ABSTRACT

1.	**Survey Area**	:	Detailed Soil Survey and Land Use Plan of 4D3A8k1, k2, k3, k4, k5, n1,n2,n3,n4, n5, p1, p2, p3, p4 & p5 microwatersheds of Nagarjunasagar Catchment, Taluk- Adoni, Alur & Aspari, District- Kurnool, Andhra Pradesh State
2.	**Geographical Extent**	:	15^0 15' to $15^0$41' North Latitude 77^0 23' to $77^0$57' East Longitude
3.	**Agro-climatic Region**	:	Southern Hill and Plateau region (Zone No. X)
4.	**Total Geographical Area Mapped and Reported**	:	26,204 ha
5.	**Kind of Survey**	:	Detailed Soil Survey using Remote Sensing Techniques
	Base Maps	:	(i) High resolution Satellite Imagery (scale1:10,000) (ii) Enlarged Survey of India Toposheets (scale 1:10,000)
7.	**Scale of Mapping**	:	1:10,000
8.	**Period of Survey**	:	December 2013 to March 2014

S.No	New Micro watershed codes	Total area (in ha)
01	4D3A8k1,k2,k3,k4,k5,	7381
02	4D3A8n1,n2,n3,n4,n5,	8802
03	4D3A8p1,p2,p3,p4,p5	10021
	Total	**26204**

9. Soil Series identified and their micro watershed-wise distribution of the area (ha).

S No.	Series Name	4D3A8k1	4D3A8k2	4D3A8k3	4D3A8k4	4D3A8k5	4D3A8n1	4D3A8n2	4D3A8n3	4D3A8n4	4D3A8n5	4D3A8p1	4D3A8p2	4D3A8p3	4D3A8p4	4D3A8p5	Area (Ha.)	Area (%)
1	**Adoni**	0	0	125	154	61	0	5	254	0	0	0	0	0	0	0	599	2
2	**Albanuru**	146	0	0	111	768	7	542	0	2	386	196	314	854	418	340	4084	16
3	**Badanehalu**	181	30	1	0	0	771	397	68	325	14	67	0	0	0	0	1854	7
4	**Hebbatam**	537	98	74	199	315	95	0	0	182	43	941	1519	568	31	233	4835	18
5	**Maddilingadahalli**	457	444	268	122	320	0	53	0	17	302	33	76	565	589	264	3510	13
6	**Nagahalli**	100	94	23	0	0	0	0	0	0	0	0	0	0	0	177	394	2
7	**Pedda Gonahalu**	0	0	179	183	0	0	0	0	0	0	0	0	0	0	0	362	1
8	**Santekulluru**	283	296	518	151	22	953	994	155	711	722	245	77	330	133	135	5725	22
9	**Tovi**	88	135	141	205	266		78	638	0	220	611	0	0	27	777	3186	12
10	**Tumbalabidu**	0	0	0	0	0	0	28	539	0	0	0	0	0	0	65	632	2
11	**Misc.**	84	27	21	58	96	94	71	62	53	21	108	107	113	83	25	1023	4
	G Total	**1876**	**1124**	**1350**	**1183**	**1848**	**1920**	**2168**	**1716**	**1290**	**1708**	**2201**	**2093**	**2430**	**1281**	**2016**	**26204**	**100**

10. Micro Watershed Wise Distribution of Area (ha) Under Different Soil Depth Classes

S No.	Soil Depth	4D3A8k1	4D3A8k2	4D3A8k3	4D3A8k4	4D3A8k5	4D3A8n1	4D3A8n2	4D3A8n3	4D3A8n4	4D3A8n5	4D3A8p1	4D3A8p2	4D3A8p3	4D3A8p4	4D3A8p5	Total area (Ha.)	Area (%)
1	**Shallow (d2)**	0	0	125	154	61	0	33	793	0	0	0	0	0	0	65	1231	5
2	**Moderately Deep(d3)**	234	135	141	316	1034	7	620	638	2	606	807	314	854	445	1117	7270	28
3	**Deep(d4)**	740	740	965	456	342	953	1047	155	728	1024	278	153	895	722	399	9597	37
4	**Very Deep(d5)**	818	222	98	199	315	866	397	68	507	57	1008	1519	568	31	410	7083	27
5	**Misc.**	84	27	21	58	96	94	71	62	53	21	108	107	113	83	25	1023	4
Grand Total		**1876**	**1124**	**1350**	**1183**	**1848**	**1920**	**2168**	**1716**	**1290**	**1708**	**2201**	**2093**	**2430**	**1281**	**2016**	**26204**	**100**

11. Micro Watershed Wise Distribution of Area (ha) Under Different slope Classes

S No.	Slope Classes	4D3A8k1	4D3A8k2	4D3A8k3	4D3A8k4	4D3A8k5	4D3A8n1	4D3A8n2	4D3A8n3	4D3A8n4	4D3A8n5	4D3A8p1	4D3A8p2	4D3A8p3	4D3A8p4	4D3A8p5	Total area (Ha.)	Area (%)
1	**A**	0	0	23	0	0	51	0	0	0	0	25	0	0	0	0	99	0
2	**B**	1496	1097	1180	971	1587	916	2041	924	895	1431	1735	1400	2041	991	1668	20373	78
3	**B(A)**	115	0	0	0	0	44	0	0	0	0	266	0	0	0	0	425	2
4	**C**	181	0	1	0	104	815	51	476	342	256	67	586	276	207	323	3685	14
5	**D**	0	0	125	63	35	0	5	240	0	0	0	0	0	0	0	468	2
6	**E**	0	0		91	26	0	0	14	0	0	0	0	0	0	0	131	1
7	**Misc**	84	27	21	58	96	94	71	62	53	21	108	107	113	83	25	1023	4
	G.Total	**1876**	**1124**	**1350**	**1183**	**1848**	**1920**	**2168**	**1716**	**1290**	**1708**	**2201**	**2093**	**2430**	**1281**	**2016**	**26204**	**100**

11. Micro Watershed Wise Distribution of Area (ha) Under Different erosion Classes

S No.	Erosion Classes	4D3A8k1	4D3A8k2	4D3A8k3	4D3A8k4	4D3A8k5	4D3A8n1	4D3A8n2	4D3A8n3	4D3A8n4	4D3A8n5	4D3A8p1	4D3A8p2	4D3A8p3	4D3A8p4	4D3A8p5	Total area (Ha)	Area (%)
1	**Slight (e1)**	115	0	23	0	0	95	0	0	0	0	291	0	0	0	0	524	2
2	**Moderate (e2)**	1468	1097	1180	971	1691	1103	2002	1251	895	1437	1727	1910	1984	1070	1763	21549	82
3	**Severe (e3)**	209	0	126	154	61	628	95	403	342	250	75	76	333	128	228	3108	12
4	**Misc**	84	27	21	58	96	94	71	62	53	21	108	107	113	83	25	1023	4
	G. Total	**1876**	**1124**	**1350**	**1183**	**1848**	**1920**	**2168**	**1716**	**1290**	**1708**	**2201**	**2093**	**2430**	**1281**	**2016**	**26204**	**100**

12. Soil Series wise distribution of area (ha) under different land capability units

S No.	Soil Series	IIes1	IIes2	IIIes1	IIIes2	IIIes3	IVes1	IVes2	IVes3	VIes1	VIes3	VIIes1	Misc	Total area (Ha.)	Area (%)
1	**Adoni**	0	0	0	0	0	0	0	0	468	0	131	0	599	2
2	**Albanuru**	0	0	0	3899	89		96	0	0	0	0	0	4084	16
3	**Badanehalu**	0	0	319	221	0	122	1192	0	0	0	0	0	1854	7
4	**Hebbatam**	994	0	3841	0	0	0	0	0	0	0	0	0	4835	18
5	**Maddilingadahalli**	1766	0	781	0	0	0	963	0	0	0	0	0	3510	13
6	**Nagahalli**	23	371	0	0	0	0	0	0	0	0	0	0	394	2
7	**Pedda Gonahalu**	362	0	0	0	0	0	0	0	0	0	0	0	362	1
8	**Santekulluru**	5660	0	65	0	0	0	0	0	0	0	0	0	5725	22
9	**Tovi**	0	0	0	0	0	0	3186	0	0	0	0	0	3186	12
10	**Tumbalabidu**	0	0	0	0	0	243	141	88	0	160	0	0	632	2
11	**Misc.**	0	0	0	0	0	0	0	0	0	0	0	1023	1023	4
	G Total	**8805**	**371**	**5006**	**4120**	**89**	**365**	**5578**	**88**	**468**	**160**	**131**	**1023**	**26204**	**100**

11. Salient features

- The survey area comprises mainly of soils developed on granite geology.
- Physiographically, the survey area is divided into physiographic units viz. Hill side slopes, Isolated hillocks/subdued Hills, Upper pediplains and Lower pediplains.
- Soils of the survey area have been classified under three orders namely Entisols, Inceptisols and Vertisols as per Soil Taxonomy.
- Out of the total surveyed area, 1231 ha is covered by shallow soils, 7270 ha by moderately deep, 9597 ha by deep soils and 7083 ha by very deep soils.
- An area of 78 ha is under nearly level to very gentle slope and an area of 20373 ha under gently sloping, moderately to strongly sloping is 468 ha and moderately steep to steep area is 131 ha.
- Area under slight erosion is 524 ha only, moderate erosion is 21549 ha and severe erosion is 3108 ha.
- Nearly 35 percent of the surveyed area has been classified under land capability class II, 34.8 percent under class III, 23 percent under class IV, 2.39 percent under class VI and mere 0.5 percent under class VII.

How to use soil survey report

The report encompasses the detailed account of various characteristics of the surveyed area like physiography, relief, geology, climate, natural vegetation, land use and soils. It provides comprehensive information on the soils of the area with their classification, distributional pattern and inter-relationships. Detailed description of the soil series identified in the survey area and the interpretation of different soil mapping units for various applied aspects of agricultural development, such as land use planning and water management, soil conservation are given in relevant chapters. Different problems of the area have been depicted and corrective measures have also been suggested.

Broad outline - This report comprises of nine chapters -

Chapter 1 deals with introduction and background information about the soil survey.

Chapter 2 describes the physical and environmental setting of the area i.e. geology, climate, natural vegetation, socio-economic condition, present land use and pattern of agriculture.

Chapter 3 and 4 cover the procedural details e.g. soil survey methodology, description and characteristics of soils.

Chapter 5 deals with distribution area under different soil series and phases.

Chapter 6 deals with soil formation with their genetic aspect and classification.

Chapter 7 deals with Interpretation of Soil Analytical Data.

Chapter 8 presents various interpretative groupings of soils derived from the database of the soils and land characteristics collected during the survey. The potentiality of the soils and ameliorative measures to be adopted for agricultural development has also been discussed.

Chapter 9 deals with Watershed management, suggested planning for land use and area development which may help the user agencies.

Soil and land capability map: The soil and land capability map is appended in this report. Each soil unit delineated on the map is represented by symbolic expression that corresponds with its description in the legend. The abbreviated symbol gives the information about the soil series name, effective soil depth, surface texture, slope and moderate of erosion, rockiness and stoniness as indicated below with an example. Soil mapping unit AD2dFG3SR connotes, 'AD' - 'Adoni' Soil series name; '2'- Shallow soils (depth class); 'd' - Gravelly sandy loam (textural class); 'FG'- Moderately to steep (slope class); '3'- Severe erosion (Erosion class) and 'SR'- Slightly stony and rocky phase.

Guidelines to Users

The area of interest can be located on the map. For the purpose, soil mapping unit and particulars of interpretative groups may be noted down. Details of soil description and various interpretations can be obtained from chapter 5 and 6 respectively. The details of the soil mapping units, their description and interpretative groupings have been depicted in **Appendix-I** (Guide to soil mapping unit). The differentiating characteristics of Soil Series are furnished in **Table 6** and the

typifying pedon from **Appendix-II**. Village wise mapping unit list along with their area of extent, present land use and management status are given in **Appendix-III.**

The analytical methods used for soil analysis, Glossary of technical terms and the symbols used in this report are depicted in **Appendix-IV, V and VI** respectively.

The recommendations and suggestions given in this report are of broad nature. For site specific, detailed field management and treatment, local experience and conditions should be considered by the various users.

For any additional information or clarification contact may be established with-

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