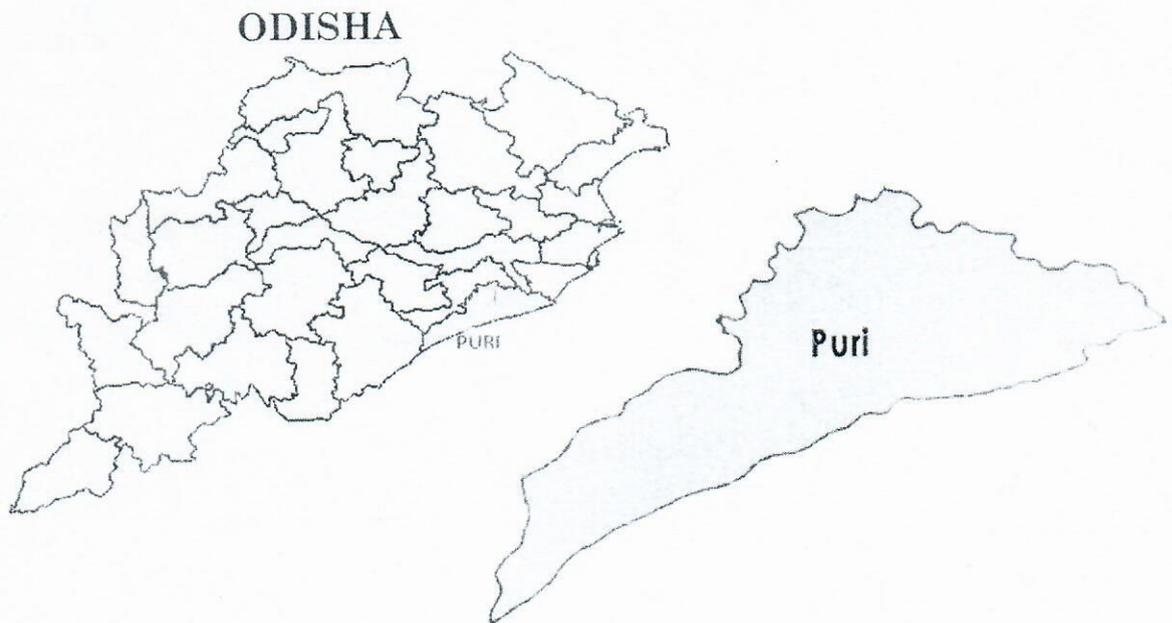




REVISED DISTRICT SURVEY REPORT (DSR)
OF
PURI DISTRICT, ODISHA
FOR
RIVER SAND

**(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, PURI

CONTENT

SL NO	DESCRIPTION	PAGE NO
1	INTRODUCTION	1
2	OVERVIEW OF MINING ACTIVITIES IN THE DISTRICT	2
3	LIST OF LEASES WITH LOCATION, AREA AND PERIOD OF VALIDITY	2
4	DETAILS OF ROYALTY COLLECTED	2
5	DETAILS OF PRODUCTION OF SAND	2
6	PROCESS OF DEPOSIT OF SEDIMENTS IN THE RIVERS	2
7	GENERAL PROFILE	3
8	LAND UTILISATION PATTERN	7
9	PHYSIOGRAPHY	7
10	RAINFALL	9
11	GEOLOGY AND MINERAL WALTH	10

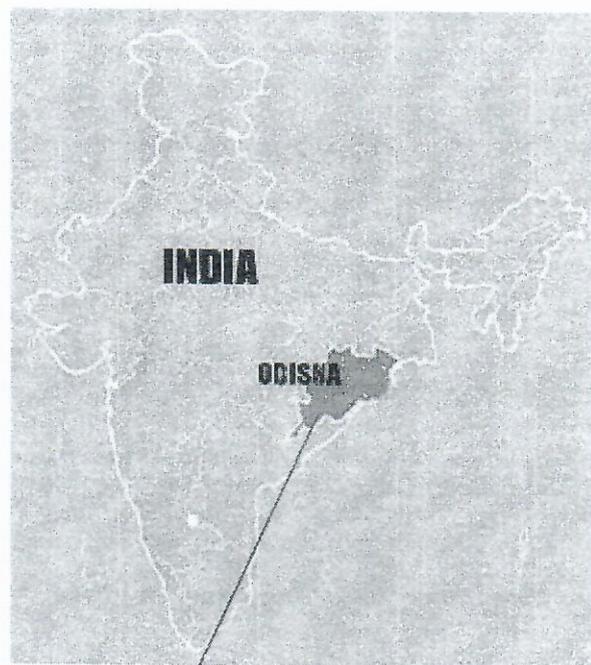
LIST OF PLATES

DESCRIPTION	PLATE NO
INDEX MAP OF THE DISTRICT	1
MAP SHOWING TAHASILS	2
ROAD MAP OF THE DISTRICT	3
MINERAL MAP OF THE DISTRICT	4

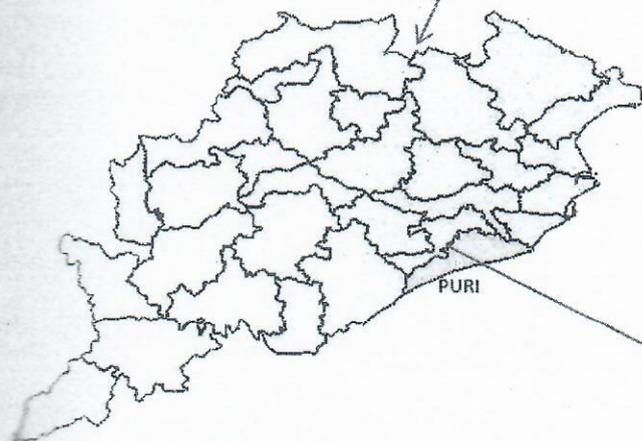
LIST OF ANNEXURES

DESCRIPTION	ANNEXURE NO
LIST OF RUNNING LEASES	I
LIST OF POTENTIAL SOURCES OF THE DISTRICT	II

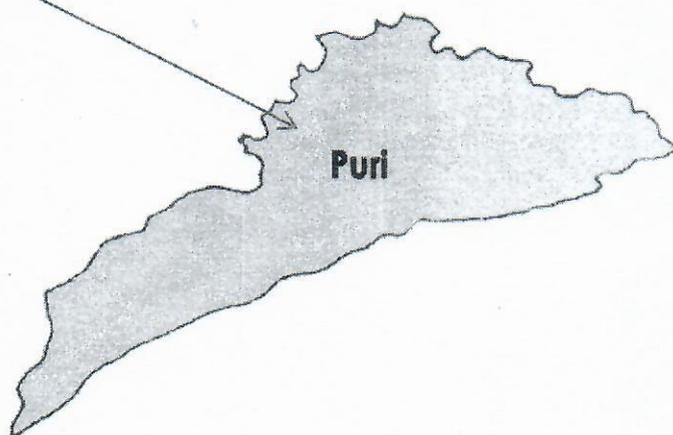
INDEX MAP



ODISHA

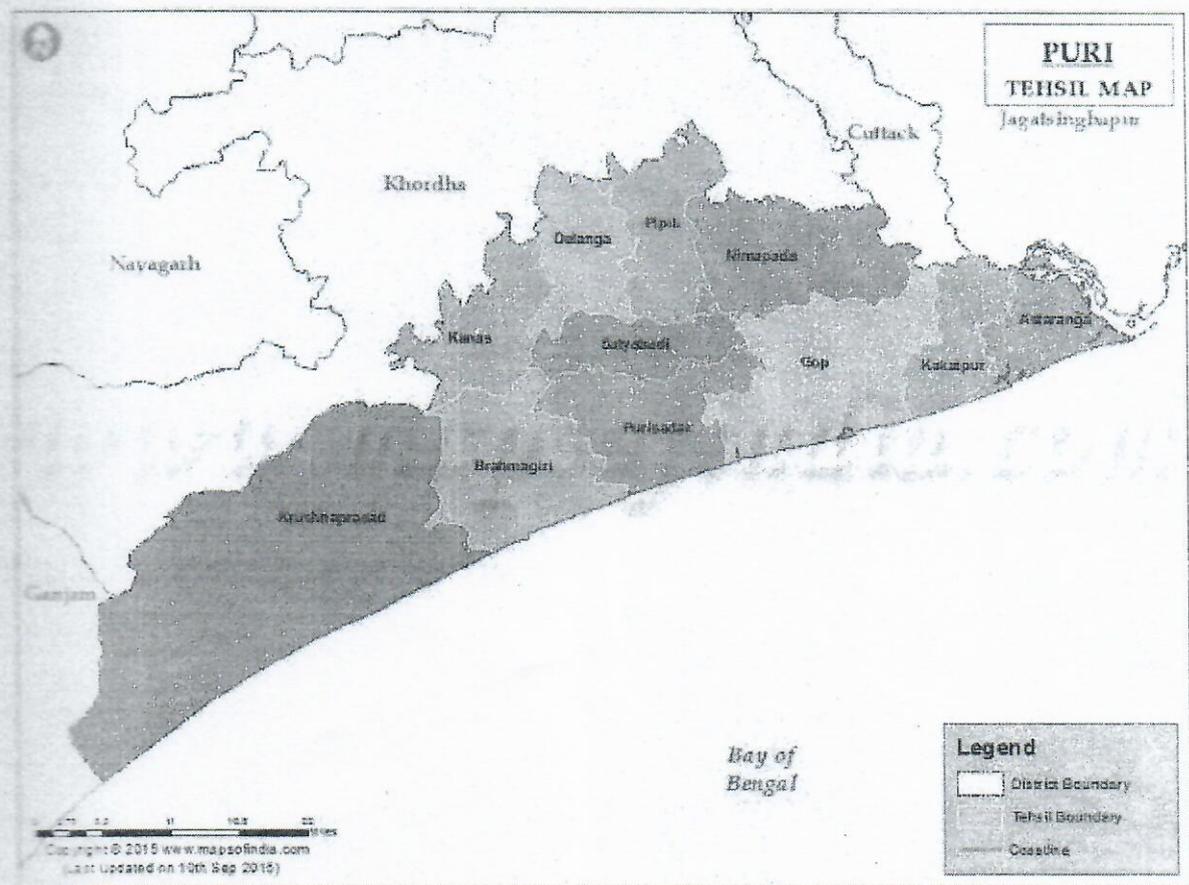


PURI

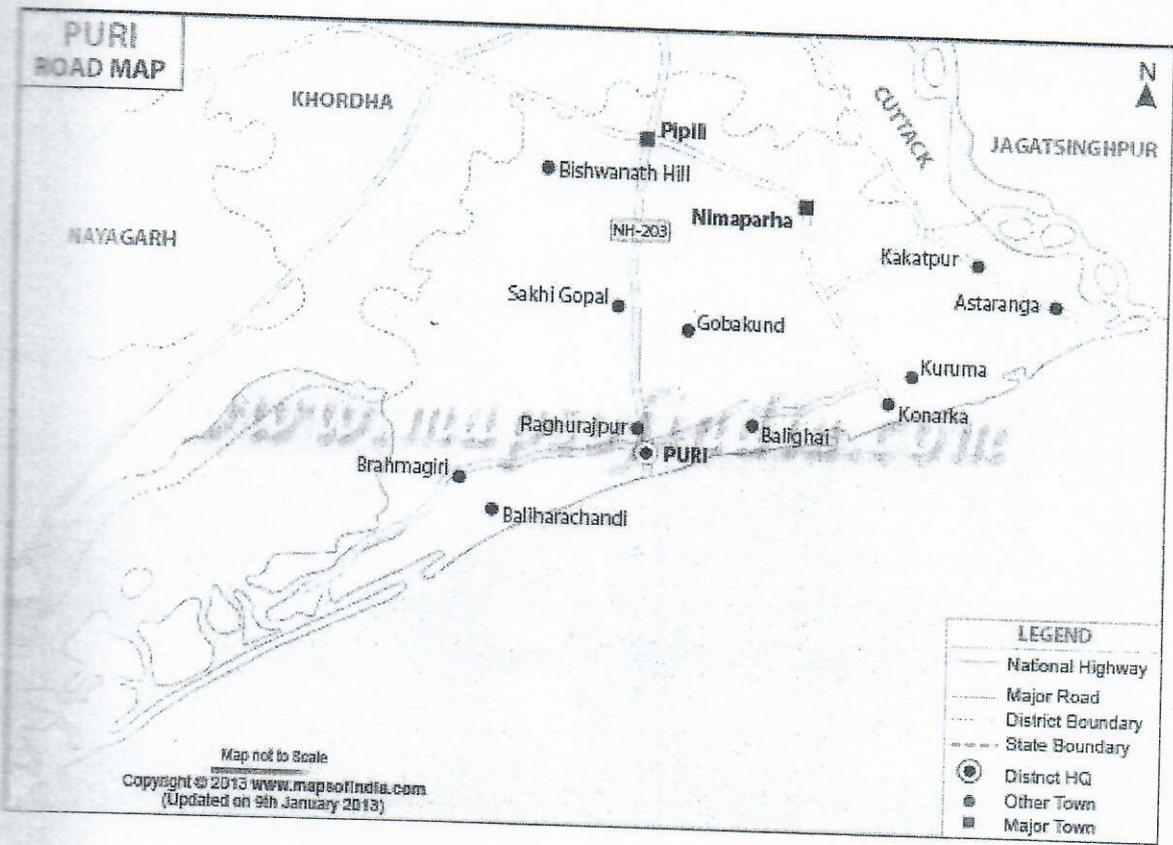


Puri

MAP SHOWING THE TAHASILS OF PURI DISTRICT



MAP SHOWING THE MAJOR ROADS OF PURI DISTRICT



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 bed 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 set up of the district and is 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. 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

Puri District is a coastal District on the eastern part of Odisha, India. This District needs no introduction, being the abode of Lord Vishnu, most popularly known as Lord Jagannath. This District derives its name from the heritage city of Puri, one of the four pilgrimage centres of India. Covering an area of 3051 sq/kms, the District may be divided into two dissimilar natural divisions-the Littoral tract and the Level alluvial tract. It is located at 19° 28' N to 20° 10' N latitudes & 85° 09' E. To 86° 25' E longitudes. Its altitude is at sea level.

In 1912, the new province of Bihar and Odisha was formed. Subsequently, Odisha became a separate province in 1936. After integration of the feudatory states of Nayagarh, Daspalla, Khandapara and Ranapur with Odisha on 1 January 1948 a separate sub-division comprising these ex-states was added to Puri district. The fourth sub-division of Bhubaneswar was carried out on 26 January 1959. The old Puri district consisted of four sub-divisions i.e. Puri Sadar, Khurdha, Bhubaneswar and Nayagarh. Again by the year 1995, the Puri district was divided into three districts namely Nayagarh, Khordha & Puri.

2. OVERVIEW OF MINING ACTIVITIES IN THE DISTRICT.

Heavy minerals: The beach and sand dune deposit contains heavy minerals like monazite, rutile, illmenite, zircon etc. Such deposits are seen around Paikrapur, Nandala, Brahmandeo, Bajrakot and Udegiri over a length of 91.23km. The total reserve of heavy minerals in these areas has been estimated as 147 million tonnes and the average grade of the heavies in beach sand is 11.8%.

River Sand deposits: River sand deposits occur around Bayakuda, Gop, Ganeswarapur, Begunia, Sovanpur, Balanga, Haripur, Dhirapur and Chhenua villages of the district and used as construction material for buildings and roads.

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	Gop	198434	233430	233430	233430
2	Nimapara	0	2842000	2861000	2878000
3	Pipli	0	0	0	0
4	Delanga	0	0	0	0
5	Kakatpur	0	0	0	0
TOTAL		198434	3075430	3094430	3111430

5. DETAILS OF PRODUCTION OF SAND (cum)

Sl.No	Name Of Tahasil	2015-16	2016-17	2017-18	2018-19
1	Gop	2211	2211	2211	2211
2	Nimapara	11015	11185	11377	31567
3	Pipli	0	0	0	0
4	Delanga	0	0	0	0
5	Kakatpur	0	0	0	0
TOTAL		13226	13396	13588	33778

6. PROCESS OF DEPOSIT OF SEDIMENTS IN THE RIVERS

The drainage of the district is mainly controlled by rivers like Kushabhadra, Daya, Bhargavi, Devi & Prachi. 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 water flow the sand gets deposited in the locations where there is less energy.

7. GENERAL PROFILE

a. Administrative set up:

SI No	Item	Unit	Magnitude
1	Location		
	Longitude	Degree	85 ^o 09' to 86 ^o 25'East
	Latitude	Degree	19 ^o 28' to 20 ^o 10' North
2	Geographical area	Sq.Km.	3479
3	Sub-division	Numbers	1
4	Tahasils	Numbers	11
5	C D Blocks	Numbers	11
6	Municipalities	Numbers	1
7	NACs	Numbers	3
8	Police Stations	Numbers	29
9	Gram Panchayats	Numbers	268
10	Villages	Numbers	1707
	Inhabited	Numbers	1600
	Uninhabited	Numbers	107
11	Assembly constituencies	Numbers	6

b. Area and Population:

The district has an area of 3479.0 sq.kms and 16.99 lakhs of population as per 2011 census. The district accounts for 2.23 percent of the states territory and shares 4.05 percent of the state's population. The density of population of the district is 488 per sq. km. As against 270 person per sq.km of the state. It has 1707 villages (including 107 un-inhabited villages) covering 11 blocks, 11 Tahasils and 1 Subdivision. As per 2011 census the schedule caste population is 325133.(19.1%) and schedule tribe population 6129 (0.4%). The literacy percentage of the district covers 84.7 against 72.9 of the state.

c. Climate :

The climatic condition of the district is generally hot with high humidity during April to May and cold during December to January. The monsoon generally breaks during the month of June. Average annual rainfall of the district was 1439.5 mm during the last four FYs which is more than the normal rainfall 1408.8 mm.

d. Economy:

Handicraft and cottage industries of this district is famous world over, its original source being the temple craft of Lord Jagannath and the Sun Temple at Konark. The rich traditional culture and heritage of the district gives a boost to this industry. The important products of this industry are in applique, stone carving, patta chitra, wood carving, modern patch work, terracotta, bell metal, and sea shell items etc. The District Industries Centre, on its part has imparted training and upgraded the skill of the traditional artisan families and other economically weaker sections of the people, thus improving their per capita income. It has introduced many promotional schemes and also promotes handicraft training schools and coir training centers etc. There are also a number of small scale industries running in this district.

e. Industry:

No. of MSME units set up	Investment (In Rs. crores)	Employment Generated				Employment of women
		SC	ST	General	Total	
1510	4670.41	467	35	3626	4128	555

f. Agriculture:

During the year 2017-18 the net area sown was 91 thousand hectares against 5356 thousand hectares of the state. The production of was as below:

Name	Paddy	Wheat	Maize	Mung	Biri	Kulthi	Tiil	Groundnut	Mustard	Potatoes	Jute	Sugarcane
Production in 000 MT	260.10	0.08	0.42	14.73	12.12	2.35	0.45	21.78	0.92	0.37	7.20	26.57

j. Tourist places:

There are 20 nos. of tourist centers such as Astaranga, Balighai, Baliarchandi, Barala (Balunkeswarpatha), Biswanath Hill, Beleswar, Brahmagiri, Chaurasi, Chilika, Jhaniapira, Kakatpur, Konark, Kuruma, Manikpatna, Pipli, Puri, Raghurajpur, Ramachandi, Satyabadi and Baligoan and identified by department of Tourism and Culture, Odisha. During the year 2011, the numbers of Domestic tourists were 15833106 and foreign tourists were 69539 who visited the tourists spots of the district.

k. Forest areas:

Category of forest	Area in sq km
Reserve Forest	15.66
Unclassified Forest	0.51
Demarcated Protected Forest (DRF)	85.88
Undemarcated Protected Forest	0
Other forest under Revenue Dept	35.05
Total	137.1

l. Education:

Primary School (2017-18)	No. of Schools	1294
	Enrolment (No)	120142
	Pupil Teacher Ratio	16.34
Upper Primary School 2017-18	No. of Schools	871
	Enrolment (No)	75134
	Pupil Teacher Ratio	17.02
General College 2017-18	Junior	62
	Degree	45
Secondary School	No. of Schools	378
	Enrolment (No)	49227
	Pupil Teacher Ratio	23.99
Literacy Rate, 2011	Male	90.8
	Female	78.3
	Total	84.7

m. Culture & Heritage:

Puri is one of the fascinating littoral districts of Odisha. The cultural heritage of Puri with its long recorded history beginning from the third century B.C., The monuments and religious sanctity, way of life of the people with their rich tradition possess emphatically to be the cultural heart of Odisha. Puri is considered to be a cultural capital of Odisha.

The district has a conglomeration of different religions, sects and faiths in course of its history. Majority of the people are Hindus. The other important communities are Muslims, Sikhs, Jains, Christians and indigenous groups are found in the district. The Hindu monuments of various sectors like Shaivism, Vaishnavism, Sakti cult, Ganapatya, Mahabir etc. are found. Similarly Muslim Mosques, Christian Churches are also noticed here.

8. LAND UTILISATION PATTERN

SI No	Landuse	Area in '000Ha
1	Forest Area	14
2	Misc. trees & Grooves	9
3	Permanent Pasture	9
4	Culturable Waste	3
5	Land put to Non Agril Use	115
6	Barren & Unculturable Land	7.9
7	Current Fallow	98
8	Other Fallow	1
9	Net Area Sown	91
10	Mining	0.1
	Geographical Area	348

9. PHYSIOGRAPHY

The whole of the district may be divided into two dissimilar natural divisions i) The littoral tract ii) The level alluvial tract

i) The littoral Tract The strip of the country lies between the alluvial and the Bay of Bengal. It assumes the form of a bear but sandy ridges which stretch along the

seashore for the full length of the district, Varying from 6.5 km. to a few hundred metres in width. Accumulations of wind blown sand give rise to ridges parallel to the coast. It forms the dividing line between the Chilika lake and the ocean

ii) The Level Alluvial tract

This level of the alluvial region is full of villages and rice fields, watered by a network of channels, through which the water of distributaries of the most southerly branch of Mahanadi, find their way to the sea. There is no hill in Puri District except a small cultivate land are under plough. Generally biali or autumn rice, sarada or winter rice and dalua or spring rice these three types of rice are cultivated.

Coastal bays

The length of the sea coast of the district of Puri is nearly 150.4 km. Sandy ridges are found along the sea-coast which stretch into the districts of Jagatsingpur and Ganjam. One such sandy spit divides the lake Chilika from Bay of Bengal. These sandy ridges and dunes are formed by the strong monsoon currents which blow over the country for nearly 8 months of the year. The ridges vary from about 7 km to a few metres in width and have prevented most of the rivers of the district from finding their way into the ocean.

River system

All the rivers of Puri district have a common characteristic. In the hot weather, they are beds of sand with tiny streams or none at all, while in the rains they receive more water than they can carry. Generally, all rivers are tributaries of Mahanadi rivers.

1) Kushabhadra River- A branch of the Kuakhai river originates from Ballianta and meets the sea of Bay of Bengal at the shrine of Ramachandi, located 15 miles east of Puri. Its tributary *Mugei* joins with *Kushabhadra*.

2) Daya River- A branch of the Kuakhai river drains into the **Chilika** lake. Two small rivers join with the Daya river i.e. the *Gangua* and the *Managuni* below Kanas. Daya river has been attributed with the problem of causing silt build-up in Chilika Lake.

3) Bhargavi River- A branch of *Kuakhai* meets the sea of Bay of Bengal after breaking up into numerous tributaries in the last two and a half miles of its course.

There are four main branches all branching off from the left bank viz. *Kanchi*, the East Kania, the Naya Nadi and the South Kanchi (which drains into Sar Lake); and by various channel the first three are interconnected and finally join the Suna Munhi river which falls into Bali Harchandi and ultimately drains to the Bay of Bengal via the mouth of Chilika. The South Kania gets lost in the marshes on the western shore of Chilika.

4) Kadua River- It is a monsoon fed river that drains into Prachi river.

5) Prachi River- It is a branch commencing from Puri and Jagatsinghpur district. It has its origin near Kantapara on Cuttack-Gop road and passes through the village of Kakatpur before draining into the sea of Bay of Bengal.

6) Devi River- It is a branch of the Kathajori. It runs into Puri district near the extreme east forming numerous branches.

There are also a few small rivers worth a mention, chiefly Ratnachira and Nuna, which drain into Bhargabi river and Daya river respectively.

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 7^o-8^o C during peak winter.

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

Year/ Month	APRIL	MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOV	DEC	JAN	FEB	MARCH	TOTAL
15-16	68.48	15.16	109.67	230.09	319.67	236.54	31.65	36.45	26.93	20.32	0.09	0.82	1095.9
16-17	0.55	108.4	110.65	197.04	382.13	287.36	64.63	52.28	0	0	0	22.73	1225.8
17-18	5.09	6.55	153.97	331.18	314.38	198.1	306.94	103.6	68.4	0	0	0	1488.2
18-19	51.77	132.9	154.05	640.97	390.98	320.75	231.34	2.87	8.42	0	0	14.09	5758
AVG	31.5	65.8	132.1	349.8	351.8	260.7	158.6	48.8	25.9	5.1	0.0	9.4	1439.5

11. GEOLOGY AND MINERAL WALTH

Geologically a small part in the extreme north of the district is represented by Khondalite gneiss of Archaean age and the remaining part is covered by a thick pile of Quaternary sediments ranging in age from Pleistocene to present day.

Khondalite gneiss contains garnet, sillimanite, quartz and graphite. The Quaternary sediments are represented by (i) Bolgarh formation formed by secondary detrital laterite, (ii) Kaimundi formation consisting of caliche bearing hard, sticky sandy to silty clay, (iii) Upper deltaic sediment comprising sandy clay with little silt (iv) Lower deltaic sediment made up of clay with little sand (v) Older beach ridge deposits represented by oxidized medium to fine sand (vi) Younger beach ridge sediment represented by medium to fine sand with little silt and (vii) Present day marine and lagoonal sediment consisting of medium sand with heavies and black clay with little sand.

STRATIGRAPHY:

The geological succession in the district is as follows:

Age	Formation	Lithology
Holocene		Medium sand with heavies
		Residua Black clay with sand
		Medium to fine sand with little silt
		Black clay with little silt
		Greyish sandy clay with little silt
Late Pleistocene to Early Holocene	Kaimundi	Caliche bearing sandy clay
Pleistocene	Bolgarh	Detrital laterite
Archaean to Proterozoic		Feldspar-quartz-sillimanite schist

- Detail of river/stream/other sand source-** Sand mining in the district is confined to main rivers like Kushabhadra, Daya, Bhargavi, Devi & Prachi.
- Availability of maximum sand or gravel or aggregate resources-** sand- 16,87,432 cum (Annexure II), Gravel- Nil, Aggregate- Nil. 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.

- 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

DRAINAGE SYSTEM WITH DESCRIPTION OF MAIN RIVERS

(TO BE FILLED BY DISTRICT OFFICE OF WATER RESOURCES DEPT.)

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 of deposition of sediments	Volume of sand deposited in last 4 years (Year wise)	Any important note related to leasing of sand quarry within the river
A	B	C	D	E	F		G	H	I
1	Bharagavi (Branch river of Kuakhat)	Saradeipur near Balakat	-	85.00	-	-	Submitted below	2015- 2016- 2017- 2018-	-
2	Daya (Branch river of Kuakhai)	Saradeipur near Balakat	-	60.00	-	-	-do-	2015- 2016- 2017- 2018-	-
3	Kushabhadra (Branch river of Kuakhai)	Bhubanpur near Balianta	-	-	-	-	-do-	2015- 2016- 2017- 2018-	-

1. Drainage and irrigation pattern of the District:-

Drainage:- Smooth drain to Chilika and Bay of Bengal

Irrigation:- Surface irrigation through canal system and also through Sprinkler, Drip/Trickle method.

2. Surface water scenario in the District:-

Surface water scenarios are used to assess the potential contamination of active substances and metabolites of plant protection products to surface water. Surface water is the second environmental compartment covered by the activities of focus. The possibilities of contamination of surface water by

the application of plant protection products (PPP) are already recognised for a long time main process involved in the loading of surface waters with plant protection products are e.g. drift, drainage and run-off.

3. Process of deposition of Sediments:-

Soil, sand & rocks are added to a land through the process of weathering and transportation of existing land mass by wind, water, gravity etc and deposition of the said transported material due to loss of kinetic energy building up layers of sediments.

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

SAND SAIRATS ALREADY LEASED OUT AND EXECUTED

Sl.No	Name of Tahasil	River or stream and Name of village and date of registration of lease deed	Status	Period of Validity of Mining Lease		Portion of the River or Stream leased for mineral concession (GPS co-ordinates or Khata and Plot No.) (Sketch map to be attached) Degree	Latitude			Longitude			Lenth of Area leased for mineral concession (in km)	Average width of area leased for mineral concession (in km)	Area leased for mineral concession (in square m)	Mineable mineral potential as pre-approved mining plan (in cum)
				From	To		Degree	Minute	Second	Degree	Minute	Second				
1	2	3	4			5							6	7	8	9
1	Pipli	Daya	Running	15-16	19-20	Kanti kothabadaNijigoat Kuakhai KuakhaiK-502, Plot-1 Ac 12.355Out of 25.32Kisam Nadi	20	8	20	85	46	9.4	0.4	0.04	14180	5000
2	Pipli	Daya	Running	15-16	19-20	Kakudia K-351 P-773 Ac 10.32 And K-284 P-1 Ac 2035 Out of 6.45 Kisam Nadi	20	8	17.4	85	45	44.8	0.4	0.04	16200	7000
3	Pipli	Daya	Running	15-16	19-20	Totapada K-245 P-59 Ac-8.45 And Dakhinuagaon K-370 P-400 Ac-3885 Out of Ac 3.885, Kisam Nadi	20	8	20	85	46	9.4	0.5	0.03	16300	7000
4	Pipli	Daya	Running	15-16	19-20	Gobardhanpur Sultan nagark-183 P-1 Ac- 6.40 And P-508 Ac- 5.955 Out of Ac-8.65, Kisam Nadi	20	8	47.6	85	49	20	0.5	0.04	18230	7000
5	Pipli	Daya	Running	15-16	19-20	Gangapada K-83 P-280 And 281 Ac-11.65 And Ac-0.705 Out of Ac- 8.60, Kisam Nadi	20	7	43.8	85	53	9	0.4	0.04	14280	5000
6	Pipli	Daya	Running	15-16	19-20	Patelkuda K-136 P-29 Ac-12.355 Out of Ac-52.37, Kisam Nadi	20	11	28.3	85	52	11.9	0.5	0.04	16200	7000

POTENTIAL SAND SOURCES OF THE TAHASIL PIPILI DISTRICT-PURI

Sl No.	Name Of Tahasil	Status	River or Stream	Portion of the River or Stream Recommended for mineral concession (GPS co-ordinates or Khata and Plot No.) (Sketch map to be attached)	Latitude			Longitude			Name of Village	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
1	Pipli	Running	Daya	Kanti kothobada K-502 P-1 Ac-12.355 Out of Ac- 25.32Kisam Nadi	20	8	20	85	46	9.4	Kanti Kothabada	14180	25524
2	Pipli	Running	Daya	Kakudia K-351, P-773 Ac 10.32 And K-284 P-1 Ac 2035 Out of 6.45 Kisam Nadi	20	8	17.4	85	45	44.8	Kakudia	16200	29160
3	Pipli	Running	Daya	Totapada K-245 P-59 Ac-8.45 And Dakhinanagaon K-370 P-400 Ac-3885 Out of Ac 3.885, Kisam Nadi	20	8	20	85	46	9.4	Totapada	16300	29340
4	Pipli	Running	Daya	Gobardhanpur Sultan nagarK-183 P-1 Ac- 6.40 And P-508 Ac-5.955 Out of Ac- 8.65, Kisam Nadi	20	8	47.5	85	49	20	Gobardhanpur, sultan nagar	18230	32814
5	Pipli	Running	Daya	Gangapada K-83 P-280 And 281 Ac-11.65 And Ac-0.705 Out of Ac- 8.60, Kisam Nadi	20	7	43.8	85	53	9	Gangapada	14280	25704
6	Pipli	Running	Daya	Patelkuda K-136 P-29 Ac- 12.355 Out of Ac-52.37, Kisam Nadi	20	11	28.3	85	52	19.9	Pattalikuda	16200	29160

Revised District survey Report on Minor Mineral in Puri District is approved today.

Collector and DM Chairman, DEIAA, Puri

Sub- Collector Member,
Secretary, DEIAA, Puri

DFO Member ,DEIAA, Puri

Expert Member, DEIAA, Puri