कार्यालय जिलाधिकारी अमरोहा।

पंत्राक 551 /खनिज लिपिक/2017 दिंनाक– 1/1/18

विषयः–जिला सर्वेक्षण रिपोर्ट जनपद अमरोहा को जनपद अमरोहा की अधिकारिक वेबसाइट **amroha.nic.in** पर अपलोड करने के सबंध में ।

सूचना

सर्वसाधारण को सूचित किया जाता है कि भारत सरकार पर्यावरण वन और जलवायु परिवर्तन मंत्रालय की अधिसूचना दिंनाक 10.01.2016 के परिशिष्ट 10 दिये गये प्राविधानों के अनुसार जनपद अमरोहा में उपलब्ध खनिजों के संबंध में जिला सर्वेक्षण रिर्पोट तैयार की गई है जिसें जिले के अधिकारिक वेबसाइट **amroha.nic.in** अपलोड करा दी गयी है तथा कलैक्ट्रेट अमरोहा व समस्त तहसीलों के सूचना पट पर चस्पा कर दी गयी है। उक्त सर्वेक्षण रिर्पोट को खनिज विभाग अमरोहा से प्राप्त भी किया जा सकता है। इस सम्बन्ध में अपना सुझाव भी प्रस्तुत कर सकते है। प्राप्त समस्त सुझावों पर विचार करते हुये जनपद अमरोहा के सम्बन्ध में सर्वेक्षण रिर्पोट के सम्बन्ध में नियमानुसार अग्रेतर कार्यवाही की जायेगी।

अपर जिलाधिकारी,
अमरोहा।

प्रतिलिपि –

1.निदेशक भूतत्व एवं खनिकर्म उ0प्र0 लखनऊ को सादर सूचनार्थ प्रेषित।
2.समस्त तहसीलदार, जनपद अमरोहा को सूचना पट पर चस्पा करने हेतु।
3.नाजिर सदर, कलैक्ट्रेट को सूचना पट पर चस्पा हेतु।

अपर जिलाधिकारी,
अमरोहा।

PREFACE

In Compliance to the Amendment Notification issued by the Ministry of Environment, Forest and Climate Change (MoEFandCC) dated 15.01.2016, the preparation of District Survey Report of River bed mining and other minor minerals is in accordance with Appendix X of the notification. It is also important to mention here that the procedure of preparation of District Survey Report is as per notification guidelines. Every effort have been made to cover sand mining locations, areas and overview of mining activity in the district with all its relevant features pertaining to geology and mineral wealth in replenishable and non-replenishable areas of rivers, stream and other sand sources. This report 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 is based on data of various departments, published reports, and websites. The data may vary due to flood, heavy rains and other natural calamities. Therefore, it is recommended that the sub-divisional level Committee may take into consideration all its relevant aspects/data while scrutinizing and recommending the application for Environmental Clearance to the concerned Authority.

SURVEY REPORT
OF
DISTRICT AMROHA

The Government of India, Ministry of Environment, Forests and Climate change has made certain amendments in, Environmental Impact Assessment (EIA) Notification No. S.O.1533 (E) dated 14.09.2006 issued by the erstwhile Ministry of Environment and Forest, vide notification no. S.O.141 (E) dated 15.01.2016 and notification no. S.O.190 (E) dated 20.01.2016. These amendments led to the constitution of the District Level Environment Impact Assessment Authority (DEIAA) at district level for grant of environmental clearances for category B2 projects (B2 category projects pertaining to mining of minor minerals of lease area less than or equal to 5 hectares) for mining of minor minerals, for all the districts in the country. DEIAA comprises of following members:

	District Magistrate or District Collector of the district	Chairperson
	Senior most Divisional Forest Officer in the district	Member
	An expert member to be nominated by the Divisional Commissioner or Chief Conservator of the Forest	Member
	Sub-Divisional Magistrate or Sub-Divisional Officer of the district head quarter	Member Secretary

Ordinary sand other than sand used for prescribed purposes and some other minerals has been specified as minor mineral in Sec 3(E) of The Mines and Minerals (Development and Regulation) Act, 1957. The Central Government in addition to some other minor minerals have also declared the ordinary earth (used for filling or levelling purposes in construction or embankments, roads, railways and buildings) and brick earth as the minor minerals.

The DEIAA shall base its decisions on the recommendations of District Level Expert Appraisal Committee (DEAC). It comprises of following members:

	Senior most Executive Engineer, Irrigation Department	Member
	Senior most Sub-Divisional Forest Officer in the district	Member
	A representative of Remote Sensing Department or Geology Department or State Ground Water Department to be nominated by the District Magistrate or District Collector	Member
4	Occupational health expert or Medical Officer to be nominated by the District Magistrate or District Collector.	Member
	Engineer from Zila Parishad.	Member
	A representative of State Pollution Control Board or Committee	Member
	An expert to be nominated by the Divisional Commissioner or Chief Conservator of Forest	Member
	An expert to be nominated by the Divisional Commissioner or Chief Conservator of Forest	Member
	An expert to be nominated by the Divisional Commissioner or Chief Conservator of Forest	Member
	Senior most Assistant Engineer, Public Works Department	Member
	Assistant Director or Deputy Director or District Mines Officer or Geologist in the district in that order	Member

District Survey Report (DSR) is required to identify the areas of aggradations or depositions where mining can be allowed and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area. The mineral potential is calculated based on field investigation and geology of the catchment area of the river or streams. Also as per the site conditions and locations, depth of minable mineral is defined. The area for removal of the mineral in a river or stream is decided depending on geo- morphology and other factors, it can be 50% to 60% of the area of a particular river or stream. Other constituents like clay and silt are excluded as waste while calculating the mineral potential of particular river or stream. The District Survey Report (DSR) shall form the basis for application for

environmental clearance, preparation of reports and appraisal of projects. The Report shall be updated once every five years.

INTRODUCTION

Amroha is a city in north-western Uttar Pradesh state in northern India, located in the north-west of Moradabad, near the Sot river. It is the administrative headquarters of the Amroha district. District Amroha lies in the west of Moradabad District adjoining district Hapur, Sambhal and Buland Shahar. The district came into being on 24th April 1997 in the memory of famous social reformer Sant Mahatama Jyotiba Phule by combining Amroha, Dhanora and Hasanpur Tehsils of Moradabad district vide UP Gazette no. 1071/1-5-97/224/sa-5 dated 15/4/1997 whose headoffice is situated in the ancient city Amroha.

The name of Amroha drove out from the word (Sanskrit) Amr (अमर्) *i.e.* Mango and Vanam (वनम्) *i.e.* forest.

This district is one of the five districts, those come under Moradababd division. The District has been the part of Moradabad district in the past which was a part of 'Sarkar of Sambhal' of Delhi Province during the Akbar regime.

BRIEF DETAILS OF THE DISTRICT

Physical Features and Geographical Area

Amroha is located north-west of Moradabad, near the Sot River. The district consists of 1133 villages, 3 Tehsils, 6 Blocks and 11 Police Stations. Its geographical area is 2470 Sq. Km. Extending from Latitute 28° 54' North to 39° 6' North and Longitude 78° 28' East to 78° 39' East. The maximum and minimum height from sea level is 240ft. and 177ft. respectively. In the north of the district lies district Bijnore, district Sambhal is in the south, tehsil Sadar of Moradabad is in the east and in the west are situated districts Hapur, Ghaziabad and Buland Shahar. Ganga river separates it from district Hapur,Ghaziabad and Buland Shahar. The city is divided into localities and blocks.

Population

Amroha is a city in UP. As per the final data of 2011 census, Amroha had a population of 198,471. Population of Children with age of 0-6 is

28323 which is 14.27% of total population of Amroha (NPP). In Amroha Nagar Palika Parishad, Female Sex Ratio is of 925 against state average of 912. Moreover, Child Sex Ratio in Amroha is around 950 compared to Uttar Pradesh state average of 902. Literacy rate of Amroha city is 62.36% lower than state average of 67.68%. In Amroha, Male literacy is around 66.73% while female literacy rate is 57.61%.

Transport

Amroha is well connected through Railways and Road with Indian capital New Delhi. Amroha railway station is situated on Delhi-Moradabad line and all passenger trains and most of the express trains stop here. Amroha railway station is on a line built by Oudh and Rohilkhand Railway, 868 miles from Kolkata. Amroha is about 5 km away from NH 24, a four-lane highway which connects New Delhi to Lucknow.

Administrative Set-up

AMROHA is divided into Four sub divisions Sadar(Amroha), Dhanaura, Hasanpur, Naugawan Sadat. The area of each subdivision includes the area of each tehsil. There are 4 Tehsils in Amroha:

1. Amroha
2. Hasanpur
3. Dhanaura
4. Naugawan Sadat

For better administration tehsils are segmented in paragnas. Each pargana is headed by a Nayab Tehsildar. He is assisted by Kunoongo and Lekhpals.

Tehsil	No. of Village	No. of Panchayat	No. of Pargana	Total No. of Lekhpal	Total No. of Revn. Inspector	Total No. of Naib Tehsildar	Total Area In Ha.
Amroha	272	13	1	66	7	3	43319
Hasanpur	378	15	1	109	11	2	84308
Dhanaura	319	13	1	87	9	2	62903
Naugawan Sadat	164	7	1	40	4	0	25520
Total	1133	48	4	302	31	7	216050

Physiography

The district has almost monotonous plain with no distinct features except some sand ridges, river valleys and shallow depressions. The maximum and minimum height from sea level is 182.00 mamsl to 208.00 mamsl respectively. Geomorphologically, the district can be divided in to two broad geomorphologic units namely younger and older alluvium.

REGIONAL GEOLOGY

Amroha district is in the State of Uttar Pradesh which is characterised by rock formations ranging in age from the Archean (the Bundelkhand Graniticgneisses) to the Recent (the Ganga alluvium). The Ganga plain which dominates the landscape and nearly covers three fourth of the geographical area of the State, lies between the rocky Himalayan belt in the north and the southern hilly tract comprised of mainly Pre-Cambrian rocks. Flexing of the Indian lithosphere in response to the compressive forces due to collision, and thrust fold loading produced the Ganga Plain foreland basin. It is filled with recent alluvial sediments which are at places more than 1,000 m. thick and an amalgam of sand, silt, clay in varying proportions. The southern hilly tract is roughly parallel to the Ganga-Yamuna lineament. The tract is

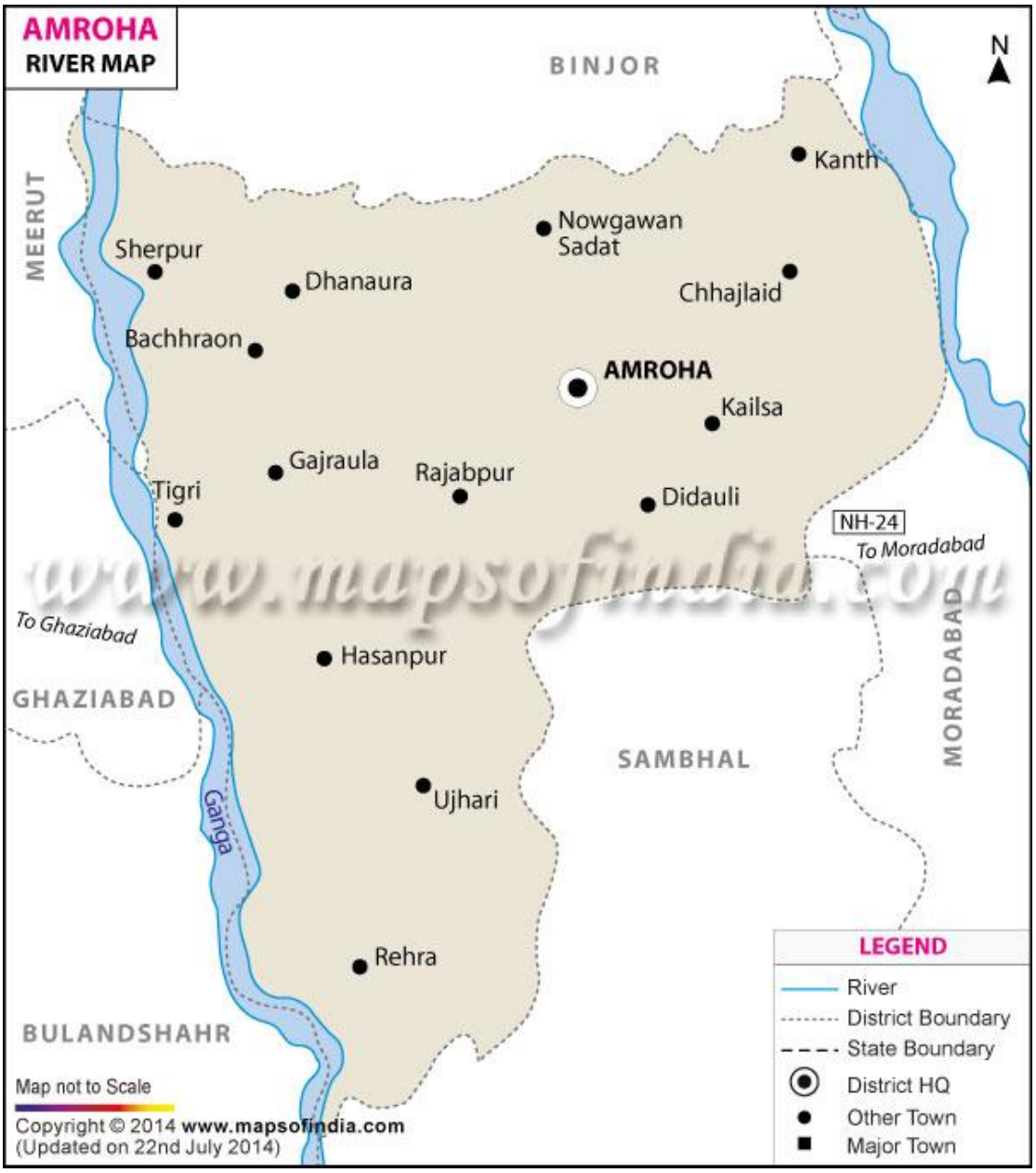
underlain by granitic complex in Bundelkhand region and in Sonbhadra. It is overlain by rocks Mahakoshal (Bijawar) and Vindhyan Supergroup. The younger rock comprise of coal bearing Gondwana in south Sonbhadra and basaltic rocks in southern part of Lalitpur. The granitic

complex is considered to be potential for the search of metallic minerals like copper, lead, zinc, molybdenum, gold, nickel, Uranium and Platinum group of elements. The overlying sediments of Mahakoshal (Bijawar) and associated Iron Formation show a potential

for the search of copper, uranium, and gold in Lalitpur and andalusite, sillimanite, gold, calcite, marble and clay in sonbhadra. The lower Vindhyan sediments of Sonbhadra contain deposits of cement grade limestone, flux grade dolomits, building stone and are also potential for the search of placer gold and other metals, while the Upper Vindhyan i.e. sandstones are suitable for making decorative slab/tiles or ballast. Deposits of silica sands and bauxite are available in Allahabad and chitrakoot districts while coal deposits occur in the Gondwana rocks in south-western corner of Sonbhadra.

RIVER SYSTEM

The Sot River is a tributary of the Ganges in Uttar Pradesh, India. It flows close to Budaun city. Geologically the area falls in the Ganga basin. The area is drained by Ganga, Soht and Bagar river.



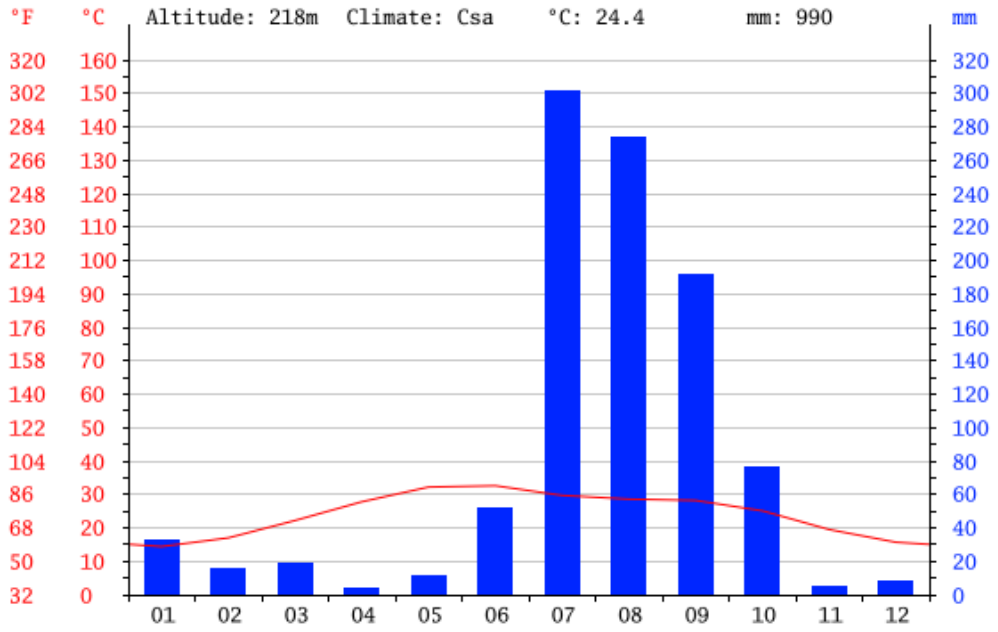
RAINFALL AND CLIMATE

The climate of the Amroha is similar to other districts of Western Uttar Pradesh situated at the base of Himalaya which becomes hot in summer and dry and cold in winter.

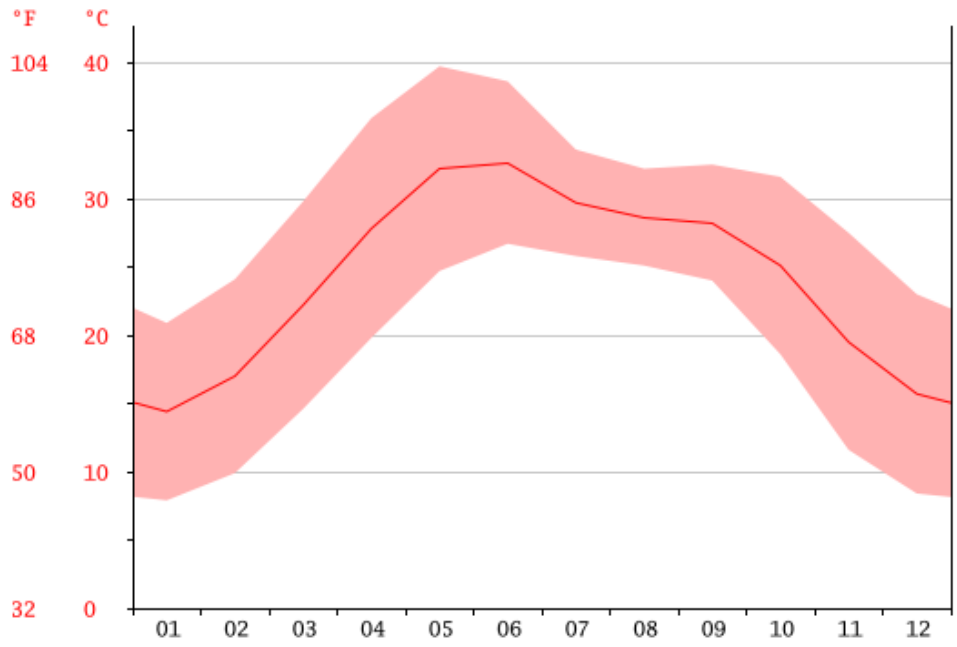
Being just 130 km away, Amroha's weather is very similar to Delhi.

The district falls in the subtropical region and the climate is classified as tropical to subtropical type. The climate is characterised by a hot summer and biting cold, winter is associated with general dryness,

except during the southwest monsoon where humidity is high. The rainy season extends from end of June to September or mid of October. Extreme temperature is recorded during winter and summer months. The mean daily maximum temperature is about 400C and the mean daily minimum temperature is about 250C during May and June. The mean monthly maximum relative humidity in the morning and evening is 84% to 74% respectively and is varies from 21% to 84%. A study of rainfall data from six rain gauge stations around the district, the annual mean rainfall is 1046 mm at Amroha. Amroha received highest rainfall in 1990 (1813.0 mm) which is 1.76 times more than normal. Whereas lowest was in 1987 (492.1 mm) which is 1.84 times less than normal. The Hasanpur highest rainfall was recorded in 1975 (1404 mm) which is 1.59 time more than normal, whereas lowest was in 1987 (402.4 mm) which is 2.19 times less than normal annual rainfall.



The driest month is April, with 4 mm of rainfall. The greatest amount of precipitation occurs in July, with an average of 301 mm.



With an average of 32.6 °C, June is the warmest month. In January, the average temperature is 14.4 °C. It is the lowest average temperature of the whole year. The difference in precipitation between the driest month and the wettest month is 297 mm. The variation in temperatures throughout the year is 18.2 °C.

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	14.4	17	22.2	27.8	32.2	32.6	29.7	28.6	28.2	25.1	19.5	15.7
Min. Temperature (°C)	7.9	9.9	14.6	19.8	24.7	26.7	25.8	25.1	24	18.6	11.6	8.4
Max. Temperature (°C)	20.9	24.1	29.8	35.9	39.7	38.6	33.6	32.2	32.5	31.6	27.5	23
Avg. Temperature (°F)	57.9	62.6	72.0	82.0	90.0	90.7	85.5	83.5	82.8	77.2	67.1	60.3
Min. Temperature (°F)	46.2	49.8	58.3	67.6	76.5	80.1	78.4	77.2	75.2	65.5	52.9	47.1
Max. Temperature (°F)	69.6	75.4	85.6	96.6	103.5	101.5	92.5	90.0	90.5	88.9	81.5	73.4

Precipitation /Rainfall (mm)	33	16	19	4	11	52	301	274	191	76	5	8

Source: https://en.climate-data.org

LAND USE PATTERN

On account of high population pressure in Jyotiba Phule Nagar district, more than 78 per cent of the reporting area has been brought under cultivation in the district which is high as compared to the proportion of net cultivated area at the state level (69 per cent). The percentage of area under forest in the district is also high (9.68 per cent) in comparison with the forest area at the state level (6.97 per cent). Despite higher proportion of net area sown in the district, cropping intensity has remained quite low (153 per cent in Jyotiba Phule Nagar district versus 193 per cent in the state) which indicates that traditional structure of agriculture has not changed much in the district despite the fact that level of irrigation in the district has been far better than what could be in the state as a whole

TOPOGRAPHY

Its geographical area is 2470 S q. Km. Extending from Latitude 28.54’ N and Longitude 78.31’ E. The maximum and minimum heights from sea level are 240ft. and 177ft. respectively. In the north of the district lies district Bijnore, Sambhal is in the south, tehsil Sadar of Moradabad is in the east and in the west are situated districts Meerut, Ghaziabad and Buland Shahar. Ganga River separates it from district Ghaziabad, Meerut and Buland Shahar.

AVAILABILITY OF MINERALS

The whole of the District is composed of the recent deposits known collectively as the Indo-Genetic alluvium, which consists of the alluvial sand, clay and loam.

Except Sand and Soil (Minor Minerals) no other minerals are available in Amroha district. Sand is primarily produced from mining operations on the surface of the earth, near the river beds and the sand quarrying

below the surface of earth. Some brick earth and foundry sands are reported from the district.

OVERVIEW OF MINING ACTIVITY

In Amroha district only sand and soil mining can be carried out. These Minor Minerals constituents are required for any type of construction apart from other material like cement and steel. With the passage of time, new technique of development activities were started and the demand of Minor Mineral started on an increasing trend. In order to meet the requirement of raw material for construction, the extraction of sand carried out manually/semi- mechanized process from the river beds and soil is extracted for filling purposes or as brick earth.

The local residents used to lift sand etc. from the river beds to meet out their bonafide requirement. However after coming into being the **Uttar Pradesh Minor Mineral rules 1963, and amended rules in 2017(42nd Amendment)**, the mining is regulated in accordance with the rules. At present tenders are invited for the mining quarries under the above said rules in different parts of the District.

PROCESS OF DEPOSITION OF SEDIMENTS IN THE RIVER

Weathering cycle of River (Fluvial) comprises of three stages viz. erosion, transportation and deposition. Rivers have a lot of energy and 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. The intensity of lateral and vertical erosion is dictated by the stage in the river's course, discussed in more detail here but essentially, 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 and 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 saltation. 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 and 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 are 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.

GENERAL RECOMMENDATIONS AND CONCLUSION

During the preparation of the present report prominent rivers/ streams has been studied in detail, as the rest of the streams/rivers either have very insignificant annual replenishment/ approachability problem or are very narrow at most of the places and as such are not fit for grant of mineral concession for mineral based industries, however it is also important to mention here that because of the regular demand of sand, and soil for the developmental activities in the respective areas, such streams are prone to illegal mining. It is suggested that the auctions of quarries be done regularly to meet out the local demand subject to the approval from the joint Inspection Committee as per **Uttar Pradesh**

Minor Mineral rules 1963, and amended rules in 2017(42nd Amendment). These mineral concessions shall also reduce demand load and will be helpful to minimize illegal extraction of minerals, failure of which may result in to illegal mining at odd hours and shall be haphazard and more detrimental to the local ecology. Irrespective of it following geo-scientific considerations is also suggested to be taken into account during the river bed mining in a particular area:

1. Abandoned stream channels or terrace and inactive floodplains may be preferred rather than active channels and their deltas and floodplains.
2. Stream should not be diverted to form inactive channel.
3. Mining below subterranean water level should be avoided as a safeguard against environmental contamination and over exploitation of resources.
4. Large rivers and streams whose periodic sediment replenishment capacities are larger, may be preferred than smaller rivers.
5. Segments of braided river system should be used preferably falling within the lateral migration area of the river regime that enhances the feasibility of sediment replenishment.
6. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly meandering segment of a river should be selected for mining in such a way as to avoid natural eroding banks and to promote mining on naturally building (aggrading) meander components.
7. Continued riverbed material mining in a given segment of the river will induce seasonal scouring and intensify the erosion activity within the channel. This will have an adverse effect not only within the mining area but also both in upstream and downstream of the river course. Hazardous effects of such scouring and enhanced erosion due to riverbed mining should be evaluated periodically and avoided for sustainable mining activities.
8. Mining area should be demarcated on the ground with Pucca pillars so as to avoid illegal unscientific mining.

9. It is recommended that Sub Divisional Level Committee may take into consideration all its relevant aspects/data while scrutinizing and recommending the application for EC to the concerned Authority.