Report of soil survey and land use of the sub-watershed comprising Mahulpara and adjoining areas in Ib watershed, Sundargarh district, Orissa State, under Mahanadi Catchment.

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The report covers soil survey of a part of the watershed of of Ib river on its right bank on the north side of Sundargarh - Lefripara main road extending upto Atakosa forest ranges and Tunga river, and includes an area of 17,730 acres comprising the following villages :-

S.No.	Village	Area in acres.	S.No.	Village	Area in acres
1.	Lemlema	1,556.67	12.	Kanakjore	1,323.96
2.	Baljori	1,160.17	13.	Tasladihi	808.45
3.	Ratanpur	650.61	14.	Katra	552.57
4.	Talendihi	631.24	15.	Belkadihi	500.41
5.	Kiakachhar	214.04	16.	Indrapur	296.58
6.	Bandhapali	2,695.75	17.	Parbatberna	202.98
7.	Sianbahal	706.01	18.	Budhabahal	1,220.65
8.	Chakramal	855.70	19.	Meghdega	1,164.57
9.	Mahulpali	745.55	20.	Tinkuda	1,035.72
10.	Pradhanpath	402.24	21.	Turungagarh	532.08
11.	Kalobahal	371.18	22.	Gailjore	102.69
				TOTAL: -	17,729.82

The north east and north western parts adjoining the reserve forests are hilly and undulating but the rest of the area are very gently sloping to almost flat. Two small streams rising from these hills flow through some of the villages and discharge into the Ib river.

Most of the low lying paddy areas are bunded and protected from soil erosion. Cultivated uplands, grass lands, forests and waste lands are however moderately to severely eroded. Gully erosion is also common at the foot of hills, which are spreading into grass and forest lands. Severe bank cutting of the Ib river and its tributories are seem in villages Lemlema, Bandhapali, Balijor, Chakramal and Katra.

Forests and grass lands including waste lands occupy about 41 percent of the area, the rest being under cultivation, of which paddy is the principal crop.

The soil belongs to Sundargarh series 1,2,3,4,6 and 7. More than 65 % of the land is covered by series 1 and 2 and about 11 % by series 4. Description of these soils series are given below. They are all derived from granite, gneiss, quartzite and mica schists.

Sundargarh Series 1 : The soils are developed mainly on uplands and sloping lands and are well drained. The upper horizon is sandy to sandy loam and the lower horizons are clay to clay loam. Plenty of ferruginous concretions are present particularly in lower horizons. Lime is absent. The soils are slightly acidic, the pH ranging between 4.5 and 6.5. They are susceptable to erosion when unbunded.

The soils are usually under upland paddy or minor crops, grass land and forests.

Sundergarh series 2: These soils also occur on uplands or sloping lands, and occassionally in low lands also. The texture is light to medium throughout the profile depth ranging from fine sand to loam. They are well drained, and the permeability is rapid. Ferruginous concretions are present., some time forming a distinct accummulation layer. The soils are acidic and free of lime.

These soils are under paddy, otherwise pulses or lesser millets or grass and forest.

Sundargarh series 3: These soils are present on uplands and sloping lands. The surface texture is usually sandy to sandy loam and occasionally clay loam, but the lower horizons are much lighter, being different grades of sand. Iron concretions are some time present, but lime is absent. The pH is on acid side.

The soils are generally under grass and forest. Some time they are used for pulses and minor crops. The water holding capacity is low.

Sundargarh Series 4 : These soils usually occupy plain and flat bunded lands. Effect of local alluvial and colluvial deposits is observed. The surface soil is loam to silt loam and the lower horizons are silty clay

permeability and are very deep. Iron concretions are some time present, and the soil is slightly acidic. These soils are quite productive and are mainly used for paddy.

Sundargarh Series 6: These soils are present usually on plain and flat lands and are bunded. The texture is medium to heavy, ranging from clay loam to silty clay loam to clay throughout the profile depth. It is distinct from Sundargarh series 4, being comparatively heavier. The soils are very deep and have high moisture retensive capacity, and are therefore very suitable for paddy.

Sundargarh series 7 : These soils are similar to series 6, but have lime concretions usually in lower depth, and on the surface in eroded phases. Iron concretions are also present. The soils are moderately to poorly drained. Soil reaction is neutral to slightly alkaline in calcareous ~~ix~~ layers. The lands are usually bunded and grow good crops of paddy.

Soil maps of the villages are given in the appendix. The characteristics of each soil unit in the map is indicated by a symbol. The first part of the numerator denotes the series which represents certain fixed profile characteristics. This is followed by abbreviations for texture of the top soil and then the soil depth. The denomenator ~~xiuux~~ shows firstly the slope of the land, then the degree of soil erosion and finally the stony, rocky or saline - alkaline phase, if any. For example, symbol Sun 1-Ls-d4 / B.e2 indicates Sundargarh series 1 loamy sand soil, 18 to 36 inches deep, slightly sloping (slope 1 to 3 %) with moderate degree of erosion.

Analytical data of some of the soil profiles are given in the appendix.