



**ADDITIONAL DISTRICT SURVEY REPORT
(DSR)
OF
JHARSUGUDA DISTRICT, ODISHA
FOR
RIVER SAND
(FOR PLANNING & EXPLOITING OF MINOR
MINERAL RESOURCES)**



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

COLLECTORATE, JHARSUGUDA

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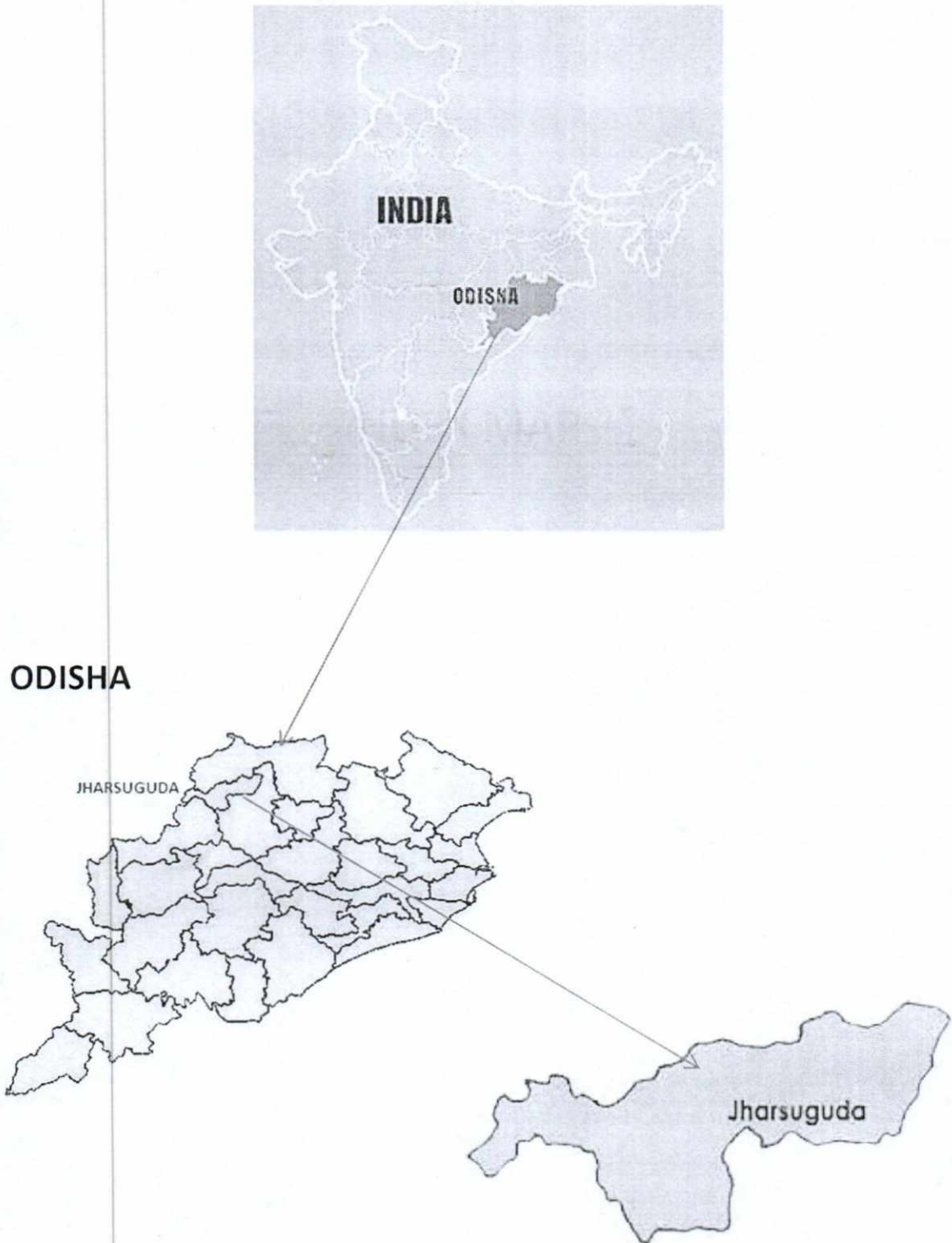

DFO, Jharsuguda(T)
Member DEIAA


DR. Sarat Choudhary
Retd. Principal
Expert Member, DEIAA

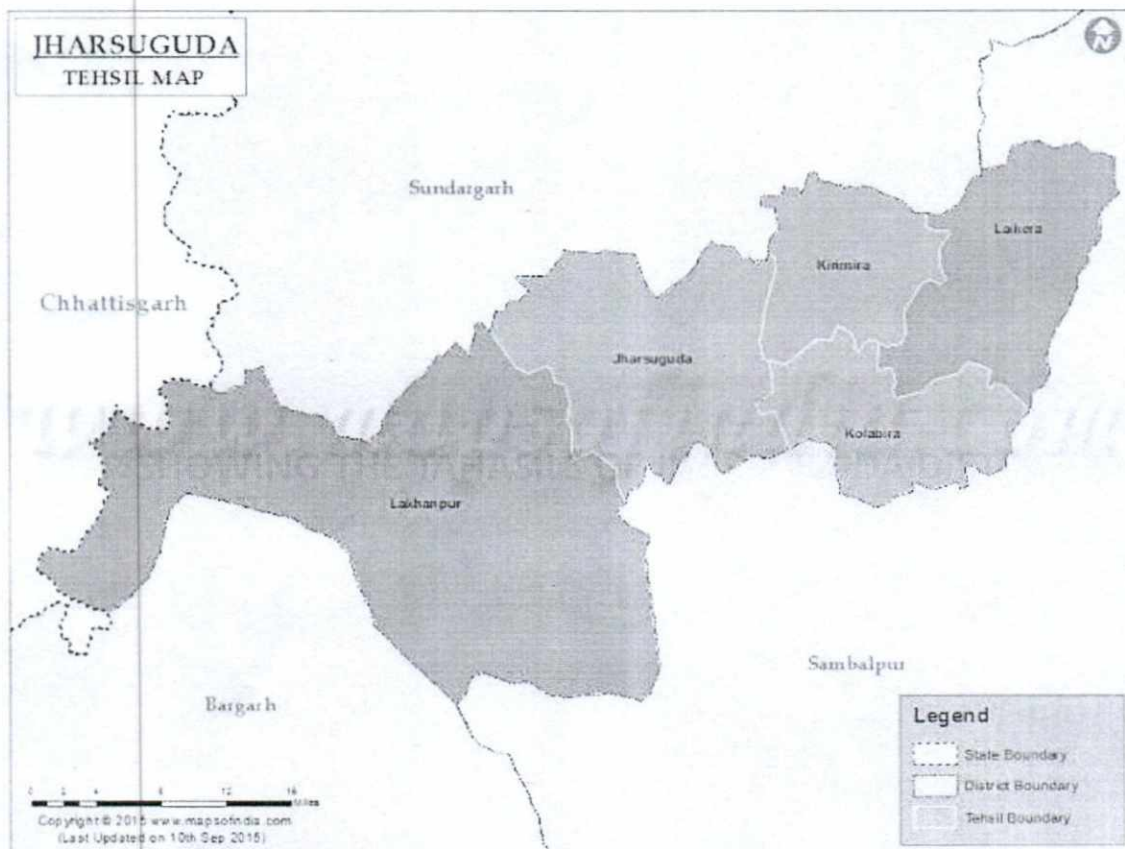

SubCollector, Jharsuguda
Member secretary DEIAA


District Magistrate
& Collector, Jharsuguda
Chairman DEIAA

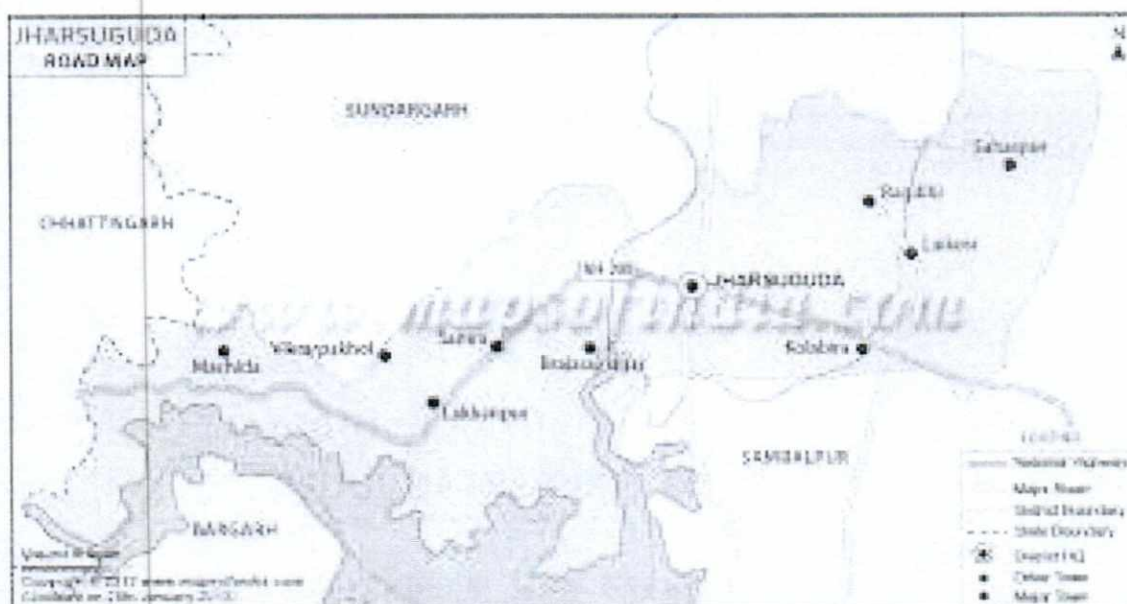
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MAP SHOWING THE TAHASILS OF JHARSUGUDA DISTRICT



MAP SHOWING THE MAJOR ROADS OF JHARSUGUDA DISTRICT

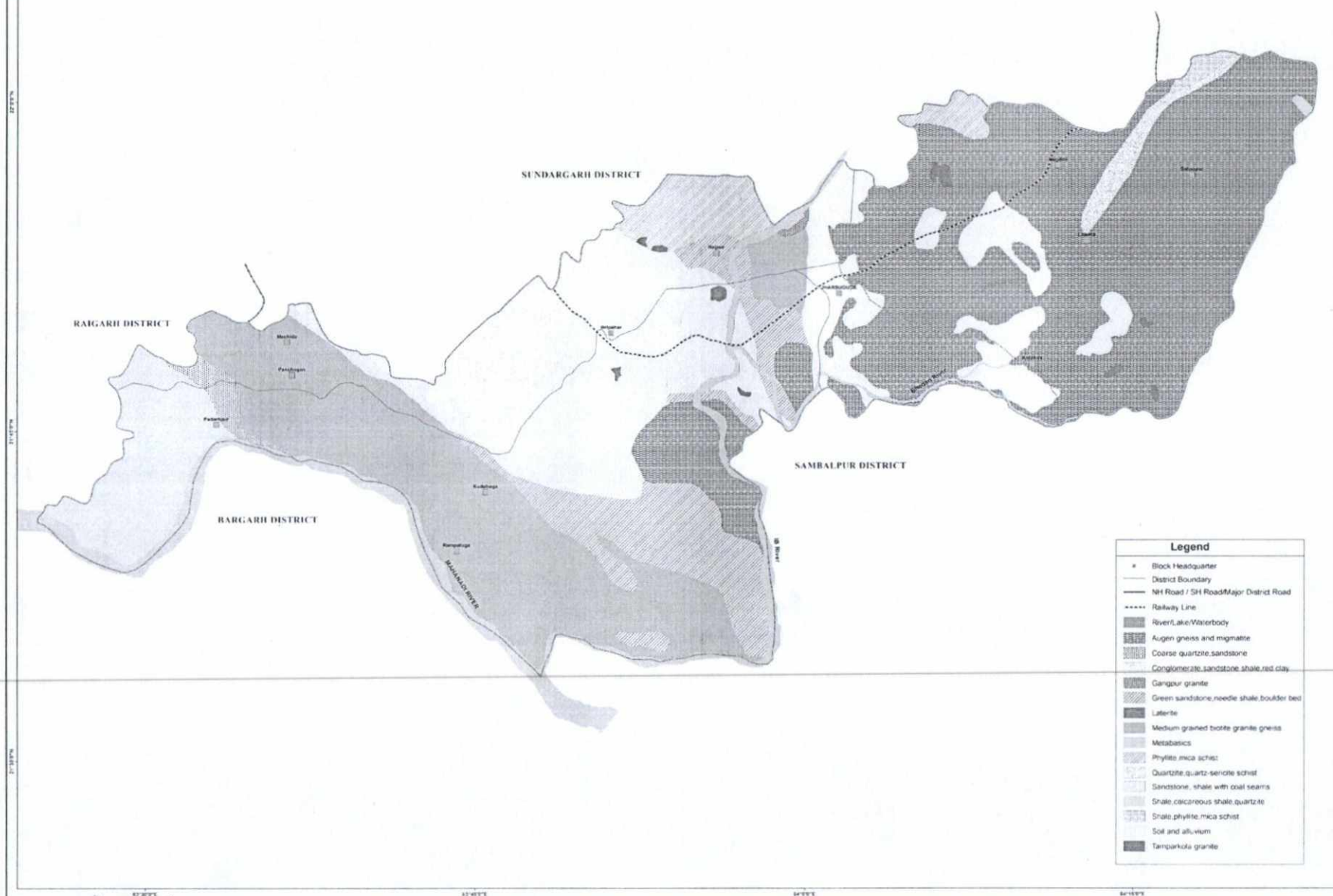


MINERAL MAP OF JHARSUGUDA DISTRICT

SCALE - 1:110,000



PLATE NO-4

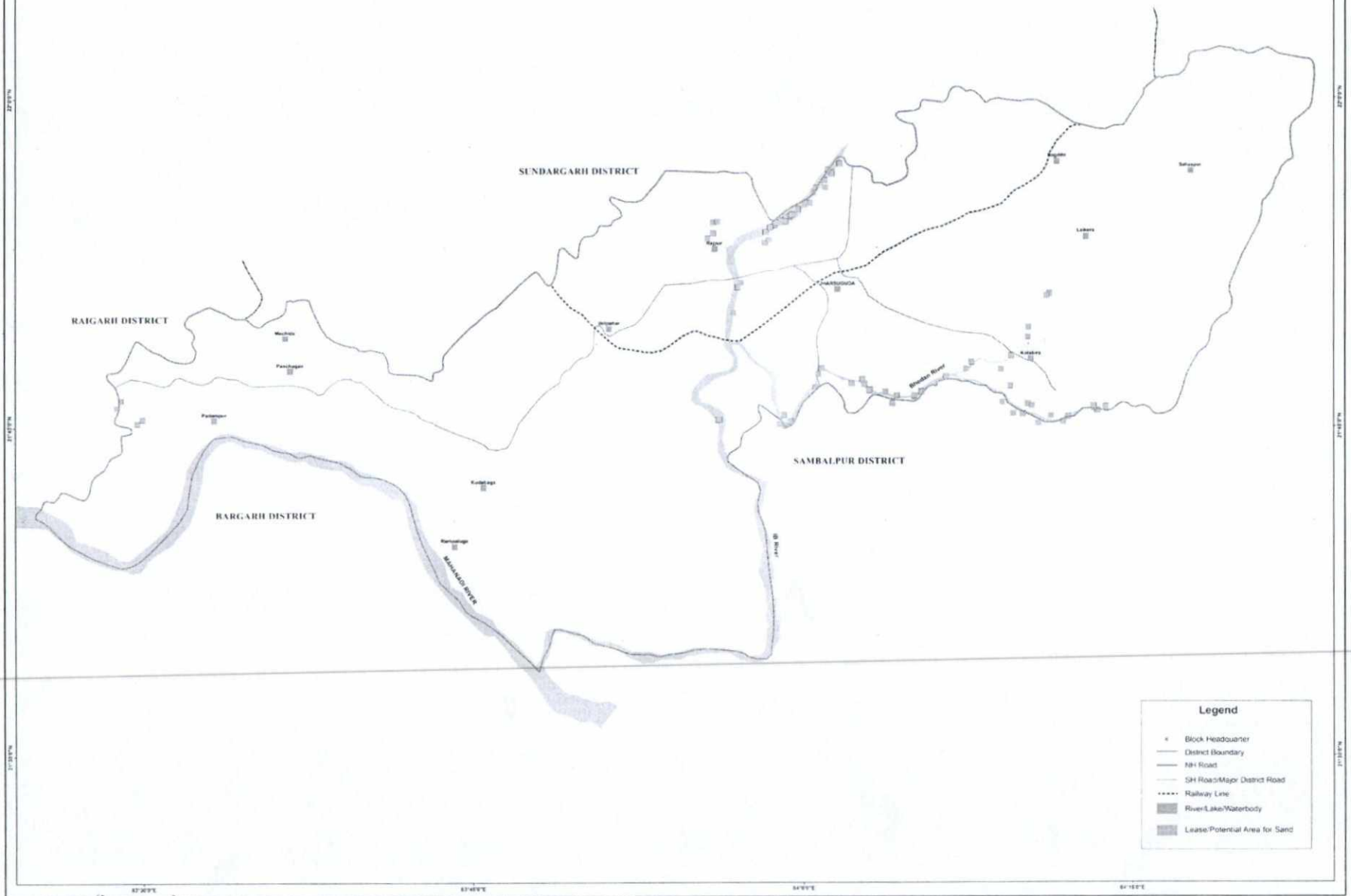


LEASE/POTENTIAL MAP OF SAND IN JHARSUGUDA DISTRICT

SCALE : 1:110,000



PLATE NO-5



PREFACE

In compliance to the notification issued by the Ministry of Environment and Forest and Climate Change Notification no. S.O.3611 (E) NEW DELHI dated 25-07-2018 the preparation of district survey report of river sand mining has been prepared in accordance with Clause II of Appendix X of the notification. Every effort has been made to cover river sand mining locations, future potential areas and overview of sand mining activities in the district with all its relevant features pertaining to geology and mineral wealth. This report will act as a compendium of available mineral resources, geological set up, environmental and ecological setup of the district and based on data of various departments like Revenue, Water Resources, Forest, Geology and Mining in the district as well as statistical data uploaded by various state Government departments for preparation for district survey report. The main purpose of preparation of district Survey Report is to identify the mineral resources and developing the mining activities along with other relevant data of the District.

1. INTRODUCTION

Jharsuguda is a district in Odisha, India with Jharsuguda town as its headquarters. Mineral rich district, Jharsuguda is one of the most industrially developed district of Odisha. Jharsuguda district was established on 1st January, 1994, before which it was a part of Sambalpur district. It was created by amalgamation of the erstwhile Jamindars of Rampur, Kolabira, Padampur and Kudabaga. The district is surrounded by Sundargarh district in the North, Sambalpur district in the East, Bargarh district in the South and Chattisgarh state in the West. Jharsuguda district is situated at a distance of 515 km from Kolkata, 616 km from Nagpur, 48 km from Sambalpur and 372 km from state capital Bhubaneswar. Jharsuguda district covers a total area of 2,081 sq km. The district once had an airport during World War II. This region is rich in coal and other mineral reserves. Of late, many small and medium scale iron and steel units have been set up in the vicinity of Jharsuguda town, giving impetus to the industrial growth of the district.

2. OVERVIEW OF MINING ACTIVITIES IN THE DISTRICT.

Coal : Coal, the major mineral resources of the district is confined to Ib-river coal field which was brought to light towards the later part of the last century and now it is supposed to be one of the major coal fields in India. Both Barakar and Karharbari formations of this coal field are major coal bearing horizons. Surface and sub-surface data reveal one coal seam in Karharbari and four coal seams in Barakar with a number of local seams. The coal seams are highly interbanded with high moisture and ash contents. A total reserve of 9361.26 million tonnes of power grade coal has been estimated for the district.

In Jharsuguda district Coal extraction is done by Mahanadi Coalfields Limited (MCL) a subsidiary of Coal India Limited. There are five numbers of Opencast Projects and nine numbers of underground leases in operation by MCL. The total area held by MCL for Mining Operation is 9255.267 Hectare in the district. Major Consumers of the IB Valley Area Coal across the Country are like NALCO, NTPC, Tamilnadu Electricity Board (TNEB), West Bengal Power Development Corporation (WPDCL), Aravali Power Co.(P) Ltd. T.P.P. Hariyana, Talwandi Saboo Power Ltd. Punjab, Tata Electric Power, Jharkhand, Vendanta Pvt. Ltd., OPGC Odisha, Mahagenco Akola, Maharashtra, Gopani Iron & Power, Chandrapura, Maharashtra, etc. The State Govt is earning revenue of 550-600 crores as royalty & around 150 crores as DMF from the district.

Fire Clay: Several occurrences of fire clay have been encountered within the Kamthi and Barakar formations of Ib-river coal field associated with coal seams. The important occurrences are located around Belpahar, Jurabag, Darliapali, Lakhanpur and Bholamal. The fire clay is very hard, fine grained with good plasticity, dirty white in colour and when burnt it neither cracks nor fuses at 1400°C. The fusion point varies from 1600° to 1640°C. A total reserve of 0.674 million tonnes of fire clay has been estimated for the district. Tata Refractories Ltd. (TRL) is a major refractory plant in the state which thrives on the produce of the Belpahar fireclay mine. Other occurrences are reported in the village Chandli, Soldia, Ganga, Belout, Bhatlaida, Bonaroi, Khinda & Talabira.

Quartz & Quartzite: The quartz deposit of Bhatlaira, Bonereai & quartzite of Kanjhaharan are amongst the notable ones. Besides, refractory / glass grade quartz occurs around Laikera, Pandrimal, Jhargaon – Kadamghat, Kolabira, Jangapera, Bhikhampur, Beldungri & Harpidungri.

Besides above mentioned coal mines, there are two numbers of Quartzite mines operating in the district. One is Chuinpali Quartzite mines of M/s TRL KrosakiRefractories Limited over 102.123 Hectare area situated at Chuinpali Village of Lakhanpur Tahasil and the other is Bhikampali Quartzite Mines of M/s OCL India Ltd. over 4.897 Hectare in Bhikamplai Village of Lakhanpur Tahasil of Jharsuguda District.

Red Oxide / Red Ochre: An important deposit of red oxide occurring within Gondwanas is located in Patrapali – Malda and is under active exploitation.

Gemstone: Gem quality green tourmaline occurrences in the zoned pegmatites have been encountered within porphyritic granite gneiss, amphibolite & schists around Bagdihi. Incidences of semitransparent aquamarines have been reported from colluvial zone of the pegmatite body, located east of Pandrimal.

Dolomite: The river Sapai, flowing along the boundary of Sundargarh and Jharsuguda districts exposes sporadic occurrences of dolomite. These occurrences appear to be extension of limestone and dolomite deposits of Gangpur Synclinerium. The estimated reserve of dolomite along the Sapai river section in both Jharsuguda and Sundergarh district is 5.4 million tonnes.

Other Minerals: Minor occurrences of minerals like kyanite of Titheimal, sillimanite of Bhuliadihi, opaque beryl of Pandrimal and Kolabira, tourmaline of Kolabira, columbite –tantalite of Kolabira, feldspar of Bhatlaira and the Pyroxene granulites of Pandrimal area for dimension stone have also been reported.

Other than the above mentioned minerals, minor minerals such as river sand, laterite slabs, building stone/black stone/road metals, morrum, brick earth etc. are also available in the district.

3. LIST OF LEASES WITH LOCATION, AREA AND PERIOD OF VALIDITY

Enclosed as Annexure I

4. DETAILS OF ROYALTY COLLECTED (Rs)

Sl.No	Name Of Tahasil	2015-16	2016-17	2017-18	2018-19
1	Jharsuguda	499000	567000	7758000	8017000
2	Kirmira	0	315438	720758	833490
3	Kolabira	0	111000	1639000	3505000
4	Laikera	0	102900	431200	294000
5	Lakhanpur	0	360000	435460	705140
TOTAL		499000	1561438	11713218	13376630

5. DETAILS OF PRODUCTION OF SAND (cum)

Sl.No	Name Of Tahasil	2015-16	2016-17	2017-18	2018-19
1	Jharsuguda	120178.8	123440.6	152080.4	167874.4
2	Kirmira	0	11363	11370	11380
3	Kolabira	0	46826	46966.25	169974.3
4	Laikera	0	1050	4400	3000
5	Lakhanpur	0	9000	10715	22322
TOTAL		150311.8	199029.6	229931.7	380550.7

6. PROCESS OF DEPOSIT OF SEDIMENTS IN THE RIVERS

The drainage of the district is mainly controlled by rivers like IB & Bheden. During rainy season the river water carries sand which is formed due to disintegration of rock bodies along with other suspensions. After recession of the flood water flow the sand gets deposited in the locations where there is less energy.

7. GENERAL PROFILE

a. Administrative set up:

Sl No	Item	Unit	Magnitude
1	Location		
	Longitude	Degree	84°01' East
	Latitude	Degree	21° 82' North
2	Geographical area	Sq.Km.	2114
3	Sub-division	Numbers	1
4	Tahasils	Numbers	5
5	C D Blocks	Numbers	5
6	Municipalities	Numbers	3

7	NACs	Numbers	-
8	Police Stations	Numbers	11
9	Gram Panchayats	Numbers	78
10	Villages	Numbers	351
	Inhabited	Numbers	347
	Uninhabited	Numbers	4
11	Assembly constituencies	Numbers	2

b. Area and Population:

Jharsuguda district covers a total area of 2,081 sq km. The district lies between 21.82 degree north latitude and 84.1 degree east longitude.

Total population of the District is 579505 consisting of 351 villages. Urban Population is 231165 and rural population is 348340. Total male population of the District is 296690 and female population is 282815. The District consists of total 104620 SC population and 176758 ST population. The total literacy rate of the District is 78.86% comprising 86.61% male literacy rate and 70.73% female literacy rate.

c. Climate :

The district of Jharsuguda is characterized by a hot dry summer. The temperature in the month of May is 42 degree at the maximum. The average rainfall of the district is 1500 millimeter. From April to August the wind blows from south and southwest whereas from September onwards wind blows from North West.

d. Economy:

The economy of the Jharsuguda district can be judged through its natural resources. The District is rich in minerals like coals, quartzite and fire clay. Besides deposit of limestone, granite, white sand stone and laterite stone are also found in several places of Jharsuguda district that add to economy of the District. Several industrial units like Vendanta Alumina, Bhusan Steel and Power, TATA Refractories are operating in the district those contribute to the

economic growth of the district. There are also some major forest products like Kendu leaves, wood, rice and leather that also contribute significantly to the economy of Jharsuguda district.

e. Industry:

No. of MSME units set up	Investment (In Rs. crores)	Employment Generated				Employment of women
		SC	ST	General	Total	
1517	12335.47	463	466	2921	3850	151

f. Agriculture:

During the year 2017-18 the net area sown was 60 thousand hectares against 5356 thousand hectares of the state. The production of was as below:

Name	Paddy	Wheat	Maize	Mung	Biri	Kulthi	Till	Groundnut	Mustard	Potatoes	Jute	Sugar cane
Production in 000 MT	116.52	0.15	2.87	0.69	0.39	1.37	1.22	1.00	1.24	0.00	4.80	27.04

During 2017-18, the total fertilizers used in the district was about

Type of fertiliser	Nitrogenous	Phosphatic	Pottasic	Total	Consumption per Ha
Quantity in MT	3372	1401	722	5495	67.27

g. Power:

Consumption of electricity in the district during the year covers 82 million units per month and villages so far electrified as on 30.08.2019 is 333 which constitutes almost 95% to the total villages of the district.

h. Transport & Communication:

Railway route length (14-15) km	66.62
No of Rly stations and PH(14-15)	9
Forest road (17-18) km	23.00
National Highway (16-17) km	105.60
State Highway (17-18) km	106.16
Major district road (17-18) km	40.37
Other dist road (17-18) km	942.75
Rural road(17-18) km	323.41
Inter village road (16-17) km	1024.64
Intra village road (16-17) km	1025.57

i. Health:

The medical facilities are provided by different agencies like Govt., Private individuals and voluntary organizations in the district.

Allopathic Govt medical institutions	93 No
Beds facilities	DHH- 300 beds- 1No CHCs- 60 beds- 6 Nos OH- 10 beds- 1No
Homoeopathic dispensaries	7 No
Ayurvedic dispensaries	9 No

j. Tourist places:

Jharsuguda is one of the popular tourist destinations. The district is decorated with many tourist places. Koilighughar waterfall (Lakhanpur) and Adyaswambhu are the picnic spots that attract lots of tourists every year. Likewise there are several places of historical importance like ruins of Hill Forts of Ulapgarh, rock painting and lithography of Bikramkhol, Ushakothi cave and Kolabira Fort. The district has number of temples namely Padmasini Temple of Padampur, Ancient Shiva Shrine of Jhadeswar Temple, Ramchandi, an ancient Shaktipitha, Shree Pahadeswar Temple, Shiva Shrine of Mahadebpali.

k. Forest areas:

Category of forest	Area in sq km
Reserve Forest	35.53
Unclassified Forest	0.04
Demarcated Protected Forest (DRF)	109.97
Undemarcated Protected Forest	0
Other forest under Revenue Dept	56.9
Total	202.44

I. Education:

Primary School (2017-18)	No. of Schools	393
	Enrolment (No)	47042
	Pupil Teacher Ratio	20.50
Upper Primary School 2017-18	No. of Schools	323
	Enrolment (No)	28349
	Pupil Teacher Ratio	14.52
General College 2017-18	Junior	21
	Degree	10
Secondary School	No. of Schools	137
	Enrolment (No)	15858
	Pupil Teacher Ratio	21.60
Literacy Rate, 2011	Male	86.6
	Female	70.7
	Total	78.9

m. Culture & Heritage:

Jharsuguda district is very much rich in its cultural heritage. Various fairs and festivals are celebrated round the year that indicates its richness in culture and religion. There are many common fairs and festivals that are celebrated in the state. But there are few distinct and special festivals that are celebrated in the District like Ranjta Festival, Ratha Jatra of Kukurjunga, Famous Gokulastami Jatra of Rajpur and Makar Ratha Jatra of Belpahar.

The District is a beautiful diaspora of different origins of people from across India which makes it unique & different from other cities in Odisha.

Sambalpuri is the mother tongue of the district. Besides some ethnic groups have their own languages like Agrias, Lairias, Mundas, Kishans, Khadis and Turis.

8. LAND UTILISATION PATTERN

SI No	Landuse	Area in '000Ha
1	Forest Area	20
2	Misc. trees& Grooves	6
3	Permanent Pasture	20
4	Culturable Waste	15
5	Land put to Non Agril Use	19
6	Barren & Unculturable Land	27
7	Current Fallow	28
8	Other Fallow	3
9	Net Area Sown	60
10	Mining	10
	Geographical Area	208

9. PHYSIOGRAPHY

The district exposes a wide spectrum of rock types. The Peninsular Gneiss comprising augen gneiss and migmatite represent the oldest rocks of Archaean to Lower Proterozoic age in the area. They occupy a gently undulating terrain east of Jharsuguda. A small body of massive granite, the Tamparkola granite, of Lower Proterozoic age occurs as an isolated exposure near Dulesra. A narrow linear strip of metasedimentary rocks consisting of quartzite, quartz-sericite schist, phyllite and mica schist occurring near Laikera belongs to Upper Bonai Group of Lower Proterozoic age. Well consolidated, soft and foliated rocks of Gangpur Group of Lower Proterozoic age comprising phyllite and mica schist are well exposed here. An unmetamorphosed sedimentary sequence of rocks occur near the western corner of the district. This sedimentary sequence can be broadly divisible into a sequence of shale, calcareous shale and quartzite forming the Raipur

Group and coarse sandstone and quartzite forming the Chandarpur Group of the Chattisgarh Super Group. The Gondwana Super Group of sedimentary rocks are confined to fault bounded basin and occur in the central part of the district around Belpahar, Brajarajnagar areas. Among Talchir and Barakar Formations of Lower Gondwanas, the latter is the store house of 'bituminous coal' in the region. Kamthi Formation consisting of conglomerate, sandstone, shale, red clay etc. represents the Upper Gondwanas in the area. Soil, alluvium and laterite are the younger formations in the area. Laterite occurs in small, isolated, irregular outcrops, spread almost all over the above rock types. The unclassified soil/alluvium of the Quaternaries occupies large area in the Mahanadi river valley and over the gneissic country, east of Jharsuguda.

10. RAINFALL

The district is generally hot with high humidity during April and May and cold during December and January. The monsoon generally breaks during the month of July and continues till end of October. The temperature goes as high as up to 46°C in the summer and up to 7⁰-8⁰ C during peak winter.

The rainfall statistics of the district for last four years is given below:

Year/ Month	APRIL	MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC	JAN	FEB	MARCH	TOTAL
15-16	40.86	7.4	199.1	480.9	441.9	271.78	7.04	0	26.32	0	24.06	16.26	1515.66
16-17	0	22.44	85.72	259.2	406.1	253.24	43.88	0	0	7.5	0	4.69	1082.75
17-18	1	64.48	228.4	442.3	300.8	245.84	94.06	0	0	0	0	1.64	1378.6
18-19	27.94	113.8	176.1	421.2	399.5	122.26	6.6	0	90.54	0	44.04	13.9	1415.96
AVG	17.45	52.03	172.3	400.9	387.1	223.28	37.895	0	29.22	1.875	17.03	9.1225	1348.24

11. GEOLOGY AND MINERAL WALTH

The geological succession in the district is as follows:

AGE	GEOLOGICAL UNIT		LITHOLOGY
Pleistocene to Recent	Quaternary		Soil and alluvium
Cainozoic			Laterite
Permian to Triassic	Gondwana Super Group	Kamthi Formation	Conglomerate, sandstone shale, red clay
Permian		Barakar Formation	Sandstone, shale with coal seams
Carboniferous (?) Permian		Talchir Formation	Green sandstone, needle shale, boulder bed
Upper Proterozoic			Gangpur granite
Middle to Upper Proterozoic	Chattisgarh Super Group	Raipur Group	Shale, calcareous shale, quartzite
Lower Proterozoic		Chandarpur Group	Coarse quartzite, sandstone
Lower Proterozoic		Gangpur Group	Phyllite, mica schist
			Tamparkola granite
		Upper Bonai Group	Shale, phyllite, mica schist Quartzite, quartz-sericite schist
Archaean to Lower Proterozoic		Lower Bonai Group	Metabasics
		Peninsular Gneiss (Younger phase)	Augen gneiss and migmatite
Archaean		Peninsular Gneiss (Older phase)	Medium grained biotite granite gneiss

- a. **Detail of river/stream/other sand source-** Sand mining in the district is confined to main rivers like IB & Bheden.
- b. **Availability of maximum sand or gravel or aggregate resources-** sand- 77,51,362 cum (Annexure II). This is the maximum quantity of river sand which can be made available for extraction, calculated on the basis of existing stipulations. The calculation of present sand deposit of the district could not be made due to cover of maximum portion of sand bed under flowing water of the monsoon.
Gravel- Nil, Aggregate- Nil
- c. **Detail of existing mining leases of sand and aggregates-** For sand pl refer Annexure I. Aggregate- Nil

DRAINAGE SYSTEM AND DESCRIPTION OF SALIENT FEATURES OF MAIN RIVERS AND STREAMS

Sl.no	Name of the River	Place of origin	Altitude at origin	Total length in the district (in km)	Area drained (sq km)	% area drained in the district	Process on deposition of sediments	Volume of sand deposited in last four years (Year wise)	Any important note related to leasing of sand quarry within the river
A	B	C	D	E	F	G	H	I	J
1	River IB	Pandarapat Raigarh	21°51'N 83°56'E	52Km	12447sq km	14Km	Sediments get deposited along with sand after receding of flood water.	35,00,000 Cum(Approx.)	-
2	River Bheden	Bamara	21°46'7" N 84°14' 40"E	50Km	2120 sq km	50Km	-do-	50,00,000 Cum(Approx.)	-


Detail of the potential of river sand of the district is submitted as Annexure II.

POTENTIAL SAND SAIRATS IN THE DISTRICT

Annexure I

Sl. No	Name of Tahasil	River or stream	Portion of the River or Stream recommended for mineral concession (GPS co-ordinates or Khata& Plot No)	Longitude			Latitude			Name of village	Status	Length of area recommended for mineral concession (in km)	Average width of area recommended for mineral concession (in km)	Area recommended for mineral concession (in sq m)	Maximum Mineable sand (in cum) (60% of total potential)
				Degree	Minute	Second	Degree	Minute	Second						
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Kolabira		Khata No.153,Plot No.1 (P),Area-Ac.7.80,>	84	13	23.8	21	45	43.8	Guchhapali	New	0.49	0.07	0.031	56800
2	Kolabira		Khata No.178,Plot No.64(P), Area-Ac.12.35	84	08	24.16	21	47	51.54	Tareikela	New	0.95	0.04	0.049	89900
3	Kirmira	Safei	Mouza-Sulehi, Khata No.257,Plot No.1300,Area-Ac.3.00	21	59	49.4 N	84	06	11.7 E	ESulehi	New	0.20	0.06	12000	11472
4	Kirmira	Safei	Mouza-Chakbuda, Khata No.58,Plot No.01 & 799, Area-Ac.6.00	21	59	27.7 N	84	04	51.0 E	Chakabuda	New	0.40	0.05	20000	12000


Tahasildar, Kolabira


Tahasildar, Kirmira