BAB V
ANALISIS LAJU SEDIMENTASI

Laju sedimentasi pada studi ini dianalisis dengan menggunakan metode USLE (Universal Soil Loss Equation). Prinsip pokok dari metode tersebut adalah bahwa proses terjadinya erosi dan sedimentasi pada satu daerah pengaliran dipengaruhi oleh tingkat erosivitas dan erodibilitas.

5.1 DATA MEKANIKA TANAH

Data tanah diuji di laboratorium dengan mengambil sampel tanah secara tak terganggu (*undisturb sample*) pada dua titik lokasi. Seperti yang dilakukan oleh Cahaya Persada (2004), data tanah diketahui sebagai berikut :

Tabel 5.1 Data tanah pada lokasi rencana BPS

No.	Sifat Fisik/Teknis	Titik bor I	Titik bor II
1	Kedalaman sampel	-1,0 s.d. -1,5	-1,0 s.d. -2,0
2	*Water content* (%)	26,00	27,50
3	*Specific gravity*	2,709	2,710
4	*Unit weight* (gr/cm^3)	1,6860	1,6959
5	*Dry unit weight* (gr/cm^3)	1,3386	1,3301
6	*Porosity* (%)	50,59	50,92
7	*Void ratio* (e)	1,0238	1,0374
8	*Grain size*	Pasir kerikilan	Pasir kerikilan
9	*Kohesi* (kg/cm^2)	0,09	0,07
10	*Internal angle of friction(degree)*	28	32

(sumber: Cahaya Persada, 2004)

5.2 PERHITUNGAN FAKTOR EROSIVITAS HUJAN (*R*)

$$R = \sum_{i=1}^{n} EI_{30} \qquad (2.2)$$

$$EI_{30} = 6{,}119 \times Pb^{1{,}211} / N^{0{,}474} \times P_{max}^{0{,}526} \qquad (2.3)$$

Tabel 5.2 Perhitungan curah hujan bulanan (Pb)

ket	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Jumlah
januari(cm)	52.902	66.737	64.428	63.678	83.431	81.943	57.008	42.606	57.832	60.316	66.610	69.790	59.779	32.651	38.259	55.840	73.913	40.935	44.687	36.435	1149,780
pmax	5.810	5.190	6.190	7.088	7.612	9.034	7.548	4.557	6.265	7.093	4.708	11.255	6.387	3.116	4.242	5.727	7.491	5.127	5.037	5.095	
N hari	27	29	28	30	31	30	27	29	29	31	30	30	27	31	28	29	31	26	28	29	
pebruari(cm)	55.746	84.131	75.790	40.401	57.456	63.176	48.751	49.063	36.203	51.242	29.601	43.779	91.180	45.736	43.698	92.999	41.695	36.377	41.287	24.409	1052,720
pmax	5.403	7.302	9.343	3.949	6.695	9.570	4.584	4.681	6.249	6.239	4.058	4.690	9.428	4.495	11.070	9.938	3.610	4.647	6.500	5.343	
N hari	28	29	26	28	28	26	28	25	27	26	21	25	28	27	21	29	28	20	26	25	
maret(cm)	56.558	63.495	87.918	111.993	58.188	74.330	37.963	41.270	46.965	59.605	75.501	62.901	74.214	32.968	50.543	68.221	50.679	44.660	65.194	49.058	1212,225
pmax	6.634	6.681	7.280	21.278	9.562	6.140	3.818	3.765	6.474	6.724	6.637	7.962	8.004	2.868	7.232	6.630	5.203	4.790	7.195	4.359	
N hari	31	29	29	30	29	31	27	24	25	29	29	25	29	25	21	31	27	26	31	30	
april(cm)	49.302	50.691	81.578	73.781	41.661	16.883	37.456	34.473	61.351	54.597	52.432	25.826	35.022	32.583	27.403	51.954	48.995	53.082	55.432	36.499	921,001
pmax	6.366	5.223	7.491	6.360	4.894	2.069	3.365	3.289	7.549	7.228	5.312	4.978	7.460	3.901	4.337	6.565	5.844	8.447	6.950	4.154	
N hari	26	30	30	31	28	25	24	26	28	29	29	25	22	26	24	28	23	29	23	23	
mei(cm)	52.273	20.563	49.805	22.381	27.172	41.430	36.962	28.634	11.509	0.000	24.120	19.792	32.707	10.962	19.935	40.519	22.293	33.042	21.859	12.289	528,248
pmax	9.793	3.027	6.947	2.849	4.344	5.173	3.921	3.488	3.410	0.000	7.494	4.376	5.741	3.461	2.562	5.440	3.797	7.023	3.855	2.643	
N hari	30	21	21	16	21	26	30	30	11	0	21	11	23	12	19	24	20	28	21	13	
juni(cm)	8.354	5.596	64.499	40.881	7.786	10.741	38.270	23.145	5.857	0.000	17.614	3.981	38.077	11.035	5.998	46.462	23.634	13.769	14.152	6.468	386,316
pmax	24.822	19.030	89.173	50.753	20.625	14.141	65.401	34.752	12.825	0.000	31.659	28.051	49.091	26.512	21.370	71.981	42.297	58.895	19.957	28.553	
N hari	6	9	21	25	15	12	23	23	12	0	19	4	24	13	9	26	20	8	17	8	
juli(cm)	0.703	13.330	9.933	34.595	11.172	9.977	36.210	15.212	2.644	0.000	2.634	0.600	19.824	4.999	0.693	34.319	8.204	4.965	16.530	3.999	230.542
pmax	0.538	2.399	1.903	4.003	1.997	2.742	7.494	3.158	0.703	0.000	1.517	0.414	4.624	2.358	0.321	5.971	1.738	1.803	4.046	1.351	
N hari	4	22	15	26	15	10	24	22	6	0	3	3	13	5	3	25	15	4	17	5	
agustus(cm)	0.745	15.934	8.808	6.602	1.686	9.311	14.356	16.823	0.579	0.000	18.407	0.445	0.631	9.275	0.000	10.550	10.287	6.587	0.590	2.702	134.318
pmax	0.331	2.884	4.736	1.842	1.003	1.462	4.067	2.961	0.455	0.000	3.289	0.124	0.228	1.465	0.000	3.685	6.649	2.068	0.559	1.553	
N hari	4	20	11	14	4	18	18	13	2	0	20	5	4	13	0	17	9	11	2	4	
september(cm)	3.729	66.177	18.500	47.496	7.465	17.221	22.107	38.077	1.740	0.000	26.788	0.831	6.463	22.046	0.000	30.678	15.567	15.961	22.464	5.896	369,207
pmax	1.034	5.518	2.937	10.562	1.241	2.120	3.608	4.396	0.538	0.000	1.766	0.124	1.717	3.178	0.000	4.307	1.613	1.465	3.447	1.924	
N hari	7	30	13	25	11	22	6	19	7	0	15	4	13	10	0	18	8	17	19	10	
oktober(cm)	44.373	87.326	29.383	40.572	8.927	43.448	32.135	11.045	9.156	0.000	26.252	15.981	23.274	55.351	10.383	43.624	45.135	66.264	80.231	2.699	675,557
pmax	4.215	7.132	5.378	5.345	2.575	7.902	6.001	2.588	1.296	0.000	4.985	3.631	4.164	5.026	4.550	6.679	7.459	9.679	7.283	0.882	
N hari	28	27	19	29	16	28	27	24	13	0	21	17	22	28	10	26	21	24	31	7	
november(cm)	87.601	41.667	84.132	70.624	56.463	66.168	26.120	28.424	53.719	0.000	48.898	16.710	79.647	73.874	34.812	61.775	55.622	991.811	38.081	16.963	1933,110
pmax	8.686	9.773	6.147	8.406	6.775	7.247	4.787	5.034	5.465	0.000	4.827	3.309	7.323	8.571	5.144	6.536	6.990	6.289	3.260	3.364	
N hari	28	26	28	29	29	28	24	30	29	0	27	19	30	29	17	28	30	30	29	20	
desember(cm)	74.153	109.778	54.333	53.958	80.719	36.207	47.773	73.833	66.319	0.000	78.319	42.206	34.926	39.698	64.988	50.546	42.456	50.898	22.849	29.331	1053,291
pmax	6.917	10.887	6.280	6.386	11.726	5.444	4.948	8.953	7.273	0.000	10.446	4.426	4.923	5.432	10.321	6.955	4.325	8.918	3.528	3.268	
N hari	31	27	27	30	28	26	30	29	31	0	28	30	31	25	28	28	29	19	26	26	
																				jumlah Pb	9646,314 40,193

Tabel 5.3 Perhitungan R dan EI30

bln/thn 1983	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.523	4.769	87.625	283.675	4181.305
2	6.119	2.429	4.852	87.625	268.383	
3	6.119	2.706	5.092	87.625	284.889	
4	6.119	2.647	4.685	87.625	302.993	
5	6.119	3.321	5.014	87.625	355.088	
6	6.119	5.416	2.338	87.625	1242.071	
7	6.119	0.722	1.929	87.625	200.579	
8	6.119	0.559	1.929	87.625	155.373	
9	6.119	1.018	2.515	87.625	217.001	
10	6.119	2.131	4.852	87.625	235.520	
11	6.119	3.118	4.852	87.625	344.519	
12	6.119	2.766	5.092	87.625	291.215	
bln/thn 1984	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.378	4.934	87.625	258.405	4011.474
2	6.119	2.846	4.934	87.625	309.234	
3	6.119	2.716	4.934	87.625	295.111	
4	6.119	2.386	5.014	87.625	255.116	
5	6.119	1.791	4.234	87.625	226.759	
6	6.119	4.710	2.833	87.625	891.348	
7	6.119	1.585	4.328	87.625	196.318	
8	6.119	1.746	4.137	87.625	226.237	
9	6.119	2.456	5.014	87.625	262.604	
10	6.119	2.811	4.769	87.625	315.989	
11	6.119	3.317	4.685	87.625	379.622	
12	6.119	3.511	4.769	87.625	394.731	
bln/thn 1985	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.609	4.852	87.625	288.292	4754.038
2	6.119	3.239	4.685	87.625	370.735	
3	6.119	2.841	4.934	87.625	308.733	
4	6.119	2.884	5.014	87.625	308.408	
5	6.119	2.772	4.234	87.625	351.018	
6	6.119	10.613	4.234	87.625	1343.934	
7	6.119	1.403	3.61	87.625	208.347	
8	6.119	2.266	3.116	87.625	389.930	
9	6.119	1.763	3.373	87.625	280.175	
10	6.119	2.423	4.038	87.625	321.693	
11	6.119	2.599	4.852	87.625	287.229	
12	6.119	2.629	4.769	87.625	295.545	
bln/thn 1986	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.801	5.14	87.625	292.223	4986.130
2	6.119	2.059	4.852	87.625	227.581	
3	6.119	4.994	5.014	87.625	534.086	
4	6.119	2.646	5.092	87.625	1031.722	
5	6.119	1.734	3.722	87.625	249.851	
6	6.119	7.890	4.599	87.625	919.844	
7	6.119	2.074	4.685	87.625	237.395	
8	6.119	1.379	3.494	87.625	211.598	
9	6.119	3.455	4.599	87.625	402.838	
10	6.119	2.415	4.934	87.625	262.422	
11	6.119	3.064	4.934	87.625	332.999	
12	6.119	2.652	5.014	87.625	283.570	

bln/thn 1987	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.908	5.092	87.625	306.256	3844.279
2	6.119	2.719	4.852	87.625	300.427	
3	6.119	3.279	4.934	87.625	356.348	
4	6.119	2.306	4.852	87.625	254.775	
5	6.119	2.165	4.234	87.625	274.207	
6	6.119	4.913	3.61	87.625	729.739	
7	6.119	1.439	3.61	87.625	213.692	
8	6.119	1.002	1.929	87.625	278.440	
9	6.119	1.120	3.116	87.625	192.775	
10	6.119	1.645	3.722	87.625	236.937	
11	6.119	2.736	4.934	87.625	297.269	
12	6.119	3.651	4.852	87.625	403.415	
bln/thn 1988	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	3.183	5.014	87.625	340.340	3673.406
2	6.119	3.281	4.685	87.625	375.452	
3	6.119	2.598	5.092	87.625	273.516	
4	6.119	1.466	4.599	87.625	170.875	
5	6.119	2.374	4.685	87.625	271.649	
6	6.119	4.029	3.247	87.625	665.238	
7	6.119	1.700	2.979	87.625	305.951	
8	6.119	1.221	3.935	87.625	166.380	
9	6.119	1.485	4.328	87.625	183.947	
10	6.119	2.966	4.852	87.625	327.793	
11	6.119	2.834	4.852	87.625	313.204	
12	6.119	2.438	4.685	87.625	279.063	
bln/thn 1989	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.896	4.769	87.625	325.548	4223.057
2	6.119	2.227	4.852	87.625	246.151	
3	6.119	2.023	4.769	87.625	227.455	
4	6.119	1.893	4.51	87.625	225.060	
5	6.119	2.052	5.014	87.625	219.397	
6	6.119	9.016	4.42	87.625	1093.656	
7	6.119	2.885	4.51	87.625	342.960	
8	6.119	2.092	3.935	87.625	284.992	
9	6.119	1.964	2.338	87.625	450.393	
10	6.119	2.566	4.769	87.625	288.549	
11	6.119	2.279	4.51	87.625	270.927	
12	6.119	2.319	5.014	87.625	247.970	
bln/thn 1990	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.221	4.934	87.625	241.305	3535.304
2	6.119	2.252	4.599	87.625	262.559	
3	6.119	2.008	4.51	87.625	238.776	
4	6.119	1.871	4.685	87.625	214.088	
5	6.119	1.929	5.014	87.625	206.320	
6	6.119	6.465	4.42	87.625	784.219	
7	6.119	1.831	4.328	87.625	226.822	
8	6.119	1.770	3.373	87.625	281.378	
9	6.119	2.179	4.038	87.625	289.342	
10	6.119	1.649	4.51	87.625	196.048	
11	6.119	2.340	5.014	87.625	250.217	
12	6.119	3.168	4.934	87.625	344.228	

bln/thn 1991	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.625	4.934	87.625	285.288	3517.706
2	6.119	2.622	4.769	87.625	294.768	
3	6.119	2.671	4.599	87.625	311.411	
4	6.119	2.896	4.852	87.625	320.012	
5	6.119	1.906	3.116	87.625	328.039	
6	6.119	3.827	3.247	87.625	631.913	
7	6.119	0.831	2.338	87.625	190.570	
8	6.119	0.661	1.389	87.625	255.125	
9	6.119	0.722	2.515	87.625	153.844	
10	6.119	1.146	3.373	87.625	182.206	
11	6.119	2.443	4.934	87.625	265.520	
12	6.119	2.840	5.092	87.625	299.011	
bln/thn 1992	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.802	5.092	87.625	295.086	1198.543
2	6.119	2.619	4.685	87.625	299.788	
3	6.119	2.725	4.934	87.625	296.098	
4	6.119	2.830	4.934	87.625	307.571	
5	6.119	0.000	0	87.625	0.000	
6	6.119	0.000	0	87.625	0.000	
7	6.119	0.000	0	87.625	0.000	
8	6.119	0.000	0	87.625	0.000	
9	6.119	0.000	0	87.625	0.000	
10	6.119	0.000	0	87.625	0.000	
11	6.119	0.000	0	87.625	0.000	
12	6.119	0.000	0	87.625	0.000	
bln/thn 1993	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.259	5.014	87.625	241.555	4015.556
2	6.119	2.089	4.234	87.625	264.576	
3	6.119	2.706	4.934	87.625	294.083	
4	6.119	2.407	4.934	87.625	261.583	
5	6.119	2.885	4.234	87.625	365.315	
6	6.119	6.155	4.038	87.625	817.331	
7	6.119	1.245	1.683	87.625	396.614	
8	6.119	1.871	4.137	87.625	242.445	
9	6.119	1.349	3.61	87.625	200.291	
10	6.119	2.328	4.234	87.625	294.805	
11	6.119	2.289	4.769	87.625	257.334	
12	6.119	3.435	4.852	87.625	379.624	
bln/thn 1994	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	3.573	5.014	87.625	382.066	4378.196
2	6.119	2.254	4.599	87.625	262.834	
3	6.119	2.978	4.599	87.625	347.205	
4	6.119	2.326	4.599	87.625	271.194	
5	6.119	2.174	3.116	87.625	374.053	
6	6.119	5.776	1.929	87.625	1605.432	
7	6.119	0.629	1.683	87.625	200.262	
8	6.119	0.334	2.144	87.625	83.496	
9	6.119	0.334	1.929	87.625	92.802	
10	6.119	1.971	3.83	87.625	275.862	
11	6.119	1.876	4.038	87.625	249.160	
12	6.119	2.187	5.014	87.625	233.830	

bln/thn 1995	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.652	4.769	87.625	298.161	4069.905
2	6.119	3.255	4.852	87.625	359.695	
3	6.119	2.986	4.934	87.625	324.526	
4	6.119	2.878	4.328	87.625	356.509	
5	6.119	2.507	4.42	87.625	304.176	
6	6.119	7.753	4.51	87.625	921.714	
7	6.119	2.238	3.373	87.625	355.691	
8	6.119	0.459	1.929	87.625	127.599	
9	6.119	1.329	3.373	87.625	211.209	
10	6.119	2.118	4.328	87.625	262.362	
11	6.119	2.850	5.014	87.625	304.755	
12	6.119	2.313	5.092	87.625	243.507	
bln/thn 1996	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	1.818	5.092	87.625	191.460	3881.454
2	6.119	2.205	4.769	87.625	247.866	
3	6.119	1.741	4.599	87.625	202.927	
4	6.119	2.046	4.685	87.625	234.184	
5	6.119	1.921	3.247	87.625	317.290	
6	6.119	5.607	3.373	87.625	891.285	
7	6.119	1.570	2.144	87.625	392.713	
8	6.119	1.223	3.373	87.625	194.338	
9	6.119	1.837	2.979	87.625	330.673	
10	6.119	2.338	4.852	87.625	258.356	
11	6.119	3.096	4.934	87.625	336.416	
12	6.119	2.436	4.599	87.625	283.948	
bln/thn 1997	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.139	4.852	87.625	236.325	3748.823
2	6.119	3.542	4.234	87.625	448.514	
3	6.119	2.831	4.234	87.625	358.527	
4	6.119	2.164	4.51	87.625	257.220	
5	6.119	1.640	4.038	87.625	217.794	
6	6.119	5.006	2.833	87.625	947.413	
7	6.119	0.550	1.683	87.625	175.144	
8	6.119	0.000	0	87.625	0.000	
9	6.119	0.000	0	87.625	0.000	
10	6.119	2.219	2.979	87.625	399.344	
11	6.119	2.367	3.83	87.625	331.309	
12	6.119	3.414	4.852	87.625	377.232	
bln/thn 1998	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.504	4.934	87.625	272.134	4365.607
2	6.119	3.346	4.934	87.625	352.366	
3	6.119	2.705	5.092	87.625	284.798	
4	6.119	2.691	4.852	87.625	297.341	
5	6.119	2.437	4.51	87.625	289.769	
6	6.119	9.482	4.685	87.625	1085.156	
7	6.119	2.560	4.599	87.625	298.436	
8	6.119	1.986	3.83	87.625	278.006	
9	6.119	2.156	3.935	87.625	293.706	
10	6.119	2.715	4.685	87.625	310.745	
11	6.119	2.684	4.852	87.625	296.646	
12	6.119	2.774	4.852	87.625	306.503	

bln/thn 1999	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.884	5.092	87.625	303.683	4151.183
2	6.119	1.964	4.852	87.625	217.085	
3	6.119	2.381	4.769	87.625	267.688	
4	6.119	2.531	4.42	87.625	307.032	
5	6.119	2.017	4.137	87.625	261.465	
6	6.119	7.169	4.137	87.625	929.099	
7	6.119	1.337	3.61	87.625	198.620	
8	6.119	2.709	2.833	87.625	512.660	
9	6.119	1.286	2.68	87.625	257.305	
10	6.119	2.878	4.234	87.625	364.394	
11	6.119	2.781	5.014	87.625	297.389	
12	6.119	2.160	4.934	87.625	234.763	
bln/thn 2000	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.363	4.685	87.625	270.380	4646.875
2	6.119	2.244	4.137	87.625	290.789	
3	6.119	2.280	4.685	87.625	260.901	
4	6.119	3.072	4.934	87.625	333.852	
5	6.119	2.788	4.852	87.625	308.084	
6	6.119	8.532	2.68	87.625	1707.001	
7	6.119	1.363	1.929	87.625	378.957	
8	6.119	1.465	3.116	87.625	252.151	
9	6.119	1.222	3.83	87.625	171.116	
10	6.119	3.300	4.51	87.625	392.347	
11	6.119	2.631	5.014	87.625	281.296	
12	6.119	3.161	0	87.625	0.000	
bln/thn 2001	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.341	4.852	87.625	258.670	3748.184
2	6.119	2.677	4.685	87.625	306.329	
3	6.119	2.824	5.092	87.625	297.322	
4	6.119	2.773	4.42	87.625	336.343	
5	6.119	2.034	4.234	87.625	257.523	
6	6.119	4.829	3.83	87.625	676.023	
7	6.119	2.086	3.83	87.625	805.183	
8	6.119	0.736	1.389	87.625	97.758	
9	6.119	1.917	4.038	87.625	201.897	
10	6.119	2.842	5.092	87.625	308.811	
11	6.119	1.862	4.934	87.625	202.326	
12	6.119	1.941	0	87.625	0.000	
bln/thn 2002	6.119	pm^0.526	n^0.474	PB^1.211	EI30	R
1	6.119	2.355	4.934	87.625	255.890	3799.557
2	6.119	2.415	4.599	87.625	281.500	
3	6.119	2.169	5.014	87.625	231.968	
4	6.119	2.115	4.42	87.625	256.550	
5	6.119	1.667	3.373	87.625	265.063	
6	6.119	5.830	2.68	87.625	1166.394	
7	6.119	1.172	2.144	87.625	292.988	
8	6.119	1.261	1.929	87.625	350.373	
9	6.119	1.411	2.979	87.625	253.920	
10	6.119	0.936	2.515	87.625	199.594	
11	6.119	1.893	4.137	87.625	245.316	
12	6.119	1.864	0	87.625	0.000	
					R	3936.529

5.3 PERHITUNGAN FAKTOR ERODIBILITAS TANAH (*K*)

O = Presentase bahan organik = 2%

M = Kelas struktur tanah berupa pasir kerikilan = 3055

s = Kode struktur tanah granula sangat halus = 1

P = Kelas permeabilitas tanah agak lambat 0,5-2,0 cm/jam = 2

$$K = \{2{,}713 \times 10^{-4}(12\text{-}O)M^{1{,}14} + 3{,}25(s\text{-}2) + 2{,}5\frac{(P-3)}{100} \quad (2.4)$$

$$= \{2{,}713 \times 10^{-4}(12\text{-}0{,}02)3055^{1{,}14} + 3{,}25(1\text{-}2) + 2{,}5\frac{(2-3)}{100}$$

$$= 27{,}262$$

5.4 PERHITUNGAN EROSI LAHAN YANG TERJADI (E_a)

L = Panjang Lereng DPS = 1875 m

S = Sloope rata-rata DPS = 8,373%

z = 0,5

$$LS = \left(\frac{L}{22}\right)^{z} [0{,}006541\, S^2 + 0{,}0456\, S + 0{,}065] \quad (2.5)$$

$$= \left(\frac{1875}{22}\right)^{0{,}5} [0{,}006541 * (8{,}373\%)^2 + 0{,}0456 * 8{,}373\% + 0{,}065]$$

$$= 0{,}636$$

R = 3936,529 KJ/ha/tahun

Tabel 5.4 Koefisien pengelolaan tanaman (*C*) di DAS Serayu

No	Penggunaan lahan	% Luas	C	C x % Luas(%)
1	Hutan alam	50	0,005	0,25
2	Perladangan	10	0,4	4
3	Perkebunan	15	0,5	7,5
4	Pemukiman	10	0,4	4
5	Sawah	15	0,01	0,15
		100		15,9

(sumber : perhitungan)

C = Faktor indeks pengelolaan tanaman = 0,159

Pada dasarnya pengelolaan tanah di DAS Serayu dilakukan menurut garis kontur dengan kemiringan 8 – 20 %, sehingga nilai P (Faktor konservasi tanah) = 0,75

Besarnya laju sedimentasi diprediksi dari besarnya tingkat erosi di daerah tangkapan (*catchment area*).

Total sedimen pada BPS per tahun :

E_a = *R x K x LS x C x P* (2.1)

= 3936,529 x 27,262 x 0,636 x 0,159 x 0,75

= 8139,293 ton/ha

Maka total sedimen pada BPS selama 50 tahun adalah:

E_a 50 tahun = 406964,640 ton/ha