

## **1.0 Introduction**

### **1.1 Background**

M/s. Sreevaree Enterprises, has filed an application for quarry lease for Colour Granite over an extent of 1.50 ha, in Sy.No.1133 of Gattubuthkur village, Gangadhara Mandal, Karimnagar District, Telangana to the Assistant Director of Mines and Geology, Karimnagar on 23-02-2015.

The Director of Mines & Geology, Hyderabad has decided to grant a quarry lease in favor of M/s. Sreevaree Enterprises for a period of 20 years subject to submission of Approved Mining Plan within a period of 6 months from the date of issue of Notice No.4220/R1-3/2014, dt: 14.10.2014 as per Rule 12 (5) (C) of Telangana Minor Mineral Rules, 1966. Mining Plan approval has approved by Joint Director of Mines & Geology, Hyderabad vide Letter Number No: 34/MP-KMNR/2015 dated 23-02-2015.

### **1.2 Project proponent**

M/s. Sreevaree Enterprises granted quarry lease for mining of Black granite over an extent of 1.50ha. in Sy.No.1133 of Gattubuthkur village, Gangadhara Mandal, Karimnagar District, Telangana. M/s. Sreevaree Enterprises is Proprietor of the company and has significant experience in the Granite Industry.

### **1.3 Proposed project**

The proposed project is located in Gattubuthkur village, Gangadhara Mandal, Karimnagar District, Telangana at Sy.no.1133 over an area of 1.50ha. The nearest habitation Gattubuthkur located at a distance of 2.00 km due North from lease area. The proposed maximum production in three years is 7,800 m<sup>3</sup> per annum.

#### **Boundaries around project site**

East : Sy.No.1125 & 1135

West : Sy.No.1129 & 1132

North : Sy.No.1132

South : Sy.No. 1127

The Salient features of the proposed Quarry Lease (QL) area is presented in **Table 1.1**

**Table 1.1: Salient Features of Proposed Quarry Lease Area**

Name of the organization	M/s. Sreevaree Enterprises
Name of the Applicant & Address	M/s. Sreevaree Enterprises Proprietor: Sri. G. Sathish Kumar H.No. 7-1-683/1, Mankammathota, Karimnagar, Telangana State.
Type of activity	Colour Granite Mining
Production Capacity	7,800 m <sup>3</sup> (per annum highest production in 3 years)
Location of the Proposed project or activity	Sy. No: 1133, Gattubuthkur Village, Gangadhara Mandal, Karimnagar District, Telangana State.
Appraisal Category	B2
Quarry Lease (QL) Area & Period	1.50 Hectares & 20 Years
Type of Land	Government Land(Barren)
Nearest habitation and distance	Gattubuthkur-2.0 km (N)
Nearest Railway station	Karimnagar Railway station -12.87 km (NNW)
Nearest Seaport	Kakinada Port-383.57 km (SE)
Nearest Airport	RGI Airport - 150.82 km (SSW)
Source of water	Through tankers or nearby bore wells
Total investment of the project/activity.	Rs. 60 Lakhs
Funds allocated for EMP (capital cost and recurring cost per annum)	Rs. 2.65 Lakhs (Capital Cost) Rs. 1.47 Lakhs (Recurring Cost)
Survey of India Topo sheet	56 N/3
Latitude	18° 28' 51.21" N
Longitude	79° 00' 56.41" E
Man power requirement	14

#### 1.4 Project location and Accessibility

- Lease area is located at 2.0 km in NW direction from Gattubuthkur village.
- District Headquarter is Karimnagar which is located at a distance of 12.84 km – ESE direction from the mine lease area.
- National Highway-10 Road is at 8.00 km from the lease area.
- Education Facilities are available in Gangadhara and elementary school education is available at Gattubuthkur village.

- Hospital facility is available at Gangadhara, which is 13 km away from the lease area.
- Power connections and Telecommunication facilities are available at Gattubuthkur village.

## **1.5 Topography**

Topographically the QL applied area is general the area is plain studded with isolating hillocks. Sometimes they may raise gently as continuous hills, presenting a rugged topography.

## **1.6 Geology**

### **1.6.1 Regional Geology:**

The area is a part of the stable Southern Indian Peninsular Gneissic Complex (PGC) of Archaean age. The PGC occupies a major part of the Granites, Grano-Diorite are exposed in a massive spread in the study area. The PGC are intruded by basic dykes and Quartz Pegmatite Gneisses (QPG). Basically the dykes are massive discordant body with Northeast to Southwest direction in discontinuous body at surface. General trend of granties is NNW-SSE and which is follows general trend of the Dharwars. The quarry lease area is part of the "Granitoid gneiss" region which is younger than Dharwar Super Group (Kanungo D.N. et al. 1976, Rajesham T. et al.,1993 and Chakwick. B. et al. 2000). The granite comprises of porphyritic texture with phenocryst is of alkali feldspars which are formed by intrusive into the pre-existing older formation hornblende-biotite granite (gneissose) or grantiferous granitic rocks. Numerous fractures observed are helpful in dislocating the granite blocks. The area is subjected to prolonged weathering and crustal disturbances over a past geological time era is resulted in numerous secondary fractures, which will aid in recovering of granite blocks with ease.

### **1.6.2 Local Geology**

The soil covers is mostly reddish brown with mixture of silt and sand occasionally clay bottom of the soil covers highly weathered murram (harder pale coarse grained) which is periphery of the area on north side along the boundary line. But major portion of the area is covered by weathered granitic-gneiss out crop. The position of quarry lease area is mostly big granitic boulders and weathered rocks are removed and extracting thick material of granite in form of small to bigger size. The extracted portion of granitic blocks contains medium size to uneven surface and boulders with multiple fractures and joints.

The granitic blocks are designed such way as per marketable sizes 6X4X3m and smaller 1X1X0.5m in the area.

The litho unit of the area is as follows:

Soil cover : loose reddish brown with mixture of silt and sand  
 Gneissic Porphyry granite : Ripples multi-colour granite (bould  
 Light pink Granites (Brown colour) gneiss: Alkali Feldspar rich m

## **1.6 Exploration/Prospecting**

### **1) Present Status:**

The modified mine plan quarry lease area is under mining operation of granite blocks. It is start operations from North-Eastern part and proceed to east-west side with establishing bench operations is in progress of extraction of granite blocks. The bench height in the quarry lease area is ranging from 6 to 10 meters. The quarry is extending in NE-Central-south direction. Granite is exposed throughout the quarry lease area in form of pedimount and part of Pediplain terrain from ground surface to 20m elevation.

Granite is exposed to 20 meters as is visible in the working area and the same has been considered under proved category. Evidences of depth persistence further to a depth of another 20 meters considered for probable reserves. Based on the topography further 20 meters considered for possible reserves.

### **b) Future Programme:**

To convert the probable and possible reserves to proved category it is proposed to drill a bore hole to a depth of 40 meters from the pit bottom. As such geologically depth persistence of granite is assured.

### **Reserves:**

**Guidelines under MCDR for United Nations framework classification of mineral reserves/resources:-**

### **Total Mineral Resources:**

- A concentration (or occurrence) or material of intrinsic economic interest.
  - Reasonable prospects for eventual economic extraction.
  - Location, grade, quantity, geological characteristic known, estimated or interpreted from specific geological evidence and knowledge.
- I. Measured Mineral Resource (331) : That part of mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence ie. Based on detailed exploration.
- II. Indicated Mineral Resource (332): Tonnage, densities, shape, physical characteristic, grade and mineral content can be estimated with reasonable level of confidence based on exploration, sampling and testing information, location of borehole, pits etc., too widely spaced.

III. Inferred Mineral Resource (333): Tonnage, grade and mineral content can be estimated with low level of confidence. Inferred from Geological evidence. The reserves are computed based on available exposure on surface and subsurface lithology. The boulder formations visible from the surface ground level upto hill top is about 10m and the sheet rock is encountered from 10m to the further depth upto 60m below. However, only 10m thickness is taken for computation of proved deposit, and 20m probable deposit and 20m possible deposit is considered as Resources. The reserves of the colour granite have been computed based on the cross-section method which is more accurate. A total of 3 cross-section were drawn based on the geological studies and rock exposures in the field viz. a - a', b - b' and c - c' (Plates III & IV). The area of colour Granite was measured in each of these cross-sections and multiplied by respective lengths of influence to get its volume. The area of colour Granite was measured in each of these cross-sections and multiplied by respective lengths of influence to get its volume. The reserves of the colour granite are categorized into Proved (111)/ Measured (331), Probable (121)/Indicated (332) and Possible (122)/ Inferred (333) categories.

## 1.7 Mining Methodology

### a) Type of Mining:

It is already well opencast semi-mechanised method is adopted for quarrying and simultaneously developing multiple benches. Overburden consists of thin to thick soil cover and weathered granite rock which is of no use and is a waste. The big boulders may be cut in to blocks of varying sizes. The sheet rock so exposed is developed into a mine face/working face. Splitting is effected by wedging the line holes made using jack hammers operated by compressed air. The split block is examined for hairline cracks etc., and dressed to a geometrical shape.

The quarry is operational with a targeted annual production of 24000 Cu.m per year colour granite. During the proposed three year on an average 23000 Cu.m to 24000 Cu.m per annum.

**Table - VI. - Details of machinery deployed in quarrying operations for the colour Granite in the quarry lease area**

S.No	Type of Machinery
1.	200 Hitachi-TATA- 2 No.
2.	P 330 Hitachi - 1 No.
3.	Portable Air Compressor (325 CBM) -1 nos.
4.	Diesel Electrical Generator (82.5 Kv) -1 nos
5.	Wire-saw cutting machines -1 nos
6.	Tippers (10 tones) - 2nos - Hired. •

7.	Solar lighting is used for electrical supply 10 Nos.
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The above machinery is available in the quarry, as the quarrying operations have been in progress in the quarry

#### **b. Existing method of quarrying**

Mining operations in winning the granite blocks are:-

1. Drilling line holes using jack hammers and compressed air.
2. Blasting is rarely practiced as blasting may impart hair line
3. Hauling of soil and waste rock is by Hydraulic Haulers
4. Transportation is by tippers of 10 tonner capacity.

#### **1.10 Man Power Requirement for Mining Operations**

A total of 22 persons shall be engaged to carry out the various operations at the QL area. There is a scope of another 10 person's employment as indirect employment. The man power required for the mining operations shall be as per **Table 1.5** given below.

**Table 1.5: Manpower at the QL area**

<b>S.No.</b>	<b>Category</b>	<b>No's</b>
1.	Mines Manager	1
2.	Mines Supervisor	2
3.	Skilled Workers	6
4.	Unskilled Workers	6
5.	Machine Operators	6
6.	Watchman	1

**(Source: Mining plan)**

#### **1.8 Utilities**

The utilities required by the project are water & power.

##### **a) Water Requirement**

Total water requirement in the mine will be 7.0 kLD. It will be sourced through tankers from the nearby villages. Breakup for water requirement in the mine is given in Table – 1.6.

**Table 1.6: Water Requirement**

<b>Enduse</b>	<b>Quantity (kLD)</b>
Dust suppression on haul roads	3.5
Green Belt Development	1.5
Domestic Use	2.0
<b>Total</b>	<b>7.0</b>

**b) Power**

Estimated Power: 120KVA

Source: D.G. set of 120KVA

Fuel consumption: 300LPD

**c) Site Amenities:**

Office room, Rest shelter, Canteen, toilets and first aid room is provisioned.

**5.0 Climatic Conditions**

**Table 2.1 Climatic Conditions**

<b>Nearest IMD station</b>	Karimnagar 12.84 (ESE)
<b>Maximum,Minimum Temperature</b>	Maximum:42.9°C Minimum:12.6°C
<b>Rainfall of area</b>	1162 mm
<b>Mean Wind Speed</b>	7.5km/hr

**(Source: Climatological Normals (1961-1990): IMD)**

### 3.0 Site Specific Details & Environment Management Plan

**Table 3.1 Site Specific details**

S. No.	Features	Details	Environmental Management plan
1	Nearest Village	Gattubuthkur-2.0 km (N)	<ul style="list-style-type: none"> <li>• Unnecessary use of horns will be avoided</li> <li>• Sprinkling water on the roads by tanker will be practiced.</li> <li>• Natural barricades will be set on the boundary of the lease area</li> </ul>
2	Nearest Main Road	National Highway - 8.00 km (ENE)	<ul style="list-style-type: none"> <li>• Speed of the vehicles will be limited</li> <li>• Sprinkling water on the roads by tanker will be practiced.</li> </ul>
3.	Nearest Reserve Forest	Doddipalle R.F: 0.5km-North	<ul style="list-style-type: none"> <li>• Fencing will be provided around the lease area</li> </ul>
4	Nearest Water Bodies	Chinthapalle pond : 2.37 km NW	<ul style="list-style-type: none"> <li>• No impact on water bodies is envisaged.</li> <li>• It is proposed to construct garland drains around dump. The garland drains will be routed through siltation pond &amp; diversion of storm water through nearby drainage line.</li> </ul>
5	Nearest Wild Life Sanctuaries	Nil	----

### 4.0 Project Specific Impacts & Environment Management Plan

To check harmful effects of mining activity in lease area Environmental Management plan has been proposed. Environmental management approach includes action to protect environment by using instruments, direct regulatory requirements or incorporating technological features. It provides the remedial solutions of the problems.

## 4.1 Air Environment

### a) Impacts:

Dust generation during mining activities is the major impact on air environment due to mining of granite. The major sources of air pollution are:

- ∅ Drilling, Blasting
- ∅ Loading and Unloading
- ∅ Transportation and handling of waste and top soil
- ∅ Transportation and handling of granite blocks.

### b) Mitigation Measures

Following measures shall be taken to mitigate the effect of mining operation over air environment:

1. Regular spraying of water by water sprinkling system.
2. The dust anticipated during dry seasons, due to haulage will be suppressed by sprinkling water. For this purpose, tractor mounted sprinkler will be deployed.
3. To reduce dust generation during loading operation water shall be sprayed over the muck pile to the loading material.
4. Periodic maintenance of haulage roads
5. Regular maintenance of vehicles and machinery.
6. Providing dust masks to all the workers.
7. Plantation along the lease boundary.

## 4.2 Noise Environment

### a) Impacts:

The main sources of noise in mining activity are drilling, material handling machinery, loading equipment etc.

### b) Mitigation Measures

Following mitigation measures should be taken to control noise pollution:

- ⇒ Workers will be provided with earmuffs, earplugs.
- ⇒ Proper lubrication and maintenance of equipment, vehicles and machinery.
- ⇒ Controlled blasting will be done to minimize the vibrations.
- ⇒ Speed of the vehicles entering and leaving the mining lease will be limited to 25 kmph.
- ⇒ Unnecessary use of horns by the drivers of the vehicles shall be avoided.

- ⇒ Diesel generator sets shall be provided with integral acoustic enclosure at the manufacturing stage itself
- ⇒ The lessee will apply latest techniques for extracting the blocks using wire saw cutting / splitting by chemical compound etc. to reduce the noise generation.

### **4.3 Water Environment**

#### **a) Impacts**

Effect of quarrying activities on the ground water regime are meager and deterioration of ground water quality is ruled out as quarrying operations are in a small scale and mining will be located at higher levels than the ground water table. The dumping yard may contribute by way of leaches during rainy season only, but every measure will be taken to stabilize the waste dumps.

#### **b) Mitigation Measures**

The following measures proposed to arrest surface runoff.

- a) There is no erosion/sedimentation in the area because there will not be water discharge from working mine pits except during monsoon
- b) There are no chances for change in quality of surface water or ground water.
- c) Garland drains will be constructed around waste dump.
- d) There is no disposal and treatment of water from mines.
- e) Domestic wastewater will be sent to the septic tank followed by soak pit

### **4.4 Greenbelt Development**

Top Soil excavated during mining will be used for plants growth all along the buffer zone.

### **4.5 Solid waste management**

**Dumping Yard:** About 70 % of the material from granite production is going to be generated as rock waste. About 42455 m<sup>3</sup> (18200 m<sup>3</sup>/annum) generated waste will be dumped along the South Eastern of the quarry lease applied area with the dumping area (*Source: Mine Plan*)

### **4.6 Measures to Improve Socio Economic Conditions**

As this is small mine the lease holder will be not be able to provide housing, educational, housing etc. facilities to workers but he will increase employment opportunities. The state Government will get tax due to mining and selling of granite.

## 4.7 Occupational Safety & Health Management

M/s. Sreevaree Enterprises will take all the necessary steps to provide better occupational safety and health. Occupational health and safety issues occur during all phases of the mine cycle and can be classified according to the following categories:

- ⇒ General workplace health and safety
- ⇒ Hazardous substances
- ⇒ Use of explosives
- ⇒ Electrical safety and isolation
- ⇒ Physical hazards
- ⇒ Fitness for work
- ⇒ Noise and vibration

### General Workplace Health and Safety

Recommended strategies to manage general workplace safety hazards include the following:

Mining exploration and development activities should manage occupational health and safety hazards as part of a comprehensive health and safety management plan incorporating the following aspects:

- ⇒ Training of employees on the recognition and prevention of occupational hazards specifically applicable to work.
- ⇒ Integration of behavioral considerations into health and safety management, including on the job behavioral observation processes.
- ⇒ Signage in risky areas, installations, materials, safety measures and other such areas should include standards of cleanliness, visibility and reflectance in areas of potentially poor illumination or sources of dust and pollution, be known and easily understood by workers, visitors and as appropriate to the general public.
- ⇒ Periodical Medical Examination (PME) of all workers by a medical specialist so that any adverse effect may be detected in its early stage. Medical records shall be maintained.
- ⇒ Providing Personal Protective Equipment to workers such as safety helmets and footwear, in addition to ear, eye, and hand protection devices.
- ⇒ Occupational health assessments should be conducted for employees on a regular basis, based on exposure to risk.

### Use of Explosives

Blasting activities that may result in safety impacts are typically related to accidental explosion and poor coordination and communication of blasting activities. The

proponent will be using low explosives and silent non explosive demolishing agents will be used to minimize the effects of vibration.

Control measures to be taken during blasting are:

- ✘ Specific warning devices (e.g. horn signals, flashing lights) and procedures should be implemented before each blasting activity to alert all workers and third parties in the surrounding areas (e.g. the resident population). Warning procedures may be needed to include traffic limitation along local roadways.
- ✘ Actively managing blasting activities in terms of loading, priming, and firing explosives, drilling near explosives, misfired shots and disposal.
- ✘ Adoption of consistent blasting schedules, minimizing blast- time changes.
- ✘ Rules and regulations laid down for safe storage and handling of the explosives as per the explosives Act will be strictly maintained.
- ✘ Specific personnel training on explosives handling and safety management should be conducted.
- ✘ Blasting sites should be checked post-blast by qualified personnel for malfunctions and unexploded blasting agents, prior to resumption of work.

### **Noise and Vibration**

Reduction of noise to acceptable occupational exposure levels as follows:

- ⇒ In smooth blasting technique, the generation of vibration will be on lower side.
- ⇒ Ensuring that large equipment (e.g. excavators, Compressor, Tipper empty, Tipper loaded, Poclain, and Blasting) will not cause harm, the lessee will provided suitable protective gear to the workers for minimizing the noise.
- ⇒ Exposure to hand-arm vibration from hand and power tools or whole-body vibration from surfaces on which the worker stands or sits should be adequately controlled through the selection and maintenance of equipment

### **Machine and Equipment Safety**

To prevent and control hazards related to machine and equipment use, measures for the enhancement of visibility should be applied throughout the mine. Specific visibility management practices may include the following:

- ✘ Use of reflective markings on structures, traffic junctions, and other areas with a potential for accidents.
- ✘ Use of contrast coloring on equipment / machinery, including the provision of reflective markings to enhance visibility.
- ✘ Use of moving equipment / machinery equipped with improved operator sight lines.
- ✘ Installing safety barriers in high-risk locations of internal roads / transport corridors. Barriers may be constructed with refuse or other materials capable to stopping vehicles

## **5.0 Post Project Monitoring**

Post project monitoring program includes periodic analysis of air, ground water, soil and noise samples. The samples shall be periodically tested to detect contamination. In the event of any contamination, concerned authorities shall be notified immediately and appropriate corrective action in consultation with an approved consultant shall be initiated

### **5.1 Monitoring Strategy**

The monitoring of various environmental parameters is necessary and is a part and parcel of the environmental protection measures. Monitoring is as important as that of control of pollution since the efficiency of control measures can only be determined by monitoring. A well-defined environmental monitoring program would be employed with trained and qualified staff for monitoring.

A comprehensive monitoring program is suggested underneath. Environmental attributes should be monitored as given below:

- Air pollution and meteorological aspects.
- Water and wastewater quality.
- Noise levels.
- Soil characteristics.
- Ecological preservation and upgradation.

#### **5.1.1 Ambient Air Monitoring**

As per MOEF there is a need to identify 3 ambient air stations at 120° angle keeping the main source in the center. The concentrations of particulate matter, sulphur dioxide and nitrogen oxides in the ambient air outside the project boundaries and in the adjoining villages will be monitored at regular intervals. Any deviation from predicted/expected values will be investigated and necessary action will be taken.

#### **5.1.2 Noise Monitoring**

Noise levels in the workspace environment will be monitored periodically. If any deviation is observed necessary corrective measures will be taken.

Monitoring noise levels is essential to assess the efficacy of maintenance of schedules undertaken to reduce noise levels and noise protection measures. A good quality sound pressure level meter is essential for this purpose. This work can be handled by plant authorities themselves or by hiring services. Noise surveillance is for the benefit of the workers well being and to keep track of machine wear.

#### **5.1.3 Monitoring of Water Quality**

Ground water near the project site will be routinely tested for its quality. No contamination of ground water and surface water is expected. However these waters will be periodically tested for any change of water quality.

Ground water is recommended to be monitored in at least two villages in the direction of ground water flow to keep surveillance on the ground water quality.

## 6.0 Budget for Environmental Protection Measures

M/s. Sreevaree Enterprises is allocating budget of Capital cost of Rs.2.65 lacks & Recurring Cost of Rs. 1.47 lacks.

Sl No	Work Name	Total Fixed Cost	Maintenance/ Recurring cost with periodicity
1	Safety shoe	-	7,500
2	Helmet	-	3,000
3	Hand gloves	-	1,350
4	Ear plugs	-	1,500
5	Cloth for Protection From Dust	-	3,000
6	Gunny bags for drill hole coverage	-	5,000
7	Dust Masks	-	13,500
8	Construction of Retaining Wall	155,000	-
9	Construction of garland drain (Hard ground)	50,000	5,000
10	Check Dam	20,000	5,000
11	Water sprinkling	-	30,000
12	Green belt Establishment	40,000	10,000
13	Medical examination	-	3,000
14	Environmental Monitoring	-	30,000
15	Social welfare measures		30,000
<b>Total</b>		<b>265,000</b>	<b>147,850</b>

## 6.1 Reclamation

No reclamation will be proposed during mining period because, the mining will be continued to further depths and reclamation could be possible only after completion of mining up to the proposed depths.

## 6.2 Progressive Mine Closure Plan

### Mined out land

- During the life of the mine, the minedout area will be backfilled and greenbelt will be developed.

### **Afforestation Programme**

In every year about 50m length of buffer zone will be planted along the boundary of northern side over an area of 50m x 6m at 3m grid interval with suitable plants

### **Infrastructure**

- Since the mine is an ongoing mine, existing infrastructure will be continued to be used.

### **Disposal of Mining Machinery**

- No mining machinery will be disposed

### **Safety and Security**

- Since the mine is an ongoing mine, all statutory obligations will be implemented

## **7.0 Conclusions**

The proposed Black Granite mining activities of M/s. Sreevaree Enterprises Sy. No:1133, Gattubuthkur village, Gangadhara Mandal, Karimnagar District, Telangana State will be not cause any much environmental impacts on surrounding areas. The proponent will adopt all preventive measures to control pollution and greenbelt will be developed all around lease area.