



HINDALCO INDUSTRIES LTD.

SAMRI BAUXITE MINES

P.O. : KUSMI DISTT. : SURGUJA (CHHATTISGARH), INDIA, PIN : 497 222
PH. NO. : (07778) 274442, 274326, 274327, FAX : (07778) 274325

Ref : HIL/SAM/CCF/209/2013/K

Date :
06.12.2013

To,
The Chief Conservator of Forest (Central),
MoEF Regional Office (Western Zone)
Kendriya Paryavaran Bhawan, Link Road
Bhopal-462016

Sub:- Status of compliance of EC condition (Half yearly status of compliance report) Kudag Bauxite Mine (Lease area- 377.116 Ha.) of Hindalco Industries Limited of Chhattisgarh state from Apr-2013 to Sep-2013.

Ref No:- Environment Clearance Letter No-J-11015/354/2007-IA. II(M) dated July 27, 2007

Dear Sir,

We do hereby submit half yearly compliance status report of EC condition with respect of Kudag Bauxite Mine, Lease area -377.116 Ha, of Hindalco Industries Limited, located in Balrampur- Ramanujganj district of Chhattisgarh state from Apr -2013 to Sep-2013.

We assure that we comply all the conditions laid down in the consent letter and also abide to follow all the Rules and Regulations.

Thanking you,

Yours' faithfully

For, Hindalco Industries Limited

(M. K. Nayak)

Agent of Mines

Encl:-

1. Half Yearly Status of compliance of Environment condition as annexure-I.
2. Copy of Diversion of Revenue Forest Land enclosed as annexure -II.
3. Apr-13 to Jun-13, Environment Status Report enclosed as annexure -III
4. Renewal copy of Consent to Operate from CECB enclosed as annexure -IV
5. Yearly Production report enclosed as annex-V.
6. Status report of mined out, reclaimed and afforested land as annexure-VI.
7. Actual expenditure incurred in environment measure from Apr-13 to Sep-13 as annex-VII.

06.12.2013

**Status of Compliance from Apr-2013 to Sep-2013 of Environmental
Condition laid down by MOEF**

Kudag Bauxite Mine

The status of compliance of the conditions (as per point no.3) with reference to environment clearance letter no.J-11015/354/2007-11A.II(M) dated 27.07.07 of Ministry of Environment & Forests, New Delhi, for expansion of production capacity of Kudag Bauxite Mine is as under.

A Specific condition:-

- (i) The wild life management plan has been prepared and approved by PCCF Raipur.
- (ii) We accept the condition.
- (iii) The conservation plan for schedule I fauna have been prepared. The authenticated list of flora and fauna for core and buffer zone is enclosed for perusal please. (Annexure- I).
- (iv) The mining operation will be restricted to above ground water table during current mining operation. The ultimate depth of working is about 14 meters below whereas the water table in the core zone is about 50-52 meters.
- (v) Top soil and solid waste is being utilized for simultaneous back filling of mined out area for reclamation purpose and practice is followed.
- (vi) OB is being stacked at earmark location and slope of dump is maintained less than 28 degree. All protective measure such as retaining walls, bunds and also plantation on available land are being taken to prevent erosion of soil.
- (vii) Garland drains have been made around the active mining pits coupled with arrester to arrest silt from soil and dumps are maintained. The garland drains are regularly desilted before the monsoon.

- (viii) We undertake that no natural water course is obstructed during mining operation.
- (ix) Controlled blasting is being practiced in the mine. Dust extractors are being used during drilling operations. Cord relay & effective blast design are used to control blast vibration and fly rocks.
- (x) The plantation in reclaimed area is carried out as per plan and is carried out as suggested. The density is being maintained about 2500 plant per hectare with the species like jatorpha, Kashia Samia, mango, babul, pears & guava etc. Social forestry is also being encouraged among the local villagers.
- (xi) The ground water table does not intersect during our mining operation because of shallow depth of mining
- (xii) Regular water spraying with 12 KL water tanker in the mine lease hold area is being carried out regularly to control air pollution. The ambient air quality is within the stipulated norms.
- (xiii) Regular monitoring of ground water quality is being carried out. The analysis reports are being submitted to Regional Office, CECB, Ambikapur and other regulating authority.
- (xiv) Till date three rain water harvesting ponds has been made at lease hold area.
- (xv) If required, the permission will be taken from competent authority.
- (xvi) No endanger fauna is present in mines area however all possible measures is taken to prevent ecological status of project area.
- (xvii) Regular and periodic maintenance of HEMM is being carried out for control of vehicular emission in mines area. The bauxite ore are transported in trucks with tarpaulin cover.
- (xviii) The report has been submitted to ministry, copy enclosed as Annexure- 2. The rehabilitation of land oustees is not involved in the project.
- (xix) All workers are provided personal protective equipment and training are also being imparted to them for safety & health and will be continued. One doctor having MBBS qualification has been appointed for facilitation of OHS.
- (xx) We accept the condition.

(B) General Condition.

- (i) No change in mining technology and scope of working will be done without approval of MOEF New Delhi.

- (ii) Calendar plan will be followed and there will not be any change in calendar plan.
- (iii) The suggestion of local forest department will be implemented for conservation of flora and fauna in and around lease hold area.
- (iv) Ambient Air quality monitoring is being carried out as per guideline and will be followed.
- (v) Data of ambient air quality (RPM, SPM, SO₂, Nox) are being submitted to CECB and will be submitted as per guidelines.
- (vi) Fugitive dust emission from generating sources is being controlled. The dust extractor, wet drilling, regular water spraying with 12 KL water tanker in the mine lease hold area is being carried out regularly.
- (vii) The noise level in working are being maintained below the limit prescribed and will be maintained. The operators of HEMM are being provided earplug/muffs. The proper maintenance of HEMM is being carried out to control noise emission.
- (viii) No waste water is generated from the mine however as suggested measures will be taken if required.
- (ix) All workers are provided personal protective equipment and training are also being imparted to them for safety & health and will be continued as per guidelines.
- (x) Periodical and Initial medical examination of all workers are being carried out as per provision of Mines Act.
- (xi) Environment cell is already in place at Samri Mines Division headed by GM (Mines) and comprises of suitable qualified persons.
- (xii) In case of final closure of mine the information will be submitted to Regional Office, Ministry of Environment & Forests, Bhopal.
- (xiii) Adequate fund provision is already earmarked for environmental protection measures and will not be diverted to other purpose. The year wise expenditure will be submitted to concern authorities as per guidelines.
- (xiv) The same will be intimated to Regional Office, Ministry of Environment & Forests, Bhopal.
- (xv) All cooperation is being extended to regulatory authorities and will be extended as earlier.
- (xvi) Although no suggestion/representation has been received by any Panchayat/Local NGO while processing the proposal. However we have

forwarded the copy of clearance letter to Panchayat in our area. The copy of same has been already submitted to your good office.

(xvii) The copy has been displayed by CECB in Balrampur Collectorate.

(xviii) The information regarding environment clearance has been published in two local new papers namely Hari Bhumi & Ambika Vani. The copy of same has been already submitted to your good office.

Hope the above compliance will be found in order.

Yours truly,

(For Hindalco Industries Limited)



(M K Nayak)

Agent of Mines.

(M. K. Nayak)

Agent of mines

Samri mines Division

Hindalco Industries Ltd

Encl.: As Above



तार

Telegram : PARYAVARAN,
NEW DELHI

दूरभाष ।

Telephone :

टेलिक्स (द्विभाषीय) :

Telex : (bi-lingual) : W-66185 DOE IN

FAX : 4360678

भारत सरकार

पर्यावरण एवं वन मंत्रालय

GOVERNMENT OF INDIA

MINISTRY OF ENVIRONMENT & FORESTS

पर्यावरण भवन, सी० जी० ओ० कॉम्प्लेक्स

PARYAVARAN BHAWAN, C.G.O. COMPLEX

लोदी रोड, नई दिल्ली - 110003

LODHI ROAD, NEW DELHI - 110003

Dated: 19th March, 1996.KUDAG

No. 8-74/95-FC

To

The Secretary (Forests)
Government of Madhya Pradesh
Bhopal.Sub: Diversion of 124.109 ha. of revenue forest land in
favour of M/s HINDALCO Industries Ltd. for Bauxite
mining in District Sarguja.

Sir,

I am directed to refer to your letter no. F.5/17/95/10/3 dated 9.3.95 on the above mentioned subject seeking prior approval of the Central Government in accordance with Section-2 of the Forest (Conservation) Act, 1980 and to say that the proposal has been examined by the Advisory Committee constituted by the Central Government under Section-3 of the aforesaid Act.

2. After careful consideration of the proposal of the State Government and on the basis of the recommendation of the above mentioned Advisory Committee, the Central Government hereby conveys its approval under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 124.109 ha. of revenue forest land in favour of M/s HINDALCO Industries Ltd. for Bauxite mining in District Sarguja subject to the following conditions:

- i) Legal status of forest land shall remain unchanged.
- ii) Compensatory afforestation shall be carried out over double the degraded forest land at the project cost.

- iii) Reclamation of the mining area will be done in consultation with the State Forest Deptt. at the project cost as per plan prepared in this regard.
- iv) Demarcation of the mining area will be done on the ground at the project cost.
- v) Forest land will not be used for construction of buildings etc. and any purpose other than those mentioned in the proposal.
- vi) Lease period shall remain coterminus with lease under MMRD Act subject to maximum of 20 years.
- vii) Free fuelwood will be provided to the labourers and staff working at the project site at the project cost.
- viii) Any other condition the State Govt. may impose.
- ix) This clearance is subject to the environmental clearance of the project under the Environment Protection Act.

Yours faithfully,

(R.K. CHAUDHRY)
Asstt. Inspector General of Forests.

Copy to:

- 1. The P rincipal Chief Conservator of Forests Government of Madhya Pradesh, Bhopal.
- 2. Nodal Officer, Office of the Principal Chief Conservator of Forests, Govt. of Madhya Pradesh, Bhopal.
- 3. The CCF (Central), Regional Office, Bhopal.
- 4. RO(HQ), New Delhi.
- 5. Guard file.

19.3.96
(R.K. CHAUDHRY)
AIGF.

Environmental Status Report

for

Kudag Bauxite Mine

at

Post & Teh.: Samri, (Kusmi) Dist: Balrampur-

Ramanujganj (C.G.)

Duration: April-May- June-2013

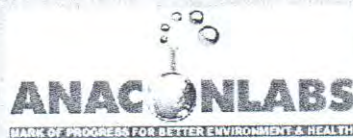
for



(M. K. Nayak)
Agent of mines
Samri mines Division
Hindalco Industries Ltd

M/s Hindalco Industries Limited.,

Prepared and Compiled by



Recognised by MoEF (GOI) Notifn. No. D.L.33004/99 Dt.24.10.2007

NABL (DST GOI) Cert. No. T-1550 Dt. 16/05/2011

NABL (DST GOI) Cert. No.T-1826 dt. 04/10/2010

QCI-NABET Scheme for Accreditation of EIA Consultant
ISO 9001:2008 vide Registration No. 44 100 094152-E3

Head Office: 60, Bajiprabhu Nagar, Nagpur-440 033, MS

Lab. : FP-34, 35, Food Park, MIDC, Butibori, Nagpur - 441122

Ph. : (0712) 2242077, 9373287475 Fax: (0712) 2242077

Email: anacornnp@gmail.com, anacornlabnnp@gmail.com

website: www.anacornlaboratories.com, www.anacornlabnnp.com

Foreword

The protection of environment plays a crucial role in maintaining the local environment quality for any mining industry. Hence compliance of the statutory requirements becomes very important to conserve the ecological balance within and surrounding the mine area. Therefore, environment protection is becoming a prerequisite for sustainable development. In line with this requirement, the management of **M/s Hindalco Industries Ltd.** has adopted a corporate responsibility of environment protection.

In order to comply with the Environment protection act, to fulfill statutory requirement and to be in tune with Environmental Preservation and sustainable development, **M/s Hindalco Industries Ltd.** has retained **ANACON LABORATORIES PVT. LTD.,** Nagpur as Environment Consultants and for various Environmental issues related to their mines.

This report presents the Environmental Status for the period **April 2013 to June 2013** as compliance to the statutory requirements.

The co-operation extended by the Staff and Management of **M/s Hindalco Industries Ltd.** during the work execution period is gratefully acknowledged.

for **ANACON LABORATORIES PVT. LTD.**

Place : Nagpur

Date : June, 2013

Authorized Signatory



1.1 Introduction

Hindalco Industries Limited (Hindalco) is one among the flagship companies of the Aditya Birla Group of Industries and is one of the largest corporate groups in India. This group is a leading manufacturer of Aluminum in India, having integrated facilities encompassing bauxite, mining, refining and smelting to achieve Aluminum.

Various processing units of Hindalco are strategically located in different parts of the nation to achieve optimum benefits. Over the past few decades the group has grown multifold in its production capacities, product mix and diversification in mining. The Chhattisgarh Environment Conservation Board (CECB) granted permission for establishing the Bauxite mine to Hindalco at block Tatijharia, Kudag and Samri mines in Surguja District of Chhattisgarh State.

HINDALCO INDUSTRIES LTD., awarded the work to M/s ANACON LABORATORIES PVT. LTD. Nagpur (ALPL) for carrying out Environmental monitoring of parameters for assessing pollution levels and preparation of monthly reports (*April-May-June-2013*) as per the requirement of Chhattisgarh Environment Conservation Board (CECB) and Ministry of Environment and Forest (MoEF) for Kudag mining lease in Surguja District, Chhattisgarh State.

1.2 Background Information of Kudag Mine

Hindalco was granted Kudag Bauxite mining lease over an area of 377.116 ha in Kudag village in Post office Dumarkholi, Tehsil Samri (Kusmi) of Surguja district, Chhattisgarh on 24/12/1996 for a period of 20 years. The mining operations were started on 02/07/1997. The production capacity of Bauxite is 0.6 Lakh Tonnes Per Annum (LTPA).

1.3 Salient Features of Kudag Bauxite Mine

The deposits occur in Kudag block, Post office Dumarkholi Tehsil Samri (Kusmi) of Surguja district. This deposit has been identified as one of the resources to cater the raw material requirements of the Hindalco Alumina refinery at Renukoot, Uttar Pradesh. The salient features of the project are presented below: **(Table 1)**

Table 1
Salient Features of Kudag Bauxite Mines

S.No.	Particulars	Details
1.	Survey of India Toposheet No.	64 M /15
2.	Latitude	23 ⁰ 26' 02"N to 23 ⁰ 29' 00"N
3.	Longitude	83 ⁰ 51' 00"E to 83 ⁰ 59' 00"E
4.	Elevation	1145-m above Mean Sea Level
5.	Climatic Conditions (as per IMD, Ambikapur)	Annual maximum temp.:30.3 ⁰ C Annual minimum temp. :17.7 ⁰ C Average annual rainfall :1401.1 mm
6.	Mining lease area	377.116 Ha.
7.	Method of mining	Open cast (Semi-Mechanized)
8.	Mode of transportation	Trucks
9.	Landuse	Agricultural and Barren land
10.	Nearest Road	Samri to Kusmi (18 km)
11.	Nearest Airport	Ranchi Airport (230 Km)
12.	Nearest Town	Ambikapur (116.km, SW)

1.4 Environmental Monitoring

Regular monitoring of environmental parameters is of immense importance to assess the status of environment during mining operation. With the knowledge of baseline conditions, the monitoring program will serve as an indicator for any deterioration in environmental conditions due to mining operation of the project. Suitable mitigation steps will be taken in time to safeguard the environment, based on monitoring reports. Monitoring is important in the control of pollution since the efficiency of control measures can only be determined by monitoring.

In order to find out the impact of mining activity on sensitive receptors, it is necessary to monitor Environmental Quality to know the level of concentrations of pollutants within and around the mining lease area. Accordingly Hindalco Industries through ALPL has been monitoring air, water and noise quality on monthly basis during these months. (Table-2).

1.5 Air Environment

1.5.1 Ambient Air Quality Monitoring

Ambient Air Quality monitored at 8 following locations with reference to Kudag mine lease area shown in (Fig. 1).

Table 2Locations of Ambient Air Quality Monitoring (AAQM)& Fugitive Emission

Sr. No.	Core Zone	Sr. No.	Buffer Zone
1	Saraidih (Hindalco Campus)	5	Village Khas Kudag
2	Mining Area (New Kudag)	6	Jaljali Village
3	Samri Chowk/Weigh Bridge	7	Tatijharia Weighbridge
4	Rajenderpur Mine	8	Piprapat Mines Area

The sampling stations are selected at the above mentioned locations, in downwind and upwind directions of the mining site. ALPL is carrying out regular monitoring for PM_{2.5}, RPM (PM₁₀), SO₂, NO_x and SPM, RSPM, SO₂, NO_x, Pb, Hg, As and Cr at above Ambient Air Quality Monitoring (AAQM) locations and Fugitive Emission. The dust fall rate was measured in the mining area and Khaskudag during June-2013. The AAQM sampling sites are selected considering seasonal variation in wind speed and wind direction.

Sampling Duration and Frequency

Ambient air quality monitoring was carried out for the parameters PM_{2.5}, RPM (PM₁₀), SO₂, NO_x and SPM, RSPM, SO₂, NO_x, Pb, Hg, As and Cr from April-May-June-2013 as per CPCB norms. Sampling conducted duration and Frequency is given in (Table 3).

Data is compared with the standards mentioned in the Gazette Notification of the Central Pollution Control Board (CPCB) (August-20, 1994) and as per consent conditions mentioned in consent letter.

Table 3
MONITORED PARAMETERS AND FREQUENCY OF SAMPLING

Parameters	Sampling frequency
Suspended Particulate Matter	24 hourly sample twice a week for Three months
Respirable Particulate Matter	24 hourly sample twice a week for Three months
Particulate Matter 2.5	
Sulphur dioxide (So ₂)	24 hourly sample twice a week for Three months
Oxides of Nitrogen (NO _x)	24 hourly sample twice a week for Three months
Pb, Hg, As, Cr	8 hourly samples for 24 hour twice a week for three months

Methods and Instruments used for Sampling

The air samples were analyzed as per methods specified by Central Pollution Control Board (CPCB).

The levels of Suspended Particulate Matter (SPM), Respirable Particulate Matter (RPM), Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x), Pb, Hg, As and Cr were monitored for establishing the baseline status. SPM and RPM were collected with the help of respirable particulate sampler

operating 24 hours by drawing air which passes through the cyclone at the rate of 1.0 -1.5 m³/min. The particles less than 10 µm diameter is collected over glass fiber filter paper and the bigger particulates from 10 to 100 µm are collected into the cup provided at the bottom of the cyclone. The dust deposited over the filter paper is measured as RPM. The dust deposited in the cup and over filter paper is measured as SPM, which is computed by gravimetric method. PM 2.5 collected with the help of Fine Dust sampler operating 24 hours. Due to the high flow rate of air, the vacuum is formed into the hopper region of sampler which is tapped by providing a nozzle in the hopper which sucks the ambient air for sampling SO₂ and NO_x. The gases were measured by wet chemical method and were analyzed by calorimetrically. The dust fall rate was measured using dust fall jar. The jar was exposed for one month in the mining area and village KhasKudag during May-2013. The jar was filled with 2 lit of distilled water. The water in the jar is mixed with copper sulphate solution (0.02 N solution) to prevent any growth of algae. The water level in the jar is constantly maintained in such a way that 2 lit of water is always retained. The measurement techniques used for various pollutants and other details are given in (Table 5).

1.5.2 Ambient Air Quality

The background levels of SPM, RPM(PM10),PM2.5 SO₂, NO_x, Pb, Hg, As and Crand Dust fall are required to compute fugitive emissions. The sampling locations are selected at the above mentioned locations in downwind and upwind directions of the mine. The Minimum, Maximum concentration, Arithmetic mean (AM), Geometric mean (GM), and 98 Percentile are presented in tabular form (Table 5 to 6).

The statistical analysis of SPM is presented for April-May-June-2013 in the mining area given in (Table 6). The minimum and maximum values varied between 138 to 291 µg/m³ respectively. The average values of SPM varied between 133 to 268 µg/m³ only. The 98th percentile values varied between 146 to 290 µg/m³.

The minimum and maximum values of RSPM varied between 46 to 74 µg/m³ respectively (Table 7). The average values varied between 50 to 68 µg/m³. The 98th percentile values varied between 53 to 74 µg/m³. Overall values of SPM and RSPM were well within the CPCB limits prescribed for industrial and residential area in the study area.

The minimum and maximum values of Pm_{2.5} concentrations varied between 9.8 to 19.3 µg/m³ respectively. The average values range between 13.7 to 15.5 µg/m³ and 98th percentile values varied between 17.4 to 19.1 µg/m³ (Table 7a).

The minimum and maximum values of SO₂ concentrations varied between 5 to 12 µg/m³ respectively. The average values range between 6 to 10 µg/m³ and 98th percentile values varied between 7 to 12 µg/m³ (Table 8).

The minimum and maximum concentrations of NO_x varied between 7 to 27 µg/m³ respectively. The average concentration varied between 10 to 23 µg/m³ 98th percentile values varied between 13 to 27 µg/m³ in the study region (Table 9). Pb, As, Cr and Hg was not detected at any of the locations in SPM samples as well as RSPM Samples.

The dust fall rate was measured by exposing a jar during June 2013 in mining area and Khas Kudag village. The dust fall rate was observed to be 16.7 and 21.4 MT/km²/month respectively as given in (Table 14).

Graphical presentation of AAQ are shown is shown in (Fig. 4)

Overall the ambient air concentrations of SPM, RSPM, SO₂, NO_x, Pb, As, Cr and Hg were well within the limits of concentrations promulgated by CPCB, New Delhi in the study area.

1.5.3 Meteorology: Wind Pattern

The data of wind pattern collected during the study period (April-May-June-2013) indicates that the wind was blowing dominantly from 270 (W), during study period, for 60.7 % hours wind was found to be calm. The details of wind pattern in form of wind frequency distribution are presented below in tabular form as well as in graphical illustration. The wind rose diagram is also presented in subsequent Fig. 1 & 2.

Table.04
Wind Frequency Distribution Data

Directions / Wind Classes (m/s)	<0.3-<0.1	0.3-1.4	1.0-5.0	1.5-3.0	5.1-11.0-19	Total
0	60.7	0.0	0.1	0.9	0.3	1.3
22.5	0.0	0.0	0.0	0.1	1.0	1.2
45	0.0	0.0	0.0	2.2	0.7	2.9
90	0.0	0.0	0.0	4.8	3.5	8.3
135	0.0	0.0	0.1	1.5	0.4	2.0
180	0.0	0.0	0.0	0.1	0.4	0.6
225	0.0	0.0	0.0	3.4	3.9	7.3
247.5	0.0	0.0	0.0	0.1	0.4	0.6
270	0.0	0.0	0.1	5.7	8.2	14.0
315	0.0	0.0	0.0	0.7	0.1	0.9
337.5	0.0	0.0	0.0	0.0	0.1	0.1
Sub-Total	60.7	0.0	0.3	19.5	19	39.2
Calms						60.7
Non Calm						39.3
Total						100

SUMMARY OF WIND PATTERN

Season	First Predominant Winds	Second Predominant Winds	Calm Condition
April- June 2013	W (14.0%)	E (8.3%)	60.7 %

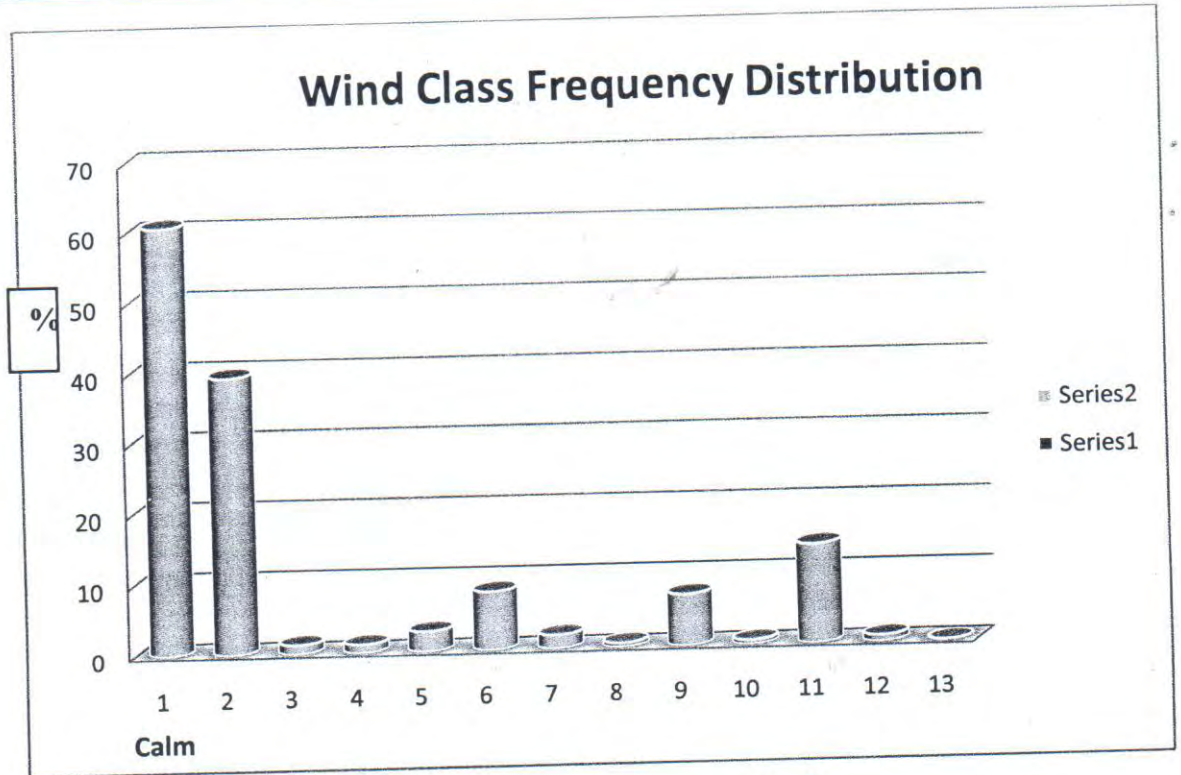


Fig.01 Wind Class Frequency Distribution

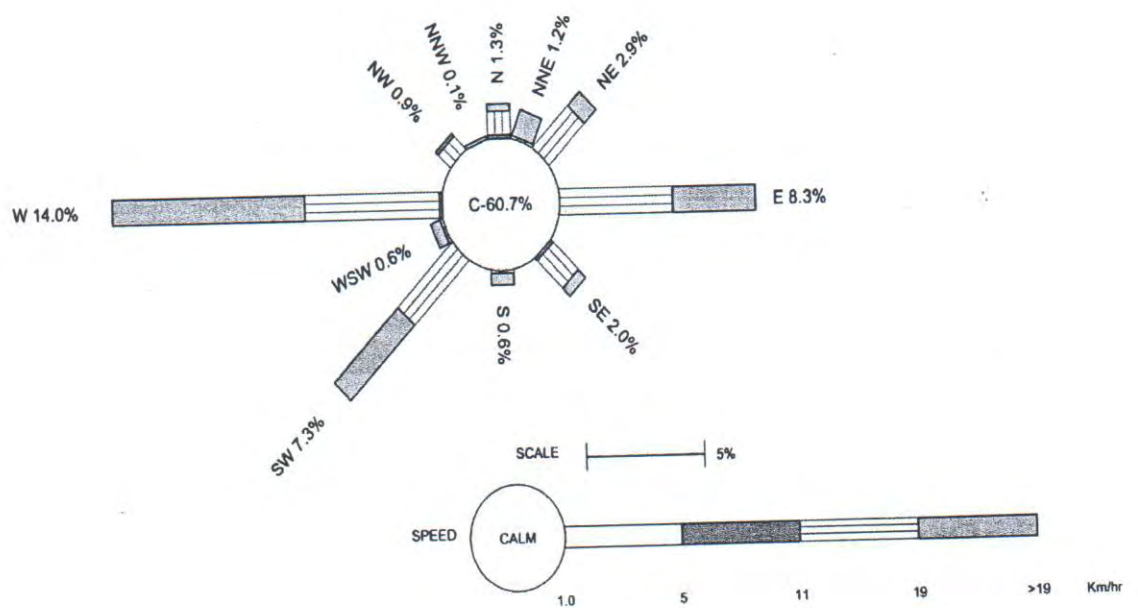


Fig.02 Wind Rose Diagram (April to June -2013)

1.6 Noise Environment

The Director General of Mines Safety in its circular No. DG (Tech)/18 of 1975, has prescribed the noise level in mining occupations (TLV) for workers, in an 8 hour shift period with unprotected ear as 90 dB(A) or less. There will be some noise sources in mines, which produce noise levels above 90 dB (A), however; the workers are not expected to be exposed continuously for 8 hours. In order to maintain this statutory requirement noise monitoring has been carried out in and around the mining lease area.

Work zone noise level in the mining area shall increase due to blasting excavation and transportation. The impacts due to the mining activities on the noise levels shall be negligible, if all the precautions for the elimination of the noise are taken. The mining activities will be undertaken during daytime only. The daytime equivalent noise levels, when all the machineries are in operation, shall be minimized as the machineries have been provided with control equipment. Noise monitoring carried out on monthly basis at mining site, village KhasKudag and Saraidih and Jaljali mines are shown in Fig. 3.

Identification of sampling locations

Noise at different noise generating sources has been identified based on the activities in the village area and ambient noise due to traffic.

The noise monitoring has been conducted for determination of ambient noise levels in the mining area and villages. The noise levels at each location were recorded for 24 hours.

Instrument used for monitoring

Noise levels were measured using integrated sound level meter manufactured by Envirotech made in India (Model no. SLM-100). This instrument is capable of measuring the Sound Pressure Level (SPL), Leq.

Method of Monitoring

Sound Pressure Level (SPL) measurements were monitored at three locations. The readings were taken for every hour for 24 hours. The day noise levels have been monitored during 6 am to 10 pm and night levels during 10 pm to 6 am at three locations within 10-km radius of the study area.

Noise level monitoring was carried out continuously for 24 hours with one hour interval starting at 06.00 hrs to 06.00 hrs next day.

Noise levels monitored during day and night at three locations are found to be below in the Mining Area than the stipulated standard of CPCB for Industrial area as 75dB(A) and 70dB(A) for day and night respectively as given in (Table 8).

1.7 Water Quality Monitoring

The existing status of water quality for groundwater and surface water was assessed by collecting the water samples from underground wells from the village, Rajenderpur, Sariadih, Tatijharia Weighbridge, , Samri weighbridge, Piprapat pit of Kudag mine.

The purpose of the study is to assess the water quality characteristics for critical parameters, evaluate the impacts on agricultural productivity, habitat conditions, recreational resources and aesthetics in the vicinity and identification of impact on water quality by this project and related activities.

The physico-chemical analysis of water samples collected during the study period is given in (Table13 and Fig.5). The overall water quality found to be below the stipulated standards of IS 10500-2012 for ground water & found to be fit for drinking purpose for tested parameters. Thus the impacts due to mining activities have been found to be insignificant.

The drinking water is supplied by the tankers from faraway sources. Hence, additional care may be taken to chlorinate the tankers before leaving the supply source.

The water sample from Nalahs near Mines Area was collected to know its chemical characteristics in order to find out the use of water for various utilities in the mine area As per IS : 2296 Class C-1982 for surface water results are within the permissible limit so that the water can be used after chlorination.

The drinking water is supplied by the tankers from far away sources. Hence, additional care may be taken to chlorinate the tankers before leaving the supply source.

Table 4
Measurement Techniques for various pollutants

S.No.	Parameter	Technique	Technical Protocol	Minimum Reportable Value ($\mu\text{g}/\text{m}^3$)
1.	Suspended Particulate Matter	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part - IV)	5
2.	Respirable Particulate Matter	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part-IV)	5
3.	Particulate Matter Size 2.5 μm	Fine Dust Sampler WINS IMPACTOR(Gravimetric Method)	Federal Reference Method USA	5
4.	Sulphur Dioxide	Modified West and Gaeke	IS-5182 (Part - II)	4
5.	Oxide of Nitrogen	Jacob &Hochheiser Method	IS-5182 (Part - VI)	4
6.	Dust Full	Gravimetric	IS-5182 (Part-I)	-

Table 6
Statistical Analysis of SPM

Unit: $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Saraidih (Hindalco Campus)	April-2013	251	284	268	268	283
	May-2013	239	264	252	252	264
	June-2013	197	248	223	223	247
Mining Area (New Kudag)	April-2013	187	213	200	200	212
	May-2013	184	197	191	191	197
	June-2013	138	164	151	151	163
SamriChowk/Weigh Bridge	April-2013	198	239	219	219	238
	May-2013	212	268	240	240	267
	June-2013	197	232	215	215	231
Rajenderpur Mine	April-2013	157	174	166	166	174
	May-2013	184	212	198	198	211
	June-2013	149	162	156	156	162
Village Khas Kudag	April-2013	138	152	145	145	152
	May-2013	142	167	155	155	167
	June-2013	119	147	133	133	146
Village Jaljali	April-2013	187	268	228	228	266
	May-2013	202	257	230	230	256
	June-2013	219	261	240	240	260
Tatijharia Weighbridge	April-2013	239	291	265	265	290
	May-2013	189	234	212	212	233
	June-2013	157	179	168	168	179
Piprapat Mines area	April-2013	152	169	161	161	169
	May-2013	168	184	176	176	184
	June-2013	142	164	153	153	164

Table 7
Statistical Analysis of RSPM

Unit: $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Saraidih (Hindalco Campus)	April-2013	61	74	68	68	74
	May-2013	58	71	65	65	71
	June-2013	54	63	59	59	63
Mining Area (New Kudag)	April-2013	51	64	58	58	64
	May-2013	49	57	53	53	57
	June-2013	53	56	55	55	56
SamriChowk/Weigh Bridge	April-2013	56	64	60	60	64
	May-2013	61	73	67	67	73
	June-2013	53	61	57	57	61
Rajenderpur Mine	April-2013	51	59	55	55	59
	May-2013	47	53	50	50	53
	June-2013	47	56	52	52	56
Village Khas Kudag	April-2013	46	53	50	50	53
	May-2013	52	64	58	58	64
	June-2013	48	56	52	52	56
Village Jaljali	April-2013	54	67	61	61	67
	May-2013	49	64	57	57	64
	June-2013	61	72	67	67	72
Tatijharia Weighbridge	April-2013	58	69	64	64	69
	May-2013	63	72	68	68	72
	June-2013	49	57	53	53	57
Piprapat Mines area	April-2013	56	68	62	62	68
	May-2013	54	63	59	59	63
	June-2013	48	57	53	53	57

Table 8
Statistical Analysis of PM_{2.5}

Unit: $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Saraidih	April-2013	11.7	19.2	15.5	15.5	19.1
	May-2013	9.8	17.6	13.7	13.7	17.4
	June-2013	11.1	19.3	15.2	15.2	19.1

Table 9
Statistical analysis of SO₂

Unit: $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Saraidih (Hindalco Campus)	April-2013	7	10	9	9	10
	May-2013	6	9	8	8	9
	June-2013	6	8	7	7	8
Mining Area (New Kudag)	April-2013	5	8	7	7	8
	May-2013	5	7	6	6	7
	June-2013	7	9	8	8	9
SamriChowk/Weigh Bridge	April-2013	7	10	9	9	10
	May-2013	8	12	10	10	12
	June-2013	8	11	10	10	11
Rajenderpur Mine	April-2013	7	12	10	10	12
	May-2013	8	11	10	10	11
	June-2013	7	9	8	8	9
Village Khas Kudag	April-2013	6	9	8	8	9
	May-2013	8	11	10	10	11
	June-2013	6	8	7	7	8
Village Jaljali	April-2013	6	8	7	7	8
	May-2013	7	9	8	8	9
	June-2013	6	8	7	7	8
Tatijharia Weighbridge	April-2013	8	12	10	10	12
	May-2013	9	11	10	10	11
	June-2013	6	8	7	7	8
Piprapat Mines area	April-2013	8	12	10	10	12
	May-2013	9	13	11	11	13
	June-2013	6	9	8	8	9

Table 10
Statistical Analysis of NOx

Unit: $\mu\text{g}/\text{m}^3$

Location	Month & Year	Min.	Max.	A.M.	G.M.	98%
Saraidih (Hindalco Campus)	April-2013	19	27	23	23	27
	May-2013	16	24	20	20	24
	June-2013	13	22	18	18	22
Mining Area (New Kudag)	April-2013	14	21	18	18	21
	May-2013	16	18	17	17	18
	June-2013	14	19	17	17	19
Samri Chowk/Weigh Bridge	April-2013	13	18	16	16	18
	May-2013	16	23	20	20	23
	June-2013	9	16	13	13	16
Rajenderpur Mine	April-2013	8	14	11	11	14
	May-2013	10	16	13	13	16
	June-2013	7	13	10	10	13
Village Khas Kudag	April-2013	9	16	13	13	16
	May-2013	11	14	13	13	14
	June-2013	8	14	11	11	14
Village Jaljali	April-2013	13	24	19	19	24
	May-2013	12	22	17	17	22
	June-2013	16	23	20	20	23
Tatijharia Weighbridge	April-2013	11	18	15	15	18
	May-2013	9	14	12	12	14
	June-2013	7	13	10	10	13
Piprapat Mines area	April-2013	11	18	15	15	18
	May-2013	13	21	17	17	21
	June-2013	9	16	13	13	16

Table 11
Dust fall rate (June-2013)

Sl.No.	Lacatioin	Rate (mt/km2/month)
1	Mining Area	21.4
2	Khaskudag village	16.7

Table 12
Noise Level Monitoring

Unit: dB(A) Leq

Sl. No.	Location	April-2013		May-2013		June-2013	
		Day	Night	Day	Night	Day	Night
1	Mining Area (New Kudag)	68	61	64	58	59	53
2	Saraidih (Hindalco Campus)	67	59	63	57	64	56
3	Village KhasKudag	51	43	49	41	52	43
4	Village Jaljali	48	39	51	42	53	41

CPCB Standards for Residential Area: 55 (Day time) 45 (Night time)

Industrial Area: 75 (Day time) 70 (Night time)

Note: D –Day, N – Night

Table 12-A

HEMM Spot Noise Level Monitoring

Unit: dB(A) Leq

Sl. No.	Location	April-2013		May-2013		June-2013	
		Min.	Max.	Min.	Max.	Min.	Max.
1	Mining Area (New Kudag)	75	68	73	67	76	69

The purpose of this report is to provide information on the quality of groundwater at the location mentioned above. The results of the analysis of the groundwater are given in the following table and other details are given in TABLE I (Part 1)

Table I (Report on Chemical Examination of Ground Water

Location: GW1: Rajenderpur
 GW2: KudgaiesSaraidih
 GW3: Tatijharia Weigh Bridge
 GW4: Tatijharia Camp
 GW5: Samri Weigh Bridge
 GW6: Piprapat Pit

Sr. No	Test Parameters	Units	Permissible Requirement	Results		
				GW1	GW2	GW3
1.	pH Value	-	6.5 to 8.5	7.84	7.69	7.63*
2.	Electrical Conductivity	µs/cm	-	918.4	832.3	812.7
3.	Turbidity NTU	NTU	5	3.2	2.9	2.4
4.	Apparent Colour	Hazen units	5	4	3	3
5.	Odour	-	unobjectionable	Agreeable	Agreeable	Agreeable
6.	Taste	-	Acceptable	-	-	-
7.	Free Residual Chlorine	mg / l	Min.0.2	-	-	-
8.	TDS	mg / l	500	427.9	403.2	398.2
9.	Fluoride (as F)	mg / l	1.0	0.28	0.24	0.29
10.	Cyanide as (CN)	mg / l	0.05	< 0.005	< 0.005	< 0.005
11.	Iron (as Fe)	mg / l	0.3	< 0.01	< 0.01	< 0.01
12.	Chlorides (as Cl)	mg / l	250	23.8	21.9	19.2
13.	Total Alkalinity	mg / l	200	129.8	131.6	118.7
14.	Total Hardness	mg / l	300	167.0	182.1	170.6
15.	Calcium (as Ca)	mg / l	75	56.3	61.2	57.9
16.	Magnesium (as Mg)	mg / l	30	6.4	7.1	6.3
17.	Sulphate (as SO ₄)	mg / l	200	12.4	11.6	9.8
18.	Nitrates (as NO ₃)	mg / l	45	7.2	6.8	7.1
19.	Sodium (as Na)	mg / l	-	13.4	11.9	12.8
20.	Potassium (as K)	mg / l	-	0.48	0.42	0.37
21.	Copper as(Cu)	mg / l	0.05	< 0.03	< 0.03	< 0.03
22.	Manganese as (Mn)	mg / l	0.1	< 0.05	< 0.05	< 0.05
23.	Mercury as (Hg)	mg / l	0.001	< 0.0005	< 0.0005	< 0.0005
24.	Cadmium as (Cd)	mg / l	0.01	< 0.001	< 0.001	< 0.001
25.	Selenium as (Se)	mg / l	0.01	< 0.001	< 0.001	< 0.001
26.	Arsenic as (As)	mg / l	0.05	< 0.01	< 0.01	< 0.01
27.	Lead as (Pb)	mg / l	0.05	< 0.001	< 0.001	< 0.001
28.	Zinc as (Zn)	mg / l	5	< 0.1	< 0.1	< 0.1
29.	Chromium as (Cr ⁶⁺)	mg / l	0.05	< 0.03	< 0.03	< 0.03
30.	Boron as (B)	mg / l	1	0.11	0.09	0.12
31.	Aluminum as (Al)	mg / l	0.03	< 0.005	< 0.005	< 0.005
32.	Mineral oil	mg / l	0.01	< 0.001	< 0.001	< 0.001
33.	Poly aromatic hydrocarbon (as PAH)	µg/l	-	< 0.03	< 0.03	< 0.03
34.	Anionic Detergent	mg / l	1.0	< 0.001	< 0.001	< 0.001

35	Phenolic Compounds	mg / l	0.001	< 0.001	< 0.001	< 0.001
36	Total Coliform	MPN/100 ml	Nil	Absent	Absent	Absent

ND: Not Detected (< 0.001), Unob : Unobjectionable

Remark:-Based upon request of the party, sample was tested for above mentioned parameters only. Sample complies with IS:10500:2012, for test conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

Table 13 (continued)
Report on Chemical Examination of Ground Water

Sr. No	Test Parameters	Units	Permissible Requirement	Results		
				GW4	GW5	GW6
1.	pH Value	-	6.5 to 8.5	7.64	7.82	8.01
2.	Electrical Conductivity	µs/cm	-	784	819	738
3.	Turbidity NTU	NTU	5	2.8	3.1	2.6
4.	Apparent Colour	Hazen units	5	3	2	3
5.	Odour	-	unobjectionable	Agreeable	Agreeable	Agreeable
6.	Taste	-	Acceptable	--	--	--
7.	Free Residual Chlorine	mg / l	Min.0.2	--	--	--
8.	TDS	mg / l	500	368.9	412.8	397.6
9.	Fluoride (as F)	mg / l	1.0	0.247	0.312	0.231
10.	Cyanide as (CN)	mg / l	0.05	< 0.005	< 0.005	< 0.005
11.	Iron (as Fe)	mg / l	0.3	< 0.01	< 0.01	< 0.01
12.	Chlorides (as Cl)	mg / l	250	26.9	31.2	28.7
13.	Total Alkalinity	mg / l	200	141.6	129.8	131.7
14.	Total Hardness	mg / l	300	177.2	176.6	168.0
15.	Calcium (as Ca)	mg / l	75	59.7	61.3	56.7
16.	Magnesium (as Mg)	mg / l	30	6.8	5.7	6.4
17.	Sulphate (as SO ₄)	mg / l	200	23.7	19.4	18.7
18.	Nitrates (as NO ₃)	mg / l	45	6.8	7.2	6.4
19.	Sodium (as Na)	mg / l	-	13.8	11.7	9.2
20.	Potassium (as K)	mg / l	-	0.17	0.19	0.17
21.	Copper as(Cu)	mg / l	0.05	< 0.03	< 0.03	< 0.03
22.	Manganese as (Mn)	mg / l	0.1	< 0.05	< 0.05	< 0.05
23.	Mercury as (Hg)	mg / l	0.001	< 0.0005	< 0.0005	< 0.0005
24.	Cadmium as (Cd)	mg / l	0.01	< 0.001	< 0.001	< 0.001
25.	Selenium as (Se)	mg / l	0.01	< 0.001	< 0.001	< 0.001
26.	Arsenic as (As)	mg / l	0.05	< 0.01	< 0.01	< 0.01
27.	Lead as (Pb)	mg / l	0.05	< 0.001	< 0.001	< 0.001
28.	Zinc as (Zn)	mg / l	5	< 0.1	< 0.1	< 0.1
29.	Chromium as (Cr ¹⁶)	mg / l	0.05	< 0.03	< 0.03	< 0.03
30.	Boron as (B)	mg / l	1	0.14	0.13	0.14
31.	Aluminum as (Al)	mg / l	0.03	< 0.005	< 0.005	< 0.005
32.	Mineral oil	mg / l	0.01	< 0.001	< 0.001	< 0.001
33.	Poly aromatic hydrocarbon (as PAH)	µg/l	-	< 0.03	< 0.03	< 0.03

34.	Anionic Detergent	mg / l	1.0	< 0.001	< 0.001	< 0.001
35.	Phenolic Compounds	mg / l	0.001	< 0.001	< 0.001	< 0.001
36.	Total Coliform	MPN/100 ml	Nil	Absent	Absent	Absent

Table 14
Monthly Report on Chemical Examination of Surface Water
(Nalahs near Mines Area)

S.No.	Parameters	Unit	IS 2296 Class 'C' Limits	Results
				April-2013
1	pH Value	-	6.5 to 8.5	7.4
2	Total Hardness (CaCO ₃)	mg / l	\$	97
3	Iron as (Fe)	mg / l	50	2.1
4	Chlorides as (Cl)	mg / l	600	31.9
5	Electrical Conductivity	µs/cm	\$	218
6	Total Dissolved Solids (TDS)	mg / l	1500	149
7	Calcium as (Ca)	mg / l	\$	23.8
8	Magnesium as (Mg)	mg / l	\$	7.1
9	Sulphate as (SO ₄)	mg / l	400	19.8
10	Nitrates as (NO ₃)	mg / l	\$	0.64
11	Fluoride as (F)	mg / l	1.5	0.9
12	Alkalinity	mg / l	\$	64
13	Chemical Oxygen Demand (COD)	mg / l	\$	11.3
14	BOD at 27°C for 3days	mg / l	3	3.9
15	Total Suspended Solid (TSS)	mg / l	\$	57

\$: Limits not specified

Table 15
Report on Soil Analysis, Kudag

Date of collection: April-2013 Sample Location: (Nr. Kudag Mines)

Sr. No	Test Parameters	Measurement Unit	Results
1	pH	-	6.59 at 26 ⁰ C
2	Electrical Conductivity at 25 ⁰ C	µs/cm	357
3	Texture	-	Clay
4	Sand	%	13
5	Silt	%	28.6
6	Clay	%	34.9
7	Bulk Density	g/cc	1.08
8	Porosity	%	1.04
9	Water Holding Capacity	%	0.51
10	Exchangeable Calcium as Ca	mg/kg	4.3
11	Exchangeable Magnesium as Mg	mg/kg	2.1
12	Exchangeable Sodium as Na	mg/kg	41.6
13	Available Potassium as K	kg/hect.	9.16
14	Available Phosphorous as P	kg/hect.	68.9
15	Available Nitrogen as N	kg/hect.	34.8
16	Organic Matter	%	1.97
17	Organic Carbon	%	0.64
18	Water Soluble Chloride as Cl ⁺	mg/kg	12.4
19	Water Soluble Sulphate as SO ₄	mg/kg	7.12
20	Sodium Absorption Ratio	-	21.8
21	CEC	meq/100 gm	25.8
22	Total Iron	%	5.1
23	Available Manganese	mg/kg	0.03
24	Available Zinc	mg/kg	0.007
25	Available Boron	mg/kg	0.004

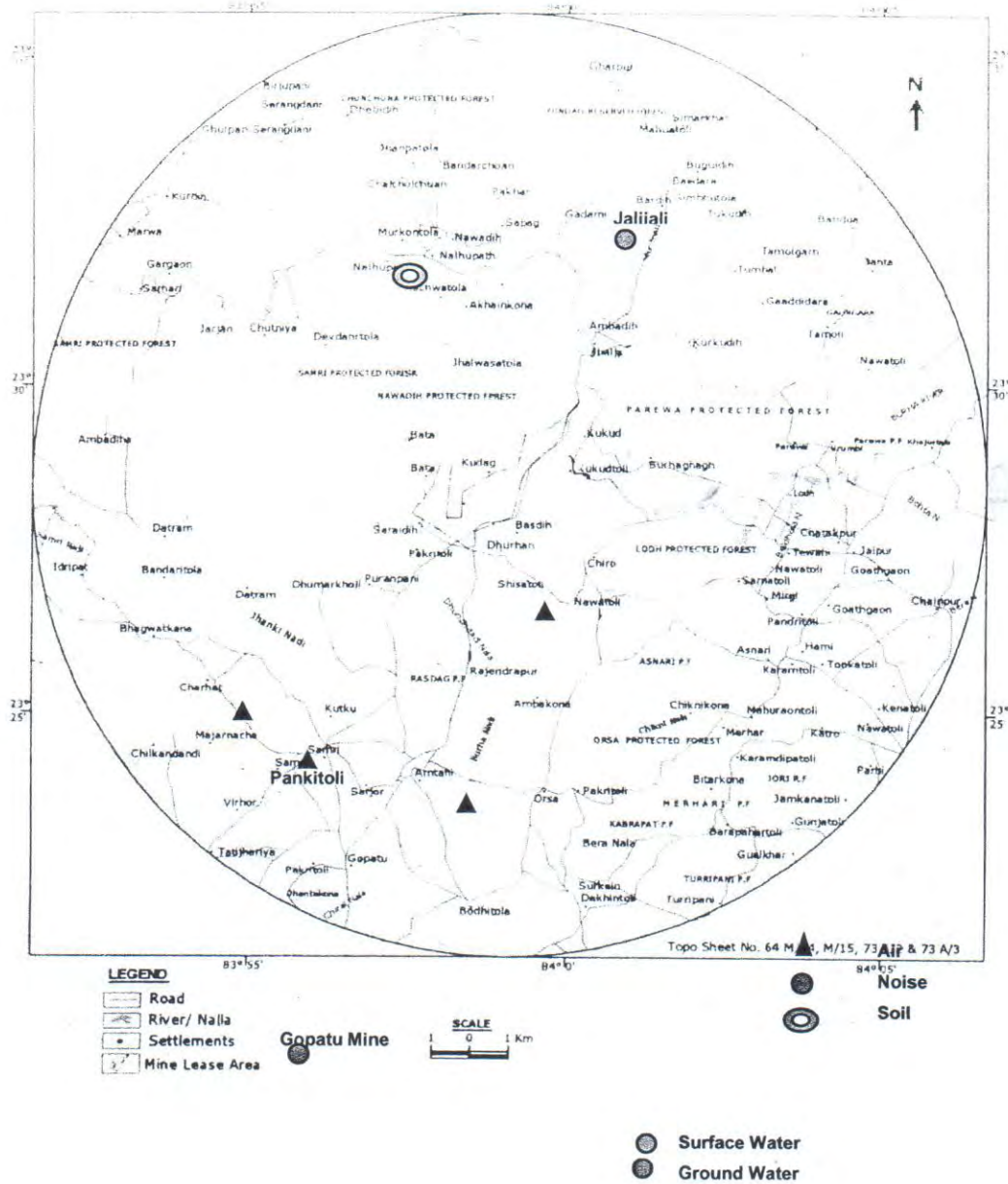
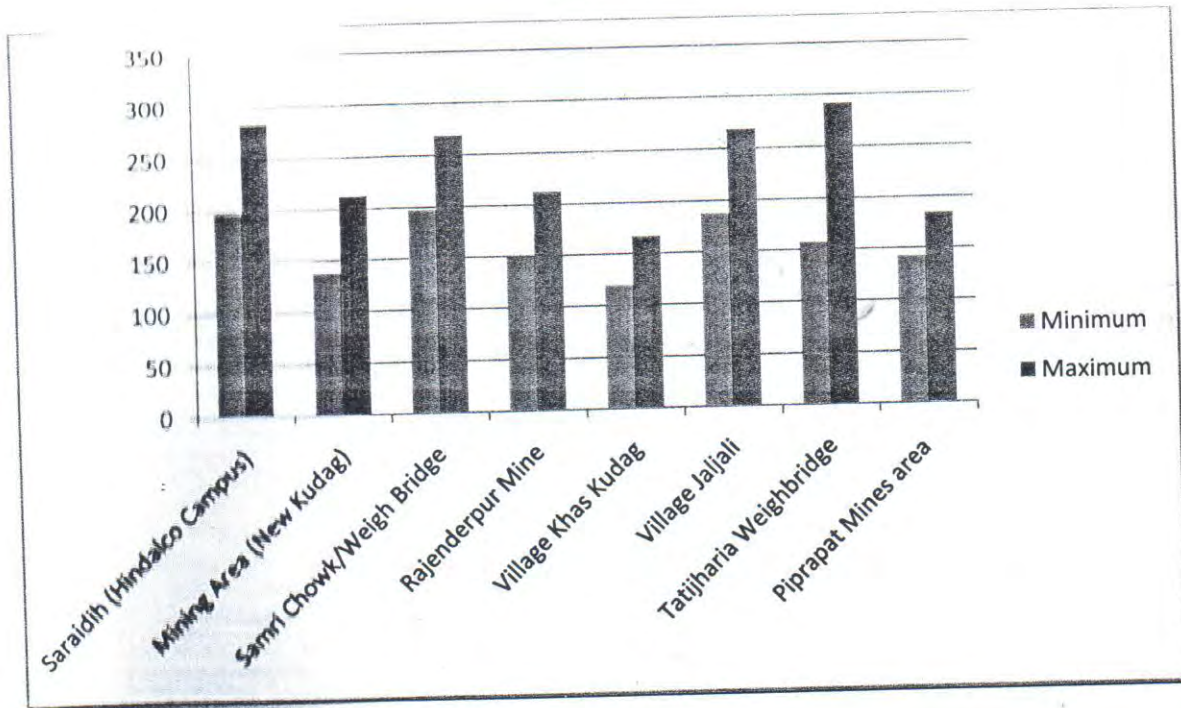


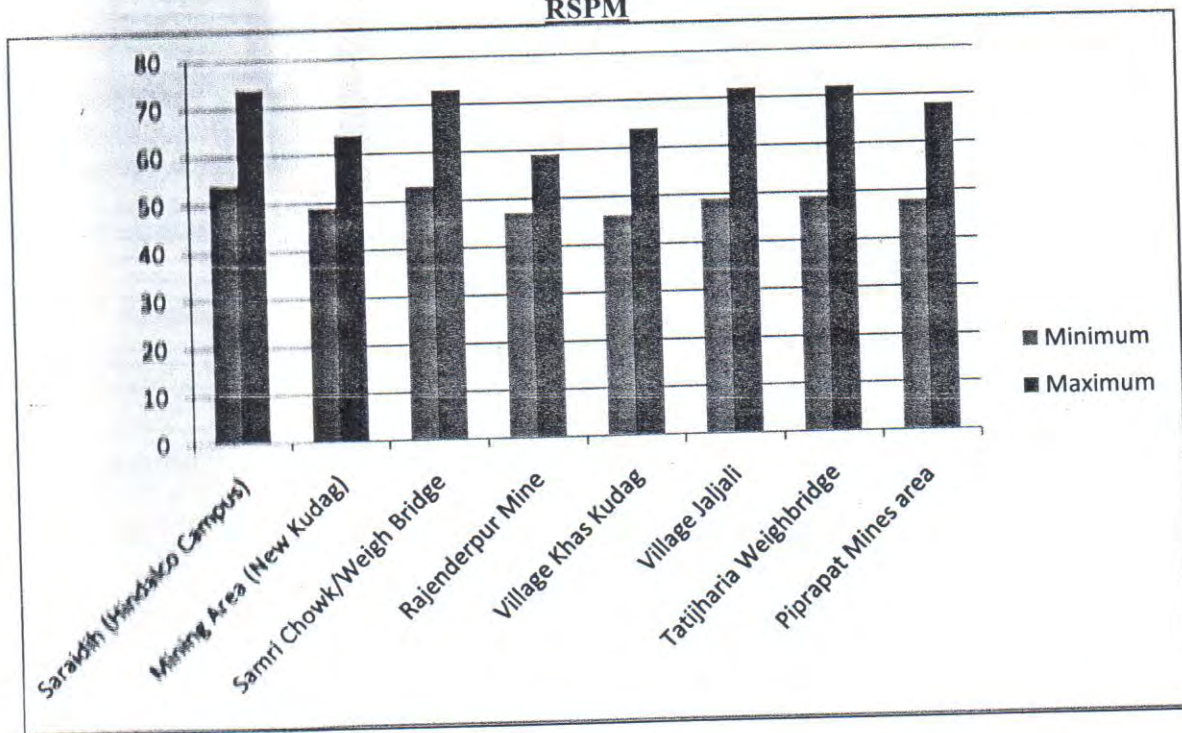
Fig 3: Sampling Location for Air & Noise

Fig 4: GRAPHICAL PRESENTATION OF AAQ

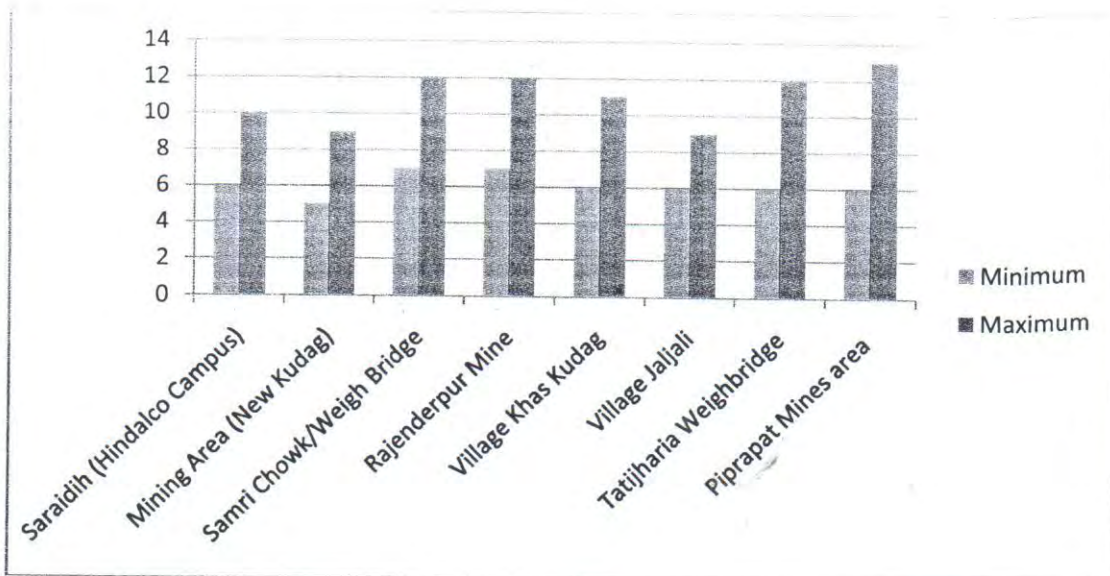
SPM



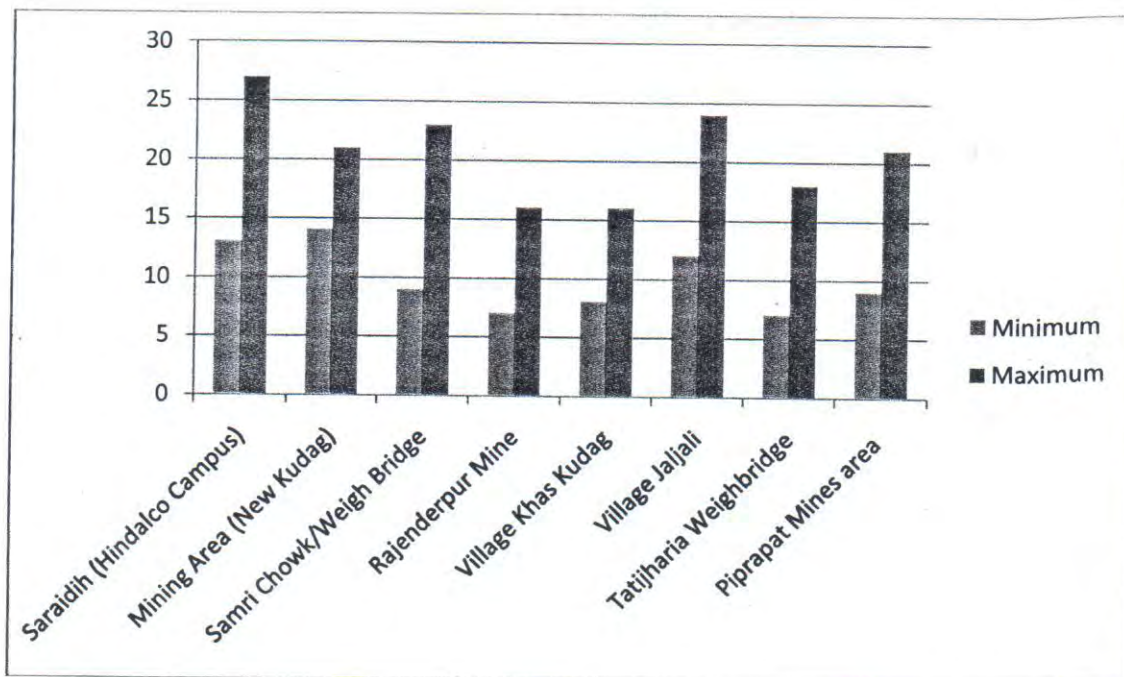
RSPM



SO₂



NO_x



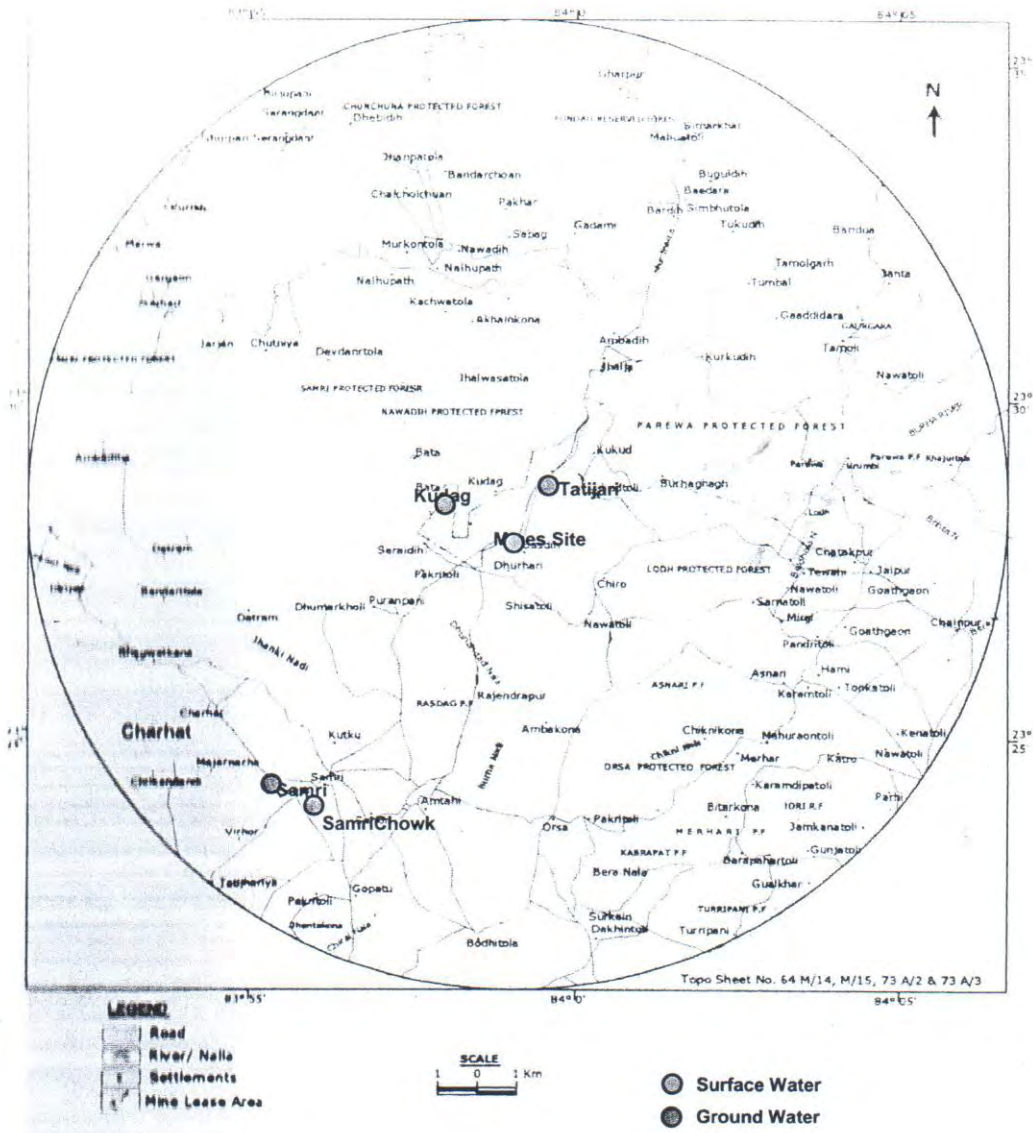


Fig 5: Sampling Locations for Water

छत्तीसगढ़ पर्यावरण संरक्षण मंडल, रायपुर
CHHATTISGARH ENVIRONMENT CONSERVATION BOARD, RAIPUR
 Commercial Complex, Housing Board Colony, Kabir Nagar, Raipur - 492 099
 E-mail: hocpcb@gmail.com, Ph.-0771-2970070, Fax- 0771-2970074

No. 1817 /TS/CECB/2013Raipur, dated: 5/7/2013

To, ✓
 M/s Hindalco Industries Limited,
 Kudag Bauxite Mine,
 Village- Kudag, Bata & Saridih,
 Tehsil-Samri,
 District- Balrampur (C.G.)

Hindalco Industries Ltd.
 Kusmi
 Date 13/7/13
 Received by Alme

Sub: Renewal of consent of the Board for Bauxite Ore Mine under section 25/26 of the Water (Prevention and Control of Pollution) Act, 1974.

- Ref: 1. Consent of the Board for Bauxite Ore Mine issued under section 25/26 of the Water (Prevention and Control of Pollution) Act, 1974 vide letter no. 6880/TS/C ECB/2007 Raipur, dated: 24/12/2007.
2. Last renewal of the Board for Bauxite Ore Mine issued under section 25/26 of the Water (Prevention and Control of Pollution) Act, 1974 vide letter no. 1093TS/CECB/2012 Raipur, dated: 01/06/2012.
3. Your Letter No. HIL/KUD/CECB/144/2012/SAMRI, dated: 25/08/2012 and subsequent correspondence ending letter dated: 10/05/2013.

--: 00 :--

With reference to your above application consent is hereby renewed for a period of One year i.e. from 01/12/2012 to 30/11/2013, subject to the fulfillment of the terms and conditions incorporated in the schedule of the consent letter No. 6880/TS/CECB/2007 Raipur, dated: 24/12/2007 and additional conditions mentioned below.

This renewal of consent is valid for: -

Name of Product	Production Capacity
Mining of bauxite ore	0.6 Lakhs Tonne per Annum [Zero Point Six Lakhs Tonne per Annum]

Additional Conditions

1. Industry shall ensure the treated effluent quality within prescribed effluent standard all the time. Industry shall not discharge effluent out side the mine lease area in any circumstances; hence zero discharge condition shall be maintained all the time.
2. All internal roads shall be made pucca. Good house keeping practices shall be adopted. Dust muck generated on the road shall be dispose doff properly.
3. Bauxite ore shall be transported in duly covered vehicles.

4. Industry shall submit Environment Statement to this Board as per provision of Environment (Protection) amendment Rule, 1993 for the previous year ending 31st March on or before 30th September every year.
5. All the solid waste rejects shall be disposed off property and reclaimed scientifically. Industry shall obtain authorization under Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 from the Board (If required).
6. Extensive tree plantation shall be carried out in the reclaimed areas and within the mining lease area.

Please acknowledge the receipt of this letter.

For & on behalf of
Chhattisgarh Environment Conservation Board Raipur (C.G.)



Member Secretary
Chhattisgarh Environment Conservation Board
Raipur (C.G.)

Endt. No. /TS/CECB/2013

Raipur, dated: ___ / ___ /2013

Copy to: -

- 1- Regional Officer, Regional Office, Chhattisgarh Environment Conservation Board, Ambikapur (C.G.). Please ensure compliance and report, if any condition/conditions are violated by the industry.
- 2- Cess Section, Chhattisgarh Environment Conservation Board, Raipur (C.G.)

Member Secretary
Chhattisgarh Environment Conservation Board
Raipur (C.G.)

छत्तीसगढ़ पर्यावरण संरक्षण मंडल, रायपुर
CHHATTISGARH ENVIRONMENT CONSERVATION BOARD, RAIPUR
Commercial Complex, Housing Board Colony, Kabir Nagar, Raipur – 492 099
E-mail: hceceb@gmail.com, Ph.-0771-2970070, Fax- 0771-2970074

No. 1819 /TS/CECB/2013

Raipur, dated: 5/7/2013

To, ✓
M/s Hindalco Industries Limited,
Kudag Bauxite Mine,
Village- Kudag, Bata & Saridih,
Tehsil-Samri,
District- Balrampur (C.G.)

Recd.
13/7/13

13/7/13
Received by, *Om*

Sub: Renewal of consent of the Board for Bauxite Ore Mine under section 21 of the Air (Prevention and Control of Pollution) Act, 1981.

- Ref: 1. Consent of the Board for Bauxite Ore Mine issued under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 vide letter no. 6882/TS/CECB/2007 Raipur, dated: 24/12/2007.
2. Last renewal of the Board for Bauxite Ore Mine issued under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 vide letter no. 1095/TS/CECB/2012 Raipur, dated: 01/06/2012.
3. Your Letter No. HIL/KUD/CECB/144/2012/SAMRI, dated: 25/08/2012 and subsequent correspondence ending letter dated: 10/05/2013.

--:: 00 ::--

With reference to your above application consent is hereby renewed for a period of one year i.e. from 01/12/2012 to 30/11/2013, subject to the fulfillment of the terms and conditions incorporated in the consent letter No. 6882/TS/CECB/2007 Raipur, dated: 24/12/2007 and additional conditions mentioned below.

This renewal of consent is valid for: -

Name of Product	Production Capacity
Mining of bauxite ore	0.6 Lakhs Tonne per Annum [Zero Point Six Lakhs Tonne per Annum]

Additional Conditions

1. Industry shall operate & maintain the existing air pollution control facilities to ensure the emission of air pollutants within the prescribed emission standard the all time. Industry shall install some additional fixed type water sprinklers in haul roads fapproach roads for dust suppression. The industry shall also maintain the ambient air quality in and around the mine lease area within prescribed limits.
2. All internal roads shall be made pucca. Good house keeping practices shall be adopted by the industry.

3. Blasting operations shall be carried out as per the standards prescribed by Director General of Mine Safety.
4. Industry shall transport Bauxite Ore in duly covered vehicles to avoid dust emission during transportation.
5. Industry shall submit Environment Statement to this Board as per provision of Environment (Protection) amendment Rule, 1993 for the previous year ending 31st March on or before 30th September every year.
6. Extensive tree plantation shall be carried out in the reclaimed areas and with mining lease area to the plants.

Please acknowledge the receipt of this letter.

For & on behalf of
Chhattisgarh Environment Conservation Board Raipur (C.G.)



Member Secretary

Chhattisgarh Environment Conservation Board
Raipur (C.G.)

Endt. No. /TS/CECB/2013
Copy to: -

Raipur, dated: ___ / ___ /2013


Regional Officer, Regional Office, Chhattisgarh Environment Conservation Board, Ambikapur (C.G.). Please ensure compliance and report, if any condition/conditions are violated by the industry.

Member Secretary

Chhattisgarh Environment Conservation Board
Raipur (C.G.)


ANNEXURE-V

Lease	EC (in Lakh Tonnes)	Production { (April-2013 to September-2013 (in Tonnes))}
Samri	5.0	213083.00
Tatijharia	4.0	194670.00
Kudag	0.6	26541.00


(M. K. Nayak)
Agent of mines
Samri mines Division
Hindalco Industries Ltd

KUDAG LEASE

Particulars	Kudag Lease
Approved lease area	377.116 Ha
Total Mined out up to the year (2012-13)	55.3485 Ha
Total Reclaimed up to the year (2012-13)	50.4231 Ha
Total afforestation in reclaimed land up to the year (2012-13)	42.95 Ha
Total nos. of plants up to the year (2012-13)	102655
% of survival of plants	62
Mined out during April 2013 to September 2013	0.769 Ha
Reclaimed during April 2013 to September 2013	0.113 Ha
Afforestation (2013-14)	950
Afforestation in 2013-14 (Ha.)	0.400



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Actual Expenditure incurred in Environment Management Plan:-

Composite cost during the year 2013-14 (Apr to Sep) for environment protection & pollution control by Samri Mines division, it includes Samri Bauxite Mine , Tatijharia Bauxite Mine & Kudag Bauxite Mine of Chhattisgarh state.

Sl No-	Environment Protection Measures	Actual Cost (Lacs)	
		Budget (2013-14)	Actual (Up to Sep-13)
1	Pollution Control	6.0	3.20
2	Environment Monitoring	3.15	1.48
3	Green Belt	11.0	8.15
4	Reclamation/Rehabilitation of mined out area	---	--
5	Rural Development (This include capital cost of on going construction of 2.5km ring road , Building for 6 Bed hospital & Primary School)		80.86
6	Total		93.69

- Environment monitoring jobs has been out sourced to Annacon Lab, recognized by MoEF (GOI) & NABL etc.
- One centralized nursery has been established at Samri mines among three leases viz, Samri, Tatijharia & Kudag.
- Reclamation and rehabilitation is part of mining operation. Mined out area has been backfilled by using mines rejects, laterite, morrum and at the top of surface by top soil. As per type of the land we decide for cultivation or planting species. Cost of reclamation /rehabilitation already included in the mining operation.
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