

LAMPIRAN 1

DATA CURAH HUJAN MAKSIMUM TAHUNAN

Stasiun : Cibinong

Tahun pengamatan : 1983 s/d 1999

Tahun	Curah Hujan Harian Max Tiap Bulan (CHH max) (mm)												CHH max Tiap Tahun = R ₂₄
	Jan	Feb	Mar	Apr	Mei	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(mm)
1983	-	-	-	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-	-	-
1986	58	101.5	34	162	39	78	49	116	75	86	42	87	162
1987	40	42	57	80	83	67	19	15	43	66	84	31	84
1988	65	53	48	79	119	52	59	77	17	68	30	61	119
1989	71	92	65	104	58	71	27	24.5	28	82	93	60	104
1990	74	96	50	83	81	54	68	70	102	92	59	79	102
1991	34	87	69	84	84	47	62	1	80	82	95	76	95
1992	43	55	45	62	92	123	106	24	31	100	53	75	123
1993	66	56	45	96	102	77	77	87	85	59	73	125	125
1994	110	33	39	79	26	34	5	82	55	71	94	76	110
1995	72	57	20	60	29	69	62	5	41	49	61	24	72
1996	48	32	70	21	17	19	0	0	0	12	30	0	70
1997	152	44	124	64	41	0	0	0	0	0	23	79	152
1998	175	37	90	70	220	10	30	14	0	8	26	85	220
1999	41	83	55	95	96	0	12	0	0	0	38	95	96
Jumlah	1049	868.5	811	1139	1087	701	576	515.5	557	775	801	953	
Avg	61.71	51.09	47.71	67.00	63.94	41.24	33.88	30.32	32.76	45.59	47.12	56.06	
CHT max	175	101.5	124	162	220	123	106	116	102	100	95	125	

Sumber : Badan Meteorologi dan Geofisika, Jakarta (1983-1999)

LAMPIRAN 1
DATA CURAH HUJAN MAKSIMUM TAHUNAN

Stasiun : Kebun Raya Bogor
Tahun pengamatan : 1983 s/d 1999

Tahun	Curah Hujan Harian Max Tiap Bulan (CHH max) (mm)												CHH max Tiap Tahun = R ₂₄
	Jan	Feb	Mar	Apr	Mei	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(mm)
1983	-	-	-	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	-	-	-	-	-
1985	-	-	-	-	-	-	-	-	-	-	-	-	-
1986	61	58	62	21	63	51	28	0	42	36	70	70	70
1987	84	125	78	91	35	52	37	0	31	35	61	69	125
1988	44	53	59	40	56	56	32	0	0	25	55	42	59
1989	50	86	44	83	80	64	32	0	21	72	61	27	86
1990	58	74	49	43	98	36	32	0	53	34	105	54	105
1991	89	82	80	136	92	62	44	0	54	72	98	58	136
1992	52	101	68	87	68	35	100	0	0	40	0	38	101
1993	56.2	77.5	0	95	69.2	0	18	1.8	0	67.6	0	0	95
1994	67	132	75	30	35	45	15	0	9	0	0	0	132
1995	67	82	128	30	35	45	15	0	9	0	0	0	128
1996	90	147	100	97	82	92	24	6	64	112	62	52	147
1997	56	47	62	54	29	40	28	13	39	58	54	69	69
1998	30	49	54	56	46	67	38	0	0	96	57	67	96
1999	25	68	69	62	25	48	70	40	34	60	70	50	70
Jumlah	829.2	1181.5	928	925	813.2	693	513	60.8	356	707.6	693	596	
Avg	48.78	69.50	54.59	54.41	47.84	40.76	30.18	3.58	20.94	41.62	40.76	35.06	
CHT max	90	147	128	136	98	92	100	40	64	112	105	70	

Sumber : Badan Meteorologi dan Geofisika, Jakarta (1983-1999)

LAMPIRAN 1

DATA CURAH HUJAN MAKSIMUM TAHUNAN

Stasiun : Sawangan

Tahun pengamatan : 1983 s/d 1999

Tahun	Curah Hujan Harian Max Tiap Bulan (CHH max) (mm)												CHH max Tiap Tahun = R ₂₄
	Jan	Feb	Mar	Apr	Mei	Jun	Jul	Aug	Sep	Oct	Nov	Dec	(mm)
1983	47	26	53	60	36	70	14	0	12	19	125	50	125
1984	45	75	50	85	120	68	57	39	49	103	26	20	120
1985	97	130	40	55	62	56	68	131	53	42	75	69	131
1986	85	36	36	71	68	58	74	112	46	102	56	78	112
1987	67	32	40	34	83	69	10	15	0	59	47	47	83
1988	78	42	31	50	45	69	60	77	63	72	30	48	78
1989	21	57	0	37	64	52	54	77	63	72	30	48	77
1990	48	47	64	64	43	29	69	25	14	8	35	32	69
1991	21	25	30	27	75	0	47	12	38	30	35	49	75
1992	59	45	52	40	50	15	16	35	40	69	78	76	78
1993	45	32	50	29	34	37	40	29	25	69	80	47	80
1994	40	48	60	50	100	70	0	0	18	65	30	25	100
1995	30	23	40	58	67	40	5	0	36	86	89	24	89
1996	19	65	27	62	52	27	17	24	13	97	47	27	97
1997	26	22	37	25	30	20	15	27	11	0	58	40	58
1998	26	40	47	45	25	40	43	15	31	42	6	15	47
1999	11	35	20	45	51	25	30	40	0	0	0	0	51
Jumlah	576	549	534	637	787	551	480	488	398	771	621	556	
Avg	41.14	39.21	38.14	45.50	56.21	39.36	34.29	34.86	28.43	55.07	44.36	39.71	
CHT max	85	65	64	71	100	70	74	112	63	102	89	78	

Sumber : Badan Meteorologi dan Geofisika, Jakarta (1983-1999)

PROSES ELENGKAPAN DATA CURAH HUJAN DENGAN CARA REGRESI LINEAR

1. Melengkapi data untuk Stasiun Cibinong

Tahun	Sawangan x	Cibinong y	x ²	x.y
1986	112	162	12544	18144
1987	83	84	6889	6972
1988	78	119	6084	9282
1989	77	104	5929	8008
1990	69	102	4761	7038
1991	75	95	5625	7125
1992	78	123	6084	9594
1993	80	125	6400	10000
1994	100	110	10000	11000
1995	89	72	7921	6408
1996	97	70	9409	6790
1997	58	152	3364	8816
1998	47	220	2209	10340
1999	51	96	2601	4896
TOTAL	1094	1634	89820	124413

Melengkapi Data Sta Cibinong terhadap Sta Sawangan

Persamaan garis terhadap stasiun Sawangan :
 $y = ax + b$

$$a = \frac{n(Ey) - (Ex)(Ey)}{n(Ex^2) - (Ex)^2}$$

$$b = \frac{-(Ex)(Ey) + (Ex^2)(Ey)}{n(Ex^2) - (Ex)^2}$$

$Ex = 1094$
 $Ey = 1634$
 $n = 14$
 $Exy = 124413$
 $Ex^2 = 89820$
 $(Ex)^2 = 1196836$

maka:
 Persamaan garis yang didapat:
 $a = -0.76$
 $b = 175.75$
 $y = -0.76 x + 175.75$

Dengan Rumus Garis Linear yang didapat, maka data Sta. Cibinong dapat dilengkapi sebagai berikut :

Tahun	Stasiun	
	Sawangan	Cibinong
1983	125	81.3
1984	120	85.1
1985	131	76.8
1986	112	162.0
1987	83	84.0
1988	78	119.0
1989	77	104.0
1990	69	102.0
1991	75	95.0
1992	78	123.0
1993	80	125.0
1994	100	110.0
1995	89	72.0
1996	97	70.0
1997	58	152.0
1998	47	220.0
1999	51	96.0

2. Melengkapi data untuk Stasiun Bogor

Tahun	Sawangan x	Bogor y	x ²	x.y
1986	112	70	12544	7840
1987	83	125	6889	10375
1988	78	59	6084	4602
1989	77	86	5929	6622
1990	69	105	4761	7245
1991	75	136	5625	10200
1992	78	101	6084	7878
1993	80	95	6400	7600
1994	100	132	10000	13200
1995	89	128	7921	11392
1996	97	147	9409	14259
1997	58	69	3364	4002
1998	47	96	2209	4512
1999	51	70	2601	3570
TOTAL	1094	1419	89820	113297

Melengkapi Data Sta Bogor terhadap Sta Sawangan

Persamaan garis terhadap stasiun Sawangan :
 $y = ax + b$

$$a = \frac{n(Ey) - (Ex)(Ey)}{n(Ex^2) - (Ex)^2}$$

$$b = \frac{-(Ex)(Ey) + (Ex^2)(Ey)}{n(Ex^2) - (Ex)^2}$$

$Ex = 1094$
 $Ey = 1419$
 $n = 14$
 $Exy = 113297$
 $Ex^2 = 89820$
 $(Ex)^2 = 1196836$

maka:
 Persamaan garis yang didapat:
 $a = 0.56$
 $b = 57.84$
 $y = 0.56 x + 57.84$

Dengan Rumus Garis Linear yang didapat, maka data Sta. Bogor dapat dilengkapi sebagai berikut :

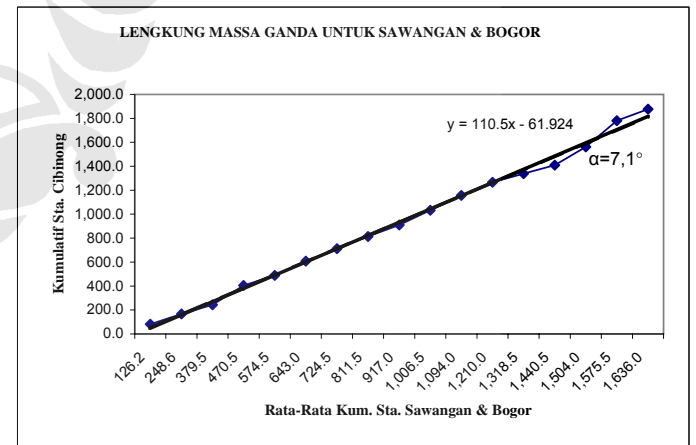
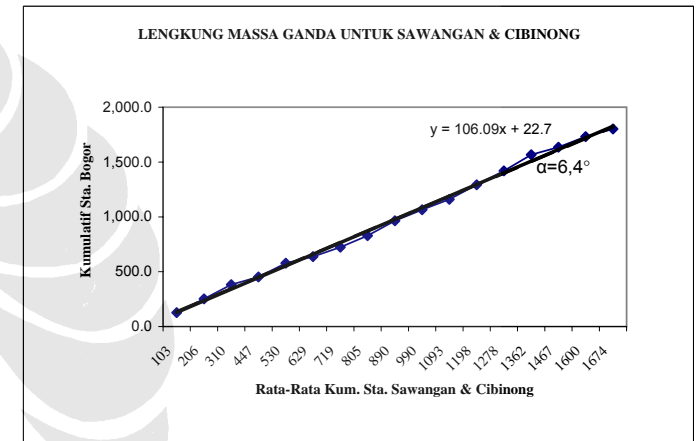
Tahun	Stasiun	
	Sawangan	Bogor
1983	125	127.5
1984	120	124.7
1985	131	130.8
1986	112	70.0
1987	83	125.0
1988	78	59.0
1989	77	86.0
1990	69	105.0
1991	75	136.0
1992	78	101.0
1993	80	95.0
1994	100	132.0
1995	89	128.0
1996	97	147.0
1997	58	69.0
1998	47	96.0
1999	51	70.0

LAMPIRAN 3
PENGUJIAN KONSISTENSI DATA

UJI KONSISTENSI DATA

1. Lengkung Massa Ganda

Tahun	Stasiun			Penjumlahan Kumulatif Tiap Sta.		Rataan 2 Stasiun		Penjumlahan Rata-Rata Kumulatif 2 Sta.	
	Sawangan	Cibinong	Bogor	Cibinong	Bogor	Sawangan & Cibinong	Sawangan & Bogor	Sawangan & Cibinong	Sawangan & Bogor
1983	125.0	81.3	127.5	81.3	127.5	103.2	126.2	103.2	126.2
1984	120.0	85.1	124.7	166.4	252.1	102.5	122.3	205.7	248.6
1985	131.0	76.8	130.8	243.2	382.9	103.9	130.9	309.6	379.5
1986	112.0	162.0	70.0	405.2	452.9	137.0	91.0	446.6	470.5
1987	83.0	84.0	125.0	489.2	577.9	83.5	104.0	530.1	574.5
1988	78.0	119.0	59.0	608.2	636.9	98.5	68.5	628.6	643.0
1989	77.0	104.0	86.0	712.2	722.9	90.5	81.5	719.1	724.5
1990	69.0	102.0	105.0	814.2	827.9	85.5	87.0	804.6	811.5
1991	75.0	95.0	136.0	909.2	963.9	85.0	105.5	889.6	917.0
1992	78.0	123.0	101.0	1,032.2	1,064.9	100.5	89.5	990.1	1,006.5
1993	80.0	125.0	95.0	1,157.2	1,159.9	102.5	87.5	1,092.6	1,094.0
1994	100.0	110.0	132.0	1,267.2	1,291.9	105.0	116.0	1,197.6	1,210.0
1995	89.0	72.0	128.0	1,339.2	1,419.9	80.5	108.5	1,278.1	1,318.5
1996	97.0	70.0	147.0	1,409.2	1,566.9	83.5	122.0	1,361.6	1,440.5
1997	58.0	152.0	69.0	1,561.2	1,635.9	105.0	63.5	1,466.6	1,504.0
1998	47.0	220.0	96.0	1,781.2	1,731.9	133.5	71.5	1,600.1	1,575.5
1999	51.0	96.0	70.0	1,877.2	1,801.9	73.5	60.5	1,673.6	1,636.0



LAMPIRAN 4

TABEL - TABEL

Tabel a

Harga reduced standar deviation (s_N)

Sumber : J. Nemece, Engineering Hidrology, Tata Mc. Graw Hill Publishing Company Ltd, New Delhi, 1973

m	0	1	2	3	4	5	6	7	8	9
10	0.9496	0.9676	0.9833	0.9971	1.0095	1.0206	1.0316	1.0411	1.0493	1.0565
20	1.0628	1.0696	1.0754	1.0811	1.0864	1.0915	1.0961	1.1004	1.1047	1.1086
30	1.1124	1.1159	1.1193	1.1226	1.1255	1.1285	1.1313	1.1339	1.1363	1.1388
40	1.1413	1.1436	1.1458	1.1480	1.1499	1.1519	1.1538	1.1557	1.1574	1.1590
50	1.1607	1.1623	1.1638	1.1658	1.1667	1.1681	1.1696	1.1708	1.1721	1.1734
60	1.1747	1.1759	1.1770	1.1782	1.1793	1.1803	1.1814	1.1824	1.1834	1.1844
70	1.1854	1.1863	1.1873	1.1881	1.1890	1.1898	1.1906	1.1915	1.1923	1.1930
80	1.1938	1.1945	1.1953	1.1959	1.1967	1.1973	1.1980	1.1987	1.1994	1.2001
90	1.2007	1.2013	1.2020	1.2026	1.2032	1.2038	1.2044	1.2049	1.2055	1.2060
100	1.2065									

Tabel b

Harga reduced mean (Y_N)

Sumber : J. Nemece, Engineering Hidrology, Tata Mc. Graw Hill Publishing Company Ltd, New Delhi, 1973

m	0	1	2	3	4	5	6	7	8	9
10	0.4952	0.4996	0.5035	0.5070	0.5100	0.5128	0.5157	0.5181	0.5202	0.5220
20	0.5236	0.5252	0.5268	0.5283	0.5296	0.5309	0.5320	0.5332	0.5343	0.5353
30	0.5362	0.5371	0.5380	0.5388	0.5396	0.5402	0.5410	0.5418	0.5424	0.5430
40	0.5436	0.5442	0.5448	0.5453	0.5458	0.5463	0.5468	0.5473	0.5477	0.5481
50	0.5485	0.5489	0.5493	0.5497	0.5501	0.5504	0.5508	0.5511	0.5515	0.5518
60	0.5521	0.5524	0.5527	0.5530	0.5533	0.5535	0.5538	0.5540	0.5543	0.5545
70	0.5548	0.5550	0.5552	0.5555	0.5557	0.5559	0.5561	0.5563	0.5565	0.5567
80	0.5569	0.5570	0.5572	0.5574	0.5576	0.5578	0.5580	0.5581	0.5583	0.5585
90	0.5586	0.5587	0.5589	0.5591	0.5592	0.5593	0.5595	0.5596	0.5598	0.5599
100	0.5600									

Tabel b

Harga reduced mean (Y_N)

Sumber : J. Nemece, Engineering Hidrology, Tata Mc. Graw Hill Publishing Company Ltd, New Delhi, 1973

Periode Ulang (tahun)	Reduced Variate (Y_T)
2	0.3665
5	1.4999
10	2.2502
15	2.6844
20	2.9700
25	3.1985
50	3.9019
100	4.6000

Tabel II.3.

Harga reduced mean (Y_{Tr})

Sumber : J. Nemece, Engineering Hidrology, Tata Mc. Graw Hill Publishing Company Ltd, New Delhi, 1973

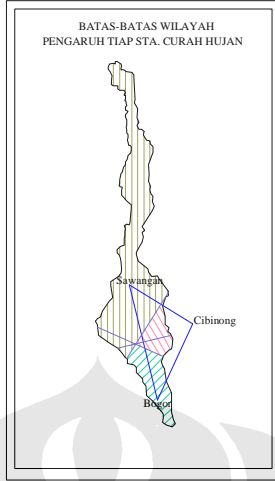
Periode Ulang (tahun)	5	10	25	50	100	200	500	1000	10000
Reduced Variate (Y_T)	1.499	2.250	3.198	3.901	4.600	5.295	6.213	6.907	9.210

LAMPIRAN 4

MEMBUAT KURVA IDF DENGAN MENGGUNAKAN CURAH HUJAN RATA-RATA

Berdasarkan Luasan yang didapat dengan menggunakan Peta DAS dengan penggambaran titik Poligon antar tiap stasiun curah hujan yaitu :

1. Stasiun Bogor $A_{pengarah}$: 18.29 km^2
 2. Stasiun Sawangan $A_{pengarah}$: 82.89 km^2
 3. Stasiun Cibinong $A_{pengarah}$: 10.88 km^2
 4. DAS S. Pesanggrahan : 112.06 km^2
 5. Panjang S. Pesanggrahan : 73.69 km
 6. Slope S. Pesanggrahan : 0.0027 m/m
- Maka Rataan Curah Hujan Max. tiap tahun adalah sbb :



Data Hujan Harian Maximum

Tahun	Nama Stasiun		
	Sawangan	Cibinong	Bogor
1983	125.0	81.3	127.5
1984	120.0	83.1	124.7
1985	131.0	76.8	130.8
1986	112.0	162.0	70.0
1987	83.0	84.0	125.0
1988	78.0	119.0	59.0
1989	77.0	104.0	86.0
1990	69.0	102.0	105.0
1991	75.0	95.0	136.0
1992	78.0	123.0	101.0
1993	80.0	125.0	95.0
1994	100.0	110.0	132.0
1995	89.0	72.0	128.0
1996	97.0	70.0	147.0
1997	58.0	152.0	69.0
1998	47.0	220.0	96.0
1999	51.0	96.0	70.0

LAMPIRAN 4

Xrata	86.47	110.42	105.99
Sx	24.87	38.59	27.77
Ytr=25	3.1985		
Y _N	0.5181		
S _N	1.0411		
Ktr	2.5746		
P _{area}	150.49	209.78	177.50
Bobot Area	0.74	0.10	0.16
P _{DAS}	160.66 mm		

Xrata	86.47	110.42	105.99
Sx	24.87	38.59	27.77
Ytr=50	3.9010		
Y _N	0.5181		
S _N	1.0411		
Ktr	3.2494		
P _{area}	167.27	235.82	196.24
Bobot Area	0.74	0.10	0.16
P _{DAS}	178.66 mm		

Xrata	86.47	110.42	105.99
Sx	24.87	38.59	27.77
Ytr=100	4.6000		
Y _N	0.5181		
S _N	1.0411		
Ktr	3.9208		
P _{area}	183.97	261.73	214.89
Bobot Area	0.74	0.10	0.16
P _{DAS}	196.57 mm		

PERHITUNGAN INTENSITAS CURAH HUJAN HARIAN GABUNGAN (dengan metode Mononobe)

LAMPIRAN 4

Periode Ulang 25 tahunan

T (menit)	0	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240
P (mm)	0.00	183.91	115.85	88.41	72.98	62.90	55.70	50.26	45.98	42.50	39.62	37.18	35.09	30.24	26.78	24.16	22.10
Akumulasi (mm)	0.00	183.91	299.76	388.18	461.16	524.05	579.75	630.01	675.99	718.49	758.11	795.29	830.38	860.62	887.39	911.56	933.66

Periode Ulang 50 tahunan

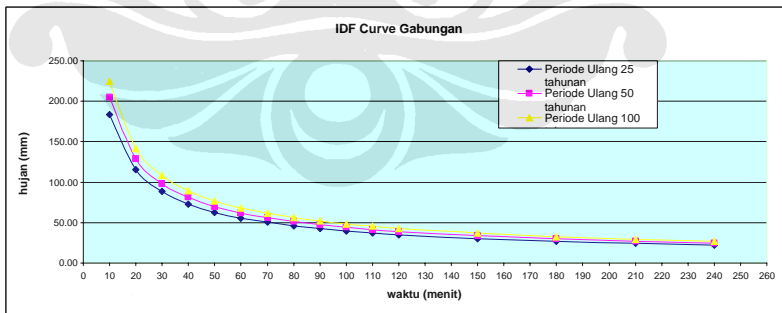
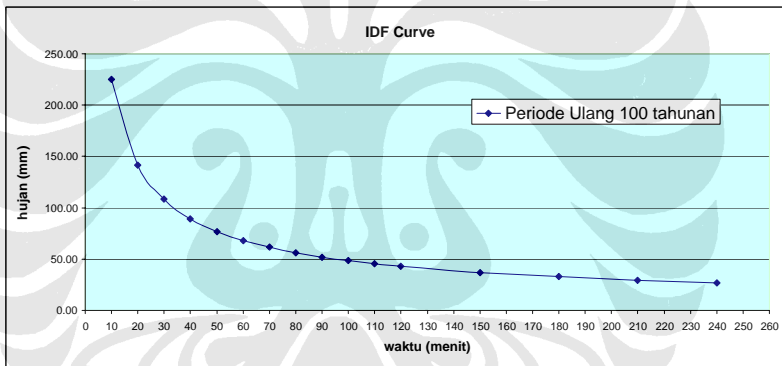
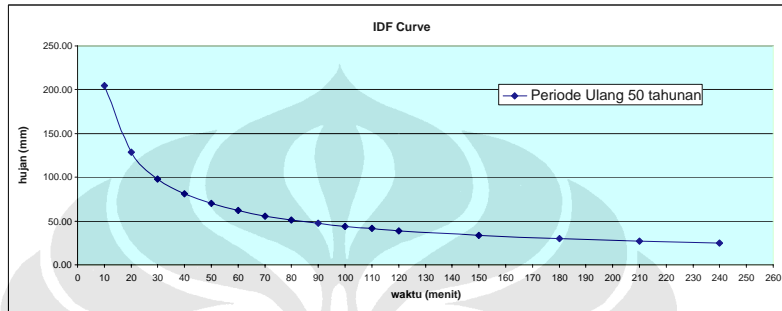
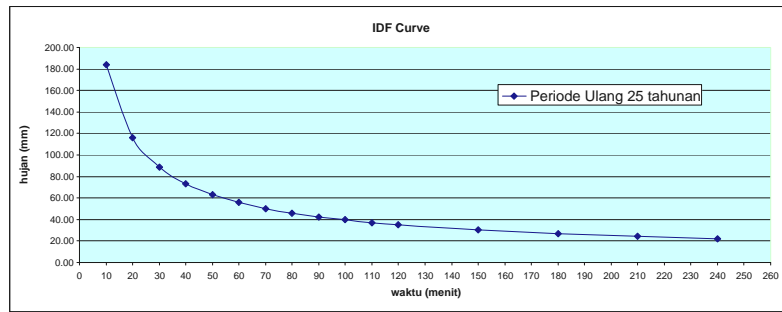
T (menit)	0	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240
P (mm)	0.00	204.51	128.83	98.32	81.16	69.94	61.94	55.89	51.13	47.27	44.06	41.35	39.02	33.62	29.78	26.87	24.58
Akumulasi (mm)	0.00	204.51	333.34	431.66	512.82	582.77	644.70	700.59	751.72	798.98	843.04	884.39	923.41	957.03	986.81	1013.68	1038.26

Periode Ulang 100 tahunan

T (menit)	0	10	20	30	40	50	60	70	80	90	100	110	120	150	180	210	240
P (mm)	0.00	225.01	141.75	108.17	89.30	76.95	68.15	61.49	56.25	52.00	48.48	45.49	42.93	37.00	32.76	29.56	27.04
Akumulasi (mm)	0.00	225.01	366.76	474.93	564.23	641.18	709.33	770.82	827.07	879.08	927.55	973.05	1015.98	1052.97	1085.73	1115.29	1142.34

Tahun	Periode tahunan	C	I		Q (Rasional)		Q (SMADA)		Devisiasi	
			(mm/jam)	(Ha)	(m3/s)	(m3/s)	(cfs)	(m3/s)	(%)	
2008	25	0.707	15.05	11206	331.08	370.76	13,093.21	39.68	10.70	
	50	0.745	16.74	11206	387.96	422.39	14,916.53	34.43	8.15	
	100	0.787	18.41	11206	451.33	474.00	16,738.94	22.67	4.78	

LAMPIRAN 4



LAMPIRAN 5

1. Hubungan Antara Perubahan tata Guna Lahan Tiap Tahun Pengamatan Terhadap Cterbobot Dengan Masa Ulang 100 tahunan

No.	Tahun	Luas Lahan (Ha)					Luas Total	Koefisien Aliran (C)					C _{terbobot}
		Sawah	Hutan	Ladang	Pemukiman	Jalan		Sawah	Hutan	Ladang	Pemukiman	Jalan	
1	2007	3,547	1,242	2,306	9,755	887	17,737	0.51	0.47	0.55	0.97	0.95	0.787

2. Hubungan Antara Perubahan tata Guna Lahan Tiap Tahun Pengamatan Terhadap Cterbobot Dengan Masa Ulang 50 tahunan

No.	Tahun	Luas Lahan (Ha)					Luas Total	Koefisien Aliran (C)					C _{terbobot}
		Sawah	Hutan	Ladang	Pemukiman	Jalan		Sawah	Hutan	Ladang	Pemukiman	Jalan	
1	2007	3,547	1,242	2,306	9,755	887	17,737	0.48	0.43	0.52	0.92	0.90	0.745

3. Hubungan Antara Perubahan tata Guna Lahan Tiap Tahun Pengamatan Terhadap Cterbobot Dengan Masa Ulang 25 tahunan

No.	Tahun	Luas Lahan (Ha)					Luas Total	Koefisien Aliran (C)					C _{terbobot}
		Sawah	Hutan	Ladang	Pemukiman	Jalan		Sawah	Hutan	Ladang	Pemukiman	Jalan	
1	2007	3,547	1,242	2,306	9,755	887	17,737	0.44	0.40	0.49	0.88	0.86	0.707

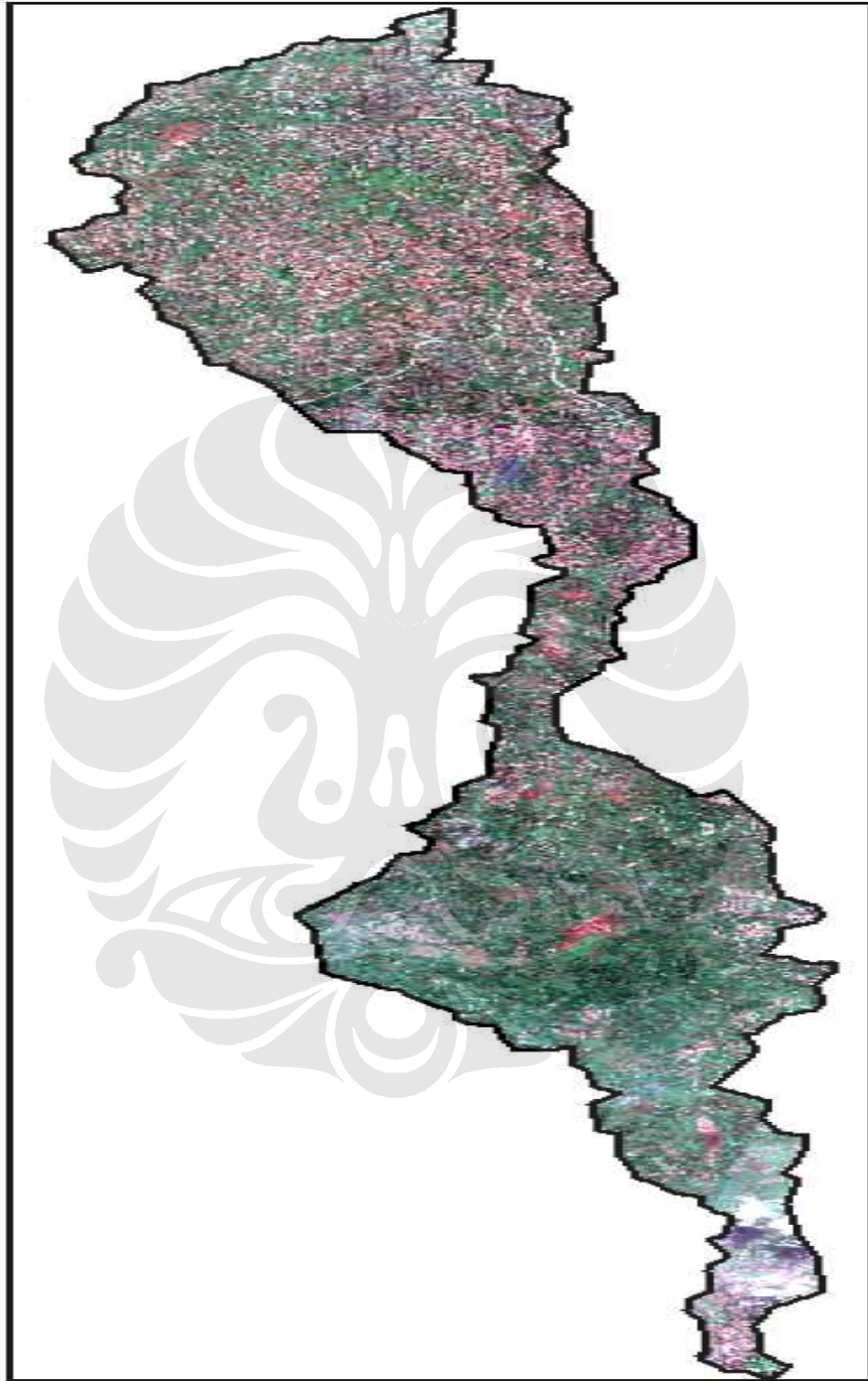
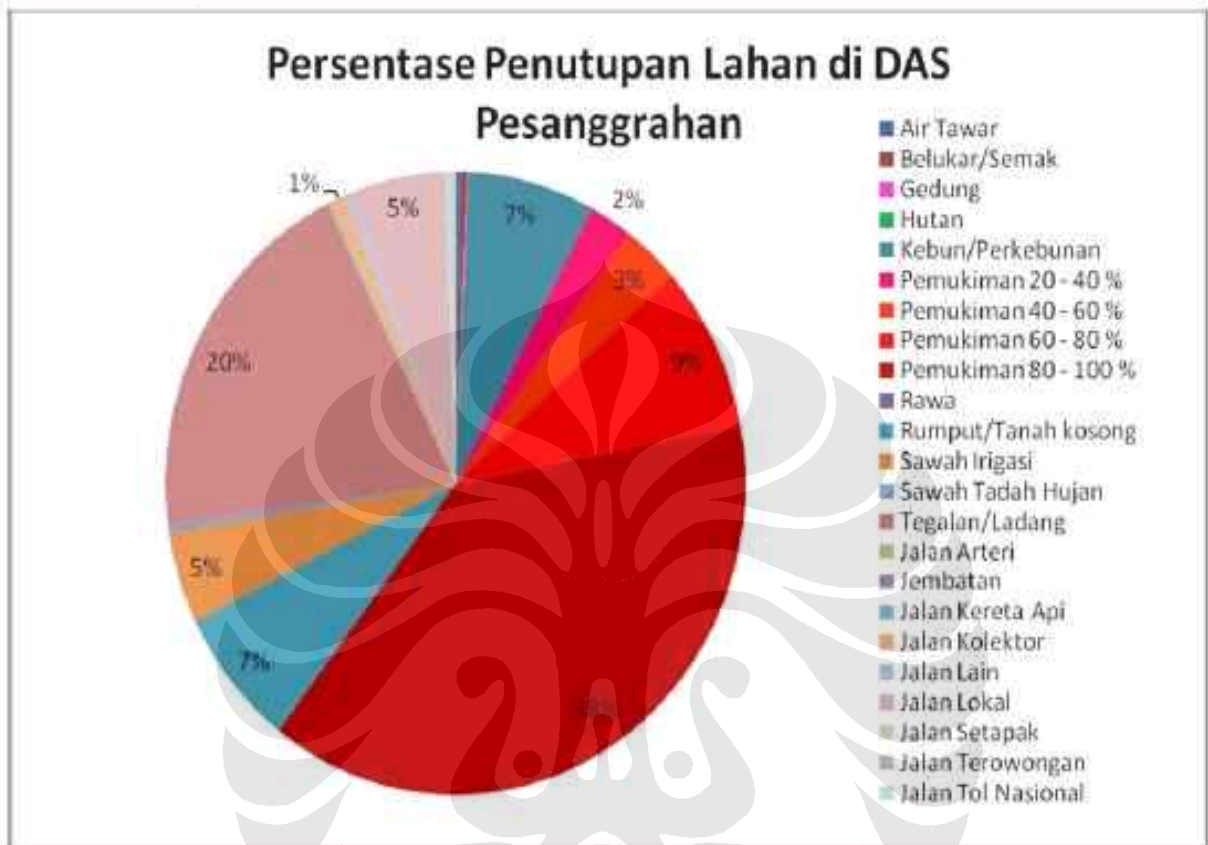


Foto Satelit lahan di DAS Pesanggrahan



Persentase penutupan lahan di DAS Pesanggrahan

LAMPIRAN 6

Output Hidrograf Program SMADA
Periode Ulang 25 tahunan

Hydrograph Type :SCS 484 Hydrograph

Time (hr)	Time HHMM	Rain (in)	C Rain (in)	Infiltration (in)	Instant (cfs)	Outflow (cfs)
0.250	00015	0.229	0.229	0.146	9188.197	8.497
0.500	00030	0.298	0.527	0.191	12000.750	28.093
0.750	00045	0.330	0.857	0.185	16166.140	62.640
1.000	00100	0.438	1.295	0.190	27751.890	122.851
1.250	00115	0.673	1.968	0.211	51616.060	230.798
1.500	00130	1.333	3.302	0.261	119725.30	449.468
1.750	00145	0.514	3.816	0.069	49719.820	714.119
2.000	00200	0.400	4.216	0.046	39544.980	1015.342
2.250	00215	0.349	4.566	0.036	35029.360	1348.961
2.500	00230	0.318	4.883	0.029	32191.220	1712.350
2.750	00245	0.292	5.175	0.025	29868.550	2103.363
3.000	00300	0.273	5.448	0.021	28113.830	2520.375
3.250	00315	0.241	5.690	0.018	24984.040	2960.492
3.500	00330	0.229	5.918	0.016	23778.270	3422.600
3.750	00345	0.222	6.140	0.014	23211.130	3906.174
4.000	00400	0.210	6.350	0.013	21962.390	4410.060
4.250	00415	0.000	6.350	0.000	0.000	4913.945
4.500	00430	0.000	6.350	0.000	0.000	5417.830
4.750	00445	0.000	6.350	0.000	0.000	5921.714
5.000	00500	0.000	6.350	0.000	0.000	6425.600
5.250	00515	0.000	6.350	0.000	0.000	6929.485
5.500	00530	0.000	6.350	0.000	0.000	7433.369
5.750	00545	0.000	6.350	0.000	0.000	7937.254
6.000	00600	0.000	6.350	0.000	0.000	8441.140
6.250	00615	0.000	6.350	0.000	0.000	8945.024
6.500	00630	0.000	6.350	0.000	0.000	9448.909
6.750	00645	0.000	6.350	0.000	0.000	9952.796
7.000	00700	0.000	6.350	0.000	0.000	10456.680
7.250	00715	0.000	6.350	0.000	0.000	10953.450
7.500	00730	0.000	6.350	0.000	0.000	11434.450
7.750	00745	0.000	6.350	0.000	0.000	11894.480
8.000	00800	0.000	6.350	0.000	0.000	12321.610
8.250	00815	0.000	6.350	0.000	0.000	12689.220
8.500	00830	0.000	6.350	0.000	0.000	12927.740
8.750	00845	0.000	6.350	0.000	0.000	13043.320
9.000	00900	0.000	6.350	0.000	0.000	13093.210
9.250	00915	0.000	6.350	0.000	0.000	13088.100
9.500	00930	0.000	6.350	0.000	0.000	13033.360
9.750	00945	0.000	6.350	0.000	0.000	12932.790
10.00	01000	0.000	6.350	0.000	0.000	12789.390
10.25	01015	0.000	6.350	0.000	0.000	12606.820
10.50	01030	0.000	6.350	0.000	0.000	12388.220
10.75	01045	0.000	6.350	0.000	0.000	12134.880
11.00	01100	0.000	6.350	0.000	0.000	11848.160
11.25	01115	0.000	6.350	0.000	0.000	11545.960
11.50	01130	0.000	6.350	0.000	0.000	11243.750
11.75	01145	0.000	6.350	0.000	0.000	10941.540
12.00	01200	0.000	6.350	0.000	0.000	10639.340
12.25	01215	0.000	6.350	0.000	0.000	10337.130
12.50	01230	0.000	6.350	0.000	0.000	10034.920

12.75	01245	0.000	6.350	0.000	0.000	9732.719
13.00	01300	0.000	6.350	0.000	0.000	9430.513
13.25	01315	0.000	6.350	0.000	0.000	9128.307
13.50	01330	0.000	6.350	0.000	0.000	8826.101
13.75	01345	0.000	6.350	0.000	0.000	8523.894
14.00	01400	0.000	6.350	0.000	0.000	8221.688
14.25	01415	0.000	6.350	0.000	0.000	7919.482
14.50	01430	0.000	6.350	0.000	0.000	7617.274
14.75	01445	0.000	6.350	0.000	0.000	7315.069
15.00	01500	0.000	6.350	0.000	0.000	7012.863
15.25	01515	0.000	6.350	0.000	0.000	6710.658
15.50	01530	0.000	6.350	0.000	0.000	6408.451
15.75	01545	0.000	6.350	0.000	0.000	6106.246
16.00	01600	0.000	6.350	0.000	0.000	5804.039
16.25	01615	0.000	6.350	0.000	0.000	5501.832
16.50	01630	0.000	6.350	0.000	0.000	5199.626
16.75	01645	0.000	6.350	0.000	0.000	4897.420
17.00	01700	0.000	6.350	0.000	0.000	4595.214
17.25	01715	0.000	6.350	0.000	0.000	4293.008
17.50	01730	0.000	6.350	0.000	0.000	3990.802
17.75	01745	0.000	6.350	0.000	0.000	3688.596
18.00	01800	0.000	6.350	0.000	0.000	3386.390
18.25	01815	0.000	6.350	0.000	0.000	3084.184
18.50	01830	0.000	6.350	0.000	0.000	2781.977
18.75	01845	0.000	6.350	0.000	0.000	2479.772
19.00	01900	0.000	6.350	0.000	0.000	2177.565
19.25	01915	0.000	6.350	0.000	0.000	1880.671
19.50	01930	0.000	6.350	0.000	0.000	1590.499
19.75	01945	0.000	6.350	0.000	0.000	1309.392
20.00	02000	0.000	6.350	0.000	0.000	1043.949
20.25	02015	0.000	6.350	0.000	0.000	807.696
20.50	02030	0.000	6.350	0.000	0.000	639.448
20.75	02045	0.000	6.350	0.000	0.000	497.135
21.00	02100	0.000	6.350	0.000	0.000	376.516
21.25	02115	0.000	6.350	0.000	0.000	275.221
21.50	02130	0.000	6.350	0.000	0.000	191.714
21.75	02145	0.000	6.350	0.000	0.000	124.719
22.00	02200	0.000	6.350	0.000	0.000	73.277
22.25	02215	0.000	6.350	0.000	0.000	35.619

6.350 1.470 4.878 4.878

Totals for Watershed in inches over 27690.52 acres
Rational Coefficient = 0.769 Peak Flow (cfs) = 13093.21

LAMPIRAN 6

Output Hidrograf Program SMADA
Periode Ulang 50 tahunan

Hydrograph Type :SCS 484 Hydrograph

Time (hr)	Time HHMM	Rain (in)	C Rain (in)	Infiltration (in)	Instant (cfs)	Outflow (cfs)
0.250	00015	0.254	0.254	0.163	10226.710	9.458
0.500	00030	0.332	0.587	0.211	13496.030	31.397
0.750	00045	0.368	0.954	0.195	19238.390	71.128
1.000	00100	0.488	1.442	0.196	32602.270	141.010
1.250	00115	0.749	2.191	0.213	59862.440	266.253
1.500	00130	1.484	3.675	0.257	136961.50	518.160
1.750	00145	0.572	4.248	0.067	56447.070	822.269
2.000	00200	0.445	4.693	0.044	44779.610	1167.792
2.250	00215	0.389	5.082	0.034	39596.720	1549.933
2.500	00230	0.353	5.435	0.028	36339.630	1965.682
2.750	00245	0.325	5.760	0.023	33681.360	2412.580
3.000	00300	0.304	6.064	0.020	31674.250	2888.771
3.250	00315	0.269	6.333	0.017	28127.420	3390.974
3.500	00330	0.254	6.587	0.015	26753.490	3917.919
3.750	00345	0.247	6.834	0.014	26101.160	4469.003
4.000	00400	0.233	7.068	0.012	24685.050	5042.916
4.250	00415	0.000	7.068	0.000	0.000	5616.829
4.500	00430	0.000	7.068	0.000	0.000	6190.742
4.750	00445	0.000	7.068	0.000	0.000	6764.655
5.000	00500	0.000	7.068	0.000	0.000	7338.567
5.250	00515	0.000	7.068	0.000	0.000	7912.480
5.500	00530	0.000	7.068	0.000	0.000	8486.393
5.750	00545	0.000	7.068	0.000	0.000	9060.305
6.000	00600	0.000	7.068	0.000	0.000	9634.218
6.250	00615	0.000	7.068	0.000	0.000	10208.130
6.500	00630	0.000	7.068	0.000	0.000	10782.050
6.750	00645	0.000	7.068	0.000	0.000	11355.960
7.000	00700	0.000	7.068	0.000	0.000	11929.870
7.250	00715	0.000	7.068	0.000	0.000	12495.870
7.500	00730	0.000	7.068	0.000	0.000	13044.200
7.750	00745	0.000	7.068	0.000	0.000	13568.130
8.000	00800	0.000	7.068	0.000	0.000	14053.240
8.250	00815	0.000	7.068	0.000	0.000	14469.020
8.500	00830	0.000	7.068	0.000	0.000	14736.550
8.750	00845	0.000	7.068	0.000	0.000	14863.780
9.000	00900	0.000	7.068	0.000	0.000	14916.530
9.250	00915	0.000	7.068	0.000	0.000	14907.040
9.500	00930	0.000	7.068	0.000	0.000	14841.490
9.750	00945	0.000	7.068	0.000	0.000	14724.240
10.00	01000	0.000	7.068	0.000	0.000	14558.710
10.25	01015	0.000	7.068	0.000	0.000	14349.060
10.50	01030	0.000	7.068	0.000	0.000	14098.860
10.75	01045	0.000	7.068	0.000	0.000	13809.590
11.00	01100	0.000	7.068	0.000	0.000	13482.790
11.25	01115	0.000	7.068	0.000	0.000	13138.590
11.50	01130	0.000	7.068	0.000	0.000	12794.380
11.75	01145	0.000	7.068	0.000	0.000	12450.180

12.00	01200	0.000	7.068	0.000	0.000	12105.970
12.25	01215	0.000	7.068	0.000	0.000	11761.770
12.50	01230	0.000	7.068	0.000	0.000	11417.560
12.75	01245	0.000	7.068	0.000	0.000	11073.350
13.00	01300	0.000	7.068	0.000	0.000	10729.150
13.25	01315	0.000	7.068	0.000	0.000	10384.940
13.50	01330	0.000	7.068	0.000	0.000	10040.740
13.75	01345	0.000	7.068	0.000	0.000	9696.533
14.00	01400	0.000	7.068	0.000	0.000	9352.326
14.25	01415	0.000	7.068	0.000	0.000	9008.123
14.50	01430	0.000	7.068	0.000	0.000	8663.918
14.75	01445	0.000	7.068	0.000	0.000	8319.712
15.00	01500	0.000	7.068	0.000	0.000	7975.506
15.25	01515	0.000	7.068	0.000	0.000	7631.301
15.50	01530	0.000	7.068	0.000	0.000	7287.095
15.75	01545	0.000	7.068	0.000	0.000	6942.889
16.00	01600	0.000	7.068	0.000	0.000	6598.685
16.25	01615	0.000	7.068	0.000	0.000	6254.479
16.50	01630	0.000	7.068	0.000	0.000	5910.274
16.75	01645	0.000	7.068	0.000	0.000	5566.069
17.00	01700	0.000	7.068	0.000	0.000	5221.863
17.25	01715	0.000	7.068	0.000	0.000	4877.657
17.50	01730	0.000	7.068	0.000	0.000	4533.452
17.75	01745	0.000	7.068	0.000	0.000	4189.247
18.00	01800	0.000	7.068	0.000	0.000	3845.041
18.25	01815	0.000	7.068	0.000	0.000	3500.836
18.50	01830	0.000	7.068	0.000	0.000	3156.630
18.75	01845	0.000	7.068	0.000	0.000	2812.425
19.00	01900	0.000	7.068	0.000	0.000	2468.220
19.25	01915	0.000	7.068	0.000	0.000	2129.926
19.50	01930	0.000	7.068	0.000	0.000	1799.196
19.75	01945	0.000	7.068	0.000	0.000	1479.271
20.00	02000	0.000	7.068	0.000	0.000	1177.743
20.25	02015	0.000	7.068	0.000	0.000	910.057
20.50	02030	0.000	7.068	0.000	0.000	720.148
20.75	02045	0.000	7.068	0.000	0.000	559.659
21.00	02100	0.000	7.068	0.000	0.000	423.732
21.25	02115	0.000	7.068	0.000	0.000	309.646
21.50	02130	0.000	7.068	0.000	0.000	215.640
21.75	02145	0.000	7.068	0.000	0.000	140.254
22.00	02200	0.000	7.068	0.000	0.000	82.388
22.25	02215	0.000	7.068	0.000	0.000	40.041

7.068 1.509 5.556 5.556

Totals for Watershed in inches over 27690.52 acres
Rational Coefficient = 0.786 Peak Flow (cfs) = 14916.53

LAMPIRAN 6

Output Hidrograf Program SMADA
Periode Ulang 100 tahunan

Hydrograph Type :SCS 484 Hydrograph

Time (hr)	Time HHMM	Rain (in)	C Rain (in)	Infiltration (in)	Instant (cfs)	Outflow (cfs)
0.250	00015	0.280	0.280	0.179	11256.100	10.410
0.500	00030	0.366	0.646	0.230	15157.470	34.837
0.750	00045	0.405	1.050	0.204	22425.420	80.004
1.000	00100	0.537	1.587	0.200	37556.510	159.904
1.250	00115	0.825	2.412	0.214	68172.500	302.850
1.500	00130	1.634	4.045	0.253	154134.80	588.341
1.750	00145	0.630	4.675	0.065	63118.230	932.206
2.000	00200	0.490	5.165	0.043	49964.710	1322.278
2.250	00215	0.428	5.593	0.033	44118.020	1753.150
2.500	00230	0.389	5.982	0.027	40444.640	2221.427
2.750	00245	0.358	6.340	0.022	37453.120	2724.341
3.000	00300	0.335	6.674	0.019	35195.800	3259.803
3.250	00315	0.296	6.970	0.016	31236.020	3824.154
3.500	00330	0.280	7.250	0.014	29695.580	4415.967
3.750	00345	0.272	7.522	0.013	28958.880	5034.562
4.000	00400	0.257	7.779	0.012	27377.070	5678.475
4.250	00415	0.000	7.779	0.000	0.000	6322.389
4.500	00430	0.000	7.779	0.000	0.000	6966.302
4.750	00445	0.000	7.779	0.000	0.000	7610.215
5.000	00500	0.000	7.779	0.000	0.000	8254.128
5.250	00515	0.000	7.779	0.000	0.000	8898.040
5.500	00530	0.000	7.779	0.000	0.000	9541.954
5.750	00545	0.000	7.779	0.000	0.000	10185.870
6.000	00600	0.000	7.779	0.000	0.000	10829.780
6.250	00615	0.000	7.779	0.000	0.000	11473.690
6.500	00630	0.000	7.779	0.000	0.000	12117.610
6.750	00645	0.000	7.779	0.000	0.000	12761.520
7.000	00700	0.000	7.779	0.000	0.000	13405.440
7.250	00715	0.000	7.779	0.000	0.000	14040.640
7.500	00730	0.000	7.779	0.000	0.000	14656.160
7.750	00745	0.000	7.779	0.000	0.000	15243.640
8.000	00800	0.000	7.779	0.000	0.000	15786.220
8.250	00815	0.000	7.779	0.000	0.000	16249.540
8.500	00830	0.000	7.779	0.000	0.000	16545.470
8.750	00845	0.000	7.779	0.000	0.000	16683.800
9.000	00900	0.000	7.779	0.000	0.000	16738.940
9.250	00915	0.000	7.779	0.000	0.000	16724.680
9.500	00930	0.000	7.779	0.000	0.000	16648.000
9.750	00945	0.000	7.779	0.000	0.000	16513.800
10.00	01000	0.000	7.779	0.000	0.000	16325.930
10.25	01015	0.000	7.779	0.000	0.000	16089.050
10.50	01030	0.000	7.779	0.000	0.000	15807.160
10.75	01045	0.000	7.779	0.000	0.000	15481.900
11.00	01100	0.000	7.779	0.000	0.000	15115.020
11.25	01115	0.000	7.779	0.000	0.000	14728.830
11.50	01130	0.000	7.779	0.000	0.000	14342.640
11.75	01145	0.000	7.779	0.000	0.000	13956.460

12.00	01200	0.000	7.779	0.000	0.000	13570.270
12.25	01215	0.000	7.779	0.000	0.000	13184.080
12.50	01230	0.000	7.779	0.000	0.000	12797.890
12.75	01245	0.000	7.779	0.000	0.000	12411.700
13.00	01300	0.000	7.779	0.000	0.000	12025.520
13.25	01315	0.000	7.779	0.000	0.000	11639.330
13.50	01330	0.000	7.779	0.000	0.000	11253.140
13.75	01345	0.000	7.779	0.000	0.000	10866.950
14.00	01400	0.000	7.779	0.000	0.000	10480.760
14.25	01415	0.000	7.779	0.000	0.000	10094.570
14.50	01430	0.000	7.779	0.000	0.000	9708.383
14.75	01445	0.000	7.779	0.000	0.000	9322.195
15.00	01500	0.000	7.779	0.000	0.000	8936.007
15.25	01515	0.000	7.779	0.000	0.000	8549.817
15.50	01530	0.000	7.779	0.000	0.000	8163.629
15.75	01545	0.000	7.779	0.000	0.000	7777.440
16.00	01600	0.000	7.779	0.000	0.000	7391.253
16.25	01615	0.000	7.779	0.000	0.000	7005.064
16.50	01630	0.000	7.779	0.000	0.000	6618.876
16.75	01645	0.000	7.779	0.000	0.000	6232.688
17.00	01700	0.000	7.779	0.000	0.000	5846.500
17.25	01715	0.000	7.779	0.000	0.000	5460.311
17.50	01730	0.000	7.779	0.000	0.000	5074.122
17.75	01745	0.000	7.779	0.000	0.000	4687.934
18.00	01800	0.000	7.779	0.000	0.000	4301.746
18.25	01815	0.000	7.779	0.000	0.000	3915.557
18.50	01830	0.000	7.779	0.000	0.000	3529.369
18.75	01845	0.000	7.779	0.000	0.000	3143.181
19.00	01900	0.000	7.779	0.000	0.000	2756.992
19.25	01915	0.000	7.779	0.000	0.000	2377.312
19.50	01930	0.000	7.779	0.000	0.000	2006.129
19.75	01945	0.000	7.779	0.000	0.000	1647.556
20.00	02000	0.000	7.779	0.000	0.000	1310.169
20.25	02015	0.000	7.779	0.000	0.000	1011.314
20.50	02030	0.000	7.779	0.000	0.000	799.968
20.75	02045	0.000	7.779	0.000	0.000	621.494
21.00	02100	0.000	7.779	0.000	0.000	470.425
21.25	02115	0.000	7.779	0.000	0.000	343.689
21.50	02130	0.000	7.779	0.000	0.000	239.300
21.75	02145	0.000	7.779	0.000	0.000	155.614
22.00	02200	0.000	7.779	0.000	0.000	91.397
22.25	02215	0.000	7.779	0.000	0.000	44.413

7.779 1.543 6.234 6.234

Totals for Watershed in inches over 27690.52 acres
Rational Coefficient = 0.802 Peak Flow (cfs) = 16738.94

LAMPIRAN 7
Input Data Rainfall

Rainfall Properties x

Exit [Icons] Total = 6.35 inches

Enter Rainfall Property Data

Total Rainfall Duration in hours	4
Time step for Rainfall in minutes	15
Total Rainfall in inches	6.35
Start Time of Rainfall (optional)	
Start Date of Rainfall (optional)	

Select Type of Rainfall Distribution

User Defined SCS Type I
 SCS Type IA SCS Type II
 SCS Type III SCS Type II FL
 From STM file Constant Intensity
 Clear

	Time (hrs)	Time (min)	Rainfall (inches)
1	0.25	15	0.229
2	0.50	30	0.298
3	0.75	45	0.330
4	1.00	100	0.438
5	1.25	115	0.673
6	1.50	130	1.334
7	1.75	145	0.514
8	2.00	200	0.400
9	2.25	215	0.349
10	2.50	230	0.318
11	2.75	245	0.292
12	3.00	300	0.273
13	3.25	315	0.241
14	3.50	330	0.229
15	3.75	345	0.222
16	4.00	400	0.210

Input Data Rainfall 25 tahunan

Rainfall Properties x

Exit [Icons] Total = 7.07 inches

Enter Rainfall Property Data

Total Rainfall Duration in hours	4
Time step for Rainfall in minutes	15
Total Rainfall in inches	7.067717
Start Time of Rainfall (optional)	
Start Date of Rainfall (optional)	

Select Type of Rainfall Distribution

User Defined SCS Type I
 SCS Type IA SCS Type II
 SCS Type III SCS Type II FL
 From STM file Constant Intensity
 Clear

	Time (hrs)	Time (min)	Rainfall (inches)
1	0.25	15	0.254
2	0.50	30	0.332
3	0.75	45	0.368
4	1.00	100	0.488
5	1.25	115	0.749
6	1.50	130	1.484
7	1.75	145	0.572
8	2.00	200	0.445
9	2.25	215	0.389
10	2.50	230	0.353
11	2.75	245	0.325
12	3.00	300	0.304
13	3.25	315	0.269
14	3.50	330	0.254
15	3.75	345	0.247
16	4.00	400	0.233

Input Data Rainfall 50 tahunan

Kondisi Kali Pesanggrahan (depan PA cengkareng)



Pintu Air Cengkareng (Daan Mogot)



Kondisi Kali Pesanggrahan daerah hilir (Kel. Kembangan Utara)



Saluran buangan sampah dari RT (Kel. Kembangan Utara)