

LAMPIRAN



LAMPIRAN

Lampiran 1. Proses Input Data

The screenshot displays the Expert Choice software interface. The main window shows the goal 'Prioritas Lokasi Check Dam' and the selected criterion 'Tingkat Erosi'. A list of alternatives (Sub DAS 1 to Sub DAS 7) is visible on the right. Below this, a comparison matrix is shown for 'Tingkat Erosi'.

Compare the relative preference with respect to: Tingkat Erosi

	Sub DAS 5	Sub DAS 7	Sub DAS 8	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 21	Sub DAS 21	Sub DAS 21	Sub DAS 21	Sub DAS 21
Sub DAS 1	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	1.0	3.0
Sub DAS 2	1.0	1.0	1.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	3.0
Sub DAS 3	1.0	1.0	1.0	2.0	2.0	3.0	3.0	2.0	3.0	3.0	3.0	1.0	2.0	2.0	3.0	3.0
Sub DAS 4	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	1.0	1.0
Sub DAS 5				2.0	2.0	2.0	3.0	2.0	3.0	2.0	3.0	1.0	2.0	2.0	3.0	3.0
Sub DAS 7			1.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	2.0	1.0	2.0	3.0	3.0
Sub DAS 8				1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	2.0	1.0	2.0	3.0	3.0
Sub DAS 10					2.0	1.0	2.0	1.0	2.0	1.0	2.0	2.0	1.0	2.0	3.0	3.0
Sub DAS 13						2.0	1.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	3.0	3.0
Sub DAS 14							2.0	1.0	2.0	1.0	2.0	2.0	1.0	2.0	3.0	3.0
Sub DAS 15								1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 16									2.0	2.0	1.0	2.0	2.0	1.0	2.0	3.0
Sub DAS 17										2.0	2.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 18											2.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 19												2.0	2.0	1.0	2.0	3.0
Sub DAS 20													2.0	2.0	3.0	3.0
Sub DAS 21																
Sub DAS 22																
Sub DAS 24																
Sub DAS 25																

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Sub DAS 24 9 8 7 6 5 4 3 2 | 2 3 4 5 6 7 8 9 Sub DAS 25

Compare the relative preference with respect to: Penggunaan lahan

	Sub DAS 5	Sub DAS 7	Sub DAS 8	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 21	Sub DAS 21	Sub DAS 21	Sub DAS 21	Sub DAS 21
Sub DAS 1	1.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 2	1.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 3	1.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 4	2.0	2.0	1.0	2.0	3.0	2.0	1.0	2.0	3.0	2.0	2.0	1.0	1.0	2.0	3.0	3.0
Sub DAS 5		1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 7			2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 8				2.0	3.0	2.0	1.0	2.0	3.0	2.0	2.0	1.0	1.0	2.0	3.0	3.0
Sub DAS 10					2.0	1.0	2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 13						1.0	3.0	2.0	1.0	2.0	2.0	3.0	2.0	1.0	1.0	1.0
Sub DAS 14							2.0	1.0	2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 15								2.0	3.0	2.0	2.0	1.0	1.0	2.0	3.0	3.0
Sub DAS 16									2.0	1.0	1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 17										2.0	2.0	3.0	3.0	2.0	1.0	1.0
Sub DAS 18											1.0	2.0	2.0	1.0	2.0	2.0
Sub DAS 19												2.0	2.0	1.0	2.0	2.0
Sub DAS 20													1.0	2.0	3.0	3.0
Sub DAS 21														2.0	3.0	3.0
Sub DAS 22															1.0	1.0
Sub DAS 24																1.0
Sub DAS 25																

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Sub DAS 24 9 8 7 6 5 4 3 2 | 2 3 4 5 6 7 8 9 Sub DAS 25

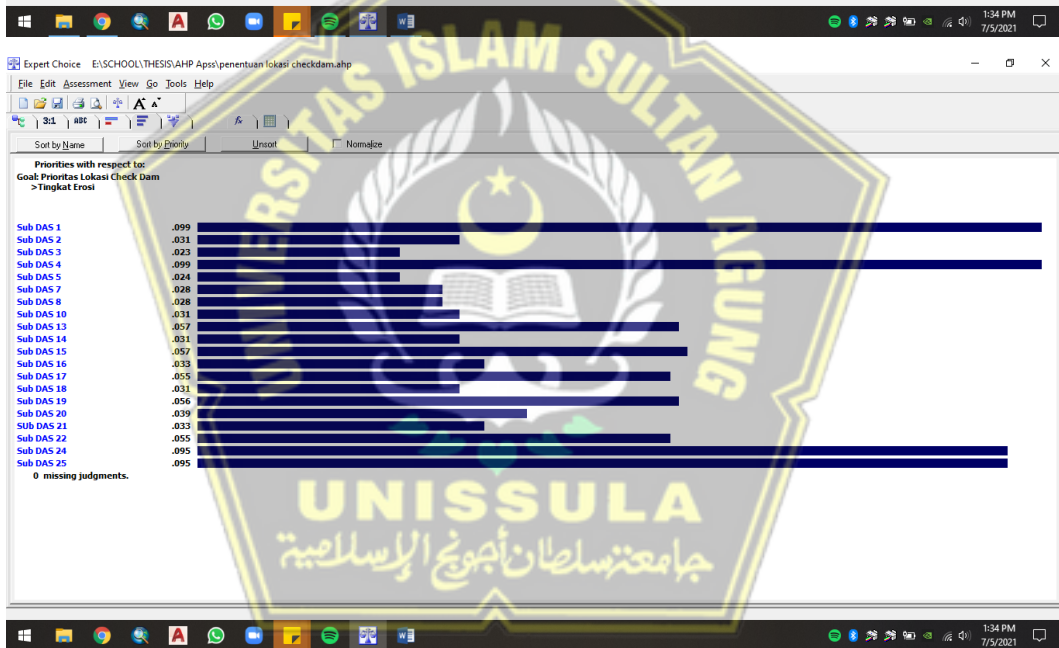
Compare the relative preference with respect to: Slope

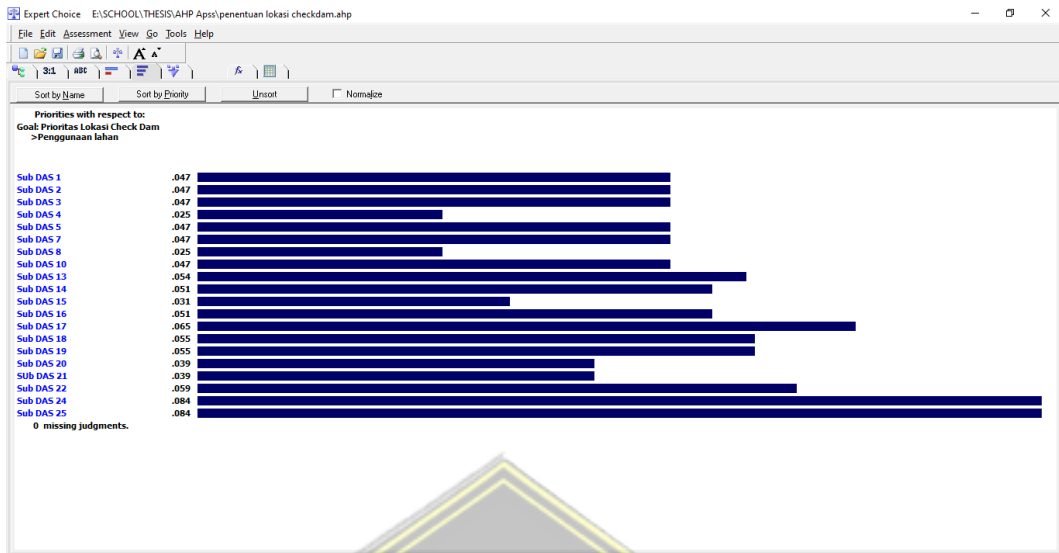
	Sub DAS 5	Sub DAS 7	Sub DAS 8	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 11	Sub DAS 21	Sub DAS 21	Sub DAS 21	Sub DAS 21	Sub DAS 21
Sub DAS 1	2.0	2.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	2.0	3.0	2.0	1.0	1.0	2.0	2.0
Sub DAS 2	2.0	2.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	2.0	3.0	2.0	1.0	1.0	2.0	2.0
Sub DAS 3	2.0	2.0	1.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	3.0
Sub DAS 4	1.0	1.0	1.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0	2.0	2.0	2.0	2.0	3.0
Sub DAS 5		1.0	1.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0	4.0	3.0	2.0	2.0	2.0	3.0
Sub DAS 7			1.0	2.0	3.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	3.0
Sub DAS 8				2.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	2.0	2.0	3.0
Sub DAS 10					2.0	2.0	1.0	2.0	1.0	3.0	2.0	2.0	2.0	2.0	2.0	3.0
Sub DAS 13						1.0	3.0	2.0	2.0	2.0	1.0	3.0	3.0	3.0	3.0	2.0
Sub DAS 14							3.0	2.0	2.0	2.0	1.0	3.0	3.0	3.0	3.0	2.0
Sub DAS 15								2.0	2.0	2.0	3.0	2.0	2.0	2.0	2.0	3.0
Sub DAS 16									2.0	1.0	3.0	3.0	2.0	2.0	2.0	3.0
Sub DAS 17										1.0	2.0	1.0	2.0	2.0	2.0	1.0
Sub DAS 18											1.0	2.0	2.0	2.0	2.0	1.0
Sub DAS 19												3.0	3.0	3.0	3.0	2.0
Sub DAS 20													2.0	2.0	2.0	1.0
Sub DAS 21														1.0	1.0	2.0
Sub DAS 22															1.0	2.0
Sub DAS 24																2.0
Sub DAS 25																

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Ideal mode	Pairwise	Pairwise	Pairwise
Alternative	Tingkat Erosi	Penggunaan lahan	Slope
✓ Sub DAS 1	1.000	560	364
✓ Sub DAS 2	.315	560	364
✓ Sub DAS 3	.236	560	182
✓ Sub DAS 4	1.000	.293	219
✓ Sub DAS 5	.244	560	219
✓ Sub DAS 7	.287	560	219
✓ Sub DAS 8	.287	.293	201
✓ Sub DAS 10	.311	560	369
✓ Sub DAS 13	.572	.646	963
✓ Sub DAS 14	.311	.605	963
✓ Sub DAS 15	.580	.373	281
✓ Sub DAS 16	.339	.605	409
✓ Sub DAS 17	.557	.776	632
✓ Sub DAS 18	.311	.659	595
✓ Sub DAS 19	.569	.659	1.000
✓ Sub DAS 20	.394	.469	629
✓ Sub DAS 21	.339	.469	404
✓ Sub DAS 22	.562	.705	404
✓ Sub DAS 24	.959	1.000	439
✓ Sub DAS 25	.959	1.000	683





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1.0 Goal

Goal: Prioritas Lokasi Check Dam

- Tingkat Erosi (L: .540)
- Penggunaan lahan (L: .163)
- Slope (L: .297)

Alternatives: Ideal mode

Sub DAS 1	0.72
Sub DAS 2	0.66
Sub DAS 3	0.27
Sub DAS 4	0.64
Sub DAS 5	0.28
Sub DAS 7	0.30

Information Document

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1.0 Goal

Hierarchy View

File Node Options

Goal: Prioritas Lokasi Check Dam

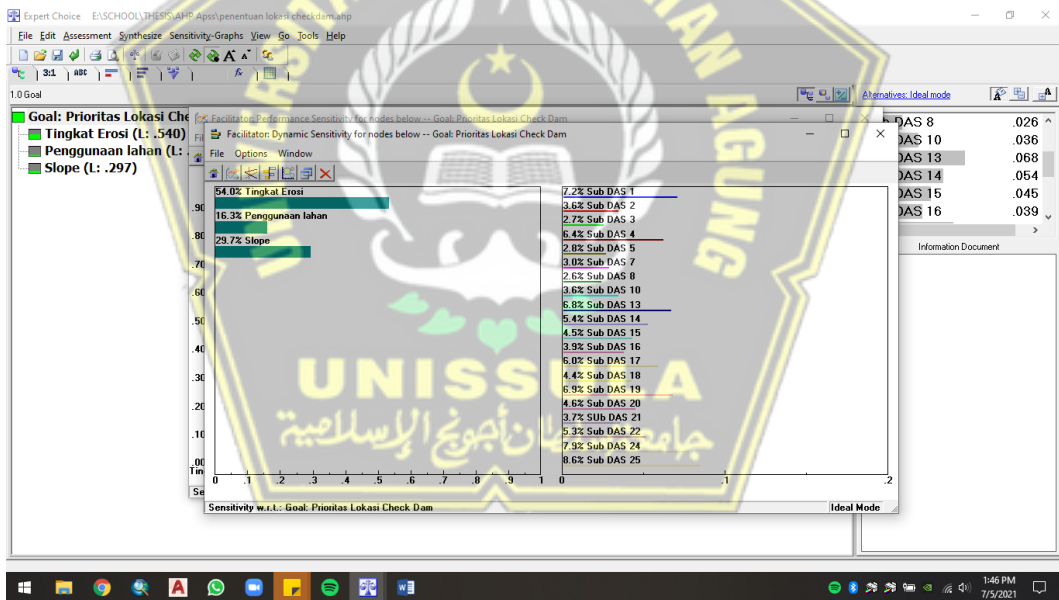
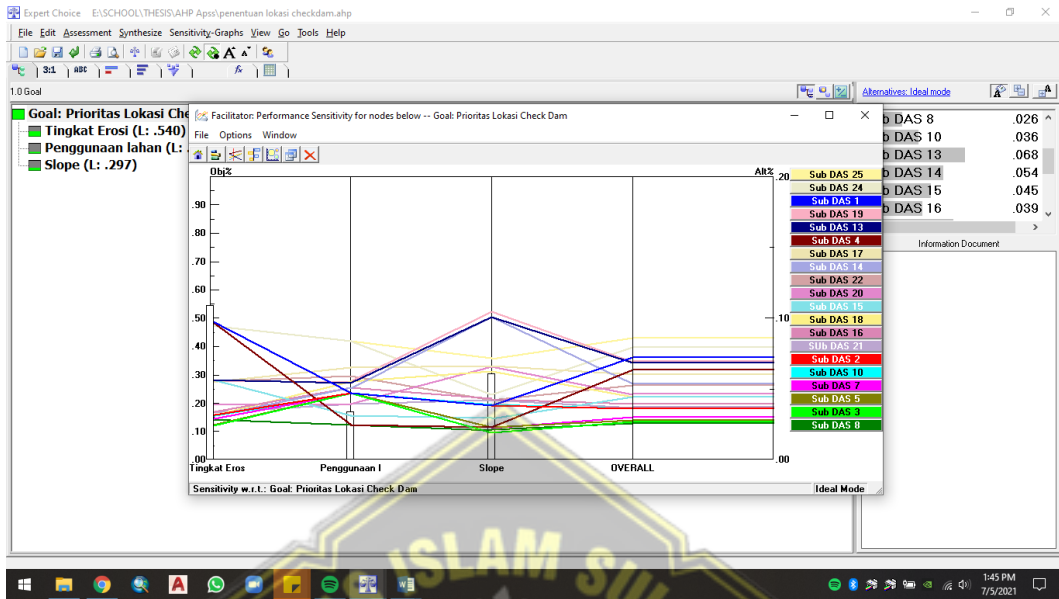
Tingkat Erosi | Penggunaan lahan | Slope

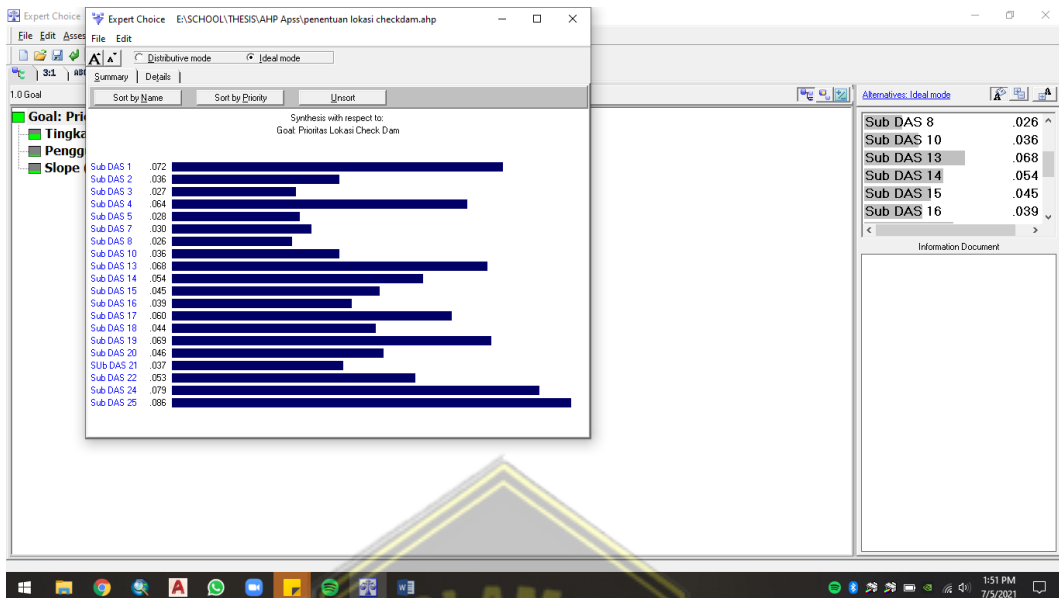
Alternatives: Ideal mode

Sub DAS 8	0.26
Sub DAS 10	0.66
Sub DAS 13	0.68
Sub DAS 14	0.54
Sub DAS 15	0.45
Sub DAS 16	0.39

Information Document

Lampiran 2. Hasil Analisa





Lampiran 3. Analisa Dispersi Curah Hujan

1. Distribusi Normal

Nilai k Distribusi Normal					
Periode Ulang (tahun)					
2	5	10	25	50	100
0.000	0.840	1.280	1.708	2.050	2.330

No.	Tahun	Rata-rata (Xrt) (mm)	k Normal	Standar Deviasi	XT (mm)
1	2	112.567	0.000	21.40	112.567
2	5		0.840		130.541
3	10		1.280		139.955
4	25		1.708		149.114
5	50		2.050		156.432
6	100		2.330		162.423

2. Distribusi Gumbel

n	Sn	Yn
15	1.0206	0.5128

Nilai Variabel Reduksi Gumbel (Ytr)					
Periode Ulang (tahun)					
2	5	10	25	50	100
0.3665	1.4999	2.2504	3.1985	3.9019	4.6012

No	T (Tahun)	Xrt (mm)	S	k Gumbel	Xt (mm)
1	2	112.567	21.397	-0.143	109.499
2	5			0.967	133.262
3	10			1.703	148.996
4	25			2.631	168.874
5	50			3.321	183.621
6	100			4.006	198.282

3. Distribusi Pearson

Nilai k Distribusi Pearson tipe III						
Cs	Periode Ulang (tahun)					
	2	5	10	25	50	100
0.8	-0.132	0.78	1.336	1.998	2.453	2.891
0.9	-0.148	0.769	1.339	2.018	2.498	2.957
0.882	-0.145	0.771	1.338	2.014	2.490	2.945

No.	T (Tahun)	Xrt (mm)	S	k Pearson III	Xt (mm)
1	2	112.567	21.397	-0.145	109.460
2	5			0.771	129.063
3	10			1.338	141.207
4	25			2.014	155.672
5	50			2.490	165.849
6	100			2.945	175.591

3. Distribusi Log Normal

Nilai k Distribusi Normal					
Periode Ulang (tahun)					
2	5	10	25	50	100
0.000	0.840	1.280	1.708	2.050	2.330

No	T (Tahun)	Log Xrt (mm)	S	k Log Normal	Log Xt (mm)	Xt (mm)
1	2	2.045	0.0779	0.000	2.04	110.83
2	5			0.840	2.11	128.86
3	10			1.280	2.14	139.45
4	25			1.708	2.18	150.58
5	50			2.050	2.20	160.11
6	100			2.330	2.23	168.36

4. Distribusi Log Pearson III

Nilai k Distribusi Pearson tipe III						
Cs	Periode Ulang (tahun)					
	2	5	10	25	50	100
0.4	-0.066	0.816	1.317	1.88	2.261	2.615
0.5	-0.083	0.808	1.323	1.91	2.311	2.686
0.457	-0.076	0.811	1.320	1.897	2.289	2.655

No	T (Tahun)	Log Xrt (mm)	S	k Log Person III	Log Xt (mm)	Xt (mm)
1	2	2.045	0.078	-0.076	2.039	109.337
2	5			0.811	2.108	128.203
3	10			1.320	2.148	140.463
4	25			1.897	2.192	155.776
5	50			2.289	2.223	167.138
6	100			2.655	2.252	178.481

Persyaratan Metode Sebaran

Distribusi	Parameter	Hasil Perhitungan	Kesimpulan
Normal	$C_s \approx 0$	0.882	Tidak memenuhi
	$C_k \approx 3$	3.434	
Gumbel	$C_s \approx 1.139$	0.882	Tidak memenuhi
	$C_k \approx 5.402$	3.434	
Log Normal	$C_s \approx 1.137$	0.457	Tidak memenuhi
	$C_v \approx 0.06$	0.038	
	$C_s/C_v = 3$	11.98	
Log Pearson III	Tidak ada batasan	0.457	Memenuhi
		0.038	

GUMBEL

N	Yn	n	Yn	n	yn	n	Yn
10	0.4952	34	0.5396	58	0.5515	82	0.5672
11	0.4996	35	0.5402	59	0.5518	83	0.5574
12	0.5035	36	0.541	60	0.5521	84	0.5576
13	0.507	37	0.5418	61	0.5524	85	0.5578
14	0.51	38	0.5424	62	0.5527	86	0.558
15	0.5128	39	0.543	63	0.553	87	0.5581
16	0.5157	40	0.5436	64	0.5533	88	0.5583
17	0.5181	41	0.5442	65	0.5535	89	0.5585
18	0.5202	42	0.5448	66	0.5538	90	0.5586
19	0.522	43	0.5453	67	0.554	91	0.5587
20	0.5236	44	0.5458	68	0.5543	92	0.5589
21	0.5252	45	0.5463	69	0.5545	93	0.5591
22	0.5268	46	0.5468	70	0.5548	94	0.5592
23	0.5283	47	0.5473	71	0.555	95	0.5593
24	0.5296	48	0.5477	72	0.5552	96	0.5595
25	0.5309	49	0.5481	73	0.5555	97	0.5596
26	0.532	50	0.5485	74	0.5557	98	0.5598
27	0.5332	51	0.5489	75	0.5559	99	0.5599
28	0.5343	52	0.5493	76	0.5561	100	0.56
29	0.5353	53	0.5497	77	0.5563		
30	0.5362	54	0.5501	78	0.5565		
31	0.5371	55	0.5504	79	0.5567		
32	0.538	56	0.5508	80	0.5569		
33	0.5388	57	0.5511	81	0.557		

Sumber : Hidrologi Teknik. C.D. Soemarto. Edisi Ke-2. 1987:236

n	Sn	n	Sn	n	Sn	n	Sn
10	0.9496	33	1.1226	56	1.1696	79	1.1930
11	0.9676	34	1.1255	57	1.1708	80	1.1938
12	0.9833	35	1.1286	58	1.1721	81	1.1945
13	0.9971	36	1.1313	59	1.1734	82	1.1953
14	1.0095	37	1.1339	60	1.1747	83	1.1959
15	1.0206	38	1.1363	61	1.1759	84	1.1967
16	1.0316	39	1.1388	62	1.1770	85	1.1973
17	1.0411	40	1.1413	63	1.1782	86	1.1987
18	1.0493	41	1.1436	64	1.1793	87	1.1987
19	1.0565	42	1.1458	65	1.1803	88	1.1994
20	1.0628	43	1.1480	66	1.1814	89	1.2001
21	1.0696	44	1.1499	67	1.1824	90	1.2007
22	1.0754	45	1.1519	68	1.1834	91	1.2013
23	1.0811	46	1.1538	69	1.1844	92	1.2020
24	1.0864	47	1.1557	70	1.1854	93	1.2026
25	1.0915	48	1.1574	71	1.1854	94	1.2032
26	1.0861	49	1.1590	72	1.1873	95	1.2038
27	1.1004	50	1.1607	73	1.1881	96	1.2044
28	1.1047	51	1.1623	74	1.1890	97	1.2049
29	1.1086	52	1.1638	75	1.1898	98	1.2055
30	1.1124	53	1.1658	76	1.1906	99	1.2060
31	1.1159	54	1.1667	77	1.1915	100	1.2065
32	1.1193	55	1.1681	78	1.1923		

Sumber : Hidrologi Teknik. C.D. Soemarto. Edisi Ke-2. 1987:237

Koef.	Waktu Balik (Tahun)															
	1.01	1.05	1.11	1.25	1.667	2	2.5	5	10	20	25	50	100	200	1000	
Cs	Peluang (%)															
	99	95	90	80	60	50	40	20	10	5	4	2	1	0.5	0.1	
3	-0.667	-0.665	-0.66	-0.636	-0.476	-0.396	-0.124	0.42	1.18	2.095	2.278	3.152	4.051	4.97	7.25	
2.5	-0.799	-0.79	-0.771	-0.711	-0.477	-0.36	-0.067	0.518	1.25	2.093	2.262	3.048	3.845	4.652	6.6	
2.2	-0.905	-0.882	-0.844	-0.752	-0.471	-0.33	-0.029	0.574	1.284	2.081	2.24	2.97	3.705	4.444	6.2	
2	-0.99	-0.949	-0.895	-0.777	-0.464	-0.307	-0.002	0.609	1.302	2.066	2.219	2.912	3.605	4.298	5.91	
1.8	-1.087	-1.02	-0.945	-0.799	-0.454	-0.282	0.026	0.643	1.318	2.047	2.193	2.848	3.499	4.147	5.66	
1.6	-1.197	-1.093	-0.994	-0.817	-0.442	-0.254	0.056	0.675	1.329	2.024	2.163	2.78	3.388	3.99	5.39	
1.4	-1.318	-1.168	-1.041	-0.832	-0.427	-0.225	0.085	0.705	1.337	1.996	2.128	2.706	3.271	3.828	5.11	
1.2	-1.449	-1.243	-1.086	-0.844	-0.411	-0.195	0.114	0.732	1.34	1.963	2.087	2.626	3.149	3.661	4.82	
1	-1.588	-1.317	-1.128	-0.852	-0.393	-0.164	0.143	0.758	1.34	1.926	2.043	2.542	3.022	3.489	4.54	
0.9	-1.66	-1.353	-1.147	-0.854	-0.383	-0.148	0.158	0.769	1.339	1.905	2.018	2.498	2.957	3.401	4.395	
0.8	-1.733	-1.388	-1.116	-0.856	-0.373	-0.132	0.172	0.78	1.336	1.888	1.998	2.453	2.891	3.312	4.25	
0.7	-1.806	-1.423	-1.183	-0.857	-0.363	-0.116	0.186	0.79	1.333	1.861	1.967	2.407	2.824	3.223	4.105	
0.6	-1.88	-1.458	-1.2	-0.857	-0.352	-0.099	0.201	0.8	1.328	1.837	1.939	2.359	2.755	3.132	3.96	
0.5	-1.955	-1.491	-1.216	-0.856	-0.341	-0.083	0.214	0.808	1.323	1.812	1.91	2.311	2.686	3.041	3.815	
0.4	-2.029	-1.524	-1.231	-0.855	-0.329	-0.066	0.228	0.816	1.317	1.786	1.88	2.261	2.615	2.949	3.67	
0.3	-2.104	-1.555	-1.245	-0.853	-0.318	-0.05	0.241	0.824	1.309	1.759	1.849	2.211	2.544	2.856	3.525	
0.2	-2.178	-1.586	-1.258	-0.85	-0.305	-0.033	0.255	0.83	1.301	1.732	1.818	2.159	2.472	2.763	3.38	
0.1	-2.252	-1.616	-1.27	-0.846	-0.293	-0.017	0.267	0.836	1.292	1.703	1.785	2.107	2.4	2.67	3.235	
-0.2	-2.326	-1.645	-1.282	-0.842	-0.281	0	0.281	0.842	1.282	1.673	1.751	2.054	2.326	2.576	3.09	
-0.3	-2.4	-1.673	-1.292	-0.836	-0.267	0.017	0.29	0.836	1.27	1.642	1.716	2	2.252	2.482	2.95	
-0.4	-2.472	-1.7	-1.301	-0.83	-0.255	0.033	0.305	0.85	1.258	1.61	1.68	1.945	2.178	2.388	2.81	
-0.5	-2.544	-1.726	-1.309	-0.824	-0.241	0.05	0.318	0.853	1.245	1.577	1.643	1.89	2.104	2.294	2.675	
-0.6	-2.615	-1.75	-1.317	-0.816	-0.228	0.066	0.329	0.855	1.231	1.544	1.606	1.834	2.029	2.201	2.54	
-0.7	-2.686	-1.774	-1.323	-0.808	-0.214	0.083	0.341	0.856	1.216	1.509	1.567	1.777	1.955	2.108	2.4	
-0.8	-2.755	-1.797	-1.328	-0.8	-0.201	0.099	0.352	0.857	1.2	1.473	1.528	1.72	1.88	2.016	2.275	
-0.9	-2.824	-1.819	-1.333	-0.79	-0.186	0.116	0.363	0.857	1.183	1.437	1.488	1.663	1.806	1.926	2.15	
-1	-2.891	-1.839	-1.336	-0.78	-0.172	0.132	0.373	0.856	1.166	1.401	1.448	1.606	1.733	1.837	2.035	
-1.1	-2.957	-1.858	-1.339	-0.769	-0.158	0.148	0.383	0.854	1.147	1.364	1.407	1.549	1.66	1.749	1.91	
-1.2	-3.022	-1.877	-1.34	-0.758	-0.143	0.164	0.393	0.852	1.128	1.326	1.366	1.492	1.588	1.664	1.8	
-1.3	-3.149	-1.91	-1.34	-0.732	-0.114	0.195	0.411	0.844	1.086	1.249	1.282	1.379	1.449	1.501	1.625	
-1.4	-3.271	-1.938	-1.337	-0.705	-0.085	0.225	0.427	0.832	1.041	1.172	1.198	1.27	1.318	1.351	1.465	
-1.6	-3.388	-1.962	-1.329	-0.675	-0.056	0.254	0.442	0.817	0.994	1.096	1.116	1.166	1.197	1.216	1.28	
-1.8	-3.499	-1.981	-1.318	-0.643	-0.026	0.282	0.454	0.799	0.945	1.02	1.035	1.069	1.087	1.097	1.13	
-2	-3.605	-1.996	-1.302	-0.6	0.005	0.307	0.464	0.777	0.895	0.948	0.959	0.98	0.99	0.995	1	
-2.2	-3.705	-2.006	-1.284	-0.574	0.029	0.33	0.471	0.752	0.844	0.881	0.888	0.9	0.905	0.907	0.91	
-2.5	-3.845	-2.012	-1.25	-0.518	0.067	0.36	0.477	0.711	0.771	0.789	0.793	0.798	0.799	0.8	0.802	
-3	-4.051	-2.003	-1.18	-0.42	0.124	0.396	0.476	0.636	0.66	0.665	0.666	0.666	0.667	0.667	0.668	

Uji Chi-Square

$$G = 1 + 3.322 \log n$$

$$G = 4.91$$

$$\approx 5$$

$$Dk = G - 3$$

$$Dk = 2$$

$$Ef = n/G$$

$$Ef = 3.00$$

$$\Delta X = (X_{maks} - X_{min}) / (G - 1)$$

$$= 0.07$$

$$X_{awal} = X_{min} - 0.5 \Delta X$$

$$= 1.90$$

$$X_{akhir} = X_{max} + 0.5 \Delta X$$

$$= 2.27$$

$$\Delta X = (\log X_{max} - \log X_{min}) / (G - 1)$$

$$X_{awal} = \log X_{min} - 1/2 \Delta X$$

$$X_{akhir} = \log X_{max} + 1/2 \Delta X$$

No.	Probabilitas (%)	Ef	Of	Ef-Of	(Ef-Of) ² /Ei
1	1.90 < X < 1.96	3	4	-1	0.33
2	1.97 < X < 2.02	3	1	2	1.33
3	2.03 < X < 2.08	3	6	-3	3.00
4	2.09 < X < 2.14	3	3	0	0.00
5	X > 2.14	3	1	2	1.33
		15	15	0	6.00

X² tabel dengan a = 5% DK = 2 -> 7.261

X² tabel > X² hitung

Diterima

Dk	α derajat kepercayaan							
	0,995	0,99	0,975	0,95	0,05	0,025	0,01	0,005
1	0,0000393	0,000157	0,000982	0,00393	3,841	5,024	6,635	7,879
2	0,0100	0,0201	0,0506	0,103	5,991	7,378	9,210	10,597
3	0,0717	0,115	0,216	0,352	7,815	9,348	11,345	12,838
4	0,207	0,297	0,484	0,711	9,488	11,143	13,277	14,860
5	0,412	0,554	0,831	1,145	11,070	12,832	15,086	16,750
6	0,676	0,872	1,237	1,635	12,592	14,449	16,812	18,548
7	0,989	1,239	1,690	2,167	14,067	16,013	18,475	20,278
8	1,344	1,646	2,180	2,733	15,507	17,535	20,090	21,955
9	1,735	2,088	2,700	3,325	16,919	19,023	21,666	23,589
10	2,156	2,558	3,247	3,940	18,307	20,483	23,209	25,188
11	2,603	3,053	3,816	4,575	19,675	21,920	24,725	26,757
12	3,074	3,571	4,404	5,226	21,026	23,337	26,217	28,300
13	3,565	4,107	5,009	5,892	22,362	24,736	27,688	29,819
14	4,075	4,660	5,629	6,571	23,685	26,119	29,141	31,319
15	4,601	5,229	6,262	7,261	24,996	27,488	30,578	32,801
16	5,142	5,812	6,908	7,962	26,296	28,845	32,000	34,267
17	5,697	6,408	7,564	8,672	27,587	30,191	33,409	35,718
18	6,265	7,015	8,231	9,390	28,869	31,526	34,805	37,156
19	6,844	7,633	8,907	10,117	30,144	32,852	36,191	38,582
20	7,434	8,260	9,591	10,851	31,410	34,170	37,566	39,997
21	8,034	8,897	10,283	11,591	32,671	35,479	38,932	41,401
22	8,643	9,542	10,982	12,338	33,924	36,781	40,289	42,796
23	9,260	10,196	11,689	13,091	36,172	38,076	41,638	44,181
24	9,886	10,856	12,401	13,848	36,415	39,364	42,980	45,558
25	10,520	11,524	13,120	14,611	37,652	40,646	44,314	46,928
26	11,160	12,198	13,844	15,379	38,885	41,923	45,642	48,290
27	11,808	12,879	14,573	16,151	40,113	43,194	46,963	49,645
28	12,461	13,565	15,308	16,928	41,337	44,461	48,278	50,993
29	13,121	14,256	16,047	17,708	42,557	45,722	49,588	52,336
30	13,787	14,953	16,791	18,493	43,773	46,979	50,892	53,672

Sumber: Bonnier,1980

Lampiran 4. Analisa Debit Banjir

I. Karakteristik DAS dan Hujan			
1	Nama Sub DAS	=	Sub DAS 1
2	Luas Daerah Aliran Sungai (Adas)	=	16.040 km ²
3	Panjang Sungai Utama (L)	=	7.229 km
4	Kemiringan Sungai (S)	=	1.886
5	Tinggi Hujan Satuan (R)	=	1.000 mm
6	Durasi Hujan Satuan (Tr)	=	1.000 Jam
II. Perhitungan Waktu Puncak (Tp) Dan Waktu Dasar (Tb)			
1	Koefisien waktu (Ct)	=	1.000
2	Time Lag (TL)		jam
	$TL=Ct*0.21*L^{0.7}$; L < 15km	=	L < 15km
	$TL=Ct*(0.527+0.058*L)$; L ≥ 15km		0.839
3	Waktu Puncak		
	TP=1.6TL	=	1.342 Jam
4	Waktu Dasar		
	TB/TP	=	20.00 (Ratio TB/TP)
	TB	=	26.84 Jam
III. Debit Puncak (QP)			
1	Cp. Koefisien Puncak (Cp)	=	1.000
2	Alpha	=	2.500
3	Betha	=	0.720
4	Luas HSS (lihat Bag-IV, Jumlah Kol-4)	=	1.766
5	$Qp=1/(3.6*Tp)*(ADAS/AHSS)$	=	1.880 m ³ /s
6	Volume Hujan (VDAS=R*ADAS*1000)	=	16040 m ³
7	VHSS (Bag IV, Jumlah kolom-6)	=	16040 m ³
8	DRO=VHSS/ADAS/1000	=	1.000 mm

IV. Perhitungan HSS ITB-2					
T (jam)	HSS Tak Berdimensi			HSS Berdimensi	
	t=T/Tp	q=Q/Qp	A	Q=qxQp	V(m ³)
(1)	(2)	(3)	(4)	(5)=(3)*Qp	(6)
0.00	0.000	0.000	0.000	0.000	0.000
0.10	0.075	0.002	0.000	0.003	0.513
1.00	0.745	0.479	0.161	0.901	1464.877
1.34	1.000	1.000	0.188	1.880	1711.302
2.00	1.491	0.702	0.418	1.321	3791.789
3.00	2.236	0.411	0.415	0.772	3767.051
4.00	2.981	0.240	0.243	0.452	2202.752
5.00	3.726	0.140	0.142	0.264	1288.041
6.00	4.472	0.082	0.083	0.154	753.171
7.00	5.217	0.048	0.048	0.090	440.411
8.00	5.962	0.028	0.028	0.053	257.527
9.00	6.707	0.016	0.017	0.031	150.587
10.00	7.453	0.010	0.010	0.018	88.054
11.00	8.198	0.006	0.006	0.011	51.489
12.00	8.943	0.003	0.003	0.006	30.108
13.00	9.688	0.002	0.002	0.004	17.605
14.00	10.434	0.001	0.001	0.002	10.295
15.00	11.179	0.001	0.001	0.001	6.020
16.00	11.924	0.000	0.000	0.001	3.520
17.00	12.669	0.000	0.000	0.000	2.058
18.00	13.415	0.000	0.000	0.000	1.204
19.00	14.160	0.000	0.000	0.000	0.704
20.00	14.905	0.000	0.000	0.000	0.412
21.00	15.650	0.000	0.000	0.000	0.241
22.00	16.396	0.000	0.000	0.000	0.141
23.00	17.141	0.000	0.000	0.000	0.082
24.00	17.886	0.000	0.000	0.000	0.048
	Luas HSS	1.76627	Vol (m³)	16040.00	
			DRO (mm)	1.00	

5 tahunan							
Waktu (jam)	HSS ITB-2	Tinggi Hujan (mm/jam)					Hidrograf Total
		1.00	2.00	3.00	4.00	5.00	
		14.995	3.897	2.733	2.177	1.838	
0.00	0.0000	0.0000	*	*	*	*	0.0000
0.10	0.0029	0.0427	0.0000	*	*	*	0.0427
1.00	0.9014	13.5161	0.0111	0.0000	*	*	13.5272
1.34	1.8800	28.1895	3.5131	0.0078	0.0000	*	31.7104
2.00	1.3206	19.8019	7.3270	2.4638	0.0062	0.0000	29.5989
3.00	0.7722	11.5790	5.1469	5.1385	1.9622	0.0052	23.8319
4.00	0.4515	6.7707	3.0096	3.6096	4.0925	1.6572	19.1396
5.00	0.2640	3.9591	1.7598	2.1107	2.8748	3.4562	14.1606
6.00	0.1544	2.3151	1.0290	1.2342	1.6810	2.4278	8.6872
7.00	0.0903	1.3537	0.6017	0.7217	0.9830	1.4197	5.0798
8.00	0.0528	0.7916	0.3519	0.4220	0.5748	0.8301	2.9703
9.00	0.0309	0.4629	0.2057	0.2468	0.3361	0.4854	1.7369
10.00	0.0181	0.2707	0.1203	0.1443	0.1965	0.2838	1.0156
11.00	0.0106	0.1583	0.0703	0.0844	0.1149	0.1660	0.5939
12.00	0.0062	0.0925	0.0411	0.0493	0.0672	0.0971	0.3473
13.00	0.0036	0.0541	0.0241	0.0288	0.0393	0.0568	0.2031
14.00	0.0021	0.0316	0.0141	0.0169	0.0230	0.0332	0.1187
15.00	0.0012	0.0185	0.0082	0.0099	0.0134	0.0194	0.0694
16.00	0.0007	0.0108	0.0048	0.0058	0.0079	0.0113	0.0406
17.00	0.0004	0.0063	0.0028	0.0034	0.0046	0.0066	0.0237
18.00	0.0002	0.0037	0.0016	0.0020	0.0027	0.0039	0.0139
19.00	0.0001	0.0022	0.0010	0.0012	0.0016	0.0023	0.0081
20.00	0.0001	0.0013	0.0006	0.0007	0.0009	0.0013	0.0047
21.00	0.0000	0.0007	0.0003	0.0004	0.0005	0.0008	0.0028
22.00	0.0000	0.0004	0.0002	0.0002	0.0003	0.0005	0.0016
23.00	0.0000	0.0003	0.0001	0.0001	0.0002	0.0003	0.0009
24.00	0.0000	0.0001	0.0001	0.0001	0.0001	0.0002	0.0006
							31.7104

100 tahunan							
Waktu (jam)	HSS ITB-2	Tinggi Hujan (mm/jam)					Hidrograf Total
		1.00	2.00	3.00	4.00	5.00	
		20.875	5.426	3.805	3.031	2.559	
0.00	0.0000	0.0000	*	*	*	*	0.0000
0.10	0.0029	0.0595	0.0000	*	*	*	0.0595
1.00	0.9014	18.8167	0.0155	0.0000	*	*	18.8322
1.34	1.8800	39.2446	4.8908	0.0108	0.0000	*	44.1462
2.00	1.3206	27.5677	10.2004	3.4300	0.0086	0.0000	41.2067
3.00	0.7722	16.1200	7.1653	7.1537	2.7318	0.0073	33.1780
4.00	0.4515	9.4260	4.1899	5.0252	5.6974	2.3070	26.6455
5.00	0.2640	5.5118	2.4500	2.9384	4.0022	4.8116	19.7140
6.00	0.1544	3.2230	1.4326	1.7182	2.3403	3.3800	12.0940
7.00	0.0903	1.8846	0.8377	1.0047	1.3684	1.9764	7.0719
8.00	0.0528	1.1020	0.4898	0.5875	0.8002	1.1557	4.1352
9.00	0.0309	0.6444	0.2864	0.3435	0.4679	0.6758	2.4180
10.00	0.0181	0.3768	0.1675	0.2009	0.2736	0.3952	1.4139
11.00	0.0106	0.2203	0.0979	0.1175	0.1600	0.2311	0.8268
12.00	0.0062	0.1288	0.0573	0.0687	0.0936	0.1351	0.4835
13.00	0.0036	0.0753	0.0335	0.0402	0.0547	0.0790	0.2827
14.00	0.0021	0.0441	0.0196	0.0235	0.0320	0.0462	0.1653
15.00	0.0012	0.0258	0.0115	0.0137	0.0187	0.0270	0.0967
16.00	0.0007	0.0151	0.0067	0.0080	0.0109	0.0158	0.0565
17.00	0.0004	0.0088	0.0039	0.0047	0.0064	0.0092	0.0331
18.00	0.0002	0.0052	0.0023	0.0027	0.0037	0.0054	0.0193
19.00	0.0001	0.0030	0.0013	0.0016	0.0022	0.0032	0.0113
20.00	0.0001	0.0018	0.0008	0.0009	0.0013	0.0018	0.0066
21.00	0.0000	0.0010	0.0005	0.0005	0.0007	0.0011	0.0039
22.00	0.0000	0.0006	0.0003	0.0003	0.0004	0.0006	0.0023
23.00	0.0000	0.0004	0.0002	0.0002	0.0003	0.0004	0.0013
24.00	0.0000	0.0002	0.0001	0.0001	0.0001	0.0002	0.0008
							44.1462

t (waktu)	Kala Ulang (m ³ /dt)					
	2th-an	5th-an	10th-an	25th-an	50th-an	100th-an
0.00	0.000	0.000	0.000	0.000	0.000	0.000
0.10	0.036	0.043	0.047	0.052	0.056	0.060
1.00	11.537	13.527	14.821	16.436	17.635	18.832
1.34	27.044	31.710	34.743	38.530	41.341	44.146
2.00	25.243	29.599	32.429	35.965	38.588	41.207
3.00	20.325	23.832	26.111	28.957	31.069	33.178
4.00	16.323	19.140	20.970	23.256	24.952	26.646
5.00	12.077	14.161	15.515	17.206	18.461	19.714
6.00	7.409	8.687	9.518	10.555	11.325	12.094
7.00	4.332	5.080	5.566	6.172	6.622	7.072
8.00	2.533	2.970	3.254	3.609	3.872	4.135
9.00	1.481	1.737	1.903	2.110	2.264	2.418
10.00	0.866	1.016	1.113	1.234	1.324	1.414
11.00	0.506	0.594	0.651	0.722	0.774	0.827
12.00	0.296	0.347	0.380	0.422	0.453	0.483
13.00	0.173	0.203	0.222	0.247	0.265	0.283
14.00	0.101	0.119	0.130	0.144	0.155	0.165
15.00	0.059	0.069	0.076	0.084	0.091	0.097
16.00	0.035	0.041	0.044	0.049	0.053	0.057
17.00	0.020	0.024	0.026	0.029	0.031	0.033
18.00	0.012	0.014	0.015	0.017	0.018	0.019
19.00	0.007	0.008	0.009	0.010	0.011	0.011
20.00	0.004	0.005	0.005	0.006	0.006	0.007
21.00	0.002	0.003	0.003	0.003	0.004	0.004
22.00	0.001	0.002	0.002	0.002	0.002	0.002
23.00	0.001	0.001	0.001	0.001	0.001	0.001
24.00	0.000	0.001	0.001	0.001	0.001	0.001
Qmaks	27.044	31.710	34.743	38.530	41.341	44.146

