

Report on Prioritisation of Micro-watersheds of 3D2C3-7 Watershed of Brahmaputra Basin, Ukhrul district of Manipur and Phek, Tuensang and Zunheboto districts of Nagaland.

ABSTRACT

1. **Survey Area** : 3D2C3-7 Watersheds of Brahmaputra Basin, Ukhrul district of Manipur and Phek, Tuensang and Zunheboto districts of Nagaland.
2. **Location** : 94⁰ 26'30" to 95⁰ 11'30" E Longitude and 25⁰ 06'" to 26⁰ 24' N Latitude
3. **Total Area** : 418032 ha
4. **Agroclimatic Region** : Eastern Himalayan Region (II) as per Planning Commission(1989)
5. **Period of field visit** : December 2006 to March 2007
6. **Type of Survey** : Rapid Reconnaissance Survey using Remote Sensing Technique
7. **Base Material** : Survey of India Toposheets (1:50,000) and IRS-P6 LISS-III Precision Geo-coded FCC(3, 2, & 1) Satellite Imagery (1:50,000)

8. Areal Extent of different Runoff Potential Mapping Units

Sl.No.	RPMU	Runoff Potential Value	Area (ha.)	Area (%)
1.	AC01	61	284	0.07
2.	AC03	60	437	0.10
3.	AC04	56	800	0.19
4.	SD01	71	286	0.07
5.	SD02	61	1366	0.33
6.	SD03	62	343	0.08
7.	SD04	69	1525	0.36
8.	SD05	90	77631	18.57
9.	SD06	75	36741	8.79
10.	SD07	80	45208	10.81
11.	SD08	85	39691	9.49

Sl .No.	RPMU	Runoff Potential Value	Area (ha.)	Area (%)
12.	SD09	84	2907	0.70
13.	SD10	70	62464	14.94
14.	SD11	93	79555	19.03
15.	SD12	86	22602	5.41
16.	SD13	84	4174	1.00
17.	SD14	78	5703	1.36
18.	SD15	73	9243	2.21
19.	SD16	64	3258	0.78
20.	SD17	76	10484	2.51
21.	SD18	80	3189	0.76
22.	SD20	78	1028	0.25
23.	SD21	71	1519	0.36
24.	SD22	64	515	0.12
25.	SD24	76	2711	0.65
26.	SD25	78	435	0.10
27.	SD27	59	335	0.08
28.	SD29	69	359	0.09
29.	SD33	59	247	0.06
30.	HS	0	2353	0.56
31.	RI	0	539	0.13
32.	RC	0	61	0.01
33.	Tank	0	39	0.01
Grand Total			4,18,032	100.00

9. *Hydrological Divisions :*
- Water Resource Region (3)*
 - Basin (3D)*
 - Catchment (3D2)*
 - Subcatchment (3D2C)*
 - Watersheds (3D2C 3,4,)*
 - Subwatersheds (3D2C3a,b, .c.....,)*
 - Microwatersheds (3D2C3a1..., 3D2C4a1,)*

10. Soil Erosion Hazard:

Erosion Classes	Manipur	Nagaland			Total Area (ha)	Area (%)
	Ukhrul	Phek	Tuensang	Zunheboto		
None to slight erosion	20	536	244		800	0.19
Slight to moderate erosion	9641	21060	34562	459	65722	15.72
Moderate erosion	10811	13735	13746	1976	40268	9.63
Moderate to severe erosion	20178	23754	96406	161	140499	33.61
Severe erosion	30435	31059	105644	613	167751	40.13
Misc.	362	391	2229	10	2992	0.72
Total	71447	90535	252831	3219	418032	100

11. Priority Categorization :

Sl. No.	Priority Category	No. of Microwatersheds	Area (ha.)	Percentage
1	Very High (above 70)	488	394419	94.35
2	High (66-70)	26	22778	5.45
3	Medium (61-65)	1	835	0.20
	Grand Total	515	418032	100.00

12. District and State wise Priority Categorization:

Priority Category	Manipur	Nagaland			Area (ha)	Area (%)
	Ukhrul	Phek	Tuensang	Zunheboto		
Very High	63759	79738	248231	2691	394419	94.35
High	7688	9962	4600	528	22778	5.45
Medium		835			835	0.20
Total	71447	90535	252831	3219	418032	100.00

13. Salient Features:

- ❖ *3D2C sub-catchment has been subdivided into 515 micro-watersheds following the delineation and codification method outlined in Watershed Atlas of India (1:1 M scale).*
- ❖ *Out of 418032 hectares surveyed area, 394419 ha. (94.35%) covered by 488 micro-watersheds have been categorized under very high priority and 22778 ha. (5.45%) covered by 26 micro-watersheds have been categorized under high priority area which need immediate attention for suitable soil water conservation measures under integrated watershed development programme.*
- ❖ *330660 ha and 63759 ha areas come under very high priority category and 150901ha & 7688ha areas have been demarcated under high priority category of Nagaland and Manipur state respectively. The area needs immediate soil-water conservation measures to check the runoff.*
- ❖ *In Phek district, 79738 ha(19.07%) & 9962ha(2.38%) and in Tuensang district 248231ha(59.38%) & 4600(1.10%) while in Zunheboto district of Nagaland 2691ha(0.64%) & 528ha(0.30%) are identified as very high & high priority category respectively.*
- ❖ *About 209247 ha (50.06%) area of the survey area is unmanaged, 435ha (0.1%) area is unmanaged to poorly managed and 44117ha (10.55%) area is poorly managed.*
- ❖ *Severely eroded lands occupy 167751 ha (40.13%) while moderately to severely eroded land covering 140499 ha (33.61%) and also moderate eroded land of 40268(9.63%) that need proper soil water conservation practices.*

HOW TO USE SOIL SURVEY REPORT

This report on Demarcation of Priority Micro-watersheds of 3D2C3-7 Sub-catchment Ukhrul district of Manipur and Phek, Tuensang and Zunheboto districts of Nagaland aims at identifying the micro-watersheds which are relatively susceptible to severe water erosion due to land degradation problems. Further, it furnishes information on general characteristics of the catchments with particular reference to their location and extent, physiography, relief and drainage, geology, climate, land use and soils of the area also.

The sub-catchment is delineated and codified following the codification system of Watershed Atlas of India (WAI) published by Soil & Land Use Survey of India in 2012. The surveyed area comprises 5 watersheds (3D2C3-7) of WAI which are subdivided into 82 subwatersheds and finally into 515 microwatersheds. Subwatersheds are codified by suffixing small case English alphabets with the watershed code e.g. 3B1B1a, 3D2C3-7 etc and microwatersheds are codified by affixing Arabic numerical with the subwatershed code, e.g., 3D2C3, 3D2C4 etc. Within a microwatershed, Runoff Potential Mapping Units (RPMUs) are demarcated and symbolized with alphanumeric codes viz. AC01, AC02, SD01, SD02 etc. The Runoff Potential Mapping Units (RPMU) are established by visual interpretation of False Color Composites (FCC) of IRS-P6 LISS-III followed by field verification. The RPMUs represent the landscape, physiography, slope, soil characteristics, existing soil conservation status, land use and severity of erosion of each mapping unit. These Runoff Potential mapping units are described in the **Table 6** on 'Legend to Runoff Potential Mapping Units'. Each of these units is assigned its runoff potential (RP) value which indicates the susceptibility for soil erosion (soil detachment) and transportation of detached materials from the microwatershed. Differentiating morphological characteristics of the Run-off Potential Mapping Units have been presented in the **Table 7**.

Based on Run-off Potential (RP) value and the extent of RPMU in a microwatershed, the Runoff Potential Index (RPI) values of all microwatersheds are computed which is given in the **ANNEXURE-I**. The relative priorities are assigned based upon the Runoff Potential Index (RPI) of the microwatersheds. Higher the value of Runoff Potential Index (RPI) indicates higher priority where as the lower value indicates lower priority. The list of microwatersheds under different priority categories are given in **ANNEXURE-II**.

Microwatersheds categorized under very high and high priority are selected for treatment of degraded lands of these microwatersheds under FPR Scheme. Both treatable and non-treatable lands are occupied by each priority (very high or high category) microwatershed. The ratio of treatable and non-treatable lands in a priority microwatershed varies with the kind, degree and extent of the degraded lands occupied by the same microwatershed.

Each map sheets on 1:50,000 scale depicting the drainage network, hydrological units, runoff potential mapping units and administrative boundaries are appended with this report.

For any further clarification, information or comments, contact may be made to:

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