

**EXECUTIVE
SUMMARY
IN
ENGLISH**

1.1 Introduction

The proposed project is for mining of sand, boulder and Bajri (minor minerals) in an area of 23.75 ha from the river bed of Swarna River located in Village-Abdullapur & Rampur, Tehsil- Vikas Nagar, District- Dehradun, Uttarakhand. The project site comes in Jhajra Forest Range under the Forest (Be Nap), Dehradun.

Mine lease has been allotted in the name of M/s UKFDC vide Letter of Intent (LOI) no. 584/BHU.KANI.E./2012-13 dated 23.01.2013 by Director of Mines & Geology Department, Uttarakhand.

The project has been proposed for an annual production of 2,16,000 tonnes per annum of Sand/Bajri/Boulder by open-cast manual extraction method of mining in river bed. The river along its course brings huge quantity of material consisting of sand, boulder & bajri during every monsoon. This material has to be removed every year in order to channelize the river course and to prevent it from widening & thus causing cutting of nearby agriculture & forest land.

Project will benefit in meeting the huge demand of construction material like coarse & fine aggregate required in building, construction & infrastructure works, road material for construction and maintenance of roads/highway; elastic ballast material for rail tracks in the state of Uttarakhand and nearby cities and towns of Uttar Pradesh as the natural available materials of Swarna river at river bed quarry site has been found suitable from techno-economic consideration.

This project will provide employment to 300 persons including skilled, semi- skilled & unskilled. Total number of working days will be 270. The mine will be worked in the day shift only. Total water requirement will be 7 KLD for domestic purpose, dust suppression & green belt development which shall be met by tanker supply.

The baseline collected data for land, soil, water, air and noise shows all values found are within the limits, prescribed by CPCB. About 46 ha area is proposed for afforestation a part of compensatory afforestation as per conditions of Forest clearance.

All possible environment aspects have been adequately assessed and necessary control measures have been formulated to meet statutory requirements. Thus implementing this project will have positive impacts.

As per MoEF&CC, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as category 'B2'.

Table -1: Detail of the project

Project Name	Extraction/Collection of Sand, Bajri & Boulder (minor minerals) from Swarna River Bed
Area	23.75 Ha
Capacity	2,16,000 TPA
New/Expansion/Modernization	New Mine
Category	B2
Land Use	River bed in Forest land
Toposheet Number	53 F/15
Elevation	603.5 mRL (highest) & 545 mRL (lowest)
Seismic Zone	Zone-IV (As per 1893:2002)
Method of Mining	Open-cast Manual

Minerals to be Mined	Sand, Bajri, Boulder
Life of Mine	Continuous, being replenished yearly
After use of Mined Mineral	It will be sold with the permission of State Government
Water Demand	7 KLD
Sources of Water	Tanker supply
Man Power	300
No of Working Days In A Year	270

1.2 Project description

The project has been proposed for an annual production of 2, 16,000 tonnes of Sand/Bajri/Boulder by opencast manual extraction method in river bed of Swarna. The mine lease area is 23.75 Ha. Estimated project cost (capital + recurring) is Rs. 25 lakh.

Water requirement for plantation and dust suppression will be 7 KLD.

Proved reserve -2472057.37 MT or 1373365.21 m³

Probable Reserve-1648038.36 MT or 91.5579.87 m³

Possible reserve- 824019.01 MT or 457788.34m³

Production- 216000 TPA

Life of Mine –Replenish every year

1.3 Description of environment

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, Socio-economic and Ecology & Biodiversity. The generation of primary data as well as collection of secondary data and information from the site and surroundings was carried out during post monsoon season i.e. October 2017 to December, 2017. The EIA study is being done for the Mine Lease (core zone) and area within 10 Km distance from mine lease boundary (buffer zone), both of which together comprise the study area. The project site falls under seismic zone IV.

1.3.1 Air Environment

The maximum value for PM₁₀ is observed, as 60 µg/m³ at Jamankhata and minimum value of 40 µg/m³ at Hasnanpur and Kherakhet while 24 hours applicable limit is 100µg/m³ for industrial and mixed use areas. The average value ranges between 47 to 53 µg/m³.

The maximum value for PM_{2.5} is observed, as 39 µg/m³ at Jamankhata and minimum value of 22 µg/m³ at Hasnanpur and Kherakhet while 24 hours applicable limit is 60µg/m³. The average value ranges between 26 to 34 µg/m³.

The maximum value for NO₂ is observed, as 28 µg/m³ at Jamankhata and Rampur & minimum values is 12 µg/m³ at Atakfarma and Kherakhet while 24 hours applicable limit is of 80 µg/m³ for residential, industrial and other areas. Average value of NO₂ is between 18 to 22 µg/m³. The area observes NO₂ well below the prescribed range.

The maximum value for SO₂ is observed, as 14 µg/m³ at Hasnanpur and minimum value is 5 at Mine site while 24 hours applicable limit is of 80 µg/m³ for residential, industrial and other areas. Average value of SO₂ is between 7 to 10 µg/m³. The area observes SO₂ well below the prescribed range.

1.3.2 Water environment

Analysis result of Surface water reveals the following:

The value of pH ranges from 7.55–7.62, indicating that water is neutral in the study area. Maximum Conductivity observed is 502µmhos/cm at Asan, whereas minimum conductivity was observed in Mine site as 456 µmhos/cm. Total hardness of surface water ranges from 168 and 178 mg/l at Mine site and Asan River respectively. TDS ranges from 262 and 275mg/l at Asan River and Mine site location.

Analysis results of Ground water reveal the following;

- The value of pH ranges from 7.32 to 7.56, indicating that water is slightly alkaline in the study area. Maximum Conductivity observed is 448 µmhos/cm at Jamankhata whereas minimum conductivity was observed at Selaqui as 388 µmhos/cm.
- Total hardness of ground water ranges from 142 to 180 mg/l.
- The observed values of Chloride vary from 14mg/l at Jamankhata to 28 mg/l at Selaqui. The ground water quality is in good conditions at mostly all locations.

1.3.3 Soil environment

Monitoring data shows that the texture of soil at all locations is Sandy Loam. The monitoring sites have sand ranging from 70% to 72% in soil samples. Silt content varies from 16 % to 20%, while Clay content varies from 6% to 12% in the soil samples.

- The data shows that value of pH ranges from 7.12 at Jamankhata to 7.59 at Rampur indicating that all soil samples are neutral.
- Hasnanpur shows maximum conductivity of 526 µmhos/cm, while At Kherakhet shows minimum conductivity of 381 µmhos/cm.
- Values of CEC ranges from 4.52 meq/100g as lowest at Atakfarm and 7.44 meq/100g as maximum at Rampur.
- Magnesium values ranges from 2.6 meq/100g as lowest at Jamankhata and 3.7 meq/100g as highest at Rampur.
- The average concentration of Nitrogen, Phosphorus and Potassium in the soil samples varies from 12.8 to 15.6 mg/100gm, 0.58 to 0.79 mg/100gm and 2.6 to 3.4 mg/100gm.

1.3.4 Noise environment

In study area, Leq (day) noise level are ranging between 58.5 dB recorded at Mine site to 49.3 dB recorded at Hasnapur during day time and Leq (night) of 37.5 dB recorded at Hasnapur to 43.4 dB recorded at Mine Site during night time. During daytime and night time noise level within the residential area are well within the prescribed limit.

1.3.5 Socio-economic Environment

The demographic profile within the study area is given below.

Table -2: Demographic profile of the study area

S. No.	Description	Number	Percentage to Respective Total
1	Total Population	1,31,674	100.0
	Male	68,476	52.00

	Female	63,198	48.00
	Sex Ratio	923	
2	Population (0-6 age group)	18,287	100.00
	Male	9,489	51.9
	Female	8,798	48.1
	Sex Ratio	927	
3	Population- Scheduled Caste	16,830	100.00
	Male	8,760	52.0
	Female	8,070	48.0
	Sex Ratio	921	
4	Population- Scheduled Tribe	10,135	100.0
	Male	5,354	52.8
	Female	4,781	47.2
	Sex Ratio	893	
5	Population- General (including OBC)	1,04,709	100.0
	Male	54,362	51.9
	Female	50,347	48.1
	Sex Ratio	926	
6	Total No. of Households	25,822	
	Average Household Size	5	
7	Total Literates	88,207	100.0
	Male	50,000	56.7
	Female	38,207	43.3
	Overall Literacy Rate	77.8	
	Male	84.8	
	Female	70.2	
	Gender Gap in Literacy Rate	14.6	
8	Total Workers	40,054	100.0
	Male	33,075	82.6
	Female	6,979	17.4
	Gender Gap in Work Participation Rate	65.2	
9	Main Workers	31,669	100.0
	Male	26,923	85.0
	Female	4,746	15.0
	Gender Gap in Work Participation Rate	70.0	
10	Marginal Workers	8,385	100.0
	Male	6,152	73.4
	Female	2,233	26.6
	Gender Gap in Work Participation Rate	46.8	

11	Household Industrial Workers	1,472	100.0
	Male	1,105	75.1
	Female	367	24.9
12	Total Agricultural Workers	14,677	100.0
	Male	11,391	77.6
	Female	3,286	22.4
12 (a)	Cultivators	6,592	100.0
	Male	4,812	73.0
	Female	1,780	27.0
12 (b)	Agricultural Labour	8,085	100.0
	Male	6,579	81.4
	Female	1,506	18.6
13	'Other Workers'	23,905	100.0
	Male	20,579	86.1
	Female	3,326	13.9
Source: Census of India & Desk Research			

1.3.6 Biological Environment

The study area mainly comprises of **Moist Bhabar Doon Sal Forests**. The hilly region is covered with Sal. There are also small tracts of cultivated lands and fruit orchards in between the forests of this region. No Eco-Sensitive Zone exists within the 10 km radius of the project site. However, there are reserve forests in the surrounding of the river.

Shorea robusta (Sal) is highly dominated in these forests with random presence of other tree species like *Bombax cieba*, *Lannea coromandelica*, *Dalbergia sissoo*, *Aegle marmelos*, *Albizzia lebbeck*, *Cassia fistula*, *Melia azaderachta*, *Morus alba*, *Tectona grandis* and *Trewia nudiflora* etc.

The most common shrubs are *Adhatoda vasica*, *Boehmeria macrophylla*, *Callicarpa macrophylla*, *Carissa carandas*, *Cassia occidentalis*, *Cassia tora*, *Carissa opaca* whereas common herbs are *Achyranthes aspera*, *Ageratum conyzoides*, *Artemisia nilagirica*, *Chenopodium album*, *Euphorbia hirta*, *Justicia procumbens*, *Oxalis corniculata* etc.

Various faunal is reported from the study area which belongs to 76 birds, 21 mammals, 8 reptiles 5 amphibians, 12 butterflies and 4 fish species. The animals reported from these forest areas include, Indian wild boar, Sloth Bear, Indian pangolin and Leopard which are endangered and accorded protection by the Wildlife Protection Act, 1972.

Main fishes in the river swarna include *Labeo rohita* (Rohu), *Catla catla* (Catla), *Clarias batrachus* (Mangur) etc.

1.4 Anticipated environment impact and mitigation measures

1.4.1 AIR ENVIRONMENT

1.4.1.1 *Anticipated impacts*

a) Due to Haul road/ Access Road

Plying of trucks from public road to river sand collection points needs access roads. Majority of such access roads are the same existing roads/tracks being used by pedestrians/cart owners. Movement of heavy vehicles sometimes causes problems to cattle post, agriculture land, and human habitations due to dust, noise and movement of public. These environmental problems are felt more as the area is rural in nature.

b) Due to Mining process

Air pollution is likely to be caused at various stages of sand mining operations such as excavation, loading of material. Most of the dust will be generated from loading. This dust becomes air borne and gets carried away to surrounding areas. The impact on air is mainly localized in nature as the dust particles are not carried to longer distances and the effect is felt within the core zone of the project involving active Sand mining operations.

1.4.2 Mitigation Measures

a) Mitigation of Impacts on Access Roads

Movement of the vehicles on the road will be increased; however, unmetalled road in the mining area will be sprinkled with water at regular intervals. In addition to prevent spillage by trucks over loading should be controlled along with speed limit (10 tonnes/ truck). Water will be sprinkled on regular basis to control the dust generation.

b) For Fugitive Dust Emission:

- To avoid fugitive dust emissions at the time of excavation, regular sprinkling of water will be done on regular basis.
- Sand is transported to the sites by road through trucks covered by tarpaulin sheets.
- To minimize the vehicular pollution from the sand transporting vehicles, the following conditions are insisted to permit the vehicles of the transporters:
 - The vehicles should have pollution control certificate (PUC) issued by appropriate authorities.
 - Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.
- Green belt development along the haul roads, which will act as pollution sink.

1.4.3 WATER ENVIRONMENT

1.4.3.1 *Anticipated impacts*

As the project activity is carried out in the dry part of river bed, none of the project activities will affect the water environment or riverian habitats. Project activities will not have any adverse effect

on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

1.4.3.2 *Mitigation measures*

- Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed.
- Mining below subterranean water level will be avoided as safe guard against environmental contamination and over exploitation of resources.
- River stream will not be diverted to form in active channels.
- Utmost care will be taken to minimize or control leakage vehicles to be used for sand transportation.
- The washing of trucks in the river will be avoided.
- The contractor will follow all guidelines and rules for proper and scientific method of mining during the period of extracting the sand.

1.4.4 **LAND ENVIRONMENT**

The type of mining and the characteristics of the particular mineral deposit both affect the degree to which mining disturbs the landscape. Sand Mining and allied activities will be done in the fluvial plain formed by river meandering. Mining of sand may cause a few environmental degradations.

1.4.4.1 *Anticipated impacts*

- Damage of river bank due to access ramps to river bed, may cause soil erosion.
- Destruction of river bank hinterland and ecological due to extraction of sand by probability of damage to the flood control bunds (built along the river side) due to heavy movements of vehicles over the bund to approach the mine are and further during transportation for sand from the mine area.
- Disposal of packing material, carried by the workers, would not be allowed. This packing material would include used sachet/gutka/pan masala pouches.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations, borehole users due to dust, noise and it also causes traffic hazards.
- Surface degradation due to road network.

1.4.4.2 *Mitigation measures*

- Safety distance of 3m or 1/10th of the width of the river which ever will be more will be left from both the bank of the river. (As guided by, MOEFCC guidelines on “Sustainable sand mining guidelines” & Geological Survey of India).
- No foreign material like polythene bag, jute bag and useless articles should be allowed to remain/spill in river bed and catchment area, or no pits/pockets will be allowed to be filled with such material.
- Minimum number of access roads to river bed for which cutting of river banks will be avoided and ramps are to be maintained.
- Care will be taken to ensure that ponding is not formed in the river bed.
- Mining will not exceeds beyond the allowed extraction capacity.

- Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

1.4.5 NOISE ENVIRONMENT

1.4.5.1 *Anticipated impacts*

Noise environment in this project will be affected only by the equipment at the site and vehicular transportation. Since, slight increase in noise levels can be expected.

1.4.5.2 *Mitigation measures*

- Minimum use of Horns at the village area.
- Timely maintenance of vehicles and their silencers to minimize vibration and Sound.
- Phasing out of old and worn out trucks.
- Provision of green belts along the road networks.
- Care will be taken to produce minimum sound during sand loading.
- Use of Backhoe and ear plugs may be provided to protect the labors working at the site.

1.4.5.3 *BIOLOGICAL ENVIRONMENT*

1.4.5.4 *Anticipated impacts*

The proposed project is a small level RBM activity which will be carried out only in the river bed. This activity will be confined in the dry river bed without disturbing the live water stream of the river. Therefore, the proposed mining activity will have insignificant effect on the existing flora and fauna.

There are mainly agricultural fields at the both sides of the river in the project area. There are small and large forest patches which are not close to the proposed mining site.

Most importantly, no natural or critical habitats or sensitive ecological areas will be impacted by the Project.

Therefore, the project is not directly affecting to any natural habitat or aquatic habitat. A careful mining activity avoiding any disturbance to the natural habitat may be carried out at the site.

1.4.5.5 *Mitigation measures*

However, there is no tree felling or any other disturbance to the biological environment of the study area due the project activity still plantation work is recommended to minimize soil erosion and dust pollution in the core and the buffer zone of the projects activity.

The basic objectives of plantations are as follows:

- Improvement in Soil quality
- Control on soil erosion
- Improvement in river bank stability
- Conservation of biological diversity
- Provide shelter, habitat and forage to the wild life
- Improve scenic beauty of the Area

Native floral species are recommended for the Plantation work around the project site and along the roads as green belt.

1.4.6 Socio-Economic Environment

1.4.6.1 Anticipated Impact

From the primary Socio-economic survey & through secondary data available from established literature and census data 2001 & 2011, it is found that there would be positive impact on Socio-economic condition of the nearby area. There is no habitation in the mining lease area. Therefore, neither villages nor any part of villages will be disturbed during the entire life of the mine. Mining in this lease will give Direct 300 job opportunities to the local people. With the operation of mining lease, various indirect employment opportunities will also be generated. Several persons of the neighboring villages have been benefited with contract works, employment through contractors, running jeeps, trucks, tractors and buses on hire, running canteens, different kinds of shops and transport related business avenues.

1.4.7 Solid Waste

1.4.7.1 Anticipated Impact

- This RBM project does involve negligible quantity of waste generation in form of sandy soil which gets deposited as crust material on the bed profile and is extracted during mining process.
- No municipal waste other than domestic sewage shall be generated,
- However, there will be about 300 workers on site. While cooking at site will not be allowed, some food wastes can be expected to be generated which if not disposed properly will render the site dirty.

1.4.7.2 Mitigation Measures

- Negligible amount of Sandy soil generated during mining processes will be back-filled into mine pits.
- Domestic sewage shall be disposed into septic tank followed by soak pits.
- However, solid wastes generated from the personal habits of people such as used bidis, waste paper, food remains etc. cannot be ruled out. Dustbins shall be provided at the rest places. These dustbins shall be emptied daily at the nearest dhalaos from the site.

1.4.8 Traffic Density

1.4.8.1 Anticipated Impact

- Increase in traffic density will lead to air pollution.
- Movement of vehicles will cause noise pollution.
- Increased traffic may cause accidental incidences.

1.4.8.2 Mitigation Measures

- Vehicles with PUC Certificate will be hired. Regular maintenance of vehicles will be done to ensure smooth running of vehicle.

- Un- necessary blowing of horn will be avoided.
- To avoid accidents the speed of vehicles will be low near habitation areas.

1.5 Analysis of alternatives

No alternative site had been considered as it is specific lease allotted for mining purpose.

1.6 Environmental Monitoring Programme

M/s UKFDC has formulated well laid-out Environmental Policy, wherein preservation of environment has been accorded a most strategic and prime position. The various protocol procedures in connection with communication channels upwards and downwards, for dealing with violations or departures in environmental standards involvement of Board of Directors as well as shareholders about such incidences, etc, have been described in detail in chapter VI.

Regular monitoring of implementation of various control measures in respect of air quality, meteorology, water quality, noise levels, biological status, land environment, socioeconomic factors, occupational health, etc. is most important to ensure that the project operations do not deteriorate the environmental status of the area at any point of time and environmental quality in respect of above parameters are kept well within the statutorily sustainable levels, as prescribed by CPCB, MOEF&CC and State Pollution Control Board.

A full-fledged environment cell will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programmes, social development schemes, etc. in the working mines in the area.

The organizational pattern for this cell is shown in Figure -9.1 in Chapter-IX. The total recurring costs per annum for environmental control, excluding man power cost, work out to Rs.4.1 lakhs. In case of any further necessity for funds for implementation of control measures

1.7 Additional studies

Risk Assessment and Disaster Management Plan in connection with mining and allied operations of the project will be spelt out in detail to cover possible dangers / risks / explosions / accidents, etc. likely to arise from the project operations, including onsite and off-site emergency plans to meet the disastrous situations if any.

1.8 Project benefits

Project has positive impact to the local people as direct and indirect employment opportunity have been generated. The proposed mining will help to avoid flood in the nearby area.

1.9 Environmental management plan

1.9.1 Air Quality Management

- Proper mitigation measures like water sprinkling on haul roads will be adopted to control dust emissions.
- Plantation will be carried out along approach roads premises.
- It shall be ensured that all transportation vehicles carry a valid PUC certificate.

1.9.2 Water Management

No waste water will be generated from the mining activity of minor minerals .

1.9.3 Noise Management

- Periodical monitoring of noise will be done.
- No other equipments except the Transportation vehicles for loading will be allowed at site.
- Noise generated by these equipments shall be intermittent and does not cause much adverse impact.
- Plantation will be carried out along approach roads. The plantation minimizes propagation of noise and also arrest dust.

1.9.4 Solid Waste Management

No solid waste will be generated from the said mining operations.

1.9.5 Occupational Health & Safety

- Dust masks will be provided as additional personal protection equipment to the workers working in the dust prone area.
- Workers are informed, kept aware and trained about occupational health hazards, due to such activities and preventive measures.
- Workers health related problem if any, will be properly addressed.

1.9.6 Plantation Development and Program

The local species will be planted with consultation of local forest department /horticulturist and follow the CPCB guidelines.

1.10 Conclusion

The gap between the annual demand and the quantity of sand, Bajri, boulder (minor minerals) received from captive mines is substantial and thus the company intends to bridge this gap by extraction of sand, Bajri, boulder for use in construction activities like building, infrastructure facilities, construction and expansion of existing SH/NH of the area.

The proposed project will provide employment to local people in different activities such as mining, transportation and plantation activities. The project activity will not have any major impact on the environment. At post mining stage of proposed project, the existing land use will remain same i.e. river bed, and it will get replenished yearly during monsoon season. Also the company's Corporate Social Responsibility initiatives will have a positive impact on socio economic environment of the region.

Therefore, implementation of the proposed project is feasible.