EXECUTIVE SUMMARY

( ENGLISH)

FOR

DEDHROTA BAUXITE MINE

NEAR VILLAGE – DEDHROTA, TALUKA – HIMMAT NAGAR

DISTT – SABARKANTHA (GUJARAT)

Lease Area – 20.0 Ha.
Survey No.335/1
Purpose – Fresh Grant,
Proposed production – 250000 TPA

PROJECT COST – 90.0 Lakhs

CATEGORY ‘B’

Online Proposal No. – F1 (4)/SIA/GJ/MIN/2877/2015.

LESSEE
ALIMIYA IMAMALI SAIYAD
FF/16, SAMRUDDHI COMPLEX, NEAR LIC OFFICE, HIMMAT NAGAR. 383001.
SABARKANTHA, GUJARAT.
MOB. 9979858114.
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ACCREDITED BY NABET CATEGORY “A” FOR MINING SECTOR (S.No. 160)
Name of the Consultant: Udaipur Min-Tech Pvt. Ltd.

205, “Apeksha Complex”,
Sector 11, Hiran Magri,
Udaipur- 313002

Sectors Approved – 01 Nos.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Sector No.</th>
<th>Name of Sector</th>
<th>Category**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Mining of minerals (Opencast only)</td>
<td>A</td>
</tr>
</tbody>
</table>

Total = 01 Sector

*(Sectors allocated to individual EIA Coordinators are mentioned in Annexure I-B)

(Vipin Sahni)
Director
EXECUTIVE SUMMARY

ENGLISH
1.1 INTRODUCTION

This report is prepared to evaluate the environmental impacts of the project namely Dedhrota Bauxite Mine over 20.0 ha Govt land, Near Village – Dedhrota, Taluka-Himmat Nagar Distt – Sabarkantha, Gujarat. The requirements of EIA notification so 1533(E) dated 14.9.2006 and amendments made thereof.

Project identification

The mining lease was sanctioned by Government of Gujarat vide order no. MCR-1581 (S-238/6645-CHH) dt.10-09-85. The mining lease deed was executed on 24-11-1986 for the term of 20 years. (Refer Annexure no. I & I A.)

The tenure of mining lease ended on 23-11-2006. The lessee applied for renewal of mining lease in Form J on 30-6-2008. (Refer Annexure no. II)

The application for renewal was rejected by the State government on the ground that lessee had submitted the application after expiry of the lease period.

The lessee made an appeal by revision application on 12-8-2009 to Joint Secretary (Mines) and contended that he was never put in possession of the leased land for mining as no survey and demarcation was done. The order of State government was set aside and case was remanded to the State government for considering the case on merits as per provisions of MMDR Act. (Refer Annexure no.III)

Thereafter Government of Gujarat, Industries and Mines Department passed an order no.MCR/162009/GOI-57/CHH dt.4-7-2015 to assign the possession of lease and extension of lease period in terms of Section 8A, introduced by the MMDR (Amendment) Act 2015.

The tenure of the mining lease stands extended up to the date 9-9-2035 as per this order. Mining activity will be carried out only after obtaining Environmental clearance. There are some more terms and conditions stipulated Refer (Annexure no. IV.)
IDENTIFICATION OF PROJECT PROPONENT

Alimiya Imamali Saiyad is authorized signatory of Dedhrota Bauxite Mine. The contact address of PP is given as under

Alimiya Imamali Saiyad
FF/16, Samruddhi Complex, Near LIC office,
Himmat nagar, Sabarkantha. Gujarat.
MOB. +09979858114
Email: dipak18.patel@yahoo.com
(Refer Annexure-V, Photo ID of lessee)

1.2 PROJECT DESCRIPTION

Dedhrota Bauxite Mine is a new project proposed to produce about 2,50,000 TPA (ROM) Bauxite. The mining will be carried out by opencast semi-mechanised with drilling and blasting method. The lease area is situated near village - Dedhrota, Tehsil – Himmat Nagar, District – Sabarkantha (Gujarat) over 20 ha Govt. land.

The lease area falls on survey of India Toposheet No. 46 A/14 and is situated between:

<table>
<thead>
<tr>
<th>Latitude N</th>
<th>Longitude E</th>
</tr>
</thead>
<tbody>
<tr>
<td>N 23° 36’16.25” to N 23°36’42.74”</td>
<td>E 72°50’26.87” to E 72°50’ 40.42”</td>
</tr>
</tbody>
</table>

Description of lease area and mining process:

**Proposed working:** The Dedhrota Bauxite Mine shall be developed by mechanized opencast mining with drilling and blasting, excavator shall be deployed for removal and loading of mineral and dumpers will be deployed for transportation of mineral.

**Manpower:** Project will create 275 people get direct & indirect employment opportunities within the surrounding region.
**Machinery to be deployed:** Detail of the mining machinery to be deployed is given in the table below.

<table>
<thead>
<tr>
<th>Type of Machinery</th>
<th>Nos.</th>
<th>Bucket Capacity in Cum.</th>
<th>Motive Power</th>
<th>H.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>JCB 3D Excavator/Loader</td>
<td>2</td>
<td>0.5 Cum</td>
<td>Diesel</td>
<td>60</td>
</tr>
<tr>
<td>Tata Dumper model 2515</td>
<td>4</td>
<td>20 ton</td>
<td>Diesel</td>
<td>110</td>
</tr>
<tr>
<td>Tractor mounted Air Compressor</td>
<td>1</td>
<td>150 Cfm</td>
<td>Diesel</td>
<td>45</td>
</tr>
<tr>
<td>Jack Hammer with Drill rods</td>
<td>2</td>
<td>120 Cfm</td>
<td>Compressed air</td>
<td>-</td>
</tr>
<tr>
<td>Mahindra Tractor with Water Tank on trolley</td>
<td>1</td>
<td>5000 litre tank</td>
<td>Diesel</td>
<td>45</td>
</tr>
<tr>
<td>Water pump with Diesel engine</td>
<td>1</td>
<td>100 litre / min</td>
<td>Diesel</td>
<td>5</td>
</tr>
</tbody>
</table>

**Need of the project:** The mined out Bauxite in small size is proposed to be used in cement plant. Supply of cement grade Bauxite is to various local cement plants, supplying them Cement grade Bauxite content 39% to 40% $\text{Al}_2\text{O}_3$.

**1.3 DESCRIPTION OF THE ENVIRONMENT**

The baseline environmental monitoring was carried out during winter season of year December 2015 to February 2016. The various environmental components which are thoroughly studied during the study period include:

- Land Environment
- Water Environment (surface and ground water)
Air Environment
Noise Environment
Biological Environment
Socio- Economic Environment

<table>
<thead>
<tr>
<th>Component</th>
<th>Baseline Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land environment</td>
<td><strong>Local Geology</strong> - Two types of Bauxite are observed in the area, ash grey or</td>
</tr>
<tr>
<td></td>
<td>pinkish grey in colour and nodular or boulder in nature and the other dawn grey</td>
</tr>
<tr>
<td></td>
<td>or reddish brown, earthy, massive and showing similar features and habits of</td>
</tr>
<tr>
<td></td>
<td>occurrence as the ferruginous Laterite. A study of pits reveals the fact the</td>
</tr>
<tr>
<td></td>
<td>thickness of Bauxite zone and its quality is variable within short lateral</td>
</tr>
<tr>
<td></td>
<td>distances. The size and concentration of big boulders and nodules are seen to</td>
</tr>
<tr>
<td></td>
<td>vary greatly, also on the different walls of the same pit. At the surface and</td>
</tr>
<tr>
<td></td>
<td>in the upper reaches of the pits, the boulders are of a fairly big size and</td>
</tr>
<tr>
<td></td>
<td>closely packed but diminish in size in the lower portions. Sedimentary structures</td>
</tr>
<tr>
<td></td>
<td>such as wavy bedding, small and large scale planer(high cum angle) cross</td>
</tr>
<tr>
<td></td>
<td>bedding and at some places graded bedding are observed in the rocks of both the</td>
</tr>
<tr>
<td></td>
<td>formations of Himmat nagar.</td>
</tr>
</tbody>
</table>

**Hydrogeology**:- The Sabarkantha district has two main hydrogeological provinces consisting of hard rock types and soft rock. In the hard rock, it is constituted of meta sediments and Deccan traps. In soft rock type, it has alluvium and sandstone. Each terrain has 13 varied hydro-geochemical regimes. Groundwater of the district originates as rainwater that infiltrates through soil into flow system in the underlying geologic material. In Sabarkantha district, higher plateau and hill zones of eastern part constitute as recharge areas, which is underlain by granitic rocks and met sediments.
**Land use:** The existing land use pattern in the study area has been studied through satellite imagery. The pre-dominant land use of the study area is divided into the following categories:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Class Names</th>
<th>Area (Ha.)</th>
<th>% (Area)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Deciduous Forest</td>
<td>5622.21</td>
<td>16.58</td>
</tr>
<tr>
<td>ii</td>
<td>Water bodies/River</td>
<td>1561.28</td>
<td>4.59</td>
</tr>
<tr>
<td>iii</td>
<td>Build up land</td>
<td>973.43</td>
<td>2.86</td>
</tr>
<tr>
<td>iv</td>
<td>Scrub /waste Land</td>
<td>9441.57</td>
<td>27.79</td>
</tr>
<tr>
<td>v</td>
<td>Crop land</td>
<td>14548.45</td>
<td>42.82</td>
</tr>
<tr>
<td>vi</td>
<td>Grass land/grazing land</td>
<td>1823.87</td>
<td>5.36</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>33970.81</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**Soil quality:** Sand, goradu and medium black are the three main types of soil found in almost all talukas. Sandy soil is chiefly found in the central part of the district covering mostly Modasa, Meghraj, Malpur, Himmatnagar, Bhiloda and Idar talukas. The goradu soil covers Modasa, Prantij, Himmatnagar, Bhiloda and Malpur talukas and the medium black soil covers Khedbrahma, Vijaynagar, Bayad and Idar talukas.

**Water environment**

The quality of groundwater near the mining lease area and within the 10 km radius was established and analysis results are given as:

1. It is observed that the pH of the ground water samples are range from 6.73 to 7.88, which is between the acceptable pH limit for drinking water.

2. The concentration of Total dissolve solides (TDS) are in the range of 654 to 1169 mg/l which falls in permissible category stipulates by Bureau of Indian standards. The desirable limit for total dissolved solids as per IS-10500 Standards is 500 mg/l whereas the permissible limit in absence of alternate
source is 2000 mg/l.

3. Total hardness of the ground water samples observe in the range of 270 to 418 mg/l as CaCO₃. The désirable limit is 300 mg/l and permissible limit is 600 mg/l.

4. Floride Concentration is the rang between 0.77 to 1.21 mg/l. The desirable limit of 1 mg/l and permissible limit of 1.5 mg/l.

5. Alkalinity Concentration is the rang between 160 to 320 mg/l. The desirable limit of 200 mg/l and permissible limit of 600 mg/l.

6. Chlorides Concentration is the rang between 34.99 to 399.8 mg/l. The desirable limit of 250 mg/l and permissible limit of 1000 mg/l.

7. Magnesium Concentration is the rang between 23.06 to 39.33 mg/l. The desirable limit of 30 mg/l and permissible limit of 100 mg/l.

8. Sulphate Concentration is the rang between 19.41 to 106.15 mg/l. The desirable limit of 200 mg/l and permissible limit of 400 mg/l.

<table>
<thead>
<tr>
<th>Air and Noise environment</th>
<th>Ambient air quality has been determined by measuring the concentration of parameters like PM₁₀, PM₂.₅, and SO₂ and NO₂ in the air and results are within the NAAQS standards. The noise monitoring shows that Leq day and night time noise levels in lease area are within the CPCB standards.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biological environment</td>
<td>The biological study of the area has been conducted in order to understand the ecological status of the existing flora and fauna to generate baseline information and evaluate the probable impacts on the biological environment. No endemic plant species found in the study area, however schedule –I fauna (Peacock) observed in the study area, a conservation plan has been prepared and attached with EIA report</td>
</tr>
</tbody>
</table>
in this regard.

**Socio economic environment**

Total population of the study area (for 10 km. radius buffer zone) comprising 26 villages as per 2011 census is 48927 out of which 25256 are male and 23671 are female. Out of the total population scheduled caste 5828 (11.91%) and Scheduled Tribe population is 1342 (2.74%) & total SC & ST population is 7170 respectively.

Total main worker population is 15180 & non worker population is 28990, come under marginal worker 4757 belong to non-workers category.

The overall literacy rate for the population in the survey area is 34622(70.76%). The male literacy rate is 20071 [41.02%] as against the female literacy rate of 14491 [29.61%].

### 1.4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

<table>
<thead>
<tr>
<th>Environment Component</th>
<th>Anticipated Impacts</th>
<th>Mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land Environment</strong></td>
<td>Change in topography and drainage of lease area. Change in Land use of the lease area.</td>
<td>• Garland drain will be constructed around the excavation to prevent the inflow of water into the pit. Sumps will be made for settling of suspended particles if any.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A well laid out closure plan is given in the mining plan and approved from the authorities. Detail is given for reclamation of the degraded lease area to the plantation in the statutory barrier and proposed water reserve in mine out pit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Total plantation by the end of the mine life will be over 2.500 ha (Total lease area 20 ha) on statutory barrier. Therefore 12.5 % of the total lease area will be covered under plantation by the end of life of mine.</td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>There is no proposal for</td>
<td>• Garland drains will be constructed on</td>
</tr>
<tr>
<td>Environment</td>
<td>The sources of air pollution are dust generated due to excavation, blasting, loading and unloading of material and movement of dumpers/trucks on haul roads.</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Paving of road.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The sprinkling of water will be undertaken as and when required on roads as well as stockpile.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Plantation around the lease area.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training to driver for unloading the material from safe height to prevent dust generation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The dumper will be covered while moving the material and care will be taken so that loading will be done without spillage of material during the movement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Traffic management to ensuring that there are no traffic jams on mine route by deputing manpower and by planning dumper movement.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Effective mine closure plan or post mining land use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ambient Air Quality Monitoring will be conducted on regular basis to assess the air quality.</td>
<td></td>
</tr>
</tbody>
</table>

abstraction of groundwater for the bauxite mining. Also there is no any source of ground water in the lease area. The Sabarmati river flows all along the western boundary of the lease area. Proposed mining will not polluted the surface water. The excavation of bauxite further does not add to any harmful ingredients that could leach down to the water table. There is no abstraction of surface water. The opencast mining operation usually causes surface water pollution. No any waste dump proposed in mining lease area. All the garland drains will be routed through settling pits to remove suspended solids from flowing into storm water. The water collected in the pit, after settling of the suspensions, will be used for plantation.

- Plantation shall further help to reduce surface water pollution.
| Noise and Vibration Environment | The nearest population is in village Dedhrota at about 2.0 Km from the mining site. Continuous noise levels beyond the prescribed standards can, however, have impact on fauna. These can also have an impact on workers. | • Plantation along mining lease boundary. The greenbelt minimizes propagation of noise.  
• Proper maintenance of vehicles will be done.  
• Mine operations will be limited to day time.  
• The compressor used for drilling holes will be provided with proper enclosures.  
• The blasting will be of low impact type with a maximum impact area of 500 m.  
• By carefully designing a blast hole using experience and deciding drilling pattern or blast geometry with appropriate burden distance, spacing as holes, hole size, hole depth, and stemming height, and powder factor.  
• Power Horns will not be allowed in dumper. Drivers will be further instructed not to use music systems at high volumes.  
• The excavator use will be for limited hours with breaks at regular intervals. The excavator will be regularly serviced.  
• In order to reduce the effect of noise pollution, ear plugs /earmuffs will be provided to workers  
• Ambient and Source Noise level Monitoring will be conducted on regular basis to assess the quality of ambient air w.r.t noise as per the proposed monitoring plan to have a watchful eye on noise levels and to assess the effectiveness of mitigation measures. |
| Biological Environment | The dust is the only major pollutant which will be generated from different activities of mining. The effect of particulate matter on vegetation is in the form of incrustation, | • Mining activities will be restricted to day time so that fauna will not disturb at night.  
• Tar road will be used for transportation to minimise fugitive emissions.  
• Material will be covered during transportation. |
plugging of stomata, and loss of chlorophyll and reduction of photosynthesis process.

- Plantation will be taken up in consultation with Forest department and species local to the area shall be planted as per findings during baseline environment which help maintain the regional ecological balance, soil and hydrological conditions.
- Water sprinkling will be done on haul roads to control fugitive emissions.
- Hedge of sturdy woody shrubs along the applied lease will be created.
- The removal or picking of any protected/unprotected plant will not be permitted.
- Proper traffic management including ban on use of pressure horns; restriction on use of music in vehicles at high volume as well as regular maintenance of vehicles shall be insisted to minimize disturbance from vehicular movement.
- The noise causing activities as operation of excavator shall be stopped at regular intervals so that the continuity is broken
- Educational and awareness programmes for mine workers will be arranged.

<table>
<thead>
<tr>
<th>Socio Economic Environment</th>
<th>Positive impacts:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Direct Employment Potential in various categories as skilled/semi-skilled/un-skilled work force for carrying out mining activities besides indirect employment in transport Sector.</td>
</tr>
<tr>
<td></td>
<td>Increase in business opportunity with contract works.</td>
</tr>
<tr>
<td></td>
<td>Improvement in the economic growth in the region.</td>
</tr>
<tr>
<td></td>
<td>Improvement in the</td>
</tr>
</tbody>
</table>

|                              | Adequate measures will be adopted to control dust generation like water sprinkling on unpaved road, working sites and wheel & dumper wash facility at mine site. |
|------------------------------| Construction and maintenance of approach roads. |
|------------------------------| Material will be covered during transportation. |
|------------------------------| Paving of unpaved roads. |
| **Occupational Health & Safety** | Exposure to dust can result in Respiratory problems.  
**Physical hazards:** Injuries during Project operation are typically related to slips and falls; contact with falling / moving objects; and lifting / over-exertion. Injuries may occur due to contact with, or capture in, moving machinery (e.g. dumpers). | The working in the lease area will be done with all safety measures under the supervision of qualified staff. The workers will be provided dust mask, safety boot, helmet and other safety equipment. A well-equipped first aid box will be maintained at site. For mitigating the aspect the following measures will be implemented:  
• Regular water sprinkling on haul roads.  
• Dust mask will be provided to the workers.  
• Periodical medical examinations will be carried out for the workers as per Norms.  
• Medical records will be kept maintained.  
• Medical facilities to the workers.  
• Any early symptom of diseases, if observed, such workers will be taken off in the dusty atmosphere and suitable employed elsewhere.  
• Personal Protective Equipment’s will be provided to the workers.  
• Vocational Training will be provided to |
the workers.
- Safety of the employee during mining will be taken care as per Mine Regulations.

1.5 Additional studies:

The additional studies carried out for the proposed project Dedhrota Bauxite Mine, Near Village – Dedhrota, Taluka- Himmat Nagar Distt – Sabarkantha, Gujarat, for the proposed production capacity of about 250000 TPA (ROM) Bauxite.

**RISK ASSESSMENT**

The anticipated risks in the mining operations are mentioned below:

**Hazard identification and risk analysis:** This deals with the hazards associated with various mining works during operation of the mine and can happen due to excavation, handling of material, machinery breakdown electric failures and natural calamities.

It also presents the calculated frequencies of occurrence of different accident scenarios for the identified potential hazard occurrence.

**Technological Hazards**

Technological hazards may be due to intense noise during excavation / loading, transportation etc. fire in the excavator, and road mishap.

**Structural failure**

Structural failure is associated with the failure of slope, it can be bench fall, slope failure due to undercutting and fall of machinery and workers due to fall of bench/slope, any of the said activity can cause major injury and fatalities.

**DISASTER MANAGEMENT PLAN**

The complete mining operation will be carried out under the management control and direction of qualified Mines Manager. The Directorate General of Mines Safety (DGMS), Dhanbad have issued a number of standing orders, model standing orders and circulars to be followed by the mine management:

- Checking and regular maintenance of garland drains and earthen bunds to avoid any inflow of surface water in the mine pit.
• Provision of pumps for pumping out water from the mining pit.
• Entry of unauthorized persons will be prohibited.
• Fire fighting and first aid provision shall be kept in the mines office complex and mining area.
• Safety equipment such as safety boots, helmets, goggles etc. will be made available to the employees and regular checked for their use.
• Training and refresher courses for all the workers.
• Working of mine as per approved scheme and regular updating for the same.
• Regular cleaning of mine faces.
• Regular maintenance and testing of all mining equipment as per manufacture’s guidelines.
• Suppression of dust on the haulage roads.
• Increasing the awareness of safe practices through competitions, posters and other similar drive.

SOCIAL IMPACT ASSESSMENT, R&R ACTION PLAN
There will be the positive impact on the villagers of the nearby villages in the form of employment. There is no human settlement in the lease area. Thus there is no impact on the human settlement and thus no R & R plan is required

Conceptual reclamation and rehabilitation of the worked out area
Conceptual plan is made taking into consideration of the present available reserves and resources. There is no proposal of waste disposal and back filling of voids in this Mining plan. Total 5.5200 ha area will be excavated and excavated mine out area will be used in water reserved. About total 2.500 ha area will be planted on statuary barrier along the lease boundary (7.5m). Thus, at conceptual stage, there will not be any surface dump. The infrastructure like mine road, office etc. being of semi-permanent nature will be removed and reclaimed for plantation as proposed.
1.6 PROJECTS BENEFITS:
There are various aspects of this project and allied activities that will be beneficial to the locality, region and nation.

- The Lime stone production from this mine. There is sufficient demand in this region for the purpose. This project will benefit the industry.

- Being the decorative stone, the principle use of this lime stone (Building stone) is in flooring and wall tiles.

- Direct and indirect generation of employment, about 275 people will get direct employment in the mine including supervisory staff and labours. The labourers will also get trainings for skill development. The local people will also be preferred for contract jobs during operational stages of the project.

- Improvement in the physical & social infrastructure is another benefit that will arise from this mining project. People in the adjoining area will be helped through the CSR activities and other funds allocation especially for the development of the area.

- Tangible benefits like improved standard of living, health and education.

This project is beneficial at all levels providing benefits to the industry, local inhabitants and state government.

10.7 ENVIRONMENT MANAGEMENT PLAN
The main objective of environmental management plan is implementation of all environment pollution controlling system effectively to maintain the ecological balance of the area and also to promote the sustainable development during the operational and post operational phase in the area.
ENVIRONMENT MONITORING PROGRAM

The monitoring schedule along with monitoring parameters, monitoring frequencies and duration is given in the below table.

MONITORING SCHEDULE FOR ENVIRONMENTAL PARAMETERS

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Monitoring Frequencies</th>
<th>Duration of Station</th>
<th>Important Monitoring Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface water/ Ground water Sampling</td>
<td>Twice in a year</td>
<td>Grab</td>
<td>pH, TDS, Iron, Hardness, Alkalinity, Chlorides, Calcium, magnesium, Nitrates, Sulphate &amp; Fluorides.</td>
</tr>
<tr>
<td>Ambient air quality monitoring</td>
<td>Twice in a year</td>
<td>24/8 hr.</td>
<td>PM$<em>{2.5}$ PM$</em>{10}$, SO$_2$ and NO$_2$.</td>
</tr>
<tr>
<td>Noise Monitoring</td>
<td>Twice in a year</td>
<td>8/1 hr.</td>
<td>Level in dB (A).</td>
</tr>
<tr>
<td>Soil Sampling</td>
<td>Twice in a year</td>
<td>Grab</td>
<td>PH, Conductivity, organic matter permeability, water holding capacity, Alkalinity &amp; texture.</td>
</tr>
</tbody>
</table>

The monitoring will be taken up by the supervisory officers of the mine. Mine manager will be in charge of the environment cell and will be responsible for the effective functioning of the monitoring programme.

FUNCTIONS OF THE MONITORING CELL

1. To carry out the environment monitoring for environmental parameters given in the above table by an outside agency or through monitoring cell that will be formed by the mines management. The monitoring programme will be focused to ensure the environmental status of the core and buffer zone will be preserved in good status as per rules.

2. To observe the effectiveness of mitigation measures.

3. Regular visit of the working site to examine the slope stability, mine faces.
4. Regular checking of garland drain for any blockage due to silting or accumulation of the loose materials.

5. To ensure the green belt development in a time bound manner and also regular monitoring of planted species for survival rate.

6. Regular water monitoring for the parameters prescribed in the consent conditions of SPCB.

7. Monitoring of ambient air quality at the desired monitoring location covering both upwind and downwind directions and also to make sure that control measures are effectively implemented.

8. Health check-up of the workers will be conducted regularly for Occupational health and safety and also concentration of respirable dust in the workplace will be regularly measured as laid down by DGMS.

9. The information regarding the health status of the workers will be maintained.

10. Conducting safety week programmes to create safety awareness amongst the workers and other staff. This will educate the workers to work safely in mine lease with different equipment along with all PPE’s.

11. To make sure that CSR activities are taken up in the proposed villages.

12. Coordinating the environment related activities within the project as well as with outside agencies.

13. To comply with all the EC conditions effectively.

10.8 Conclusions

Thus, it can be concluded on a positive note that after the implementation of the mitigation measures and Environmental Management Plan, activities of mine during the mining phase would have negligible impact on environment.