

# **ENVIRONMENTAL MANAGEMENT PLAN**

**For**

**“Ordinary Sand Quarry” in Patta Land**

**Over an extent of 7-00 Acres (2.832 Ha)**

**at Sy. No. 6/2A & 8 of Shirol Village,**

**Naragund Taluk, Gadag District.**

# Table of Contents

1. Introduction.....	3
1.1 Project Details .....	3
1.2 Salient feature of project .....	3
1.3 Location and area accessibility .....	4
1.4 Topography.....	4
1.5 Estimation of reserves in the area: .....	5
2. Quarrying .....	6
2.1 Proposed method of quarrying: .....	6
2.2 Year wise production: .....	6
2.3 Drilling & Blasting:.....	6
2.4 Loading:.....	7
2.5 Hauling and Transport:.....	7
2.6 Disposal of waste.....	7
2.7 Employment potential .....	7
3. Baseline Environment .....	8
3.1 Land environment.....	8
3.2 Water quality .....	8
3.3 Noise and vibrations .....	8
3.4 Air Quality.....	9

3.5	Climatic conditions.....	9
3.6	Socio-Economic environment.....	9
4.	Environmental Management Plan.....	10
4.1	Introduction .....	10
4.2	Environmental Impact Statement & Control measures.....	11
4.2.1	Climate .....	11
4.2.2	Air Environment .....	11
4.2.3	Noise Environment .....	11
4.2.4	Water Environment.....	12
4.2.5	Biological environment: .....	12
4.2.6	Land Restoration/Reclamation .....	13
4.2.7	Occupational Safety and Health: .....	13
5.	Conclusions .....	13

# 1. Introduction

## 1.1 Project Details

The proposed Ordinary sand mining is at Sy. No. 23/1, 23/2 & 23/3 Gadgoli Village, Naragund Taluk, Gadag district. The quarry is proposed for Ordinary sand Quarrying over an extent of 7-00 Acres.

### 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 has given notification which is enclosed in Quarry plan.

## 1.2 Salient feature of project

Name of the project	Ordinary Sand Quarry Open Quarrying Excavation Sand Block.
Name of the Applicant	Sri. Yallappa Sharanappa Navalagunda, Halakere Village and Post, Navalagunda Taluk, Gadag District, Karnataka.
Location	Sy. No- 6/2A & 8 in Shirol - Village, Naragund – Taluk, Gadag – District.
production capacity	65,314 tonnes per annum.
Mining method	Semi Mechanized Open quarrying excavation
Source of water	5.4 KLD of Potable water will be sourced through Borewells of nearby village for 14 workers.
Extent of Sand Block area	7-00 Acres

### **1.3 Location and area accessibility**

Details of the Area:

The lease area is demarcated on the Topo-sheet No 48 M/9

The lease area is situated at 0.30 Km South of Shirol village. The quarry area is 21.10 kms from Naragund Taluk Head Quarters & 44.20 Km from the district head quarter Gadag. The nearest railway station is at Holealur, which is at a distance of 10.80 km from the quarry area. The nearest airport is Hubbli 71.30 kms.

### **1.4 Topography**

In the Topo sheet No 48 M/9 where proposed quarry is located, the following topographic features can be observed.

The applied quarry lease area.

- The applied area is located in Patta land
- The terrain is flat terrain sloping North-East.
- No major roads pass through the License area.
- No human settlements within or in the vicinity of the license area. The nearest village is at a distance of 0.30 km.
- The drainage pattern of the buffer zone is dendritic to sub- dendritic in nature. Generally the quarrying will be continued during the non- monsoon period.
- The highest elevation is in the Northern side and lowest elevation in the Southern side of the Block i.e. 544 and 543 m RL respectively with reference to a Temporary Bench mark at South-East Corner at 543.1 m RL. The difference in altitude is 1 m. Temporary Bench mark established with an RL of 543.1 m at South -East corner.

### 1.5 Estimation of reserves in the area:

The Ordinary sand deposit in this license area is to a depth of 5.0 Meters. 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. Mineral Reserves are calculated up to the lower most exposures in the pit. Total reserves estimated is given below.

<i>PROVED RESERVES / RESOURCES (7-00 ACRES)</i>				
<i>PLAN AREA</i> <i>Sq. m.</i>	<i>AVERAGE DEPTH OF THE BLOCK</i> <i>in m.</i>	<i>TOTAL VOLUME</i> <i>In Cu. m.</i>	<i>BULK DENSITY</i> <i>in</i> <i>Ton/cu.m.</i>	<i>TOTAL QUANTITY_in</i> <i>Tonnes.</i>
28328	5.0	1,41,640	1.7	2,40,788

<i>MINABLE RESERVES / RESOURCES (7-00 ACRES)</i>				
<i>PLAN AREA</i> <i>Sq. m.</i>	<i>AVERAGE DEPTH OF THE BLOCK</i> <i>in m.</i>	<i>TOTAL VOLUME</i> <i>In Cu. m.</i>	<i>BULK DENSITY</i> <i>in</i> <i>Ton/cu.m.</i>	<i>TOTAL QUANTITY_in</i> <i>Tonnes.</i>
23,052	5.0	1,15,260	1.7	1,95,942

## 2. Quarrying

### 2.1 Proposed method of quarrying:

The Ordinary sand is well exposed right on the surface, Quarrying will be continued from the North of the license area to South of the license area. An open cast quarrying by semi-mechanized method will be adopted to operate the quarry. Annual production will be 65,314 Tonnes/Annum for three Year. The Hitachi EX 200 and JCB 4DX Eco Excellence will be used for digging and loading activities. No drilling is required as material is non compact in nature and easily diggable by using excavator.

Quarrying plan for production and development is shown in Plate.No.6. Sand is available to a depth of about 5 metres, it is proposed to quarry mineable depth of 5.0 meter. Plantations will be done along the approach roads and in the buffer zone..

### 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 by using excavator.

#### **Blasting:**

A) As the Ordinary sand is course grained and not compacted, it is removed by 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. 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:**

Only the loading equipments like Hitachi EX 200, JCB 4DX Eco Excellence, and Tractor mounted loaders, Tippers may be used.

### **2.5 Hauling and Transport:**

The Ordinary sand extracted by excavator is screened by using gravity screens and the saleable product up to 8mm size sand is stacked separately for dispatches by 10 ton 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 two 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.

There is no such reduction of waste/mineral reject processing possibilities are proposed during plan period.

### **2.7 Employment potential**

In all, there will be about 14 workers. Details are 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 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 5.0m.

#### **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 many 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.

## **Environmental Management Plan**

### **3.7 Introduction**

The quarry operations in the study area, needs to be intertwined with judicious utilization Ordinary 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.

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

### **3.8.1 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.

### **3.8.2 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, m quarrying. Effect of quarrying is minimal.

#### **3.8.2.1 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 dumpers.

### **3.8.3 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 quarry of 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

#### **3.8.4 Water Environment**

There will not be any wastewater discharges to water bodies from the mining operations. As proposed sand quarrying will be limited to 3.0m, 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, 2016 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 5.4 KLD of water. This includes water for domestic purpose. Water required will be sourced from borewells available in surrounding village the depth of mining shall be restricted to 5.0m.

#### **3.8.5 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 two years as per rules is safe with very little negative impact.

### **3.8.6 Land Restoration/Reclamation**

The area granted for quarrying of Ordinary sand is in patta land. Barbed wire fencing will be done to avoid any accidents. The depth of mining proposed is only 5.0 meters. Since Ordinary sand deposits is not continuous, concurrent reclamation is feasible & after working concurrent backfilling will be proposed by the silt & waste of the total extraction will be of the rejection in the form of pebbles or clay. These rejects will be back filled in the extracted area as part of reclamation.

#### **3.8.6.1 Topsoil Management:**

The area is not having any top soil or fertile soil. The depth of mining shall be restricted to 5.0m.

### **3.8.7 Occupational Safety and Health:**

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. Conclusions**

- The depth of mining shall be restricted to 5.0 m.
- The ground water table in the villages also will not be affected as the maximum proposed depth of quarrying will be limited to 5.0 m.
- 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.