

**ENVIRONMENTAL MANAGEMENT PLAN**

**For**

**“MADALLI SAND BLOCK NO- 1”**

**EXTENT -3-20Acres (1.416 Ha)**

**ADJACENT TO**

**SY. NO- 150,151,173,175 & 176**

**IN**

**MADALLI - VILLAGE,**

**SHIRAHATTI - TALUK,**

**GADAG - DISTRICT**

**KARNATAKA**

***Table of Contents***

1. Introduction .....	3
1.1 Project Details .....	3
1.2 Salient feature of the Project .....	3
1.3 Location and area accessibility .....	4
1.4 Topography .....	4
1.5 Estimation of reserves in the area: .....	4
2. Quarrying .....	5
2.1 Proposed method of quarrying: .....	5
2.2 Year wise production: .....	5
2.3 Drilling & Blasting:.....	5
2.4 Loading: .....	6
2.5 Hauling and Transport: .....	6
2.6 Disposal of waste .....	6
2.7 Employment potential.....	6
3. Baseline Environment.....	6
3.1 Land environment .....	6
3.2 Water quality.....	7
3.3 Noise and vibrations.....	7

3.4	Air Quality.....	7
3.5	Climatic conditions .....	7
3.6	Socio-Economic environment.....	8
3.7	Common Fish species in the River .....	8
4.	Environmental Management Plan .....	10
4.1	Introduction .....	10
4.2	Environmental Impact Statement & Control measures .....	10
4.2.1	Climate.....	10
4.2.2	Air Environment.....	11
4.2.3	Noise Environment .....	11
4.2.4	Water Environment .....	11
4.2.5	Biological environment:.....	12
4.2.6	Land Restoration/Reclamation.....	12
5.	Environmental Management Plan Implementation.....	14
6.	Conclusions .....	15

## 1. Introduction

### 1.1 Project Details

The proposed Madalli Sand Block No- 1 is adjacent Sy. No- 150,151,173,175 & 176 in Madalli Village, Shirahatti - Taluk, Gadag – District, Karnataka. The Madalli Sand Block No- 1 is proposed for ordinary sand Quarrying over an extent of 3-20Acres (1.416 Ha).

#### **Importance of Sand:-**

Sand has become a very important mineral for our society due to its many uses. It can be used for making concrete, filling roads, building sites, brick-making, making glass, sandpapers, reclamations, and etc. On average, people 'use' over 200kg of sand per person per year. This sand is taken from what are essentially non-renewable resources.

### INTRODUCTION

Department of Mines and Geology Permission letter No. GABHUE/HEBHUV/GADAGA/SA. MA. THA. AM. LETTER /2018-19/287.

### 1.2 Salient feature of the Project

Name of the project	Madalli Sand Block No-1 Open Quarrying Excavation Sand Block.
Name of the Applicant	Smt. Sujata Ningappa Doddamani W/o Ningappa Doddamani Mulgunda Road, Behind Kutira Hotel, Govt PU College Gadag District
Location	Adjacent to Sy. No- 150,151,173,175 & 176 in Madalli Village, Shirahatti Taluk, Gadag – District, Karnataka
production capacity	2,000 tons/annum
Mining method	Semi Mechanized Open quarrying excavation
Source of water	6.14 KLD of Potable water will be sourced through Bore wells of nearby village for 5 workers

## EMP- MADALLI SAND MINING BLOCK-1

Extent of Sand Block area	1.416 Ha
---------------------------	----------

### 1.3 Location and area accessibility

Details of the Area:

The lease area is demarcated on the Topo-sheet No. 48 M/16

The nearest place Madalli – 2.05 kms (NE) away from the quarry site and 17.77 Km (E) from Kundgol. The nearest railway station is at Kundgol which is at 17.99 (E) Kms from the quarry area.

### 1.4 Topography

In the Topo sheet No Topo-sheet No. 48 M/16 where proposed quarry is located, the following topographic features can be observed.

- The applied quarry lease area.
- The Tungabhadra river bed is having a flat with very slight undulation.
- No major roads pass through the Lease area.
- No human settlements within or in the vicinity of the lease area. The nearest Village Madalli about 2.05 Km.
- The drainage pattern of the buffer zone is dendritic to sub- dendritic in nature. No perennial flow in the river. Only during Monsoon and its adjoining period for about 5 - 6 months the water flows in the river. Generally the quarrying will be continued during the non- monsoon period.

*Details are provided in Quarry Plan.*

### 1.5 Estimation of reserves in the area:

The Ordinary sand deposit in this Madalli Sand Block No- 1 from 0.5 to 1m metres as proved by way of trial pits as per UNFC Norms. For the purpose of Estimation of Reserves, the volume of the Ordinary sand is arrived by multiplying the plan area by the depth of the sand. Specific gravity of the ordinary sand is considered as 1.7 and then estimated the reserves by multiplying the volume by specific gravity.

In case of Ordinary sand, question of life of the mine does not arise as the ordinary sand is replenished by regular flow of the river every year during monsoon.

## **2. Quarrying**

### **2.1 Proposed method of quarrying:**

The Ordinary sand is well exposed right on the surface, Quarrying will be continued from the downriver of the block to upriver of the block in the general direction of the lease. An open cast quarrying by semi mechanized method will be adopted to operate the quarry. Quarrying is planned by semi mechanized operation for extraction of Ordinary sand, screening, stacking etc. keeping the productivity and safety in mind. After screening, the rejection will be back filled in the excavated area. Only at the time of dispatches the JCB/ Loader will be used for loading the trucks. No drilling is required as material is non compact in nature and easily dig gable.

### **2.2 Year wise production:**

The Tonnages of saleable Ordinary sand and the rejection during the plan period is specified in quarry plan.

### **2.3 Drilling & Blasting:**

No Drilling and blasting is proposed in the quarrying process for ordinary sand as the Ordinary sand is course grained and not compacted. It is extracted mechanically by using excavator.

#### **Blasting:**

A) As the Ordinary sand is course grained and not compacted, it is removed mechanically using excavator no blasting is required.

B) Whether secondary blasting is needed, if so, describe in brief:

Ordinary sand is removed mechanically by using excavator, spade and crowbars. No drilling and blasting is proposed.

C) Storage of Explosive:

No explosive is used for the purpose of blasting. Blasting is not required.

**2.4 Loading:**

Loading will be done by the skilled laborers to the trucks.

**2.5 Hauling and Transport:**

The Ordinary sand extracted by using excavator & is screened by using gravity screens and the saleable product up to 8mm size sand is stacked separately for dispatches by tippers to the consumer point.

**2.6 Disposal of waste**

The nature and quality of top-soil, over burden waste and mineral rejects likely to be removed during the next five years:

There is a no top soil to be produced in the plan period. Only the rejection after screening in the form of oversize pebbles and clay shall be used for back filling in the excavated areas.

It is proposed to handle rejections from both blocks by back spreading over worked out areas.

**2.7 Employment potential**

The break -up of the employment is provided in quarry plan.

**3. Baseline Environment**

**3.1 Land environment**

In the proposed Mining activity there will not be much impact on the land environment due to the following reasons.

1. There is no removal of vegetation such as plants, bushes in the reach area
2. The proposed sand block area is situated on the surface of river bed. The land is not utilized for any other purposes, as there are no proposals for storage of the mined sand or is there any development involved for the proposed mining of sand.
3. No effluent generation as any further processing of mineral is proposed. Hence no ground water contamination due to the proposed mining activity.

4. The depth of mining shall be restricted to 0.5 to 1.0m/water level, whichever is less.

### **3.2 Water quality**

The quality of ground water is fairly good. There is no liquid waste discharge from mining activity, which is likely to pollute water.

### **3.3 Noise and vibrations**

Since it is small scale quarrying, where there is no drilling and blasting is proposed, there will be no back ground noise levels at the site. The area is away from roads where frequent traffic is encountered. General noise levels are expected to be less than 80 dBA in the working of the mine.

Vibration levels: Blasting is not adopted in the quarry, Hence no vibration is apprehended in the mine.

### **3.4 Air Quality**

In general the SPM, SO<sub>2</sub> and NO<sub>x</sub> concentration in the region may be within the permissible limits, as it is a small scale quarrying.

Control of air quality associated with operational dust:

- Water spraying will be conducted more frequently during hot weather and windy conditions.
- Enforcing speed limits on unpaved or untreated roads.
- Appropriate vegetation cover will be established as part of the concurrent rehabilitation practices at the mine.
- The erection of shade cloth to act as windbreaks.

### **3.5 Climatic conditions**

The district falls under semi-arid tract of the state and it is categorized as draught prone. And normal rainfall is 613 mm. The north-east monsoon contributes nearly



24.8% and prevails from October to early December. And about 54.7% precipitation takes place during south -west monsoon period from June to September. And remaining 20.5% takes place during rest of the year. In the district from December to February month is winter season, During April to May temperature reaches up to 42°C and December and January temperature will go down up to 16°C. The standard deviation of rainfall in the district varies from 1.3 to 263.5mm from west to east. The average standard deviation for the district is about 146 mm. South West monsoon is dominant followed by northeast monsoon

### **3.6 Socio-Economic environment**

There are 5 or more villages within the buffer zone and they all depend on agriculture and related activities. Since the quarrying is on small scale, no health problems are anticipated as well as safety due to quarrying operations.

Wherever possible and subject to the availability of the necessary skills and expertise, employment of people from the local region will be favored.

### **3.7 Common Fish species in the River**

The fishery of the River comprises of *Puntius camaticus*, *P. sarana*, and *P. dubius*. *Tor spp.*, *Ompok bimaculatus*, *Wallago Attu*, *Mystus cavasius* and *Notopterus notop'terus* mainly.

As in-stream mining is not carried out there will not be any impact on Fish Species in the river.

### **3.8 Animal Life**

List of Species found in the region are:

## EMP-MADALLI SAND MINING BLOCK-1

---

SL. No.	Species	Abundance (Absent/Rare/Common/very Common)
A	B	C
1	Tiger	Rare
2	Leopard	Common
3	Wild dog	Rate
4	Wolf	Common
5	Jackal	Very Common
6	Sloth bear	Common
7	Elephannt	Very Common
8	Gaur	Common
9	Chital	Absent
10	Sambar	Common
11	Wild Boar	Very Common
12	Nilgiri Langur	Rare
13	Common Langur	Common
14	Bonnet Macaue	Rare

Any tortoises or Snakes that are encountered along the access tracks within the exploration area must be moved off the track. The tortoises are not to be removed from the local area where they have been encountered.

Restrict access to all identified restricted areas and un-mined areas (areas in advance of mining) in order to allow fauna displaced from the mining area to move through these areas and access adjacent farmland. Vehicles are to avoid rocky outcrops and quartz patches No other specific mitigating measures are required.

## **4. Environmental Management Plan**

### **4.1 Introduction**

The quarry operations in the study area, needs to be intertwined with judicious utilization natural resources within the limits of permissible assimilative capacity. The assimilative capacity of the study area is the maximum amount of pollution load that can be discharged in the environment without affecting the designated use and is governed by dilution, dispersion and removal due to natural physio-chemical and biological processes. The Environmental Management Plan (EMP) is required to ensure sustainable development in the study area.

This chapter covers the genesis of pollution, the principal sources of pollution, the nature of pollution, the proposed measures required for meeting the prevailing statutory requirements of gaseous emissions, wastewater discharge characteristics, noise levels etc. for environmental management purpose in connection with the quarrying and its related activities in the study area.

This section discusses the management plan for mitigation/abatement impacts and enhancement of beneficial impacts due to quarrying. The Environmental Management Plan (EMP) has been designed within the framework of various Indian legislative and regulatory requirements on environmental and socio-economic aspects.

Environmental Management Plan giving the environmental protection measures at quarry to meet the stipulated norms, are as detailed.

### **4.2 Environmental Impact Statement & Control measures**

#### **4.2.1 Climate**

The proposed quarry activities are not likely to contribute to any variation in the climate parameters of the region. The variations observed are on a regional scale and the control factors lie much beyond the small area considered for Quarrying. Hence no management measures are needed and proposed.

#### **4.2.2 Air Environment**

No pollution is expected due to the quarry operation as the method adopted is Semi Mechanized in a small scale. Therefore, the SPM count in the air will not increase. Blasting is not adopted in the quarry, hence major air pollution is avoided to the maximum.

NO<sub>x</sub>, SO<sub>2</sub> and CO values are expected to be within the permissible limits due to proposed, Semi Mechanized quarrying. Effect of quarrying is minimal.

##### **4.2.2.1 Dust Control**

The main source of dust is from transportation.

- The dust generated during the vehicular movement will be controlled by spraying water on village roads for which water tanker fitted with sprayer are proposed.
- Over loading of trucks and consequent spillage on the roads will be avoided.
- Measures such as covering tarpaulins over the loaded material will prevent spreading of sand from the trucks.

#### **4.2.3 Noise Environment**

Noise will be produced at the quarry due to movement of tractors only. The noise generated by the quarrying activity is dissipated within a small zone around the quarry. The lease area is not inhabited by any wild life, as there is no forest cover. Hence there will not be any effect on migration or extinction of wild life from the lease area as the noise created by the quarry operation is insignificant so as to cause any impacts.

As the process involves only extraction of ordinary sand from the riverbed Semi Mechanized, there is no major noise generation; however the following mitigation measures will be followed to mitigate the noise generation

1. Speed of the vehicles in the village area will be restricted to 25 Km/hr
2. Vehicles with good maintenance will be utilized for sand transportation

#### **4.2.4 Water Environment**

There will not be any wastewater discharges to water bodies from the mining operations. As proposed sand quarrying will be limited to 0.3 to 1.0m/water level, whichever is less, there will not be any intersection with ground water table. All the stipulations of MoEF for sand mining and guidelines as per the Karnataka Minor Mineral Concession (Amendment)

Rules, 2013 will be followed. Hence there will be not be any impact due to the proposed quarrying on the water environment.

### **WATER REQUIREMENT**

The proposed Mining activity requires 6.14 KLD of water for the block. This includes water for domestic purpose. Water required will be sourced from bore wells available in surrounding village The depth of mining shall be restricted to 0.3 to 1.0m/water level, whichever is less. Hence there will not be any significant impact on hydrology of the river.

#### **4.2.5 Biological environment:**

As the area is devoid of any vegetation, surface sand mining is not going to cause any damage to any plant. There are no Turtle or Crocodile breeding grounds in the quarry lease area under consideration. Hence the anticipated negative impacts if any are only minor, temporary and easily reversible. Natural restoration to original condition can occur within about one or two years. Hence it can be safely concluded that the proposed ordinary sand quarrying for five years as per rules is safe with very little negative impact.

#### **4.2.6 Land Restoration/Reclamation**

The area granted for quarrying of Ordinary sand is purely in the Tungabhadra water flows in this river seasonally during monsoon and its spread over for a period of about 5 months and generally dry during rest of the period. In the buffer zone of 5 km major area is covered by Agriculture lands.

Waste will be removed/ excavated, these mineral rejects like shingle and pebbles at river bed will be dumped back in the worked out areas as a part of reclamation

##### **4.2.6.1 Topsoil Management:**

The area is not having any top soil or fertile soil. The depth of mining shall be restricted to 0.3 to 1.0m/water level, whichever is less. There is no environmental pollution due to the proposed quarrying as it is proposed to be a manual scooping of ordinary sand on the river bed. However the workers involved in quarrying and loading of sand will be provided with dust masks. Hence there will be no major occupational health hazards.

**4.2.6.2 Other Environment Safeguards**

- No labour camps will be allowed on river bed
- Prior to mining, short awareness program will be conducted for labours to make them aware for way of working.
- If some causality or injury to animal occurs, it will be informed to forest department and proper treatment will be given.
- No lighting will be allowed in the area.
- No tree cutting, chopping, lumbering, uprooting of shrubs and herbs will be allowed.
- No track or new road for movement of labours or vehicles be laid in adjoining area, this will prevent fragmentation, encroachment and human – animal encounter.
- Corridor for movement of wild mammals (If exists) will be avoided for mining/travelling purposes.
- Care will be taken that noise produced during vehicles movement for carrying sand are within the permissible noise level.
- No stockpiling of sand will be done in adjoining area.
- If wild animals are noticed crossing the river bed, they will not be disturbed or chased away, instead the labours will move away from their path.

## **5. Environmental Management Plan Implementation**

Environmental Management Plan serves no purpose if it is not implemented with true spirit. Some loopholes in the EMP can also be detected afterwards when it is implanted and monitored. Thus, an implementation and monitoring programme has to be prepared.

The major attributes of environment are not confined to the mining site alone. Implementation of proposed control measures and monitoring programme has an implication on the surrounding area as well as for the region. Therefore, mine management will strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented within the mining area relating to the following specific areas for eco-friendly mining:

- Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- Collection of soil samples at strategic locations once in every year and analysis thereof with regard to deleterious constituents, if any.
- The effectiveness of drainage system depends upon proper cleaning of all drains provided in the surrounding of mine area. Any blockage due to siltation or loose material will be checked at least once in a month.
- Measurement of water level fluctuations in the nearby ponds, dug wells and bore wells.
- Regular visual examination will be carried out to look for erosion of river banks. Any abnormal condition, if observed will be taken care of.
- Measurement of noise levels at mine site, stationary and mobile sources, and adjacent villages will be done in every quarter of the year.
- Plantation/afforestation will be done as per program i.e. along the road sides and near civic amenities, which will be allotted by Government bodies as it is not feasible to plant trees near the mine lease area. Post plantation, the area will be regularly monitored in every season for evaluation of success rate. For selection of plant species local people will also be involved.

## **6. Conclusions**

- The depth of mining shall be restricted to 0.5 to 1.0m/water level, whichever is less.
- Hydrology of the river will not alter due to the proposed activity.
- The ground water table in the villages also will not be affected as the maximum proposed depth of quarrying will be limited to 0.3 to 1.0m/water level, whichever is less.
- All vehicles used for transport will comply with emission norms & noise level norms of the Ministry of Environment & Forests.
- Vehicles used for transportation of sand will be covered with tarpaulin.
- The quarrying operations will be in accordance with rules and regulations of Karnataka Minor Mineral Concession (Amendment) Rules, 2013
- All environmental rules and regulations will be strictly followed and implemented.