



OFFICE OF THE COLLECTOR & DISTRICT MAGISTRATE: SUNDARGARH
(Mining Section)

E.mail ID- dcminingsng@gmail.com

No. 227 /XV-14/2020, Dt. 20.08.2020

To

The Member Secretary,
State Level Environment Impact Assessment Authority (SEIAA)
Odisha, 5RF-2/1, Unit-IX, Bhubaneswar-751022

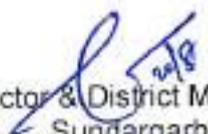
Sub: - Submission of District Survey Report (DSR) on River Sand for grant of
Environmental Clearance in favour of Mining lessees of Minor Minerals.

Sir,

With reference to the subject cited above, I am to say that the District
Survey Report for grant of Environmental Clearance in favour of mining lessees of
Minor Minerals of Sundargarh district has been prepared and approved. The said
report has also been uploaded in the District Website and published in the notice
board of Collectorate, Sundargarh for information of general public.

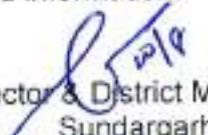
A copy of the District Survey Report (DSR) of minor minerals is
enclosed herewith for favour of your kind information and necessary action.

Yours faithfully,


Collector & District Magistrate,
Sundargarh.

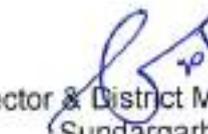
Memo No. 228 /Dt. 20.08.2020

Copy forwarded the Director Environment-cum-Special Secretary to
Govt. F&E Deptt. Odisha, Bhubaneswar for favour of kind information.


Collector & District Magistrate,
Sundargarh.

Memo No. 229 /Dt. 20.08.2020

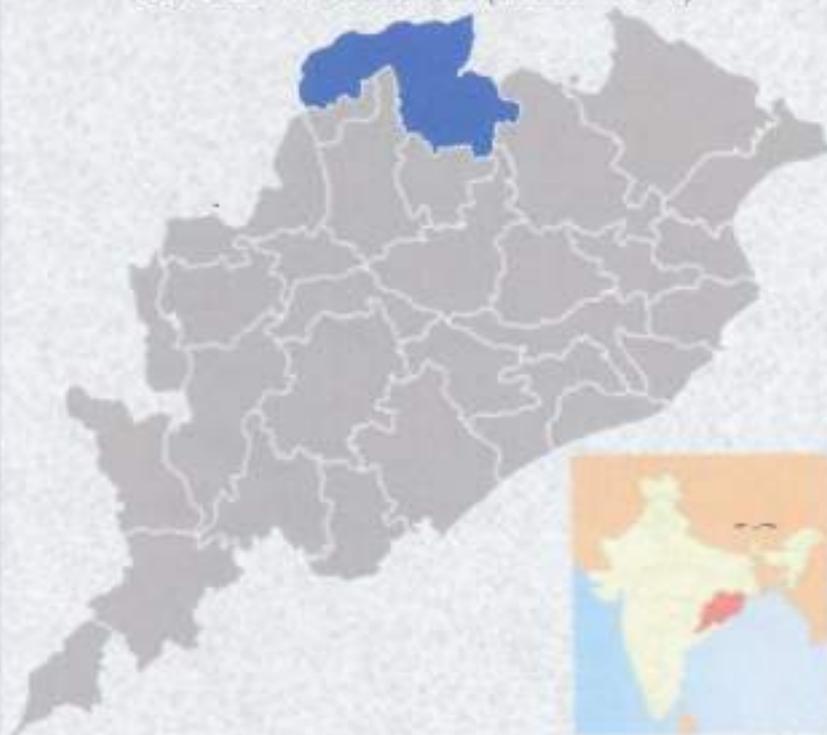
Copy forwarded to the Principal Secretary to Govt. R&DM, Deptt.,
Odisha, Bhubaneswar for favour of kind information.


Collector & District Magistrate,
Sundargarh.



DISTRICT SURVEY REPORT (DSR) OF SUNDARGARH DISTRICT, ODISHA ON RIVER SAND MINING

As per Notification No. S.O. 141(E), 15th January, 2016 & S.O. 3611(E),
25th July, 2018, New Delhi, MINISTRY OF ENVIRONMENT, FOREST &
CLIMATE CHANGE (MoEF & CC)




COLLECTOR
SUNDARGARH

**DISTRICT ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY (DEIAA)
SUNDARGARH, ODISHA
MARCH-2020**

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In addition to the above points, the report contains the following:

- (a) District wise details of river or stream and other sand source;
Annexure-I (Page-60)
- (b) District wise availability of sand or gravel or aggregate resources;
Annexure-II (Page-61-62)
- (c) District wise details of existing mining leases of sand and aggregates,
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0. PREFACE

The Erstwhile Ministry of Environment and Forests(MoEF), (the Government of India, made Environmental Clearance (EC) for mining of minerals mandatory through its Notification of 27th January, 1994 under the provisions of Environment Protection Act, 1986. Keeping in view the experience gained in environmental clearance process over a period of one decade, the Ministry came out with Environmental Impact Notification, SO 1533 (E), dated 14th September 2006. The Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India had amended the said vide notification S.O. 141(E) Dated 15th January, 2016. Now again Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India amended the notification S.O. 141(E) Dated 15th January, 2016 vide S.O. 3611(E) Dated 25th July, 2018. It has been made mandatory to obtain environmental clearance for different kinds of development projects as listed in Appendix-X of the Notification.

Further, in pursuance to the order of Hon'ble Supreme Court dated the 27th February, 2012 in I.A. No.12- 13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., prior environmental clearance has now become mandatory for mining of minor minerals irrespective of the area of mining lease; And also in view of the Hon'ble National Green Tribunal, order dated the 13th January, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor Minerals. The Ministry of Environment, Forest and Climate Change in consultation with State governments has prepared Guidelines on Sustainable Sand Mining detailing the provisions on environmental clearance for cluster, creation of District Environment Impact Assessment Authority(DEIAA) and proper monitoring of minor mineral mining using information technology and information

technology enabled services to track the mined out material from source to destination.

The DEIAA and DEAC will scrutinize and recommend the prior environmental clearance of mining of minor minerals on the basis of District Survey Report. This will be a model and guiding document which is a compendium of available mineral resources, geographical set up, environmental and ecological set up of the district and replenishment of minerals and is based on data of various departments, published reports, journals and websites.

The District Survey Report (DSR) shall form the basis for application for environment clearance, preparation of reports and appraisal of projects. The Report will be updated every five years.

Accordingly, a survey has been carried out by the **District Level Environment Impact Assessment Authority (DEIAA), Sundargarh** with the assistance of Geology and Mining Department and involvement all other related Departments like Revenue Department, Irrigation Department, Forest Department, etc. in the district as per the MoEF, New Delhi, notification S.O. 141(E) dated 15th January 2016 to prepare the District survey Report (DSR) of Sundargarh District (For Sand) in the year 2020. District Survey Report of Sand mining has been prepared in accordance with **Clause-I of Appendix X** of the said notification.

OBJECTIVES

The main objective of the preparation of District Survey Report is to ensure the following –

- Identification of mineral wealth in the district.
- Identification of areas of Minor Mineral having the potential mineral where mining can be allowed. And
- Identification of areas of proximity to infrastructural structures and installations where mining should be prohibited.

01. INTRODUCTION.

Sundargarh district forms the North western part of Odisha state. Sundargarh town is the district headquarter. Geographically, the district is not a compact unit and consists of widely dissimilar tracts of expansive and fairly open, dotted with tree, clad isolated peaks, vast inaccessible forests, extensive river valleys and mountainous terrain. Broadly speaking, it is an undulating tableland of different elevations broken up by rugged hill ranges and cut up by torrential hill streams and the rivers IB and Brahmani. The general slope of the District is from north to south. Because of this undulating, hilly and sloping nature of landscape, the area is subjected to rapid runoff leading not only to soil erosion but also to scarcity of water for both agriculture and drinking purposes. Brahmani, Sankh, Koel and IB are the major rivers flowing through this District. Covering a geographical area of 9712 sq.kms, Sundargarh District is the second largest District of the state, accounting for 6.23 percent of its total area. Out of this total area, forests cover 4232.57 sq km, this being the second largest in the state, accounting for 8.53 percent of the state total, Sundargarh is the southernmost district of Orissa.

Sundargarh is recognized as an industrial district in the map of Odisha. Steel Plant, Fertilizer Plant, Cement factory, Ferro Vanadium Plant, Machine building factory, Glass and china clay factory and Spinning mills are some of the major industries of this District. Sundargarh occupies a prominent position in the mineral map of Odisha and is rich in iron ore, limestone, manganese, dolomite, and fire clay. Major industries are the Odisha Cements Ltd, Hart Fertilizers Ltd, and Odisha Industries Ltd. The industrial town of Rourkela in this District has the first government sector plant built with foreign collaboration and was the first in India to use LD oxygen technology.

Still, more than 50 percent of the people earn their livelihoods from agriculture and allied sectors. Sundargarh District is coming under the

North Western Plateau Zone as per the agro climatic zone of Odisha. Soil group of the Sundargarh district is mixture of red and yellow soil. Out of the 3,13,000 hectares of cultivated land, 52 percent is upland, 30 percent is medium land and 18 percent is low land. As paddy is the main crop, 75 percent of the land is covered with paddy during Kharif. Due to limited irrigation facilities, 24 percent land is irrigated during Kharif and 8 percent of land is irrigated during Rabi.



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02. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT.

Other than ordinary stone & Sand a great variety of major mineral potential like Coal, Iron Ore, Manganese, Bauxite, Limestone and Specified Minor Minerals like Dolomite, Quartz, Pyroxenite & Decorative Stone (Granite) are available in the district.

As there are a major number of mines present within the district so there are two Deputy Director Mines Circles within the district i.e. DDM Kaira & DDM Rourkela

The over view mining data provided by DDM Rourkela is as follows:

Sl No.	List of Mines	Different of Minerals with area	Name of the lessee	Period of validity	Remarks	
1	Basundhara	Coal	214.300	M/s M.C.Ltd	--	Working
2	Kulda	Coal	854.320	M/s M.C.Ltd	--	Working
3	Garjanbahal	Coal	653.828	M/s M.C.Ltd	--	Working
4	Dulinga	Coal	762.420	NTPC	--	Working
5	Manoharpur	Coal	652.8853	OCPL	08.05.2047	Working
6	Dharuara-Kukuda	Limestone & Dolomite	39.42	Sri R.A.Jalan	20.02.2024	Working
7	Biramitrapur	Limestone & Dolomite	793.043	BSL Co. Ltd	31.03.2020	Working
8	Tunmura	Limestone & Dolomite	64.308	Sri V.K.Lall	31.03.2020	Working
9	Tunmura-Jharbeda	Limestone & Dolomite	87.906	Sri V.K.Lall	31.03.2020	Working
10	Gomardih	Dolomite	372.796	TATA Steel Ltd.	31.03.2020	Working
11	Lanjiberna	Limestone & Dolomite	873.057	M/s OCL India Ltd.	29.02.2040	Working
12	Khafkurbahal & Kulenbahal	Limestone & Dolomite	72.439	M/s Shiva Cement Ltd.	14.01.2042	Working
13	Timna	Decorative Stone	11.93	M/s ARC Resources	08.01.2048	Working w.e.f.24.11.2018
14	Banki	Dolomite	26.285	Sri A.N.Patnaik	11.05.2026	Non-working w.e.f.01.04.2019
15	Minmina-Safara	Dolomite	33.492	M/s Bijaya Aditya Mines	12.02.2028	Non-working w.e.f.05.12.2018
16	Banarai	Dolomite	9.324	G.C.Rout	02.09.2022	Non-Working
17	Alanda	Limestone & Dolomite	45.555	M/s B.D.Patnaik Mineral Pvt.Ltd.	16.01.2015	Non-Working

18	Raibaga	Limestone & Dolomite	33.104	M/s Chariot Steel & Power Pvt. Ltd.	08.03.2027	Non-Working
19	Telighana Mines	Limestone & Dolomite	106.833	M/s Om Ganesh Minerals	03.01.2012	Non-Working
20	Purunapani	Limestone & Dolomite	230.525	SAIL	31.03.2020	Non-Working
21	Katang	Limestone & Dolomite	52.236	R.V.Enterprises	--	Non-Working
22	Badakuchulu	Limestone & Dolomite	64.993	R.V.Enterprises	10.12.2034	Non-Working

The over view mining data provided by DDM Koira is as follows:

Information on Mining Leases with Lease Validity under Koira Mining Circle					
Sl No	List of Mines	Mineral with Area (In ha.)		Name of the Lessee	Lease Validity
		Minerals	Area (ha)		
1	2	3	4	5	6
ML Case					
1	Bandhal Mn Mines	Mn	28.0207	Kanakdhara Mining & Minerals (P) Ltd.	13.03.2022
2	Nuagaon Iron & Mn Mines	Iron & Mn	29.257	Prabodh Mohanty	10.05.2019
3	Jamirdihi	Pyroxenite, Quartz, Quartzite, Dunite etc.	50.646	Indian Marble Company	03.07.2023
4	Bhanjapali Iron Mines	Iron Ore	18.00	J N Patnaik	31.03.2027
5	Patabeda Iron Mines	Iron Ore	14.00	M/s M G Mohanty	07.03.2026
6	Patabeda Iron Mines	Iron Ore	28.397	MGM Minerals Ltd.	07.03.2026
7	Bhanjapali Mn Mines	Mn Ore	65.710	R S Sindhu	10.01.2067
8	Oraghat	Mn Ore	11.485	S A Halim	23.09.2027
9	Adaghat	Iron Ore	15.074	National Enterprises	11.01.2067

10	Kadafa, Sanrusibenua, Basada in Sundargarh District; & Pirapokhari & Handibhanga in Keonjhar District	Iron Ore	874.290	Nilachal Ispat Nigam Limited	10.01.2067
11	Gonua & Mandajoda	Iron & Mn	12.080	B C Dagara	02.05.2025
12	Dalita	Iron & Mn	22.165	B C Dagara	07.09.2023
<u>1st RML Case</u>					
13	Kaira	Iron	90.143	Essel Mining & Industries Ltd.	26.08.2021
14	Sanindpur	Iron/Buxt.	147.1	Rungta Sons (P) Ltd.	05.09.2035
15	Raikela	Iron	207.113	Jindal Steel & Power Ltd.	24.05.2035
16	Tantra	Iron	72.56	Korp Resources (P) Ltd.	21.11.2035
17	Patabeda	Iron/Mn	19.425	M/s M.G. Mohanty	02.04.2036
18	Raikela & Tantra	Iron	49.372	PTA Ltd.	02.12.2036
19	Oraghat	Iron	82.961	Rungta Sons (P) Ltd.	09.12.2032
20	Raikela	Iron	18.315	S.N. Mohanty	02.04.2032
21	Gonua	Iron/Mn	13.796	S.N. Mohanty	05.06.2020
22	KJST (Jaldih)	Iron/Mn/Buxt.	188.268	S.N. Mohanty	19.01.2037
23	Toda RF	Iron	77.94	SAIL	28.04.2030
24	Kusumdihi	Mn/Bux.	52.176	B.I.Co. Ltd.	31.03.2020
25	Kamanda	Bauxite	43.067	Rungta Sons (P) Ltd.	25.02.2035
26	Sarkunda	Iron/Mn	393.556	Feegrade & Co. (P) Ltd.	31.03.2020
27	Raikela	Iron	67.586	Geetarani Mohanty	01.07.2041
28	Rantha	Iron	408.8731	OMC Ltd.	30.12.1998
29	Kashira	Iron	418.355	OMC Ltd.	12.10.2026
30	Kanther Kaira	Iron/Mn.	13.270	B.S.Mishra	19.09.2002
31	Raikela	Iron Ore	69.606	C.P. Sharma	16.04.2006
32	Kuljhar	Quartzite	24.167	JK & KP Jhunjhunwala	07.07.2001
33	Gonua	Iron/Mn	12.56	K.C. Pradhan	14.03.2011
34	Nuagaon	Mn	39.89	K.C. Pradhan	18.10.2004

35	Jaldih & Tantigram	Iron/Mn/Bux.	29.575	K.J.S. Ahluwalia	23.07.2011
36	Gonua	Iron/Mn	23.30	K.J.S. Ahluwalia	15.07.2008
37	Kusumdihi	Mn	47.486	Kavita Agarwal	27.03.2004
38	Raikela	Iron	45.932	National Enterprises	20.12.2033
39	Bhanjapali & Koira	Iron	141.235	OMC Ltd.	06.05.2012
40	Kusumdihi	Bauxite	102.79	ORIND	31.07.1997
41	Tantra, Bandhal & Rengua	Buxi./Iron/Mn	106.128	P.D. Agarawal	07.07.2011
42	Raikela	Iron	14.933	S.D. Sharma	20.01.2012
43	Nuagaon	Iron/Mn	12.942	S.D. Sharma	06.05.2005
44	Toda RF	Iron	3.34	SAIL	17.01.2004
45	Tantra	Bauxite	117.44	SAIL	17.08.1989
46	Patmunda	Mn	81.197	Sun Alloys & Minerals (P) Ltd.	11.02.2006
47	Teherai-Sonua	Iron/Mn	29.076	Tarini Meinerals	25.12.2000
48	Nuagaon	Mn	7.85	Tarini Menerals	25.02.2000
49	Kamanda	Mn	60.7	U.C. Mishra	07.08.2008
50	Gonua	Iron/Mn	129.179	Zenith Mining (P) Ltd.	22.10.2001
51	Bhaludunguri	Soap Stone	155.43	Shiv Dutt Sharma	02.12.2004
52	Sanindpur	Iron/ Mn	70.917	National Enterprises	09.09.2020
53	Oraghat	Iron /Mn	25.847	S A Halim	08.04.2018
<u>2nd RML Case</u>					
54	Kurmitar Pahar	Iron	651	OMC Ltd.	28.04.2035
55	Barsuan	Iron	2486.382	SAIL	05.01.2030
56	Kalta	Iron		SAIL	
57	Taldih	Iron		SAIL	
58	Bhaludunguri	Soap Stone	110.479	J.C. Budharaj	21.03.1993
59	Gonua	Iron/Mn	83.151	M.G. Mahanty	29.11.1991
60	Gonua	Iron/Mn	86.886	P.K. Ahluwalia	31.03.2020
61	Toda RF	Iron	25.981	SAIL	16.01.2025
<u>3rd & 4th RML Case</u>					
62	Narayanposhi	Iron/Mn	399.838	A.M.T.C. Ltd.	31.03.2020
63	Mahulsukha	Mn	349.839	A.M.T.C. Ltd.	31.03.2020
64	Nadidih	Iron/Mn	73.855	B.I.Co. Ltd.	31.03.2020
65	Teherai	Iron/Mn	137.46	B.I.Co. Ltd.	31.03.2020
66	Nadidih	Iron/Mn	121.405	Feegrade & Co. (P) Ltd.	31.03.2020
67	Kolmong	Mn	218.53	Rungta Mines Ltd.	31.03.2020
68	Kanther-Koira	Mn	73.653	Rungta Mines Ltd.	31.03.2020

District Survey Report(Sand) Sundargarh, Odisha 8 | Page


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69	Khajurdihi (C-Block) Mandajoda (A-Block) & Dalita (B-Block)	Iron/Mn	Block-A: 55.605 Block-B: 32.375 Block-C: 31.566	Matadin Sharda	30.08.1987
70	Kusumdihi	Mn	31.549	O.M. & M Ltd.	31.03.2020
71	Sanpatholi	Mn	23.29	O.M. & M Ltd.	31.12.1999
72	Orahuri	Mn	51.476	O.M. & M Ltd.	31.03.2020
73	Patmunda	Mn	807.316	O.M. & M Ltd.	31.03.2020
74	Tentulidihi & Dengula	Mn	35.61	O.M. & M Ltd.	31.12.1999
75	Bhanjikusum	Mn	8.498	O.M. & M Ltd.	31.03.2020
76	Malda	Mn	822.00	Tata Steel Ltd.	[RML applied up to 12.08.2030]
77	Sarkunda	Mn	160.90	EMI Ltd.	03.12.2002

03. LIST OF MINING LEASES IN THE DISTRICT WITH LOCATION, AREA & PERIOD OF VALIDITY.

*All required Lease details are given in the prescribed format,
Please refer (Annexure-III , Table No. 11.C.01).*

04. DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS. (for Sand)

Sl. No.	Name of the Tahasil	Name of Source	Revenue Collected for last three years (in Rs)		
			2016-17	2017-18	2018-19
1	Sadar, Sundargarh	Nua-Amilpali Sand Bed	477019.70	381290.80	384239.00
2		Lankahuda Sand Bed	236537.40	185466.56	187666.00
3		Kaintara Sand Bed	354336.00	552950.00	272835.00
4		Samina Sand Bed	289429.00	217782.30	221382.00
5		Chitabhanga Sand Bed	269241.10	214055.15	218946.00
6		Bhasma Sand Bed	310207.50	910979.75	253381.00
7		Badkachhar sand bed	254676.00	207736.00	230316.00
1	Tangarpali	Bilaigarh Sand Bed	91930.00	91930.00	44315.00
2		Surda Sand Bed	28950.00	28950.00	0.00
3		Jamunadhipa Sand Bed	28950.00	28950.00	0.00
4		Telipali Sand Bed	28950.00	28950.00	14025.00
5		Kurga Jharbarni Sand Bed	195137.00	195137.00	195137.00
6		Ergapita Sand Bed	131700.00	187880.00	0.00
7		Abankela Sand Bed	210419.00	420838.00	0.00
8		Daldali Sand Bed	322198.00	483294.00	0.00
9		Nadisuguda Sand Bed	0.00	165315.00	94597.00
10		Lemlema Sand Bed	0.00	0.00	0.00
11		Tangarpali Tamga Sand Bed	0.00	0.00	0.00
12		Ratanpur Sand Bed	0.00	0.00	0.00
13		Kurga Tamga Sand Bed	0.00	0.00	0.00
14		Mangaspur Sand Bed	0.00	0.00	0.00
15		Kurta Sand Bed	0.00	0.00	0.00
1	Bargaon	Barpali Sand Bed	16646.00	20465.00	20857.00
2		Fulbari Sand Bed	42536.00	52056.00	52448.00
3		Kureibaga Sand Bed	34741.00	42256.00	42648.00
4		Kureibaga Sand Bed-2	35562.00	43278.00	43670.00
5		Kharikamunda Sand Bed	33587.00	40766.00	41158.00
1	Gurundia	Narendra Sand Bed-2	1598917.00	1598917.00	1598917.00
1	Lahunipara	Tumkela Sandbed	627750.00	579250.00	2350100.00
2		Birtola Sandbed	742500.00	742975.00	742975.00

3		Digi Sandbed	193120.00	275720.00	193120.00
4		Suarpati Sandbed	542178.00	249678.00	249678.00
5		Palgaon Sandbed	88376.00	402500.00	907910.00
1	Lathikata	Attghat Sand Bed	3,92,000.00	3,92,000.00	3,92,000.00
2		Kansar Sand Bed	5,48,080.00	5,48,080.00	5,48,080.00
3		Bhalupatra Sand Bed	0.00	0.00	3,77,500.00
4		Beldihi Sand Bed-I	3,85,000.00	0.00	0.00
5		Beldihi Sand Bed-II	0.0	1,21,485.00	1,21,485.00
6		Kalokudar Sand Bed	10,15,100.00	0.00	0.00
7		Lungel Sand Bed	0.00	0.00	0.00
8		Balani Sand Bed	0.00	0.00	0.00
1	Balisankara	Ghoghar Sand Bed	0.00	210000.00	210000.00
2		Kusumura Sand Bed	0.00	0.00	0.00
3		Bankidhi Sand Bed	0.00	0.00	0.00
1	Rajgangpur	Chungimati Sand bed	0.00	0.00	0.00
1	Subdega	Kanka Sand Bed	405000	632500	747500
2		Maldhi Sand Bed	648000	1113750	0.00
3		Jaisar Sand Bed	0.00	600000	0.00
4		Gallo Sand Bed	0.00	780000	780000
5		Bhajpur Sand Bed	7404 (Differential Amount)	0.00	0.00
6		Subalaya Sand Bed	0.00	0.00	261360 (Forfeited Amt.)
1	Rourkela	Tarkera sand bed-I	0	600000	600000
2		Tarkera Sand Bed-II	0	0	507000
3		Tarkera Sand bed-III	0	0	1091502
4		Luakera Sand bed		557382.4	557817.6
5		Tumkela Sand bed	298549	298549	298549
6		koelnagar Sand Bed	0	483550	0
1	Lephipara	Surguda Sand	0	0	52200.00
1	Bonal	BRAHAMANI NADI (KOLASAH)	236250	236250	236250
2		BRAHAMANI NADI (DEOGAON)	100000	100000	105000


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05. DETAIL OF PRODUCTION OF SAND.

Sl. No.	Name of the Tahasil	Name of Source	Production for last three years (In Cum)		
			2016-17	2017-18	2018-19
1	Sadar, Sundargarh	Nua-Amilpali Sand Bed	3000.90	3035.60	3010.80
2		Lankahuda Sand Bed	2002.70	2007.60	2037.00
3		Kaintara Sand Bed	6284.60	6284.60	6284.60
4		Samina Sand Bed	2021.70	2021.70	2021.70
5		Chitabhanga Sand Bed	1827.60	1816.50	1869.00
6		Bhasma Sand Bed	3987.00	4029.35	4035.85
7		Badkachhar sand bed	2385.00	2440.00	2737.00
1	Tangarpali	Bilagarh Sand Bed	2000	2000	2000
2		Surda Sand Bed	500	500	500
3		Jamunadhpa Sand Bed	500	500	500
4		Telipali Sand Bed	500	500	500
5		Kurga Jharibeni Sand Bed	4000	4000	4000
6		Ergapita Sand Bed	0	0	0
7		Abankela Sand Bed	1637	0	0
8		Daldali Sand Bed	2000	0	0
9		Nadisuguda Sand Bed	0	0	0
10		Lemlema Sand Bed	0	0	0
11		Tangarpali Tamga Sand Bed	0	0	0
12		Ratanpur Sand Bed	0	0	0
13		Kurga Tamga Sand Bed	0	0	0
14		Mangaspur Sand Bed	0	0	0
15		Kurfa Sand Bed	0	0	0
1	Bargaon	Barpali Sand Bed	510	520	530
2		Fulbari Sand Bed	1300	1320	1330
3		Kureibaga Sand Bed	1060	1070	1080
4		Kureibaga Sand Bed-2	1090	1100	1110
5		Kharikamunda Sand Bed	1010	1020	1030
1	Gurundia	Narendra Sand Bed-2	35136	35136	35136
1	Lahunipara	Tumkela Sandbed	20700	--	6300
2		Birtala Sandbed	8100	6900	3000
3		Digi Sandbed	4800	5100	2700
4		Suarpali Sandbed	6300	10200	9300
5		Polgaon Sandbed	12900	--	600
1	Lathikata	Attghat Sand Bed	7521	8014	7765

2		Kansar Sand Bed	10540	10540	10540
3		Bhalupatra Sand Bed	0	0	0
4		Beldihi Sand Bed-I		0	0
5		Beldihi Sand Bed-II	0	1740	1740
6		Kalokudar Sand Bed		0	0
7		Lungei Sand Bed	0	0	0
8		Balani Sand Bed	0	0	0
1	Biramitrapur	Teterkela	4920	4625	4780
2		Lankoi	2220	2104	0
3		Jaharitolli	2250	2180	2050
4		Gopapur	2520	0	0
1	Balisanakara	Ghoghar Sand Bed	0	0	0
2		Kusumura Sand Bed	0	0	0
3		Bankidih Sand Bed	0	0	0
1	Rourkela	Tarkera sand bed-I	0	6000	6000
2		Tarkera sand bed-II	0	0	5070
3		Tarkera sand bed-III	0	0	7134
4		Tumkela Sandbed	8123.76	8123.76	8123.76
5		Luakera Sand bed	0	8196.8	8203.2
6		Koelnagar Sand Bed	0	0	0
1	Lephipara	Surguda	-	-	900 cum
1	Bonal	BRAHAMANI NADI (KOLASAH)	6750	6750	6750
2		BRAHAMANI NADI (DEOGAON)	2000	2000	2100


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06. PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS OF THE DISTRICT.

Fluvial Process of deposition is a geological process on the face of earth, normally controlled by various factors like gradient of the river, velocity of the flowing water, amount of discharge, change in the river channel pattern & chemical precipitation etc. Sediment in rivers gets deposited as the river slows down. Larger, heavier particles like pebbles and sand are deposited first, whilst the lighter silt and clay only settle if the water is almost still. The flow of water is strongest on the outside of river bends, eroding the bank, but is slowest on the inside of the bends, allowing deposition of sand and gravel. When a river "bursts its banks" after heavy rain, flood water spreads out across the floodplain and, because this water hardly moves, finer silt and clay are deposited – often making good farmland.

Sundargarh district is a physically hilly terrain having majorly dendritic drainage pattern to sub-parallel, there are two main rivers named IB River & Brahmani River. Brahmani river along with its tributaries, the Sankha & koel Rivers flows within the district. There are few other small rivers flows within the district. The Brahmani River originates from the vedavyas at Rourkela within Sundargarh district. The distance of the sources from the river origin is geologically very short, hence this can be concluded that the rate of deposition of sand in the above River is moderate, while in rest small rivers within the district the rate of deposit is slow.

Sundargarh district is physiologically a complex terrain having numerous numbers of hills, moulds, plane lands, river beds, agricultural lands, forest growth areas etc. In the central part of the district there is Mandira Reservoir catchment area. Adjacent to reservoir catchment area hilly terrain present which have an elevation range from mean sea level about 200m to 600m. Hills and mounts are more common in the east to Sundargarh district where as in the west part there are less hills compared to east part. There are several seasonal nala / dry nala & a

few perineal natural drainage exists within the district. Main river that flows in the district is Brahmani River & Ib River, in addition to that a few other small rivers present within the district namely Sankha, Koel, Deo, River etc. The distance of the sources from the river origin is geologically very short, hence this can be concluded that the rate of deposition of sand in Brahmani & Ib River is moderate, while in rest rivers within the district the rate of deposit is slow

**Additional river source details are given in the following tables
Please refer (Table No. 11.A.01) & (Table No. 11.B.01)**



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07. GENERAL PROFILE OF THE DISTRICT.

Sundargarh District was constituted on the 1st January, 1948, out of the two ex-States of Gangpur and Bonai, which merged with Odisha on that day. True to its name, this beautiful District of Sundargarh with about 43 percent of its total area under forest cover and numerous colourful tribes dotting its landscape and with abundant mining potential is bounded by Ranchi District of Jharkhand on the North, Raigarh District of Chhatisgarh on the west and North West, Jharsuguda, Sambalpur and Angul Districts of Odisha on the South and South East and Singhbhum District of Jharkhand and Keonjhar District of Odisha on the east.

Sundargarh is recognized as an industrial district in the map of Odisha. Steel Plant, Fertilizer Plant, Cement factory, Ferro Vanadium Plant, Machine building factory, Glass and china clay factory and Spinning mills are some of the major industries of this District. Sundargarh occupies a prominent position in the mineral map of Odisha and is rich in iron ore, limestone, manganese, dolomite, and fire clay. Major industries are the Odisha Cements Ltd, Hart Fertilizers Ltd, and Odisha Industries Ltd.

Sundargarh District has 3 sub divisions, 16 Tehsils, 17 Blocks and 262 Gram panchayats. Topographically, this district is located between latitude 21 degree 36' N to 22 degree 32' N and longitude 83 degree 32' E to 85 degree 22' E. The population of this District is 2,080,664, this being the fifth most populous District of the state. Its rural population exceeds twelve lakhs and the urban population is more than six lakhs. The male literacy rate is 82.13 and female literacy rate in the District is 65.93.

The climate of this District is characterized by extremely hot summers and cool winters. Climate is hot & moist sub humid. Normal rainfall of the District is approximately 1230 mm, but there is a deviation in receipt of rainfall pattern which is influencing crop production.

The education circle of Sundargarh revenue District was bifurcated from Sundargarh to Sambalpur education circle and came to existence since 1968 with area of operation within the geographical territory of Sundargarh revenue District. There are several educational institutions in

Sundargarh District. National Institute of Technology NIT at Rourkela, Government college Rourkela, S.G. Women's College Rourkela etc are prominent among them.

Sundargarh District celebrates many festivals around the year. Important festivals of the District are Nuakhai, Rath Yatra, Ramanavami and Nama Sankirtana. Nama Sankirtana is a form of worshipping Lord Krishna and Lord Rama in a gathering.

Sundargarh District is one of the tourist attraction spots of Odisha. The District is visited by a large number of tourists round the year. Places like Rourkela, Vedavyasa, Manikmonda, Mandindra dam, Ghogar, Khandadhar and Darjeeng are the important tourist spots of the district.



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08. LAND UTILIZATION PATTERN IN THE DISTRICT: FOREST, AGRICULTURE, HORTICULTURE, MINING ETC.

The best cultivated lands of Sundargarh are located along the valleys of the two main rivers, the Bramhani and IB and their tributaries viz., the Sankha the Koel, the Safai, the Ichha etc. The cultivable area of the district is 6,72,000 hect., out of which percentage of land under highland, medium land and low land are respectively 0%, 27.7% and 22.3%. As in 2011, the net area sown in the district was 3,32,056 hect., which constitute 49.4% of the gross cultivable area. The land use pattern of the district out of the surveyed area of 715280 hect. and 715256 hect. in 2009-10 and 2010-11 respectively, is given in the following table. The detailed Block and ULB-wise land use pattern is elaborated in TABLE.

Year	2009-10		2010-11	
	Area in Ha	% of surveyed area	Area in Ha	% of surveyed area
Forest	176151	24.63	152013	21.25
Land put to non-agriculture use	67568	9.45	72033	10.07
Barren and non-cultivable land	60788	8.50	63222	8.84
Permanent pastures and other grazing land	35324	4.94	34230	4.79
Land under Misc. tree crop & grooves, not included in net area sown	1484	0.21	2206	0.31
Cultivable waste	40313	5.64	45154	6.31
Old fallows	48007	6.71	54575	7.63
Current fallows	64937	9.08	61549	8.61
Net area sown	220708	30.86	230274	31.19

Forest:

There are three forest divisions in the district namely, Sundargarh Forest Division, Rourkela Forest Division, Bonai Forest Division.

As per the data provided by the **Divisional Forest Officer Cum Wild Life Warden, Rourkela** Forest Division; the land use in the division is as follows

forest area cover (1) Proposed Revenue Forest U/s-4 OFA, 1972=2143.199 ha. (14 nos), (2) Demarcated Protected Forest=3919.42 (38 nos), (3) Un Demarcated Protected Forests=15929.713 ha (269 nos), (4) Village Forest=229.176 ha (35 nos), (5) Un-Classed Forest=29.869 ha Total Forest Area in Rourkela Forest Division 22251.377 ha.

Out of 22251.377 ha, an area of **157.108** ha of forest land has been diverted for non-forestry purpose. The detail of diverted forest land is furnished below.

Sl No	Purpose for diversion	Forest Area diverted in ha.	No. of Project in Nos
1	2	3	4
1	Industry	24.34	1
2	Transmission	28.801	3
3	Road	77.796	3
4	Water Suply	1.25	1
5	Railway	17.87	1
6	Pipeline	7.051	1
	Total:	157.108	10

As per the data provided by the **Divisional Forest Officer, Sundergarh** Forest Division: the land use in the division is as follows

Forest Division the forest area cover (1) 94 nos. of Revenue Forest Blocks=101186.87 ha (2) 26 nos. of Proposed Revenue Forest U/s-4 OFA, 1972=5580.80 ha, (3) 92 nos. of Demarcated Protected Forest=14876.84 ha, (4) Un Demarcated Protected Forests=45342.23 ha, (5) Village Forest 146 nos. =1048.10 ha, (6) Un-Classed Forest= 80.43 ha (7) Land having Forest growth=3939.15 ha. Total Forest Area in Sundargarh Forest Division =172054.42 ha.

Out of 172054.42 ha, an area of **2225.0015** ha of forest land has been diverted for non-forestry purpose. The detail of diverted forest land is furnished below.

Sl No	Purpose for diversion	Forest Area diverted in ha.	No. of Project in Nos
1	2	3	4
1	Mining	1264.943 ha.	9 nos.
2	Transmission	543.6799 ha.	18 nos.
3	Road Project	85.987 ha.	3 nos.
4	Railway Project	270.642 ha.	5 nos.
5	Irrigation Project	21.92 ha.	2 nos.
6	Other	37.84 ha.	4 nos.
	Total	1954.37 ha.	41 nos.

Against the total diverted land 2980.171 acers has been identified for raising Compensatory Afforestation.

As per the data provided by the **Divisional Forest Officer, Bonai** Forest Division; the land use in the division is as follows;

Total 203268.864 ha of forest area cover in Bonai Forest Division, Details of Category-wise forest area cover in this division is furnished below;

Sl No	Category of forest	Number	Area(ha)
1	RF(Reserve forest)	45	102894.567
2	PRF(Proposed Reserve forest)	41	34105.896
3	VF(Village forest)	32	166.790
4	UDPF(Un-demarcated Protected forest)	406	37291.831
5	DLC land	-	22331.549
6	Un-classed forest	-	61.731
7	DPF(Demarcated demarcated protected forest)	25	5849.793
8	PF(U/s-33) (Protected forest)	27	566.707
	Total forest area	-	203268.864

Out of 203268.864 Ha. Total forest area, 6996.398Ha. of forest land has been diverted for no-forestry purpose. The details of diverted forest land is as furnished below;

Sl no	Purpose of diversion	Total(ha)	Number of project
1	Mining	6441.759	49
2	Industries	0.817	2
3	Irrigation	386.799	3
4	Road	91.144	2
5	Electric	47.346	1
6	Exploration drilling	0.000023	1
7	diverted under Forest Right Act, 2006 below 1ha.	28.533	67
		6996.398	125

Against the total diversion area, 5523.833 ha. Of land (degraded forest land-4357.699ha.+ non-forest land -1166.134ha.) has been identified for the purpose of compensatory afforestation in Bonai forest division.

Agriculture:

Land utilization pattern in the district as per the department of agriculture Sundargarh is as follows:

SL. NO.	Name of the ADO Circle	Geographical Area	Forest Area	Cultivated area				Paddy Area				Non Paddy Area	Total	Crop achievement	
				High	Medium	Low	Total	High	Medium	Low	Total			Kharif (in Ha.)	Rabi (in Ha.)
1	ADO, Lephripa	18226	94419	28595	15894	8260	52749	13892	15894	8260	38046	14703	52749	51984	13901.8
2	ADO, Sundargarh	176892	95523	23887	16506	13808	54201	8825	16506	13808	39139	15062	64201	53267	15528
3	ADO, Rajgangpur	100443	14731	30459	15098	9055	54612	10929	15098	9055	35082	19530	54612	53924	19062.4
4	ADO, Patnash	194024	46918	49693	22358	12007	84058	30383	22358	12007	64748	19310	84058	84058	30143
5	ADO, Bonai	315659	186569	30366	25144	11870	67380	11971	25144	11870	48985	18395	67380	61080	19926
	Total:	971244	438160	163000	95000	55000	313000	76000	95000	55000	226000	87000	313000	304313	98561.2

The agricultural activity is by and large confined to the traditional Kharif cultivation due to lack of adequate irrigation system.

Horticulture:

Land utilisation pattern in the district as per the horticulture department Sundergarh is as follows:

LAND UTILISATION PATTERN IN SUNDERGARH DISTRICT(Area in Ha.)				
Kharif	YEAR			
	2016	2017	2018	2019
Vegetables	12460	13390	18765	13500
Spices	3900	4121	4320	4510
Fruit	16300	17406	17850	19708
Rabi				
Vegetables	30974	26476	24612	36090
Spices	5429	5600	7124	5853

Mining:

Incidence of major mineral resources is quite encouraging in the district. Leaving aside the above major minerals, some Specified Minor Minerals like Quartz, Talc/ soap stone, Decorative stones are also available in certain areas of the District. Besides, the district is rich in minor minerals like river sand, road metals, morrum, laterite stone etc.

The total area considered for mining activity for all minerals shall be the mining area within the district.

Major mineral areal details are given in the over view of mining activities chapter.

Total Area for considered for Sand mining shall be sum of lease area of sand quarry. Total Area for considered for Stone mining shall be sum of lease area of stone quarry.


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09. PHYSIOGRAPHY OF THE DISTRICT.

Being the part of the Chhota- Nagpur Plateau, major parts of the district has rough and hilly terrain and rich in mineral resources as well. Hills of Sundargarh district may be classified in to three broad categories, Bonai hills, Sundargarh hills, Biramitrapur hills. The Bonai hills which further elongate into the Keonjhar district are known for their iron ore resources, whereas Sundargarh hills famous for coal deposits, which further elongate into Jharsuguda district and Chhatisgarh state as well.

The hills are mainly extensions of the Deccan and Chhota-Nagpur Plateau. In Sundargarh and Panposh Sub-Divisions there are mainly three hill ranges apart from a few isolated outcrops. The one, in the reserved forest blocks of Mahabir Chhatam, Topkurlu, Bhaismunda and Chirobeda on the South-East forming the boundary between Sambalpur and this district, runs East-West direction. The second, in the centres starts from Gurabasa reserved forest in South-West to North-East direction and runs through Kumbahal, Runga, Peruabhadri, Panchara and Brahmani reserved forest ending near the Sankha River. The third, on the western border of the district running South-East to the North-West direction is an extension of the wide range of hills forming the watershed between the river Mahanadi and her affluent IB. Thus these mountain ranges seem to have started from a point in the middle of the southern boundary of the district and outflanking in three different directions divide the country into separate plains.

The Hemgir plateau is flanked by a system of mountain which starts from Garjanjore (1966' or 599m.) and runs due South-East up to Bendrichuan (1343' or 409m.). There is an abrupt swing near the latter due West up to the water parting between the Garjhor and the Jhulenbar after which there is again a gentle bend due North-West up to the border of Raigarh district.

Among the ridges mention may be made of the great ridge, an extension of the Karampada range of Singhbhum, which apparently

seems to be the spine of the Toda area in East Bonai. It extends from North-East to South-West and is capped with an immense deposit of high grade hematite. The Rontha plateau (2500'-3000' or 762-914m) from which descends Khandadhar water fall is also covered with iron ore. The Bichakhani hill yields millions of tones of iron ore which feed the Rourkela steel plant. A new railway line has been laid to the foot of the hill at Dumara for transportation of the iron ore.

The territory covered by Sundargarh and Panposh Sub-Divisions (comprising the ex-State of Gangpur) consists of a long undulating table-land about 700ft. (213) above the sea level dotted with hill ranges and isolated peaks of considerable height. On the West of Sundargarh Sub-Division lies the Hemgir Plateau, nearly 1150 ft (351m) high, in the centre of which is located the village Hemgir. To the North of Hemgir the land is considerably hilly while to the South it is relatively plain with a minimum elevation of 709 ft (51.6m) near the Chuanbahal village. The eastern tract of the Sub-Division intervening between Chota Nagpur plateau and Mahavir range, for the most part, is open and well cultivated, the general elevation of which varies from 700' to 1000' (213m TO 305m) but that of the reserved forests except, of course, a few patches, comes under 1000' to 1500' (305m to 457m). Besides, numerous isolated hills and sharp ranges running generally East to West are also evenly distributed throughout the country. On the North the Chota Nagpur plateau with its foot-hills gradually falls away to the plain while the Mahavir range in the South, springs abruptly in an irregularly wall of tilted and disrupted rock and forms for some length the boundary between Sambalpur and this district. On the southern border, dense forests linking up with the forest-clad ranges of Bonai Sub-Division are also seen. Didhrapahar, the highest peak 2509' (765m) of Sundargarh Sub-Division is located near the tri-junction of Sundargarh Sub-Division, Bonai Sub-Division and Sambalpur district.

The block to the North formed by the broad valleys of the Sankh, the South Koel and the Deo, although interspersed with isolated hills and series of small ridges striking East and West, is generally plain, but the tract to the South is comparatively more hilly and wooded excepting the valley of the Brahmani which extends to an appreciable distance South of Panposh. The region extending from South of Bisra to South of Chirobeda is much broken and hilly, it raises along the Singhbhum and Bonai boundaries to an elevation of 1800' to 2000' (549m) to (610m) the highest peak being Bhaisamunda Pahar 2234' (681m). In the plains the elevation is about 600' to 700' (183m to 213m) the lowest point on the Brahmani vally on the Bonai border near Banki village being 575' (175m). The land is completely denuded of its fertility and is unsuitable for cultivation.

The principal peaks are Mankarnacha (3664ft or 1117m) and Badamgarh (3525ft or 1074m), both on Keonjhar boundary, Kumritar (3495ft or 1065m), the Bichakani (2964ft or 903m), and Khandadhar (3000ft or 914m), all in Bonai Police Station, Rengalbera (2179ft or 664m) in Banki Police Station, Baghbindha (2650ft or 808m), Raipiri (2620ft or 799m) and the Kantamunda (2524ft or 769m), all in Gurundia Police Station, Chelliakota (3331ft to 1015m), in Mahulpada Police Station, Balla (3313ft or 1010m) and the Karaspani (2483ft or 757m), both in Kaira Police Station. All the above peaks are in Bonai Sub-Division, Besides, some unnamed peaks of considerable heights are also found. No hills of any significant height are found in Panposh Sub-Division. Among the peaks in Sundargarh Sub-Division mention may be made of Man (1935ft or 590m) on the Madya Pradesh border, Satparlia (1327ft or 404m) and Jogijogan (1471ft or 448m), both in Sundargarh Police Station, Mahabir (1861ft or 567m) in Bargaon Police Station, Didra (2509ft to 765m) in Rajgangpur Police Station on the trijunction of Bonai and Sundargarh Sub-Divisions and Sambalpur district. Other peaks on the Didra range are Bhaisamunda (2234ft or 681m) and Kichimir (2050ft or 625m). The last named peak is also in the Rajgangpur Police Station. Andiabira (1455ft or 443m) and Bilpahari (1333ft or 406m) are among the less prominent peaks.

10. RAINFALL: MONTH-WISE.

The district enjoys sub-tropical climate characterized by hot and dry summer, cold winter and erratic rainfall in monsoon. The winter season extends from November to end of February, which is followed by summer season from March to the middle of June, and rainy season from middle of June to middle of October. During summer months the maximum temperature rises up to 43° C and May is the hottest month. December is the coldest month of the year when the average daily temperature drops down to 8° C. Relative humidity is around 60-70% throughout the year. The highest and lowest monthly mean relative humidity so far recorded is 97% (Dec) and 26% (April).

The District Rainfall in milli-meters (R/F) shown below are the arithmetic averages of Rainfall of Stations under the District.

Month	Year wise rainfall in mm			
	2016	2017	2018	2019
Jan	6.02	3.32	Nil	6.45
Feb	18.56	Nil	0.74	38.82
Mar	11.62	0.41	1.16	28.82
April	Nil	0.45	38.2	37.98
May	23.31	46.77	106.04	25.91
June	90.4	230.77	150.91	119.82
July	330.12	499.18	311.86	221.84
Aug	307.08	260.06	403.33	447.78
Sept	233.62	183.39	203.06	313.29
Oct	31.34	60.44	10.47	66.75
Nov	Nil	3.25	Nil	Nil
Dec	Nil	Nil	86.52	5.38
Total:-	1052.07	1288.04	1312.29	1314.84

11. GEOLOGY AND MINERAL WEALTH.

GEOLOGY-

Sundargarh District is part of Gangpur Group, South Singhbhum Granite-Iron Ore Series as per the studies done by several Geologists namely J. A. Dunn, Sarkar & Saha, M.S. Krishnan etc at different times.

Part of sundargarh district under reference represents a part of the Archean complex with deformed meta sediments belonging to the Biramitrapur limestone and dolomite belt in Gangpur group of Precambrian age. The litho units encountered in the area includes Quartzite, Quartz-mica-schist, slates and phyllite, limestone and dolomite, Gondite and Epidiorite, Quartz veins traversing the Gangpur group of rocks represent a phase of later geological activity. Laterites which are commonly seen in the area have been resulted from a process of residual weathering. These group of rocks are separated from the quartzite and quartz schists of the iron ore group by the persistent zone of crushed quartzite and conglomerate (Raghunath Palli Conglomerate) to the south.

To the west of the Singhbhum district, in Gangpur (now called as Sundargarh), there is an anticlinorium or geanticline which has an ENE-WSW axial direction. The structure is closed towards the east but is cut up and obscured by granitic intrusive to the west. The strike becomes WNW-ESE in eastern Gangpur, in conformity with and influenced by the structural trends of the Mahanadi & Brahmani valleys just to the south and southwest of this region.



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The anti-clinorium shows the following succession of rocks, as worked out by Krishnan and named by him Gangpur Series.

Iron-ore Series (?)	Phyllites, Slates and Lavas Raghunathpali Conglomerate
-----Shear zone-----	
Gangpur Series	Phellytes and Mica-schists Upper Carbonaceous Phyllites Calcitic Marbles Dolomitic Marbles Mica-schist and Phyllites Lower Carbonaceous Quartzites and Phyllites Gondites with associated Phyllites Base not seen

Regional Structural Set-up- There is a general increase in the grade of metamorphism when the rocks are followed from the Singhbhum boarder on the east to the centre of the anti-clinorium on the west. It should, how ever, be noted that some of the rocks , which have phyllitic appearance and characters, are really products of retrogressive metamorphism, containing relics of garnet, staurolite, biotite etc. The Satpura strike (ENE-WSW) is found to be superimposed on an earlier , presumably Eastern Ghats, strike which is prominent.

Several large scale and many minor scale faults occurs in the area. Most of them are the block fault type.

The oldest rocks are Gondites found in the central or axial region of the anticlinorium. They contains, besides quartz-spesartite rocks, also those

with rhodonite, blandfordite, winchite etc., associated with workable bodies of manganese ore. They are succeeded by carbonaceous quartzite and phyllites, dolomitic and calcitic marbles and carbonaceous phyllites, these being intercalated with phyllites and mica-schists. The carbonaceous phyllites are flaggy slaty in certain places while the marbles contains very large reserve of good limestone & dolomite which are now being used as fluxes in the iron-smelting furnaces of Odisha, Bengal, Jharkhand & Bihar. Large quantities of the limestones also burnt in to Quick-lime well known in the Calcutta market as Bisra lime, named after Bisra railway station near the Singhbhum-gangpur boarder. At the top of the succession is a shear zone in which the Raghunathpali Conglomerate is involved. It is a sedimentary conglomerate which has suffered intense shearing as a result of which an autoclastic character has been imposed in it. The over lying beds are phyllites and mica-schists belonging to some parts of the Iron ore Series. The Gangpur Series is intruded by basic sills(Dalma traps) and by the bosses of the Chhota Nagpur granite. The basic rocks have been converted in to schistose, amphibolites and epidiorites containing amphibole, clinozoisite and magnetite.

Radiometric age dating of biotite etc from three different horizons in the Gangpur Series has given ages of 910 MY to 990 MY indicating that the rocks were folded and metamorphosed at the time of folding of the rocks north of the Copper Belt and the intrusion of Chhota Nagpur granite gneiss. This needs conformation by future work.

J. A. Dunn remapped parts of the Iron-ore Series of South Singhbhum and re-Interpreted the succession. He thought that the older metamorphosed by the SINGHBHUM GRANITE. The conglomerates and sandstones south of Chaibasa were assigned to the lower part of the KOLHAN SERIES, which include also limestone and shales. These limestones are worked near Chaibasa for cement manufacture. This

series lies partly on the Singhbhum Granite, but is much younger than the iron-ore Series

Based on the presently available knowledge, the succession in Singhbhum will be as follows :

Newer dolerite

Soda granite and Cu-U mineralization

Chota Nagpur Granite-Gneiss

Dhanjori Orogeny (Singbhum Orogeny of Sarkar and Saha)

Dalma and Dhanjori lavas

Dhanjori Stage (Kolhan Series)

Singbhum Singhbhum granite

Orogeny (Iron-ore Orogeny Sarkar and Saha)

Iron-ore Series

The geology of the area north of the Singhbhum thrust zone and east of the large Singhbhum granite exposure has been described by Sarkar and Saha(1962) and Iyengar and Alwar(1965). According to the latter authors, a geosyncline developed to the north and east of the Singhbhum granite craton, in the Dhanjori and Dalma areas. The Basal quartzite-conglomerates in this basin are followed by black carbonaceous phyllites and turbidite sequence which is overlain and intercalated with submarine volcanic flows and tuffs. Marginal faults in the Mayurbhanj and Dhanjori areas were intruded by gabbro-anorthosites accompanied by vanadiferous magnetite lenses and pyroxene-granulite granophyre. A quartzite conglomerate horizon occurs above the carbonaceous phyllites. This geosyncline was subjected to folding and intrusion of granites, viz., the ROMAPAHARI GRANITE in Mayurbhanj, the CHAKRADHARPUR GRANITE in Ghatsila region and the Soda-Granite in the Singhbhum shear zone. The Dhanjori geosyncline contains some 9,000 m of sediments but the thickness is

about 4,500 m to the north of the shear zone. The cratonic region also experienced intrusion of ultrabasic lenses and dykes of Newer Dolerite. These authors also believe that the Mayurbhanj iron formation is older than the Iron-ore Series of Keonjhar-Bonai and that the sequence found to the north of the Singhbhum Copper Belt shear is younger than the Iron-ore Series as it the same as, and continuous with, that in the Dhanjori syncline.

The sequence in north Singhbhum and in Dhanjori and Mayurbhanj may now be given as below:

Romapahari (Mayurbhanj), Kulipal (Dhanjori) and Arkasani Soda-Granite (shear zone), all

Syntectonic

"Dhanjori orogeny" (Singhbhum orogeny of Sarkar and Saha)

Pyroxene granite-granophyre

Gabbro-anorthosite (V magnetite in places)

Spilitic Lavas and quartzite (Dhanjori and Dalma Lavas)

Turbidite sequence with quartz-conglomerate

Black phyllite

Conglomerate

-----Unconformity-----

Singhbhum Granite, mostly syntectonic

"Singhbhum orogeny" and folding of Iron-ore Series (-Iron-ore Orogeny of Sarkar and Saha)

Iron-ore Series of S. Singhbhum -Keonjhar-Bonai

Sarkar and Saha called the mountain-building movements which followed the deposition of Iron-ore Series and which was accompanied by the intrusion of the Singhbhum Granite as "Iron-ore Orogeny". It would most appropriately be called the SINGHBHUM OROGENY, particularly as Iyengar

and Alwar have now designated the one following the Dhanjori-Dalma assemblage of rocks as DHANJORI OROGENY.

Intrusive into the Iron-ore Series are ultramafic rocks, the Chota Nagpur Granite-Gneiss, Singhbhum Granite, the Arkasani Soda granite and dykes of Newar Dolerite.

Ultramafic Rocks.—In South Singhbhum there is a patch of altered peridotitic rock near Nurda which may be pre-Singhbhum in age. To the same age may belong the chromite bearing rocks (saxonite, lherzolite etc.) found near Chaibasa. The chromite bodies in them have been worked for nearly 50 years.

The gabbro-anorthosites associated with lenses of vanadiferous magnetite in East Singhbhum and the pyroxene-ricbeekite-granite-granophyre of Simlipal in Mayurbhanj belong to the period of development of marginal fractures along the Dhanjori geosyncline, prior to the Dhanjori Orogeny and the emplacement of the Romapahari and Kullipal Granites. These granites appear to be a later age, probably contemporaneous with the formation of the shear zone and its mineralization by copper and uranium bearing fluids

The Chota Nagpur Granite-gneiss occupies an immense tract to the north of the Dharwarian rocks of Singhbhum and Gangpur. The northern belt of this extends from Santhal Parganas through Hazaribagh to Palamau and the southern one from Bankura to Ranchi and Jashpur and farther west. It is distinctly intrusive into the Iron-ore Series and assumes a banded and composite aspect near the margins of the schistose rocks, as for example along the Gangpur-Ranchi border. It is generally coarse and porphyritic and contains quartz, microcline orthoclase, oligoclase, biotite, a little apatite (and occasionally some green hornblende, in Singhbhum). Tourmaline is

frequently seen but especially abundant in the pegmatite phase as in Southern Ranchi. In parts of Manbhum, Ranchi and Hazaribagh, it weathers into fars and is called the Dome Gneiss. The composite form of the rock used to be referred to as the Bengal Gneiss in earlier geological literature. Its later phases are pegmatites, aplites and quartz veins, the last being often auriferous in Chota Nagpur.

Singhbhum Granite.—This great batholithic mass occupies an area of several hundred sq. km. in Singhbhum, Keonjhar and Mayurbhanj from Chaibasa in the north and to beyond Keonjhar in the south. According to A. K. Saha, who has made a detailed study of the northern part of this mass, it consists of a series of domed up intrusions varying in composition from biotite-granodiorite to adamellite, biotite-trondjemite and leucogranite. The margins are hornblende, chloritic or epidotic granodiorites and pyroxene-diorites derived by the granitisation of the country rocks. The main mass shows distinct N.-S. or N.N.W.-S.S.E. foliation which tends to become parallel to the margin of the country rocks. A few patches unassimilated older basic rocks and quartzites occur in the granite. The common granodiorite consists of perthitic microcline (20 to 30 per cent Ab.) with oligoclase-andesine (12 to 28 per cent An.), Quartz, biotite, subordinate muscovite and chlorite. The accessory minerals are epidote, sphene, zircon, apatite and rutile. The marginal structures have been controlled by the country rocks, while the central portions show evidences of forceful intrusion. The granite is traversed by numerous dykes of NEWER DOLERITE. Iyenger and Alwar believe that the bgranite, especially near its eastern margin, may contain younger intrusive units belonging to the Dhanjori orogeny which appears to be contemporaneous with the Satpura orogeny of the Bihar Mica Belt (950-1000 M.Y.) associated with intrusion of granite and mica bearing pegmatites.

The Arkasani Soda-granite—This rock, which is granophyric in part, is found along the thrust zone of the Copper Belt in several places. It varies from a feldspathic schist to a fairly coarse-grained granite, the former often showing thin bands and streaks of mafic minerals. Granophyric texture is

fairly common in some exposures. The typical rock contains partly altered plagioclase, quartz, muscovite, biotite and grains of magnetite and apatite. Sericification make up the epidotisation of the feldspars is common. The first two minerals make up the bulk of the rock. It is regarded as having been formed from the granitization and replacement of muscovite-quartz-schists which originally occupied much of the thrust zone. Radiometric dating seems to show that it is approximately of the same age as the mica bearing pegmatites of Bihar (about 950 M.Y.)

Mineral wealth:

Other than ordinary stone & Sand a great variety of major mineral potential like Coal, Iron Ore, Manganese, Bauxite, Limestone and Specified Minor Minerals like Dolomite, Quartz, Pyroxenite & Decorative Stone (Granite) are available in the district.

Reserve & Resource potential Evaluation:

As per UNFC (United Nations Framework Classification) of potentials of minerals, A '**Mineral Reserve**' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments, which may include feasibility studies, have been carried out, and include consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction is justified.

The mineability (Economic Viability) is demonstrated in consecutive Feasibility Assessment stages which may be, in order of increasing detail, Prefeasibility Study and Feasibility Study/Mining Report. A Probable Mineral Reserve may derive from a Prefeasibility study and a Proved Mineral Reserve from a Feasibility Study or mining activity documentation. Hence for the Reserve Potential estimation of the Sundargarh district, the approved Mining Plans of each existing Quarry has been referred as it provides a details of the Mineable & Geological Reserve potentials of the Quarry lease.

As per the approved Mining Plans of the Quarry leases in Sundargarh District the Total mineral potential are as follows;

Potential Reserve as per Approved Mining plan of Sources of Sand

Sl No.	Name of Tahasil	Name and location of Source	Geological reserve as per approved Mining Plan of existing quarries (In m ³)	Mineable reserve as per approved Mining Plan of existing quarries (In m ³)
01	Sundargarh	Nua-amlipali Sand Khata No.- 381, Plot No- 475/P & 477/1211/P, Kisam- River 4.856 Ha Latitude- N22° 07'4.40" to N22°07'19.70" Longitude- E84°00'36.70" to E84°00'45.30"	70218	61824
02	Sundargarh	Chitabhangra Sand Khata No.- 474, Plot No- 2413/P, Kisam- River 4.127 Ha Latitude- 22°05'38.30" to 22°05'47.60" Longitude- 84°00'47.70" to 84°00'50.70"	54873	46311
03	Sundargarh	Lankahuda Sand Khata No.- 150, Plot No- 1/P, Kisam- River 4.90 Ac Latitude- 22°02'37.59"N to 22°02'43.84"N Longitude- 83°59'32.59"E to 83°59'37.15"E	19830	15778
04	Sundargarh	Bhasma Sand Khata No.- 133, Plot No- 1/1384/P, Kisam- River 9.30 Ac	37637	31816

		Latitude- 21° 57'38.12"N to 21° 57'46.81"N Longitude- 84°01'51.51"E to 84°01'59.85"E		
05	Sundargarh	Badkachhar Sand Khata No.- 119, Plot No- 1783,1389/p Kisam- River Latitude- N22°02'557.6" to N22°02'01.8" Longitude- E84°09'47.0" to E84°09'59.7"	35191.2	25031.2
06	Sundargarh	Kaintara Sand Khata No.- 76, Plot No- 756/797, Kisam- River Latitude- 21°58'10.70" to 21°58'18.90" Longitude- 84°02'11.10" to 84°02'22.80"	17011.5	13467
07	Sundargarh	Samina Sand Khata No.- 107, Plot No- 1/p, Kisam- River Latitude- 22° 05'13.60" to 22°05'18.70" Longitude- 84°00'39.30" to 84°00'44.40"	13425	10108
08	Sundargarh	Nua-amlipali Sand Bed- I Khata No.381, Plot No. 1/P, Area-12.00Ac. Kisam- Nadi latitude of 22°07'40.96"N to 22°07'47.25"N and longitude of 84°01'15.18"E to 84°01'26.35"E	23251	20300
09	Sundargarh	Nua-amlipali Sand Bed- II Mauza- Nua- amlipali, Khata No.381, Plot No. 397/P, Area- 12.00Ac.	45381	39040

		Kisam- Nadi latitude of 22°07'30.39"N to 22°07'38.88"N and longitude of 84°00'56.88"E to 84°01'10.41"E		
10	Sundargarh	Kainsara Sand Bed Mouza- Kainsara, Khata No. 86, Plot No. 96/1146/P, Area-6.00 Ac. Kisam- Nadi Mouza- Deuli, Khata No. 257, Plot No. 2668/P, Area-6.00 Ac. Kisam- Nadi latitude of 21°58'30.42"N to 21°58'34.22"N and longitude of 84°02'31.39"E to 84°02'46.81"E	33849	28276
11	Bargaon	Barpali Sand Khata No-64, Plot No. 387/p Area- 0.50 , kisam- river Latitude- 22°09' 43.70"N to 22° 09' 45.08"N and longitudes of 84°19' 20.79"E to 84°19' 22.79"E	2040	891
12	Bargaon	Fulbari Sand Khata No-63 Plot No. 01/p Area- 2.00 , kisam- river 22° 09' 28.96"N to 22° 09' 34.13"N and longitudes of 84°18' 38.05"E to 84°18' 44.15"E	4033	2383
13	Bargaon	Kureibaga Sand Khata No-101 Plot No- 01/p & 751/p, Area-4.00, kisam-river, 22° 07' 40.20"N to 22° 07' 58.74"N and longitudes of 84°17' 16.41"E to 84°17' 40.54"E	2087	1299

14	Bargaon	Bhoipali Sand Khata No- 101, Plot No- 1453/1483/p. Area- 1.00, Kisam- river. 22° 07' 40.20"N to 22° 07' 58.74"N and longitudes of 84°17' 16.41"E to 84°17' 40.54"E.	5058	3842
15	Bargaon	Kharikomunda Sand Khata No- 117, Plot No- 1185/01. Area- 5.00, kisam- river. 22° 07' 24.08"N to 22° 07' 27.53"N and longitudes of 84°16' 40.28"E to 84°16' 48.52"E.	12617	9751
16	Tangarpali	Bilaigarh Sand Bed Bilaigarh Khata No. 217 Plot No. 1240/1 Kisam- Nadi Lat- 22 00' 30.90" N Lon- 83 59' 31.50" E	18399	14216
17	Tangarpali	Surda Sand Bed Surda Khata No. 126 Plot - 1186/1 Kisam - Nadi Lat- 22 01' 43.80" N Lon- 83 58' 23.80" E	7668	5443
18	Tangarpali	Jamunadhpa Sand Bed Jamunadhpa Khata No. 38 Plot no. 290/1 Kisam- Nadi Lat- 22 01' 05.10"N Lon- 83 59' 13.30" E	11563	8375
19	Tangarpali	Telipali Sand Bed Telipali Khata No. 171 Plot No. 991 Kisam- Nadi Lat- 22 01' 35.60"N Lon- 83 58' 28.50"E	9871	7212

20	Tangarpali	Kurga Jharberni Sand Bed Kurga Khata No. 201 Plot No. 2447/P Kisam Nadi Lat- 22 04' 51.95"N Lon-83 59' 35.25"E	28628	20916
21	Tangarpali	Lemlema Sand Bed Lemlema Khata No. 186 Plot No. 132/1645 Kisam Nadi Lat- 84 02' 54.77"N Lon- 84 02 06.68"E	3679	1553
22	Tangarpali	Tangarpali Tamga Sand Bed Tangarpali Khata No. 189 Plot No. 826/P Kisam Nadi		
23	Tangarpali	Ratanpur Sand Bed Ratanpur Khata No. 107 Plot No. 577/1157 Kisam Nadi Lat- 22 08' 02.33"N Lon-83 01' 15.51"E	3459	912
24	Tangarpali	Kurga Tamga Sand Bed Kurga Khata No. 201 Plot No. 1990 Kisam Nad		
25	Tangarpali	Ergapita Sand Bed Ergapita Khata No. 34 Plot No. 220/P Kisam Nadi Lat- 21 59' 02.52"N Lon- 84 00' 40.09"E	79792	68480
26	Tangarpali	Mangaspur Sand Bed Mangaspur Khata No. 432 Plot No. 1314/1 Kisam- Jore Lat- 21 57' 27.06"N Lon-83 59' 07.24"E	2159	820

27	Tangarpali	Kurla Sand Bed Kurla Khata No. 168 Plot No. 1720 Kisam- Jore Lat- 21 56' 27.31"N Lon- 83 59' 09.23"E	3094	940
28	Tangarpali	Nadisuguda Sand Bed Nadisuguda Khata No. 113 Plot No. 338/1350 Kisam Nadi Lat- 21 56' 40.36"N Lon- 84 00' 57.77"E	109266	93752
29	Tangarpali	Daldali Sand Bed Khata No. 153 Plot No. 1495/1652 Kisam- Nadi Lat-21 55' 10.90' N Lon- 83 59' 51.35"E	53833	46766
30	Tangarpali	Abankela Sand Bed Khata No. 175 Plot No. 996/1501 Kisam Nadi Lat-21 57' 26.66" N Lon- 84 01' 35.84" E	58993	48118
31	Lathikata	Attaghat Sand Bed At:- Jalda, Khata No-61, Plot No- 484/566/P, Kissam-Nadi 12.00Ac latitude of 22°09'33.58"N to 22°09'34.96"N and longitude of 84°50'34.04"E to 84°50'42.10"E	19474	13215
32	Lathikata	Kansar Sand Bed At:- Jalda, khata No-94, Plot No- 211/P, Kissam- Nadi 12.00Ac latitude of 22°09'33.58"N to 22°09'34.96"N and longitude of 84°50'34.04"E to 84°50'42.10"E	24282	20530

33	Lathikata	Bhalupatra Sand Bed At:- Brahmanitarang, khata No-46, Plot No-1/1 & 1/2, 4.45Ha Kissam- Nadi 22° 15' 02.56"N to 22° 15' 11.73"N and longitudes of 84°43' 04.95"E to 84°43' 28.99"E	111313	78730
34	Lathikata	Beldih Sand Bed-I At:- K Beldih, Khata No- 146, Plot No- 40/P, Nadi- Kissam 10Ac latitude of 22°14'51.68"N to 22°15'01.22"N and longitude of 84°45'22.26"E to 84°45'31.93"E.	8036	6250
35	Lathikata	Beldih Sand Bed-II At:- Beldih, Khata No-146, Plot No- 1/P, Nadi- Kissam 22° 15' 03.2"N to 22° 15' 09.8"N and longitudes of 84°46' 32.9"E to 84°46' 42.6"E.	20234	16807.5
36	Lathikata	Kalokudar Sand Bed At:- Kalokudar, Khata No-43, Plot No- 296/3, Kissam- Nadi 6.0Ac latitude of 22°14'50.12"N to 22°14'56.80"N and longitude of 84°45'47.37"E to 84°45'52.72"E	9875	8061
37	Lathikata	Lungei Sand Bed At:- Kalunga, khata No-80, Plot No- 1/P, 4.04Ha Kissam- Nadi	44408	27833

		22° 14' 51.78'' N to 22° 14' 57.71'' N and longitudes of 84° 46' 05.26'' E to 84° 46' 23.12'' E.		
38	Lathikata	Baloni Sand Bed At:- lathikata, Khata No-127, Plot No- 1161/1, 4.85Ha Kissam-Nadi 22° 05' 28.58'' N to 22° 05' 36.14'' N and longitudes of 84° 52' 18.80'' E to 84° 52' 32.14'' E.	135979	41368
39	Lahunipara	Tumkela Sand bed Brahmaninadi "KHA" Khata No-01, Plot No-31/p 4.917Ha Kissam-Nadi Latitude- 21 49' 44.83' N to 21 49' 54.89' N and Longitude- 84 56' 00.07' E to 84 56' 11.30' E	43064	38766
40	Lahunipara	Suarpali Sand bed Brahmani Nadi- Kha Khata No-01, Plot No-84/p 5.00Ha Kissam-Nadi Latitude- 21 45' 58.96' N to 21 46' 04.75' N and Longitude- 84 59' 19.32' E to 84 59' 29.87' E	45250	40260
41	Lahunipara	Polgaon Sandbed Brahmani Nadi- Kha Khata No-01, Plot No-78/1 4.046Ha Kissam- Nadi Latitude- 21 46' 43.5' N to 21 46' 53.4' N and Longitude- 84 58' 39.5' E to 84 58' 49.7' E	32368	25336

46	Lahunipara	Kenapali Sand Bed Mauza- Brahmaninadi 'KHA' Village- Kenapali, Khata No. 1, Plot No. 41/p, Kisam Nadi, Ac. 12.35 latitude of 21°50'32.04"N to 21°50'41.18"N and longitude of 84°56'46.00"E to 84°56'54.49"E	49970	43519
47	Gurundia	Narendra Sand Bed-2 Brahmani Nadi- Kha Khata No.- 1, Plot No.- 18/p, 8.012Ha Kisam- Nadi 21°49'34.62"N to 21°49'49.37"N and longitude of 84°54'39.82"E to 84°54'46.46"E.	77384	68160
48	Gurundia	Bartengeda Sand Bed Mauza- Brahmani Nadi 'Ga' Khata No.- 1, Plot No.- 14/p, Kisam- Nadi 12.35 Ac latitude of 21°53'02.51"N to 21°53'12.03"N and longitude of 84°51'07.61"E to 84°51'15.67"E	33452	27738
49	Gurundia	Raniamarbaripur Sand Bed Mauza- Brahmani Nadi 'Ga' Khata No.- 1, Plot No.- 11/p, Kisam- Nadi 12.35 Ac latitude of 21°53'18.43"N to 21°53'27.69"N and longitude of 84°51'01.02"E to 84°51'07.09"E	33909	28979

50	Gurundia	Chhidi Sand Bed Mauza- Chhidi Khata No.- 49, Plot No.- 456/486/P, Kisam- Nadi 12.35 Ac latitude of 22° 03'48.94"N to 22° 03'57.12"N and longitude of 84°53'02.28"E to 84°53'11.53"E	49970	43477
51	Gurundia	Pitagaon Sand Bed Mauza- Brahmani Nadi (Ka) Khata No.- 01, Plot No.- 5/P & 6/P, Kisam- Nadi 12.35 Ac latitude of 22°01'45.42"N to 22°02'09.10"N and longitude of 84°52'27.98"E to 84°52'35.46"E	41741	32585
52	Biramitrapur	Teterkela Sand Bed Khata No.84, Plot No.526/527/1 Kisam-Nadi 11.52Ac latitude of 22°17'28.92"N to 22°17'39.23"N and longitude of 84°58'51.50"E to 84°59'05.61"E	46621	15329
53	Biramitrapur	Goppur Sand Bed Khata No-102 Plot No-638/1 Kisam-Nadi 11.50Ac latitude of 22°22'28.96"N to 22°22'55.49"N and longitude of 84°54'59.03"E to 84°55'05.83"E	28111	17044
54	Biramitrapur	Lankai Sand Bed Khata no-137 Plot No-620/1458 & 712/1459/P Kisam-Nadi 11.90Ac	26717.6	8821.4


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		latitude of 22° 19'20.20"N to 22° 19'47.32"N and longitude of 84°56'32.07"E to 84°56'41.33"E		
55	Biramitrapur	Jaharitali Sand Bed Khata No.67 Plot No.459/1, 460/1 Ac.11.78 latitude of 22°23'47.77"N to 22°24'04.09"N and longitude of 84°54'37.04"E to 84°54'43.44"E	21163	8496
56	Balsankara	Ghaghar Sand Bed- 8 Khata No.171 Plot No.457/p, Ac.7.00 latitude 22°20'19.1"N to 22°20'27.2"N longitude 83°59'35.3"E to 83°59'40.3"E	13510	10593
57	Balsankara	Bankidihl Sand Bed Khata No.48, Plot No.270/457/P, Area 10.45 latitude 22°20'49.62"N to 22°21'00.06"N longitude 83°59'2.01"E to 83°59'12.28"E	42290	35526
58	Balsankara	Lulkidihl Sand Bed Khata No.549 Plot No. 2202/4515, Ac.7.21 latitude 22°31'47.91"N to 22°31'26.87"N longitude 83°59'48.78"E to 83°59'09.72"E	29178	3699
59	Rajgangpur	Chungimati Sand Bed Khata No:93 Plot No. 507 9.00Ac Kisam : Nadi	18000	10900

60	Subdega	Subalaya Sand Bed Khat no-153 Plot no- 118/134,439,491/p 4.908Ha latitude 22°07'58.09"N to 22°08'39.3"N longitude 84°04'21.5"E to 84°05'21.7"E	147144	5084
61	Subdega	Jaisar Sand Bed Khat no-190 Plot no-1/1, 113/1 4.208Ha Kisam- Nadi latitudes of 22°16'38.57" N to 22°16'50.05" N and longitudes of 84°03'27.0" E to 84°03'34.60"E	19528	14576
62	Subdega	Bhajpur Sand Bed Khat no-69 Plot no-1 18.717Ha Kisam- Nadi latitude of 22°08'02.70" N to 22°08'50.10" N and longitude of 84°03'22.68" E to 84°03'39.72" E	69069	60431
63	Subdega	Kanika Sand Bed Khat no-67 Plot No-814/831 4.856Ha latitude 22°09'31.27" N to 22°09'40.32" N longitude 84°05'08.13"E to 84°05'22.34"E	67679	62427
64	Subdega	Maliahi Sand Bed Khat no-49 Plot No-01/p 4.856Ha latitude 22°13'58.09"N to 22°14'08.11"N longitude 84°05'30.66"E to 84°05'44.69"E	94814	80640

65	Subdega	Kukuridih Sand Bed Khata no-172 Plot No-01/p Kisam-Nadi 3.5Ac latitude 22°15'10.95"N to 22°15'16.92"N longitude 84°04'34.26"E to 84°04'40.98"E	21264	15601.5
66	Subdega	Barpali Sand Bed Khata no-69 Plot no-874/P 10.00Ac Kisam-nadi latitude of 22° 18'41.6"N to 22° 18'51.6"N and longitude of 84°01'03.4"E to 83°01'12.5"E.	40468	27580
67	Subdega	Bhagapali Sand Bed Khata no-71 Plot no-1/P 5.00Ac Kisam-nadi latitude of 22°12'53.91"N to 22°13'03.67"N and longitude of 84°05'47.66"E to 83°05'56.46"E.	20234	14180
68	Lephipara	Surguda Sand Khata no-173 Plot no-607 19.546Ha Kisam-nadi latitude of 22° 06'17.84"N to 22° 06'33.60"N and longitude of 83°49'57.72"E to 83°50'37.48"E.	20020	12402
69	Lephipara	Lephipara Sand Khata no-245 Plot no-1686/2145, 1682 8.360Ha Kisam-nadi latitude of 22° 06'58.98"N to 22° 07'11.35"N and	10210	1958

		longitude of 83°48' 09.40" E to 83°48' 38.98" E.		
70	Lephripara	Chhefanpali Sand Khata no-140 Plot no-277/1139 6.074Ha Kisam-nadi 22°05'42.10"N to 22°06'17.30"N and longitude of 83°52' 19.94"E to 83°52' 45.57"E.	13332	9365
71	Lephripara	Luthukend Sand Bed Khata No. 65 Plot-301 Ac.3.12 468 Ac. 3.16 459 Ac. 1.84 Total. Ac. 8.12 latitude of 22°09'19.60"N to 22°09'29.45"N and longitude of 83°43'04.63"E to 83°43'28.02"E	6518	947
72	Lephripara	Lephripara Sand Bed Khata No. 245 Plot no-1697/p Ac. 12.00 latitude of 22°06'56.42"N to 22°07'02.46"N and longitude of 83°48'42.84"E to 83°49'04.21"E	2360	1435
73	Bonai	Deogaon Sand Bed Mauza- Brahmaninadi "Kha" Khata No- 1 Plot No.- 32/P 0.68 Ha Latitudes - from 21' 50' 4.81"N : 21' 50' 10.2" N Longitudes- 84' 56' 38.8" E : 84' 56' 42.6" E	13596	6454
74	Bonai	Upurda Sand Bed Mauza- Brahmaninadi (kha) Khata no-01	50000	40644

		Plot-69/P & 70/P Kisam- Nadi 12.355Ac latitude of 21° 47'55.02"N to 21° 48'12.78"N and longitude of 84°58'03.15"E to 84°58'06.91"E		
75	Bonai	Tendra Sand Bed Mauza- Brahmaninadi (kha) Khata no-01 Plot-143/P & 141/P Kisam- Nadi 12.355Ac latitude of 21°43'20.25"N to 21°43'28.21"N and longitude of 84°54'50.26"E to 84°54'04.28"E	75000	29508
76	Bonai	Sangogua Sand Bed Mauza- Brahmaninadi (kha) Khata no-01 Plot-116/P & 117/P Kisam- Nadi 8.00Ac latitude of 21° 47'55.02"N to 21° 48'12.78"N and longitude of 84°58'03.15"E to 84°58'06.91"E	32376	27002
77	Bonai	Bonakela Sand Bed Mauza- Brahmaninadi (kha) Khata no-01 Plot-128/P Kisam- Nadi 12.355Ac latitude of 21°43'20.25"N to 21°43'28.21"N and longitude of 84°54'50.26"E to 84°54'04.28"E	49179	42357

78	Bonai	Chandiposh Sand Bed Mauza- Brahmaninadi (kha) Khata no-01 Plot-98/P 101/P & 102/P Kisam- Nadi 12.355Ac latitude of 21°43'20.25"N to 21°43'28.21"N and longitude of 84°54'50.26"E to 84°54'04.28"E	50000	23255
79	Bonai	Kolasahi Sand Bed Mauza- Brahmaninadi "Kha" Khata No- 1 Plot No.- 60/P Kisam- Nadi 11.78Ac latitude of 21° 49'12.00"N to 21° 49'18.76"N and longitude of 84°57'48.14"E to 84°57'55.98"E		
80	Rourkela	Tarkera Sand-3 Khata no-22 Plot no- 424/1289/p 4.856 Ha Kisam-nadi Latitudes - from 22° 12' 36.3" N - 22° 15' 39.8" N Longitudes- 84° 48' 49.0" E : 84° 49' 10.7" E	48563	38784
81	Rourkela	Luakera Sand Khata no-78 Plot no-247/755(p) 4.856Ha Kisam-Nadi Latitudes - from 22° 16' 06.5" N : 22° 16' 10.7" N Longitudes- 84° 48' 29.5" E : 84° 48' 47.8" E	50224	41248

82	Rourkela	Koelnagar Sand Khata no-174 Plot no-96/383(p) 4.775Ha Kisam-Nadi Latitudes - from 22° 16' 4.3" N : 22° 16' 07.0" N Longitudes- 84° 53' 20.9" E : 84° 53' 38.7" E	14326	11677
83	Rourkela	Tumkela Sand. Khata no-2 Plot no-312/339/p 6.475Ha Kisam-Nadi latitude of 22°16'28.20"N to 22°16'33.70"N and longitude of 84°50'36.10"E to 84°50'52.10"E.	11522.8	10320.4
84	Rourkela	Tarkera Sand-2 Khata no-109 Plot no-461/553/p, 410/552/p 4.844Ha Kisam-Nadi latitude of 22°12'36.0"N to 22°15'41.9"N and longitude of 84°48'14.80"E to 84°48'50.70"E.	34005	28494
85	Rourkela	Tarkera Sand-1 Khata no-109 Plot no-63/548/p. 410/549/p. 410/552/p. 410/551/p. 410/550/p 3.379Ha Kisam-Nadi latitude of 22°12'40.1"N to 22°15'49.80"N and longitude of 84°48'14.8"E to 84°48'30.40"E.	11293	8702
86	Bisra	Jamsera-I sand Bed Khata No-38 Plot No- 59/331/p.1/p 4.856Ha Kisam-Nadi	24281	19787

		latitude of 22°16'29.10"N to 22°16'35.3"N and longitude of 84°54'16.9"E to 84°54'26.8"E.		
87	Bisra	Jamsera-II Sand Bed Khata No-38 Plot No-59/331 Kisam-Nadi 5.00Ha latitude of 22°16'31.65"N to 22°16'35.65"N and longitude of 84°54'44.65"E to 84°55'01.23"E.	38889	31782
88	Bisra	Khatangkudar sand Bed Khatangkudar Khata No-21 Plot No-9/134/p Udushu Khata No-139 Plot No-1/1668/p Kisam-Nadi 4.997Ha latitude of 22°17'21.45"N to 22°17'34.54"N and longitude of 84°59'20.79"E to 84°59'32.22"E.	19992	16848
89	Bisra	Kundapash sand Bed Kundapas Khata No-34 Plot No-1/386/p Eria Khata No-54 Plot No-1/632/p Kisam-Nadi, 4.997Ha latitude of 22°19'34.40"N to 22°19'41.73"N and longitude of 85°04'24.37"E to 85°04'39.64"E.	40539	34144
90	Bisra	Dadhari Sand Bed Khata No-82 Plot No-550/1 4.856Ha Kisam-Nadi	24281	18308.5

		latitude of 22°17'41.0"N to 22°17'49.6"N and longitude of 84°58'34.4"E to 84°58'49.1"E.		
91	Bisra	Jabaghat Sand Bed Khata No-86 Plot No-1/p Kisam-Nadi 5.00Ha 22°16'32.73"N to 22°16'41.70"N and longitude of 84°55'39.33"E to 84°55'56.27"E.	25000	20775
92	Bisra	Badbambua- Masurikudar sand Bed Mauza- Badbambua Khata No-88 Plot No-1/805/p Kisam-Nadi Mauza- Masurikudar Khata No-73 Plot No-1/p Kisam-Nadi 5.00Ha 22°19'36.79"N to 22°19'44.21"N and longitude of 85°01'52.92"E to 85°02'05.34"E.	42194	36509
93	Kuarmunda	Bijubandh Sand Bed Khata No-58 Plot No-216/p 5.216Ha Kisam-Nadi latitude of 22°16'33.80"N to 22°16'37.30"N and longitude of 84°50'48.30"E to 84°51'02.60"E.	8026	3948
94	Kuarmunda	Pasara Sand Bed Khata No-81 Plot No-838/p 5.261Ha Kisam-Nadi latitude of 22°16'08.3"N to 22°16'15.2"N and	26304.5	22989.5

		longitude of 84°52'11.2"E to 84°52'51.8"E		
95	Kuarmunda	Kuarmunda Sand- I Khata No-397 Plot No-2876/p 12.00Ac Kisam-Nadi latitude of 22°16'01.87"N to 22°16'07.48"N and longitude of 84°47'35.66"E to 84°47'59.29"E.	21371	16348
96	Kuarmunda	Kuarmunda Sand- II Khata No-397 Plot No-2879/p 8.00Ac Kisam-Nadi latitude of 22°15'16.29"N to 22°15'25.76"N and longitude of 84°47'40.92"E to 84°47'49.52"E.	13382	11264
97	Kuarmunda	Jamunanaki Sand bed-I Khata No-75 Plot No-405/p 6.879Ha Kisam-Nadi latitude of 22°14'42.1"N to 22°14'56.8"N and longitude of 84°46'25.6"E to 84°46'45.4"E.	20839	16416
98	Kuarmunda	Jamunanaki Sand bed-II Khata No-75 Plot No-405/1. 405/415/p 6.515Ha Kisam-Nadi latitude of 22°14'39.92"N to 22°14'32.73"N and longitude of 84°47'43.37"E to 84°47'50.36"E.	151000	69000

99	Kuarmunda	Padampur Sand Bed-II Khata No-138 Plot No-374/813/P 12.00Ac Kisam-Nadi	47283	41311
100	Kuarmunda	Padampur Sand Bed-III Khata No-138 Plot No-374/813/P 12.00Ac Kisam-Nadi	47000	41000
101	Kuarmunda	Sarandaposh Sand Bed Khata No-84 Plot No-471/P 10.00Ac Kisam-Nadi	30000	20000
102	Kuarmunda	Padampur Sand Bed-I Khata No-138 Plot No-422/812/P, Kisam-Nadi 23.60Ac latitude of 22°15'00.73"N to 22°15'13.06"N and longitude of 84°46'12.86"E to 84°46'45.65"E	94647	78335
103	Kuarmunda	Chandiposh Sand Bed Khata No-47 Plot No-159/p Kisam-Nadi 4.856Ha latitude of 22°15'10.32"N to 22°15'16.96"N and longitude of 84°44'07.39"E to 84°44'16.16"E	48563	42195
104	Kuarmunda	Ushra Ghat-I Sand Bed Khata No-263 Plot No-2256/p Kisam-Nadi 4.856Ha latitude of 22°14'54.17"N to 22°15'03.00"N and longitude of 84°42'19.45"E to 84°42'32.88"E	48563	41654

105	Kuamunda	Ushra Ghat-II Sand Bed Khata No-263 Plot No-2364/p Kisam-Nadi 4.856Ha latitude of 22°14'36.36"N to 22°14'48.01"N and longitude of 84°42'02.51"E to 84°42'11.90"E.	48563	41726
106	Kutra	Tarkera Sand Bed- I Khata No-155 Plot No-528/P, Kisam-Jala bhandar 9.10Ac Plot-528/1304P Kisam-Nadi 2.14Ac latitude of 22°20'39.68"N and longitude 84°29'59.66"E	45487	30000
107	Kutra	Tarkera Sand Bed- II Khata No-154 Plot No- 931/1309/P 6.80Ac Kisam-Jala bhandar latitude of 22°20'02.95"N and longitude of 84°30'08.75"E.	26934	21997
108	Kutra	Samalimunda Sand Bed-I Khata No-158 Plot No- 706/2156/P 6.30Ac Kisam-Jala bhandar latitude of 22°19'31.62"N to 22°19'36.10"N and longitude of 84°29'58.22"E to 84°30'05.47"E.	4685	3899.2
109	Kutra	Udurma Sand Bed-I Khata No-144 Plot No-1/P	48765	42000

		12.05Ac Kisam-Nadi latitude of 22°21'36.99"N and longitude 84°29'02.32"E.		
110	Kutra	Laxmipash Sand Bed-I Khata No-85 Plot No- 683/1289/P 5.16Ac Kisam- Jala bhandar latitude of 22°18'35.99"N to 22°18'39.80"N and longitude of 84°31'03.26"E to 84°31'13.50"E.	15661.5	5913

Similarly, as per UNFC (*United Nations Framework Classification*) of potentials of minerals A **'Mineral Resource'** is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust in such form, quality and quantity that these are reasonable prospects for eventual economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.

The resource figures are quoted as being of intrinsic economic interest, depending on the results of a Prefeasibility Study and feasibility Study. Generally, only in-situ resource figures are reported at this stage of geological assessment. Mineral Resources are subdivided, in order of increasing geological confidence, into inferred, indicated and measured categories. Portions of a deposit that do not have reasonable prospects for eventual economic extraction must not be included in a Mineral Resource.

For assessment of potential resources of *New sairat sources of Sand*, a joint field survey has been done and sources has been identified. At this stage of survey, a detail study of each source is not feasible, hence the sand area of proposed quarry lease has been multiplied with the average sand bed thickness of the respective source to obtain the Geological resources

whereas for Mineable resources has been considered about 60% of geological Resources **(Table No. 11.A.03)**.

As in nature the replenishment of sand is a natural process within the river bed, But the estimated potential may vary in each successive year.



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(a) District wise details of river or stream and other sand source;

Annexure-I

In Sundargarh District River beds and streams are the only source of Sand, hence the details of the main river and streams are given in the following table as per the data provided by irrigation department:

Drainage system with description of main river (Table No. 11.A.01)

Sl No.	Name of the River	Area Drained (Sq.Km)	% Area Drained in the District
1	IB	7623.00	38.16
2	Madalghat Nallah Sukhrajore	27.00	100.00
3	Safai	1102.25	100.00
4	Ustalli Nallah	50.00	100.00
5	Gahirajore Nallah	45.00	100.00
6	Sanswati Nallah	26.00	100.00
7	Ichha	400.00	100.00
8	Sankha	10835.00	12.69
9	Koel	12230.00	9.57
10	Badjore Nallah (Sanikh)	35.00	100.00
11	Deo Nallah	132.00	31.50
12	Brahmani River	26190.00	11.93
13	Siudhi Nallah	18.50	100.00
14	Kuradi Nallah	32.00	100.00
15	Amruji Nallah	42.00	100.00
16	Saplata Nallah	22.00	100.00
17	Rukura Nallah (Downstream of Rukura Reserver)	32.00	100.00


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(b) District wise availability of sand or gravel or aggregate resources:

Annexure-II

In this case only Sand has been considered

Salient Features of Important Rivers and Streams: (Table No. 11.B.01)

S. No	Name of the River or Stream	Total Length in the District (in Km)	Place of origin	Altitude at Origin	Position of the River or Stream Recommended for Mineral Concession	Length of area recommended for mineral concession (in Km)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (In Sq. meter)	Mineable mineral potential (in m ³) (60% of total mineral potential)
1	IB	7623.00							
2	Madalnhat Nallah Sukhajore	27.00							
3	Safai	1102.25							
4	Ustalli Nallah	50.00							
5	Gahrajore Nallah	45.00							
6	Sarswati Nallah	26.00							
7	Ichha	400.00							
8	Sankha	10835.00							
9	Koel	12230.00							

Details of area proposed sources are given in below Table No. 11.A.03 & existing source details are given in the reserve table above.


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10	Badjore Nallah (Sanikh)	35.00					
11	Deo Nallah	132.00					
12	Brahmani River	26190.00	Vedavyas, Rourkela				
13	Siudhi Nallah	18.50					
14	Kuradi Nallah	32.00					
15	Amruti Nallah	42.00					
16	Saplata Nallah	22.00					
17	Rukura Nallah (Down stream of Rukura Reserver)	32.00					

Details of area proposed sources are given in below Table No. 11.A.03 & existing source details are given in the reserve table above.


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(c) District wise details of existing mining leases of Sand and Aggregates:

In this case only Sand has been considered.

(Table No. 11.C.01)

Sl.No.	Name of River /Stream	Name of the Mineral	Name of the Lessee	Address & Contact No. of lessee	Mining lease Grant Order No. & date	Area of Mining lease (in Hc)	Period of Mining lease (Initial)		Date of commencement of mining operation	Status (Working / Non Working /Temp. working for despatches etc.)	Obtained Environmental clearance (Y/N) If Y letter No. with date of grant of EC	Location of the mining lease Land Schedule and (Latitude & Longitude)	Remarks
							from	To					
1	1.1	2	3	4	5	6	7	8	11	12	14	15	17
Name of the Tahasil:- Sodar Sundargarh													
1	1b	Nud-ampipal Sand	Manoj Kumar Sahu	A1- Sunaripada PO/Dist- Sundargarh PS- Town Mob- 9437045785	284/Dt. 21.01.2015	4.856 Ha	2015-16	2019-20	21.07.2015	Working	y, 3565/SEI A.A. Dt.04.07.2015	MUD-ampipal, Khado No.- 381, Plot No- 475/P & 477/1211 /P, Kison- River Latitude- N22° 07' 40" to N22° 07' 19" 70" Longitude - E84° 00' 36" 70" to E84° 00' 45" 30"	



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2	lb	Chitabha anga Sand	Manoj Kumar Sahu	A1-Sunarpada PO/Dist- Sundargarh PS- Town Mob- 9437045785	292/DI. 22.01.2015	4.127 Ha	2015- 16	2019- 20	12.08.2015	Working	Y, 3412/SEI AA, DI,30.05. 2015	Mouza- Chitabha nga Khata No.-474, Plot No- 2413pp, Kisam- River Latitude- 22°05'38.3 0" to 22°06'47.6 0" Longitude 84°00'47.7 0" to 84°00'50.7 0"
3	lb	Lankahu da Sand	Nripita Kumar Behura	A1/PO- Patrapada Dist- Sundargarh PS- Town	287/DI. 21.01.2015	1.983 Ha	2015- 16	2019- 20	12.08.2015	Working	Y, 3414/SEI AA, DI,30.05. 2015	Mouza- Lankahu a, Khata No.- 150, Plot No- 1/4, Kisam- River Latitude 22°02'37.5 9"N to 22° 02'43.94" N Longitude 83°59'32.5 9"E to 83°59'37.1 5"E

4	lb	Bhasma Sand	Sundarmani Naik	AI/PO- Jamtalia Dist- Sundargarh PS- Bhasma Mob- 7008165036	286/DI. 21.01.2015	3.763 Ha	2015- 16	2019- 20	31.07.2015	Working	Y. 3401/SEI A.A. 01.30.05. 2015	Mauzo- Bhasma, Khatu No.- 133, Plot No- 3384/p. Kisam- River Latitude- 23° 57'38.12" N to 21° 57'46.81" N Longitude 84°01'51.5 1"E to 84°01'59.8 5"E
5	Satal	Badkac Bhar Sand	Manoj Kumar Awasth	AI/PO- Dhanuadihi P.S- Dhanuadihi Dist- Sundargarh Mob- 9556563225	295/DI. 22.01.2015	4.290 Ha	2015- 16	2019- 20	14.09.2015	Working	Y. 3569/SEI A.A. 01.04.07. 2015	Mauzo- Badkac at, Khatu No.- 119, Plot No- 1783,1389 /p Kisam- River Latitude- N22°02'55 7.6" to N22°02'01. 8" Longitude 84°09'47. 0" to 84°09'59. 7"

The flowing
water of
the river
changes its
direction &
there is no
sand.
Hence the
source is not
feasible for
auction.


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6	lb	Kaintara Sand	Sundarmani Nak	AI/PO- Jamitalla Dist- Sundargarh PS- Bhasma Matb- 7008165036	29/01, 22.01.2015	1.424 Ha	2015- 16	2019- 20	30.09.2015	Working	Y. 3399/SEI AA: Dt.30.05, 2015	Mauza- Kaintara, Khalla No.- 7A, Plot No- 756/797, Kisam- River Latitude- 21°58'10.7 0" to 21°58'18.9 0" Longitude 84°02'11.1 0" to 84°02'22.8 0"	The flowing water of the river changes its direction & there is no sand. Hence the source is not feasible for auction.
7	lb	Samina Sand	Arabinda Kumar Sahu	AI/PO- Rangachhpa Dist- Sundargarh PS-Town	285/Dt. 21.01.2015	0.971 Ha	2015- 16	2019- 20	16.11.2015	Working	Y. 3409/SEI AA: Dt.30.05, 2015	Mauza- Samina, Khata No.- 107, Plot No- 1/p, Kisam- River Latitude- 22° 05'13.60" to 22°05'18.7 0" Longitude 84°00'39.3 0" to 84°00'44.4 0"	The flowing water of the river changes its direction & there is no sand. Hence the source is not feasible for auction.



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Name of the Tahasil:- Bargaon											
1	Safei	Barpali Sand	Subash Chandra Bisai	At-Fulbari PO- Bargaon Sundargarh Mob:88478292 06	0.202	2016-17	2019-20	07-11-2016	Working	No. 441/ dt. 22.07.16	Village- Barpali Khata No- 64, Plot No. 387/p Area- 0.50 . Kisan- river 22°09' 43.70" N to 22°09' 45.08" N and longitudes of 84°19' 20.79" E to 84°19' 22.79" E
2	Safei	Fulbari Sand	Rajendra Nayak	At-Fanpashi(Gowalaparaj PO-Kansbathi Sundargarh Mob- 9437244129	0.809	2016-17	2019-20	07-11-2016	Working	No. 514/ dt. 28.09.16	Village- Fulbari Khata No- 63 Plot No. 01/p Area- 2.00 . Kisan- river 22°09' 28.96" N to 22°09' 34.13" N and longitudes of 84°18' 38.05" E to 84°18' 44.15" E


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3	Safai	Kureibaga Sand	Rajendra Nayak	At-Panposh (Gowalaparaj PO-Kansbahal Sundargarh Mob:- 9437244129	2.023	2016-17	2019-20	07-11-2016	Working	No.508/ dt 28.09.16	village- Kureibaga Khata No-101 Plot No-01/pt & 751/pt. Area-4.00, kssam- river. village- Bhoipali Khata No-101, Plot No- 1453/1483 P. Area- 1.00, kssam- river. 22°07' 40.20"N to 22°07' 58.74"N and longitudes of 84°17' 16.41"E to 84°17' 40.54"E.
4	Safai	Bhoipali Sand	Rajendra Nayak	At-Panposh (Gowalaparaj PO-Kansbahal Sundargarh Mob:- 9437244129	2.023	2016-17	2019-20	07-11-2016	Working	No.508/ dt 28.09.16	village- Kureibaga Khata No-101, Plot No- 1453/1483 P. Area- 1.00, kssam- river. 22°07' 40.20"N to 22°07' 58.74"N and longitudes of 84°17' 16.41"E to 84°17' 40.54"E.
5	Safai	Kharika munda Sand	Rajendra Nayak	At-Panposh (Gowalaparaj PO-Kansbahal Sundargarh Mob:- 9437244129	2.023	2016-17	2019-20	07-11-2016	Working	No.507/ dt 28.09.16	village- Kharikam unda, Khata No-117, Plot No- 1185/01, Area- 5.00.


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3	IB River	Jamuna chipsa Sand Bed	Lalu Bog	AI/PO- Bilagam Dist- Sundargarh	272/ 12.01.17	1.21	2015- 16	2019- 20	12.01.2017	Working	2056/07- 10.16	Jamunadi hipa Khata No. 38 Plot no. 290/1 Kisam- Nadi Lat- 22 01' 05.10" N Lon- 83 59'13.30" E
4	IB River	Telipali Sand Bed	Lalu Bog	AI/PO- Bilagam Dist- Sundargarh	272/ 12.01.17	1.09	2015- 16	2019- 20	12.01.2017	Working	2056/07, 10.16	Telipali Khata No. 171 Plot No. 991 Kisam- Nadi Lat- 22 01' 35.60" N Lon- 83 58 28.50" E
5	IB River	Kurga Jharber ni Sand Bed	Sangra m Rout	AI/PO- Dengbhadri Dist- Sundargarh	3101/19.12. 16	1.49	2015- 16	2019- 20	19.12.16	Working	1707/25. 06.16	Kurga Khata No. 201 Plot No. 2447/P Kisam Nadi Lat- 22 04' 51.95" N Lon- 83 59' 35.25" E
6	IB River	Lemlem a Sand Bed	Sangra m Rout	AI/PO- Dengbhadri Dist- Sundargarh	3101/19.12. 16	1.61	2015- 16	2019- 20	19.12.16	Working	1707/25. 06.16	Lemlem Khata No. 186 Plot No. 1321/645 Kisam Nadi


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Name of the Tahasil:- Lathikata														
1	Brahmani River	Atighat Sand Bed	Sudhir Harichandran	E-4/10, Civil Township, C. No. 9238340731	No. 2221/06.06.2015	7.28	2015-16	2019-20	12.06.2015	Working	Yes	At- Jalda, khata No- 61, Plot No- 484/566, Kissam-Nadi 22°09' 05.40"N to 22°09' 16.10"N and longitudes of 84°51' 09.10"E to 84°51' 21.40"E.	Nil	Waiting for NOC from EE, Sing
2	Brahmani River	Kansar Sand Bed	Sudhir Harichandran	E-4/10, Civil Township, C. No. 9238340731	No. 2232/dtd 06.06.2015	5.26	2015-16	2019-20	21.07.2015	Working	Yes	At- Jalda, khata No- 94, Plot No- 211/P, Kissam-Nadi latitude of 22°09' 20.3 5"N to 22°09' 35.2 0"N and longitude of 84°50' 46.0 5"E to 84°51' 13.4 8"E.	Nil	Waiting for NOC from EE, Sing
3	Sankh River	Bhalupa tra Sand Bed	Suresh Jaiswal	I-3/4, Civil Township, C. No. 9437000661	No. 2086/dtd 02.06.2018	4.45	2018-19	2022-23	07.02.2019	Non-Working	Yes	At- Brahmanil arang, khata No- 46, Plot	Nil	Waiting for NOC from EE, Sing


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4	Sankh River	Belahi Sand Bed-II	Prava Ranjan Mishra	M/S Premex Group, Atr- Plot No. 652, Ekamra Villa, IRC Village, Bhubaneswar, C.N. 943/044031 Nayapalli, Bhubaneswar. Atr- Plot No-	No. 901/ dated 11.03.2015	4.04	2017-18	2021-22	22.09.2017	Working	Yes	No-1/1 & 1/2, KISSAM-Nadi 22° 15' 02.56" N to 22° 15' 11.73" N and longitudes of 84° 43' 04.95" E to 84° 43' 28.99" E. Atr- Belahi, Khatra No- 146, Plot No- 1/P, Nadi- KISSAM 22° 15' 03.2" N to 22° 15' 09.8" N and longitudes of 84° 46' 32.9" E to 84° 46' 42.6" E.	Nil
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5	Sankh River	Beldhi Sand Bed-I	Sunil Bara	Sri Sunil Bara, S/o:- Late Mungu Bara At:- Lungel, P.O:- Vedvyas, Tungtola, C.N- 9348174434	1987/dtd.30 .05.2018	4.04	2015- 16	2019- 20	12.09.2019	Working	Yes	At:- Beldhi Khata No-146, Plot No- 40/P, Nad- Kasam latitude of 22°14'51.6 8"N to 22°15'01.2 2"N and longitude of 84°45'22.2 6"E to 84°45'31.9 3"E	Nil
6	Sankh River	Kalkud or Sand Bed	Jogendra Lohar	S/o:- Raghunath Lohar At:- Jaldia 'A' Block, PO:- Rourkela-43, C.N - 9437245784	1985/dtd.30 .05.2018	2.428	2017- 18	2021- 22	08.07.2019	Working	Yes	At:- Kalkud Khata No-43, Plot No- 296/P, Kasam- Nadi latitude of 22°14'50.1 2"N to 22°14'56.8 0"N and longitude of 84°45'47.3 7"E to 84°45'52.7 2"E	Nil


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7	Sankh River	Lungei Sand Bed	Suresh Jaiswal	I-3/4, Civil Township, C. N-9437003661	1989/dtd.30.05.2018	4.04	2018-19	2022-23	03.12.2019	Non-Waiting	Yes	<p>AT- Kalungak hata No-80, Plot No-1/P, KISSAM-Nadi</p> <p>22° 14' 51.78" N to 22° 14' 57.71" N and longitudes of 84° 46' 05.26" E to 84° 46' 23.12" E.</p> <p>Due to obstruction of Road by the villagers</p>
8	Brahmani River	Balani Sand Bed	RKD Construction	B-20, Chandaka Industrial Estate, Patila, Bhubaneswar-751024, C.N-9438397017	Temporary Permit	4.85	2018-19	2022-23	Under process	Temporary	Yes	<p>AT- Iatrakata, Khata No-127, Plot No-1161/1, KISSAM-Nadi</p> <p>22° 05' 28.58" N to 22° 05' 36.14" N and longitudes of 84° 52' 18.80" E to 84° 52' 32.14" E.</p> <p>Under process</p>


**COLLECTOR
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Name of the Tahasil:- Lahunipara											
									Khata No- 01, Plot No- 31/p Kisam- Nadi Latitude- 21 49' 44.83" N to 21 49' 54.89" N and Longitude - 84 56' 00.07" E to 84 56' 11.30" E		
1	Brahmani nadi "KHA"	Tumkela Sand bed	Sashi Bhasan Jit	A/PO- Bad- Tumkela P.S- Lahunipara Dist- Sundargarh Contact- 9437685768	1326 dt. 17.07.2018 of Tehsildar, Lahunipara	4.917	2017- 18	2021- 22	17.07.2018	Working	Y. 200/Mini ng Dt. 09.04.20 18
2	Brahmani nadi "KHA"	Suarpat Sand bed	Sudhir Kumar Haicha ndan	Vill-Civil Township PS- Raghunathpali Dist- Sundargarh Contact- 9437040731	1711 dt. 03.10.2016 of Tehsildar, Lahunipara	5.000	2016- 17	2020- 21	03.10.2016	Working	Y. 512/Mini ng Dt. 28.09.20 16


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3	Brahmani naid "KHA"	Poigaoon Sand bed	Fortune Associat es Pvt. Ltd	AT/PO-Barbil Dist-Keonjhar Contact- 8249008449	2016 dt. 05.10.2018 of Tehsilkar, Lahuniapara	4.046	2017- 18	2021- 22	05.10.2018	Working	Y. 202/Mini ng Dt. 09.04.20 18	Latitude- 21 46' 43.5" N to 21 46' 53.4" N and Longitude -84 58' 39.5" E to 84 58' 49.7" E	Khata No- 01. Plot No- 78/71 Kisam- Nadi
4	Brahmani naid "KHA"	Digi Sand bed	Rashmi Rekha Sahu	AT-Singal PO- Amgaoon PS- Barkote Dist- Deogarh Contact- 9556263724	1799 dt. 05.10.2016 of Tehsilkar, Lahuniapara	5.000	2016- 17	2020- 21	04.10.2016	Working	Y. 516/Mini ng Dt. 28.09.20 16	Latitude 21° 44'56.77" N to 21° 45'09.30" N Longitude 84°59' 36.96" E to 84°59' 45.24" E	Khata No-01. Plot No- 92/p Kisam- Nadi


COLLECTOR
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5	Brahmani nadi "KHA" bed	Ladani Sand bed	Dev Narayan Prasad Sahoo	AT/PO/PS-Kota Dist- Sundargarh Contact- 9437066694	25 dt. 05.01.2017 of Competent Authority, SPCB, Odisha	11-990	2016-17	2020-21	14.01.2017	Working	Y, 1882/SEI AA Dt. 27.08.2016	Latitude- 20°57' 05.5" N to 20°57' 16.0" N and Longitude -84°52' 24.7" E to 84°52' 40.4" E
6	Brahmani nadi "KHA" bed	Ladani Sand bed	M/S- KMC- RKD(JM)	AT/PO- Chandaka Ind Estate, PS-Patia BBSR Contact- 7328865198	09/2018 till 02.07.2018 of Tehsildar, Lathunipara	4.046	2018-19	2020-21	14.01.2018	Working	Y, 523/Mini ng Dt. 12.10.2018	Latitude- 21°50' 43.1" N to 21°50' 39.30" N and Longitude -84°57' 18.31" E to 84°57' 06.80" E



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Name of the Tahasil:- Gurundia											
1	Brahmani Nadi-Kho	Narendra a Sand Bed-2	Sri Madhab Chandr a Majhi, S/o- Shyam Sunar Majhi	A1- Talbatali, P.O- Srachapur, P.S.- Lahuniara, Dist- Sundargarh, Mob.- 9437144516		6.012	2015-16	2019-20	Working	Yes	Khata No.-1, Plot No.-18/p, Ksorn-Nadi 21°49'34.6 2"N to 21°49'49.3 7"N and longitude of 84°54'39.8 2"E to 84°54'46.4 6"E.
Name of the Tahasil:-Biramitrapur											
1	Deo River	Teterkel a Sand Bed	M/s Premk Bhuban eswar	Plot No.652 Ekaram Villa, IRC village Nayapalli, BBSR	11.12.2015	4.61	2015-16	2019-20	Non-working	N. (EC ended on 31.3.2019)	Khata No.84, Plot No.526/52 7/1 Kalliyde 22°22'57.4 " N to 22°22'57.3 " N longitude 84°55'00.6 " E to 84°55'00.8 " E
2	Deo River	Gopur Sand Bed	Sri Profulla Kumar Mahata	Village Teterkala, P.S.Bira Sundargarh, Odisha	Letter No. 2026 & Dt- 15.07.2019	4.653			Non-working		Khata No-102 Plot No-638/1 latitude of 22°22'28.9


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Name of the Tahasil:- Rajgongpur										
1		Chungi mali Sand bed					3.642			Mesura: Chungim ati Khata No:93 Plot No. 507 Kicam :- Nadi
Name of the Tahasil:- Subdego										
1	lb	Subalay a Sand Bed	Umesh Prasad Sahu	Adarsh Nagar, Sundargarh, 955664434	-	-	4.908	-	Non- Working	Khata no- L53 Plot no- 118/134.4 39.49170 latitude 22°07'58.0 9"N to 22°08'39.3 7"N longitude 84°04'21.5 11"E to 84°05'21.7 11"E


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2	lb	Jaisal Sand Bed	Om Prakash Gupta	Near Telephone Bhawari, Sundargarh, 9437043625	Letter No. 837 & Dt- 11.04.2017	4.208	2017- 18	2021- 22	16.11.2019	Working	Yes. 355 / Mining dated 10.08.20 17	Khat no- 190 Plot no- 1/1, 113/1 Kisam- Nadi latitudes of 22°16'38.5 7" N to 22°16'50.0 5" N and longitudes of 84°03'27.0 1" E to 84°03'34.6 DE.
3	lb	Gallo Sand Bed	Soumen dia Goswa mi	Sundargarh, 9937849554	1574 / zc- DATED 15.09.2017 Of Joint Director Geology (I/C), Sambalpur	3.443	2017- 18	2021- 22	16.03.2018	Working	Yes. 24 / Mining. dated 15.01.20 18	


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4	lb	Bhojpur Sand Bed	Chandr a Gupta Sahu	Near Telephone Bhowan, Sundargarh, 9437043625	Letter No. 8408 DI-11.04.2017	18,717	2017-18	2021-22	-	Non-Working	NO	Khatia no-69 Plot no-1 Kiam-Nadi latitudes of 22°08'02.7 0" N to 22°08'50.1 0" N and longitude of 84°03'22.6 8" E to 84°03'59.7 2" E
5	lb	Kamika Sand Bed	Chandr a Gupta Sahu	Near Telephone Bhowan, Sundargarh, 9437043625	1783 / 25, DATED 24.05.2016 OF Joint Director Geology (I/c), Sambalpur	4,856	2016-17	2020-21	03.09.2016	Working	Yes, 432 / Mining dated 22.07.2016	Khatia no-67 Plot No-814/831 latitude 22°09'31.2 7" N to 22°09'40.3 2" N longitude 84°05'08.1 3" E to 84°05'22.3 4" E


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6	to	Maidithi Sand Bed	Chandra Gupta Sathu	Near Telephone Bhawan, Sundargarh, 9437043625	1780 / zc. DATED 24.05.2016 Of Joint Director Geology (J/c), Sambalpur	4856	2016-17	2020-21	03.09.2016	Non-Working	Yes, 436 / Mining dated 22.07.2016	Khata no- 49 Plot No- 01/P Latitude 22°13'58.0" N to 22°14'08.1" N Longitude 84°05'30.6" E to 84°05'44.6" E
Name of the Tahasil:- Lepthipara												
1	KHHA	Surguda Sand	Udit Kumar Patel	Surguda 9437138970		19.546	2018-19	2022-23		Working		Khata no- 173 Plot no- 607 Ksarn- nodi latitude of 22° 06'17.84" N to 22° 06'33.60" N and longitude of 83°49' 57.72" E to 83°50' 37.48" E.


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2	ICHHA	Lephipara Sand	Manas Kumar Choudhary	Lephipara 7008336257	2274 J 27.08.2019	8.360	2019-20	2023-24	27.08.2019	Working	Khata no- 245 Plot no- 1686/2145 , 1682 Ksam- naal latitude of 22° 06' 58.98" N to 22° 07' 11.35" N and longitude of 83° 48' 09.40" E to 83° 48' 38.98" E.
3	ICHHA	Chhiela naal Sand				6.074					Khata no- 140 Plot no- 277/1139 Ksam- naal 22° 05' 42.10" N to 22° 06' 17.30" N and longitude of 83° 52' 19.94" E to 83° 52' 45.57" E.


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Name of the Tahasil:- Bondal												
1	BRAHAMA NI NADI	KOLASA HI SAND	Bikash Kumar Sahu	A1/Po- Bondal, Dist- Sundargarh	1721600088 & 20.02.2016	Hc. 4.77	2015- 16	2019- 20	26.02.2016	Working	Y L.No.- 413 DATE :- 25.1.2016	Mauza- Brahman I "Khad" Khatra No- 1 Plot No.- 60/P Latitudes - from 21' 49" 84.18" N : 21' 49" 15.276" N Longitudes -84' 57" 46.684" E : 84' 57" 55.209" E
2	BRAHAMA NI NADI	DEOGA ON SAND	Kamal Lachan Sahu	A1/Po- Bondal, Dist- Sundargarh	1721600084 & 19.02.2016	Hc 0.68	2015- 16	2019- 20	25.02.2016	Working	Y L.No.- 528 DATE :- 30.1.2016	Mauza- Brahman I "Khad" Khatra No- 1 Plot No.- 32/P Latitudes - from 21' 50' 4.81" N :21' 50' 10.2" N Longitudes -84' 56" 38.8" E : 84' 56" 42.6" E

3	BRAHAMA NI NADI	SABARA SAND	Nabin Kumar Mishra	AI/Po- Kumbharpara (Sambalpur HQ). Dist- Sambalpur	NOT GRANTED	Hc 2.43	-	-	NA	NON WORKIN G	N	Mouza- SABARA Brahman i Nadi Khata No- 36 Plot No.- 15/551
4	BRAHAMA NI NADI	SANGA GUA SAND	Niranjan Chaitra	AI/Po- Khaparsani (Debagarh). Dist- Debagarh	NOT GRANTED	Hc 3.237	-	-	NA	NON WORKIN G	N	Mouza- Brahmani nadi (khaj Khata no- 01 Plot-116/P & 117/P Kkam- Nadi B.O.DAC latitude of 21° 47'55.02" N to 21° 48'12.78" N and longitude of 84°58'03.1 5"E to 84°58'06.9 1"E
5	BRAHAMA NI NADI	BALJATO TA SAND	Swati Pratik Pradhan	AI/Po- Sonai, Dist- Sundargarh	NOT GRANTED	Hc 2.05	-	-	NA	NON WORKIN G	N	Mouza- Brahman i Khad i Khata No- Plot No.- 54/P


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Name of the Tahasil - Rourkela	Khatra no- 22 Plot no- 424/1289/ p	Kisam- nadi Latitudes - from 22 12° 36.3'N - 22° 15' 39.8" N Longitude 5-84° 48' 49.0" E : 84° 49' 10.7" E					Khatra no- 78 Plot no- 247/755(p)
1	Working		2022- 23	2018- 19	4.856 HC	At- Deogaon, panipash, Rourkela, Sundargarh	Sudhir Kumar Haricha nakan
2	Working				4.856	At-D/174, Sector-16, PS-Sector-15 Rourkela Sundargarh	Smt. Kancha n Prava Pradhan
3	Working		20.05. 2022	21.05.2 017	4.775	Jhirpani Sundargarh	Koelha ar Sand Anil Oram

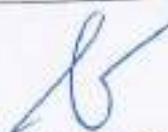

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Kisam- Nadi	Latitudes - from 22' 16 43' N : 22' 16' 07 0' N	Longitude 5-84' 53" 209' E : 84' 53" 38.7" E	Khata no- 2	Plot no- 312/339/p	Kisam- Nadi	Latitude of 22°16'28.2 0'N to 22°16'33.7 0'N and longitude of 84°50'36.1 0"E to 84°50'52.1 0"E.	Khata no- 109	Plot no- 461/553/p	410/552/p Kisam- Nadi	Latitude of 22°12'36.0 "N to
				SEIAA/39 60 DI- 14.08.15		Working				
4	Koel River	Tumkela Sand	Ramaria Ndia Srichand an	Daily Market Roukela-1 sundargarh	4,475	2015- 16	2019- 20	15.10.2015		
5		Taikera Sand-2	Ramesh Chandr o Haricha nan	At- Deogaban, parposh, Roukela, Sundargarh	4,844	2018- 19	2022- 23			



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Name of the Tahasil - Kuarmunda									
									Khata No- 58
									Plot No- 216/p
									Kasam- Nadi
									latitude of 22°16'33.8
									0"N to 22°16'37.3
									0"N and longitude of 84°50'48.3
									0"E to 84°51'02.6
									0"E
									Khata No- 81
									Plot No- 838/p
									Kasam- Nadi
									latitude of 22°16'08.3
									0"N to 22°16'15.2
									0"N and longitude of 84°52'11.2
									0"E to 84°52'51.8
									0"E
1	Koel River	Bhuban in Sand Bed	Ramana nda Silchand an	Daily Market Raukela-1 Sundargarh	5.216	2015- 16	2019- 20		
2	Koel River	Pasara Sand Bed	Robin Behera	A/PO- Siramthapur Dist- Sundargarh	5.261	2015- 16	2019- 20		


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Mineral Potential (Table No. 11.A.02)

Boulder (MT)	Bajari (MT)	Sand (m ³)	Total Mineable Mineral Potential (m ³)
NA	NA		2933676.2
Annual Deposition	NA		

(Table No. 11.A.03)

Main river streams in Sundargarh district are Brahmani River, Ib River, etc. rest all streams like sankha, koel etc. are tributaries of these rivers. Details of the proposed sources are as follows,

S. No.	River or Stream	Portion of the river or stream recommended for mineral concession	Length of area recommended for mineral concession (in kilometer)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in square meter)	Mineable mineral potential (in m ³) (60% of total mineral potential)
1	Koel River	Khatangkudar sand Bed Khata No-21 Plot No-9/134/p Khata No-139 Plot No-1/1668/p Kisam-Nadi Bisra tahasil	0.36	170	4.997Ha	16848
2	Koel River	Kundapash sand Bed Khata No-34 Plot No-1/386/p Khata No-54 Plot No-1/632/p Kisam-Nadi, Bisra tahasil	0.42	105	4.997Ha	34144


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3	Koel River	Jamsera-I Sand Bed Khata No-38 Plot No-59/331 Kisam-Nadi Bisra Tahasil	0.47	105	5.00Ha	31782
4	Koel River	Jabaghat Sand Bed Khata No-86 Plot No-1/p Kisam-Nadi Bisra Tahasil	0.47	105	5.00Ha	20775
5	Koel River	Badbambua- Masurkudar sand Bed Mauza-Badbambua Khata No-88 Plot No-1/805/p Kisam-Nadi Mauza-Masurkudar Khata No-73 Plot No-1/p Kisam-Nadi Bisra Tahasil	0.32	130	5.00Ha	36509
6	Sankha River	Podampur Sand Bed-I Khata No-138 Plot No-422/812/p Kisam-Nadi Kuarmunda Tahasil	0.96	110	9.550Ha	78335
7	Sankha River	Chandiposh Sand Bed Khata No-47 Plot No-159/p Kisam-Nadi Kuarmunda Tahasil	0.24	195	4.856Ha	42195
8	Sankha River	Ushra Ghat-I Sand Bed Khata No-263 Plot No-2256/p Kisam-Nadi Kuarmunda Tahasil	0.28	170	4.856Ha	41654


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09	Sankha River.	Ushra Ghat-II Sand Bed Khata No-263 Plot No-2364/P Kisam-Nadi Kuamunda Tahasil	0.28	185	4.856Ha	41726
10	Brahmani Nadi	Upurda Sand Bed Mauga-Brahmaninadi (kha) Khata no-01 Plot-69/P & 70/P Kisam- Nadi Bonai Tahasil	0.54	90	5.000Ha	40644
11	Brahmani Nadi	Tendra Sand Bed Mauga-Brahmaninadi (kha) Khata no-01 Plot-143/P & 141/P Kisam- Nadi Bonai Tahasil	0.49	105	5.000Ha	29508
12	Brahmani Nadi	Bonaikela Sand Bed Mauga-Brahmaninadi (kha) Khata no-01 Plot-128/P Kisam- Nadi Bonai Tahasil	0.28	180	5.000Ha	42357
13	Brahmani Nadi	Chandiposh Sand Bed Mauga- Brahmaninadi (kha) Khata no-01 Plot-98/P 101/P & 102/P Kisam- Nadi Bonai Tahasil	0.46	105	5.000Ha	23255


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6	Ib River	Nua-arnlipali Sand Bed- I Khata No.381, Plot No. 1/P, Area-12.00Ac. Kisam- Nadi Sadar, Sundargarh Tahasil	0.30	170	4.856Ha	20300
17	Ib River	Nua-arnlipali Sand Bed- II Mouza- Nua-arnlipali, Khata No.381, Plot No. 397/P, Area-12.00 Ac. Kisam-Nadi Sadar, Sundargarh Tahasil	0.33	135	4.856Ha	39040
18	Ib River	Kainsara Sand Bed Mouza- Kainsara, Khata No. 86, Plot No. 96/1146/P, Area-6.00 Ac. Kisam- Nadi Mouza- Deuli, Khata No. 257, Plot No. 2668/P, Area-6.00 Ac. Kisam- Nadi Sadar, Sundargarh Tahasil	0.40	115	4.856Ha	28276
19	Brahmani Nadi "KHA"	Luthurba Sand Bed Village- Luthurba Khata No.1 Plot No.9, Kisam - Nadi Ac. 5.37, Plot No.10, Kisam - Nadi, Ac. 3.41, Plot No.11, Kisam - Nadi Ac.0.95 & Plot No.12.	0.29	160	4.997Ha	42144

20	Brahmani Nadi "KHA"	Kisam - Nadi Ac. 2.62 Lahunipara Tahasil	0.22	240	4.997Ha	43519
21	Ichha River	Kenapali Sand Bed Mauro- Brahmaninadi "KHA" Village- Kenapali, Khata No.1, Plot No.41/p, Kisam Nadi, Ac.12.35	0.67	30	3.286Ha	947
22	Ichha River	Luthukend Sand Bed Khata No. 65 Plot-301 AC.3.12 459 468 AC. 3.16 AC. 1.84 Total. AC. 8.12 Lephipada Tahasil	0.58	80	4.856Ha	1435
23	Ichha River	Lephipara Sand Bed Khata No. 245 Plot no-1697/p AC. 12.00 Lephipada Tahasil	0.20	80	2.023Ha	14180
24		Bhagapali Sand Bed Khata no-71 Plot no-1/P 5.00Ac Kisam-nadi Subdega Tahasil	0.08	50	1.416Ha	15601.5
25		Kukuridhi Sand Bed Khata no-172 Plot No-01/p Kisam-Nadi 3.5Ac Subdega Tahasil Barpali Sand Bed Khata no-69	0.30	100	4.046Ha	27580


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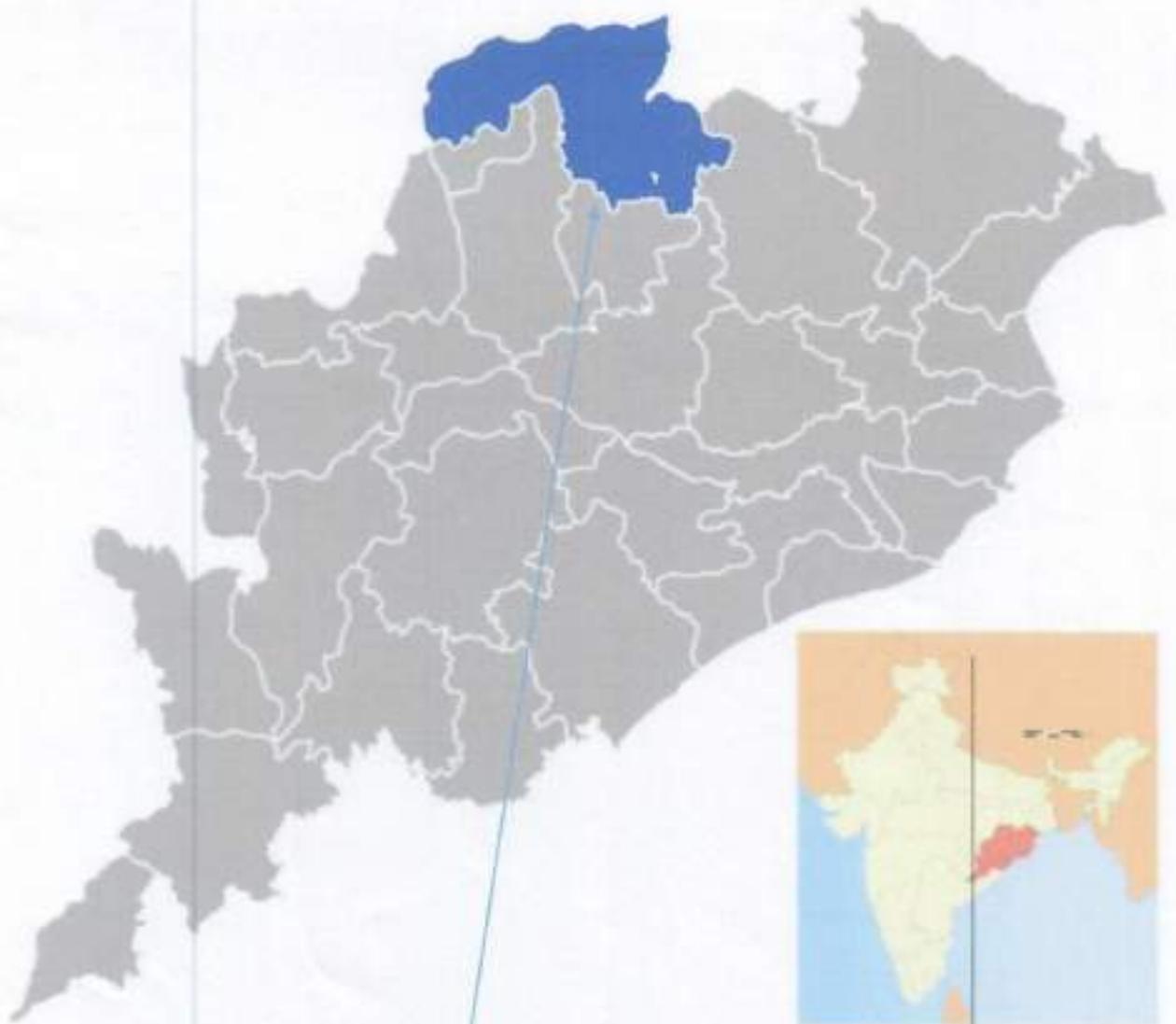
26	Brahmani river	Plot no-874/P 10.00Ac Kisam-nadi Subdega Tahasil Bortengeda Sand Bed Mauza- Brahmani Nadi Ga' Khata No.- 1, Plot No.- 14/p, Kisam- Nadi Gurundia Tahasil	0.28	182	4.997Ha	27738
27	Brahmani river	Ranikamratipur Sand Bed Mauza- Brahmani Nadi Ga' Khata No.- 1, Plot No.- 11/p, Kisam- Nadi Gurundia Tahasil	0.27	180	4.997Ha	28979
28	Brahmani river	Chhidi Sand Bed Mauza- Chhidi Khata No.- 49, Plot No.- 456/486/P, Kisam- Nadi Gurundia Tahasil	0.24	205	4.997Ha	43477
29	Brahmani river	Pitagan Sand Bed Mauza- Brahmani Nadi (Ka) Khata No.- 01, Plot No.- 5/P & 6/P, Kisam- Nadi Gurundia Tahasil	0.62	75	4.997Ha	32585
30	Sankh River	Tarkera Sand Bed-I Khata No-155 Plot No-528/P, Kisam-Jala bhandar 9.10Ac Plot-528/1304P	0.68	51	4.548Ha	30000


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32	Sankh River	Kisam-Nadi 2.14Ac Tankera Sand Bed-II Khata No-154 Plot No-93/11309/P 6.80Ac Kisam-Jala bhandar Samaleimunda Sand Bed-I Khata No-158 Plot No-706/2156/P 6.30Ac Kisam-Jala bhandar	0.22	120	2.751Ha	21997
33	Sankh River	Uduma Sand Bed-I Khata No-144 Plot No-1/P 12.05Ac Kisam-Nadi	0.20	130	2.549Ha	3899.2
34	Sankh River	Laxmiposh Sand Bed-I Khata No-85 Plot No-683/1289/P 5.16Ac Kisam-Jala bhandar	0.36	130	4.876Ha	42000
35	Sankh River		0.23	80	2.088	5913
Total for the District						
						949342.7


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PLATE-I



SUNDARGARH


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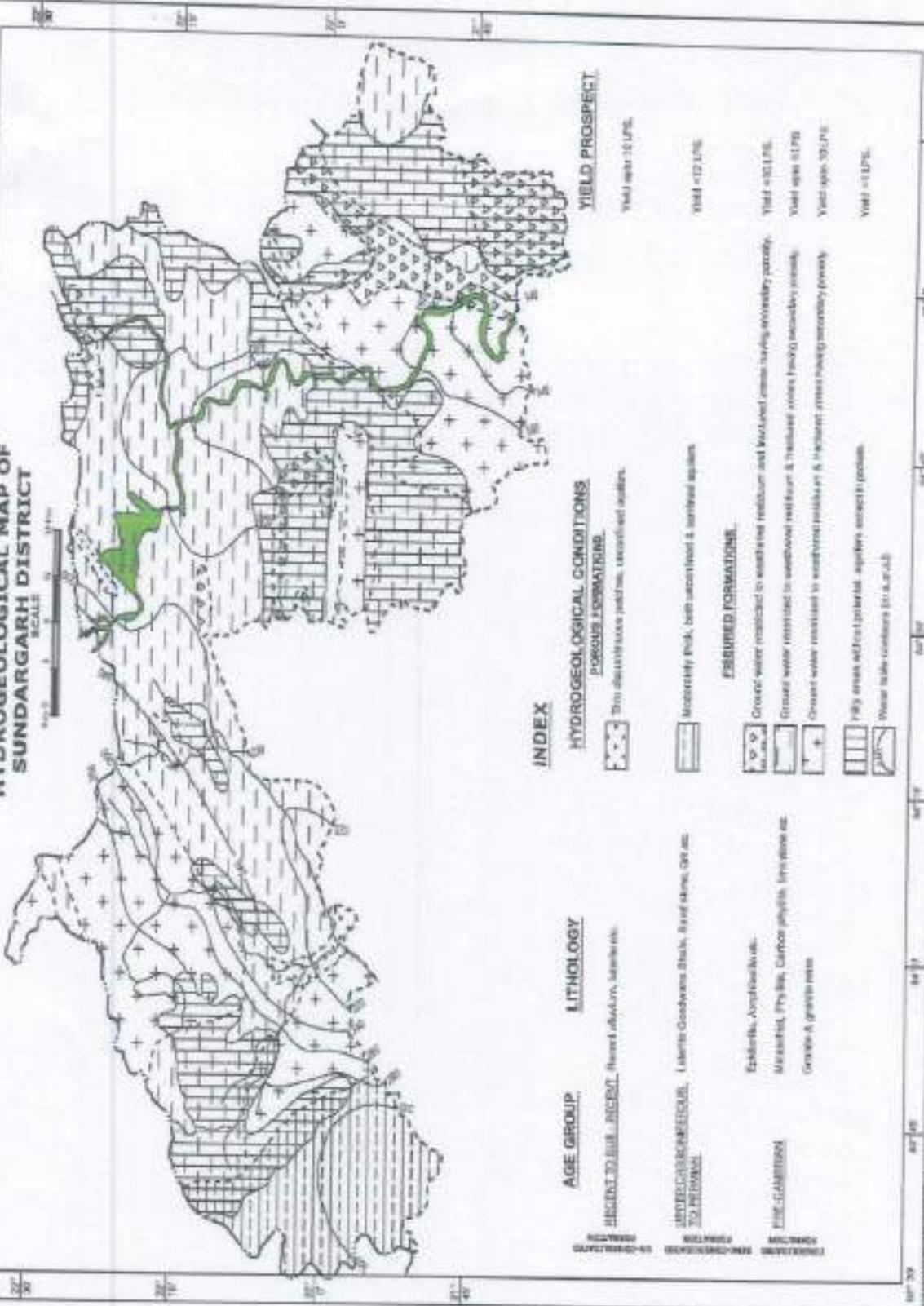
SUNDARGARH TEHSIL MAP



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**HYDROGEOLOGICAL MAP OF
 SUNDARGARH DISTRICT**

SCALE
 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100



INDEX

AGE GROUP

- RECENT TO EARLY HOLOCENE: Recent alluvium, sandstone
- INTERGLACIAL/POSTGLACIAL: Lignite, Goudkansa Shale, Sandstone, Gp. etc.
- PLISTOCENE: Sandstone, Argillaceous sh. etc.
- MIOCENE: PPh Sh., Carboniferous, Ironstone etc.
- CRETACEOUS: Granite & gneiss etc.

HYDROGEOLOGICAL CONDITIONS

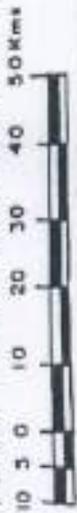
- POREOUS FORMATION: This abstracts water, unconfined aquifer
- MODERATELY PORE, both unconfined & confined aquifer
- POREOUS FORMATION: Ground water restricted to weathered residual and fractured zones having secondary porosity.
- POREOUS FORMATION: Ground water restricted to weathered residual & fractured zones having secondary porosity.
- POREOUS FORMATION: Ground water restricted to weathered residual & fractured zones having secondary porosity.
- POREOUS FORMATION: High areas with low potential aquifer except in pockets.
- POREOUS FORMATION: Water table continues to A.P.C.U.B.

YIELD PROSPECT

- Yield upto 10 LPM
- Yield > 10 LPM
- Yield > 20 LPM
- Yield > 30 LPM
- Yield > 40 LPM
- Yield > 50 LPM


**COLLECTOR
 SUNDARGARH**

GEOLOGICAL AND MINERAL MAP OF SUNDARGARH DISTRICT.



SCALE : 1 CM = 10 K.Ms.

84°

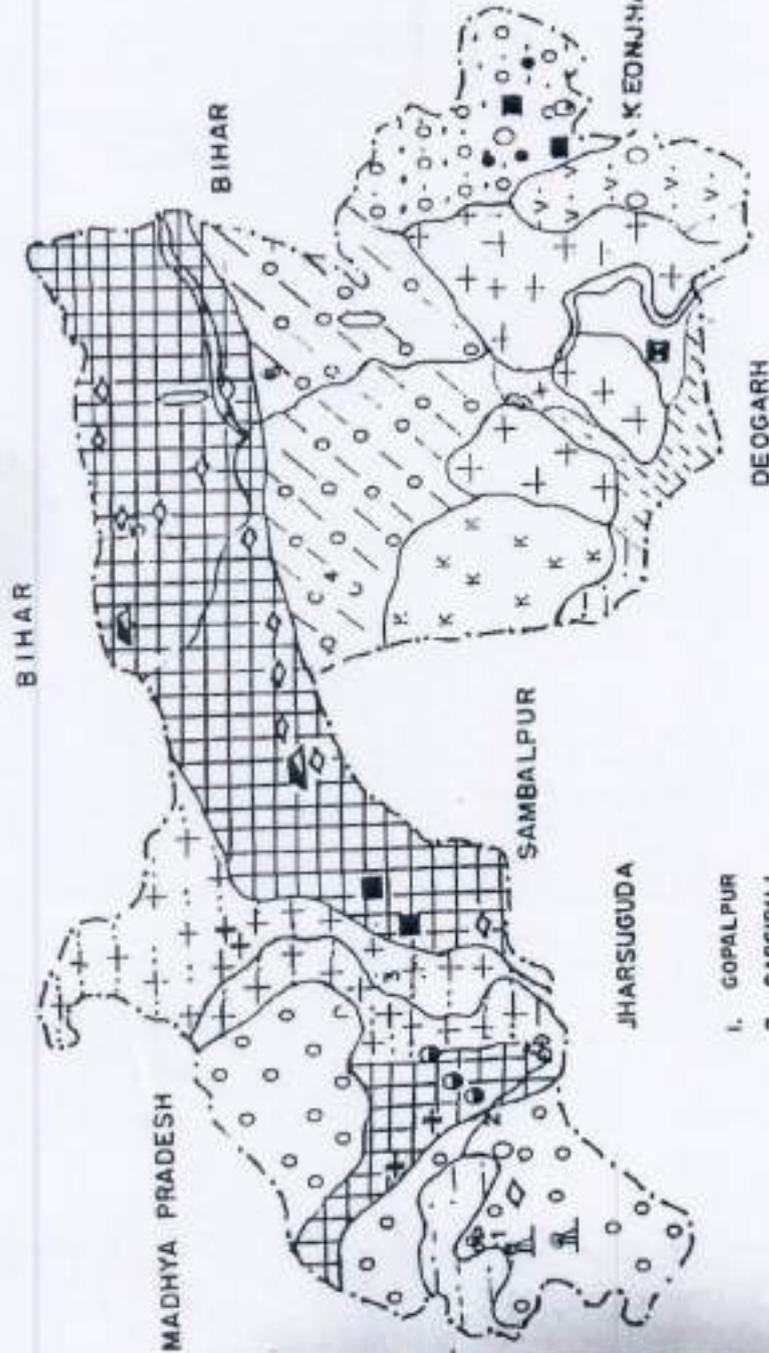
85°

INDEX LITHOLOGY

	Gondwana
	Kothan Group
	Gangpur Group
	Darjiling Group
	Singbhum Group (Phase 1 & 2)
	BIF (Korai)
	Kuanr Group
	BIF (Deogarh)
	Unclassified Granites & Gneisses

MINERAL

	Basemetal
	Bauxite
	Coal
	Fireclay
	Gold
	Iron Ore
	Kyanite & Sillimanite
	Limestone & Dolomite
	Manganese
	Soapstone
	Quartz & Quartzite



1. GOPALPUR
2. SARGIPALI
3. SUNDARGARH
4. RAJGANGPUR
5. BIRAMITRAPUR
6. ROURNELA

84°

85°

COLLECTOR
SUNDARGARH

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