	5	5	7	67	-	
163	02074		GUNUNGMAS	1100	6° 41' S	106° 59' E	0	0	2	2	-	
164	02076	*	GUNUNG MAS (PER	1160	6° 41' S	107° 01' E	22	42	57	595	All data	
165	02077		MANDALAWANGI	1800	6° 44' S	106° 59' E	0	0	3	3	-	
166	02078	*	CILEUNGSI	80	6° 24' S	107° 57' E	2	2	12	57	-	
167	02078A	*	BEKASI	20	6° 16' S	107° 00' E	13	29	56	494	1974-1994	
168	02078B	*	MUARABAKTI	5	6° 06' S	107° 03' E	2	9	26	204	-	
169	02078C	*	GABUS	6	6° 11' S	107° 04' E	9	14	33	254	-	
170	02078D		TELUK BUYUNG	2	6° 01' S	107° 11' E	11	27	43	389	1974-1994	DPU
171	02078E		TAMBUN I (BPMD)	20	6° 14' S	107° 01' E	5	18	36	294	1974-1994	
172	02078F		TAMBUN II	-	6° 06' S	107° 03' E	3	10	20	154	1974-1994	PERK. (DEPERTA)
173	02078G		CIHEAS/BOJONG K	-	- - -	- - -	1	1	5	29	-	
174	02078H		KRANJI	-	- - -	- - -	2	2	5	37	-	
175	02078I		TAMBUN/PENGAIRA	-	- - -	- - -	2	2	7	43	-	
176	02078J		BEKASI PATAL	-	- - -	- - -	5	6	18	131	-	
177	02079	*	GABUS SRIAMUR	-	- - -	- - -	1	1	2	18	-	
178	02080	*	KLAPANUNGGAL	100	6° 27' S	106° 57' E	2	3	14	104	1974-1994	
179	02081		JONGGOL	-	- - -	- - -	1	2	9	44	-	
180	02081A		BATUJAYA	4	6° 04' S	107° 07' E	18	42	65	621	All data	PENGAIRAN (DPU)
181	02081B		CABANGBUNGIN	-	6° 00' S	107° 05' E	6	23	46	392	-	
182	02081X		MENTENG (PERK)	-	6° 30' S	107° 02' E	1	2	7	49	-	
183	02082	*	CIKARANG	27	6° 15' S	107° 09' E	21	38	50	504	All data	
184	02082A		PENGAKARAN	1	6° 03' S	107° 15' E	13	43	58	591	1974-1994	PENGAIRAN (DPU)
185	02082B		SUKAMULYA	-	- - -	- - -	1	1	7	37	-	PENGAIRAN (DPU)
186	02082C		SARENGSENG	27	6° 05' S	107° 11' E	3	9	18	163	1974-1994	
187	02082D	*	TELUKBANGO	5	6° 09' S	107° 13' E	24	42	57	601	All data	PENGAIRAN (DPU)
188	02082X		CIPAYUNG	-	6° 39' S	106° 52' E	0	0	3	16	-	
189	02083		MANYENGSAL (PER	-	6° 30' S	107° 51' E	1	1	4	22	-	
190	02084A	*	SETU	60	6° 20' S	107° 03' E	12	32	48	459	1974-1994	
191	02085		CIBARUSA UDIK	72	6° 26' S	107° 05' E	10	21	39	372	1974-1994	PENGAIRAN (DPU)
192	02086		PANGKALAN	217	6° 28' S	107° 13' E	15	38	51	528	All data	
193	02086A		WARU	-	- - -	- - -	2	2	5	30	-	
194	02087	*	JONGGOL (PERK)	123	6° 28' S	107° 04' E	15	24	32	329	-	
195	02087A		JONGGOL	-	- - -	- - -	7	15	26	242	-	
196	02088		CARIU	95	6° 30' S	107° 08' E	15	21	33	298	-	PENGAIRAN (DPU)
197	02089		DAYEUH	190	6° 31' S	107° 03' E	0	0	29	229	-	
198	02089X		BR12/TEMPURAN	-	- - -	- - -	0	0	1	2	-	DPU
199	02090	*	MENTENG	383	6° 34' S	107° 02' E	0	0	12	63	-	
200	02090A	*	CIKONENG	475	6° 36' S	106° 57' E	1	1	3	15	-	
201	02091		TINGGARJAYA	525	6° 35' S	107° 02' E	0	0	2	12	-	
202	02092		PASIRTANJUNG	162	6° 36' S	107° 09' E	7	8	20	129	1974-1994	
203	02094A		CIBUAYA	2	6° 03' S	107° 21' E	16	41	58	605	1974-1994	PENGAIRAN (DPU)
204	02094B		PACING	5	6° 06' S	106° 16' E	18	43	55	583	All data	PENGAIRAN (DPU)
205	02094C		GEMPOL LOR	4	6° 06' S	107° 20' E	33	43	56	574	All data	PENGAIRAN
206	02095		PEDES I	3	6° 06' S	107° 22' E	12	25	73	565	1974-1994	PENGAIRAN (DPU)
207	02095A		PETARUMAN	8	6° 12' S	107° 18' E	9	12	28	236	1974-1994	
208	02095B		PEBAYURAN	-	- - -	- - -	4	4	8	65	-	
209	02096		RENGAS DENGKLOK	7	6° 09' S	107° 18' E	10	23	36	352	1974-1994	PENGAIRAN (DPU)
210	02096A		RAWAMERTA	7	6° 15' S	107° 24' E	16	40	61	660	1974-1994	PENGAIRAN (DPU)
211	02096B		RAWAKUYU	45	6° 12' S	107° 22' E	1	1	7	18	-	
212	02096C		TUNGGAKJATI	45	6° 14' S	107° 17' E	5	14	28	230	-	
213	02096D		CIKANGKUNG (BPM	-	6° 10' S	107° 19' E	3	6	12	99	-	

Table 3.1 LIST OF RAINFALL STATION (continued)

Region Code: 02 (in and around of Jakarta)

No.	Code	*	Station Name	Elevation	Latitude	Longitude	*1	*2	*3	*4	Data Collected	Remarks
214	02096E		TEMPURAN	-	- - -	- - -	0	0	3	10	-	DPU
215	02097		GEDONGGEDE	14	6° 16' S	107° 16' E	-	-	-	-	-	
216	02098		KRAWANG	14	6° 18' S	107° 18' E	4	23	66	589	1974-1994	
217	02098A		WARUNGBAMBU	5	6° 19' S	107° 18' E	0	0	3	3	-	
218	02098B		PLAWAD	15	6° 19' S	107° 17' E	11	29	49	455	1974-1994	PENGAIRAN (DPU)
219	02098C		SIRNABAYAN	22	6° 18' S	107° 19' E	5	8	15	142	-	
220	02098D		RAWAGABUS	14	6° 19' S	107° 18' E	4	19	34	309	-	PERTANIAN
221	02099		TELUKJAMBE	30	6° 20' S	107° 18' E	16	45	60	630	All data	
222	02099A		CIBADAR	15	6° 10' S	107° 25' E	12	25	38	378	1974-1994	PENGAIRAN (DPU)
223	02099B		PONDOKBALAS	95	6° 24' S	107° 23' E	17	24	37	377	1974-1994	
224	02100		TEGALSARI I (CI	15	6° 17' S	107° 23' E	11	35	62	579	1974-1994	
225	02100A		TEGALSARI II	15	- - -	- - -	8	10	24	183	-	
226	02101		KLARI	25	6° 22' S	107° 22' E	9	23	35	364	1974-1994	
227	02101A		CIWADAS	21	6° 20' S	107° 22' E	9	20	36	348	1974-1994	
228	02101B		BEND.WALAHAR	25	6° 23' S	107° 22' E	6	19	32	316	1974-1994	PENGAIRAN (DPU)
229	02101C		PEDES II	-	6° 24' S	107° 23' E	4	9	24	205	-	PENGAIRAN (DPU)
230	02101D		RAWAGEMPOL I	-	6° 30' S	107° 23' E	5	7	17	124	-	PENGAIRAN (DPU)
231	02101I		SRIJAYA/PEUNDEU	-	- - -	- - -	0	0	4	5	-	DPU
232	02103		CURUG	75	6° 26' S	107° 23' E	7	10	22	176	-	
233	02104		CIAMPEL	30	6° 26' S	107° 22' E	-	-	-	-	-	
234	02105		PASIR CAROLINA	80	6° 29' S	107° 22' E	-	-	-	-	-	
235	02107		CIKAO BANDUNG	27	6° 31' S	107° 24' E	10	26	37	369	1974-1994	PENGAIRAN (DPU)
236	02107A		JATILUHUR	265	6° 32' S	107° 23' E	0	0	3	3	-	
237	02107B		MANAOS	85	6° 34' S	107° 22' E	-	-	-	-	-	
238	02107C		TEGALHARENDONG	150	6° 35' S	107° 25' E	-	-	-	-	-	
239	02107D		KEMBANG KUNING	100	6° 33' S	107° 25' E	-	-	-	-	-	
240	02108		CIRIRIP	60	6° 34' S	107° 18' E	0	0	5	19	-	
241	02109		WANGUN	243	6° 37' S	107° 15' E	0	0	1	6	-	
242	02109A		SELAWANGI	500	6° 35' S	107° 05' E	1	4	16	114	-	
243	02109B		TENJOLAUT	500	6° 36' S	107° 04' E	-	-	-	-	-	
244	02110		LEMAH ABANG	-	- - -	- - -	3	5	15	109	-	
245	02110A		BTP II	-	- - -	- - -	1	2	13	64	-	
246	02110C		MERTAJAYA	2	6° 13' S	107° 33' E	0	0	7	14	-	
247	02110D		PASIRUKEM	2	6° 13' S	107° 31' E	22	26	39	367	-	PENGAIRAN (DPU)
248	02110E		PEUNDEUY	1	6° 17' S	107° 28' E	12	24	37	367	1974-1994	PENGAIRAN (DPU)
249	02110F		RAWAGEMPOL II	25	6° 14' S	107° 34' E	12	25	38	373	-	PENGAIRAN (DPU)
250	02110G		TELAR	22	6° 21' S	107° 30' E	14	24	36	353	-	
251	02110H		JATIRAGAS	16	6° 21' S	107° 33' E	1	5	19	145	-	
252	02110I		SUSUKAN	11	6° 17' S	107° 33' E	3	9	25	219	-	
253	02111		JATISARI	27	6° 22' S	107° 31' E	21	27	37	379	-	
254	02111A		PABUARAN	28	6° 25' S	107° 35' E	2	3	10	67	-	
255	02111B		TANJUNGTIMUR	30	6° 23' S	107° 32' E	17	32	45	457	-	
256	02112		DAWUHAN	30	6° 24' S	107° 34' E	5	12	27	234	-	PENGAIRAN (DPU)
257	02112A		CIKAMPEK	47	6° 25' S	107° 23' E	16	46	68	697	1974-1994	
258	02112B		KAYU ASIN	-	- - -	- - -	3	3	4	37	-	
259	02113		KAMOJING	-	6° 26' S	107° 33' E	4	4	8	69	-	
260	02113A		CINANGKA	55	6° 27' S	107° 29' E	21	36	53	534	All data	PENGAIRAN (DPU)
261	02113B		CIKALONG	26	6° 22' S	107° 32' E	11	35	54	581	-	
262	02113C		SINGAPAN	33	6° 24' S	107° 32' E	18	42	53	576	-	
263	02113D		TANJUNGGARUT	41	6° 27' S	107° 32' E	11	28	35	396	-	
264	02114		WIRADESA	-	- - -	- - -	0	0	2	8	-	
265	02115		CIBENING	100	6° 31' S	107° 30' E	0	0	2	8	-	
266	02115A		CAMPAKA	70	6° 31' S	107° 30' E	13	32	66	599	-	
267	02115B		PUNDONG	-	6° 33' S	107° 30' E	1	7	22	191	-	
268	02117		KEL-CISEURUEH	82	6° 33' S	107° 26' E	23	68	114	1142	All data	PENGAIRAN
269	02117A		SADANG	100	6° 30' S	107° 27' E	14	37	54	534	1974-1994	PENGAIRAN (DPU)
270	02117B		CIKUMPAY	30	6° 30' S	107° 30' E	11	31	47	463	-	PTP XII
271	02117C		CIPINANG/CAMPAK	-	- - -	- - -	3	3	5	51	-	
272	02119A		CIBUKAMANAH	75	6° 34' S	107° 32' E	12	33	53	498	-	
273	02119B		PONDOKSALAM	275	6° 37' S	107° 30' E	31	41	55	566	-	PENGAIRAN (DPU)
274	02120		GUNUNGANAGA	400	6° 37' S	107° 20' E	29	47	68	688	All data	
275	02122		PLERED	261	6° 37' S	107° 23' E	10	37	88	847	1974-1994	PENGAIRAN (DPU)
276	02122A		CISOMANG	-	6° 41' S	107° 24' E	5	13	24	222	1974-1994	PENGAIRAN (DPU)
277	02125		DARANGDAN	515	6° 41' S	107° 25' E	24	66	86	910	All data	
278	02126		CILAMAYA	3	6° 15' S	107° 36' E	38	70	96	996	-	PENGAIRAN (DPU)
279	02126A		GEMPOLHAJI	14	6° 19' S	107° 34' E	11	40	61	615	-	PENGAIRAN (DPU)
280	02127		TEGALPANJANG	10	6° 16' S	107° 38' E	1	1	6	24	-	
281	02127A		BINONG	10	6° 15' S	107° 36' E	0	0	3	9	-	
282	02127C		SUKAMANDI	12	6° 21' S	107° 39' E	9	24	35	350	-	
283	02128C		CIMANDIIA UTARA	52	6° 29' S	107° 36' E	0	0	1	1	-	
284	02130		PASIR PANJANG (	116	6° 33' S	107° 38' E	0	0	4	16	-	

Table 3.1 LIST OF RAINFALL STATION (continued)

Region Code: 02 (in and around of Jakarta)

No.	Code	*	Station Name	Elevation	Latitude	Longitude	*1	*2	*3	*4	Data Collected	Remarks
285	02131		CIPEUNDEUY	100	6° 30' S	107° 34' E	8	9	21	169	-	
286	02132		WANTILAN	77	6° 31' S	107° 38' E	1	1	13	61	-	
287	02132A		CIHAMBULU	90	6° 30' S	107° 36' E	15	26	33	338	-	
288	02133		WANAJASA	650	6° 41' S	107° 33' E	19	50	91	862	-	
289	02133A		PAMEUNGPEUK	-	6° 21' S	107° 32' E	3	6	15	121	-	
290	02135		RAHAYU	1000	6° 43' S	107° 33' E	-	-	-	-	-	
291	02135A		CIRACAS	500	6° 39' S	107° 35' E	10	25	46	404	-	PENGAIRAN (DPU)
292	02136A		CIASEM	8	6° 39' S	107° 43' E	0	0	3	11	-	
293	02137		PASIRMUNCANG	21	6° 24' S	107° 44' E	14	40	66	602	-	
294	02137A		KASEBON	21	6° 25' S	107° 45' E	-	-	-	-	-	
295	02138		PASIRBUNGUR	28	6° 25' S	107° 41' E	23	47	75	743	-	PTP XIV
296	02139		CINANGLING	110	6° 34' S	107° 42' E	-	-	-	-	-	
297	02139A		CISAMPIH	198	6° 35' S	107° 41' E	-	-	-	-	-	
298	02139B		CIKADU	416	6° 36' S	107° 40' E	-	-	-	-	-	
299	02140		JALUPANG	145	6° 33' S	107° 40' E	1	1	14	83	-	
300	02140A		CICADAS	170	6° 34' S	107° 38' E	-	-	-	-	-	
301	02140B		CILEUWANG	175	6° 35' S	107° 37' E	-	-	-	-	-	
302	02141		SERANGSARI	500	6° 37' S	107° 35' E	15	46	60	643	-	PERKEBUNAN
303	02142		ARJASARI	-	- - -	- - -	27	54	68	728	-	PERKEBUNAN
304	02143		SEGALAHERANG	565	6° 40' S	107° 39' E	5	11	23	189	-	
305	02144		JAGERNAIK	628	6° 39' S	107° 39' E	-	-	-	-	-	
306	02145		PANARUBAN	1000	6° 43' S	107° 38' E	0	0	2	2	-	
307	02146		CIATER	1100	6° 44' S	107° 39' E	17	40	70	679	-	
308	02146A		DAWUHAN CIATER	1181	6° 33' S	107° 41' E	-	-	-	-	-	
309	02147		SARIREJO	565	6° 42' S	107° 42' E	1	1	8	35	-	
310	02148		PAMANUKAN	8	6° 17' S	107° 41' E	2	3	11	93	-	
311	02148A		PUSAKANEGARA	5	6° 17' S	107° 53' E	11	20	28	298	-	
312	02148C		WARUNG NANGKA	-	- - -	- - -	-	-	-	-	-	
313	02149		KAMARENG	-	- - -	- - -	12	26	38	381	-	
314	02151		CIGARUGAK	-	- - -	- - -	25	25	32	322	-	
315	02151A		MANYINGSAL	-	- - -	- - -	1	1	6	21	-	
316	02152		PAGADEN	-	- - -	- - -	2	4	7	61	-	
317	02153		SALAM DARMA	-	- - -	- - -	2	3	7	58	-	
318	02153B		DANGDEUR	-	- - -	- - -	24	37	58	593	-	
319	02154		WANGUNREJA	-	- - -	- - -	4	4	13	101	-	
320	02154A		-	-	- - -	- - -	2	4	10	73	-	
321	02156		SUBANG	95	6° 34' S	107° 45' E	2	2	9	45	-	PERKEBUNAN
322	02157		SUBANG CIPEO	-	- - -	- - -	0	0	4	20	-	
323	02158		SUMURBARANG	90	6° 33' S	107° 50' E	1	1	11	71	-	
324	02159A		LANUD KALIJATI	-	- - -	- - -	-	-	-	-	-	BMG
325	02160B		KIJAMBE	-	- - -	- - -	0	0	7	28	-	
326	02160C		GUNUNG TUA	-	- - -	- - -	-	-	-	-	-	
327	02160D		TAMBAKAN	-	6° 39' S	107° 43' E	3	7	13	111	-	
328	02161		KASSOMALANG	518	6° 42' S	107° 44' E	13	34	51	486	-	
329	02161A		CIKADU	-	6° 45' S	107° 49' E	2	5	10	105	-	
330	02163		BUKANEGARA	1162	6° 47' S	107° 43' E	1	1	1	12	-	

Note) * : Station in the study area
*1 : Total of years that has continuous data series
*2 : Total of years that has 12 months data
*3 : Total of years that has some months data
*4 : Total of available months

Table 3.2 LIST OF MAJOR WATER LEVEL GAUGING STATION

(as of Nov. 1995)

No.	Station	River	Type of gauges	Owner	Remarks
1	Tanjung, Tangerang	Cidurian	Staff Gauge	PDSA	Damaged
2	Ranca Sumur, Tangerang	Cidurian	Staff Gauge	PDSA	
3	Kutruk	Cimanceuri	AWLR & Staff Gauge	PDSA	Newly Constructed
4	Genteng, Bogor	Cisadane	AWLR & Staff Gauge	PDSA	
5	Batu Beulah, Bogor	Cisadane	AWLR & Staff Gauge	PDSA	
6	Serpong, Tangerang	Cisadane	AWLR & Staff Gauge	PDSA	
7	Babakan, Tangerang	Cisadane	AWLR & Staff Gauge	PDSA	
8	BD. Pasar Baru	Cisadane	AWLR & Staff Gauge	PDSA	
9	Rawa Buaya	Angke	AWLR & Staff Gauge	PDSA	
10	Jembatan Genit	Angke	AWLR & Staff Gauge	PDSA	
11	Sawangan	Pesanggraha	Staff Gauge	PDSA	
12	Kebon Jeruk	Pesanggraha	AWLR & Staff Gauge	PDSA	
13	Pal Merah, Jakarta	K. Grogol	Staff Gauge	PDSA	
14	Bendung Hilir	Krukut	AWLR & Staff Gauge	PDSA	
15	Katulampa, Bogor	Ciliwung	AWLR & Staff Gauge	PDSA	
16	Kampung Kelapa	Ciliwung	AWLR & Staff Gauge	PDSA	
17	Ratu Jaya	Ciliwung	AWLR & Staff Gauge	PDSA	
18	Sugu Tamu	Ciliwung	AWLR & Staff Gauge	PDSA	
19	Karet Bivak (Weir)	Banjir Kanal	AWLR & Staff Gauge	PDSA	
20	Cipinang Muara	Sunter	AWLR & Staff Gauge	PDSA	Newly Constructed
21	Cileungsi	Bekasi (Cileungsi)	AWLR & Staff Gauge	PDSA	Newly Constructed
22	Bojong Kulut	Bekasi	Staff Gauge	PDSA	
23	Bekasi weir	Bekasi	AWLR & Staff Gauge	POJ	
24	Bend Cikarang	Cikarang	Staff Gauge	PDSA	
25	Cikarang weir	Cikarang	AWLR & Staff Gauge	POJ	

Note) AWLR: Automatic Water Level Recorder
PDSA: Pengembangan Data Sumber Air
POJ: Perusahaan umum Otorita Jatiluhur

Table 3.3 LIST OF COLLECTED DAILY FLOW DATA

Main River	River	Station	Data Collected (Year)	Code 1	Code 2	Code 3	Code 4	Data Source
Angke	Angke	Can Tiga	2	-	23			C
Angke	Angke	Can Tiga	2	-	23			E
Angke	Angke	Jembatan Genit	0	3	-			
Angke	Angke	Rawa Buaya	2	10	-			C
Angke	Angke	Rawa Buaya	1	10	-			E
Angke	Pesanggrahan	Kebon Jeruk	2	9	-			C
Angke	Pesanggrahan	Kebon Jeruk	1	9	-			E
Angke	Pesanggrahan	Kedoyo	2	-	22			C
Angke	Pesanggrahan	Sawangan / Depok	2	14	-			C
Angke	Pesanggrahan	Sawangan / Depok	1	14	-			E
Banjir Kanal	Banjir Kanal	Kali Jodo	2	16	-			C
Banjir Kanal	Banjir Kanal	Karet Baru	2	11	-			C
Banjir Kanal	Kanal Pakin	Gedong Panjang	2	15	-			C
Bekasi	Bekasi	Bonjong Kulut	1		-			E
Bekasi	Bekasi	Intake PDAM	0	-	47			
Bekasi	Bekasi	Jemb. Jl. Juanda	2	42	-			C
Bekasi	Cileungsi	Cileungsi Bridge	0	41	-			
Bekasi	Cileungsi	Pekapuran	2	-	55			C
Cidurian	Cibeurem	Neglasari	0	23	-			
Cidurian	Cidurian	Kopomaja	1	34	5	02-007-02-01		C
Cidurian	Cidurian	Kopomaja	9	34	5	02-007-02-01		F
Cidurian	Cidurian	Parigi	2	20	-	02-007-03-01		C
Cidurian	Cidurian	Parigi	5	20	-	02-007-03-01		F
Cidurian	Cidurian	Ranca Sumur	1	31	-			E
Cidurian	Cidurian	Sukapada	1			02-016-04-10		F
Cidurian	Cidurian	Tanjung	3					E
Cikarang	Cikarang	Bendung Cikarang	1	43	-	02-015-02-01		C
Cikarang	Cikarang	Bendung Cikarang	1	43	-	02-015-02-01		E
Cikarang	Cikarang	Bendung Cikarang	7	43	-	02-015-02-01		F
Cikarang	Cikarang	Cikarang	0	8	-			
Ciliwung	Ciesek	Palumbon / Paseban	2	5	-			C
Ciliwung	Ciliwung	Ciawi / Cisarua	2	32	-			C
Ciliwung	Ciliwung	Depok	0	17	-			
Ciliwung	Ciliwung	Kampung Kelapa	1	12	-	02-012-01-05		E
Ciliwung	Ciliwung	Katulampa	2	-	17			C
Ciliwung	Ciliwung	Katulampa	13	-	17			D
Ciliwung	Ciliwung	Katulampa	3	-	17			E
Ciliwung	Ciliwung	Kebon Baru	2	6	-			C
Ciliwung	Ciliwung	Ratujaya	2	18	-			C
Ciliwung	Ciliwung	Ratujaya	3	18	-			E
Ciliwung	Ciliwung	Rawajati	2	-	19			C
Ciliwung	Ciliwung	Rawajati	2	-	19			E
Ciliwung	Ciliwung	Sugutamu	2	13	-	02-012-01-06		C
Ciliwung	Ciliwung	Sugutamu	1	13	-	02-012-01-06		E
Cimanceuri	Cimanceuri	Balaraja	2	35	51			C
Cimanceuri	Cimanceuri	Kutruk	0					
Cimanceuri	Cimantuk	Sukamanah	2	-	50			C
Cisadane	Cianten	Cianten I (PLN)	29					A
Cisadane	Cianten	Ciaruteun	12				S0401	A
Cisadane	Cianten	Ciaruteun	1				S0401	E
Cisadane	Cianten	Kracak I	0	-	1			
Cisadane	Cianten	Sodong / Ciaruten Hilir	2	29	15	02-010-02-01		C
Cisadane	Cianten	Sodong / Ciaruten Hilir	1	29	15	02-010-02-01		E
Cisadane	Cianten II	Kracak	2	27	3	02-010-02-02		C
Cisadane	Ciesek	Palumbon	0	5	-	02-012-01-03		
Cisadane	Cikaniki	Jengkol	2	-	53			C
Cisadane	Cikluwung	Kracak	0	-	2	02-010-02-03		
Cisadane	Cisadane	Babakan	2					A
Cisadane	Cisadane	Babakan	2					E
Cisadane	Cisadane	Batubeulah	17	1	-	02-010-03-01	S0501	A

Table 3.3 LIST OF COLLECTED DAILY FLOW DATA (continued)

Main River	River	Station	Data Collected (Year)	Code 1	Code 2	Code 3	Code 4	Data Source
Cisadane	Cisadane	Batubeulah	12	1	-	02-010-03-01		B
Cisadane	Cisadane	Batubeulah	1	1	-	02-010-03-01		C
Cisadane	Cisadane	Batubeulah	2	1	-	02-010-03-01		E
Cisadane	Cisadane	Batubeulah	6	1	-	02-010-03-01		F
Cisadane	Cisadane	Empang	6	-	13			B
Cisadane	Cisadane	Genteng	10	30	16		S0109	A
Cisadane	Cisadane	Genteng	1	30	16			C
Cisadane	Cisadane	Genteng	3	30	16			E
Cisadane	Cisadane	Legok Muncang	2	2	-	02-010-03-02		C
Cisadane	Cisadane	Legok Muncang	3	2	-	02-010-03-02		F
Cisadane	Cisadane	Masing	2	-	27	02-010-00-02		C
Cisadane	Cisadane	Masing	26	-	27	02-010-00-02	S0106	A
Cisadane	Cisadane	Pasar Baru	5					A
Cisadane	Cisadane	Pasar Baru / Cikokol	0	-	7			
Cisadane	Cisadane	Pasar Baru / Timur Utara	0	-	8			
Cisadane	Cisadane	Serpong	32	28	-		S1501	A
Cisadane	Cisadane	Serpong	7	28	-			B
Cisadane	Cisadane	Serpong	2	28	-			C
Cisadane	Cisadane	Serpong	2	28	-			E
Grogol	Grogol	Pal Merah	2	-	21			C
Grogol	Grogol	Pal Merah	3	-	21			E
Krukut	Krukut	Bendungan Hilir	2	4	-			C
Krukut	Krukut	Bendungan Hilir	1	4	-			E
Sekretaris	Sekretaris	Kebon Jeruk	2	-	20			C
Sekretaris	Sekretaris	Kebon Jeruk	1	-	20			E
Sunter	Cipinang	Cipinang Jaya	2	-	40			C
Sunter	Sunter	Cipinang Muara	2	7	-			C
Sunter	Sunter	Cipinang Muara	1	7	-			E
Sunter	Sunter	Perintis Kemerdekaan	0	-?	54?			
Sunter	Sunter	Pondok Gede	2	-	56			C

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Data Source:

A) Water Quality Control Management in JABOTABEK, Phase 1, Technical Note No.2, March 1991, (Hard copy)
B) Data file from PDSA (Pengembangan Data Sumber Air)
C) Water Quantity and Water Quality Investigation, Final Report, Annexes, (Hard Copy)
D) Hard copy from PSDA (Proyek Pengembangan Data Sumber Air)
E) PDSA's (Pengembangan Data Sumber Air) Annual Report
F) Puslitbang Air (Pusat Litbang Pengairan) Yearbook

Note:

Code 1: Water Quality and Water Quantity Investigation Code for AWLR
Code 2: Water Quality and Water Quantity Investigation Code for Staff Gauge
Code 3: Puslitbang Air Station Code
Code 4: Water Quality Control Management Station Code

Table 4.1 DAILY RAINFALL CHARACTERISTICS

Station	Name	Elevation (m)	Sample Size (year)	Average of Annual Rainfall (mm)	Annual Rainy Day (days)	Annual Mean Daily Rainfall (mm)	Annual Max. Daily Rainfall (mm)
02002	JASINGA	90	7	2,934	150	20	117
02002A	CIKOPOMAYAK	110	11	3,466	174	21	129
02012	CIPEUNDEY	782	6	4,140	169	25	117
* 02021	NIRMALA	1,350	34	4,638	230	20	109
02021A	CIANTEN	942	8	5,051	231	22	135
02021B	KRACAK (PLTA)	380	8	4,187	208	20	130
02025A	KRESEK	15	11	1,788	70	27	114
02025B	BALARAJA	27	12	2,338	106	25	129
02025E	BUMIAYU		7	1,781	124	14	82
02025G	SEPATAN		12	1,998	102	22	124
02025H	LONTAR/BENYAWAK		10	1,823	85	23	111
02026	TANJUNGPRIOK (M	2	7	1,997	122	17	124
02026A	KAPUK	9	12	1,893	93	21	119
02027	JAKARTAPUSAT (M	7	7	2,057	129	16	170
02028C	SETIABUDI(PA)		7	2,041	127	16	120
02028D	WADUK MELATI		5	2,036	129	16	109
02028E	KARET (PA)		5	1,896	109	17	121
02030H	PORIS TENGAH	13	10	2,205	93	24	117
02030I	TANGERANG II	3	8	1,729	88	20	95
02032C	PONDOK BETUNG		4	2,450	170	14	132
02033C	HALIM PERDANAKU	30	8	2,114	135	16	118
02034A	SERPONG	50	6	2,019	99	21	100
02034B	KALIMATI	6	10	2,081	80	26	146
* 02037	BOJONG GEDEH	148	73	3,370	172	20	112
* 02037A	BOJONGGEDE	140	24	3,503	175	20	123
02037C	CIBINONG		9	3,844	188	21	126
02040A	PASIR MAUNG	218	4	4,721	172	28	133
* 02045A	CIOMAS (PERK)	244	37	4,204	211	20	133
* 02046	BOGOR (EMPANG)	266	78	4,351	214	20	134
* 02048B	HAMBALANG	225	36	4,146	180	23	143
* 02048D	BOGOR BPP	250	42	4,035	214	19	120
* 02049A	MUARA	260	34	4,153	226	18	121
02059A	CIAWI	480	10	4,541	208	22	156
* 02061	CIBURAYUT	734	36	3,845	202	19	122
* 02063	SROGOL	490	37	3,603	179	20	119
* 02066	TAPOS	806	27	4,131	211	20	108
02067	CIDAKOM (PERK)	800	3	3,883	167	23	137
02068	CIKOPO	690	3	5,320	202	27	217
02069	ARCADOMAS (PERK	910	4	2,692	150	18	86
* 02070A	PANJANG (PERK)	1,021	38	3,466	194	18	111
* 02076	GUNUNG MAS (PER	1,160	42	4,042	211	19	115
02078A	BEKASI	20	4	2,124	102	22	142
02078D	TELUK BUYUNG	2	7	2,080	102	21	143
02078E	TAMBUN I (BPMD)	20	10	2,107	104	21	123
02078F	TAMBUN II		7	3,937	182	44	232
02080	KLAPANUNGGAL	100	3	2,756	105	26	114
* 02081A	BATUJAYA	4	41	1,552	77	21	113
* 02082	CIKARANG	27	37	2,225	79	28	142
02082A	PENGAKARAN	1	10	2,513	88	28	143
02082C	SARENGSENG	27	5	1,959	90	22	113
* 02082D	TELUKBANGO	5	42	1,656	84	20	123
02084A	SETU	60	11	2,881	110	26	153
02085	CIBARUSA UDIK	72	8	3,309	149	22	85
* 02086	PANGKALAN	217	38	2,716	121	23	118

Table 4.1 DAILY RAINFALL CHARACTERISTICS (continued)

Station	Name	Elevation (m)	Sample Size (year)	Average of Annual Rainfall (mm)	Annual Rainy Day (days)	Annual Mean Daily Rainfall (mm)	Annual Max. Daily Rainfall (mm)
02092	PASIRTANJUNG	162	7	3,169	164	20	127
02094A	CIBUAYA	2	9	1,971	87	23	133
* 02094B	PACING	5	42	1,693	81	21	114
* 02094C	GEMPOL LOR	4	42	1,753	90	20	111
02095	PEDES I	3	8	2,124	85	25	164
02095A	PETARUMAN	8	9	1,789	76	24	122
02096	RENGAS DENGKLOK	7	9	1,791	96	19	124
02096A	RAWAMERTA	7	7	1,724	84	21	97
02098	KRAWANG	14	8	2,065	97	22	126
02098B	PLAWAD	15	9	1,996	81	25	123
* 02099	TELUKJAMBE	30	45	1,863	101	19	108
02099A	CIBADAR	15	9	1,406	61	23	85
02099B	PONDOKBALAS	95	8	1,724	81	22	118
02100	TEGALSARI I (CI	15	3	1,903	98	20	104
02101	KLARI	25	10	2,121	91	26	129
02101A	CIWADAS	21	6	2,290	113	21	133
02101B	BEND.WALAHAR	25	9	2,348	116	21	135
02107	CIKAO BANDUNG	27	13	2,279	111	21	117
02110E	PEUNDEUY	1	9	1,414	62	23	106
02112A	CIKAMPEK	47	8	2,820	111	27	143
* 02113A	CINANGKA	55	36	2,304	116	20	109
* 02117	KEL-CISEURUEH	82	68	2,898	144	21	118
02117A	SADANG	100	11	2,986	125	24	143
* 02120	GUNUNGANAGA	400	47	2,851	151	19	113
02122	PLERED	261	1	4,042	177	23	200
02122A	CISOMANG		10	2,892	153	19	113
* 02125	DARANGDAN	515	66	2,971	148	20	109

Table 4.2 RESULTS OF REVIEWED FREQUENCY ANALYSIS

No.	Code	Station	EL	Latitude	Longitude	Statistical Parameters					a	x_p	Return Period							
						N	x_{MEAN}	S_x	C_v	*)			1	2	5	10	20	50	100	1000
1	02001	CIPELAR	118	- - -	- - -	24	114.00	34.00	30%	1)	0.03195	97.43	37	109	144	168	190	220	241	314
2	02002	JASINGA	90	6° 28' S	106° 17' E	31	113.00	25.80	23%	1)	0.04325	100.58	56	109	135	153	169	191	207	260
3	02002A	CIKOPOMAYAK	110	6° 41' S	106° 40' E	33	107.00	24.60	23%	1)	0.04563	95.19	53	103	128	145	160	181	196	247
4	02006A	CIMARACA	120	6° 28' S	106° 25' E	11	116.00	18.30	16%	1)	0.05287	106.55	70	113	135	149	163	180	194	237
5	02007B	PASIR PANGKALAN	540	- - -	- - -	12	120.00	24.30	20%	1)	0.04046	107.56	60	117	145	163	181	204	221	278
6	02012	CIPEUNDEY	782	6° 39' S	106° 29' E	24	119.00	25.90	22%	1)	0.04195	106.38	60	115	142	160	177	199	216	271
7	02013	BOLANGHILIR	100	6° 29' S	106° 30' E	24	105.00	34.50	33%	1)	0.03149	88.18	27	100	136	160	182	212	234	308
8	02013A	TENJO	52	6° 20' S	106° 28' E	14	100.00	19.40	19%	1)	0.05203	90.20	53	97	119	133	147	165	179	223
9	02014	TOGE (PERK)	1541	6° 31' S	106° 30' E	25	121.00	26.90	22%	1)	0.04057	107.92	60	117	145	163	181	204	221	278
10	02016	CIGUDAG/CIKASUN	320	6° 33' S	106° 32' E	24	120.00	41.40	35%	1)	0.02624	99.82	26	114	157	186	213	249	275	363
11	02017A	BAKNILA	450	6° 36' S	106° 35' E	22	118.00	43.50	37%	1)	0.02472	96.69	19	112	157	188	217	255	283	376
12	02018	CIBEBER	550	6° 38' S	106° 36' E	23	123.00	29.10	24%	1)	0.03715	108.78	57	119	149	169	189	214	233	295
13	02019A	CIHIRIS	650	6° 39' S	106° 36' E	22	130.00	31.10	24%	1)	0.03458	114.77	59	125	158	180	201	228	248	315
14	02021	NIRMALA	1350	6° 44' S	106° 31' E	24	113.00	18.50	16%	1)	0.05873	103.98	71	110	130	142	155	170	182	222
15	02021A	CIANTEN	942	6° 45' S	106° 36' E	33	130.00	38.20	29%	1)	0.02938	111.66	46	124	163	188	213	244	268	347
16	02021B	KRACAK (PLTA)	380	6° 37' S	106° 38' E	36	138.00	58.40	42%	1)	0.01937	110.07	10	129	188	226	263	312	348	467
17	02023C	KRAMAT WETAN	-	- - -	- - -	38	77.00	16.70	22%	1)	0.06805	69.03	41	74	91	102	113	126	137	171
18	02024	PANGKALAN	6	6° 04' S	106° 39' E	17	116.00	43.00	37%	1)	0.02418	94.59	15	110	157	188	217	256	285	380
19	02024A	TELUKNAGA	5	6° 05' S	106° 38' E	19	123.00	42.00	34%	1)	0.02514	102.24	25	117	162	192	220	257	285	377
20	02025	MAUK	5	6° 03' S	106° 30' E	21	106.00	40.60	38%	1)	0.02634	86.06	13	100	143	171	199	234	261	348
21	02025A	KRESEK	15	6° 08' S	106° 23' E	25	94.00	24.30	26%	1)	0.04492	82.18	39	90	116	132	148	169	185	236
22	02025B	BALARAJA	27	6° 12' S	106° 26' E	32	93.00	20.80	22%	1)	0.05381	83.00	47	90	111	125	138	156	168	211
23	02025C	CILONGOK GANDU	22	6° 09' S	106° 30' E	23	117.00	48.40	41%	1)	0.02234	93.35	7	110	161	194	226	268	299	403
24	02025E	BUMIAYU	-	6° 08' S	106° 27' E	11	96.00	26.60	28%	1)	0.03638	82.26	29	92	124	144	164	190	209	272
25	02025H	LONTAR/BENYAWAK	-	6° 04' S	106° 27' E	11	86.00	32.70	38%	1)	0.02959	69.12	4	82	120	145	169	201	225	303
26	02026	TANJUNGPRIOK (M	2	6° 06' S	106° 53' E	51	124.00	49.20	40%	1)	0.02362	100.76	19	116	164	196	226	266	295	393
27	02026	TANJUNGPRIOK (M	2	6° 06' S	106° 53' E	52	122.00	42.81	35%	2)	0.02719	101.79	31	115	157	185	211	245	271	356
28	02026A	KAPUK	9	6° 10' S	106° 42' E	28	74.00	42.40	57%	1)	0.02605	53.49	-21	68	111	140	167	203	230	319
29	02026A	KAPUK	9	6° 10' S	106° 42' E	40	97.90	46.20	47%	2)	0.02470	75.89	-2	91	137	167	196	234	262	355
30	02026D	CILINCING	0	6° 06' S	106° 56' E	20	141.00	53.00	38%	1)	0.02005	114.89	19	133	190	227	263	309	344	459
31	02026D	CILINCING	0	6° 06' S	106° 56' E	11	147.45	55.80	38%	2)	0.01734	118.64	7	140	205	246	290	344	384	517
32	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	33	103.00	39.70	39%	1)	0.02827	83.94	16	97	137	164	189	222	247	328
33	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	111	107.00	38.04	36%	2)	0.03186	89.38	29	101	136	160	183	212	234	306
34	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	21	102.48	39.81	39%	3)	0.02686	82.93	11	97	139	167	193	228	254	340
35	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	30	103.33	36.99	36%	3)	0.03007	85.5	21	98	135	160	184	215	238	315
36	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	38	120.05	52.26	44%	3)	0.02175	95.11	6	112	164	199	232	275	307	413
37	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	69	112.43	46.59	41%	3)	0.02542	90.62	15	105	150	179	207	244	272	362
38	02027B	KEMAYORAN (METE	5	6° 09' S	106° 51' E	31	116.00	55.10	48%	1)	0.02025	89.48	-6	108	164	201	236	282	317	431
39	02028A	MANGGARAI	13	6° 10' S	106° 50' E	19	112.00	25.70	23%	1)	0.04108	99.30	52	108	136	154	172	194	211	267
40	02028A	MANGGARAI	13	6° 10' S	106° 50' E	16	115.00	25.81	22%	2)	0.03993	102.09	54	111	140	158	176	200	217	275
41	02029A	CIPINANG	18	6° 14' S	106° 53' E	10	107.00	37.10	35%	1)	0.02560	87.65	12	102	145	176	204	240	267	358
42	02030	SUKASARI	18	6° 10' S	106° 40' E	15	100.00	29.60	30%	1)	0.03448	85.13	29	96	129	150	171	198	219	285
43	02030A	CURUG I (BPMD)	41	6° 16' S	106° 33' E	25	88.00	34.00	39%	1)	0.03210	71.46	11	83	118	142	164	193	215	287
44	02030B	TIGARAKSA	39	6° 16' S	106° 28' E	16	78.00	22.40	29%	1)	0.04601	66.80	25	75	99	116	131	152	167	217
45	02030C	PARUNG PANJANG	60	6° 21' S	106° 34' E	27	111.00	41.50	37%	1)	0.02652	90.89	18	105	147	176	203	238	264	351
46	02030F	TANAH TINGGI	20	6° 11' S	106° 38' E	10	97.00	38.70	40%	1)	0.02454	76.82	-2	92	138	169	198	236	264	358
47	02030H	PORIS TENGAH	13	6° 11' S	106° 38' E	28	86.00	25.70	30%	1)	0.04298	73.57	29	82	108	126	143	164	181	234
48	02031A	PONDOK JAGUNG	30	6° 18' S	106° 35' E	15	94.00	23.90	25%	1)	0.04270	81.99	37	91	117	135	152	173	190	244
49	02032A	KEBAYORAN LAMA	25	6° 14' S	106° 47' E	18	96.00	34.80	36%	1)	0.03012	78.74	15	91	129	153	177	208	231	308
50	02032A	KEBAYORAN LAMA	25	6° 14' S	106° 47' E	23	90.87	29.38	32%	2)	0.03680	76.52	24	86	117	138	157	183	202	264
51	02033	PASAR MINGGU	35	6° 17' S	106° 50' E	14	119.00	37.90	32%	1)	0.02664	99.85	27	114	156	184	211	246	273	359
52	02033	PASAR MINGGU	35	6° 17' S	106° 50' E	72	101.58	25.71	25%	2)	0.04618	89.56	48	97	122	138	154	174	189	239
53	02033A	RAGUNAN	50	6° 17' S	106° 50' E	31	102.00	31.50	31%	1)	0.03543	86.84	32	97	129	150	171	197	217	282
54	02033A	RAGUNAN	50	6° 17' S	106° 50' E	43	95.37	27.03	28%	2)	0.04247	82.53	37	91	118	135	152	174	191	245
55	02033B	JATIPADANG	30	6° 17' S	106° 51' E	44	94.00	30.40	32%	1)	0.03783	79.57	28	89	119	139	158	183	201	262
56	02033C	HALIM PERDANAKU	30	6° 18' S	106° 54' E	36	86.00	24.30	28%	1)	0.04655	74.38	33	82	107	123	138	158	173	223
57	02033C	HALIM PERDANAKU	30	6° 18' S	106° 54' E	14	91.43	23.17	25%	2)	0.04357	79.72	35	88	114	131	148	169	185	238
58	02033D	PONDOK GEDE	28	6° 17' S	106° 55' E	18	118.00	65.10	55%	1)	0.01610	85.71	-34	108	179	225	270	328	371	515
59	02033D	PONDOK GEDE	28	6° 17' S	106° 55' E	15	124.07	69.33	56%	2)	0.01472	89.23	-42	114	191	242	291	354	402	558
60	02033F	KAMPUNG KANDANG	40	6° 19' S	106° 49' E	16	100.00	30.40	30%	1)	0.03390	84.80	28	96	129	151	172	200	220	289
61	02034A	SERPONG	50	6° 19' S	106° 40' E	31	99.00	32.10	32%	1)	0.03476	83.55	28	94	127	148	169	196	216	282
62	02034B	KALIMATI	6	6° 04' S	106° 36' E	30	105.00	39.90	38%	1)	0.02788	85.77	16	99	140	166	192	226	251	334
63	02035	CIPUTAT	50	6° 18' S	106° 45' E	21	93.00	33.60	36%	1)	0.03183	76.50	16	88	124	147	170	199	221	294
64	02035	CIPUTAT	50	6° 18' S	106° 45' E	24	87.00	28.38	33%	2)	0.03828	73.17	23	83	112	132	151	175	193	254
65	02035A	PASAR REBO	57	6° 18' S	106° 52' E	14	92.00	22.20	24%	1)	0.04547	80.78	38	89	114	130	146	167	182	233
66	02036	DEPOK	95	6° 24' S	106° 51' E	25	102.00	25.20	25%	1)	0.04331	89.74	45	98	124	142	158	180	196	249
67	02036	DEPOK	95	6° 24' S	106° 51' E	74	119.00	33.79	28%	2)	0.03519	103.21	48	114	146	167	188	214	234	300
68	02036A	PARUNG	103	6° 25' S	106° 44' E	19	100.00	27.90	28%	1)	0.03784	86.21	35	96	126	146	165	189	208	269
69	02036A	PARUNG	103	6° 25' S	106° 44' E	34	103.88	40.61	39%	2)	0.02772	84.41	15	98	139	166	192	225	250	334
70	02036B	SAWANGAN	100	6° 25' S	106° 47' E	20	114.00	34.70	30%	1)	0.03063	96.91	34	109	146	170	194	224	247	322
71	02036B	SAWANGAN	100	6° 25' S	106° 47' E	25	101.28	39.56	39%	2)	0.02759	82.04	12	95	136	164	190	223	249	332
72	02036C	GUNUNG SINDUR	90	6° 22' S	106° 42' E	23	105.00	41.80	40%	1)	0.02586	84.58	10	99	143	172	199	235	262	352
73	02037	BOJONG GEDEH	148	6° 28' S	106° 50' E	30	107.00	28.90	27%	1)	0.03849	93.07	43	103	132	152	170	194	213	273

Table 4.2 RESULTS OF REVIEWED FREQUENCY ANALYSIS (continued)

No.	Code	Station	EL	Latitude	Longitude	Statistical Parameters					a	x_0	Return Period							
						N	x_{MEAN}	S_x	C_V	*)			1	2	5	10	20	50	100	1000
74	02037	BOJONG GEDEH	148	6° 28' S	106° 50' E	68	126.00	87.90	70%	2)	0.01346	84.83	-59	112	196	252	305	375	427	593
75	02037A	BOJONGGEDE	140	6° 30' S	106° 46' E	21	127.00	23.58	19%	2)	0.04535	115.42	73	124	148	165	181	201	217	268
76	02037B	CITAYAM	110	6° 27' S	106° 47' E	25	116.00	29.80	26%	1)	0.03663	101.51	49	112	142	163	183	208	227	290
77	02037C	CIBINONG	-	6° 24' S	106° 41' E	10	118.00	28.10	24%	1)	0.03379	103.35	46	114	148	170	191	219	239	308
78	02037F	CISALAK (BAN)	-	- - -	- - -	29	94.00	24.70	26%	1)	0.04488	82.07	39	90	115	132	148	169	185	236
79	02038B	ATANG SANJAYA	170	6° 33' S	106° 45' E	25	113.00	29.80	26%	1)	0.03663	98.51	46	109	139	160	180	205	224	287
80	02039	CILUAR	180	6° 32' S	106° 49' E	24	129.00	33.60	26%	1)	0.03234	112.62	53	124	159	182	204	233	255	326
81	02039	CILUAR	180	6° 32' S	106° 49' E	33	130.00	28.45	22%	2)	0.03945	116.34	67	126	154	173	192	215	233	291
82	02040	KEDUNGHALANG	200	6° 33' S	106° 49' E	24	136.00	24.00	18%	1)	0.04527	124.30	82	132	157	174	190	210	226	277
83	02040	KEDUNGHALANG	200	6° 33' S	106° 49' E	35	137.00	27.35	20%	2)	0.04126	123.90	77	133	160	178	196	218	235	291
84	02040A	PASIR MAUNG	218	- - -	- - -	21	128.00	20.40	16%	1)	0.05242	117.98	81	125	147	161	175	192	206	250
85	02040A	PASIR MAUNG	218	- - -	- - -	9	128.78	21.24	16%	2)	0.04373	117.57	73	126	152	169	185	207	223	276
86	02041	TEGAL KEMANG	314	6° 34' S	106° 38' E	24	126.00	29.40	23%	1)	0.03695	111.67	59	122	152	173	192	217	236	299
87	02042A	SAJIRA (BAN)	91	- - -	- - -	18	133.00	53.60	40%	1)	0.01955	106.42	8	125	183	222	258	306	342	460
88	02043	CIMULANG	150	- - -	- - -	37	121.00	30.70	25%	1)	0.03694	106.33	54	116	147	167	187	212	231	293
89	02044	DRAMAGA (METEO)	220	6° 18' S	106° 39' E	23	121.00	26.00	21%	1)	0.04158	108.30	62	117	144	162	180	202	219	274
90	02045A	CIOMAS (PERK)	244	6° 37' S	106° 46' E	34	133.00	45.00	34%	1)	0.02501	111.43	34	126	171	201	230	267	295	369
91	02045B	PANLASAN	280	- - -	- - -	17	132.00	16.10	12%	1)	0.06458	123.98	94	130	147	159	170	184	195	231
92	02046	BOGOR (EMPANG)	266	6° 36' S	106° 48' E	26	127.00	35.40	28%	1)	0.03096	109.82	47	122	158	182	206	236	258	333
93	02046	BOGOR (EMPANG)	266	6° 36' S	106° 48' E	75	132.64	32.28	24%	2)	0.03686	117.56	65	128	158	179	198	223	242	305
94	02046B	KEBUNRAYA BOGOR	280	6° 36' S	106° 47' E	29	137.00	39.50	29%	1)	0.02807	117.93	49	131	171	198	224	257	282	364
95	02048	BOGOR (PERTA)	237	6° 35' S	106° 46' E	37	122.00	19.80	16%	1)	0.05727	112.54	79	119	139	152	164	181	193	233
96	02048B	HAMBALANG	225	6° 32' S	106° 52' E	43	147.00	51.30	35%	1)	0.02238	122.63	36	139	190	223	255	297	328	431
97	02048D	BOGOR BPP	250	6° 33' S	106° 50' E	32	116.00	35.90	31%	1)	0.03118	98.74	37	111	147	171	194	224	246	320
98	02049A	MUARA	260	6° 38' S	106° 50' E	16	122.00	17.40	14%	1)	0.05923	113.30	81	119	139	151	163	179	191	230
99	02049A	MUARA	260	6° 38' S	106° 50' E	32	122.00	17.74	15%	2)	0.06309	113.47	83	119	137	149	161	175	186	223
100	02049D	PALASARI	740	6° 40' S	106° 48' E	10	135.00	26.00	19%	1)	0.03652	121.44	69	131	163	183	203	228	247	311
101	02052	CIAPUS	540	6° 41' S	106° 47' E	24	139.00	31.90	23%	1)	0.03406	123.45	67	134	167	190	211	238	259	326
102	02052	CIAPUS	540	6° 41' S	106° 47' E	29	137.00	31.15	23%	2)	0.03559	121.96	68	132	164	185	205	232	251	316
103	02054	WARUNGLOA	645	6° 41' S	106° 46' E	24	139.00	29.70	21%	1)	0.03658	124.52	72	135	166	186	206	231	250	313
104	02055	PASIRKARET	470	6° 35' S	106° 55' E	29	130.00	25.80	20%	1)	0.04297	117.54	73	126	152	170	187	208	225	278
105	02059A	CIAWI	480	6° 40' S	106° 51' E	25	129.00	36.30	28%	1)	0.03007	111.34	47	124	161	186	210	241	264	341
106	02059A	CIAWI	480	6° 40' S	106° 51' E	17	125.00	43.94	35%	2)	0.02366	103.12	21	119	167	198	229	268	298	395
107	02060	PASIR POGOR (PE	640	6° 42' S	106° 47' E	26	105.00	36.60	35%	1)	0.02995	87.23	23	99	137	162	186	218	241	318
108	02060	PASIR POGOR (PE	640	6° 42' S	106° 47' E	58	128.00	34.38	27%	2)	0.03409	111.83	55	123	156	178	199	226	247	314
109	02060A	CURUGAGUNG	480	6° 43' S	106° 48' E	13	155.00	34.00	22%	1)	0.02933	137.71	72	150	189	214	239	271	295	373
110	02060A	CURUGAGUNG	480	6° 43' S	106° 48' E	14	149.00	39.47	26%	2)	0.02558	129.06	53	143	188	217	245	282	309	399
111	02061	CIBURAYUT	734	6° 43' S	106° 46' E	24	120.00	36.20	30%	1)	0.03001	102.35	38	115	152	177	201	232	256	332
112	02061	CIBURAYUT	734	6° 43' S	106° 46' E	67	118.00	26.04	22%	2)	0.04541	105.80	63	114	139	155	171	192	207	258
113	02063	SROGOL	490	6° 45' S	106° 50' E	27	130.00	65.70	51%	1)	0.01675	98.17	-17	120	188	233	275	331	373	511
114	02063	SROGOL	490	6° 45' S	106° 50' E	69	120.00	44.23	37%	2)	0.02678	99.29	27	113	155	183	210	245	271	357
115	02066	TAPOS	806	6° 43' S	106° 53' E	22	80.00	31.90	40%	1)	0.03371	64.37	7	75	109	131	152	180	201	269
116	02066	TAPOS	806	6° 43' S	106° 53' E	65	107.98	33.68	31%	2)	0.03507	92.20	37	103	135	156	177	203	223	289
117	02067	CIDAKOM (PERK)	800	6° 40' S	106° 52' E	31	118.00	34.00	29%	1)	0.03282	101.63	43	113	147	170	192	221	242	312
118	02067	CIDAKOM (PERK)	800	6° 40' S	106° 52' E	52	106.00	35.36	33%	2)	0.03291	89.31	31	100	135	158	180	208	229	299
119	02068	CIKOPO	690	6° 42' S	106° 54' E	30	122.00	55.90	46%	1)	0.01990	95.05	-2	113	170	208	244	291	326	442
120	02068	CIKOPO	690	6° 42' S	106° 54' E	82	120.00	40.99	34%	2)	0.02916	100.89	35	113	152	178	203	235	259	338
121	02069	ARCADOMAS (PERK	910	6° 48' S	107° 07' E	10	135.00	70.50	52%	1)	0.01347	98.24	-45	125	210	265	319	388	440	611
122	02070	CICAPI II/LEMAH	1075	- - -	- - -	27	99.00	38.50	39%	1)	0.02859	80.35	13	93	133	159	184	217	241	322
123	02070A	PANJANG (PERK)	1021	6° 47' S	107° 07' E	29	113.00	47.10	42%	1)	0.02354	90.26	8	106	154	186	216	256	286	384
124	02071	CISARUA	1071	6° 40' S	106° 55' E	24	103.00	23.60	23%	1)	0.04604	91.50	50	99	124	140	156	176	191	242
125	02076	GUNUNG MAS (PER	1160	6° 41' S	107° 01' E	35	107.00	44.80	42%	1)	0.02519	85.55	9	100	145	175	203	240	268	360
126	02078	CILEUNGSI	80	6° 24' S	107° 57' E	24	120.00	19.00	16%	1)	0.05718	110.74	77	117	137	150	163	179	191	232
127	02078A	BEKASI	20	6° 16' S	107° 00' E	26	106.00	32.90	31%	1)	0.03332	90.03	32	101	135	158	179	207	228	297
128	02078B	MUARABAKTI	5	6° 06' S	107° 03' E	18	89.00	35.20	40%	1)	0.02977	71.54	7	84	122	147	171	203	226	304
129	02078C	GABUS	6	6° 11' S	107° 04' E	24	131.00	55.70	43%	1)	0.01951	103.85	5	123	181	219	256	304	340	458
130	02078D	TELUK BUYUNG	2	6° 01' S	107° 11' E	35	136.00	46.40	34%	1)	0.02432	113.78	34	129	175	206	236	274	303	398
131	02080	KLAPANUNGGAL	100	6° 27' S	106° 57' E	24	116.00	30.40	26%	1)	0.03574	101.18	47	111	143	164	184	210	230	294
132	02081A	BATUJAYA	4	6° 04' S	107° 07' E	56	117.00	54.20	46%	1)	0.02158	91.47	2	108	161	196	229	272	305	412
133	02081B	CABANGBUNGIN	-	6° 00' S	107° 05' E	24	135.00	57.40	43%	1)	0.01893	107.02	5	126	186	226	264	313	350	472
134	02082	CIKARANG	27	6° 15' S	107° 09' E	45	141.00	66.00	47%	1)	0.01745	109.70	-1	131	196	239	280	333	373	505
135	02082D	TELUKBANGO	5	6° 09' S	107° 13' E	36	125.00	52.00	42%	1)	0.02176	100.13	11	117	169	204	237	279	312	418
136	02084A	SETU	60	6° 20' S	107° 03' E	10	116.00	52.30	45%	1)	0.01816	88.73	-18	109	171	213	252	304	342	469
137	02085	CIBARUSA UDIK	72	6° 26' S	107° 05' E	53	112.00	41.60	37%	1)	0.02801	92.38	23	105	146	173	198	232	257	339
138	02086	PANGKALAN	217	6° 28' S	107° 13' E	29	106.00	32.80	31%	1)	0.03380	90.16	33	101	135	157	178	206	226	295
139	02087	JONGGOL (PERK)	123	6° 28' S	107° 04' E	15	115.00	22.50	20%	1)	0.04536	103.69	61	112	137	153	169	190	205	256
140	02088	CARIU	95	6° 30' S	107° 08' E	24	136.00	30.00	22%	1)	0.03622	121.38	68	131	163	184	203	229	248	312
141	02089	DAYEUH	190	6° 31' S	107° 03' E	24	138.00	26.20	19%	1)	0.04147	125.23	79	134	161	179	197	219	236	292
142	02090	MENTENG	383	6° 34' S	107° 02' E	24	149.00	19.40	13%	1)	0.05600	139.54	105	146	166	180	193	209	222	263
143	02090A	CIKONENG	475	6° 36' S	106° 57' E	21	126.00	45.60	36%	1)	0.02345	103.60	21	119	168	200	230	270	300	358
144	02092	PASIRTANJUNG	162	6° 36' S	107° 09' E	24	142.00	35.00	25%	1)	0.03104	124.94	63	137	173	197	221	251	273	347
145	02094B	PACING	5	6° 06' S	106° 16' E	36	107.00	43.30	40%	1)	0.02613	86.29	12	100	144	172	200	236	262	351
146	02095A	PETARUMAN	8	6° 12' S	107° 18' E	33	102.00	38.60	38%	1)	0.02908	83.47	17	96	135	161	186	218	242	321

Table 4.2 RESULTS OF REVIEWED FREQUENCY ANALYSIS (continued)

No.	Code	Station	EL	Latitude	Longitude	Statistical Parameters					a	x_0	Return Period							
						N	x_{MEAN}	S_x	C_v	*)			1	2	5	10	20	50	100	1000
147	02096	RENGAS DENGKLOK	7	6° 09' S	107° 18' E	59	103.00	36.30	35%	1)	0.03233	85.93	26	97	132	156	178	207	228	300
148	02098	KRAWANG	14	6° 18' S	107° 18' E	60	114.00	50.80	45%	1)	0.02312	90.12	7	106	155	187	219	259	289	389
149	02099	TELUKJAMBE	30	6° 20' S	107° 18' E	52	106.00	35.70	34%	1)	0.03260	89.15	30	100	135	158	180	209	230	301
150	02109A	SELAWANGI	500	6° 35' S	107° 05' E	14	128.00	21.80	17%	1)	0.04631	116.99	75	125	149	166	181	201	216	266
151	32A	JEUNJING	-	- - -	- - -	31	85.00	28.90	34%	1)	0.03861	71.09	21	81	110	129	148	172	190	250
152	33	PARIGI (BAN)	30	- - -	- - -	27	93.00	27.10	29%	1)	0.04061	79.87	32	89	117	135	153	176	193	250
153	35	PAMARAYAN	15	- - -	- - -	25	106.00	37.50	35%	1)	0.02911	87.76	21	100	139	165	190	222	246	325
154	36A	MAJA (BAN)	150	- - -	- - -	24	90.00	23.20	26%	1)	0.04683	78.69	37	87	111	127	142	162	177	226
155	41	PASIR AYUNAN	110	- - -	- - -	13	118.00	37.10	31%	1)	0.02688	99.14	27	113	155	183	210	244	270	356
156	44	CIPANAS (BAN)	185	- - -	- - -	23	133.00	25.70	19%	1)	0.04207	120.44	74	129	156	174	191	213	230	285
157	66	CISEUREUH	1080	- - -	- - -	31	103.00	31.80	31%	1)	0.03509	87.69	33	98	130	152	172	199	219	285
158	68	CIPANAS	91	- - -	- - -	16	94.00	20.30	22%	1)	0.05077	83.85	46	91	113	128	142	161	174	220
159	89	CIKENDI	118	- - -	- - -	14	125.00	40.50	32%	1)	0.02493	104.54	27	119	165	195	224	261	289	382
160	90	CIKALONGKULON	285	- - -	- - -	24	107.00	51.50	48%	1)	0.02110	81.90	-10	99	153	189	223	267	300	409
161	90A	VADA	420	- - -	- - -	32	91.00	20.90	23%	1)	0.05355	80.95	45	88	109	123	136	154	167	210

Note: *)

1) Cisadane River Basin Development Feasibility Study, Volume 2 Hydrology, Sep. 1987
2) Cisadane - Jakarta - Cibeet Water Resouses Development Plan, Annex C Hydrology, Oct 1980
3) Present JICA Study, 1995

Table 4.3 ANNUAL MAXIMUM DAILY RAINFALL

Unit: (mm)

Year	Station (Code)																										
	02021	02037	02037A	02045A	02046	02048B	02048D	02049A	02061	02063	02065	02070A	02076	02081A	02082	02082D	02086	02094B	02094C	02099	02113A	02117	02120	02125	02027	02027	02027	02027
N	32	20	17	18	63	17	16	19	17	15	15	15	22	18	14	24	15	18	33	18	21	23	29	24	38	21	30	69
m	109.47	109.70	124.06	136.56	133.48	147.35	125.19	119.53	116.47	110.00	134.27	104.87	113.68	115.78	131.71	112.88	117.80	115.28	108.82	102.00	104.48	110.91	112.72	114.00	120.05	102.48	103.33	112.43
S	19.56	22.24	22.44	24.96	32.02	31.28	18.49	17.17	28.24	20.73	24.30	31.76	45.20	43.40	57.35	37.07	38.60	49.84	50.28	44.23	29.31	28.96	29.87	28.01	52.26	39.81	36.99	46.59
Cv	0.18	0.20	0.18	0.18	0.24	0.21	0.15	0.14	0.24	0.19	0.18	0.30	0.40	0.37	0.44	0.33	0.33	0.43	0.46	0.43	0.28	0.26	0.27	0.25	0.44	0.39	0.36	0.41
1879					260																				80			80
1880		125			220																	117			93			93
1881		110			112																	156			89			89
1882		117			175																	148			197			197
1883		90			167																	113			196			196
1884		137			118																	75			76			76
1885					93																	114			160			160
1886		139			116																	98			168			168
1887		107			109																	104			93			93
1888		117			165																	114			101			101
1889		126			190																	87			56			56
1890		131			125																	86			66			66
1891		90			144																	133			80			80
1892		177			86																	98			289			289
1893					116																				125			125
1894		145			152																	107			103			103
1895		115			114																	167			117			117
1896		143			117																	169			86			86
1897		102			185																	116		130	61			61
1898		92			122																	156		81	184			184
1899		111			126																	110		146	100			100
1900		102			124																	98		112	107			107
1901		140			121																	198		98	145			145
1902		89			140																	149		121	249			249
1903		93			158																			137	177			177
1904		107			132																	87		73	191			191
1905		88			141																	99		89	100			100
1906		100			141																	137		150	84			84
1907		82			156																	114		114	95			95
1908		160			111																	126		100	124			124
1909		128			140																	98		105	107			107
1910	103	111			95																	180		100	70			70
1911	67	81			92																	112		100	92			92
1912	108	90			121																	93		105	96			96
1913	99	115			95																	102	128	73	109			109
1914	81				96																	103	104	159	111			111
1915	120	120			107																	112	84	133	66			66
1916	84	130			143																	82	77	115	119			119
1917	127	142			97																	68	167	104				
1918	98	156			139																	84	81	102				
1919	93	111			109																	94	116	94				
1920	147	108			190																	106	130	195				
1921	132	80			150																	156	74					

Table 4.3 ANNUAL MAXIMUM DAILY RAINFALL (continued)

Unit: (mm)

Year	Station (Code)																											
	02021	02037	02037A	02045A	02046	02048B	02048D	02049A	02061	02063	02066	02070A	02076	02081A	02082	02082D	02086	02094B	02094C	02099	02113A	02117	02120	02125	02027	02027	02027	02027
1922	130	96			121																	183	93	141				
1923	123				145																	115	103	139				
1924	106	32			144																	124	93	75				
1925	120	14	105		96	95																94	113	97				
1926	105	14	94		138	195																82	108	185				
1927	80		140	136	94	155		128	138	99	115	80	119	91	122					91			102	101				
1928	85		110	128	130	170	134	125	134	98	132	55	86	76	80		110			77			140	100				
1929	113	120	102	155	112	173	104	136	161	107	123	70	116	130	170		135			72			85					
1930	130	126	134	162	124	115	126	116	99	93	91	152	90	55	208		83			93			121	147				
1931	112	125	124	113	185	145	120	125	85	126	107	118	72	129	110		111			95			112	128				
1932	110	120	134	103	100	114	105	117	143	116	132	163	130	113	198		105			108			95					
1933	117	98	92	127	123	108	127	150	102	158	159	93	124	55	104		238			210			148	125				
1934	155	136	93	132	132	103	142	149	131	146	140	148	145	152	269		117			147			211	131				
1935	109		155	140	150	192	161	128	82	116	140	76	120	89	74		95			64			160	95				
1936	106	120	161	221	123	156	123	101	132	78	165	118	94	224	74		94			115			83	116				
1937	111	176	138	138	143	128	163	141	158	93	102	100	138	66	125		101			78			122	156				
1938	99	190	103	123	162	160	133	97	139	124	140	72	71	115	87	95	130			57			119	128				
1939	85	100	150	132	118	158	110	106	106	96	187	133	113	156	80	142	92		117	85			108	70				
1940	115	100	127	116	141	192	129	126	111	105	150	94	138	162	143	141	106	200	159	80	112		102					
1941	133	100	147	121	121	146	114	100	101	95	131	101	110	131		110	168	95	94	56	80		90	103				
1942				152										75	166	90	82	100	129	99	102							
1943	110			131			125							105		163		185	95	95				100				
1944	105			128			145							160		142		120	133	214				92				
1945																134		210	88									
1946																95		60	82									
1947																68												
1948				111						111						43		56			125							
1949												117	137			198		135	131		84							
1950							118	105		121		86	65	41		105		76	75		98		81					
1951		115		132	125	117	138	124	109	270	75	128	190	73		47		47	64		93	120						
1952		117	150	112			120	113	135	98	50	92	116	75		93		121	86		106	95	97					
1953		118	99	143		120	169	126	110	80		64	86		152	113		47	51		71	114						
1954		98	104	106		147	112	116	95	125	80	58	80	97	175	82	88	81	69		124	138	79					
1955		65	150	101	155	160	126	113	113	80	100	91	240	89	261	105	148	126	142	187	205	110	110					
1956		76	150	136	130	144	152	135	140	95	60	86	88	150	250	131	125	167	89	123	117		118					
1957		96		99	120	143	107	107	133	100	61	285	77	31	256	135	165	119	126	121	81	89	200					
1958				127	120	137	148	120	83	163	37	46	92	102	257	70	152	125	98	140	135	119	139	141			64	64
1959				133			119	132	100	135	52	112	190	135	195	98	100	76	57	102	125	75	110	102		102	103	103
1960		130		129			117	140	130	117	80		115	150	172	160	185	143	136	137	95	117		73		87	100	100
1961		130		100			130	104	108		80	148	143	157	154	149	108	129	92	130	125	73		99		103	103	103
1962		130		121		136	124	106	122	130		117	107		125		121	263	140	53	103			89		100	100	100
1963						188	124	173	205	126		105	160		115			113	79	137	84			68		148	148	148
1964				118	100	180	107	122	86	100	109	137	100	78	101	67	127	100	73	110	70			72		49	49	49
1965		120		100			92	115	80	130			107	110		124	104	151	67	131	100	73	89			104	104	104
1966		100						124	111	90			89	76	67	50			63		85	73	95	72		63	63	63
1967		65		136		120	131	98	120				110	115	118	120	130	69	65	129	83		72	74		82	82	82
1968			125		80	150	100	98				102	77	145	143	168	106	70	57	82	85			76		82	85	85

Table 4.3 ANNUAL MAXIMUM DAILY RAINFALL (continued)

Unit: (mm)

Year	Station (Code)																											
	02023	02037	02037A	02045A	02046	02048B	02048D	02049A	02061	02063	02066	02070A	02076	02081A	02082	02082D	02086	02091B	02094C	02099	02113A	02117	02120	02125	02027	02027	02027	02027
1969					95							79	55	73	105	100	105	58	67	120				74		79	79	79
1970			75			86						150	77		115	123	102	150	66	95		145	115	96		150	150	150
1971		171			114		128								70		78	72	107	128	95	113	116	69		72	86	86
1972				217	110		112		127	110					81	268	91	150	176	109	80	79	90	75		86	90	90
1973				220	153		116			103		73	61	181	85	145	150	125	99	79	157	125	119	103		90	91	91
1974		110		125	190				110	100	125	113		96		141	94	125	150	87	83	92		161		102	103	103
1975						120	114		116			76				130	100	63	60	100	87					68	68	68
1976						190										141		86	125							110	110	110
1977		150			183	130			237	276						170		150	182	122	115	154		103		204	204	204
1978		112			210	128	77			109			65	104	150	168		75	175	122	150	200		116		73	73	73
1979													145			215		120	164	113	75	135				198	198	198
1980					132	110	80							182		150		120	195		90	133	168	115			100	100
1981						130	60					104	162	198	114	98		140	265	89	130		125	130			122	122
1982																		95		112							63	63
1983							75							85		76		65	155	79	103	181		85			90	90
1984																											80	80
1985																											114	114
1986												290	220								270	200		130			107	107
1987																											171	171
1988																												
1989																	160											
1990																												
1991																												
1992		106															62			80			109	92				96
1993																	97											
1994																												
Sum	3718	8183	2962	4924	10426	5141	5057	4116	4392	4419	2923	4232	4820	4627	5271	5163	4465	4778	4643	4853	3923	8017	5301	7182	4562	2152	3100	7758
N	34	73	24	37	78	36	42	34	36	37	27	38	42	41	37	42	38	42	42	45	36	68	47	66	38	21	30	69
Av.	109.4	112.1	123.4	133.1	133.7	142.8	120.4	121.1	122	119.4	108.3	111.4	114.8	112.9	142.5	122.9	117.5	113.8	110.5	107.8	109	117.9	112.8	108.8	120.1	102.5	103.3	112.4

Table 4.4 RESULTS OF FREQUENCY ANALYSIS

No.	Code	Station	EL	Latitude	Longitude	Statistical Parameters					a	x_0	Return Period							
						N	x_{MEAN}	S_x	C_V	*)			1	2	5	10	20	50	100	1000
1	02021	CIPELAR	118	- - -	- - -	32	109.47	19.56	18%	3)	0.05722	100.07	66	106	126	139	152	168	180	221
2	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	33	103.00	39.70	39%	1)	0.02827	83.94	16	97	137	164	189	222	247	328
3	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	111	107.00	38.04	36%	2)	0.03186	89.38	29	101	136	160	183	212	234	306
4	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	21	102.48	39.81	39%	3)	0.02686	82.93	11	97	139	167	193	228	254	340
5	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	30	103.33	36.99	36%	3)	0.03007	85.50	21	98	135	160	184	215	238	315
6	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	38	120.05	52.26	44%	3)	0.02175	95.11	6	112	164	199	232	275	307	413
7	02027	JAKARTAPUSAT (M	7	6° 11' S	106° 50' E	69	112.43	46.59	41%	3)	0.02542	90.62	15	105	150	179	207	244	272	362
8	02037	BOJONG GEDEH	148	6° 28' S	106° 50' E	20	109.70	22.24	20%	3)	0.04780	98.75	58	106	130	146	161	180	195	243
9	02037A	BOJONGGEDE	140	6° 30' S	106° 46' E	17	124.06	22.44	18%	3)	0.04633	112.88	71	121	145	161	177	197	212	262
10	02045A	CIOMAS (PERK)	244	6° 37' S	106° 46' E	18	136.56	24.96	18%	3)	0.04200	124.18	78	133	160	178	195	217	234	289
11	02046	BOGOR (EMPANG)	266	6° 36' S	106° 48' E	63	133.48	32.02	24%	3)	0.03679	118.45	66	128	159	180	199	225	243	306
12	02048B	KEBUNRAYA BOGOR	280	6° 36' S	106° 47' E	17	147.35	31.28	21%	3)	0.03324	131.78	74	143	177	199	221	249	270	340
13	02048D	BOGOR BPP	250	6° 33' S	106° 50' E	16	125.19	18.49	15%	3)	0.05574	115.94	81	123	143	156	169	186	198	240
14	02049A	MUARA	260	6° 38' S	106° 50' E	19	119.53	17.17	14%	3)	0.06150	111.04	80	117	135	148	159	174	186	223
15	02061	CIBURAYUT	734	6° 43' S	106° 46' E	17	116.47	28.24	24%	3)	0.03682	102.41	50	112	143	164	183	208	227	290
16	02063	SROGOL	490	6° 45' S	106° 50' E	15	110.00	20.73	19%	3)	0.04923	99.58	60	107	130	145	160	179	193	240
17	02066	TAPOS	806	6° 43' S	106° 53' E	15	134.27	24.30	18%	3)	0.04200	122.05	76	131	158	176	193	215	232	287
18	02070A	PANJANG (PERK)	1021	6° 47' S	107° 07' E	15	104.87	31.76	30%	3)	0.03213	88.91	29	100	136	159	181	210	232	304
19	02076	GUNUNG MAS (PER	1160	6° 41' S	107° 01' E	22	113.68	45.20	40%	3)	0.02380	91.54	10	107	155	186	216	256	285	382
20	02081A	BATUJAYA	4	6° 04' S	107° 07' E	18	115.78	43.40	37%	3)	0.02415	94.25	14	109	156	187	217	256	285	380
21	02082	CIKARANG	27	6° 15' S	107° 09' E	14	131.71	57.35	44%	3)	0.01760	102.74	-7	124	188	231	271	324	364	495
22	02082D	TELUKBANGO	5	6° 09' S	107° 13' E	24	112.88	37.07	33%	3)	0.02931	94.81	29	107	146	172	196	228	252	330
23	02086	PANGKALAN	217	6° 28' S	107° 13' E	15	117.80	38.60	33%	3)	0.02644	98.40	25	112	155	184	211	246	272	360
24	02094B	PACING	5	6° 06' S	106° 16' E	18	115.28	49.84	43%	3)	0.02103	90.56	-1	108	162	198	232	276	309	419
25	02094C	GEMPOL LOR	4	6° 06' S	107° 20' E	33	108.82	50.28	46%	3)	0.02232	84.68	-2	101	152	185	218	259	291	394
26	02099	TELUKJAMBE	30	6° 20' S	107° 18' E	18	102.00	44.23	43%	3)	0.02370	80.07	-1	96	143	175	205	245	274	372
27	02113A	CINANGKA	55	6° 27' S	107° 29' E	21	104.48	29.31	28%	3)	0.03648	90.08	37	100	131	152	171	197	216	279
28	02117	KEL-CISEURUEH	82	6° 33' S	107° 26' E	23	110.91	28.96	26%	3)	0.03733	96.76	45	107	137	157	176	201	220	282
29	02120	GUNUNGANAGA	400	6° 37' S	107° 20' E	29	112.72	29.87	27%	3)	0.03711	98.30	46	108	139	159	178	203	222	284
30	02125	DARANGDAN	515	6° 41' S	107° 25' E	24	114.00	28.01	25%	3)	0.03879	100.35	51	110	139	158	177	201	219	278

Note: *)

1) Cisadane River Basin Development Feasibility Study, Volume 2 Hydrology, Sep. 1987
2) Cisadane - Jakarta - Cibeet Water Resouses Development Plan, Annex C Hydrology, Oct. 1980
3) Present JICA Study, 1996