

**EXECUTIVE
SUMMARY
BULDHANA
DISTRICT -25
SANDGHATS**

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EXECUTIVE SUMMARY (ENGLISH)

**For
SAND MINING (MINOR MINERAL)
FOR FOLLOWING VILLAGES**

SR.NO	NAME OF SANDGHAT	VILLAGE NAME	KHASRA NO	TOTAL LEASE AREA	Total Production/ Brass (TPA)	TOTAL PROJECT COST
1.	MHSALA Bk. RIVER SAND MINE AT DHAMANA RIVER	MHSALA Bk.	Masla bk - 26,27,29, masla khrud- 193,194,192,189	1.00	1425	855000

OF

TALUKA: -BULDHANA, DISTRICT - BULDHANA (Maharashtra)

Lease Validity: -2021-2022 (1 YEAR),

FOR

ENVIRONMENTAL CLEARANCE (PUBLIC HEARING)

("B" under category 1(a) of EIA Notification dated 2006,

**S.O. 141(E) dated 15. 01. 2016, MoEF& CC, S.O. 3611(E), Dated 25.07.2018,
Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining
Policy 2021**



**Applicant District Mining Officer, Buldhana
Government of India**

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**Accredited by NABET: No.: - NABET/EIA/1619/RA0060/ April 19, 2020)
February – 2022**

Introduction:

Executive summary is the brief of report prepared for Environmental Management Plan of Sand Spot Mines of Minor Minerals of Buldhana District, Tehsil: Buldhana by M/s. District Mining Office, Buldhana, Maharashtra (Govt. of Maharashtra). The mining is confined to extraction of sand in village Mhsala Bk. (1.00 Ha). Sand exposed in the lease area needed to mine by opencast manual mining method without drilling and blasting.

Project Identification

The sand (minor minerals) occurred in Buldhana district required to carry out mining practise as per mining Plan of PMCP under Rule 16 (1) of MCR 2016 and PMCP under Rule 23B of MCDR 1988 is approved by Deputy Director, Directorate of Geology and Mining, Regional Office, Aurangabad vide letter no. STC-10/2020(M.P. Sand) 52 dated 04/02/2020. Proposed lease area is Government land.

Identification of Project Proponent

Table 1: Name and address of the Applicant

Applicant
District Mining Officer, Buldhana (Govt. of Maharashtra) State Bank Chowk Road, Buldhana, Maharashtra 443001 Mob No: - 07262-242411 Email Id:-dmobul@gmail.com

1.1.3 Location of Project

Table 2: Details of Project Location

Particulars	Detail of MHSALA Bk.,
Name of the applied mine area	MHSALA Bk.RIVER SAND MINE AT DHAMNA RIVER
Near village	MHSALA Bk.
Tehsil	Buldhana
District	Buldhana
State	Maharashtra
Toposheet no.	46P/15
Latitude (N)	20°20'6.93"N
Longitude (E)	75°59'23.87"E

Background of the Project

The sand and gravel are the most important construction materials. The sand is produced by weathering of rock carried away by geological agents and deposited in river which will replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country development. As the rise in demand of these construction materials government need to ensure sustainable environment and supply this essential to sustain its developmental activities. This project provides opportunities for sustainable utilisation of resources to Government of Maharashtra. In the recent climatic changes, the sand mining is beneficial as it help to lower the inundation levels at time of floods.

Local geology: Buldhana districts large part occupied of rocks of Deccan trap formation, represented by of most horizontal lava flows of basaltic composition, emplaced by fissures aged to Mesozoic era, on to the lower tertiary era.

Table 3: Available Brass and Life of Mine

Name of Village	Mhasla Bk.
Quantity of sand for Excavation (Brass)	1425
Life of Mine	1 YEAR

Proposed Working: - Opencast Manual Mining Method will be adopted for extraction of Sand deposits in Godavari River Bed

The Modified River Bed Sand Mine Working Guidance No.11(1X) and 12 of the Notification of Revenue and Forest Department, Mantralaya Mumbai, The Government of Maharashtra vides Government Decision No. Gaukhani-10/0615/Pra.Kra. 289/Kha dated 03.01.2018; mining will be done manually only with the use of labours, man heads, spades (Pawadas), ghamelas/pans.

Each cycle of operation shall consist of the following operation.

i) Over Burden Removal: No overburden is anticipated. So there is no need of removal of Overburden.

ii) Digging of Sand: Digging of Sand will be done by manually by Labours with the help of Spades (Pawadas).

iii) Loading of Tractor Trolley: Loading of Tractor Trolley will be done by manually with the help of Man heads, Labours with the help of Spades (Pawadas) and Pans (Ghamelas) combination.

iv) Transportation of Sand by Tractor Trolley from River Bed Mine/Sand Ghat to Stack yard: Mine Owner will prepare the Stack yard outside the River bed or Sand Ghat on nearer road. By the use of Tractor Trolley the material will be transported from Sand Ghat to Stockyard.

v) Transportation of Sand from Stack yard to Customers: Transportation of Sand will be done by the use of tractors trolleys from Stack yard to various Customers with permissible quantity. Transportation will be done as per the rules and regulations.

vi) Reclamation: Applicant will do scientific mining so that in Monsoon the Mine Lease area will be automatically backfilled. Only plantation will be done by the applicant on the both bank side of the River and other free places.

Extent of Mechanization: Mining Operations will be done by manual means only. No Mechanization. Services

Description of the Environment (Baseline Environment Status)

The environmental monitoring carried out during winter season of year December 2019. The various environmental components which are thoroughly studied during the study period include:

Meteorological condition

The observed maximum temperature recorded 32 °C and Minimum temperature 21°C and wind blows from east and north.

Ambient Air Quality

The ambient air quality founds under permissible levels of pollution standards.

Ambient Noise Level

In the monitoring stations of four Locations observed maximum level was: 59.1 during day-time and minimum was 34.8 during night-time and found ambient noise level is within prescribed limit.

Water Quality

The water analysis conducted at four sample locations for groundwater and surface water. The major findings are follows.

Ground Water Quality

- It is observed that pH of the ground water samples is range of 6.10 to 7.51, which is between the acceptable pH limit for drinking water.
- Concentration of Total dissolved solids (TDS) and Total hardness observed in different groundwater samples are in range of permissible category stipulated by Bureau of Indian Standards.
- Fluoride Concentration is in between 0.1 to 0.4 mg/l. The desirable limit of 1 mg/l and permissible limit of 1.5 mg/l.
- **Surface water quality**
- Biochemical oxygen Demand - All surface water sample have BOD indicate very low organic pollution load. All BOD values are within prescribed limit (<30.0 mg/lt as in IS 10500:2012).
- Chemical oxygen demand (COD) - All surface water samples have COD values which indicates low level of organic pollution load in term of COD.
- From the analysis data it is observed all parameters are within permissible limit of drinking water standard.

Soil Characteristics

The pH values of the collected samples were in the range of 6.14 to 8.31, organic matter in the range of 0.786(%) to 1.96 (%), water holding capacity in the range of 5.56 to 7.70%, potassium in the range of 0.07 to 173, total nitrogen in the range of 0.012 to 0.013 %, bulk density in the range of 1.22 to 1.45gm/cc. These all parameter indicate that soil is not so fertile in this area.

TABLE 4: LAND USE PATTERN OF THE CORE AREA

S. No.	Particulars	MHSALA Bk.	
		As on Today in Ha	After 1 Years in Ha
1.	Area of top soil spread for a forestation	-	-
2.	Storage for top soil	-	-
3.	Green Belt	-	-
4.	Over burden Dump	-	-
5.	Mineral Storage	-	-
6.	Infrastructure (Workshop, Admin. Building etc.)	-	-
7.	Mine road in Mine lease area	-	-
8.	Utilized area for Sand Mining	-	-
9.	Virgin lease area for Sand Mine & Other Uses	0.000	1.00
10.	Road	1.00	0.000
11.	Railway	-	-
12.	Tailing Pond	-	-
13.	Effluent Treatment Plant	-	-
14.	Mineral separation plant	-	-
15.	Township Area	-	-
16.	Others to specify	-	-
17.	Ownership	Government River	Government River
Total		1.00	1.00

Biological Environment

The flora and fauna analysis found as follows

Flora - The study area is mainly dominated by Southern Dry Mixed Deciduous Forests with major species are Aam, Babul, Bel, Bor, Chandan, Jambhul, Karnj, Neem etc.

Fauna - The faunal species commonly encountered during study within the study area are Hare, Rat, Indian fox, etc. No endemic endangered or threatened species of flora and fauna observed during study period.

Demography and Socio- Economics

Buldhana: Tehsil as per census of India 2011 total 84 village are uninhabited with total population of 1,889 .

Anticipated Environmental Impact and Mitigation Measures

Impact on Air Quality:- The mining operations to be carried out by manual method and no machinery, drilling and Blasting not allowed. The impact on air quality is not envisaged. Transportation needs to allow only by tractor-trolley of the sand from the ghat to nearby depot or desired destination. The transport routes to be capable for handling this additional traffic.

Mitigation Measures: Following care to be taken for air pollution control.

- Water sprinkling to be done on the roads regularly. This reduces dust emission further by 75%.
- Care to be taken to prevent spillage by covering the carrying vehicles with tarpaulin and sprinkling of water, if dry.
- Fortnightly scraping of road in order to keep the roads almost levelled which ensures smooth flow of vehicles and also prevents spillage.
- Overloading will be strictly prohibited.
- Proper tuning of vehicles to keep the gas emissions under check.

Plantation of trees along the roads will help to reduce the impact of dust in the nearby villages.

Impact on Noise Quality: - No significant noise will be generated due to sand mining as entire operation to be carried out manually. Noise generated only due to tractor trolley being used in sand transportation.

Mitigation measures: The off-site receptors are not significantly affected due to noise generated by sand ghat which is insignificant but some disturbances can be occur due to vehicle movement which is not avoidable. The tractor trolley to be maintains in good running condition which will help to reduce noise to a minimum possible level. An optimum Speed limits to be imposed on tractor trolleys which used for sand transport.

Impact on Water Environment: - Mining of sand from within or near a streambed which has a direct impact on the stream's physical habitat characteristics. As the project activity to be carried out in the dry part of the river bed which will not affect the water environment or riparian habitats. The project to be executed without divert or truncate any stream also envisaged the pumping of water either from the river or tapping the ground water not allowed. The mining activity happening in summer months which will not affect the base

flow of the river and this minimise the adverse impact on surface hydrology and ground water regime. The proponent to be adhere all guidelines and rules for proper and scientific method of mining during the period of extraction of sand.

Mitigation measures: During the lease period, the deposit to be worked from the top surface to approved depth of mining within the demarcated lease area only.

Impact on land Environment- The mining and allied activities involved in river bed mining are creation of temporary haul roads / transportation track and formation of mined pits inside river, etc. This sand mining project does not involve any waste generation. Thus no waste dump sites are needed for the project.

Mitigation Measures:

- The mining to be carried out below the water table.
- The contractor with the satisfaction of competent authority to provide drinking water, rest shelter, first aid box and welfare facilities as per prevailing laws.
- The river bed areas to be dug during dry season. At rainy season, sand get replenished during monsoon.
- Sand/Gravel deposit in rainy season in which the material so deposited will available for fresh quarrying.
- The contractors to abide by the Maharashtra Minor Mineral Extraction Development and Regulation) Rules, 2013.

Impact on Biological Environment

The table summarised about the studies of biological environment.

Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement /living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none"> • If birds are noticed crossing the core zone, they will not be disturbed at all; • Labourers will not be allowed to discard food, polythene waste etc., which can attract animals/birds near the core site; • Only low polluting vehicles having PUC will be allowed for carrying mining materials. • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per Noise Pollution (Regulation and Control) Rules 2000, CPCB norms
Disturbance of riparian ecosystem/ wetlands	The riparian ecosystem or the wetlands will not be disturbed by the workers.
Monitoring of upstream and	Water quality will be monitored from upstream and

Impact Predicted	Suggestive measure
downstream water quality	downstream area once every month to assess the impact on water quality and mining activity will be controlled to maintain the clean water conditions.

Ecological Impacts: Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Sand mining generates extra vehicle traffic, which negatively impairs the environment. Where access roads cross riparian areas, the local environment may be impacted.

Mitigation measures: As the proposed mining to be carried out in a scientific manner not much significant impact is anticipated, however, the following mitigation measure will be taken to further minimize it:

1. The activity to be carried out manually to minimize associate loss, as stated earlier.
2. No mining to be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season.
3. As the mining site has no vegetation, no clearance of vegetation is required.
4. No mining to be carried out in the vicinity of important structure like bridges, dam and other structures if any.
5. Mining to be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
6. No mining to be carried out during the rainy season to minimize impact on aquatic life.
7. The mining activity needs to deploy a tractor for transportation of sand from the mine to desired destination that may cause some loss to riparian habitat. Safe site / site having least impact will be selected for transportation, all the vehicles employed for transportation purpose will be PUC certified. On closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.
8. No lighting allowed in the lease area.
9. No piling of sand allowed in the area.
10. No discard of food, polythene waste etc. allowed in the lease area which would distract/attract the wildlife.
11. No night time mining allowed which may catch the attention of wild life.
12. Access roads will not encroach into the riparian zones and no riparian vegetation cleared off for the mining transportation of sand.

Analysis of Alternatives

Site Alternatives- The mine is located along the where the sand exists in enough quantity to be economically extracted. Mining locations are preferred near the markets or along the transportation route.

Technology alternatives: -No alternative technology only opencast Manual Mining Method will be adopted for extraction of Sand deposits.

Environment Monitoring Program

During the execution of the project activity, the sampling and analysis of various environmental attributes to be carried out as per guidelines of central pollution control board and State pollution control board. An Environment Management Cell to be set-up to implement this mining program.

Additional Studies

Risk Studies- Hazard identification and risk analysis involves identification of undesirable events that leads to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects

Disaster Studies: - Proper disaster is planning to be done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. Fire fighting equipment and other safety appliances to be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood.

ENVIRONMENT MANAGEMENT PLAN (EMP)

This opencast mining operation may comprises for various activities related to digging and material handling which may be potential sources of environment pollution. The Sand Mine to be develops systematically by forming benches with over all pit slopes of 45° or angle of response which stabilizes the benches. Also stringent efforts to be ensure to suppress the dust at source by adequate watering. A mobile water of 2000 liters capacity to be engaged available throughout the working shift. The EMP implementation and sampling parameters summarised in following table.

Environmental Issue	Management Measures	Implementation
Air Environment	<ul style="list-style-type: none">• 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	Project authorities through regular monitoring.

	<p>through tractor trolleys. The sand carrying vehicles shall be covered by tarpaulin sheets.</p> <ul style="list-style-type: none"> • The Green Belt development will be prepared along the haul roads, which will act as a pollution sink. • To minimize the vehicular pollution from the sand transporting vehicles, the following conditions will insist to permit the vehicles of the transporters 	
Noise and Vibration	<ul style="list-style-type: none"> • Phasing out of old and worn out tractor trolleys. • 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. 	Project authorities through regular monitoring.
Water environment	<ul style="list-style-type: none"> • Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed. • 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 tractor trolleys 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. 	Project authorities through regular monitoring.
Biological Environment	<ul style="list-style-type: none"> • Mining activities will be restricted to day-time so that fauna will not disturb at night. • Material will be covered with tarpaulin during transportation. • Water sprinkling will be done on haul roads 	Project authorities through regular monitoring.

	to control fugitive emissions.	
Occupational health and safety and public Health and safety.	<ul style="list-style-type: none"> Regular water sprinkling on haul roads. Dust mask will be provided to the workers. Safety of the employee during mining will be taken care as per Mine regulations. Medical records will be keep maintained. 	Project authorities through regular monitoring.
Socio economic Environment	<ul style="list-style-type: none"> Employment will be given to local people. Regular medical camps will be organized. Funds will be provided for development activities in nearby villages. 	Regular monitoring by Project authorities.

TABLE 6: COST ESTIMATES OF EMP IMPLEMENTATION
(Investment and recurring cost in lacs/year)

Sr. No.	Component	Description	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)
1	Environmental Monitoring programme	Monitoring for Air, water, noise & groundwater	1.00	2.00
2	Air Pollution Control	Water sprinkling during mining activities	1.20	2.20
3	Approach Road Maintenance		0	1.00
4	Plantation (330plants planted)	330 plants on barrier zone @ Rs.450/plant	2.18	4.5
		200 plants on approach road & village @ Rs.350/plant		
5	Gabian Structure for arresting gravels	Gabian wall with the help of old cement bags rivers pebbles etc to arrest erosion of boundary wall intermixing of gavel etc	1.20	0.20
6	Monitoring of Sand	CCTV Cameras (15000 x2)	0.30	0.60
7	Water Pollution Control	Construction of bund along lease boundary & Mobile Toilet	1.00	Nil
8	Noise pollution	Plantation including tree guard	0.90	1.50
9	Occupational Health & safety	Periodic Health Checkups of workers	-	1.00
	Total		7.78	13

TABLE 7: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequencies	Duration of Station	Important Monitoring Parameters
Surface water / Tube well	Twice in a year	Grab	pH, SS, TDS, Iron, Hardness, Alkalinity Chlorides, Nitrates Sulphate & Fluorides
Ambient air monitoring	Twice in a year	24 hr.	PM10, PM2.5, SO _x and NO _x
Noise Pollution	Twice in a year	-	Level in dB(A) and dB(C)
Working environment	Once in a year	-	PH, Conductivity, Sulphate, Nitrate, Phosphates, Alkalinity & texture

EXECUTIVE SUMMARY (ENGLISH)
For
SAND MINING (MINOR MINERAL)
FOR FOLLOWING VILLAGES

SR.NO	NAME OF SANDGHAT	VILLAGE NAME	KHASRA NO	TOTAL LEASE AREA	Total Production/ Brass (TPA)	TOTAL PROJECT COST
1.	DIGRAS Bk. RIVER SAND MINE AT KHADAKPURNA RIVER	DEGRAS Bk.	GSDA Recommended- 450	1.57	3339	7676361
2.	NARAYANKHED & NIMGAON RIVER SAND MINE AT KHADAKPURNA RIVER	NARAYANKHED & NIMGAON	GSDA Positive Narayankhed -166,167,168,169, 170,171,172,184,185,186,187,188 Nimgaon guru - 39,40,41,42,43,44,45,50,51	3.55	12544	28838656

OF

TALUKA: -BULDHANA, DISTRICT - BULDHANA (Maharashtra)
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1.1.3 Location of Project**Table 2: Details of Project Location**

Particulars	Detail of DIGRAS Bk.,	Detail of NARAYANKHED & NIMGAON
Name of the applied mine area	DIGRAS Bk. RIVER SAND MINE AT KHADAKPURNA RIVER	NARAYANKHED & NIMGAON RIVER SAND MINE AT KHADAKPURNA RIVER
Near village	DIGRAS Bk.	NARAYANKHED & NIMGAON
Tehsil	Buldhana	Buldhana
District	Buldhana	Buldhana
State	Maharashtra	Maharashtra
Toposheet no.	55D/04	55D/04
Latitude (N)	20° 3'20.95"N	20° 3'29.43"N
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2.	Storage for top soil	-	-	-	-
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4.	Over burden Dump	-	-	-	-
5.	Mineral Storage	-	-	-	-
6.	Infrastructure (Workshop, Admin. Building etc.)	-	-	-	-
7.	Mine road in Mine lease area	-	-	-	-
8.	Utilized area for Sand Mining	-	-	-	-
9.	Virgin lease area for Sand Mine & Other Uses	0.000	1.57	0.000	3.55
10.	Road	1.57	0.000	3.55	0.000

11.	Railway	-	-	-	-
12.	Tailing Pond	-	-	-	-
13.	Effluent Treatment Plant	-	-	-	-
14.	Mineral separation plant	-	-	-	-
15.	Township Area	-	-	-	-
16.	Others to specify	-	-	-	-
17.	Ownership	Government River	Government River	Government River	Government River
Total		1.57	1.57	3.55	3.55

Biological Environment

The flora and fauna analysis found as follows

Flora - The study area is mainly dominated by Southern Dry Mixed Deciduous Forests with major species are Aam, Babul, Bel, Bor, Chandan, Jambhul, Karnj, Neem etc.

Fauna - The faunal species commonly encountered during study within the study area are Hare, Rat, Indian fox, etc.No endemic endangered or threatened species of flora and fauna observed during study period.

Demography and Socio- Economics

Deulgaon Raja Tehsil consists Municipal council 64 villages with total population 30,827.

Anticipated Environmental Impact and Mitigation Measures

Impact on Air Quality:- The mining operations to be carried out by manual method and no machinery, drilling and Blasting not allowed. The impact on air quality is not envisaged. Transportation needs to allow only by tractor-trolley of the sand from the ghat to nearby depot or desired destination. The transport routes to be capable for handling this additional traffic.

Mitigation Measures: Following care to be taken for air pollution control.

- Water sprinkling to be done on the roads regularly. This reduces dust emission further by 75%.
- Care to be taken to prevent spillage by covering the carrying vehicles with tarpaulin and sprinkling of water, if dry.
- Fortnightly scraping of road in order to keep the roads almost levelled which ensures smooth flow of vehicles and also prevents spillage.
- Overloading will be strictly prohibited.
- Proper tuning of vehicles to keep the gas emissions under check.

Plantation of trees along the roads will help to reduce the impact of dust in the nearby villages.

Impact on Noise Quality: - No significant noise will be generated due to sand mining as entire operation to be carried out manually. Noise generated only due to tractor trolley being used in sand transportation.

Mitigation measures: The off-site receptors are not significantly affected due to noise generated by sand ghat which is insignificant but some disturbances can be occur due to vehicle movement which is not avoidable. The tractor trolley to be maintains in good running condition which will help to reduce noise to a minimum possible level. An optimum Speed limits to be imposed on tractor trolleys which used for sand transport.

Impact on Water Environment: - Mining of sand from within or near a streambed which has a direct impact on the stream's physical habitat characteristics. As the project activity to be carried out in the dry part of the river bed which will not affect the water environment or riparian habitats. The project to be executed without divert or truncate any stream also envisaged the pumping of water either from the river or tapping the ground water not allowed. The mining activity happening in summer months which will not affect the base flow of the river and this minimise the adverse impact on surface hydrology and ground water regime. The proponent to be adhere all guidelines and rules for proper and scientific method of mining during the period of extraction of sand.

Mitigation measures: During the lease period, the deposit to be worked from the top surface to approved depth of mining within the demarcated lease area only.

Impact on land Environment- The mining and allied activities involved in river bed mining are creation of temporary haul roads / transportation track and formation of mined pits inside river, etc. This sand mining project does not involve any waste generation. Thus no waste dump sites are needed for the project.

Mitigation Measures:

- The mining to be carried out below the water table.
- The contractor with the satisfaction of competent authority to provide drinking water, rest shelter, first aid box and welfare facilities as per prevailing laws.
- The river bed areas to be dug during dry season. At rainy season, sand get replenished during monsoon.
- Sand/Gravel deposit in rainy season in which the material so deposited will available for fresh quarrying.
- The contractors to abide by the Maharashtra Minor Mineral Extraction Development and Regulation) Rules, 2013.

Impact on Biological Environment

The table summarised about the studies of biological environment.

Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement /living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none"> • If birds are noticed crossing the core zone, they will not be disturbed at all; • Labourers will not be allowed to discard food, polythene waste etc., which can attract animals/birds near the core site; • Only low polluting vehicles having PUC will be allowed for carrying mining materials. • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per Noise Pollution (Regulation and Control) Rules 2000, CPCB norms
Disturbance of riparian ecosystem/ wetlands	The riparian ecosystem or the wetlands will not be disturbed by the workers.
Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area once every month to assess the impact on water quality and mining activity will be controlled to maintain the clean water conditions.

Ecological Impacts: Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Sand mining generates extra vehicle traffic, which negatively impairs the environment. Where access roads cross riparian areas, the local environment may be impacted.

Mitigation measures: As the proposed mining to be carried out in a scientific manner not much significant impact is anticipated, however, the following mitigation measure will be taken to further minimize it:

1. The activity to be carried out manually to minimize associate loss, as stated earlier.
2. No mining to be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season.
3. As the mining site has no vegetation, no clearance of vegetation is required.
4. No mining to be carried out in the vicinity of important structure like bridges, dam and other structures if any.
5. Mining to be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
6. No mining to be carried out during the rainy season to minimize impact on aquatic life.

7. The mining activity needs to deploy a tractor for transportation of sand from the mine to desired destination that may cause some loss to riparian habitat. Safe site / site having least impact will be selected for transportation, all the vehicles employed for transportation purpose will be PUC certified. On closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.
8. No lighting allowed in the lease area.
9. No piling of sand allowed in the area.
10. No discard of food, polythene waste etc. allowed in the lease area which would distract/attract the wildlife.
11. No night time mining allowed which may catch the attention of wild life.
12. Access roads will not encroach into the riparian zones and no riparian vegetation cleared off for the mining transportation of sand.

Analysis of Alternatives

Site Alternatives- The mine is located along the where the sand exists in enough quantity to be economically extracted. Mining locations are preferred near the markets or along the transportation route.

Technology alternatives: - No alternative technology only opencast Manual Mining Method will be adopted for extraction of Sand deposits.

Environment Monitoring Program

During the execution of the project activity, the sampling and analysis of various environmental attributes to be carried out as per guidelines of central pollution control board and State pollution control board. An Environment Management Cell to be set-up to implement this mining program.

Additional Studies

Risk Studies- Hazard identification and risk analysis involves identification of undesirable events that leads to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects

Disaster Studies: - Proper disaster is planning to be done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. Fire fighting equipment and other safety appliances to be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood.

ENVIRONMENT MANAGEMENT PLAN (EMP)

This opencast mining operation may comprises for various activities related to digging and material handling which may be potential sources of environment pollution. The Sand Mine to be develops systematically by forming benches with over all pit slopes of 45° or angle of response which stabilizes the benches. Also stringent efforts to be ensure to suppress the dust at source by adequate watering. A mobile water of 2000 liters capacity to be engaged available throughout the working shift. The EMP implementation and sampling parameters summarised in following table.

Environmental Issue	Management Measures	Implementation
Air Environment	<ul style="list-style-type: none"> • 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 tractor trolleys. The sand carrying vehicles shall be covered by tarpaulin sheets. • The Green Belt development will be prepared along the haul roads, which will act as a pollution sink. • To minimize the vehicular pollution from the sand transporting vehicles, the following conditions will insist to permit the vehicles of the transporters 	Project authorities through regular monitoring.
Noise and Vibration	<ul style="list-style-type: none"> • Phasing out of old and worn out tractor trolleys. • 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. 	Project authorities through regular monitoring.
Water environment	<ul style="list-style-type: none"> • Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed. • River stream will not be diverted to form in active channels. • Utmost care will be taken to minimize or 	Project authorities through regular monitoring.

	<p>control leakage vehicles to be used for sand.</p> <ul style="list-style-type: none"> • Transportation. • The washing of tractor trolleys 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. 	
Biological Environment	<ul style="list-style-type: none"> • Mining activities will be restricted to day-time so that fauna will not disturb at night. • Material will be covered with tarpaulin during transportation. • Water sprinkling will be done on haul roads to control fugitive emissions. 	Project authorities through regular monitoring.
Occupational health and safety and public Health and safety.	<ul style="list-style-type: none"> • Regular water sprinkling on haul roads. • Dust mask will be provided to the workers. • Safety of the employee during mining will be taken care as per Mine regulations. • Medical records will be keep maintained. 	Project authorities through regular monitoring.
Socio economic Environment	<ul style="list-style-type: none"> • Employment will be given to local people. • Regular medical camps will be organized. • Funds will be provided for development activities in nearby villages. 	Regular monitoring by Project authorities.

**TABLE 6: COST ESTIMATES OF EMP IMPLEMENTATION
(Investment and recurring cost in lacs/year)**

Sr. No.	Component	Description	DIGRAS BK		NARAYANKHED	
			Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)
1.	Environmental Monitoring programme	Monitoring for Air, water, noise & groundwater	1.2	1.5	0.50	1.00
2.	Air Pollution	Water	0.4	0.09	0.90	1.6

	Control	sprinkling during mining activities				
3.	Approach Road Maintenance (Construction of WBM Road Length(1000mtX 6mt)		1.25	1.30	0	1.30
4.	Plantation (520 plants planted)	520 plants on barrier zone @ Rs.450/plant 200 plants on approach road & village @ Rs.200/plant	2.74	4.00	4.87	5.12
5.	Gabian Structure for arresting gravels	Gabian wall with the help of old cement bags rivers pebbles etc to arrest erosion of boundary wall intermixing of gavel etc	0.14	0.31	1.00	0.20
6.	Monitoring of Sand	CCTV Cameras (2x 15000)	0.70	0.25	0.30	0.60
7.	Water Pollution Control	Construction of bund along lease boundary & Mobile Toilet	0.05	Nil	0.50	Nil
8.	Noise pollution	Plantation including tree guard	1.00	0.08	0.90	1.8
9.	Occupational Health & safety	Periodic Health Checkups of workers	-	1.05	0	1.8
	Total =		7.93	8.58	8.97	12.62

TABLE 7: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequencies	Duration of Station	Important Monitoring Parameters
Surface water / Tube well	Twice in a year	Grab	pH, SS, TDS, Iron, Hardness, Alkalinity Chlorides, Nitrates Sulphate & Fluorides
Ambient air monitoring	Twice in a year	24 hr.	PM10, PM2.5, SO _x and NO _x
Noise Pollution	Twice in a year	-	Level in dB(A) and dB(C)
Working environment	Once in a year	-	PH, Conductivity, Sulphate, Nitrate, Phosphates, Alkalinity & texture

EXECUTIVE SUMMARY (ENGLISH)
For
SAND MINING (MINOR MINERAL)
FOR FOLLOWING VILLAGES

SR.NO	NAME OF SANDGHAT	VILLAGE NAME	KHASRA NO	TOTAL LEASE AREA	Total Production/ Brass (TPA)	TOTAL PROJECT COST
1	DEVKhed LINGA RIVER SAND MINE AT KHADAKPURNA RIVER	DEVKhed LINGA	Devkhed - 3,4,7,19,20,21,26, LINGA - 14,25,26,29,30,31	2.40	16961	38993339
2	NIMGAON VAYAL	NIMGAON VAYAL	Nimagaon vayal - 299,301,302,303,316,317,318,319	3.00	21200	48741099
3	HIVARKHEDPURNA RIVER SAND MINE AT KHADAKPURNA RIVER	HIVARKHEDPURNA	4,5,6,7,300,301,302,303,304,305 Tadhegaon - 54,55,56,57,58,59,60,61,62	4.50	5300	36556399
4	SATHEGAON RIVER SAND MINE AT KHADAKPURNA RIVER	SATHEGAON	118, 119, 120,121,122, 125,126, 127	1.20	4240	32,92,080
5	TADHEGAON RIVER SAND MINE AT KHADAKPURNA RIVER	TADHEGAON	422,423,424,425,429,430,436, 437,438,448	3.00	21201	48741099

TALUKA:-SINDKHEDRAJA, DISTRICT - BULDHANA (Maharashtra)
Lease Validity:-2021-2022 (1 YEAR),

FOR

ENVIRONMENTAL CLEARANCE (PUBLIC HEARING)

("B" under category 1(a) of EIA Notification dated 2006,

S.O. 141(E) dated 15. 01. 2016, MoEF& CC, S.O. 3611(E), Dated 25.07.2018, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2021



MANTRAS GREEN RESOURCES LTD
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Accredited by NABET: No.: - NABET/EIA/1619/RA0060/ April 19, 2020)
oct – 2022

Introduction:

Executive summary is the brief of report prepared for Environmental Management Plan of Sand Spot Mines of Minor Minerals of Buldhana District, Tehsil Sindhkhedraja by M/s. District Mining Office, Buldhana, Maharashtra (Govt. of Maharashtra). The mining is confined to extraction of sand in villages viz. DEVKHED LINGA (2.40) NIMGAON VAYAL (3.00) Hivarkhedpurna (4.50Ha), Sathegaon (1.20Ha) and Tadhegaon (3.00 Ha). Sand exposed in the lease area needed to mine by opencast manual mining method without drilling and blasting.

Project Identification

The sand (minor minerals) occurred in Buldhana district required to carry out mining practise as per mining Plan of PMCP under Rule 16 (1) of MCR 2016 and PMCP under Rule 23B of MCDR 1988 is approved by Deputy Director, Directorate of Geology and Mining, Regional Office, Aurangabad vide letter no. STC-10/2020(M.P. Sand) 52 dated 04/02/2020. Proposed lease area is Government land.

Identification of Project Proponent

Table 1: Name and address of the Applicant

Applicant
District Mining Officer, Buldhana (Govt. of Maharashtra) State Bank Chowk Road, Buldhana, Maharashtra 443001 Mob No: - 07262-242411 Email Id:- dmobul@gmail.com

Location of Project

The detailed location details tabulated in the following table

Table 2: Details of Project Location

Particulars	Devkhed	Nimgaon	Hivarkhedpurna	Sathegaon	Tadhegaon
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	Linga	Vayal			
Name of the applied mine area	Devkhed Linga River Sand Mine At Khadakpurna River	Nimgaon Vayal River Sand Mine At Khadakpurna River	Hivarkhedpurna River Sand Mine At Khadakpurna River	Sathegaon River Sand Mine At Khadakpurna River	Tadhegaon River Sand Mine At Khadakpurna River
Near village	Pimpri Zola Dusalgaon Muli Nagthana Masla Pota Zola Dharkhed Bhambarwadi Mahatpuri Anandwadi Shankarwadi	Nila village 1.00 km Hatkarwadi- 5.00 km Ajdapur 3.00 km Kandkhed-1.50 km	NimgaonWoyal (2 KM), Kingaon Raja (5 KM), Khairav (5 KM), DigrasBk (5 KM), Sathegaon (6 KM), Barlinga (2.7KM), Tatarkhed (1.94 KM)	Nimgaon Guru (2 KM), Narayankhed (2 KM), DigrasBk (3 KM), NimgaonWoyal (4 KM), PimpalgaonBk (5 KM	Hivarkhedpurna (1.04 km), DhanoraBk (0.79 km), DhanoraKhurd (1.13 km)
Tehsil			Sindkhedraja		
District			Buldhana		
State			Maharashtra		
Toposheet no.	55D/08	55D/08	55D/08	55D/04	55D/08
Latitude (N)	19°58'45.50"N	20° 2'48.55"N	20° 2'7.10"N	20° 3'22.73"N	20° 0'9.61"N
Longitude (E)	76°18'41.94"E	76°15'15.84"E	76°15'39.92"E	76°12'55.27"E	76°16'24.06"E

Background of the Project

The sand and gravel are the most important construction materials. The sand is produced by weathering of rock carried away by geological agents and deposited in river which will replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country development. As the rise in demand of these construction materials government need to ensure sustainable environment and supply this essential to sustain its developmental activities. This project provides opportunities for sustainable utilisation of resources to Government of Maharashtra. In the recent climatic changes, the sand mining is beneficial as it help to lower the inundation levels at time of floods.

Local geology: Buldhana districts large part occupied of rocks of Deccan trap formation, represented by of most horizontal lava flows of basaltic composition, emplaced by fissures aged to Mesozoic era, on to the lower tertiary era.

Table 3: Available Brass and Life of Mine

Name of Village	DEVKHED LINGA	NIMGAON VAYAL	HIVARKHEDPURNA	SATHEGAON	TADHEGAON
Quantity of sand for Excavation (Brass)	16961	21201	15901	4240	21201
Life of Mine	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR

Proposed Working: - Opencast Manual Mining Method will be adopted for extraction of Sand deposits in Sindkhedraja, Khadakpurna River

The Modified River Bed Sand Mine Working Guidance No.11(1X) and 12 of the Notification of Revenue and Forest Department, Mantralaya Mumbai, The Government of Maharashtra vides Government Decision No. Gaukhani-10/0615/Pra. Kra. 289/Kha dated 03.01.2018; mining will be done manually only with the use of labours, man heads, spades (Pawadas), ghamelas/pans.

Each cycle of operation shall consist of the following operation.

i) Over Burden Removal: No overburden is anticipated. So there is no need of removal of Overburden.

ii) Digging of Sand: Digging of Sand will be done by manually by Labours with the help of Spades (Pawadas).

iii) Loading of Tractor Trolley: Loading of Tractor Trolley will be done by manually with the help of Man heads, Labours with the help of Spades (Pawadas) and Pans (Ghamelas) combination.

iv) Transportation of Sand by Tractor Trolley from River Bed Mine/Sand Ghat to Stack yard: Mine Owner will prepare the Stack yard outside the River bed or Sand Ghat on nearer road. By the use of Tractor Trolley the material will be transported from Sand Ghat to Stockyard.

v) Transportation of Sand from Stack yard to Customers: Transportation of Sand will be done by the use of tractors trolleys from Stack yard to various Customers with permissible quantity. Transportation will be done as per the rules and regulations.

vi) Reclamation: Applicant will do scientific mining so that in Monsoon the Mine Lease area will be automatically backfilled. Only plantation will be done by the applicant on the both bank side of the River and other free places.

Extent of Mechanization: Mining Operations will be done by manual means only. No Mechanization. Services

Description of the Environment (Baseline Environment Status)

The environmental monitoring carried out during winter season of year December 2019. The various environmental components which are thoroughly studied during the study period include:

Meteorological condition

The observed maximum temperature recorded 32 °C and Minimum temperature 21°C and wind blows from east and north.

Ambient Air Quality

The ambient air quality founds under permissible levels of pollution standards.

Ambient Noise Level

In the monitoring stations of four Locations observed maximum level was: 59.1 during day-time and minimum was 34.8 during night-time and found ambient noise level is within prescribed limit.

Water Quality

The water analysis conducted at four sample locations for groundwater and surface water. The major findings are follows.

Ground Water Quality

- It is observed that pH of the ground water samples is range of 6.10 to 7.51, which is between the acceptable pH limit for drinking water.
- Concentration of Total dissolved solids (TDS) and Total hardness observed in different groundwater samples are in range of permissible category stipulated by Bureau of Indian Standards.
- Fluoride Concentration is in between 0.1 to 0.4 mg/l. The desirable limit of 1 mg/l and permissible limit of 1.5 mg/l.



Surface water quality

- Biochemical oxygen Demand - All surface water sample shave BOD indicate very low organic pollution load. All BOD values are within prescribed limit (<30.0 mg/l as in IS 10500 :2012).
- Chemical oxygen demand (COD) - All surface water samples have COD values which indicates low level of organic pollution load in term of COD.
- From the analysis data it is observed all parameters are within permissible limit of drinking water standard.

Soil Characteristics

The pH values of the collected samples were in the range of 6.55 to 8.30, organic matter in the range of 0.786(%) to 1.96 (%), water holding capacity in the range of 5.59 to 7.75%, potassium in the range of 0.07 to 174, total nitrogen in the range of 0.011to

0.014 %, bulk density in the range of 1.23to 1.48gm/cc. These all parameter indicate that soil is not so fertile in this area.

TABLE 4: LAND USE PATTERN OF THE CORE AREA

S · N o.	Particul ars	DEVKHED LINGA		NIMGAON VAYAL		HIVARKHED PURNA		SATHEGAON		TADHEGAON	
		As on Today in Ha	After 1 Years in Ha	As on Today in Ha	As on Today in Ha	As on Today in Ha	After 1 Years in Ha	After 1 Years in Ha	After 1 Years in Ha	As on Today in Ha	After 1 Years in Ha
1.	Area of top soil spread for a forestation	-	-	-	-	-	-	-	-	-	-
2.	Storage for top soil	-	-	-	-	-	-	-	-	-	-
3.	Green Belt	-	-	-	-	-	-	-	-	-	-
4.	Overburden Dump	-	-	-	-	-	-	-	-	-	-
5.	Mineral Storage	-	-	-	-	-	-	-	-	-	-
6.	Infrastructure (Workshop, Admin. Building etc.)	-	-	-	-	-	-	-	-	-	-
7.	Mine road in Mine lease area	-	-	-	-	-	-	-	-	-	-
8.	Utilized area for Sand Mining	0.000	2.40	0.000	3.00	0.000	4.50	0.000	1.20	0.000	3.00
9.	Virgin lease area for Sand Mine & Other Uses	2.40	0.000	3.00	0.000	4.50	0.000	1.20	0.000	3.00	0.000
10.	Road	-	-	-	-	-	-	-	-	-	-
11.	Railway	-	-	-	-	-	-	-	-	-	-
11	Tailing	-	-	-	-	-	-	-	-	-	-

2.	Pond										
1 3.	Effluent Treatment Plant	-	-	-	-	-	-	-	-	-	-
1 4.	Mineral separation plant	-	-	-	-	-	-	-	-	-	-
1 5.	Towns hip Area	-	-	-	-	-	-	-	-	-	-
1 6.	Others to specify	-	-	-	-	-	-	-	-	-	-
1 7.	Owners hip	Gover nment River									
	Total	2.40	2.40	3.00	3.00	4.50	4.50	1.20	1.20	3.00	3.00

Biological Environment

The flora and fauna analysis found as follows

Flora - The study area is mainly dominated by Southern Dry Mixed Deciduous Forests with major species are Aam, Babul, Bel, Bor, Chandan, Jambhul, Karnj, Neem etc.

Fauna - The faunal species commonly encountered during study within the study area are Hare, Rat, Indian fox, etc. No endemic endangered or threatened species of flora and fauna observed during study period.

Demography and Socio- Economics

Sindkhed Raja Tehsil consists Sindkhed Raja Municipal council and 107 villages with total population 1,59,869.

Anticipated Environmental Impact and Mitigation Measures

Impact on Air Quality:- The mining operations to be carried out by manual method and no machinery, drilling and Blasting not allowed. The impact on air quality is not envisaged. Transportation needs to allow only by tractor-trolley of the sand from the ghat to nearby depot or desired destination. The transport routes to be capable for handling this additional traffic.

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- Water sprinkling to be done on the roads regularly. This reduces dust emission further by 75%.
- Care to be taken to prevent spillage by covering the carrying vehicles with tarpaulin and sprinkling of water, if dry.
- Fortnightly scraping of road in order to keep the roads almost levelled which ensures smooth flow of vehicles and also prevents spillage.
- Overloading will be strictly prohibited.
- Proper tuning of vehicles to keep the gas emissions under check.

Plantation of trees along the roads will help to reduce the impact of dust in the nearby villages.

Impact on Noise Quality: - No significant noise will be generated due to sand mining as entire operation to be carried out manually. Noise generated only due to tractor trolley being used in sand transportation.

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Impact on land Environment- The mining and allied activities involved in river bed mining are creation of temporary haul roads / transportation track and formation of mined pits inside river, etc. This sand mining project does not involve any waste generation. Thus no waste dump sites are needed for the project.

Mitigation Measures:

- The mining to be carried out below the water table.
- The contractor with the satisfaction of competent authority to provide drinking water, rest shelter, first aid box and welfare facilities as per prevailing laws.
- The river bed areas to be dug during dry season. At rainy season, sand get replenished during monsoon.
- Sand/Gravel deposit in rainy season in which the material so deposited will available for fresh quarrying.
- The contractors to abide by the Maharashtra Minor Mineral Extraction Development and Regulation) Rules, 2013.

Impact on Biological Environment

The table summarised about the studies of biological environment.

Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement /living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none"> • If birds are noticed crossing the core zone, they will not be disturbed at all; • Labourers will not be allowed to discard food, polythene waste etc., which can attract animals/birds near the core site; • Only low polluting vehicles having PUC will be allowed for carrying mining materials. • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per Noise Pollution (Regulation and Control) Rules 2000, CPCB norms
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Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area once every month to assess the impact on water quality and mining activity will be controlled to maintain the clean water conditions.

Ecological Impacts: Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and

channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Sand mining generates extra vehicle traffic, which negatively impairs the environment.

Where access roads cross riparian areas, the local environment may be impacted.

Mitigation measures: As the proposed mining to be carried out in a scientific manner not much significant impact is anticipated, however, the following mitigation measure will be taken to further minimize it:

1. The activity to be carried out manually to minimize associate loss, as stated earlier.
2. No mining to be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season.
3. As the mining site has no vegetation, no clearance of vegetation is required.
4. No mining to be carried out in the vicinity of important structure like bridges, dam and other structures if any.
5. Mining to be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
6. No mining to be carried out during the rainy season to minimize impact on aquatic life.
7. The mining activity needs to deploy a tractor for transportation of sand from the mine to desired destination that may cause some loss to riparian habitat. Safe site / site having least impact will be selected for transportation, all the vehicles employed for transportation purpose will be PUC certified. On closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.
8. No lighting allowed in the lease area.
9. No piling of sand allowed in the area.
10. No discard of food, polythene waste etc. allowed in the lease area which would distract/attract the wildlife.
11. No night time mining allowed which may catch the attention of wild life.
12. Access roads will not encroach into the riparian zones and no riparian vegetation cleared off for the mining transportation of sand.

Analysis of Alternatives

Site Alternatives- The mine is located along the where the sand exists in enough quantity to be economically extracted. Mining locations are preferred near the markets or along the transportation route.

Technology alternatives: -No alternative technology only opencast Manual Mining Method will be adopted for extraction of Sand deposits.

Environment Monitoring Program

During the execution of the project activity, the sampling and analysis of various environmental attributes to be carried out as per guidelines of central pollution control board and State pollution control board. An Environment Management Cell to be set-up to implement this mining program.

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Risk Studies-Hazard identification and risk analysis involves identification of undesirable events that leads to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects

Disaster Studies: - Proper disaster is planning to be done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. Fire fighting equipment and other safety appliances to be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood.

ENVIRONMENT MANAGEMENT PLAN (EMP)

This opencast mining operation may comprises for various activities related to digging and material handling which may be potential sources of environment pollution. The Sand Mine to be develops systematically by forming benches with over all pit slopes of 45° or angle of response which stabilizes the benches. Also stringent efforts to be ensure to suppress the dust at source by adequate watering. A mobile water of 2000 litters capacity to be engaged available throughout the working shift. The EMP implementation and sampling parameters summarised in following table.

Environmental Issue	Management Measures	Implementation
Air Environment	<ul style="list-style-type: none">• 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 tractor trolleys. The sand carrying vehicles shall be covered by tarpaulin	Project authorities through regular monitoring.

	<p>sheets.</p> <ul style="list-style-type: none"> • The Green Belt development will be prepared along the haul roads, which will act as a pollution sink. • To minimize the vehicular pollution from the sand transporting vehicles, the following conditions will insist to permit the vehicles of the transporters 	
Noise and Vibration	<ul style="list-style-type: none"> • Phasing out of old and worn out tractor trolleys. • 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. 	Project authorities through regular monitoring.
Water environment	<ul style="list-style-type: none"> • Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed. • 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 tractor trolleys 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. 	Project authorities through regular monitoring.
Biological Environment	<ul style="list-style-type: none"> • Mining activities will be restricted to day-time so that fauna will not disturb at night. • Material will be covered with tarpaulin during transportation. • Water sprinkling will be done on haul roads to control fugitive emissions. 	Project authorities through regular monitoring.
Occupational	<ul style="list-style-type: none"> • Regular water sprinkling on haul roads. 	Project

health and safety and public Health and safety.	<ul style="list-style-type: none"> Dust mask will be provided to the workers. Safety of the employee during mining will be taken care as per Mine regulations. Medical records will be keep maintained. 	authorities through regular monitoring.
Socio economic Environment	<ul style="list-style-type: none"> Employment will be given to local people. Regular medical camps will be organized. Funds will be provided for development activities in nearby villages. 	Regular monitoring by Project authorities.

TABLE 6: COST ESTIMATES OF EMP IMPLEMENTATION

(Investment and recurring cost in lacs/year)

S. No	Particular		DEVKHEDE LINGA		NIMGAV VAYAL		HIVARKHEDE PURNA		SATHEGAON		TADHEGAON	
			Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)
1	Environmental Monitoring programme	Monitoring for Air, water, noise & ground water	1.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00
2	Air Pollution Control	Water sprinkling during mining activities	1.10	2.20	1.10	2.20	1.10	2.20	1.10	2.20	1.10	2.20
3	Approach Road Maintenance (Construction of WBM Road Length(1000mtX 6mt)		1.25	1.30	0	1.00	0	1.00	0	1.00		0
4	Plantation (650 plants planted)	720 plants on barrier zone @ Rs450/p	3.84	5.32	4.42	5.5	5.60	6.3	2.35	4.0	4.35	5.5

		lant										
		300 plants on approach road & village @ Rs.200/plant										
5.	Gabian wall with the help of old cement bags rivers pebbles etc to arrest erosion of boundary wall intermixing of gavels etc	Gabian wall with the help of old cement bags rivers pebbles etc to arrest erosion of boundary wall intermixing of gavels etc	1.00	0.20	1.20	0.20	1.20	0.20	1.20	0.20	1.20	0.20
6.	CCTV Cameras (15000 x2)	CCTV Cameras (15000 x2)	0.30	0.60	0.30	0.60	0.30	0.60	0.30	0.60	0.30	0.60
7.	Construction of bund along lease boundary & Mobile	Construction of bund along lease boundary & Mobile	0.70	Nil								

	Toilet	Toilet										
8.	Plantation including tree guard	Plantation including tree guard	0.90	1.50	0.90	1.50	0.90	1.50	0.90	1.50	0.90	1.50
9.	Periodic Health Checkups of workers	Periodic Health Checkups of workers	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00
TOTAL			10.09	14.12	9.62	14.8	10.8	14.8	7.55	12.5	9.55	14

TABLE 7: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequencies	Duration of Station	Important Monitoring Parameters
Surface water / Tube well	Twice in a year	Grab	pH, SS, TDS, Iron, Hardness, Alkalinity Chlorides, Nitrates Sulphate & Fluorides
Ambient air monitoring	Twice in a year	24 hr.	PM10, PM2.5, SO _x and NO _x
Noise Pollution	Twice in a year	-	Level in dB(A) and dB(C)
Working environment	Once in a year	-	PH, Conductivity, Sulphate, Nitrate, Phosphates, Alkalinity & texture

EXECUTIVE SUMMARY (ENGLISH)
For
SAND MINING (MINOR MINERAL)
FOR FOLLOWING VILLAGES

SR.NO	NAME OF SANDGHAT	VILLAGE NAME	KHASRA NO	TOTAL LEASE AREA	Total Production/ Brass (TPA)	TOTAL PROJECT COST
1.	SAWARGAV TELI CHANGFAL RIVER SAND MINE AT Khadakpurna RIVER	SAWARGAV TELI CHANGFAL	Changephal- 135,136,131,132,133,128,125,93,92 Savargaonteli- 69,73,75,78,79,85,88,89,90,91	2.00	3533	8122367
2.	SAWARGAV TELI RIVER SAND MINE AT Khadakpurna RIVER	SAWARGAV TELI	47,46,45,43,42	1.75	3092	7108508

OF
TALUKA:-SHEGAV, DISTRICT - BULDHANA(Maharashtra)
Lease Validity:-2021-2022 (1 YEAR),
FOR
ENVIRONMENTAL CLEARANCE (PUBLIC HEARING)
("B" under category 1(a) of EIA Notification dated 2006,
S.O. 141(E) dated 15. 01. 2016, MoEF& CC, S.O. 3611(E), Dated 25.07.2018, Sustainable Sand Mining
Management Guidelines 2016, Guidelines for Mining Policy 2021



Applicant District Mining Officer, Buldhana

MANTRAS GREEN RESOURCES LTD
QCI-NABET ACCREDITED EIA CONSULTANT,
Hall No.1, First Floor, NICE Sankul, MIDC
Satpur, Nashik, Maharashtra

Email: Info@mantrasresources.com,
uksharma@mantrasresources.com

Accredited by NABET: No.: - NABET/EIA/1619/RA0060/ April 19, 2020)
April – 2022

Introduction:

The sand and gravel are the most important construction materials. The sand is produced by weathering of rock carried away by geological agents and deposited in river which will replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country development. As the rise in demand of these

construction materials government need to ensure sustainable environment and supply this essential to sustain its developmental activities. This project provides opportunities for sustainable utilisation of resources to Government of Maharashtra. The sand mining is beneficial as it help to lower the inundation levels at time of floods as the recent climatic changes.

Project Identification

The sand (minor minerals) occurred in Buldhana district required to carry out mining practise as per mining Plan of PMCP under Rule 16 (1) of MCR 2016 and PMCP under Rule 23B of MCDR 1988 is approved by Deputy Director, Directorate of Geology and Mining, Regional Office, Aurangabad vide letter no. STC-10/2020(M.P. Sand) 52 dated 04/02/2020. Proposed lease area is Government land.

Identification of Project Proponent

Table 1: Name and address of the Applicant

Applicant
District Mining Officer, Buldhana (Govt. of Maharashtra) State Bank Chowk Road, Buldhana, Maharashtra 443001 Mob No: - 07262-242411 Email Id:- dmobul@gmail.com

Location of Project

The detailed location details tabulated in the following table

Table 2: Details of Project Location

Particulars	SAWARGAV TELI CHANGFAL	SAWARGAV TELI
Name of the applied mine area	SAWARGAV TELI CHANGEFAL RIVER SAND MINE AT KHADAK PURNA RIVER	SAWARGAV TELI RIVER SAND MINE AT KHADAK PURNA RIVER
Near village	Tandulwadi(2.87KM), Devkhed(2.00KM).	Tandulwadi(2.87KM), Devkhed(2.00KM).
Tehsil	LONAR	
District	Buldhana	
State	Maharashtra	
Toposheet no.	56A/05	56A/05
Latitude (N)	19°56'26.44"N	19°56'27.10"N
Longitude (E)	76°20'56.36"E	76°21'32.57"E

Background of the Project

The sand and gravel are one of the most important construction materials. The sand is produced by weathering of basaltic rock carried away by geological agents and deposited in river will replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country. As the rise in requirement of these construction materials government need to ensure sustainable supply is necessary to sustain its developmental activities. This project provides opportunities for Government of Maharashtra to sustainable utilisation of resources. In the recent climatic changes, the sand mining is beneficial as it help to lower the inundation levels at time of floods.

Local geology: Buldhana districts large part occupied of rocks of Deccan trap formation, represented by of most horizontal lava flows of basaltic composition, emplaced by fissures aged to Mesozoic era, on to the lower tertiary era.

Table 3: Available Brass and Life of Mine

Name of Village	SAWARGAV TELI CHANGFAL	SAWARGAV TELI
Quantity of sand for Excavation (Brass)	3533	3092
Life of Mine	1 YEAR	1 YEAR

Proposed Working: - Opencast Manual Mining Method will be adopted for extraction of Sand deposits in Shegav, Purna & Maan River Bed

The Modified River Bed Sand Mine Working Guidance No.11(1X) and 12 of the Notification of Revenue and Forest Department, Mantralaya Mumbai, The Government of Maharashtra vides Government Decision No. Gaukhani-10/0615/Pra. Kra. 289/Kha dated 03.01.2018; mining will be done manually only with the use of labours, man heads, spades (Pawadas), ghamelas/pans.

Each cycle of operation shall consist of the following operation.

i) Over Burden Removal: No overburden is anticipated. So there is no need of removal of Overburden.

ii) Digging of Sand: Digging of Sand will be done by manually by Labours with the help of Spades (Pawadas).

iii) Loading of Tractor Trolley: Loading of Tractor Trolley will be done by manually with the help of Man heads, Labours with the help of Spades (Pawadas) and Pans (Ghamelas) combination.

iv) Transportation of Sand by Tractor Trolley from River Bed Mine/Sand Ghat to Stack yard: Mine Owner will prepare the Stack yard outside the River bed or Sand Ghat on nearer road. By the use of Tractor Trolley the material will be transported from Sand Ghat to Stockyard.

v) Transportation of Sand from Stack yard to Customers: Transportation of Sand will be done by the use of tractors trolleys from Stack yard to various Customers with permissible quantity. Transportation will be done as per the rules and regulations.

vi) Reclamation: Applicant will do scientific mining so that in Monsoon the Mine Lease area will be automatically backfilled. Only plantation will be done by the applicant on the both bank side of the River and other free places.

Extent of Mechanization: Mining Operations will be done by manual means only. No Mechanization. Services

Description of the Environment (Baseline Environment Status)

The environmental monitoring carried out during winter season of year December 2019. The various environmental components which are thoroughly studied during the study period include:

Meteorological condition

The observed maximum temperature recorded 32 °C and Minimum temperature 21°C and wind blows from east and north.

Ambient Air Quality

The ambient air quality founds under permissible levels of pollution standards.

Ambient Noise Level

In the monitoring stations of four Locations observed maximum level was: 59.1 during day-time and minimum was 34.8 during night-time and found ambient noise level is within prescribed limit.

Water Quality

The water analysis conducted at four sample locations for groundwater and surface water. The major findings are follows.

Ground Water Quality

- It is observed that pH of the ground water samples is range of 6.10 to 7.51, which is between the acceptable pH limit for drinking water.
- Concentration of Total dissolved solids (TDS) and Total hardness observed in different groundwater samples are in range of permissible category stipulated by Bureau of Indian Standards.
- Fluoride Concentration is in between 0.1 to 0.4 mg/l. The desirable limit of 1 mg/l and permissible limit of 1.5 mg/l.

➤

Surface water quality

- Biochemical oxygen Demand - All surface water samples have BOD indicate very low organic pollution load. All BOD values are within prescribed limit (<30.0 mg/l as in IS 10500 :2012).

- Chemical oxygen demand (COD) - All surface water samples have COD values which indicates low level of organic pollution load in term of COD.
- From the analysis data it is observed all parameters are within permissible limit of drinking water standard.

Soil Characteristics

The pH values of the collected samples were in the range of 6.32 to 7.40, organic matter in the range of 0.786(%) to 1.96 (%), water holding capacity in the range of 5.22 to 6.70%, potassium in the range of 0.07 to 183, total nitrogen in the range of 0.012 to 0.013 %, bulk density in the range of 1.29 to 1.37gm/cc. These all parameter indicate that soil is not so fertile in this area.

TABLE 4: LAND USE PATTERN OF THE CORE AREA

S. No.	Particulars	SAWARGAV TELI CHANGFAL		SAWARGAV TELI	
		As on Today in Ha	After 1 Years in Ha	As on Today in Ha	After 1 Years in Ha
1.	Area of top soil spread for a forestation	-	-	-	-
2.	Storage for top soil	-	-	-	-
3.	Green Belt	-	-	-	-
4.	Over burden Dump	-	-	-	-
5.	Mineral Storage	-	-	-	-
6.	Infrastructure (Workshop, Admin. Building etc.)	-	-	-	-
7.	Mine road in Mine lease area	-	-	-	-
8.	Utilized area for Sand Mining	-	-	-	-
9.	Virgin lease area for Sand Mine & Other Uses	0.000	2.00	0.000	1.75
10.	Road	2.00	0.000	1.75	0.000
11.	Railway	-	-	-	-
12.	Tailing Pond	-	-	-	-
13.	Effluent Treatment Plant	-	-	-	-

14.	Mineral separation plant	-	-	-	-
15.	Township Area	-	-	-	-
16.	Others to specify	-	-	-	-
17.	Ownership	Government River	Government River	Government River	Government River
Total		2.00	2.00	1.75	1.75

Biological Environment

The flora and fauna analysis found as follows

Flora - The study area is mainly dominated by Southern Dry Mixed Deciduous Forests with major species are Aam, Babul, Bel, Bor, Chandan, Jambhul, Karnj, Neem etc.

Fauna - The faunal species commonly encountered during study within the study area are Hare, Rat, Indian fox, etc. No endemic endangered or threatened species of flora and fauna observed during study period.

Demography and Socio- Economics

LONAR Tehsil consists Lonar Municipal council and 91 villages with total population 152351.

Anticipated Environmental Impact and Mitigation Measures

Impact on Air Quality:- The mining operations to be carried out by manual method and no machinery, drilling and Blasting not allowed. The impact on air quality is not envisaged. Transportation needs to allow only by tractor-trolley of the sand from the ghat to nearby depot or desired destination. The transport routes to be capable for handling this additional traffic.

Mitigation Measures: Following care to be taken for air pollution control.

- Water sprinkling to be done on the roads regularly. This reduces dust emission further by 75%.
- Care to be taken to prevent spillage by covering the carrying vehicles with tarpaulin and sprinkling of water, if dry.
- Fortnightly scraping of road in order to keep the roads almost levelled which ensures smooth flow of vehicles and also prevents spillage.
- Overloading will be strictly prohibited.
- Proper tuning of vehicles to keep the gas emissions under check.

Plantation of trees along the roads will help to reduce the impact of dust in the nearby villages.

Impact on Noise Quality: - No significant noise will be generated due to sand mining as entire operation to be carried out manually. Noise generated only due to tractor trolley being used in sand transportation.

Mitigation measures: The off-site receptors are not significantly affected due to noise generated by sand ghat which is insignificant but some disturbances can be occur due to vehicle movement which is not avoidable. The tractor trolley to be maintains in good running condition which will help to reduce noise to a minimum possible level. An optimum Speed limits to be imposed on tractor trolleys which used for sand transport.

Impact on Water Environment: - Mining of sand from within or near a streambed which has a direct impact on the stream's physical habitat characteristics. As the project activity to be carried out in the dry part of the river bed which will not affect the water environment or riparian habitats. The project to be executed without divert or truncate any stream also envisaged the pumping of water either from the river or tapping the ground water not allowed. The mining activity happening in summer months which will not affect the base flow of the river and this minimise the adverse impact on surface hydrology and ground water regime. The proponent to be adhere all guidelines and rules for proper and scientific method of mining during the period of extraction of sand.

Mitigation measures: During the lease period, the deposit to be worked from the top surface to approved depth of mining within the demarcated lease area only.

Impact on land Environment - The mining and allied activities involved in river bed mining are creation of temporary haul roads / transportation track and formation of mined pits inside river, etc. This sand mining project does not involve any waste generation. Thus no waste dump sites are needed for the project.

Mitigation Measures:

- The mining to be carried out below the water table.
- The contractor with the satisfaction of competent authority to provide drinking water, rest shelter, first aid box and welfare facilities as per prevailing laws.
- The river bed areas to be dug during dry season. At rainy season, sand get replenished during monsoon.
- Sand/Gravel deposit in rainy season in which the material so deposited will available for fresh quarrying.
- The contractors to abide by the Maharashtra Minor Mineral Extraction Development and Regulation) Rules, 2013.

Impact on Biological Environment

The table summarised about the studies of biological environment.

Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement /living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none"> • If birds are noticed crossing the core zone, they will not be disturbed at all; • Labourers will not be allowed to discard food, polythene waste etc., which can attract animals/birds near the core site; • Only low polluting vehicles having PUC will be allowed for carrying mining materials. • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per Noise Pollution (Regulation and Control) Rules 2000, CPCB norms
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8. No lighting allowed in the lease area.
9. No piling of sand allowed in the area.
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Environmental Issue	Management Measures	Implementation
Air Environment	<ul style="list-style-type: none"> • 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 tractor trolleys. The sand carrying vehicles shall be covered by tarpaulin sheets. • The Green Belt development will be prepared along the haul roads, which will act as a pollution sink. • To minimize the vehicular pollution from the sand transporting vehicles, the following conditions will insist to permit the vehicles of the transporters 	Project authorities through regular monitoring.
Noise and Vibration	<ul style="list-style-type: none"> • Phasing out of old and worn out tractor trolleys. • 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. 	Project authorities through regular monitoring.
Water environment	<ul style="list-style-type: none"> • Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed. • River stream will not be diverted to form in 	Project authorities through regular monitoring.

	<p>active channels.</p> <ul style="list-style-type: none"> • Utmost care will be taken to minimize or control leakage vehicles to be used for sand. • Transportation. • The washing of tractor trolleys 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. 	
Biological Environment	<ul style="list-style-type: none"> • Mining activities will be restricted to day-time so that fauna will not disturb at night. • Material will be covered with tarpaulin during transportation. • Water sprinkling will be done on haul roads to control fugitive emissions. 	Project authorities through regular monitoring.
Occupational health and safety and public Health and safety.	<ul style="list-style-type: none"> • Regular water sprinkling on haul roads. • Dust mask will be provided to the workers. • Safety of the employee during mining will be taken care as per Mine regulations. • Medical records will be keep maintained. 	Project authorities through regular monitoring.
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**TABLE 6: COST ESTIMATES OF EMP IMPLEMENTATION
(Investment and recurring cost in lacs/year)**

S.No	Particulars	SAWARGAV TELI CHANGFAL		SAWARGAV TELI	
		Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)

1	Environmental Monitoring programme	Monitoring for Air, water, noise & groundwater	2.1	2.25	2.1	2.25
2	Air Pollution Control	Water sprinkling during mining activities	1.5	1.50	1.5	1.50
3	Approach Road Maintenance (Construction of WBM Road Length(1000mtX 6mt)		0.90	Nil	1.25	1.30
4	Plantation (600 plants planted)	600 plants on barrier zone @ Rs.450/plant	3.30	4.68	2.73	4.10
		300 plants on approach road & village @ Rs.200/plant				
5.	Gabian Structure for arresting gravels	Gabian wall with the help of old cement bags rivers pebbles etc to arrest erosion of boundary wall intermixing of gavel etc	0.34	0.40	0.34	0.40
6.	Monitoring of Sand	CCTV Camera (2x 15000)s	0.25	0.32	0.25	0.32
7.	Water Pollution Control	Construction of bund along lease boundary & Mobile Toilet	0.10	Nil	0.10	Nil
8.	Noise pollution	Plantation including tree guard	0.09	0.25	0.09	0.25
9.	Occupational Health & safety	Periodic Health Checkups of workers	-	2.25	-	2.25
TOTAL			8.93	12.95	8.36	12.37

TABLE 7: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequencies	Duration of Station	Important Monitoring Parameters
Surface water / Tube well	Twice in a year	Grab	pH, SS, TDS, Iron, Hardness, Alkalinity Chlorides, Nitrates Sulphate & Fluorides
Ambient air monitoring	Twice in a year	24 hr.	PM10, PM2.5, SO _x and NO _x
Noise Pollution	Twice in a year	-	Level in dB(A) and dB(C)
Working environment	Once in a year	-	PH, Conductivity, Sulphate, Nitrate, Phosphates, Alkalinity & texture

EXECUTIVE SUMMARY (ENGLISH)
For
SAND MINING (MINOR MINERAL)
FOR FOLLOWING VILLAGES

SR.NO	NAME OF SANDGHAT	VILLAGE NAME	KHASRA NO	TOTAL LEASE AREA	Total Production/ Brass (TPA)	TOTAL PROJECT COST
1.	PATONDA RIVER SAND MINE AT PURNA RIVER	PATONDA	1,270,271,272,273,281,282,283,284	1.00	1767	4062333
2.	BHOTA RIVER SAND MINE AT PURNA RIVER	BHOTA	184,185,186,187,188,189,190,191	1.80	3816	8772984
3.	HINGANBHOTA RIVER SAND MINE AT PURNA RIVER	HINGANBHOTA ROTI-A	1,2,3,4	1.50	3180	7310820
4.	HINGANBHOTA RIVER SAND MINE AT PURNA RIVER	HINGANBHOTA ROTI-B	124,125,126,127,128	1.20	2544	5848656
5.	YERLI RIVER SAND MINE AT PURNA RIVER	YERALI	20,21,22,23,24,25,26,	1.80	3816	8772984

OF
TALUKA:-NANDURA, DISTRICT - BULDHANA (Maharashtra)
Lease Validity:-2021-2022 (1 YEAR),

FOR
ENVIRONMENTAL CLEARANCE (PUBLIC HEARING)
("B" under category 1(a) of EIA Notification dated 2006,
S.O. 141(E) dated 15. 01. 2016, MoEF& CC, S.O. 3611(E), Dated 25.07.2018, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2021



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uksharma@mantrasresources.com

Accredited by NABET: No.: - NABET/EIA/1619/RA0060/ April 19, 2020)

October 2022

Introduction:

Executive summary is the brief of report prepared for Environmental Management Plan of Sand Spot Mines of Minor Minerals of Buldhana District, Tehsil Jalgaon (Jamod) by M/s. District Mining Office, Buldhana, Maharashtra (Govt. of Maharashtra). The mining is confined to extraction of sand in villages viz. Patonda (1.00 Ha), Bhota (1.80 Ha) and Hinganbhota Roti-A (1.50 Ha) Hinganbhota Roti-B (1.20 Ha) Yerali (1.20). Sand exposed in the lease area needed to mine by opencast manual mining method without drilling and blasting.

Project Identification

The sand (minor minerals) occurred in Buldhana district required to carry out mining practice as per mining Plan of PMCP under Rule 16 (1) of MCR 2016 and PMCP under Rule 23B of MCDR 1988 is approved by Deputy Director, Directorate of Geology and Mining, Regional Office, Aurangabad vide letter no. STC-10/2020(M.P. Sand) 52 dated 04/02/2020. Proposed lease area is Government land.

Identification of Project Proponent

Table 1: Name and address of the Applicant

Applicant
District Mining Officer, Buldhana (Govt. of Maharashtra) State Bank Chowk Road, Buldhana, Maharashtra 443001 Mob No: - 07262-242411 Email Id:- dmobul@gmail.com

Location of Project

The detailed location details tabulated in the following table

Table 2: Details of Project Location

Particulars	PATONDA	BHOTA	HINGANBHOTA ROTI-A	HINGANBHOTA ROTI-B	YERALI
Name of the applied mine area	PATONDA RIVER SAND MINE AT PURNA RIVER	BHOTA RIVER SAND MINE AT PURNA RIVER	HINGANBHOTA RIVER SAND MINE AT PURNA RIVER	HINGANBHOTA RIVER SAND MINE AT PURNA RIVER	YERLI RIVER SAND MINE AT PURNA RIVER
Near village	Moregaon (2 KM) , Sonwati (3 KM) , Waki (4 KM) , Taltumba (5 KM) , Digras Khurd (6 KM)	Moregaon (2 KM) , Sonwati (3 KM) , Waki (4 KM) , Taltumba (5 KM) , Digras Khurd (6 KM)	Sonna Ambegaon digar, walagwadi, karadgaon, gogalgaon	Sarangapur (3 KM) , Pimpalgaon Gayake (3 KM) , Jawala Khurd (5 KM) , Arvi (6 KM) , Simangaon (7 KM)	Villages kothla, pardi, wadgaon, rajura,

Tehsil	Nandura				
District	Buldhana				
State	Maharashtra				
Toposheet no.	55D/05	55D/09	55D/9	55D/5	55D/5
Latitude (N)	20°55'45.11"N	20°55'19.58"N	20°55'58.24"N	20°55'45.80"N	20°55'45.78"N
Longitude (E)	76°25'49.37"E	76°31'27.09"E	76°30'3.26"E	76°29'22.60"E	76°29'18.82"E

Background of the Project

The sand and gravel are the most important construction materials. The sand is produced by weathering of rock carried away by geological agents and deposited in river which will replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country development. As the rise in demand of these construction materials government need to ensure sustainable environment and supply this essential to sustain its developmental activities. This project provides opportunities for sustainable utilisation of resources to Government of Maharashtra. In the recent climatic changes, the sand mining is beneficial as it help to lower the inundation levels at time of floods.

Local geology: Buldhana districts large part occupied of rocks of Deccan trap formation, represented by of most horizontal lava flows of basaltic composition, emplaced by fissures aged to Mesozoic era, on to the lower tertiary era.

Table 3: Available Brass and Life of Mine

Name of Village	PATONDA	BHOTA	HINGANBHOTA ROTI-A	HINGANBHOTA ROTI-B	YERALI
Quantity of sand for Excavation (Brass)	1767	3816	3180	2544	3816
Life of Mine	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR

Proposed Working: - Opencast Manual Mining Method will be adopted for extraction of Sand deposits in Nandura, Gyanganga River Bed

The Modified River Bed Sand Mine Working Guidance No.11(1X) and 12 of the Notification of Revenue and Forest Department, Mantralaya Mumbai, The Government of Maharashtra vides Government Decision No. Gaukhani-10/0615/Pra. Kra. 289/Kha dated 03.01.2018; mining will be done manually only with the use of labours, man heads, spades (Pawadas), ghamelas/pans.

Each cycle of operation shall consist of the following operation.

i) Over Burden Removal: No overburden is anticipated. So there is no need of removal of Overburden.

ii) Digging of Sand: Digging of Sand will be done by manually by Labours with the help of Spades (Pawadas).

iii) Loading of Tractor Trolley: Loading of Tractor Trolley will be done by manually with the help of Man heads, Labours with the help of Spades (Pawadas) and Pans (Ghamelas) combination.

iv) Transportation of Sand by Tractor Trolley from River Bed Mine/Sand Ghat to Stack yard: Mine Owner will prepare the Stack yard outside the River bed or Sand Ghat on nearer road. By the use of Tractor Trolley the material will be transported from Sand Ghat to Stockyard.

v) Transportation of Sand from Stack yard to Customers: Transportation of Sand will be done by the use of tractors trolleys from Stack yard to various Customers with permissible quantity. Transportation will be done as per the rules and regulations.

vi) Reclamation: Applicant will do scientific mining so that in Monsoon the Mine Lease area will be automatically backfilled. Only plantation will be done by the applicant on the both bank side of the River and other free places.

Extent of Mechanization: Mining Operations will be done by manual means only. No Mechanization. Services

Description of the Environment (Baseline Environment Status)

The environmental monitoring carried out during winter season of year December 2019. The various environmental components which are thoroughly studied during the study period include:

Meteorological condition

The observed maximum temperature recorded 32 °C and Minimum temperature 21°C and wind blows from east and north.

Ambient Air Quality

The ambient air quality founds under permissible levels of pollution standards.

Ambient Noise Level

In the monitoring stations of four Locations observed maximum level was: 59.1 during day-time and minimum was 34.8 during night-time and found ambient noise level is within prescribed limit.

Water Quality

The water analysis conducted at four sample locations for groundwater and surface water. The major findings are follows.

Ground Water Quality

- It is observed that pH of the ground water samples is range of 6.10 to 7.51, which is between the acceptable pH limit for drinking water.
- Concentration of Total dissolved solids (TDS) and Total hardness observed in different groundwater samples are in range of permissible category stipulated by Bureau of Indian Standards.
- Fluoride Concentration is in between 0.1 to 0.4 mg/l. The desirable limit of 1 mg/l and permissible limit of 1.5 mg/l.

➤

Surface water quality

- Biochemical oxygen Demand - All surface water samples have BOD indicate very low organic pollution load. All BOD values are within prescribed limit (<30.0 mg/lt as in IS 10500 :2012).
- Chemical oxygen demand (COD) - All surface water samples have COD values which indicates low level of organic pollution load in term of COD.

From the analysis data it is observed all parameters are within permissible limit of drinking water standard.

Soil Characteristics

The pH values of the collected samples were in the range of 6.55 to 8.30, organic matter in the range of 0.786(%) to 1.96 (%), water holding capacity in the range of 5.59 to 7.75%, potassium in the range of 0.07 to 174, total nitrogen in the range of 0.011to 0.014 %, bulk density in the range of 1.23to 1.48gm/cc. These all parameter indicate that soil is not so fertile in this area.

TABLE 4: LAND USE PATTERN OF THE CORE AREA

S . N o.	Particulars	PATONDA		BHOTA		HINGANBHOTA ROTI-A		HINGAN BHOTA ROTI-B		YERAL I	
		As on Today in Ha	After 1 Years in Ha	As on Today in Ha	After 1 Years in Ha	As on Today in Ha	After 1 Years in Ha	As on Today in Ha	After 1 Years in Ha	As on Today in Ha	After 1 Years in Ha
1.	Area of top soil spread for a forestation	-	-	-	-	-	-	-	-	-	-
2.	Storage for top soil	-	-	-	-	-	-	-	-	-	-
3.	Green Belt	-	-	-	-	-	-	-	-	-	-

4.	Over burden Dump	-	-	-	-	-	-	-	-
5.	Mineral Storage	-	-	-	-	-	-	-	-
6.	Infrastructure (Workshop, Admin. Building etc.)	-	-	-	-	-	-	-	-
7.	Mine road in Mine lease area	-	-	-	-	-	-	-	-
8.	Utilized area for Sand Mining	0.000	1.00	0.000	1.80	0.000	1.50	1.20	0.000-
9.	Virgin lease area for Sand Mine & Other Uses	1.00	0.000	1.80	0.000	1.50	0.000	0.000	1.20
10.	Road	-	-	-	-	-	-	-	-
11.	Railway	-	-	-	-	-	-	-	-
12.	Tailing Pond	-	-	-	-	-	-	-	-
13.	Effluent Treatment Plant	-	-	-	-	-	-	-	-
14.	Mineral	-	-	-	-	-	-	-	-

4.	separati on plant								
1	Townsh 5. ip Area	-	-	-	-	-	-	-	-
1	Others 6. to specify	-	-	-	-	-	-		-
1	Owners 7. hip	Govern ment River	Govern ment River	Govern ment River	Govern ment River	Govern ment River	Govern ment River	Governm ent River	Govern ment River
Total		1.00	1.00	1.80	1.80	1.50	1.50	1.20	1,20

Biological Environment

The flora and fauna analysis found as follows

Flora - The study area is mainly dominated by Southern Dry Mixed Deciduous Forests with major species are Aam, Babul, Bel, Bor, Chandan, Jambhul, Karnj, Neem etc.

Fauna - The faunal species commonly encountered during study within the study area are Hare, Rat, Indian fox, etc. No endemic endangered or threatened species of flora and fauna observed during study period.

Demography and Socio- Economics

Nandura Tehsil consists Nandura Municipal council and 103 villages with total population 42200.

Anticipated Environmental Impact and Mitigation Measures

Impact on Air Quality:- The mining operations to be carried out by manual method and no machinery, drilling and Blasting not allowed. The impact on air quality is not envisaged. Transportation needs to allow only by tractor-trolley of the sand from the ghat to nearby depot or desired destination. The transport routes to be capable for handling this additional traffic.

Mitigation Measures: Following care to be taken for air pollution control.

- Water sprinkling to be done on the roads regularly. This reduces dust emission further by 75%.
- Care to be taken to prevent spillage by covering the carrying vehicles with tarpaulin and sprinkling of water, if dry.
- Fortnightly scraping of road in order to keep the roads almost levelled which ensures smooth flow of vehicles and also prevents spillage.

- Overloading will be strictly prohibited.
- Proper tuning of vehicles to keep the gas emissions under check.

Plantation of trees along the roads will help to reduce the impact of dust in the nearby villages.

Impact on Noise Quality: - No significant noise will be generated due to sand mining as entire operation to be carried out manually. Noise generated only due to tractor trolley being used in sand transportation.

Mitigation measures: The off-site receptors are not significantly affected due to noise generated by sand ghat which is insignificant but some disturbances can be occur due to vehicle movement which is not avoidable. The tractor trolley to be maintains in good running condition which will help to reduce noise to a minimum possible level. An optimum Speed limits to be imposed on tractor trolleys which used for sand transport.

Impact on Water Environment: - Mining of sand from within or near a streambed which has a direct impact on the stream's physical habitat characteristics. As the project activity to be carried out in the dry part of the river bed which will not affect the water environment or riparian habitats. The project to be executed without divert or truncate any stream also envisaged the pumping of water either from the river or tapping the ground water not allowed. The mining activity happening in summer months which will not affect the base flow of the river and this minimise the adverse impact on surface hydrology and ground water regime. The proponent to be adhere all guidelines and rules for proper and scientific method of mining during the period of extraction of sand.

Mitigation measures: During the lease period, the deposit to be worked from the top surface to approved depth of mining within the demarcated lease area only.

Impact on land Environment- The mining and allied activities involved in river bed mining are creation of temporary haul roads / transportation track and formation of mined pits inside river, etc. This sand mining project does not involve any waste generation. Thus no waste dump sites are needed for the project.

Mitigation Measures:

- The mining to be carried out below the water table.
- The contractor with the satisfaction of competent authority to provide drinking water, rest shelter, first aid box and welfare facilities as per prevailing laws.
- The river bed areas to be dug during dry season. At rainy season, sand get replenished during monsoon.
- Sand/Gravel deposit in rainy season in which the material so deposited will available for fresh quarrying.
- The contractors to abide by the Maharashtra Minor Mineral Extraction Development and Regulation) Rules, 2013.

Impact on Biological Environment

The table summarised about the studies of biological environment.

Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement /living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none">• If birds are noticed crossing the core zone, they will not be disturbed at all;• Labourers will not be allowed to discard food, polythene waste etc., which can attract animals/birds near the core site;• Only low polluting vehicles having PUC will be allowed for carrying mining materials.• Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per Noise Pollution (Regulation and Control) Rules 2000, CPCB norms
Disturbance of riparian ecosystem/ wetlands	The riparian ecosystem or the wetlands will not be disturbed by the workers.
Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area once every month to assess the impact on water quality and mining activity will be controlled to maintain the clean water conditions.

Ecological Impacts: Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Sand mining generates extra vehicle traffic, which negatively impairs the environment.

Where access roads cross riparian areas, the local environment may be impacted.

Mitigation measures: As the proposed mining to be carried out in a scientific manner not much significant impact is anticipated, however, the following mitigation measure will be taken to further minimize it:

1. The activity to be carried out manually to minimize associate loss, as stated earlier.
2. No mining to be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season.
3. As the mining site has no vegetation, no clearance of vegetation is required.
4. No mining to be carried out in the vicinity of important structure like bridges, dam and other structures if any.

5. Mining to be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
6. No mining to be carried out during the rainy season to minimize impact on aquatic life.
7. The mining activity needs to deploy a tractor for transportation of sand from the mine to desired destination that may cause some loss to riparian habitat. Safe site / site having least impact will be selected for transportation, all the vehicles employed for transportation purpose will be PUC certified. On closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.
8. No lighting allowed in the lease area.
9. No piling of sand allowed in the area.
10. No discard of food, polythene waste etc. allowed in the lease area which would distract/attract the wildlife.
11. No night time mining allowed which may catch the attention of wild life.
12. Access roads will not encroach into the riparian zones and no riparian vegetation cleared off for the mining transportation of sand.

Analysis of Alternatives

Site Alternatives- The mine is located along the where the sand exists in enough quantity to be economically extracted. Mining locations are preferred near the markets or along the transportation route.

Technology alternatives: -No alternative technology only open cast Manual Mining Method will be adopted for extraction of Sand deposits.

Environment Monitoring Program

During the execution of the project activity, the sampling and analysis of various environmental attributes to be carried out as per guidelines of central pollution control board and State pollution control board. An Environment Management Cell to be set-up to implement this mining program.

Additional Studies

Risk Studies-Hazard identification and risk analysis involves identification of undesirable events that leads to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects

Disaster Studies: - Proper disaster is planning to be done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. Fire fighting equipment and other

safety appliances to be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood.

ENVIRONMENT MANAGEMENT PLAN (EMP)

This opencast mining operation may comprises for various activities related to digging and material handling which may be potential sources of environment pollution. The Sand Mine to be develops systematically by forming benches with over all pit slopes of 45° or angle of response which stabilizes the benches. Also stringent efforts to be ensure to suppress the dust at source by adequate watering. A mobile water of 2000 liters capacity to be engaged available throughout the working shift. The EMP implementation and sampling parameters summarised in following table.

Environmental Issue	Management Measures	Implementation
Air Environment	<ul style="list-style-type: none"> • 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 tractor trolleys. The sand carrying vehicles shall be covered by tarpaulin sheets. • The Green Belt development will be prepared along the haul roads, which will act as a pollution sink. • To minimize the vehicular pollution from the sand transporting vehicles, the following conditions will insist to permit the vehicles of the transporters 	Project authorities through regular monitoring.
Noise and Vibration	<ul style="list-style-type: none"> • Phasing out of old and worn out tractor trolleys. • 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. 	Project authorities through regular monitoring.
Water environment	<ul style="list-style-type: none"> • Mining is avoided during the monsoon season and at the time of floods. This will 	Project authorities

	<p>help in replenishment of sand in the river bed.</p> <ul style="list-style-type: none"> • 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 tractor trolleys 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. 	through regular monitoring.
Biological Environment	<ul style="list-style-type: none"> • Mining activities will be restricted to day-time so that fauna will not disturb at night. • Material will be covered with tarpaulin during transportation. • Water sprinkling will be done on haul roads to control fugitive emissions. 	Project authorities through regular monitoring.
Occupational health and safety and public Health and safety.	<ul style="list-style-type: none"> • Regular water sprinkling on haul roads. • Dust mask will be provided to the workers. • Safety of the employee during mining will be taken care as per Mine regulations. • Medical records will be keep maintained. 	Project authorities through regular monitoring.
Socio economic Environment	<ul style="list-style-type: none"> • Employment will be given to local people. • Regular medical camps will be organized. • Funds will be provided for development activities in nearby villages. 	Regular monitoring by Project authorities.

**TABLE 6: COST ESTIMATES OF EMP IMPLEMENTATION
(Investment and recurring cost in lacs/year)**

S. No	Particulars	PATONDA		BHOTA		ROTI -A		ROTI-B YERALI		YERALI	
		Capital cost Rs.	Operational and Maintenance								

			in Lacs	nance cost (Rs. in Lacs/ye ar)								
1	Environmental Monitoring programme	Monitoring for Air, water, noise & ground water	0.90	1.80	1.1	1.2	1.10	2.20	1.00	2.00	0.90	1.80
2	Air Pollution Control	Water sprinkling during mining activities	0.75	1.60	0.5	1.03	1.20	2.50	1.10	2.20	1.00	2.00
3	Approach Road Maintenance (Construction of WBM Road Length(1000mtX 6mt)		1.25	1.30	1.25	1.30	1.25	1.30	1.25	1.30	1.25	1.30
4	Plantation (500 plants planted)	300 plants on barrier zone @ Rs.450/plant 300 plants on approach road & village @ Rs.200/plant	1.95	3.85	3.07	4.8	2.22	4.3	2.22	4.4	3.03	4.5
5.	Gabian Structure for arresting	Gabian wall with the help of old	1.00	0.20	0.35	0.42	1.00	0.20	1.00	0.20	1.00	0.20

	gravels	cement bags rivers pebbles etc to arrest erosion of boundary wall intermixing of gravels etc										
6.	Monitoring of sand	CCTV Cameras (15000 x2)	0.30	0.60	0.15	0.32	0.30	0.60	0.30	0.60	0.30	0.60
7.	Water pollution control	Construction of bund along lease boundary & Mobile Toilet	0.50	Nil	0.05	Nil	0.80	Nil	0.80	Nil	0.70	Nil
8.	Noise pollution	Plantation including tree guard	0.80	1.50	0.06	0.15	1.00	1.80	1.00	1.20	0.80	1.60
9.	Occupational Health & safety	Periodic Health Check ups of workers	-	1.00	-	1.25	-	1.20	-	1.20	-	0.90
TOTAL			7.45	11.85	6.53	10.47	8.87	14.1	8.67	13.1	8.98	12.9

TABLE 7: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequencies	Duration of Station	Important Monitoring Parameters
Surface water / Tube well	Twice in a year	Grab	pH, SS, TDS, Iron, Hardness, Alkalinity Chlorides, Nitrates Sulphate & Fluorides
Ambient air monitoring	Twice in a year	24 hr.	PM10, PM2.5, SOx and NOx
Noise Pollution	Twice in a year	-	Level in dB(A) and dB(C)
Working environment	Once in a year	-	PH, Conductivity, Sulphate, Nitrate, Phosphates, Alkalinity & texture

EXECUTIVE SUMMARY (ENGLISH)
For
SAND MINING (MINOR MINERAL)
FOR FOLLOWING VILLAGES

SR.NO	NAME OF SANDGHAT	VILLAGE NAME	KHASRA NO	TOTAL LEASE AREA	Total Production/ Brass (TPA)	TOTAL PROJECT COST
1.	MANEGAON RIVER SAND MINE AT PURNA RIVER	MANEGAON	36,359,357,355	1.80	3180	3276075
2.	DADULGAON RIVER SAND MINE AT PURNA RIVER	DADULGAON	135,138,to144	1.72	3048	7007352
3.	HIGANABALAPUR RIVER SAND MINE AT PURNA RIVER	HIGANABALAPUR	29,28,23,to 25,3	1.65	2915	6701585
4.	ZHADEGAON RIVER SAND MINE AT PURNA RIVER	ZHADEGAON	173 to 181	1.41	2491	5726809
5	GOLEGAON BK RIVER SAND MINE AT PURNA RIVER	GOLEGAON BK	11,19 to 22,25,27	1.35	2385	5483115
6.	GOLEGAON KH RIVER SAND MINE AT PURNA RIVER	GOLEGAON KH	77 to 81	1.29	1830	4207170
7.	BHEDWAL BK. RIVER SAND MINE AT PURNARIVER	BHEDWAL BK.	324 to 326,311	1.55	2746	6313054

OF
TALUKA:- JALGAONJAMOD, DISTRICT - BULDHANA(Maharashtra)
Lease Validity:-2021-2022 (1 YEAR), Study Period:-Nov, Dec and January
FOR
ENVIRONMENTAL CLEARANCE (PUBLIC HEARING)
("B" under category 1(a) of EIA Notification dated 2006,
S.O. 141(E) dated 15. 01. 2016, MoEF and CC, S.O. 3611(E), Dated 25.07.2018, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2021



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Satpur, Nashik, Maharashtra

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Accredited by NABET: No.: - NABET/EIA/1619/RA0060/ April 19, 2020)

Introduction:

Executive summary is the brief of report prepared for Environmental Management Plan of Sand Spot Mines of Minor Minerals of Buldhana District, Tehsil: Jalgaon (jamod) by M/s. District Mining Office, Buldhana, Maharashtra (Govt. of Maharashtra). This mining activity confined to extraction of sands in villages viz. Manegaon(1.80ha), Dalulgaon, (1.7ha), Higanabalapur (1.65ha), Zhadegaon (1.41ha), GolegaonBk, (1.35 ha), GolegaonKh (1.29ha), and Bhenwal Bk.(1.55 Ha). Sand exposed in the lease area needed to mine by opencast manual mining method without drilling and blasting.

Project Identification

The sand (minor minerals) occurred in Buldhana district required to carry out mining practise as per mining Plan of PMCP under Rule 16 (1) of MCR 2016 and PMCP under Rule 23B of MCDR 1988 is approved by Deputy Director, Directorate of Geology and Mining, Regional Office, Aurangabad vide letter no. STC-10/2020(M.P. Sand) 52 dated 04/02/2020. Proposed lease area is Government land.

Identification of Project Proponent

Table 1: Name and address of the Applicant

Applicant
District Mining Officer, Buldhana (Govt. of Maharashtra) State Bank Chowk Road, Buldhana, Maharashtra 443001 Mob No: - 07262-242411 Email Id:- dmobul@gmail.com

Location of Project

The detailed location details tabulated in the following table

Table 2: Details of Project Location

Particulars	Manegaon	Dalulgaon	Higanabalapur	Zhadegaon	GolegaonBk	GolegaonKh	BHENDWAL BK
Name of the applied mine area	MANEGAON RIVER SAND MINE AT PURNA RIVER	DALULGAON RIVER SAND MINE AT PURNA RIVER	HIGANABALAPUR RIVER SAND MINE AT PURNA RIVER	ZHADEGAON RIVER SAND MINE AT PURNA RIVER	GOLEGAON BK RIVER SAND MINE AT PURNA RIVER	GOLEGAON KH RIVER SAND MINE AT PURNA RIVER	BHENDWAL BK RIVER SAND MINE AT PURNA RIVER
Near village	Manangaon, Yerli, Zadegaon, Khandvi	Palsoda, Pimpalgaon, Kale, Jigaon, Alampur, Yerali	Kharkhundi, Dadulgaon, Manegaon, HingnaBalapur	Manegaon, Yerli, Golegav, GolegavBk	Jalgaonjamo d, Nandura, Shegaon	Jalgaonjamo d, Nandura, Shegaon	Jalgaonjamo d, Nandura, Shegaon
Tehsil,	Jalgaonjamo d	Jalgaonjam od	Jalgaonjamod	Jalgaonjam od	Jalgaonjamo d	Jalgaonjamo d	Jalgaonjamo d
District	Buldhana	Buldhana	Buldhana	Buldhana	Buldhana	Buldhana	Buldhana
State	Maharashtra	Maharashtra	Maharashtra	Maharashtra	Maharashtra	Maharashtra	Maharashtra
Toposheet no.	55D/5	55D/5	MAHARASHTRA	MAHARASHTRA	55D/5	55D/9	55D/5
Latitude	20°56'16.48	20°56'11.55	20°55'28.01"N	20°55'47.53"N	20°55'48.59"	20°56'0.68"	20°55'22.15"

(N)	"N	"N			N	N	N
Longitude (E)	76°27'38.46" E	76°25'4.11" E	76°26'24.67"E	76°29'8.78"E	76°29'15.12" "E	76°30'7.10"E	76°33'18.62" E

Background of the Project

The sand and gravel are the most important construction materials. The sand is produced by weathering of rock carried away by geological agents and deposited in river which will replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country development. As the rise in demand of these construction materials government need to ensure sustainable environment and supply this essential to sustain its developmental activities. This project provides opportunities for sustainable utilisation of resources to Government of Maharashtra. In the recent climatic changes, the sand mining is beneficial as it help to lower the inundation levels at time of floods.

PROJECT DESCRIPTION - Description of Applied Lease and Mining Process

Local geology: Buldhana districts large part occupied of rocks of Deccan trap formation, represented by of most horizontal lava flows of basaltic composition, emplaced by fissures aged to Mesozoic era, on to the lower tertiary era.

Table 3: Available Brass and Life of Mine

Name of Village	Manegaon	Dalulgaon	Higanabalapur	Zhadegaon	GolegaonBk	GolegaonKh	BHENDWAL BK
Quantity of sand for Excavation (Brass)	3180	3048	2915	2491	2385	1830	2746
Life of Mine	1 YEAR	1 YEAR	1 YEAR	1YEAR	1 YEAR	1YEAR	1YEAR

Proposed Working: - Opencast Manual Mining Method will be adopted for extraction of Sand deposits in Jalgaon (jamod), Purna River Bed

The Modified River Bed Sand Mine Working Guidance No.11(1X) and 12 of the Notification of Revenue and Forest Department, Mantralaya Mumbai, The Government of Maharashtra vides Government Decision No. Gaukhani-10/0615/Pra. Kra. 289/Kha dated 03.01.2018; mining will be done manually only with the use of labours, man heads, spades (Pawadas), ghamelas/pans.

Each cycle of operation shall consist of the following operation.

i) Over Burden Removal: No overburden is anticipated. So there is no need of removal of Overburden.

ii) Digging of Sand: Digging of Sand will be done by manually by Labours with the help of Spades (Pawadas).

iii) Loading of Tractor Trolley: Loading of Tractor Trolley will be done by manually with the help of Man heads, Labours with the help of Spades (Pawadas) and Pans (Ghamelas) combination.

iv) Transportation of Sand by Tractor Trolley from River Bed Mine/Sand Ghat to Stack yard: Mine Owner will prepare the Stack yard outside the River bed or Sand Ghat on nearer road. By the use of Tractor Trolley the material will be transported from Sand Ghat to Stockyard.

v) Transportation of Sand from Stack yard to Customers: Transportation of Sand will be done by the use of tractors trolleys from Stack yard to various Customers with permissible quantity. Transportation will be done as per the rules and regulations.

vi) Reclamation: Applicant will do scientific mining so that in Monsoon the Mine Lease area will be automatically backfilled. Only plantation will be done by the applicant on the both bank side of the River and other free places.

Extent of Mechanization: Mining Operations will be done by manual means only. No Mechanization. Services

Description of the Environment (Baseline Environment Status)

The environmental monitoring carried out during winter season of year December 2019. The various environmental components which are thoroughly studied during the study period include:

Meteorological condition

The observed maximum temperature recorded 32 °C and Minimum temperature 21°C and wind blows from east and north.

Ambient Air Quality

The ambient air quality founds under permissible levels of pollution standards.

Ambient Noise Level

In the monitoring stations of four Locations observed maximum level was: 59.1 during day-time and minimum was 34.8 during night-time and found ambient noise level is within prescribed limit.

Water Quality

The water analysis conducted at four sample locations for groundwater and surface water. The major findings are follows.

Ground Water Quality

- It is observed that pH of the ground water samples is range of 6.10 to 7.51, which is between the acceptable pH limit for drinking water.
- Concentration of Total dissolved solids (TDS) and Total hardness observed in different groundwater samples are in range of permissible category stipulated by Bureau of Indian Standards.
- Fluoride Concentration is in between 0.1 to 0.4 mg/l. The desirable limit of 1 mg/l and permissible limit of 1.5 mg/l.

Surface water quality

- Biochemical oxygen Demand - All surface water samples have BOD indicate very low organic pollution load. All BOD values are within prescribed limit (<30.0 mg/l as in IS 10500 :2012).

- Chemical oxygen demand (COD) - All surface water samples have COD values which indicates low level of organic pollution load in term of COD.
- From the analysis data it is observed all parameters are within permissible limit of drinking water standard.

Soil Characteristics

The pH values of the collected samples in the range of 6.56 to 8.30, organic matter in the range of 0.786(%) to 1.96 (%), water holding capacity in the range of 5.56 to 7.70%, potassium in the range of 0.07 to 173, total nitrogen in the range of 0.012 to 0.013 %, bulk density in the range of 1.22 to 1.45gm/cc. These all parameter indicate that soil is not so fertile in this area.

TABLE 4: LAND USE PATTERN OF THE CORE AREA

S . N o.	Particu lars	MANEGAON		DADULGAON		HIGANABALA PUR		ZADEGAON		GOLEGAON Bk		GOLEGAON Kh	
		As on Toda y in Ha	After 1 Years in Ha										
1.	Area of top soil sprea d for a forest ation	-	-	-	-	-	-	-	-	-	-	-	-
2.	Stora ge for top soil	-	-	-	-	-	-	-	-	-	-	-	-
3.	Green Belt	-	-	-	-	-	-	-	-	-	-	-	-
4.	Over burde n Dump	-	-	-	-	-	-	-	-	-	-	-	-
5.	Miner al Stora ge	-	-	-	-	-	-	-	-	-	-	-	-
6.	Infras tructu re (Work shop, Admi	-	-	-	-	-	-	-	-	-	-	-	-

	n. Building etc.)												
7.	Mine road in Mine lease area	-	-	-	-	-	-	-	-	-	-	-	-
8.	Utilized area for Sand Mining	0.000	1.80	0.000	1.72	0.000	1.65	0.000	1.41	0.000	1.35	0.000	1.29
9.	Virgin lease area for Sand Mine and Other Uses	1.80	0.000	1.72	0.000	1.65	0.000	1.41	0.000	1.35	0.000	1.29	0.000
10.	Road	-	-	-	-	-	-	-	-	-	-	-	-
11.	Railway	-	-	-	-	-	-	-	-	-	-	-	-
12.	Tailing Pond	-	-	-	-	-	-	-	-	-	-	-	-
13.	Effluent Treatment Plant	-	-	-	-	-	-	-	-	-	-	-	-
14.	Mineral separation plant	-	-	-	-	-	-	-	-	-	-	-	-
15.	Township Area	-	-	-	-	-	-	-	-	-	-	-	-
16.	Others	-	-	-	-	-	-	-	-	-	-	-	-

	specify												
17.	Ownership	Government River											
Total		1.80	1.80	1.72	1.72	1.65	1.65	1.41	1.41	1.29	1.29	1.35	1.35

S. No.	Particulars	GolegaonKh		BhedwalBk	
		As on Today in Ha	After 1 Years in Ha	As on Today in Ha	After 1 Years in Ha
1.	Area of top soil spread for a forestation	-	-	-	-
2.	Storage for top soil	-	-	-	-
3.	Green Belt	-	-	-	-
4.	Over burden Dump	-	-	-	-
5.	Mineral Storage	-	-	-	-
6.	Infrastructure (Workshop, Admin. Building etc.)	-	-	-	-
7.	Mine road in Mine lease area	-	-	-	-
8.	Utilized area for Sand Mining	0.000	1.29	0.000	1.55
9.	Virgin lease area for Sand Mine and Other Uses	1.29	0.000	1.55	0.000
10.	Road				
11.	Railway	-	-	-	-
12.	Tailing Pond	-	-	-	-
13.	Effluent Treatment Plant	-	-	-	-
14.	Mineral separation plant	-	-	-	-
15.	Township Area	-	-	-	-
16.	Others to specify	-	-	-	-
17.	Ownership	Government River	Government River	Government River	Government River
Total		1.29	1.29	1.55	1.55

Biological Environment

The flora and fauna analysis found as follows

Flora - The study area is mainly dominated by Southern Dry Mixed Deciduous Forests with major species are Aam, Babul, Bel, Bor, Chandan, Jambhul, Karnj, Neem etc.

Fauna - The faunal species commonly encountered during study within the study area are Hare, Rat, Indian fox, etc. No endemic endangered or threatened species of flora and fauna observed during study period.

Demography and Socio- Economics

Jalgaonjamod Tehsil consists Jalgaonjamod Municipal council and 111 villages with total population 1,18,347.

Anticipated Environmental Impact and Mitigation Measures

Impact on Air Quality:- The mining operations to be carried out by manual method and no machinery, drilling and Blasting not allowed. The impact on air quality is not envisaged. Transportation needs to allow only by tractor-trolley of the sand from the ghat to nearby depot or desired destination. The transport routes to be capable for handling this additional traffic.

Mitigation Measures: Following care to be taken for air pollution control.

- Water sprinkling to be done on the roads regularly. This reduces dust emission further by 75%.
- Care to be taken to prevent spillage by covering the carrying vehicles with tarpaulin and sprinkling of water, if dry.
- Fortnightly scraping of road in order to keep the roads almost levelled which ensures smooth flow of vehicles and also prevents spillage.
- Overloading will be strictly prohibited.
- Proper tuning of vehicles to keep the gas emissions under check.

Plantation of trees along the roads will help to reduce the impact of dust in the nearby villages.

Impact on Noise Quality: - No significant noise will be generated due to sand mining as entire operation to be carried out manually. Noise generated only due to tractor trolley being used in sand transportation.

Mitigation measures: The off-site receptors are not significantly affected due to noise generated by sand ghat which is insignificant but some disturbances can be occur due to vehicle movement which is not avoidable. The tractor trolley to be maintains in good running condition which will help to reduce noise to a minimum possible level. An optimum Speed limits to be imposed on tractor trolleys which used for sand transport.

Impact on Water Environment: - Mining of sand from within or near a streambed which has a direct impact on the stream's physical habitat characteristics. As the project activity to be carried out in the dry part of the river bed which will not affect the water environment or riparian habitats. The project to be executed without divert or truncate any stream also envisaged the pumping of water either from the river or tapping the ground water not allowed. The mining activity happening in summer months which will not affect the base flow of the river and this minimise the adverse impact on surface hydrology and ground water regime. The proponent to be adhere all guidelines and rules for proper and scientific method of mining during the period of extraction of sand.

Mitigation measures: During the lease period, the deposit to be worked from the top surface to approved depth of mining within the demarcated lease area only.

Impact on land Environment- The mining and allied activities involved in river bed mining are creation of temporary haul roads / transportation track and formation of mined pits inside river, etc. This sand mining project does not involve any waste generation. Thus no waste dump sites are needed for the project.

Mitigation Measures:

- The mining to be carried out below the water table.
- The contractor with the satisfaction of competent authority to provide drinking water, rest shelter, first aid box and welfare facilities as per prevailing laws.
- The river bed areas to be dug during dry season. At rainy season, sand get replenished during monsoon.
- Sand/Gravel deposit in rainy season in which the material so deposited will available for fresh quarrying.
- The contractors to abide by the Maharashtra Minor Mineral Extraction Development and Regulation) Rules, 2013.

Impact on Biological Environment

The table summarised about the studies of biological environment.

Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement /living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none"> • If birds are noticed crossing the core zone, they will not be disturbed at all; • Labourers will not be allowed to discard food, polythene waste etc., which can attract animals/birds near the core site; • Only low polluting vehicles having PUC will be allowed for carrying mining materials. • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per Noise Pollution (Regulation and Control) Rules 2000, CPCB norms
Disturbance of riparian	The riparian ecosystem or the wetlands will not be

Impact Predicted	Suggestive measure
ecosystem/ wetlands	disturbed by the workers.
Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area once every month to assess the impact on water quality and mining activity will be controlled to maintain the clean water conditions.

Ecological Impacts: Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Sand mining generates extra vehicle traffic, which negatively impairs the environment. Where access roads cross riparian areas, the local environment may be impacted.

Mitigation measures: As the proposed mining to be carried out in a scientific manner not much significant impact is anticipated, however, the following mitigation measure will be taken to further minimize it:

1. The activity to be carried out manually to minimize associate loss, as stated earlier.
2. No mining to be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season.
3. As the mining site has no vegetation, no clearance of vegetation is required.
4. No mining to be carried out in the vicinity of important structure like bridges, dam and other structures if any.
5. Mining to be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
6. No mining to be carried out during the rainy season to minimize impact on aquatic life.
7. The mining activity needs to deploy a tractor for transportation of sand from the mine to desired destination that may cause some loss to riparian habitat. Safe site / site having least impact will be selected for transportation, all the vehicles employed for transportation purpose will be PUC certified. On closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.
8. No lighting allowed in the lease area.
9. No piling of sand allowed in the area.
10. No discard of food, polythene waste etc. allowed in the lease area which would distract/attract the wildlife.
11. No night time mining allowed which may catch the attention of wild life.
12. Access roads will not encroach into the riparian zones and no riparian vegetation cleared off for the mining transportation of sand.

Analysis of Alternatives

Site Alternatives- The mine is located along the where the sand exists in enough quantity to be economically extracted. Mining locations are preferred near the markets or along the transportation route.

Technology alternatives: -No alternative technology only open cast Manual Mining Method will be adopted for extraction of Sand deposits.

Environment Monitoring Program

During the execution of the project activity, the sampling and analysis of various environmental attributes to be carried out as per guidelines of central pollution control board and State pollution control board. An Environment Management Cell to be set-up to implement this mining program.

Additional Studies

Risk Studies-Hazard identification and risk analysis involves identification of undesirable events that leads to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects

Disaster Studies: - Proper disaster is planning to be done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. Fire fighting equipment and other safety appliances to be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood.

ENVIRONMENT MANAGEMENT PLAN (EMP)

This opencast mining operation may comprises for various activities related to digging and material handling which may be potential sources of environment pollution. The Sand Mine to be develops systematically by forming benches with over all pit slopes of 45° or angle of response which stabilizes the benches. Also stringent efforts to be ensure to suppress the dust at source by adequate watering. A mobile water of 2000 litters capacity to be engaged available throughout the working shift. The EMP implementation and sampling parameters summarised in following table.

Environmental Issue	Management Measures	Implementation
Air Environment	<ul style="list-style-type: none"> • 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 tractor trolleys. The sand carrying vehicles shall be covered by tarpaulin sheets. • The Green Belt development will be prepared along the haul roads, which will act as a pollution sink. • To minimize the vehicular pollution from 	Project authorities through regular monitoring.

	the sand transporting vehicles, the following conditions will insist to permit the vehicles of the transporters	
Noise and Vibration	<ul style="list-style-type: none"> • Phasing out of old and worn out tractor trolleys. • 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. 	Project authorities through regular monitoring.
Water environment	<ul style="list-style-type: none"> • Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed. • 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 tractor trolleys 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. 	Project authorities through regular monitoring.
Biological Environment	<ul style="list-style-type: none"> • Mining activities will be restricted to day-time so that fauna will not disturb at night. • Material will be covered with tarpaulin during transportation. • Water sprinkling will be done on haul roads to control fugitive emissions. 	Project authorities through regular monitoring.
Occupational health and safety and public Health and safety.	<ul style="list-style-type: none"> • Regular water sprinkling on haul roads. • Dust mask will be provided to the workers. • Safety of the employee during mining will be taken care as per Mine regulations. • Medical records will be keep maintained. 	Project authorities through regular monitoring.
Socio economic	<ul style="list-style-type: none"> • Employment will be given to local people. 	Regular

Environment	<ul style="list-style-type: none"> • Regular medical camps will be organized. • Funds will be provided for development activities in nearby villages. 	monitoring by Project authorities.
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TABLE 6: COST ESTIMATES OF EMP IMPLEMENTATION
(Investment and recurring cost in lacs/year)

S. No	Particulars	Description	MANEGAON		DADULGAON		HIGANABAL APUR		ZADEGAON		GOLEGAON Bk		GOLEGAON KH		BHEDWAL BK			
			Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)
1	Environmental Monitoring programme	Monitoring for Air, water, noise & ground water	0.90	1.80	0.90	1.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
2	Air Pollution Control	Water sprinkling during mining activities	1.00	2.00	1.00	2.00	1.00	4.50	1.00	4.50	1.00	4.50	1.00	4.50	1.00	4.50	1.00	4.50
3	Approach Road Maintenance (Construction of WBM Road Length(1000mtX 6mt)		1.25	1.30	1.25	1.25	1.25	1.20	1.25	1.20	1.25	1.20	1.25	1.20	1.25	1.20	1.25	1.20
4	Plantation (520 plants planted)	520 plants on barrier zone @ Rs.450/plant	2.94	3.7	2.97	4.0	2.82	4.3	2.49	4.3	2.60	4.5	2.53	4.5	2.89	4.5	2.89	4.5
		300 plants on approach road & village																

		@ Rs.200/ plant														
5.	Gabian Structure for arresting gravels	Gabian wall with the help of old cement bags rivers pebbles etc to arrest erosion of boundary wall intermingling of gavels etc	1.00	0.20	1.00	0.20	1.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00	1.00	2.00
6.	Monitoring of Sand	CCTV Cameras (1500 x2)	0.30	0.60	0.30	0.60	0.80	1.60	0.80	1.60	0.80	1.60	0.80	1.60	0.80	1.60
7.	Water pollution Control	Construction of bund along lease boundary & Mobile Toilet	0.70	Nil	0.70	Nil	1.00	Nil	1.00	Nil	1.00	Nil	1.00	Nil	1.00	Nil
8.	Noise pollution	Plantation including tree guard	0.80	1.60	0.80	0.60	0.30	1.00	1.30	1.00	1.30	1.00	1.30	1.00	1.30	1.00
9.	Occupational Health & safety	Periodic Health Checkups of workers	-	0.90	-	0.90	-	1.00	-	1.00	-	1.00	-	1.00	-	1.00
TOTAL			8.89	12.1	8.92	12.4	11.97	16.9	11.04	16.95	11.15	17.15	11.8	17.15	11.4	17.15

TABLE 7: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequencies	Duration of Station	Important Monitoring Parameters
Surface water / Tube well	Twice in a year	Grab	pH, SS, TDS, Iron, Hardness, Alkalinity Chlorides, Nitrates Sulphate and Fluorides
Ambient air monitoring	Twice in a year	24 hr.	PM10, PM2.5, SOx and NOx
Noise Pollution	Twice in a year	-	Level in dB(A) and dB(C)
Working environment	Once in a year	-	PH, Conductivity, Sulphate, Nitrate, Phosphates, Alkalinity and texture

EXECUTIVE SUMMARY (ENGLISH)
For
SAND MINING (MINOR MINERAL)
FOR FOLLOWING VILLAGES

SR.NO	NAME OF SANDGHAT	VILLAGE NAME	KHASRA NO	TOTAL LEASE AREA	Total Production/ Brass (TPA)	TOTAL PROJECT COST
1.	ITKHED-A RIVER SAND MINE AT PURNA RIVER	ITKHED	28, 41, 42, 45, 46, 47, 52.	1.60	2827	6499273

OF
TALUKA:-SANGRAMPUR, DISTRICT - BULDHANA (Maharashtra)
Lease Validity:-2021-2022 (1 YEAR),

FOR
ENVIRONMENTAL CLEARANCE (PUBLIC HEARING)
("B" under category 1(a) of EIA Notification dated 2006,
S.O. 141(E) dated 15. 01. 2016, MoEF& CC, S.O. 3611(E), Dated 25.07.2018, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2021



MANTRAS GREEN RESOURCES LTD
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Accredited by NABET: No.: - NABET/EIA/1619/RA0060/ April 19, 2020)
OCT- 2022

Introduction:

Executive summary is the brief of report prepared for Environmental Management Plan of Sand Spot Mines of Minor Minerals of Buldhana District, Tehsil SANGRAMPUR by M/s. District Mining Office, Buldhana, Maharashtra (Govt. of Maharashtra). The mining is confined to extraction of sand in villages viz. Itkhed-A (1.60 Ha), Sand exposed in the lease area needed to mine by opencast manual mining method without drilling and blasting.

Project Identification

The sand (minor minerals) occurred in Buldhana district required to carry out mining practice as per mining Plan of PMCP under Rule 16 (1) of MCR 2016 and PMCP under Rule 23B of MCDR 1988 is approved by Deputy Director, Directorate of Geology and Mining, Regional Office, Aurangabad vide letter no. STC-10/2020(M.P. Sand) 52 dated 04/02/2020. Proposed lease area is Government land.

Identification of Project Proponent**Table 1: Name and address of the Applicant**

Applicant
District Mining Officer, Buldhana (Govt. of Maharashtra) State Bank Chowk Road, Buldhana, Maharashtra 443001 Mob No: - 07262-242411 Email Id:- dmobul@gmail.com

Location of Project

The detailed location details tabulated in the following table

Table 2: Details of Project Location

Particulars	ITKHED
Tehsil	Sangrampur
District	Buldhana
State	Maharashtra
Toposheet no.	55D/9
Latitude (N)	20°55'8.75"N
Longitude (E)	76°37'35.25"E

Background of the Project

The sand and gravel are the most important construction materials. The sand is produced by weathering of rock carried away by geological agents and deposited in river which will replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country development. As the rise in demand of these

construction materials government need to ensure sustainable environment and supply this essential to sustain its developmental activities. This project provides opportunities for sustainable utilisation of resources to Government of Maharashtra. In the recent climatic changes, the sand mining is beneficial as it help to lower the inundation levels at time of floods.

Local geology: Buldhana districts large part occupied of rocks of Deccan trap formation, represented by of most horizontal lava flows of basaltic composition, emplaced by fissures aged to Mesozoic era, on to the lower tertiary era.

Table 3: Available Brass and Life of Mine

Name of Village	ITKHED
Quantity of sand for Excavation (Brass)	2827
Life of Mine	1 YEAR

Proposed Working: - Opencast Manual Mining Method will be adopted for extraction of Sand deposits in Sangrampur, Purna River Bed

The Modified River Bed Sand Mine Working Guidance No.11(1X) and 12 of the Notification of Revenue and Forest Department, Mantralaya Mumbai, The Government of Maharashtra vides Government Decision No. Gaukhani-10/0615/Pra. Kra. 289/Kha dated 03.01.2018; mining will be done manually only with the use of labours, man heads, spades (Pawadas), ghamelas/pans.

Each cycle of operation shall consist of the following operation.

i) Over Burden Removal: No overburden is anticipated. So there is no need of removal of Overburden.

ii) Digging of Sand: Digging of Sand will be done by manually by Labours with the help of Spades (Pawadas).

iii) Loading of Tractor Trolley: Loading of Tractor Trolley will be done by manually with the help of Man heads, Labours with the help of Spades (Pawadas) and Pans (Ghamelas) combination.

iv) Transportation of Sand by Tractor Trolley from River Bed Mine/Sand Ghat to Stack yard: Mine Owner will prepare the Stack yard outside the River bed or Sand Ghat on nearer road. By the use of Tractor Trolley the material will be transported from Sand Ghat to Stockyard.

v) Transportation of Sand from Stack yard to Customers: Transportation of Sand will be done by the use of tractors trolleys from Stack yard to various Customers with permissible quantity. Transportation will be done as per the rules and regulations.

vi) Reclamation: Applicant will do scientific mining so that in Monsoon the Mine Lease area will be automatically backfilled. Only plantation will be done by the applicant on the both bank side of the River and other free places.

Extent of Mechanization: Mining Operations will be done by manual means only. No Mechanization. Services

Description of the Environment (Baseline Environment Status)

The environmental monitoring carried out during winter season of year December 2019. The various environmental components which are thoroughly studied during the study period include:

Meteorological condition

The observed maximum temperature recorded 32 °C and Minimum temperature 21°C and wind blows from east and north.

Ambient Air Quality

The ambient air quality founds under permissible levels of pollution standards.

Ambient Noise Level

In the monitoring stations of four Locations observed maximum level was: 59.1 during day-time and minimum was 34.8 during night-time and found ambient noise level is within prescribed limit.

Water Quality

The water analysis conducted at four sample locations for groundwater and surface water. The major findings are follows.

Ground Water Quality

- It is observed that pH of the ground water samples is range of 6.10 to 7.51, which is between the acceptable pH limit for drinking water.
- Concentration of Total dissolved solids (TDS) and Total hardness observed in different groundwater samples are in range of permissible category stipulated by Bureau of Indian Standards.
- Fluoride Concentration is in between 0.1 to 0.4 mg/l. The desirable limit of 1 mg/l and permissible limit of 1.5 mg/l.



Surface water quality

- Biochemical oxygen Demand - All surface water samples have BOD indicate very low organic pollution load. All BOD values are within prescribed limit (<30.0 mg/l as in IS 10500 :2012).
- Chemical oxygen demand (COD) - All surface water samples have COD values which indicates low level of organic pollution load in term of COD.

From the analysis data it is observed all parameters are within permissible limit of drinking water standard.

Soil Characteristics

The pH values of the collected samples were in the range of 6.55 to 8.30, organic matter in the range of 0.786(%) to 1.96 (%), water holding capacity in the range of 5.59 to 7.75%, potassium in the range of 0.07 to 174, total nitrogen in the range of 0.011to 0.014 %, bulk density in the range of 1.23to 1.48gm/cc. These all parameter indicate that soil is not so fertile in this area.

TABLE 4: LAND USE PATTERN OF THE CORE AREA

S. No.	Particulars	ITKHED	
		As on Today in Ha	After 1 Years in Ha
1.	Area of top soil spread for a forestation	-	-
2.	Storage for top soil	-	-
3.	Green Belt	-	-
4.	Over burden Dump	-	-
5.	Mineral Storage	-	-
6.	Infrastructure (Workshop, Admin. Building etc.)	-	-
7.	Mine road in Mine lease area	-	-
8.	Utilized area for Sand Mining	0.000	1.60
9.	Virgin lease area for Sand Mine & Other Uses	1.60	0.000
10.	Road	-	-
11.	Railway	-	-
12.	Tailing Pond	-	-
13.	Effluent Treatment Plant	-	-
14.	Mineral separation plant	-	-
15.	Township Area	-	-
16.	Others to specify	-	-
17.	Ownership	Government River	Government River
Total		1.60	1.60

Biological Environment

The flora and fauna analysis found as follows

Flora - The study area is mainly dominated by Southern Dry Mixed Deciduous Forests with major species are Aam, Babul, Bel, Bor, Chandan, Jambhul, Karnj, Neem etc.

Fauna - The faunal species commonly encountered during study within the study area are Hare, Rat, Indian fox, etc. No endemic endangered or threatened species of flora and fauna observed during study period.

Demography and Socio- Economics

Sangrampur Tehsil consists 122 villages with total population 137092 .

Anticipated Environmental Impact and Mitigation Measures

Impact on Air Quality :- The mining operations to be carried out by manual method and no machinery, drilling and Blasting not allowed. The impact on air quality is not envisaged. Transportation needs to allow only by tractor-trolley of the sand from the ghat to nearby depot or desired destination. The transport routes to be capable for handling this additional traffic.

Mitigation Measures: Following care to be taken for air pollution control.

- Water sprinkling to be done on the roads regularly. This reduces dust emission further by 75%.
- Care to be taken to prevent spillage by covering the carrying vehicles with tarpaulin and sprinkling of water, if dry.
- Fortnightly scraping of road in order to keep the roads almost levelled which ensures smooth flow of vehicles and also prevents spillage.
- Overloading will be strictly prohibited.
- Proper tuning of vehicles to keep the gas emissions under check.

Plantation of trees along the roads will help to reduce the impact of dust in the nearby villages.

Impact on Noise Quality: - No significant noise will be generated due to sand mining as entire operation to be carried out manually. Noise generated only due to tractor trolley being used in sand transportation.

Mitigation measures: The off-site receptors are not significantly affected due to noise generated by sand ghat which is insignificant but some disturbances can be occur due to vehicle movement which is not avoidable. The tractor trolley to be maintains in good running condition which will help to reduce noise to a minimum possible level. An optimum Speed limits to be imposed on tractor trolleys which used for sand transport.

Impact on Water Environment: - Mining of sand from within or near a streambed which has a direct impact on the stream's physical habitat characteristics. As the project activity to be carried out in the dry part of the river bed which will not affect the water environment or

riparian habitats. The project to be executed without divert or truncate any stream also envisaged the pumping of water either from the river or tapping the ground water not allowed. The mining activity happening in summer months which will not affect the base flow of the river and this minimise the adverse impact on surface hydrology and ground water regime. The proponent to be adhere all guidelines and rules for proper and scientific method of mining during the period of extraction of sand.

Mitigation measures: During the lease period, the deposit to be worked from the top surface to approved depth of mining within the demarcated lease area only.

Impact on land Environment- The mining and allied activities involved in river bed mining are creation of temporary haul roads / transportation track and formation of mined pits inside river, etc. This sand mining project does not involve any waste generation. Thus no waste dump sites are needed for the project.

Mitigation Measures:

- The mining to be carried out below the water table.
- The contractor with the satisfaction of competent authority to provide drinking water, rest shelter, first aid box and welfare facilities as per prevailing laws.
- The river bed areas to be dug during dry season. At rainy season, sand get replenished during monsoon.
- Sand/Gravel deposit in rainy season in which the material so deposited will available for fresh quarrying.
- The contractors to abide by the Maharashtra Minor Mineral Extraction Development and Regulation) Rules, 2013.

Impact on Biological Environment

The table summarised about the studies of biological environment.

Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement /living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none"> • If birds are noticed crossing the core zone, they will not be disturbed at all; • Labourers will not be allowed to discard food, polythene waste etc., which can attract animals/birds near the core site; • Only low polluting vehicles having PUC will be allowed for carrying mining materials. • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per Noise Pollution (Regulation and Control) Rules 2000, CPCB norms
Disturbance of riparian ecosystem/ wetlands	The riparian ecosystem or the wetlands will not be disturbed by the workers.

Impact Predicted	Suggestive measure
Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area once every month to assess the impact on water quality and mining activity will be controlled to maintain the clean water conditions.

Ecological Impacts: Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Sand mining generates extra vehicle traffic, which negatively impairs the environment.

Where access roads cross riparian areas, the local environment may be impacted.

Mitigation measures: As the proposed mining to be carried out in a scientific manner not much significant impact is anticipated, however, the following mitigation measure will be taken to further minimize it:

1. The activity to be carried out manually to minimize associate loss, as stated earlier.
2. No mining to be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season.
3. As the mining site has no vegetation, no clearance of vegetation is required.
4. No mining to be carried out in the vicinity of important structure like bridges, dam and other structures if any.
5. Mining to be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
6. No mining to be carried out during the rainy season to minimize impact on aquatic life.
7. The mining activity needs to deploy a tractor for transportation of sand from the mine to desired destination that may cause some loss to riparian habitat. Safe site / site having least impact will be selected for transportation, all the vehicles employed for transportation purpose will be PUC certified. On closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.
8. No lighting allowed in the lease area.
9. No piling of sand allowed in the area.
10. No discard of food, polythene waste etc. allowed in the lease area which would distract/attract the wildlife.
11. No night time mining allowed which may catch the attention of wild life.

12. Access roads will not encroach into the riparian zones and no riparian vegetation cleared off for the mining transportation of sand.

Analysis of Alternatives

Site Alternatives- The mine is located along the where the sand exists in enough quantity to be economically extracted. Mining locations are preferred near the markets or along the transportation route.

Technology alternatives : - No alternative technology only opencast Manual Mining Method will be adopted for extraction of Sand deposits.

Environment Monitoring Program

During the execution of the project activity, the sampling and analysis of various environmental attributes to be carried out as per guidelines of central pollution control board and State pollution control board. An Environment Management Cell to be set-up to implement this mining program.

Additional Studies

Risk Studies - Hazard identification and risk analysis involves identification of undesirable events that leads to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects

Disaster Studies: - Proper disaster is planning to be done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. Fire fighting equipment and other safety appliances to be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood.

ENVIRONMENT MANAGEMENT PLAN (EMP)

This opencast mining operation may comprises for various activities related to digging and material handling which may be potential sources of environment pollution. The Sand Mine to be develops systematically by forming benches with over all pit slopes of 45° or angle of response which stabilizes the benches. Also stringent efforts to be ensure to suppress the dust at source by adequate watering. A mobile water of 2000 liters capacity to be engaged available throughout the working shift. The EMP implementation and sampling parameters summarised in following table.

Environmental Issue	Management Measures	Implementation
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Air Environment	<ul style="list-style-type: none"> • 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 tractor trolleys. The sand carrying vehicles shall be covered by tarpaulin sheets. • The Green Belt development will be prepared along the haul roads, which will act as a pollution sink. • To minimize the vehicular pollution from the sand transporting vehicles, the following conditions will insist to permit the vehicles of the transporters 	Project authorities through regular monitoring.
Noise and Vibration	<ul style="list-style-type: none"> • Phasing out of old and worn out tractor trolleys. • 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. 	Project authorities through regular monitoring.
Water environment	<ul style="list-style-type: none"> • Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed. • 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 tractor trolleys 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. 	Project authorities through regular monitoring.
Biological	<ul style="list-style-type: none"> • Mining activities will be restricted to day- 	Project

Environment	<p>time so that fauna will not disturb at night.</p> <ul style="list-style-type: none"> Material will be covered with tarpaulin during transportation. Water sprinkling will be done on haul roads to control fugitive emissions. 	authorities through regular monitoring.
Occupational health and safety and public Health and safety.	<ul style="list-style-type: none"> Regular water sprinkling on haul roads. Dust mask will be provided to the workers. Safety of the employee during mining will be taken care as per Mine regulations. Medical records will be keep maintained. 	Project authorities through regular monitoring.
Socio economic Environment	<ul style="list-style-type: none"> Employment will be given to local people. Regular medical camps will be organized. Funds will be provided for development activities in nearby villages. 	Regular monitoring by Project authorities.

TABLE 6: COST ESTIMATES OF EMP IMPLEMENTATION

S.No	Particulars		ITKHED-A	
			Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)
1	Environmental Monitoring programme	Monitoring for Air, water, noise & groundwater	1.00	1.00
2	Air Pollution Control	Water sprinkling during mining activities	1.00	4.50
3	Approach Road Maintenance of 2500mt Road X500Rs /mt		1.25	1.20
4	Plantation (530 plants planted)	530 plants on barrier zone @ Rs.450/plant	2.98	4.5
		300 plants on approach road & village @ Rs.450/plant		
5.	Gabian Structure for arresting gravels	Gabian wall with the help of old cement bags rivers pebbles etc to arrest erosion of boundary wall intermixing of gavels etc	1.00	2.00
6.	Monitoring of Sand	CCTV Cameras (15000 x2)	0.80	1.60
7.	Water pollution control	Construction of bund along lease boundary & Mobile Toilet	1.00	Nil
8.	Noise Pollution	Plantation including tree guard	1.30	1.00

(Investment and recurring cost in lacs/year)

9.	Occupational Health & safety	Periodic Health Checkups of workers	-	1.00
TOTAL			11.53	17.15

TABLE 7: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequencies	Duration of Station	Important Monitoring Parameters
Surface water / Tube well	Twice in a year	Grab	pH, SS, TDS, Iron, Hardness, Alkalinity Chlorides, Nitrates Sulphate & Fluorides
Ambient air monitoring	Twice in a year	24 hr.	PM10, PM2.5, SO _x and NO _x
Noise Pollution	Twice in a year	-	Level in dB(A) and dB(C)
Working environment	Once in a year	-	PH, Conductivity, Sulphate, Nitrate, Phosphates, Alkalinity & texture

EXECUTIVE SUMMARY (ENGLISH)
For
SAND MINING (MINOR MINERAL)
FOR FOLLOWING VILLAGES

SR.NO	NAME OF SANDGHAT	VILLAGE NAME	KHASRA NO	TOTAL LEASE AREA	Total Production/ Brass (TPA)	TOTAL PROJECT COST
1.	BODGAON RIVER SAND MINE AT PURNA RIVER	BODGAON	173, 177, 180, 185, 194, 4 to 7	1.17	4134	9504066
2.	BHONGAON RIVER SAND MINE AT PURNA RIVER	BHONGAON	1, 7 to 10	1.30	4611	8138460

OF
TALUKA:-SHEGAV, DISTRICT – BULDHANA(Maharashtra)
Lease Validity:-2021 -2022 (1 YEAR), Study Period:-Nov, Dec & January
FOR
ENVIRONMENTAL CLEARANCE (PUBLIC HEARING)
("B" under category 1(a) of EIA Notification dated 2006,
S.O. 141(E) dated 15. 01. 2016, MoEF& CC, S.O. 3611(E), Dated 25.07.2018, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2021



**Applicant District Mining Officer, Buldhana
Government of India**

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Email: info@mantrasresources.com,
uksharma@mantrasresources.com

Accredited by NABET: No.: - NABET/EIA/1619/RA0060/ April 19, 2020)
October– 2022

Introduction:

The sand and gravel are the most important construction materials. The sand is produced by weathering of rock carried away by geological agents and deposited in river which will

replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country development. As the rise in demand of these construction materials government need to ensure sustainable environment and supply this essential to sustain its developmental activities. This project provides opportunities for sustainable utilisation of resources to Government of Maharashtra. The sand mining is beneficial as it help to lower the inundation levels at time of floods as the recent climatic changes.

Project Identification

The sand (minor minerals) occurred in Buldhana district required to carry out mining practise as per mining Plan of PMCP under Rule 16 (1) of MCR 2016 and PMCP under Rule 23B of MCDR 1988 is approved by Deputy Director, Directorate of Geology and Mining, Regional Office, Aurangabad vide letter no. STC-10/2020(M.P. Sand) 52 dated 04/02/2020. Proposed lease area is Government land.

Identification of Project Proponent

Table 1: Name and address of the Applicant

Applicant
District Mining Officer, Buldhana (Govt. of Maharashtra) State Bank Chowk Road, Buldhana, Maharashtra 443001 Mob No: - 07262-242411 Email Id:- dmobul@gmail.com

Location of Project

The detailed location details tabulated in the following table

Table 2: Details of Project Location

Particulars	BODGAON	BHONGAON
Name of the applied mine area	BODGAON RIVER SAND MINE AT PURNA RIVER	BHONGAON RIVER SAND MINE AT PURNA RIVER
Near village		
Tehsil	Shegav	
District	Buldhana	
State	Maharashtra	
Toposheet no.	55D/9	55D/9
Latitude (N)	20°55'30.86"N	20°55'18.22"N
Longitude (E)	76°38'8.47"E	76°37'9.44"E

Background of the Project

The sand and gravel are one of the most important construction materials. The sand is produced by weathering of basaltic rock carried away by geological agents and deposited in river will replenish every year with monsoonal cycle. Availability of sand is vital for the development of the infrastructure in the country. As the rise in requirement of these construction materials government need to ensure sustainable supply is necessary to sustain its developmental activities. This project provides opportunities for Government of Maharashtra to sustainable utilisation of resources. In the recent climatic changes, the sand mining is beneficial as it help to lower the inundation levels at time of floods.

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17.	Ownership	Government River	Government River	Government River	Government River
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Shegaon Tehsil consists Shegaon Municipal council and 95 villages with total population 156116.

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Anticipated impact and mitigation measures for biological environment

Impact Predicted	Suggestive measure
Disturbance to free movement /living of wild fauna viz. Birds, Reptiles etc.	<ul style="list-style-type: none"> • If birds are noticed crossing the core zone, they will not be disturbed at all; • Labourers will not be allowed to discard food, polythene waste etc., which can attract animals/birds near the core site; • Only low polluting vehicles having PUC will be allowed for carrying mining materials. • Noise level will be maintained within permissible limit (silent zone-50dB (A) during day time or residential zone 55dB (A)) as per Noise Pollution (Regulation and Control) Rules 2000, CPCB norms
Disturbance of riparian ecosystem/ wetlands	The riparian ecosystem or the wetlands will not be disturbed by the workers.
Monitoring of upstream and downstream water quality	Water quality will be monitored from upstream and downstream area once every month to assess the impact on water quality and mining activity will be controlled to maintain the clean water conditions.

Ecological Impacts: Excessive and unscientific riverbed sand mining results in the destruction of aquatic and riparian habitat through large changes in the channel morphology. Impacts include bed degradation, bed coarsening, lowered water tables near the streambed, and channel instability. These physical impacts cause degradation of riparian and aquatic biota and may lead to the undermining of bridges and other structures. Continued extraction may also cause the entire streambed to degrade to the depth of excavation.

Sand mining generates extra vehicle traffic, which negatively impairs the environment. Where access roads cross riparian areas, the local environment may be impacted.

Mitigation measures: As the proposed mining to be carried out in a scientific manner not much significant impact is anticipated, however, the following mitigation measure will be taken to further minimize it:

1. The activity to be carried out manually to minimize associate loss, as stated earlier.
2. No mining to be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season.
3. As the mining site has no vegetation, no clearance of vegetation is required.
4. No mining to be carried out in the vicinity of important structure like bridges, dam and other structures if any.
5. Mining to be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.
6. No mining to be carried out during the rainy season to minimize impact on aquatic life.
7. The mining activity needs to deploy a tractor for transportation of sand from the mine to desired destination that may cause some loss to riparian habitat. Safe site / site having least impact will be selected for transportation, all the vehicles employed for transportation purpose will be PUC certified. On closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts.
8. No lighting allowed in the lease area.
9. No piling of sand allowed in the area.
10. No discard of food, polythene waste etc. allowed in the lease area which would distract/attract the wildlife.
11. No night time mining allowed which may catch the attention of wild life.
12. Access roads will not encroach into the riparian zones and no riparian vegetation cleared off for the mining transportation of sand.

Analysis of Alternatives

Site Alternatives- The mine is located along the where the sand exists in enough quantity to be economically extracted. Mining locations are preferred near the markets or along the transportation route.

Technology alternatives: -No alternative technology only opencast Manual Mining Method will be adopted for extraction of Sand deposits.

Environment Monitoring Program

During the execution of the project activity, the sampling and analysis of various environmental attributes to be carried out as per guidelines of central pollution control board and State pollution control board. An Environment Management Cell to be set-up to implement this mining program.

Additional Studies

Risk Studies- Hazard identification and risk analysis involves identification of undesirable events that leads to a hazard, the analysis of hazard mechanism by which this undesirable event could occur and usually the estimation of extent, magnitude and likelihood of harmful effects

Disaster Studies: - Proper disaster is planning to be done to meet any emergency situation arising due to fire, explosion, sudden leakage of gas etc. Fire fighting equipment and other safety appliances to be kept ready for use during disaster/emergency situation including natural calamities like earthquake/flood.

ENVIRONMENT MANAGEMENT PLAN (EMP)

This opencast mining operation may comprises for various activities related to digging and material handling which may be potential sources of environment pollution. The Sand Mine to be develops systematically by forming benches with over all pit slopes of 45° or angle of response which stabilizes the benches. Also stringent efforts to be ensure to suppress the dust at source by adequate watering. A mobile water of 2000 liters capacity to be engaged available throughout the working shift. The EMP implementation and sampling parameters summarised in following table.

Environmental Issue	Management Measures	Implementation
Air Environment	<ul style="list-style-type: none"> • 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 tractor trolleys. The sand carrying vehicles shall be covered by tarpaulin sheets. • The Green Belt development will be prepared along the haul roads, which will act as a pollution sink. • To minimize the vehicular pollution from the sand transporting vehicles, the following conditions will insist to permit the vehicles of the transporters 	Project authorities through regular monitoring.
Noise and Vibration	<ul style="list-style-type: none"> • Phasing out of old and worn out tractor trolleys. • Provision of green belts along the road networks. • Care will be taken to produce minimum 	Project authorities through regular monitoring.

	<p>sound during sand loading.</p> <ul style="list-style-type: none"> • Use of Backhoe and ear plugs may be provided to protect the labors working at the site. 	
Water environment	<ul style="list-style-type: none"> • Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed. • 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 tractor trolleys 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. 	Project authorities through regular monitoring.
Biological Environment	<ul style="list-style-type: none"> • Mining activities will be restricted to day-time so that fauna will not disturb at night. • Material will be covered with tarpaulin during transportation. • Water sprinkling will be done on haul roads to control fugitive emissions. 	Project authorities through regular monitoring.
Occupational health and safety and public Health and safety.	<ul style="list-style-type: none"> • Regular water sprinkling on haul roads. • Dust mask will be provided to the workers. • Safety of the employee during mining will be taken care as per Mine regulations. • Medical records will be keep maintained. 	Project authorities through regular monitoring.
Socio economic Environment	<ul style="list-style-type: none"> • Employment will be given to local people. • Regular medical camps will be organized. • Funds will be provided for development activities in nearby villages. 	Regular monitoring by Project authorities.

**TABLE 6: COST ESTIMATES OF EMP IMPLEMENTATION
(Investment and recurring cost in lacs/year)**

S.No	Particulars		BODGAON		BHONGAON	
			Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)	Capital cost Rs. in Lacs	Operational and Maintenance cost (Rs. in Lacs/year)
1	Environmental Monitoring programme	Monitoring for Air, water, noise & groundwater	0.40	0.80	0.40	0.80
2.	Air Pollution Control	Water sprinkling during mining activities	0.50	1.00	0.50	1.00
3.	Air Pollution Control		1.25	1.30	1.30	1.25
4.	Plantation (330plants planted)	330 plants on barrier zone @ Rs.450/plant	2.35	4.5	2.35	4.5
		200 plants on approach road & village @ Rs.350/plant				
5.	Gabian Structure for arresting gravels	Gabian wall with the help of old cement bags rivers pebbles etc to arrest erosion of boundary wall intermixing of gavel etc	0.50	1.00	0.50	1.00
6.	Monitoring of Sand	CCTV Cameras (15000 x2)	0.30	0.60	0.30	0.60
7.	Water Pollution Control	Construction of bund along lease boundary & Mobile Toilet	0.50	Nil	0.50	Nil

8.	Noise pollution	Plantation including tree guard	0.50	1.00	0.50	1.00
9.	Occupational Health & safety	Periodic Health Checkups of workers	-	1.00	-	1.00
TOTAL			6.3	11.2	6.3	11.2

TABLE 7: MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

Particulars	Monitoring Frequencies	Duration of Station	Important Monitoring Parameters
Surface water / Tube well	Twice in a year	Grab	pH, SS, TDS, Iron, Hardness, Alkalinity Chlorides, Nitrates Sulphate & Fluorides
Ambient air monitoring	Twice in a year	24 hr.	PM10, PM2.5, SO _x and NO _x
Noise Pollution	Twice in a year	-	Level in dB(A) and dB(C)
Working environment	Once in a year	-	PH, Conductivity, Sulphate, Nitrate, Phosphates, Alkalinity & texture