District Survey Report
Sitapur

AS PER NOTIFICATION NO. S.O. 141(E)
NEW DELHI,
15TH JANUARY, 2016
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE (MoEF & CC)

Mines Officer Sitapur (Member Secretary DEAC)	S.D.O (Forest) Sitapur (Member DEAC)	Ex. Jal Nigam Sitapur (Member DEAC)	S.D.M (Sadar) Sitapur (Member Secretary DEIAA	Ex. Irrigation Sitapur (Chairman DEAC)

DIRECTORATE OF GEOLOGY AND MINING
Govt. of Uttar Pradesh

1. INTRODUCTION

With reference to the gazette notification dated 15th January 2016, ministry of Environment, Forest and Climate Change, the District- environment Impact Assessment Authority (DEIAA) and District- Environment Assessment Committee (DEAC) are to be constituted by the divisional commissioner for prior environmental clearance of quarry for minor minerals. The DEIAA and DEAC will scrutinize and recommend the prior environmental clearance of ministry of minor minerals on the basis of district survey report. The main purpose of preparation of District Survey Report is to identify the mineral resources and mining activities along with other relevant data of district. This report contains details of Lease, Sand mining and Revenue which comes from minerals in the district. This report is prepared on the basis of data collected from different concern departments. A survey is carried out by the members of DEIAA with the assistance of Geology Department or Irrigation Department or Forest Department or Public Works Department or Ground Water Boards or Remote Sensing Department or Mining Department etc. in the district.

DISTRICT-SITAPUR

Sitapur district lies in Upper Gangetic Mid-Plains of Uttar Pradesh and is bound on four sides by Lakhimpur Kheri, Bahraich, Barabanki and Hardoi districts. The district has 19 blocks and over 2,000 villages. The total area of the district is 5743 sq km supporting a population of 36.20 lakh with a density of 630.27 persons per sq km. **Sitapur district** is one of the districts of Uttar Pradesh state of India, with Sitapur town as the district headquarters.

Sitapur as the name depicts, was established by the king Vikarmaditya after the name of Lord Ram's wife Sita. This place is concerned with ancient, medieval and modern history. This is a land of seer and sufis. Purans were written by Rishi Ved Vyas on this Holi land. According to Hindu mythology the 'Panch Dham Yatra' journey of five main religious Hindu places will not be completed without visiting the Neemsar or Naimisharanya, a religious ancient place in Sitapur. Dargah of Hazrat Makhdoom sb. at Khairabad and Hazrat Gulzar Shah are the symbols of

communal harmony.The contribution of Sitapur cannot be avoided in social, historical, political and literary field in the country.

The City is situated on the river bank of 'Sarayan', at Lucknow-Delhi National Highway No-24, 89 Km. from state capital Lucknow, and on meter gauge Railway line from Lucknow to Bareilly via Lakhimpur and Pilibhit. Sitapur is also connected on broad gauge train network connecting Gorakhpur and Delhi via Gonda, Burhwal bypassing Lucknow and Hardoi. Whole district is divided into six tehsils - Sitapur, Biswan, Mishrikh, Laharpur, Mahmoodabad and Sidhauli.

There are 19 blocks, two parliamentary constituencies (Sitapur, Mishrikh (SC)) and nine assembly constituencies (Sewta, Biswan, Mahmoodabad, Sidhauli(SC), Laharpur, Sitapur, Hargaon(SC), Mishrikh and Maholi). Total population of the district is 28.57 Lacs and the area is 5743 Sq. Km. There are 2348 Census Villages and 1329 Gram Panchayats in the district.

In the fifteenth century, the district was included in the new kingdom of Jaunpur. About 1527, Humayun occupied Khairabad, then the chief town; but it was not until the accession of Akbar that the Afghans were driven out of the neighborhood. Under Akbar, the present district formed the part of four Sarkars - Khairabad, Bahraich, Oudh, and Lucknow - all located in the Subah of Oudh. Khairabad was held for sometime by the rebels of Oudh in 1567 but throughout the Mughal period and the rule of Nawabs and Kings of Oudh, the district is seldom referred to by the native historians.

Sitapur figured prominently in the First War of Independence, 1857. In that year, three regiments of native infantry and a regiment of military police were quartered in Sitapur Cantonment. The troops rose on the morning of 3 June, fired on their officers, many of whom were killed, as were also several military and civil officers with their wives and children in the attempt to escape. Ultimately many of the fugitives succeeded in reaching Lucknow, while others obtained the protection of loyal zamindars. On 13 April 1858, Sir Hope Grant inflicted a severe defeat on the rebels near Biswan. Order was completely restored before the end of that year.

Sitapur is located at 27.57°N 80.68°E. It test has an average elevation of 138 meters (452 feet). It is located in the Gangetic Plain, with elevations ranging from

150 m above sea level in the north-west to 100 m in the south-east. It is intersected by numerous streams and ravines and contains many shallow ponds and natural reservoirs, which overflow during the rainy seasons, but become dry, in some places, in the hot season. Except in the eastern portion, which lies in the doabs between the Kewani and the Chauka, and the Ghaghra and the Chauka rivers, the soil is semi arid. Even this moist tract is interspersed with patches of land covered with saline efflorescence called reh."

Drainage

The monotony of featureless plain of upper Ganga valley is preserved throughout the district. At places this monotony is broken by Small River like Kathana, Sarayan and Gomati. Sandy stretches are found along the rivers and locally known as 'bhurs'. the region in general is a part of well integrated system of the river Ganga. Gomti is the most important tributary flows in the eastern part of the district and engulfs above mentioned small rivers. Ghaghara forms the eastern boundary of the district. There are five rivers flowing through the district of Sitapur: Gomti, Kathana, Pirai, Sarayan, Ghaghra and Sharda. Kathna or kathna is a small river that joins the left bank of the Gomti River near Dadhnamau village in Sitapur District, Uttar Pradesh, Sarayan is small tributary of Gomti river which flows through Lakhimpur and Sitapur district of Uttar Pradesh.

Transport

Railway- The district is traversed by broad gauge train network connecting Gorakhpur and Delhi via Gonda, Burhwal, bypassing Lucknow and Hardoi. The major towns of the district Sidhauli, Mishrikh, Maholi, Hargaon, Biswan, Mahmudabad etc.are well connected with rails. Tamabur-Ahmedabad is not connected with rails. Broad Gauge conversion from Lucknow to Sitapur is in progress.

Road: Towns and villages within the district are now well linked through major district roads (MDR) and metaled rural roads. Most of the roads are in good condition. The National Highway No. 24 (Lucknow - Delhi) passes from the heart of Sitapur district. This highway is open to public.

Air Port

Sitapur does not have any airport of its own. Chaudhary Charan Singh International Airport, Lucknow is the nearest airport towards south- east (approx. 110 km). It takes almost an hour and a half to reach Sitapur by car.

Divisions

Total population of the district is 28.57 Lacs and the area is 5743 Sq. Km. There are 2348 Census Villages and 1329 Gram Panchayats in the district.

The district is divided into six tehsils namely Sitapur, Biswan, Mishrikh, Laharpur, Mahmudabad and Sidhauli and 19 blocks namely Pisawan, Maholi, Misrikh, Machhrehta, Gondlamau, Ailiya, Hargaon, Parsendi, Khairabad, Laharpur, Behta, Reusa, Sakran, Biswan, Pahala Mahmudabad, Rampur Mathura, Kasmanda and Sidhauli. There are 2348 census villages and 1329 Gram Panchayats in the district. Sitapur has nine seats in Uttar Pradesh Vidhan Sabha. These nine constituencies are:- Biswan,, Hargaon,, Laharpur,, Mahmoodabad, Maholi,, Misrikh,, Sevata,, Sidhauli and, Sitapur,

The district is divided into four Lok Sabha seats:

- Sitapur Lok Sabha constituency includes Sitapur, Laharpur, Biswan, Sewta and Mahmoodabad Vidhan Sabha seats,
- Dhaurahra Lok Sabha constituency includes Maholi and Hargaon Vidhan Sabha seat from Sitapur district,
- Mohanlalganj Lok Sabha constituency includes Sidhauli Vidhan Sabha seat from Sitapur district,
- Misrikh Lok Sabha constituency includes Misrikh seat from Sitapur district.

Sitapur district is a part of Lucknow division. and is covered by the survey of India Topo sheets, either fully of partly by 63A-5,6,7,9,10,11,12,13,14,15,16 & 63 E-1,2,3,4,6 &7.

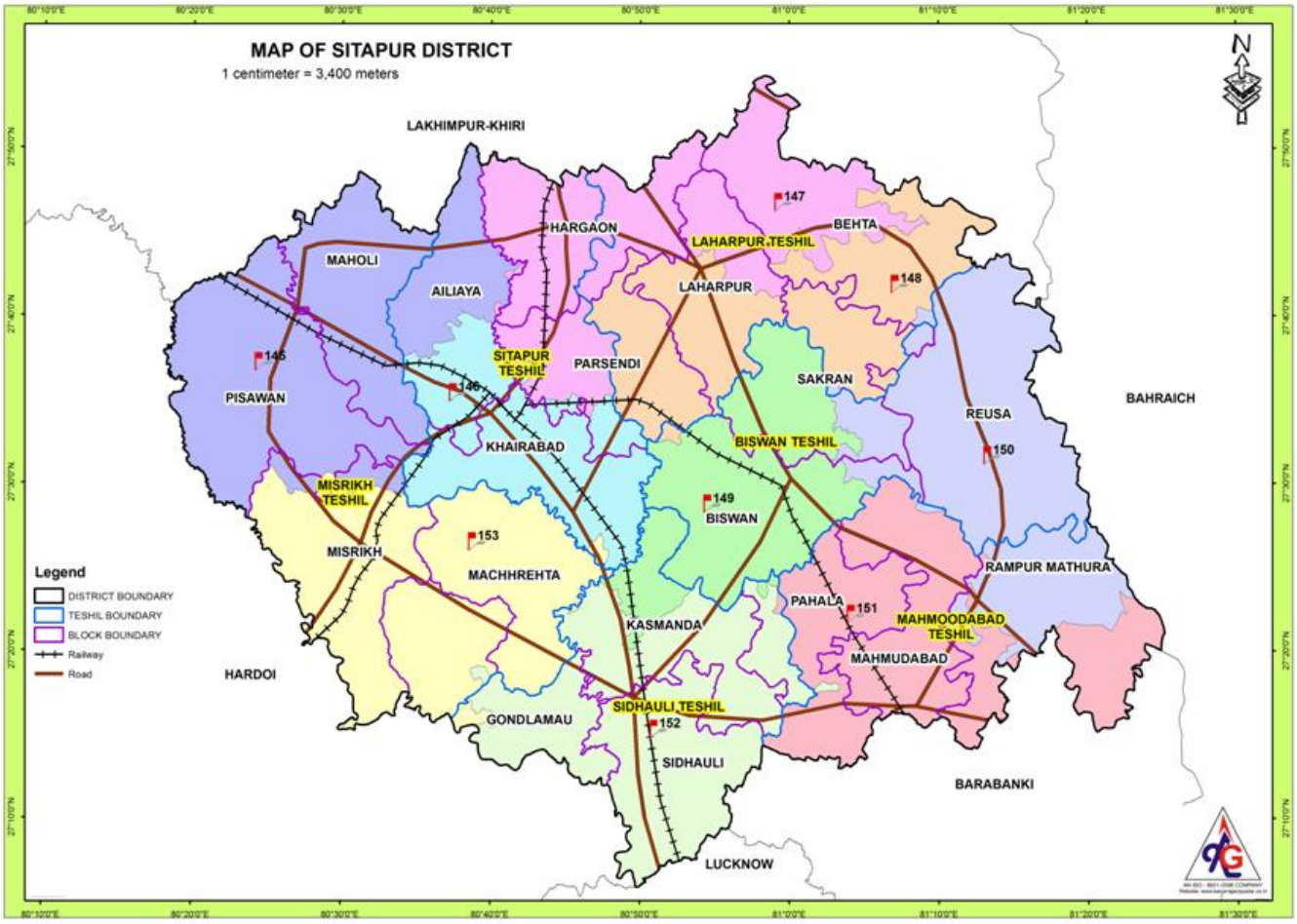

Plate-1 Physical Map of Sitapur

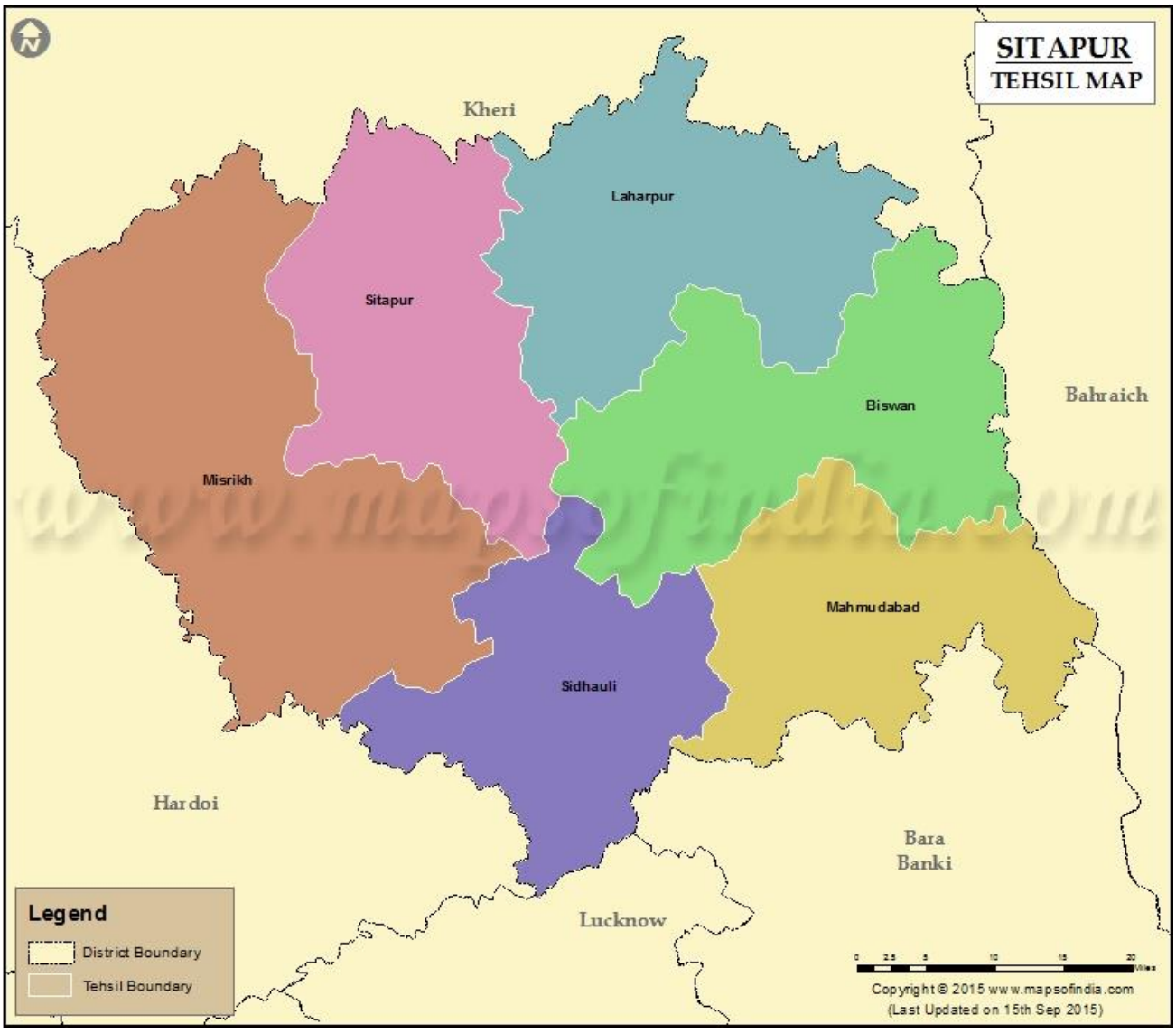

Plate-2 Tehsil Map of Sitapur

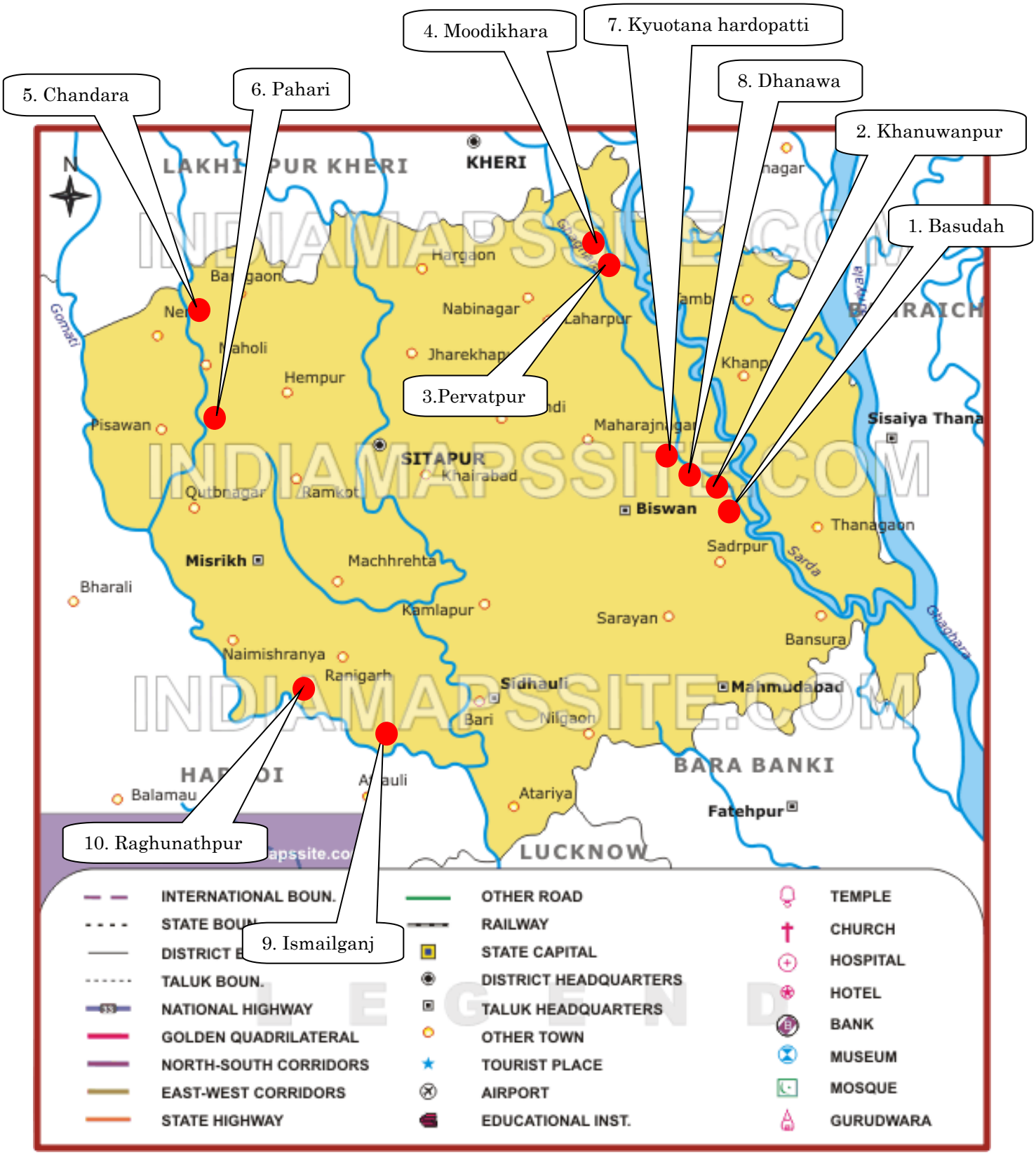

Plate-3, Drainage Map of Sitapur Showing the allotted leases

2. OVERVIEW OF MINING ACTIVITY OF DISTRICT

Although, Sitapur district is famous for its sugar mills & sugar factory. But, Mining of sand / ordinary sand along the major rivers Ghaghra, Saryu as well as along their tributaries such as Kathana, Chauka, & Kewani contribute a major potentiality of sand mining along which about six potential area has been notified for e- tendering & given short term Mining permits in these areas at different villages and material like ordinary sand are also permitted for quarrying of material at number of places.

3. LIST OF MINING LEASES/ SHORT TERM PERMIT OF SAND IN THE DISTRICT WITH LOCATION, AREA AND PERIOD OF VALIDITY.

List of leases are tabled below and marked on Plate-3 Drainage map of District:

S. No.	Village & Tehsil	Gata No./ Khand No.	Area (ha.)	Mineable Reserve M^3	Period
1.	Vill- Basudah, Tehsil- Biswan	1297 mi	3.15	33160	6 month
2.	Vill- Khanuwan pur, Tehsil- Biswan	01 mi	3.11	32750	6 month
3.	Vill-Pervatpur, Tehsil- Laharpur	691ka, 692,694kha &690ta	1.428	20120	6 month
4.	Vill-Moodikhara, Tehsil- Laharpur	44ja,74 & 102	2.45	21460	6 month
5.	Vill. Chandara, Tehsil - Maholi	Part of 87 mi	0.61	9200	6 month
6.	Vill. -Pahari, Tehsil - Maholi	Part of 484	0.96	10190	6 month

In addition to above, new potential areas have been identified for fresh allotment for five years in the district have been notified till date up to S. No.4 as well as other potential areas from S. No. 5-7 will be notified in coming future tabulated below-

S. No.	Village & Tehsil	Gata No./ Khand No.	Area (ha.)	Mineable Reserve M^3	Period
1	Vill- Kyuotana hardopatti, Tehsil- Laharpur	609Ka, 610Ka	5.706	102708	5 Years
2	Vill- Dhanawa, Tehsil- Biswan	257Ka	6	108000	5 Years
3	Vill- Ismailganj, Tehsil- Sidhouli	1347	7.5	135000	5 Years
4	Vill- Raghunathpur, Tehsil- Mishrikh	1105Mi, 1128Ka, 1338Ga, 1104Mi, 1325	10.132	182376	5 Years
5	Village –Ratauli, , Tehsil- Laharpur		36.78	993060	5 Years
6	Village- Bithoura/Tehsil- Maholi		8.67	234090	5 Years
7.	Village – Azizpur Tehsil- Mishrikh		10.538	284526	5 Years

4. DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEAR MINOR MINERALS

Total Royalty or Revenue Received from Minor Minerals is tabled bellow-

Financial Year	Revenue
2014-15	5,10,34,991
2015-16	8,08,25,876
2016-17	8,17,37,465
Up to Aug. 2017	5,18,71,077
TOTAL	**26,54,69,409**

5 DETAIL OF PRODUCTION OF SAND OR BAJARI OR MINOR MINERAL IN LAST THREE YEARS

There was no sand mining in the district from 2014-15 to 2016-17. Hence the production of sand or bajari during last three years was nil but minor mineral (ordinary earth & brick earth) contributed in the head of royalty as given below in table. Whereas from April 2017 to August 2017 total revenue generation was Rs. 5,18,71,077 out of which Rs. 3,24,46,181 (please refer section-4 for total revenue generated) generated by short term permit for sand mining through e-tendering generates revenue in advance considering the average bit of Rs. 204.40 per cubic meter for whole district. The production comes around 126880 cubic meter.

Sr. No.	Year	Total Production of minor mineral other than sand in cum.	Production of Sand in cum.
1.	2014-15	3645356	Nil
2.	2015-16	3217639	Nil
3.	2016-17	2724582	Nil
4.	Upto Aug. 2017	647496	126880

6. PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVERS

Sedimentation Process-

Rivers have a lot of energy and because they have energy, they do stuff. The obvious things rivers do with their energy is flow but, besides this, they also transport load, erode load and erode the channel through which they flow.

Erosion- Erosion is the breaking down of material by an agent. In the case of a river, the agent is water. The water can erode the river's channel and the river's load. A river's load is bits of eroded material, generally rocks, which the river transports until it deposits its load.

A river's channel is eroded laterally and vertically making the channel wider and deeper. In the upper stage of the river's course (close to the source of the river) there is little horizontal erosion and lots of vertical erosion. In the middle and lower stages vertical erosion is reduced and more horizontal erosion takes place.
There are several different ways that a river erodes its bed and banks. The first is hydraulic action, where the force of the water removes rock particles from the bed and banks. This type of erosion is strongest at rapids and waterfalls where the water has a high velocity. The next type of erosion is corrosion. This is where the river's load acts almost like sandpaper, removing pieces of rock as the load rubs against the bed & banks. This sort of erosion is strongest when the river is transporting large chunks of rock or after heavy rainfall when the river's flow is turbulent. Corrosion is a special type of erosion that only affects certain types of rocks. Water, being ever so slightly acidic, will react with certain rocks and dissolve them. Corrosion is highly effective if the rock type of the channel is chalk or limestone (anything containing calcium carbonate) otherwise, it doesn't have much of an effect.

Cavitation is an interesting method of erosion. Air bubbles trapped in the water get compressed into small spaces like cracks in the river's banks. These bubbles eventually implode creating a small shockwave that weakens the rocks. The shockwaves are very weak but over time the rock will be weakened to the point at which it falls apart.

The final type of erosion is attrition. Attrition is a way of eroding the river's load, not the bed and banks. Attrition is where pieces of rock in the river's load knock together, breaking chunks of rock off of one another and gradually rounding and shrinking the load.

Transportation -When a river erodes the eroded material becomes the river's load and the river will then transport this load through its course until it deposits the load. There are a few different ways that a river will transport load depending on how much energy the river has and how big the load is.

The largest of particles such as boulders are transported by traction. These particles are rolled along the bed of the river, eroding the bed and the particles in the process, because the river doesn't have enough energy to move these large particles in any other way. Slightly smaller particles, such as pebbles and gravel, are transported by salvation. This is where the load bounces along the bed of the river because the river has enough energy to lift the particles off the bed but the particles are too heavy to travel by suspension.

Fine particles like clay and silt are transported in suspension; they are suspended in the water. Most of a river's load is transported by suspension. Solution is a special method of transportation. This is where particles are dissolved into the water so only rocks that are soluble, such as limestone or chalk, can be transported in solution.

Capacity & Competence Rivers can only carry so many loads depending on their energy. The maximum volume of load that a river can carry at a specific point in its course is called the river's capacity. The biggest sized particle that a river could carry at a specific point is called the river's competence.

Deposition -To transport load a river needs to have energy so when a river loses energy it is forced to deposit its load. There's several reasons why a river could lose energy. If the river's discharge is reduced then the river will lose energy because it isn't flowing as quickly anymore. This could happen because of a lack of precipitation or an increase in evaporation. Increased human use (abstraction) of a river could also reduce its discharge forcing it deposit its load. If the gradient of the river's course flattens out, the river will deposit its load because it will be travelling a lot slower. When a river meets the sea a river will deposit its load because the gradient is generally reduced at sea level and the sea will absorb a lot of energy. As rivers get nearer to their mouths they flow in increasingly wide, gentle sided valleys. The channel increases in size to hold the extra water which the river has to receive from its tributaries. As the river gets bigger it can carry larger amounts of material. This material will be small in size, as larger rocks will have broken up on their way from the mountains. Much of the material will be carried in suspension and will erode the river banks by abrasion. When rivers flow over flatter land, they develop large bends called meanders. As a river goes around a bend most of the water is pushed towards the outside causing increased erosion. The river is now eroding sideways into its banks rather than downwards into its bed, a process called lateral erosion. On the inside of the bend, in contrast, there is much less water. The river will therefore be shallow and slow-flowing. It cannot carry as much material and so sand and shingle will be deposited. This is called a point bar or slip off slope Due to erosion on the outside of a bend and deposition on the inside, the shape of a meander will change over a period of time. Notice how erosion narrows the neck of the land within the meander. In time, and usually during a flood, the river will cut right through the neck. The river will then take the new, shorter route. The fastest current, called the thalweg, will now tend to be in the centre of the river, and so deposition is likely to occur in gentler water next to the banks. Eventually deposition will block off the old meander to leave an oxbow lake. The oxbow lake will slowly dry up, only refilling after heavy rain or during a flood. Streams lose velocity and make deposits when their gradient decreases, when the volume of water decreases, when there is an increase in cross

section, when they encounter obstructions, or when they enter still water. They deposit alluvial fans, alluvial cones, piedmont alluvial plains, channel fill, bars, flood plains and deltas.

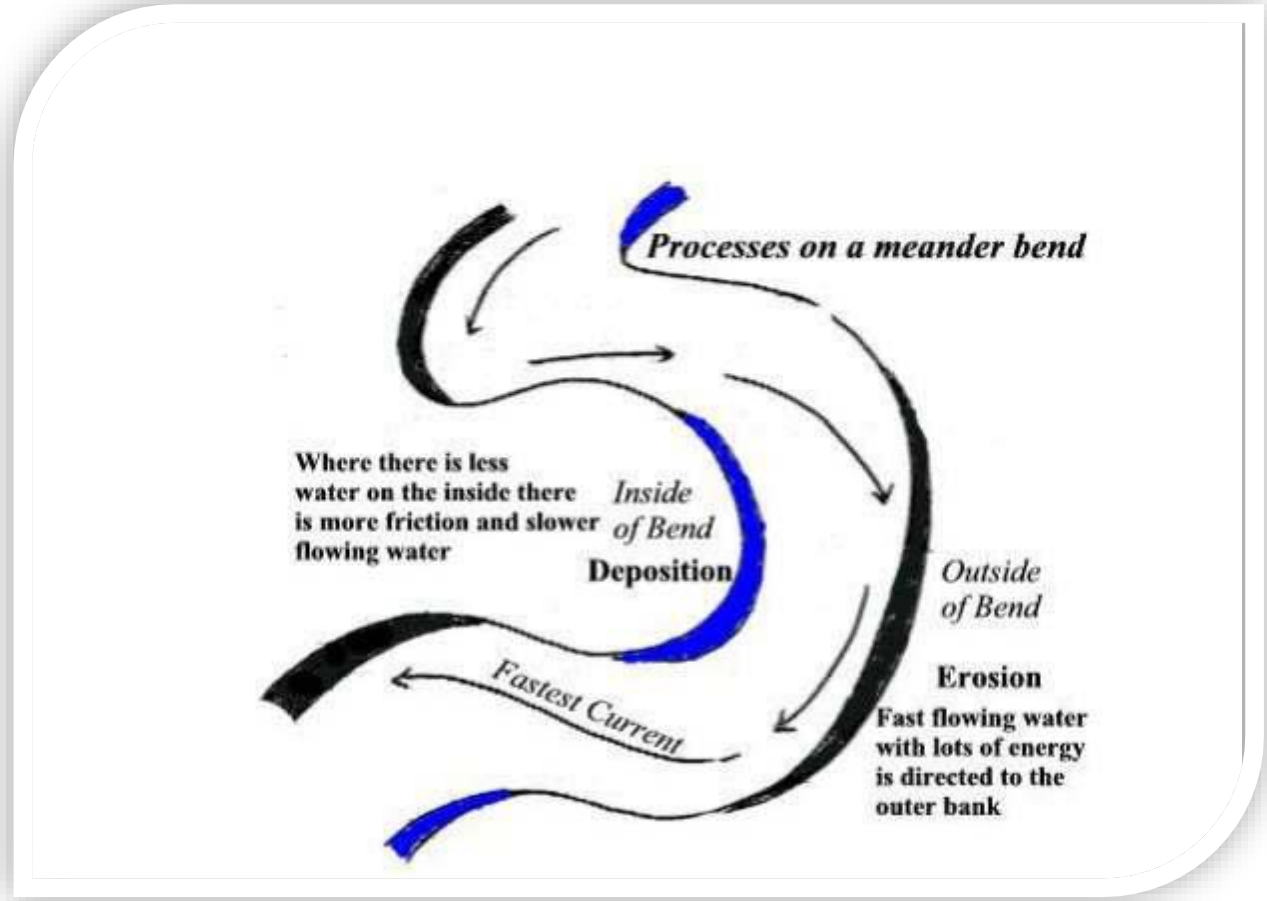

Plate-4, Pictorial Representation of
Erosion, Transportation & Deposition by River

7. GENERAL PROFILE OF THE DISTRICT

S.No.	Particulars	Statistics
1	**General Information**	
	Geographical Area	Geographical Area 5743 km^2
	Geographical Position	It is 27.6° to 27.54° longitude in north of Lucknow & in between 80.18° & 81.24° latitude in east of Lucknow.
	Administrative Division/Number of Tehsil	Administrative Division –Lucknow Six tehsils namely Sitapur, Biswan, Mishrikh, Laharpur, Mahmudabad and Sidhauli and 19 blocks
	No. of Panchayat/Villages	There are 1329 Gram Panchayats and 2348 Census Villages in the district
	Population (As Per Census 2011	District Sitapur has population of 4,483,992 of which male and female are 2,375,264 and 2,108,728 respectively
2	**Geographology**	
	Major Physiographic Units	Younger alluvial plain Older alluvial plain (Upper Gangetic Mid-Plains (Alluvial Plain of Ghaghra & Saryu of Indo-Gangatic Plain)
	Major Drainage	The Ghaghra, The Gomti river & their tributaries Saryu and its tributaries
	Temperature	Its minimum temperature is 6°C & maximum 43.34°C
3	**Land use (ha)**	
	Geographical area (ha)	574300
	Forest area (ha)	5800

<table>
<tr><td></td><td>Cultivable area (ha)</td><td colspan="3">496200</td></tr>
<tr><td></td><td>Land under non-agricultural use (ha)</td><td colspan="3">66100</td></tr>
<tr><td>4</td><td>Major Soil Types</td><td colspan="3">Bhur, Dumat and Matiyar</td></tr>
<tr><td>5</td><td>Hydrologeology</td><td colspan="3"></td></tr>
<tr><td></td><td>Pre-Monsoon depth of water level During 2007 (in mtr.)</td><td colspan="3">2.50 to 9.39</td></tr>
<tr><td></td><td>Post Monsoon depth of water level during 2007 (in mtr.)</td><td colspan="3">2.05 to 9.13</td></tr>
<tr><td>6</td><td>Mining Scenario</td><td colspan="3"></td></tr>
<tr><td></td><td>Total No. Notified Sand Lease</td><td colspan="3">10 (6 Short Term Permit + 4 Leases for 5 years have been advertised till now but other potential areas have been considered for next notification)</td></tr>
<tr><td></td><td>Total Area of Sand Leases</td><td colspan="3">92.076 (ha)</td></tr>
<tr><td></td><td>Total Royalty or Revenue Received from Minor Minerals</td><td></td><td>Financial Year</td><td>Revenue (in Rs.)</td></tr>
<tr><td></td><td></td><td></td><td>2014-15</td><td>5,10,34,991</td></tr>
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<tr><td></td><td></td><td></td><td>TOTAL</td><td>26,54,69,409</td></tr>
</table>

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

Land-Use Pattern:

Land use pattern of the district (Latest statistics)	Geographical area	Cultivable area	Forest area	Land under non-agricultural use	Permanent pastures	Cultivable wasteland	Land under Misc. tree crops and groves	Barren and unculti vable land	Current fallows	Other fallows
Area in (000 ha)	573.9	496.2	5.8	66.1	0.7	6.2	4.7	5.2	37.5	11.8

Topology:

Being a part of Indo Gangetic alluvial plain the area is almost a flat terrain with master slope towards southeast. Geomorphologically the area can be divided into younger alluvial plain and older alluvial plain. The younger alluvial plain forms flat to gently sloping, low lying, undulating surface of large areal extent formed by river deposition and consisting of fluvial land forms such as oxbow lakes, paleo-channels etc. The younger refers to later cycle of deposition and constitute unconsolidated coarse to fine sand, silt and clay. The effect of high soil moisture is observed in the vicinity of canal. The older alluvial plain is similar to younger alluvial plain but formed at earlier stage of depositional regimes, comprising older unconsolidated alluvium. The paleo-channels are buried channels filled in with sand silt and clay of varying lithology, whereas oxbow lakes are crescent shaped cut off meander with water and composed of unconsolidated alluvial materials. The area is characterised by ravines. These are small, narrow, deep depressions dissected and irregular surface usually produced by surface run off. These occurs along Gomti river & its tributaries. The ravines comprises unconsolidated alluvial material of varying lithology mainly with fine sediments and developed in older alluvium. The chief varities of soil are bhur or sand, dumat or loam and matiyar or clay. Bhur is formed along the high banks of rivers and streams, matiyar is found in depressions in the upland while dumat occurs in rest of the district.

9. PHYSIOGRAPHY OF THE DISTRICT:

District Sitapur is situated in the central part of Lucknow division, capital of U.P. It is 27.6° to 27.54° longitude in north of Lucknow & in between 80.18° & 81.24° latitude in east of Lucknow. This district is spread about 89 km. area from north to south & about 112 km. area from east to west. River Gomti makes the boundary from west to south of Sitapur & Hardoi. In the east river Ghagra which separates district Bahraich from Sitapur. On the north side is district Kheri. Thus, this district adjoins Barabanki, Baharaich, Kheri, Hardoi & Lucknow. Sitapur is divided into six tehsils- Sadar, Biswan, Mahmudabad, Sidhauli, Mishrikh & Leharpur.Main Rivers of this district are Gomti, Chowka, Ghagra & they have tributaries Sarain, Pirai, Gond, Godia, Kevani, Gadia, Ikharia etc. Sitapur has mainly these types of soils Bhood, Domat, Matiyar. Its minimum temperature is 6°C & maximum 43.34°C. Northern part of the district receives more rain because it is situated near to hills. Climate of Sitapur is healthy. It is situated 100m-150m above sea level. Agriculture is the main & important occupation of the district. Wheat, Rice & Urd are the main crops & Sugarcane, mustard & Groundnuts are the cash crops.

10. RAINFALL OF DISTRICT SITAPUR MONTH WISE

The average annual rainfall is 974.0 mm and mainly occurred from July to October. Remaining months of the year are mainly dry. During monsoon surplus water is available for deep percolation to ground water

The whole year may be mainly divided into four seasons:

- Summer season from April to June;
- Monsoon season from July to October;
- Post monsoon season from October to November; and
- Winter season from December to February.

The average annual rainfall of the district is 974.0 mm the climate is subhumid and it is characterised by a hot summer and general dryness except during the southwest monsoon. About 90% of rainfall takes place from June to September. During monsoon surplus water is available for percolation to ground water. May is the hottest month of the year. The mean daily maximum temperature in May is 43^0C. The mean daily minimum temperature is 8.6^0C and maximum temperature varies upto 45^0C. With the onset of the monsoon in third week of June the day temperature drops down appreciably. January is the coldest month with minimum temperature of the order of 9^0C. May and early June 7

form the hottest period of the year. The mean monthly maximum temperature is 31.7^0C and mean monthly minimum temperature is 18.7^0C. During March to May the air is least humid with relative humidity high in the morning and less in the evening mean. Monthly morning relative humidity is 70% and mean monthly evening relative humidity is 53%. During monsoon season the winds blow predominantly from east or southeast. The mean wind velocity is 5.6 km./hr. The potential evapotranspiration is 1494.00mm.

Rainfall	Normal Rainfall (mm)	Normal Rainy Days (Number)	Normal Onset (Specify week and month)	Normal Cessation (Specify week and month)
SW monsoon (June-sep)	849.8	46	2nd week of June	4th week of September
Post monsoon (Oct-Dec)	52.3	10	-	-
Winter (Jan-March)	47.6	-	-	-
Pre monsoon (Apr-May)	24.3	-	-	-
ANNUAL	**974.0**	**56**		

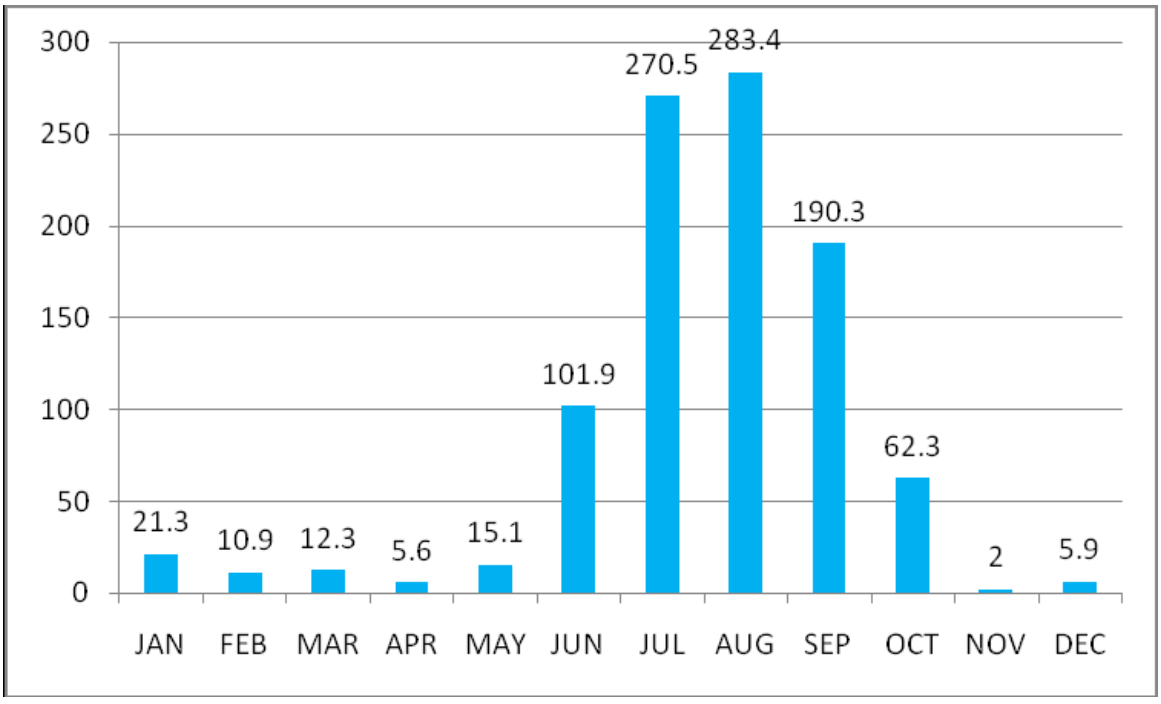

Plate-5 Average Month-wise rainfall (mm) in Sitapur District

SOILS OF SITAPUR DISTRICT (U.P.):

Alluvial plain (0-1% slope)

1. Deep, loamy soils and slightly eroded.
2. Deep, loamy soils and slightly eroded associated with silty soils.
3. Deep, fine soils moderately saline and sodic associated with loamy soils, slightly eroded.
4. Deep, fine soils and slightly eroded associated with loamy soils slightly saline and moderately sodic.
5. Deep, fine soils and slightly eroded associated with loamy soils.
6. Deep, silty soils associated with loamy soils slightly eroded.
7. Deep, silty soils with moderate salinity/sodicity associated with loamy soils slightly eroded.
8. Deep, loamy soils and slightly eroded associated with silty soils slightly saline/sodic and moderately sodic.
9. Deep, silty soils and slightly eroded associated with fine soils.

Old Alluvial plain with river left out channels/Oxbows/point bars (1-3%slope)

10. Deep, loamy soils and slightly eroded associated with stratified loamy soils slightly eroded

Recent Alluvial Plain (1-3% slope)

11. Deep, loamy soils with moderate water logging and slight salinity associated with fine soils, slightly water logging.
12. Deep, silty soils and slight flooding associated with loamy soils and slight flooding.
13. Deep, loamy soils slightly eroded associated with sandy soils with slight flooding.
14. Deep, silty soils, moderately saline and sodic associated with loam soils and slightly eroded.

Active Flood Plain (1-3% slope)

15. Deep, sandy soils with moderate flooding associated with stratified loamy soils and slight flooding.
16. Deep, stratified loamy soils, with moderate flooding associated with sandy soils with moderate flooding.
17. Deep, stratified loamy soils, with severe flooding associated with loamy soils with moderate flooding

Very gently sloping uplands with hummocks (1-3%slope)

18. Deep, fine soils, slightly eroded associated with fine smectitic soils and slightly eroded.

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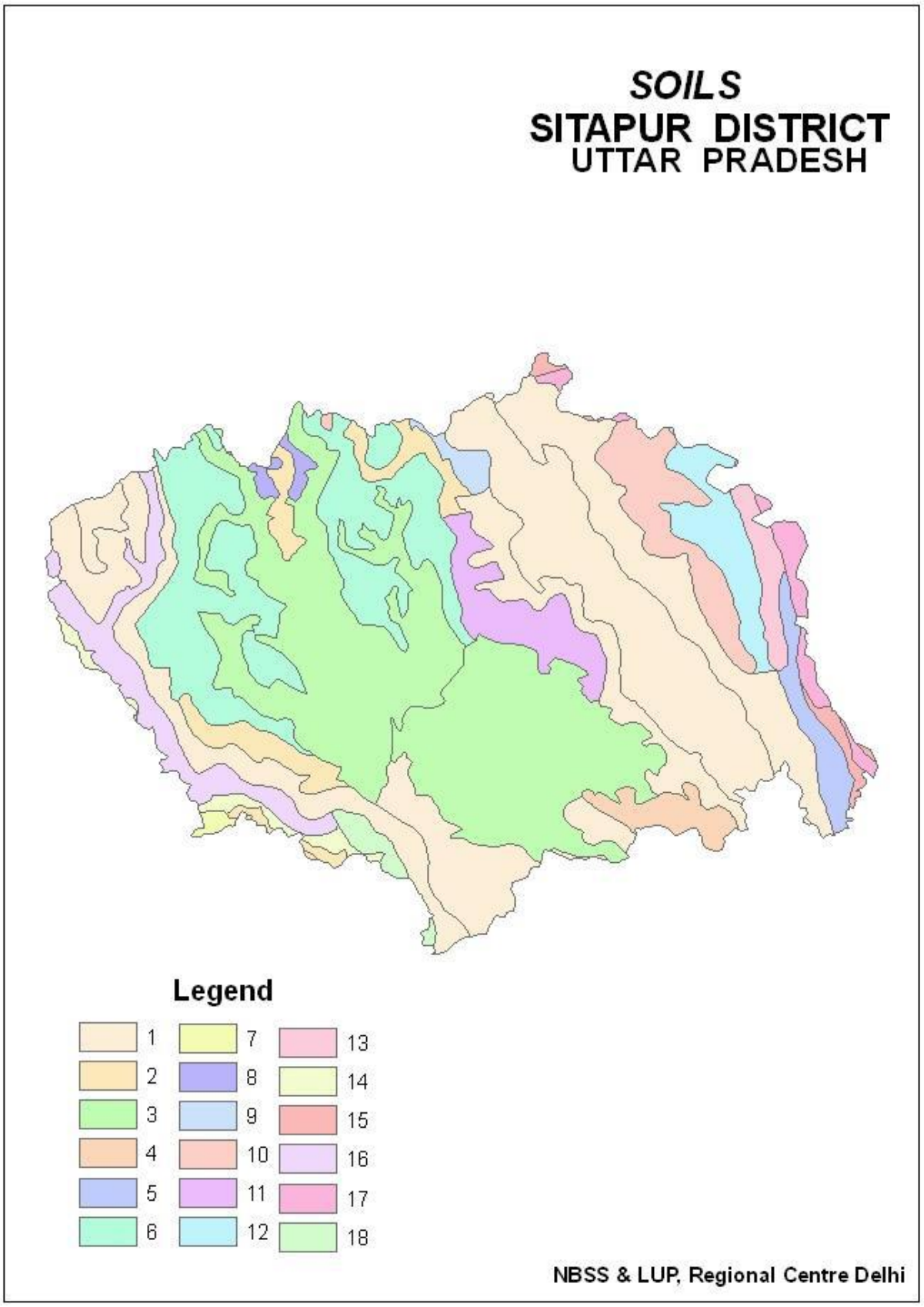

Plate-6 Soil Map of Sitapur

11. GEOLOGY AND MINERAL WEALTH

1. Geology:- Geologically the district forms part of the vast Indo-Gangetic alluvial tract, of which the origin is attributed to a sag in the earth's crust, formed, in the upper eocene times, between the northwardly drifting Gondwanaland and the rising Himalayan belt, and gradually filled in by sediments so as to constitute a level plane with a very gentle seaward slope.

The alluvium formation of the district, comprising sand, silt & clay with occasional gravel, is of the early quaternary to sub-recent age. The older alluvium called bhangar, forms slightly elevated terraces usually above the flood levels. It is rather dark in colour generally rich in concretions and nodules of impure calcium carbonate, locally known as kankar. The newer alluvium, called khandar, forming the lowlands between the Ganga and Bhangar, is light coloured, poor in calcarious contain and composed of lenticular beds of sand, gravel and clays. The economic minerals found in the district are kankar, reh and sand.

1.1 Regional Geology:-

District Sitapur is located within **Zone-3 (Moderate Zone) of seismic zone** of India in the Tari region of U.P. which is characterized by unique geological feature, since it makes the shift where the Southern Gondwana land collided with Northern Eurasian land lifting the sediments of the then existing Tethys sea and forming the Himalayas. As the result Southern and Northern part of Nepal shows widely differing formations. One find the Archean Crystalline formation covered deep beneath the Alluvium of Tarai, the main sedimentary deposits that were squeezed to form the high mountain and also the Siwalik formations. The region is flanked by the great Indo-Gangetic alluvial plains. It is occupied by litho-assemblages of various geological formations ranging in age from the Archaean to Quaternary period. The major part of the area up stream, Greater and Lesser Himalaya is composed essentially of variegated granite and granite gneisses with enclaves of meta-sediments and meta-basics and Siwalik sand stone. The gneissic-granitic suite of rocks are overlain by ENE-WSW trending volcano-sedimentary

sequence of the Bijawar Group and intra-cratonic, platformal, orthoquartzite-carbonate sequence of the Vindhyan Supergroup in the southern and eastern parts. The lacustrine Lameta Group of rocks and the overlying flood basalt of the Deccan Trap Province cover the Bijawar-Vindhyan rocks at various levels. Soil and alluvium of the Quaternary-Recent period is mostly confined along the banks of the major rivers.

1.2. Local Geology

On the basis of geology, soils, topography, climate and natural vegetation the district is sub divided into the three sub-micro regions: such as Ghaghra-Chauka Khadar, Sitapur plain and Gomti Basin. Brief description of these sub-micro regions are given below:

Ghaghra –Chauka Khadar:

The Khaddar tract formed of Alluvium and Dungravels of recent age runs parallel to Ghaghra river from north to south direction covering the major portion of Biswan, Laharpur, and Mahmudabad tahsils. The western limit of the region is marked by natural levee. The fact reveals that entire region is a left course of Chauka river which was pirated by Dahawar river in its upper part hence Chauka river becomes insignificant. The slope of the region is from north to south. Ghagra flows on the eastern boundary of the region where as Dahawar forms northern limit. A very narrow belt of eroded surface is observed along Ghaghra, Kakrehia and some streams in northern part. Ox-bow lakes, river meanders, natural ponds sand bars, dead arms of the river are the main physiographical characteristics. The area of the region is 1,766.6 sq. kms.

Sitapur Plain:

The plain is situated in the central part of the district covering parts of all six tahsils of the district with a little variation in relative relief. It is also formed of Alluvium and Dun-gravels of Recent age. A continuous belt of eroded surface may

be seen along the Surayana, Gond and Puras streams in their lower courses. This region covers an area of 2,828.55 sq. km.

Gomti Basin:

This region spreads over parts of Misrikh and Sidhauli tahsils along Gomti river in a crescent shape in the western part of the district. Geologically, it is also formed of Alluvium and Dun-gravels of Recent age. It is separated from Sitapur plain by the watershed line of Gomti River. The general slope of the area is from north to south. Three are rugged surface along Kathna and Gomti rivers. A number of sand patches are noticed in the North-Western area nearby Gomti river. The region is spread over an area of 1,167.23 sq. km.

MINERAL WEALTH :

The main mineral wealth of the district is sand. 159.856 ha. area has been marked having potential of 4316382 MT sand production. The list of marked area has already been detailed in section 3 in detail.

In addition to the above details are tabulated here for additional detail

a) District wise detail of river or stream and other sand source

Drainage system with description of main rivers

S. No.	Name of the River	Area drained (Sq. Km)	% Area drained in the District
1.	Chauka	66	1.40%
2.	Sharda	72	1.20%
3.	Gomti	114	19%
4.	Kathina	15	0.3%
5.	Ghaghra	130	22%
TOTAL		397	43.9%

Salient Features of Important Rivers and Streams:

S. No.	Name of the River or Stream	Total Length in the District (in Km)	Place of origin
1.	Chauka	110	Originating from Ghaghra near Barethi in Sitapur in NE and merges again in Ghaghra near Sohariya Sitapur in SE direction.
2.	Sharda	35	Originating from Kalapani region of Garhwal Himaya at an elevation of 3600m
3.	Gomti	175	Originating from Gomath Taal in Tanda Pilibhit.
4.	Kathina	65	Originating from Gomti river near Dhadhana Mau Sitapur.
5.	Ghaghra	65	Originating from Mapchachungo glacier in Himalaya.

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)
Chauka-62.336 ha.	10.389	60	623360
Ghaghra- 100.0 ha.	1.000	1000	1000000
Gomti- 28.17 ha.	4.33	65	281700
Kathina- 20.57 ha.	4.114	50	205700
Sharda-50.78 ha.	0.634	800	507800
Total 261.856	**20.467**	**1975**	**2618560**

b) District's river wise availability of sand or gravel or aggregate resources

Mineral Potential

River	Boulder (MT)	Bajari (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)
Chauka	Nil	Nil	2818620	1691172
Ghaghra	Nil	Nil	4500000	2700000
Gomti	Nil	Nil	1267650	760590
Kathina	Nil	Nil	925650	555390
Sharda	Nil	Nil	2285100	1371060
Total			**11797020**	**7078212**

S. No.	River or Stream	Portion of the river or stream recommended for mineral concession (in ha.)	Length of area Recommended for mineral concession (in K.meter)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in square meter)	Mineable mineral potential (in metric tonne) (60% of total mineral potential)
1.	Chauka	62.336 ha.	10.389	60	623360	1691172
2.	Ghaghra	100.0 ha.	1.000	1000	1000000	2700000
3.	Gomti	28.17 ha.	4.33	65	281700	760590
4.	Kathina	20.57 ha.	4.114	50	205700	555390
5.	Sharda	50.78 ha.	0.634	800	507800	1371060
Total for the District		**261.856 ha.**	**20.467**	**1975**	**2618560**	**7078212**

c) District wise detail of existing mining leases of sand and aggregates.

There are three mining leases for short term permit has been granted and currently in operation the detail is given below-

S. No.	Village & Tehsil	Gata No./ Khand No.	Area (ha.)	Mineable Reserve M^3	Period
1.	Vill- Basudah, Tehsil- Biswan	1297 mi	3.15	33160	6 month
2.	Vill- Khanuwan pur, Tehsil- Biswan	01 mi	3.11	32750	6 month
3.	Vill-Parvatpur, Tehsil- Laharpur	691ka, 692,694kh.& 690ta	1.428	20120	6 month
4.	Vill-Moodikhara, Tehsil- Laharpur	44ja,74 & 102	2.45	21460	6 month
5.	Vill. Chandara, Tehsil - Maholi	Part of 87 mi	0.61	9200	6 month
6.	Vill. -Pahari, Tehsil - Maholi	Part of 484	0.96	10190	6 month

Apart from the above listed leases the other 04 proposed areas are under process for granting through e-tendering which will come into operation after Environmental Clearance. There is no other existing mining lease in the district.

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