

## ABSTRACT

1.	<b>Survey Area</b>	:	Prakasham district, Andhra Pradesh State
2.	<b>Geographical Extent</b>	:	14 <sup>0</sup> 34'85'' to 16 <sup>0</sup> 18'20'' N latitude, 78 <sup>0</sup> 46'14'' to 80 <sup>0</sup> 28'34'' E longitude.
3.	<b>Agro-climatic Region</b>	:	Southern Plateau and Hills region-X
4.	<b>Total Geographical Area</b>	:	<b>17,71,680 ha</b>
5.	<b>Kind of Survey</b>	:	Soil Resource Mapping (SRM) using Remote Sensing Techniques
6.	<b>Base Maps</b>	:	(i) Survey of India Toposheets (scale 1:50,000) (ii) Geology Map (scale 1:2,50,000) of Geological Survey of India (iii) Satellite Imagery (scale 1:50,000) of LISS-III (IRS-1D)
7.	<b>Scale of Mapping</b>	:	1:50,000 Scale
8.	<b>Period of Survey</b>	:	December, 2009 to Feb, 2010

### A. Mapping unit wise soil association and their extent.

Sl. No	Mapping Unit	Series Association	Area (ha)	Area (%)
1	ALb1a1	Rudravaram-Yaddugundla	1655	0.09
2	ALb2a1	Yaddugundla -Rudravaram	10298	0.58
3	ALb2b1	Rudravaram-Yaddugundla	1008	0.06
4	ALb2d1	Bainapalle -Yaddugundla	403	0.02
5	ALg3a1	Yaddugundla -Rudravaram	124946	7.05
6	ALg3b1	Yaddugundla- Bainapalle- Nikarampalli	42398	2.39
7	ALg3d1	Nikarampalli-Bainapalle	50917	2.87
8	ALg3d2	Rudravaram-Yaddugundla	919	0.05
9	ALh4d1	Bainapalle-Nikarampalli	14386	0.81
10	ALI1a1	Alluru-Swarna	3512	0.20
11	ALI2a1	Kottapatnam- Alluru	11330	0.64
12	ALI3b1	Kottapatnam	13637	0.77
13	ALI3d1	Kottapatnam	13405	0.76
14	CGv2a1	Kotla-Gangapalem	7125	0.40
15	CGv2a2	Ramapuram-Gonugunta-Shantanapadu	18400	1.04
16	CGv2a3	Ramapuram-Patapadu	1082	0.06
17	CGv2a4	Gangapalem-Chandravarum	2614	0.15
18	CGv2b1	Gonugunta-Shantanapadu-Ramapuram	2611	0.15
19	CGv2b2	Patapadu-Ramapuram	4195	0.24
20	CGv2d1	Shantanapadu-Gonugunta-Ramapuram	33764	1.91
21	CGv3a1	Kotla-Podili	27509	1.55
22	CGv3a2	Podili-Gonugunta-Shantanapadu	1919	0.11
23	CGv3a3	Gangapalem-Chandravarum	1573	0.09
24	CGv3b1	Gonugunta-Podili	11638	0.66
25	CGv3b2	Gonugunta-Shantanapadu-Podili	50197	2.83
26	CGv3c1	Gonugunta-Podili	23477	1.33
27	CGv3d1	Shantanapadu-Podili	101911	5.75
28	CGv3d2	Podili-Shantanapadu	44745	2.53
29	CGw1a1	Vemavaram-Nagarjunakunta-Lakhavaram	4724	0.27
30	CGw2a1	Reddipadu-Enkipadu	2710	0.15
31	CGw2a2	Enkipadu-Reddipadu	267	0.02
32	CGw2b1	Vemavaram-Lakhavaram-Nagarjunakunta	6435	0.36
33	CGw2d1	Nagarjunakunta-Vemavaram-Lakhavaram	4075	0.23
34	CGw3d1	Gundla-Enkipadu	3212	0.18
35	CGw3d2	Enkipadu-Reddipadu	8628	0.49
36	GRn6d1	Mederamettha-Podilikonda	17944	1.01
37	GRn8c1	Podilikonda-Mederamettha	97339	5.49
38	GRn8d1	Mederamettha-Podilikonda	25686	1.45
39	LAv2a1	Rajupalem-Kundkur	133929	7.56
40	LAv3a1	Kundkur -Rajupalem	43818	2.47
41	LAv3b1	Kundkur- Kavali	10265	0.58
42	LAv3c1	Kavali -Kundkur	28013	1.58
43	QZn6c1	Akkacheruvu-Saganpeta-Narava	17913	1.01
44	QZn6d1	Narava-Saganpeta -Akkacheruvu	9936	0.56
45	QZn8c1	Saganpeta-Akkacheruvu-Narava	19728	1.11
46	QZn8d1	Narava-Akkacheruvu-Saganpeta	1014	0.06
47	QZu4c1	Kuntlakonda-Digavumetta-Gottipadia	7038	0.40

Sl. No	Mapping Unit	Series Association	Area (ha)	Area (%)
48	QZu4d1	Digavumetta-Gottipadia-Kuntlakonda	3185	0.18
49	QZv2a1	Mittapalem-Kottapalli	13106	0.74
50	QZv2a2	Srinagar-Padipadu-Desarapalli	2341	0.13
51	QZv2b1	Pamuru-Desarapalli-Srinagar	20491	1.16
52	QZv2d1	Srinagar-Pamuru	271880	15.35
53	QZv3c1	Kottapalli-Mittapalem	49750	2.81
54	QZv3d1	Mittapalem-Kottapalli	13791	0.78
55	SDn6d1	Konejedu	40039	2.26
56	SDv2a1	Konaleru-Padipadu	934	0.05
57	SDv2b1	Padipadu-Konaleru	613	0.03
58	SDu3b1	Padipadu-Konaleru	10997	0.62
59	SHu3a1	Rayavarum	78797	4.45
60	SHu3c1	Rayavarum	39393	2.22
61	SHu3d1	Rayavarum	13574	0.77
62	SHv2a1	Krishnapalli-Jamanapalli	14018	0.79
63	SHv2b1	Jamanapal-Krishnapallili	10775	0.61
64	SHv2c1	Jamanapalli-Krishnapalli	6209	0.35
65	SHv2d1	Krishnapalli-Jamanapalli	21876	1.23
66	SHw2a1	Sankesula	9786	0.55
67	Canal	Miscellaneous	1284	0.07
68	Habitation		15725	0.89
69	Mud		1497	0.08
70	Quarry		930	0.05
71	Reservoir		807	0.05
72	River		17290	0.98
73	ROC		513	0.03
74	Saltpan		6656	0.38
75	Sand		29	0.00
76	Tank		41146	2.32
<b>Total area in ha</b>			<b>17,71,680</b>	<b>100.00</b>

## B. Distribution of the area under different landscapes/geology

The distribution of area under different geology/landscape of the district is depicted in the given table below:

Landscape	Physiography	Area(ha)	Area (%)
Alluvium	Alluvial plains	13364	0.75
	Dissected stream banks	14386	0.81
	Coastal alluvial plain	41884	2.36
	Stream banks	219180	12.37
Complex geology	Lower pediplains	30051	1.70
	Upper pediplains	332760	18.78
Granite	Undifferentiated hills side slope	140969	7.96
Laterite	Upper pediplains	216025	12.19
Quartzite	Pediments	10223	0.58
	Undifferentiated hills side slope	48591	2.74
	Upper pediplains	371359	20.96

Landscape	Physiography	Area(ha)	Area (%)
Sandstone	Pediments	10997	0.62
	Undifferentiated hills side slope	40039	2.26
	Upper pediplains	1547	0.09
Shale	Lower pediplains	9786	0.55
	Pediments	131764	7.44
	Upper pediplains	52878	2.98
Miscellaneous		85877	4.85
<b>Total area (ha)</b>		<b>17,71,680</b>	<b>100.00</b>

### C. Distribution of the area under different land use classes

S. No	Land use	Area (ha)	Area (%)
1	Agriculture	516393	29.15
2	Forest	288860	16.30
3	Open scrub	695290	39.24
4	Plantation	185260	10.46
5	Miscellaneous	85877	4.85
<b>Total area (ha)</b>		<b>17,71,680</b>	<b>100.00</b>

### D. Distribution of the area under different depth classes

S. No	Depth classes	Area(ha)	Area (%)
1	Shallow (d2)	131764	7.4
2	Shallow to moderately deep (d2-d3)	577737	32.6
3	Moderately deep (d3)	214359	12.1
4	Moderately deep to deep (d3-d4)	104128	5.9
5	Deep (d4)	271880	15.4
6	Deep to very deep (d4-d5)	97121	5.5
7	Very deep (d5)	288814	16.2
8	Miscellaneous	85877	4.9
<b>Total area (ha)</b>		<b>17,71,680</b>	<b>100.00</b>

### E. Distribution of the area under different erosion Classes

S. No	Erosion classes	Area (ha)	Area (%)
1	None to slight erosion (e0 – e1)	793477	44.8
2	Moderate erosion (e2)	809648	45.7
3	Severe erosion (e3)	82678	4.7
4	Miscellaneous	85877	4.8
<b>Total area (ha)</b>		<b>17,71,680</b>	<b>100.00</b>

### F. Distribution of the area under different slope classes

S. No	Slope Classes	Area(ha)	Area (%)
1	Nearly level (A) (0-1%)	9891	0.56
2	Nearly level to very gently sloping (A-B) (0-3%)	612275	34.56
3	Very gently sloping to gently sloping (B-C) (1-5%)	809429	45.69
4	Gently sloping to moderately sloping (C-D) (3-10%)	24609	1.39
5	Strongly sloping to moderately steep (E-F) (10-25%)	85832	4.84
6	Steep to very steep (G-H) (25-50%)	143767	8.11
7	Miscellaneous	85877	4.85
<b>Total area (ha)</b>		<b>17,71,680</b>	<b>100.00</b>

## G. Distribution of the area under different Land Capability Classes

S. No	Land Capability Classes	Area (ha)	Area (%)
1	<b>II</b> (Good lands with minor Limitations)	63584	3.59
2	<b>II-III</b> (Good to moderately good lands with minor limitations)	474948	26.81
3	<b>III</b> (Moderately good and with minor limitations)	120268	6.79
4	<b>III-IV</b> (Moderately to fairly suitable arable lands)	550234	31.06
5	<b>IV</b> (Fairly suitable arable lands)	93290	5.27
6	<b>VI</b> (Suitable for pasture and forestry with minor limitations)	9936	0.56
7	<b>VI-VII</b> (Suitable for pasture and forestry with some minor and major limitations)	17944	1.01
8	<b>VII-VIII</b> (Suitable for pasture, forestry, wild life habitat and recreation with major limitations)	65725	3.71
9	<b>VIII</b> (Suitable for wild life habitat and recreation)	1014	0.06
10	Forest	288860	16.30
11	Miscellaneous	85877	4.85
<b>Total area (ha)</b>		<b>17,71,680</b>	<b>100.00</b>

## H. Distribution of the area under different Soil Irrigability Classes

S. No	Soil Irrigability Classes	Area (ha)	Area (%)
1	<b>B</b> (Moderate soil limitation for sustained use under irrigation)	67855	3.83
2	<b>B-C</b> (Moderate to severe soil limitation for sustained use under irrigation)	273013	15.41
3	<b>C</b> (Severe soil limitation for sustained use under irrigation)	193888	10.94
4	<b>C-D</b> (Severe to very severe soil limitations for sustained use under irrigation)	675197	38.11
5	<b>D</b> (Very severe soil limitations for sustained use under irrigation)	142346	8.03
6	<b>D-E</b> (Very severe to not suitable for irrigation)	25686	1.45
7	<b>E</b> (Not suitable for irrigation)	18958	1.07
8	Forest	288860	16.30
9	Miscellaneous	85877	4.85
<b>Total area (ha)</b>		<b>17,71,680</b>	<b>100.00</b>

## I. Distribution of the area under different Land Irrigability Classes

S. No	Land Irrigability Classes	Area (ha)	Area (%)
1	<b>2</b> (Lands that have moderate limitations of soil, topography or drainage for sustained use under irrigation)	144424	8.15
2	<b>2-3</b> (Lands that have moderate to severe limitations of soil, topography or drainage for sustained use under irrigation)	132672	7.49
3	<b>3</b> (Lands that have severe limitations of soil, topography or drainage for sustained use under irrigation)	342807	19.35
4	<b>3-4</b> (Lands that have severe to marginal (Very severe) limitations for sustained use under irrigation)	474970	26.81
5	<b>4</b> (Lands that have very severe limitations of soil, topography or drainage for sustained use under irrigation)	302070	17.05
6	Forest	288860	16.30
7	Miscellaneous	85877	4.85
<b>Total area (ha)</b>		<b>17,71,680</b>	<b>100.00</b>

## **SALIENT FEATURES:**

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- ❖ Open scrub is dominant land use in the district occupying an area of nearly 695290 ha (39.2%) followed by Agriculture 516393 ha (29.2%), forest area of 288860 ha (16.3%) and plantation 185260 ha (10.46%).
- ❖ Out of the total area, about 37.2 per cent area is suitable for cultivation and is classified as good to moderately good land with minor limitations.
- ❖ As per the Land Capability Classification (LCC) class III-IV occupying 550234 ha (31.1 %) followed by II-III 474948 ha (26.8 %) in the district.
- ❖ As per the soil irrigation potential 675197 ha (38.1%) area has severe to very severe soil limitations for sustained use under irrigation (C-D); whereas 273013 ha (15.4%) lands that have moderate to severe soil limitations (B-C) and 193888 ha (10.9%) lands under severe soil limitation for sustained use under irrigation.
- ❖ As per the Land Irrigability Class, 474970 ha (26.8%) area is under severe to marginal limitations for sustained use under irrigation followed by 342807 ha (19.4%) area under severe limitations and 144424 ha (8.2%) area under moderate limitations for sustained use under irrigation (C).
- ❖ Soils of the district have been taxonomically classified under soil order Alfisols, Aridisols Entisols, Inceptisols followed by Vertisols respectively.
- ❖ The area under shallow to moderately deep is 577737 ha (32.6%), very deep soils is 288814 ha (16.3%) followed by moderately deep soils is 214359 ha (12.1%) of the total area of the district.
- ❖ The area under very gentle slope to gentle slope is 809429 ha (45.7%), nearly level to very gentle slope is 612275 ha (34.6%) followed by steep to very steep slope is 143767 ha (8.1%) of the total area of the district.
- ❖ As per the soil erosion classes the district soils 809648 ha (45.7%) area comes under moderate erosion, 793477 ha (44.8%) area comes under none to slight erosion, followed by severe erosion is 82678 ha (4.7%) of the total area of the district.

## HOW TO USE SOIL RESOURCE MAPPING REPORT

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This report embodies the results of the Soil Resource Mapping of Prakasham district of Andhara Pradesh state and furnishes information on the geographical setting of the state vis-à-vis location, extent, physiography, relief, drainage, climate, geology, natural vegetation, agriculture, land use and soils.

The report contains information on interpretative grouping of soils and land resources which includes land capability classification providing suggestive management related guidelines; soil suitability groupings and crop recommendations which in turn provides a scientific database for horticulture, forest, forage and grassland development; water harvesting, water storage and water management. The soils of the area have also been differentiated as per soil characteristics based on Soil Taxonomy (USDA) to enable the users for scientific land use planning.

Prakasham District spreads over an area of 1771680 ha and is covered by twenty-eight Survey of India toposheets on 1:50,000 scale and the same have been used as reference maps for the survey. High-resolution satellite data has been used for image interpretation and soil mapping. In the report each soil mapping unit is marked by a symbol i.e. GRu4c1 (Granite Geology; pediment, 10-25 per cent slope; forest land use; soil series association. Each soil association is restricted to a maximum of three soil series found within concerned soil mapping unit.

For the use of the soil resource mapping report, first user needs to locate the area of interest on the map and note down the soil mapping units. Permanent features such as road, stream, lakes and village habitation etc. shown on the map will help user to locate the area of interest on the map. For the detailed information on soil mapping unit in respect of soil series in the area of interest, its extent, present and proposed land uses reference may be made to chapter: - 4, 5 and Appendix-I and II.

The symbols used in the soil mapping unit represents the five levels of mapping i.e. ALb1a1 may be referred as follows:

AL	Alluvium	:	Landscape
b	Alluvial plains	:	Physiography
1	0-1 % Slope	:	Slope classes
a	Agriculture	:	Land use
1	Soil series association of Rudravaram-Yaddugundla		

Any comments and/or suggestions on the report are welcome. For any additional information and clarification, further correspondence or personal contact may be established with:

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