# EXECUTIVE SUMMARY
# ENGLISH & HINDI
# FOR

## CLUSTER NO. 49 "EKALSINGHA" GRANITE MINE
## TOTAL AREA OF 11-EXISTING LEASE 13.3779 HECTARE
## PROPOSED 1- L.O.I APPLIED AREA- 1.0023 HECT
## TOTAL CLUSTER AREA-14.3802 HECTARE CATEGORY- B-1
## NEAR VILLAGE – EKALSINGHA
## TEHSIL - KEKRI, DISTRICT – AJMER, (RAJ.)

## IN FAVOR OF

| S.No | Applicant | M.L No | Area | Mineral | Near Village | Production Capacity TPA (ROM) |
|---|---|---|---|---|---|---|
| 1. | **Sh. Devraj Gurjar** | 51/2018 | 1.0023 | Granite | Ekalsingha | 1,62,960 |
| 2. | M/S A.G Mines & Minerals | 24/2018 | 1.4143 | Granite | Ekalsingha | 99,006.13 |
| 3. | M/S Sawai Bhoj Granites | 31/2018 | 1.3006 | Granite | Ekalsingha | 1,82,127 |
| 4. | Shree Giriraj Granite | 57/2018 | 1.5835 | Granite | Ekalsingha | 4,21,686 |
| 5. | M/s Satya Suman Marble & Granite | 86/2018 | 1.0025 | Granite | Ekalsingha | 1,28,294 |
| 6. | Shree Sagar Sharma | 119/2018 | 1.0229 | Granite | Ekalsingha | 1,66,964 |
| 7. | M/s Sh. Tirupati Granite Mines | 18/2019 | 1.3848 | Granite | Ekalsingha | 60,060 |
| 8. | M/s Arihant Granites | 22/2019 | 1.4797 | Granite | Ekalsingha | 2,03,212 |
| 9. | Sh. Jagdish Bairwa | 07/2019 | 1.0144 | Granite | Ekalsingha | 52,650 |
| 10. | Shiraj Gurjar | 28/2018 | 1.0001 | | Ekalsingha | 2,51,206 |
| 11. | M/s Aditi Granite & Mineral | 70/2018 | 1.00 | Granite | Ekalsingha | 2,00,000 |
| 12. | M/s Basarani Granite | 108/2018 | 1.1751 | Granite | Ekalsingha | 2,72,764 |
| TOTAL | | | **14.3802 Ha** | | | **22,00,929.13 TPA (ROM)** |

## CLUSTER PROJECT COST OF 11-EXISTING LEASE AS PER E.C GRANTED- 10.45 CRORE
## PROPOSED 1-L.O.I PROJECT COST AS PER ISSUED ToR LETTER- 0.95 CRORE
## TOTAL CLUSTER PROJECT COST-11.40 CRORE
## PURPOSE- ENVIRONMENT CLEARANCE


**EIA CONSULTANT**

M/S N.S. ENVIRO – TECH LABORATORIES & CONSULTANT

OFFICE ADD- P. NO. 51, GANETA HOUSE, SHIV VIHAR COLONY

NEAR PATRAKAR COLONY ROAD, MANSAROVAR JAIPUR - 302020 (RAJ.)

(NABET approved organization NABET/EIA/1922/RA/0173)

Validity (18-08-2022)

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# Quality Council of India

## National Accreditation Board for Education & Training

# CERTIFICATE OF ACCREDITATION

**N. S. Envirotech Laboratories and Consultant, Jaipur**

**Plot. No.51, Ganeta House, Shiv Vihar, Near Patarkar Colony Road, Mansrovar, Jaipur-302020**

The organization is accredited as Category-A under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

| Sl. No. | Sector Description | Sector (as per) | | Cat. |
|---|---|---|---|---|
| | | NABET | MoEFCC | |
| 1. | Mining of minerals including opencast / underground mining | 1 | 1 (a) (i) | A |
| 2. | Highway | 34 | 7 (f) | A |
| 3. | Aerial ropeways | 35 | 7 (g) | A |

***Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated Sept 04, 2020 and supplementary MoM Jan 15, 2021 posted on QCI-NABET website.***

*The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/21/1611 dated Feb 01, 2021. The accreditation needs to be renewed before the expiry N. S. Envirotech Laboratories and Consultant following due process of assessment.*

**Sr. Director, NABET**
**Dated: Feb 01, 2021**

**Certificate No.**
**NABET/EIA/1922/RA 0173**

**Valid till**
**August 18, 2022**

*For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.*

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# EXECUTIVE SUMMARY

## 1. INTRODUCTION

M/s N.S.Envirotech Laboratories & Consultant has prepared the EIA along with EMP for CLUSTER No.49 "Ekalsingha" GRANITE MINE of Cluster area 14.3802 Hectares at Village – Ekalsingha, Tehsil- Kekri & Dist – Ajmer (Raj.)

The Cluster project proponents have wide experience of mining of Granite which is used for Tiles flooring, column, Build exterior, staircases walls, Graveyard, Pre-fabrication unit (building stione).

As per the MoEF &CC, New Delhi Gazette dated 14th September 2006 amended in December 2009, April 2011, Dec 2012, March 2013, Sep 2013 and Jan 2015, the proposed mining project is categorized as category 'B1' project. The projects are proposed to mine Granite, from the cluster named Cluster No.49 "Ekalsingha" Granite Mine, located N/v- Ekalsingha, Tehsil: Kekri, Dist: Ajmer (Raj).

Cluster No.49 "Ekalsingha" Granite Mine, Cluster Area- 14.3802 ha. & Applied area- 1.0023 ha & existing lease area- 13.3779 ha, Total Production Capacity of Cluster – 22,00,929.13 TPA (RoM), Near village- Ekalsingha, Tehsil- Kekri, District- Ajmer, Rajasthan. The proposed project fall in Cluster situation with total Cluster Area- 14.3802 Hectares. There is one LOI and eleven existing lease in the cluster.

The List of Remaining 11- Existing Lease is mentioned below-

TABLE 1.1

| S. No | Name of Existing Lease | M.L No | Area in Ha. | Existing Production as per approved Cluster Mining Plan in TPA (ROM) |
|---|---|---|---|---|
| 1 | M/s A.G Mines & Minerals | 24/2018 | 1.4143 | 99006.13 TPA (ROM) |
| 2 | M/s Sawai Bhoj Granite | 31/2018 | 1.3006 | 1,82,127 TPA (ROM) |
| 3 | Shree Giriraj Granite | 57/2018 | 1.5835 | 4,21,686 TPA (ROM) |
| 4 | M/s Satya Suman Marble & Granite | 86/2018 | 1.0025 | 28,294 TPA (ROM) |
| 5 | Sh. Sagar Sharma | 119/2018 | 1.0229 | 1,66,964 TPA (ROM) |
| 6 | M/s Sh. Tirupati Granite Mines | 18/2019 | 1.3848 | 60,060 TPA (ROM) |
| 7 | M/s Arihant Granites | 22/2019 | 1.4797 | 2,03,212 TPA (ROM) |
| 8 | Sh. Jagdish Bairwa | 07/2019 | 1.0144 | 52,650 TPA (ROM) |
| 9 | Shivraj Gurjar | 28/2018 | 1.0001 | 2,51,206 TPA (ROM) |
| 10 | M/s Aditi Granite & Mineral | 70/2018 | 1.00 | 2,00,000 TPA (ROM) |
| 11 | M/s Basarani Granite | 108/2018 | 1.1751 | 2,72,764 TPA (ROM) |
| **Total** | | | **14.3802** | **22,00,929.13 TPA (ROM)** |

BACKGROUND

The cluster project propnents who are well qualified have an excellent knowledge of mining and mineral trading.

The EIA study report has been based upon the following:-

a) Field data collection on different aspects of environment including air, water, land, meteorology, noise, flora, fauna, agriculture and socio-economy in the study area of 10 km radius with cluster no.49 "Ekalsingha" Granite mine.

b) Study of opencast mining methodology, water requirement, source of pollutants and pollution control strategy.

c) Ecological Prospective and Green Belt Planning.

The EIA study evaluates the impact on the present environmental scenario and check out the environmental management plan incorporating further step to mitigate the adverse impacts of air, noise, water, land pollution on environment.

### 1.1 LOCATION & COMMUNICATION

The Cluster No. 49 "Ekalsingha" Granite Mine, Near village- Ekalsingha, Tehsil- Kekri, District- Ajmer, Rajasthan. The project site falls in Survey of India Toposheet No. 45 N/04.

The Cluster area is situated between Latitudes 26°01'16.28519" to 26°01' 14.74277" N & Longitudes 75°12'13.37401" to 75°12'11.19149" E. The Cluster area of Ekalsingha is about 0.66 km in NE direction from the cluster area. The Cluster area is connected with Ekalsingha by SH-12 about 2.56 Km in W direction from applied area. Nearest railway station is Bandanwara which is about 52.62 Km in WNW direction from applied area & Nearest Airport – Jaipur International Airport about 107.79 Km in SW direction from the Cluster area.

# 2. PROJECT DESCRIPTION

### 2.1 STUDY AREA AT A GLANCE

1. The study area includes the village of Kekri Tehsil within10 km. radius from the mine as center.

| | | |
|---|---|---|
| i) Latitude (N) | : | 26° 01' 16.28519" to 26°01' 14.74277"N |
| Longitude (E) | : | 75°12' 13.37401" to 75°12' 11.19149" E |
| ii) Populations | : | 53013 |
| II) District H.Q. | : | Ajmer |

### 2.2 Demography:-

| | | |
|---|---|---|
| i) Total Population | | |
| a) Male | : | 26935 |
| b) Female | : | 26078 |
| ii) Literates | | |
| Male and Female | : | 16835& 8690 |
| iii) No. of Household | : | 10368 |
| iv) No. of Villages | : | 39 |

### 3. Land use Pattern: - Enclosed

4 Climatology (IMD March to May, 2021):-

i) Total Rainfall (March to May 2021) : (3.3 to 14.3 mm)

ii) Mean monthly maximum temp. : 41.80 °C

iii) Mean monthly minimum temp. : 31.60 °C

iv) Relative humidity : Max. – 74%, Min. – 45%.

## 2.2 TOPOGRAPHY, DRAINAGE & REGIONAL GEOLOGY

### 2.2.1 TOPOGRAPHY & DRAINAGE

The Applied Mining lease area forms a part of Survey of India Topo-sheet no 45N/04 The Applied Mining lease area is situated between Latitudes 26° 01' 16.99081" to 26° 00' 30.35164" N & Longitudes 75°11' 57.81481" to 75°12' 53.85486" E. The mining area is about 0.66 km from Ekalsingha. Tehsil Kekri is about 7.20 km in SW direction & District Headquarter Ajmer is about 73.96 km in NW direction from the applied lease area.

General Geology:

Regional Geology:

The area covers part of Ajmer & Tonk Districts of Rajasthan. There are as well connected by roads, as jaipur-Kota & Kekri-Nasirabad-Ajmer state Highway Pass through the area. The easterly flowing Dia River and its tributaries pass through the southern part of the area.

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| Era/period | Group | Sub-Group | Formation | Lithology |
|---|---|---|---|---|
| Quaternary | | | | Unclassified alluvium and Aeolian Sand |
| | | | | Granite |
| | Intrusive | | Raypur-Jalayan Mafic Rocks | Granite & Granite gneiss |
| | | | | Giyangarh Asind Acidic rocks |
| | | | | Amphibolite |
| Archaean to Palaeo-proterozoic | Bhilwara-Super Group | Mangalwar Complex | Kekri Formation | Migmatite Composite Gneiss and mica-Schist |
| | | Sand Mata Complex | Shambhugarh | Migmatite and gneiss |

Local Geology :

| | | |
|---|---|---|
| Intrusive | Raipur-Jalayan mafic rocks | Granite and Granite gneiss |

## 2.3 RESERVES & LIFE OF MINE: -

The detail of Life of Mine of Cluster is mention below-

| S.No | Name of Lease | Mineable Reserves | Production (TPA) | Life of Mine as per Cluster approved Mining Plan |
|---|---|---|---|---|
| 1 | Sh. Devraj Gurjar | 625773.5 | 50382 | 12 |
| 2 | M/s A.G Mines & Minerals | 438968.92 | 74229 | 6 |
| 3 | M/s Sawai Bhoj Granite | 478129 | 38783 | 12 |
| 4 | Shree Giriraj Granite | 2092986 | 199746 | 11 |
| 5 | M/s Satya Suman Marble & Granite | 316435.5 | 30057.5 | 11 |
| 6 | Sh. Sagar Sharma | 533436 | 42336 | 13 |
| 7 | M/s Shri Tirupati Granite Mines | 615940 | 60000 | 10 |
| 8 | M/s Arihant Granites | 1214206 | 93805 | 13 |

| | | | | |
|---|---|---|---|---|
| 9 | Sh. Jagdish Bairwa | 299520 | 52650 | 5.68 |
| 10 | Shivraj Gurjar | 299456 | 30773 | 10 |
| 11 | M/s Aditi Granite & Mineral | 624752.5 | 34429 | 18 |
| 12 | M/s Basarani Granite | 466203 | 48378 | 10 |
| **TOTAL** | | **8005806** | **755568.5** | **18 Years Max.** |

*Source: Approved Mining Plan with Progressive Mine Closure Plan.*

Considering average Production of 625773.5 TPA of Granite minor mineral in the Cluster.

Life of mine of Cluster = Total Mineable reserve (Proved+Probable) / Av. Annual Production = 35932544.42/755568.5= 14 Years.

## 2.4 MINING METHODS:-

The Mining Method will be done open cast Semi-Mechanized Method. The Cluster area is Mostly Soil Covered and partly exposures of Granite. The bench height would not be kept greater then (the statutory provision of the prevailing Act) the width of the benches. Benches of 6 m Height have been Planned with width more than height of the bench. The mining has been proposed to start southeast of the Cluster area. The required Barrier along the mine boundary shall be kept 7.5 m. as shown in the plates of each mine in Cluster area.

A granite mine has two types of activates i.e. one is removing of waste rock and overburden and the other is extraction of granite blocks.

Overburden/Fractured capping is removed by drilling small dia holes blasted with light explosives charge (to prevent damage to Granite blocks from crakes) and the overburden is removed with help of excavator and loaded in to Dumper. The muck is transported and dumped in the lease area at proposed dumping site.

When granite is exposed, a free face in the strike direction along weak zone of strata is opened out by trench box and local terminology is called galli preparation. Thus a bench is formed. The vertical holes are drilled by jack hammer drill and with the wedging the big blocks are separated and toppled by using jacks. Big size block is further divided into small blocks by drilling and wedge method.

## 2.5 POLLUTION CONTROL STRATEGY IN THE MINING AREA

a) Air Pollution : The major contribution of air pollution is by opencast mining such under excavation, transportation etc. which will led to momentary rise in particulate matter($PM_{10}$). Adequate measures will be adopted to suppress the air pollution viz. regularly spraying of water in lease area, haulage road particularly near opencast working and green belt will be developed in M.L. area.

b) Noise Pollution: The mining activities viz. excavation and transportation will create noise pollution but these sources of noise are not continuous. The noise pollution would be minimize by proper maintenance of machine and thick canopy of green belt development.

c) Water Pollution: Mining activities will not influence the existing water quality. There is no waste water generated from the mines. In the rainy season the water be collected in the pit, which will be pumped out and used in plantation & dust suppression. As Granite & Masonry Stone is nontoxic mineral and there is no contamination of any toxic substance used in the mining process. Hence, it does not require any further treatment.

d) Solid Waste Pollution : The waste generated from the mining will be collected and dumped in demarked area. The retaining wall will be made to arrest the flow of waste. These area will be covered by green belt as the year passes.

## 3.0 DESCRIPTION OF ENVIRONMENT

### 3.1 TOPOGRAPHY:

The district is broadly triangular in shape. It is generally a plain area interspersed with low hills of Aravalli range running roughly NE-SW direction and irregular terrain lying in the southwestern part of the district. The Kekri block forms the southeastern part of the district, and is a level plain; The Kishangarh block which is in the northeastern portion of the district is sandy except for a few isolated hills. The major rivers of the district are Banas, Khari, Sagarmati and Rupnagar, which

developed very good drainage system of the district along with their tributaries like Nearan, Mashi, Sodara and Mahar etc. Minimum elevation (301 m) is found in Kekri block whereas highest elevation is reached (870 m) in Peesangan block.

## 3.2 DRAINAGE:

The Ground water table is 80 m from the surface (in rainy season) to 100 m (in Dry Season). The district is broadly triangular in shape and is generally a plain area interspersed with low hills of Aravalli ranges. The Aravalli hill ranges run parallel to each other roughly in NE-SW 6 direction giving rise to elongated valleys and divide plains of Marwar from the high elevated land of Mewar. The minimum elevation of 301 m amsl is found in Kekri block whereas highest elevation of 870 m amsl is observed in Pisangan block. Sand dunes and cluster of sand mounds cover a large part of the Sarsuti valley and area around Picholian & Pushkar valley. These features are usually formed due to abrupt termination of a hill range or existence of wind gaps in the hills. There are no perennial rivers in the district. The major rivers of the district are Banas, Khari, Sagarmati and Rupnagar, which are ephemeral in nature and develop very good drainage system of the district. The district falls under three basins, i.e., Banas (64.88%), Luni (23.74%) & Shekhawati (11.38%). The breakup of the basin area falling in various tehsils:

## 3.3 HUMAN SETTLEMENT:

There is no human settlement within the lease area. Total 39 villages with 10,368 household are there within the study area with population of 53,013.

## 3.4 EXISTING ENVIRONMENTAL SCENARIO :–

### A) WATER ENVIRONMENT:-

### i) Ground Water Resources and Quality:

The water table in the dug well situated in the lease area is (80 – 100 m). Hence, water table will not be intersected in the mine working.

ii) Surface Water Resources and Quality: There is no surface water body found wihh in Study area.

## B) AMBIENT AIR QUALITY:-

The major contribution to the air pollution is $PM_{10}$ and other pollutant present in the air are SOx and NOx. To asses the pre mining condition ambient air monitoring was carried out.

The regional $PM_{10}$ varies from 45.5 to 89.49 µg/m3 and PM2.5 varies from 24.56 to 59.49 µg/m3. The concentration of SO2 varies from 5.6 and 12.21 µg/m3, NOx concentrations vary from 10.34 to 25.9 µg/m3 and CO concentrations vary from 0.027 to 1.75 mg/m3 From the ambient air quality monitoring carried out for three months (March 2021 to May 2021) of the study period shows that the critical pollutants like $PM_{10}$, $PM_{2.5}$, SOx, NOx and CO are well within the permissible limits.

## C) METEOROLOGY:-

Meteorological information were collected twice in a day at 8.30 am and 17.30 pm during the period of March 2021 to May 2021. Based on these information following inferences can be made.

**a) Temperature:** The max. and min. temperature measured in the study area during the study period are:

| Month | Temp.(°C) | |
|---|---|---|
| | Min. | Max. |
| March 2021 | 31.60 | 22.70 |
| April 2021 | 38.0 | 25.37 |
| May2021 | 41.80 | 28.30 |

b) **Relative Humidity**: The minimum and maximum relative humidity Observed during the study period are:

| Month | Humidity (%) | | Rainfall in (MM) | |
|---|---|---|---|---|
| | 8.30hrs | 17.30 hrs | Min. | Max. |
| March 2021 | 74 | 58 | 5.6 | 0.0 |
| April 2021 | 71 | 45 | 37.7 | 0.0 |
| May2021 | 66.0 | 56 | 32.3 | 0.0 |

c) **Wind Speed**: The Minimum and Maximum wind speed were observed during the study period are:

| Month | wind speed(Km./Hr.) | | | |
|---|---|---|---|---|
| | 8.30 | | 17.30 | |
| | Max | Min | Max | Min |
| March 2021 | 45 | 04 | 016 | 004 |
| April 2021 | 55 | 05 | 018 | 006 |
| May2021 | 58 | 06 | 022 | 004 |

## D) NOISE LEVEL:-

Noise level in the study area were found slightly high during day time. 56.4 (dB) to 58.2 (dB)

## E) LAND USE OF THE LEASE AREA:-

| S.No | All the area are given in hectare | **Sh. Devraj Gurjar S/O Sh. Gopi Lal Gurjar Proposed Fresh L.O.I** |
|---|---|---|
| 1 | Water Reservoir | -- |
| 2. | Top Soil Dump | -- |
| 3. | Backfilled area | -- |
| 4. | Stack Yard | -- |
| 5. | Sub Grade stack yard | -- |
| 6. | Infrastructure | -- |
| 7. | Road | -- |
| 8. | Railway | -- |
| 9. | Green Belt other than backfilled | -- |
| 10. | Non Utilized | 1.0023 |
| **Total** | | **1.0023** |

| S. No | All the area are given in hectare | M/s A.G Mines & Minerals | M/s Sawai Bhoj Granite | Shree Giriraj Granite | M/s Satya Suman Marble & Granite | Sh. Sagar Sharma | M/s Shri Tirupati Granite Mines | M/s Arihant Granites | Sh. Jagdish Bairwa | Shivraj Gurjar | M/s Aditi Granite & Mineral | M/s Basarani Granite |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Water Reservoir | --- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2. | Top Soil Dump | --- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3. | Backfilled area | --- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 4. | Stack Yard | --- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 5. | Sub Grade stack yard | --- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 6. | Infrastructure | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 7. | Road | --- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 8. | Railway | --- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 9. | Green Belt area | --- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 10. | Non Utilized | 1.4143 | 1.3006 | 1.5835 | 1.0025 | 1.0229 | 1.3848 | 1.4797 | 1.0144 | 1.0001 | 1.00 | 1.1751 |
| **Total** | | **1.4143** | **1.3006** | **1.5835** | **1.0025** | **1.0229** | **1.3848** | **1.4797** | **1.0144** | **1.0001** | **1.00** | **1.1751** |

### F) SOCIO – ECONOMIC ENVIRONMENT:-

The study area includes 39 villages within the 10 km. radius with a total population 53,013 forming 10,368 household as per census 2011. In the study area about 25,525 of the total population is literates. Male literates are 16,835 and female literates are 8,690.

As per census 2011, about 20678 of the total are main workers, 5216 are marginal workers & 27119 of the total population are non – workers.

### G) UTILITIES:

a) **Water Requirement** : Around 0.5 KLD water will be used for domestic purpose, 1.0 KLD water will be used for green belt development. 1.0 KLD for Wire Saw Cutting. For Dust Suppression 1.0 KLD will be requiring. Thus, total 3.5 KLD will be required for applied mine. Hence, total 42 KLD will be requiring for Cluster no. 49 "Ekalsingha" Granite Mine.

b) **Man Power** : At the time of full fledgel mining operation, the total employment will be around 300-360 persons.

## 4. ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

### 4.1.1 TOPOGRAPHY

Topography of the surrounding area will remain unchanged. While that of the mining lease area will change due to mining, excavation, dumping etc.

### 4.1.2 DRAINAGE

No impact on drainage pattern within or outside the lease area due to mining project.

### 4.2 IMPACT ON CLIMATE

Temperature, rainfall, wind speed & humidity pattern is a regional behavior and is not likely to be affected by the mining activity over a small area.

## 4.3 IMPACT ON AIR ENVIRONMENT

The ambient air quality monitoring results show that all the parameters such as $PM_{10}$, SO2, $NO_x$ and CO are within the limits.

## 4.4 IMPACT ON NOISE LEVEL

The noise levels in the working environment are compared with standards prescribed by occupational safety and heath administration (OSHA-USA) & CPCB-NEW DEHLI, the acceptable limits are observed.

## 4.5 IMPACT ON WATER QUALITY –

### A) SURFACE WATER-

The opencast mining operation usually causes water pollution and suitable measures are taken to control water pollution. The sources of pollution generally are:

- Wash off from dumps
- Pumping of mine water into surface water bodies
- Soil Erosion

### B) GROUND WATER QUALITY

Ground Water Pollution is not the case with this mine, as mineral or soil does not contain any harmful ingredients that could leach down to the water table. Thus the mine workings shall not affect the ground water quality.

## 4.6 IMPACT ON FLORA AND FAUNA –

As the mining activities will be confined to core zone only, no adverse impact is foreseen on the flora of the forest area & no impact on the fauna in the core zone, as the area is poor from faunal point of view.

## 4.7 IMPACT ON TOP SOIL-

The soil removed from the mining area had been utilized for plantation in surrounding area. Since soil removal is a regular activity, the excess soil is stacked separately for future use. Therefore impact on soil in the lease area will be negligible.

## 4.8 SOCIO - ECONOMIC CONDITIONS

There is no inhabitation within the lease area. The only employment depend on is agriculture, which is seasonal. The Cluster mining operations are providing employment to 300-360 local persons. For Cluster no. 49 "Ekalsingha" Granite Mine.

## 5.0 ANALYSIS OF ALTERNATIVES-

The deposit-is located on surface & can be mined by open cast method of mining economically. At present status of mining, underground method of miningis not feasible.

## 6.0 ENVIRONMENTAL MONITORING PROGRAMME

The monitoring of pollutant in mine is carried out for air, water, soil and noise. It takes care of all monitoring needs of the mine. Additionally ambient air and work zone monitoring in mine is conducted every season near mining operation, loading and transportation (haul road) areas by private agency. The analysis results of air monitoring are properly recorded and submitted to the statutory authorities from time to time. Noise measurement of mine equipment is done once in a year. Water quality once in season & soil quality once in two year on all planted areas.

## 7.0 ADDITIONAL STUDY-DISASTER MANAGEMENT PLAN

The following natural /industrial problems may be encountered during the mining operational are

- Inundation-filling of the mine pit due to excessive rains.
- Slope failures at the mine faces or stacks.
- Accident due to storage of explosives and blasting
- Accident due to fire.

Water table will not be touched during proposed working. No high risk accidents like landslides, subsidence flood etc. have been apprehended. But possibility of accidental disaster is also not ruled out. Therefore, all the statutory precautions should be taken for quick evacuation as per the Mines Rules 1955, Rule of MMR-1961 & the Rules of MCDR-1988.

## 8.0 PROJECT BENEFIT

The surrounding inhabitants are mainly agricultural oriented. Opportunities for jobs in activities such as mining serve as a source of permanent livelihood. The mine will create employment directly or indirectly. Additional, certain works like security will be outsourced on contact.

## 9.0 ENVIRONMENTAL MANAGEMENT PLAN

### 9.1 LAND RECLAMATION

No reclamation and backfilling will be done because: Soil generated during mining will be utilized in plantation.

Mining will continue for, Granite generation. At the end of mine life mined out area will be used as water reservoir.

### 9.2 PLANTATION

The sapling for plantation will be selected on basis of water availability of water & according to climatic condition and hence it is proposed to plant 4740 saplings in five year. The plantation will be done on along the lease boundaryat & outside the lease area at both side of approach road at the end of life of mine.

## Requirements for Plants for Afforestation and Reclamation
## Plantation will be Done by Cluster No. 49 "Ekalsingha" Granite Mine"

| Year | Along the lease boundary | | On Backfilled area | | Outside the lease area | | Top Soil Dumps | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Area (Ha.) | No. of Trees | Area (Ha.) | No. of Trees | Area (Ha.) | No. of Trees | Area (Ha.) | No. of Trees | Area (Ha.) | No. of Trees |
| 2021-2022 | 0.79 | 790 | -- | -- | -- | -- | -- | -- | 0.79 | 790 |
| 2022-2023 | 0.79 | 790 | -- | -- | -- | -- | -- | -- | 0.79 | 790 |
| 2023-2024 | 0.79 | 790 | -- | -- | -- | -- | -- | -- | 0.79 | 790 |
| 2024-2025 | -- | -- | -- | -- | 1.18 5 | 1185 | -- | -- | 1.18 5 | 1185 |
| 2025-2026 | -- | -- | -- | -- | 1.18 5 | 1185 | -- | -- | 1.18 5 | 1185 |
| **Total** | **2.37** | **2370** | -- | -- | **2.37** | **2370** | **--** | **--** | **4.74** | **4740** |
| • Plantation will be carried out during mining process by Cluster Association. Approximately 4740 plants will be planted along the lease boundary & outside the area at the end of life of mine. | | | | | | | | | | |

## Requirements for Plants for Afforestation and Reclamation
## Plantation will be Done by1-Applied L.O.I Holder

| Year | Along the lease boundary | | On Backfilled area | | Outside the lease area | | Top Soil Dumps | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Area (Ha.) | No. of Trees | Area (Ha.) | No. of Trees | Area (Ha.) | No. of Trees | Area (Ha.) | No. of Trees | Area (Ha.) | No. of Trees |
| 2021-2022 | 0.0825 | 55 | -- | -- | -- | -- | -- | -- | 0.0825 | 55 |
| 2022-2023 | 0.0825 | 55 | -- | -- | -- | -- | -- | -- | 0.0825 | 55 |
| 2023-2024 | 0.0825 | 55 | -- | -- | -- | -- | -- | -- | 0.0825 | 55 |
| 2024-2025 | -- | -- | -- | -- | 0.0825 | 82 | -- | -- | 0.0825 | 82 |
| 2025-2026 | -- | -- | -- | -- | 0.0825 | 83 | -- | -- | 0.0825 | 83 |
| **Total** | **0.165** | **165** | -- | -- | **0.165** | **165** | -- | -- | **0.33** | **330** |
| • Plantation will be carried out during mining process by applied area, Approximately 330 plants will be planted along the lease boundary & outside the lease area at the end of life of mine. | | | | | | | | | | |

## 9.3 AIR POLLUTION CONTROL MEASURES

The following measures would be adopted to mitigate the $PM_{10}$ levels in ambient air.

- Dust suppression by water spraying is adopted on the haul areas
- Dense green belts are being developed around the dust generation points. Trees would be planted on both sides of roads used for transportation to arrest dust.
- Afforestation around the mine to filter out the dust and preventing it from reaching the residential areas.
- Reclamation and afforestation of mined out area as per schedule with minimum gap between excavation and reclamation to fix the dust and prevent its getting airborne.
- Dust mask provided to the workers engaged at dust generation points like excavations, loading and unloading points.

## 9.4 NOISE POLLUTION CONTROL MEASURES

The noise level monitoring carried out in the area has indicated that the present noise levels near the lease boundary are generally within limits. The deployment of various machines for drilling, transport and other auxiliary operations have increased the noise levels but are naturally attenuated within lease area itself. Additional measures are being taken to further reduce the noise levels.

## 9.5 WATER POLLUTION CONTROL MEASURES

### A) SURFACE WATER

Adequate control measures have been taken to check, not only the wash off from the freshly excavated areas and soil erosion, but also uncontrolled flow of mine water (during monsoon) into mine pits.

A garland drain shall be made to carry away rainwater of the catchments area surrounding the working to the natural nallahs. The drain shall be lined with stone masonry and shall be of adequate size to carry the storm water without overflow.

**B) GROUND WATER**

There would not be any adverse impact on the ground water quality due to mining. The mineral formation do not contain any harmful element, which could percolate into the ground and pollute the ground water. Hence, no control measures are required.

## 9.6 MEASURES TO IMPROVE SOCIO-ECONOMIC CONDITIONS

The overall impact of Granite mine on the socio-economics of the area has been a very positive one, in that not only it has generated considerable employment for local population but it has also given a good boost to the general economy of the area.

## 9.7 ENVIRONMENTAL MANAGEMENT CELL

The small Environmental Management Cell will also co-ordinate all the related activities such as collection of statistics of health of workers and population of the region, afforestation and green belt development.

## 9.8 FISCAL ESTIMATE

Annual Capital cost for implementing environmental protection measures 45.60 Lakh & ESR activities cost for the mine comes to about Rs. 22.80 lakhs.