

REPORT ON PRIORITIZATION OF MICROWATERSHEDS IN 5A2B1 TO 5A2B9 WATERSHEDS (Except 5A2B4 part & 5A2B7) OF 5A2B SUBCATCHMENT (NON-RVP), DISTRICT MALAPPURAM, PALAKKAD AND THRISSUR OF KERALA STATE AND COIMBATORE OF TAMIL NADU.

ABSTRACT

1. **Survey area** : 5A2B1, 5A2B2, 5A2B3, 5A2B4 (part), 5A2B5, 5A2B6, 5A2B8 and 5A2B9 watersheds of 5A2B Subcatchment (Non RVP) in Malappuram, Palakkad and Thrissur districts of Kerala and Coimbatore district of Tamil Nadu.
2. **Location** : 76° 23'to 77°35' E Longitude
9°14' to 9° 16' N Latitude
3. **Total area surveyed** : 437195 ha
4. **No. of microwatersheds** : 324
5. **Agro-climatic region** : Zone XII – The West Coast Plain and Hill region
6. **Type of survey** : Rapid Reconnaissance Survey for priority delineation of microwatersheds
7. **Period of survey** : November 2009 to May 2010
8. **Base map** : Survey of India toposheets on 1:50,000 scale
9. **Topo-sheet** : 49N13,49N14, ,58A04,58A08, 58B01,58B02 58B03,58B05, 58B06,58B,07,58B09,58B13 58B14,58F01,58F02
10. **Hydrological divisions** : a) Region – 5
b) Basin – 5A
c) Catchment – 5A2
d) Subcatchment – 5A2B
e) Watersheds – 5A2B1 to 5A2B9
f) Sub watersheds - 5A2B1a, 5A2B1b
g) Micro-watersheds - 5A2B1a1, 5A2B1a2...

11. Extent of different Runoff Potential Mapping Unit

Sl.No.	RPMU	Runoff Potential Value	Area in ha	Percentage
1	CA01	51	7995	1.8
2	CA02	54	2874	0.7
3	G01	64	32236	7.4
4	G02	64	11393	2.6
5	G03	64	10524	2.4
6	G04	73	3032	0.7
7	G05	67	1106	0.3
8	G06	65	1002	0.2
9	G07	63	893	0.2
10	G08	73	4336	1.0
11	G09	58	4470	1.0
12	G10	64	2299	0.5
13	G11	64	2957	0.7
14	G12	66	11860	2.7
15	G13	61	8104	1.9
16	G14	52	1675	0.4
17	G15	53	30992	7.1
18	G16	53	1855	0.4
19	G17	53	8698	2.0
20	G18	75	1584	0.4
21	G19	58	11355	2.6
22	G20	54	16892	3.9
23	G21	55	9556	2.2
24	G22	60	2091	0.5
25	G23	60	7764	1.8
26	G24	60	21775	5.0
27	G25	57	10976	2.5
28	G26	57	14113	3.2
29	G27	58	55538	12.7
30	LS01	70	1129	0.3
31	LS02	68	880	0.2
32	LS03	69	13894	3.2
33	LS04	54	9232	2.1
34	LS05	61	1532	0.4
35	LT01	61	2202	0.5
36	LT02	63	822	0.2
37	LT03	63	4751	1.1
38	LT04	63	2595	0.6
39	LT05	59	11913	2.7

40	LT06	59	16833	3.9
Sl.No.	RPMU	Runoff Potential Value	Area in ha	Percentage
41	LT07	55	6604	1.5
42	LT08	56	1088	0.3
43	LT09	56	26174	6.0
44	LT10	58	2025	0.5
45	LT11	54	2998	0.7
46	HAB	0	12951	3.0
47	RIVER	0	7462	1.7
48	ROC	0	8243	1.9
49	TANK	0	3413	0.8
50	QUARRY	0	509	0.1
		Grand Total	437195	100.0

12. Priority Categorization:

Sl.No.	Priority Category	No. of Microwatersheds	Area ha	Percentage
1	Very High (above 65)	16	20960	4.8
2	High (61-65)	68	94665	21.6
3	Medium (56-60)	204	275225	63.0
4	Low (51-55)	36	46345	10.6
	Grand Total	324	437195	100

13. Watershed wise Distribution of area (ha) and number of microwatersheds under different priority categories

Priority No. of MWS	5A2B1	5A2B2	5A2B3	5A2B4	5A2B5	5A2B6	5A2B8	5A2B9	Total	Percentage
Very High	0	6381	2196	0	5733	906	0	5744	20960	4.8
No.of MWS	0	5	2	0	4	1	0	4	16	
High	16501	16096	17092	0	11846	13554	1477	18099	94665	21.6
No.of MWS	9	13	12	0	10	11	1	12	68	
Medium	37585	22592	33193	12356	27409	50229	63467	28394	275225	63.0
No.of MWS	26	20	24	8	25	42	40	19	204	
Low	1551	2453	6100	0	11351	8055	12996	3839	46345	10.6
No.of MWS	1	3	5	0	9	7	9	2	36	
Area in (ha)	55637	47522	58581	12356	56339	72744	77940	56076	437195	
Total MWS	36	41	43	8	48	61	50	37	324	

14. District wise distribution of area (ha) under different priority categories

Priority Category No. of MWS	Kerala			Tamil Nadu	No of mws	Total Area	Percentage
	Malappuram	Palakkad	Thrissur	Coimbatore			
Very High	0	14321		6639		20960	4.8
No. of MWS	0	11	0	5	16		
High	639	44963	20344	28719		94665	21.6
No. of MWS	1	39	13	24	77		
Medium	34624	179916	7434	53251		275225	63.0
No. of MWS	30	144	13	47	234		
Low	14547	21875	3672	6251		46345	10.6
No. of MWS	10	19	5	6	40		
Total	49810	261075	31450	94860		437195	100
Total No. of MWS	41	213	31	82	367		

(Note: As some of the microwatersheds are falling in more than one district, the total number of microwatersheds may vary with the actual number of microwatersheds)

15. Distribution of area under different erosion classes

Erosion	Area(Ha)	Percentage
None to slight erosion	209172	47.8
Slight to Moderate erosion	80248	18.4
Moderate erosion	69918	16.0
Moderate to Severe erosion	35198	8.0
Severe erosion	10081	2.3
Misc	32578	7.5
Total	437195	100.0

16. Distribution of Microwatersheds under Different Priority Categories

Sl.No.	Hydrologic Unit	Area in ha	Sediment Yield Index	Relative Priority
	1. <u>Very High (above 65)</u>			
1	5A2B9d6	1071	70	1
2	5A2B5m2	1192	69	2
3	5A2B5m1	1579	68	3
4	5A2B2j4	1127	67	4
5	5A2B5h3	1473	67	5
6	5A2B6k1	906	67	6
7	5A2B9d5	1374	67	7
8	5A2B2h2	1628	66	8
9	5A2B2h3	701	66	9
10	5A2B2j3	1137	66	10
11	5A2B2j6	1788	66	11
12	5A2B3j1	1200	66	12
13	5A2B3j3	996	66	13
14	5A2B5m4	1489	66	14
15	5A2B9b3	1254	66	15
16	5A2B9g1	2045	66	16
	Total	20960	4.79%	
	2. <u>High (61-65)</u>			
1	5A2B1g5	1837	65	17
2	5A2B2d4	790	65	18
3	5A2B2f5	1338	65	19
4	5A2B2h1	914	65	20
5	5A2B2j5	1333	65	21
6	5A2B3g4	1442	65	22
7	5A2B3j2	769	65	23
8	5A2B3k6	2091	65	24
9	5A2B6k5	1672	65	25
10	5A2B9d3	1901	65	26
11	5A2B9d4	1113	65	27
12	5A2B1g4	1279	64	28
13	5A2B1g6	1986	64	29
14	5A2B2c5	1102	64	30
15	5A2B3g5	1295	64	31
16	5A2B3k2	1328	64	32
17	5A2B3k4	1218	64	33
18	5A2B3k5	1633	64	34
19	5A2B5g2	800	64	35

	Sl.No.	Hydrologic Unit	Area in ha	Sediment Yield Index	Relative Priority
	20	5A2B6k6	956	64	36
	21	5A2B6k7	1189	64	37
	22	5A2B9c1	1712	64	38
	23	5A2B9c2	1283	64	39
	24	5A2B9c3	1373	64	40
	25	5A2B9c5	1252	64	41
	26	5A2B9c6	1523	64	42
	27	5A2B1g3	1914	63	43
	28	5A2B2f6	1139	63	44
	29	5A2B3g2	1697	63	45
	30	5A2B3k3	1633	63	46
	31	5A2B5c5	1108	63	47
	32	5A2B5g3	1495	63	48
	33	5A2B6c4	1418	63	49
	34	5A2B6j2	1370	63	50
	35	5A2B6j3	1163	63	51
	36	5A2B6k2	1239	63	52
	37	5A2B9c4	1387	63	53
	38	5A2B9g3	1363	63	54
	39	5A2B1c4	1614	62	55
	40	5A2B1c6	1636	62	56
	41	5A2B1g1	1742	62	57
	42	5A2B1g2	2588	62	58
	43	5A2B1g7	1905	62	59
	44	5A2B2b3	1575	62	60
	45	5A2B3k1	1289	62	61
	46	5A2B5h2	1023	62	62
	47	5A2B5h4	938	62	63
	48	5A2B5k3	1659	62	64
	49	5A2B5k5	1014	62	65
	50	5A2B5m3	833	62	66
	51	5A2B6c5	1321	62	67
	52	5A2B6j1	1336	62	68
	53	5A2B9a3	1900	62	69
	54	5A2B9b4	1739	62	70
	55	5A2B9g2	1553	62	71
	56	5A2B2a1	1479	61	72
	57	5A2B2b4	1248	61	73
	58	5A2B2c4	923	61	74
	59	5A2B2d2	1842	61	75
	60	5A2B2d3	970	61	76
	61	5A2B2j2	1443	61	77
	62	5A2B3g3	1246	61	78
	63	5A2B3h7	1451	61	79
	64	5A2B5c1	1795	61	80
	65	5A2B5g6	1181	61	81

	Sl.No.	Hydrologic Unit	Area in ha	Sediment Yield Index	Relative Priority
	66	5A2B6k3	939	61	82
	67	5A2B6k4	951	61	83
	68	5A2B8g6	1477	61	84
		Total	94665	21.65%	

16. Salient features

- Out of 324 micro-watersheds only 16 numbers have been identified under very high priority category with 68 numbers under high, 204 numbers under medium and 36 numbers under low priority category;
- Areawise about 5% has been categorized under very high priority category accounting 20960 ha; followed by 21.6 % under high priority category accounting 694665 ha; 63 % under medium and 10.6% under low priority accounting 275225 ha and 46345 ha respectively.
- Area surveyed represents only 2% of the area under severe erosion hazards followed by 8% under moderate to severe erosion hazard with remaining 90% having none to slight to moderate erosion hazards.
- Majority of the area is under nearly level to gently sloping lands (37.8%) representing valleys and lower plains and undulatingly sloping lands with pediplains (26%) and 28.6% land under strongly to very steeply sloping hill side slopes.
- Agriculture is the mainstay of the area representing 33% share and orchards representing 35% with remaining area under forests, estates, grasslands representing 25% of the surveyed area.
- Nearly 80% of the total area is under deep to very deep soils with only 9% under shallow to moderately deep soils.
- Majority of the area is under Granite landscape (66%) followed by Laterite (15%), Limestone (6%) and Coastal alluvium (3%).

HOW TO USE SOIL SURVEY REPORT

The report embodies the results of “Rapid Reconnaissance Survey” which aims at identifying the micro watersheds, which are relatively more prone to soil erosion and need immediate suitable soil and water conservation measures. Further, this report furnishes information on the general characteristics of the catchment such as location and extent, physiography, relief, drainage, geology, climate, land use, agriculture, natural vegetation and soils.

The database for this report was generated through field traverse during the rapid reconnaissance survey carried out in 5A2B1 to 5A2B9 watersheds of 5A2B subcatchment. The survey area covers an area of 437195-hectare comprising 324 microwatersheds. The priorities are fixed on the basis of “Runoff Potential Index “Higher value of RPI suggests high priority and vice versa. Demarcated microwatersheds map sheets pertaining to 5A2B subcatchment on 1:50000 scale are appended with this report

In the maps that are appended with this report, each microwatershed has been marked with a code like 5A2B1a1, which is the representative abbreviated microwatershed code. In this code, first numeral ‘5’ indicates water resources region (flowing to Arabian sea); ‘A’ indicates basin (Southern Western Ghats); ‘2’ denotes catchment; ‘ B ‘ for Subcatchment; ‘ 1’ for watershed , ‘a’ for sub watershed and ‘1’ for microwatershed. Within each microwatershed, runoff potential mapping units (RPMU) are marked according to geological landscapes such as CA01, CA02, CA03 ...etc. Each RPMU units connotes a set of soil and land characteristics viz. physiography, slope, landform, land use, soil depth, color, texture, stoniness, type of erosion, soil conservation practices. For details, of the legend description of mapping units reference can be made to the Table Description of Mapping Units on page No. In Annexure III Distribution of Microwatersheds under different priority categories has been given in the descending order of priority. Annexure-II of the report furnishes information on Microwatershed wise distribution of Runoff Potential Mapping Units (RPMU) their runoff potential value, relative priority, priority grading in the descending order of runoff potential index, relative priority.

The very high and high priority micro-watersheds are shown in appended map by horizontal hatching. These priorities are suggestive of the relative severity of runoff problem in the catchment. For any clarification and comment on this report, contact may be made to the following addresses:

The Chief soil Survey Officer,
Soil and Land Use Survey of India
IARI Campus, New Delhi 110 012
Phone: +91-11-25841263 Fax +91-11-25843811
Email: csso-slusi@nic.in Logon to: <http://slusi.dacnet.nic.in>

or

The Soil Survey Officer
Soil and Land Use Survey of India
Survey No.207, Kodigehalli,
Vidyaranyapura.P.O post, Bangalore 560 097
+91-80-23640761, +91-80-23641119, fax +91-80-23640751
Email: soilkar@nic.in Logon to: <http://slusi.dacnet.nic.in>