ADITYA BIRLA

HINDALCO

Ref No: HIL/LHD/JP (M)/MoEF/ 0449 Date: 26.11.2015

To,
The Additional Principal Chief Conservator of Forest (C)
Ministry of Environment, Forests and Climate Changes
Regional Office (ECZ), Ranchi-834002.

Sub: **Compliance Report of EC conditions for Pakhar Bauxite Mining (115.13 Ha) project of M/s Hindalco Industries Limited located in Dist- Lohardaga, Jharkhand for the period April'15 to Sep'15.**

Ref: **Environmental Clearance letter no J-11015/406/2007 -IA II (M) dated 27th Nov 2012**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar** Bauxite Mining (115.13 Ha) project of M/s Hindalco located in Lohardaga, Jharkhand for the period **April'15 to Sep'15.**

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

(Bijesh Kumar Jha)
Joint President (Mines)

Enclosure: - As Above

Copy to: Regional Office, MoEF, Ranchi

HINDALCO INDUSTRIES LIMITED
Mines Division Court Road
PO & Distt. Lohardaga (Jharkhand)
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Tel. +91 6526 224112/224015/223113
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Dr. Annie Besant Road, Worli, Mumbai,400 030. India
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Website www.hindalco.com
Email hindalco@adityabirla.com
Corporate Identity No. L27020MH1958PLC011238

ompliance of conditions laid down in Environmental Clearance
PAKHAR BAUXITE MINES
Period: April'15-September'15
Area (115.13 Ha)
MoEF Environment Clearance ref: No. J-11015/406/2007-IA.II(M) dated 27th Nov, 2012

Sl No	Specific Conditions	Compliance Status
(i)	The project proponent shall obtain Consent to Operate from the Jharkhand State Pollution Control Board and effectively implement all the conditions stipulated therein.	Stipulated conditions are being implemented.
(ii)	All the conditions stipulated by the Jharkhand State Pollution Control Board in their NOC shall be effectively implemented.	Implementations of the stipulated condition are fulfilled.
(iii)	Corporate Environment Policy and hierarchical system for ensuring adherence to the policy and compliance with environmental regulation in accordance with the office memorandum dated 26.4.2011 issued by MoEF should be put in place.	Corporate Environment Policy and hierarchical system is in place.
(iv)	The Company shall submit within 3 month their policy towards Corporate Environment Responsibility which should inter-alia address (i) Standard operating process/procedure to bring Into focus any infringements/ deviation/ violation of environmental or forest norms/conditions, (ii) Hierarchical system or Administrative order of the company to deal with environmental issues and ensuring compliance EC conditions and (iii) System of reporting of non compliance/violation environmental norms to the Board of Directors of the Company and/or stakeholders or shareholders.	Following policies towards corporate Environment responsibility have been submitted at MoEF, Delhi on due date: (i) Standard operating process/procedure to bring into focus any infringements/ deviation/ violation of environmental or forest norms/conditions, (ii) Hierarchical system or Administrative order of the company to deal with environmental issues and ensuring compliance EC conditions and (iii) System of reporting of non compliance/violation

(v)	The environmental clearance is subject to approval of the State Land use Department, Government of Jharkhand for diversion of agricultural land for nonagricultural use.	Mining Lease is granted/ renewed by the State Govt. after due consideration and Cabinet approval on recommendation of District Collector who is the competent authority to give permission for using the agricultural land for non-agricultural purpose.
(vi)	The critical habitat in the area including dens of python, fox and bear should be protected by adopting appropriate wildlife conservation measures.	Appropriate wildlife conservation measures are being taken to protect critical habitat in the area.
(vii)	The mining operations shall be restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	Shallow depth mining is being done in the Pakhar Bauxite Mines & the ground water table is much below the working depth. Hence, ground water will not be intersected due to mining activities.
(viii)	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. Adequate measures shall be taken for conservation and protection of the 1st and 2nd order streams, if any emanating or passing through the mine lease during the course of mining operation.	It is being ensured .No natural water course is obstructed due to mining activities.
(ix)	The top soil shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	Sequential backfilling and reclamation of the mined out area are being implemented during mining operation. Top soil which is temporarily stored separately spread over the back filled area in the process of reclamation. (enclosed Annexure).

(x)	The over burden (OB) generated during the mining operation shall be temporarily stacked at earmarked dump site(s) only for the purpose of backfilling. Backfilling shall commence from the third year onwards and thereafter the waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. An area of 16.39ha of the worked out pit shall be backfilled and reclaimed by plantation during the plan period. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office, Bhubneshwar on six monthly basis.	The over burden (OB) generated during the mining operation temporarily stacked at earmarked dump site(s) only for the purpose of backfilling. Backfilled area will be reclaimed by plantation. Monitoring and management of rehabilitated areas will continue until the vegetation becomes self-sustaining. Compliance status is being submitted to the Ministry of Environment & Forests regularly on six monthly basis.
(xi)	Catch drains and siltation ponds of appropriate size shall be constructed for the working pit, temporary soil, OB and mineral dumps to arrest flow of silt and sediment directly into the agricultural fields, the Chaupat Nadi, the Kisko Nadi, the Shankh Nadi, Kisko Nallah, the Narachiya Nal lah and other water bodies, The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after the monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and temporary over burden dumps to prevent run off of water and flow of sediments directly into the agricultural fields, the Chaupat Nadi, the Kisko Nadi, the Shankh Nadi, Kisko Nallah, the Narachiya Nallah and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention	No run-off is generated from mining activities. However to collect & manage rain water during monsoon, part of mined out area is used as settling tank for the runoff. Rain water stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary. Garland drains, settling tanks and check dams of appropriate size have been constructed both around the mine pit and temporary over burden dumps to prevent run off of water and flow of sediments directly into the agricultural field and rivers.

	period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	
(xii)	Dimension of the retaining wall at the toe of the temporary OB dumps and the OB benches within the mine to check run-off and siltation should be based on the rain fall data.	The dimensions of the retaining wall of OB dumps are based on the average rainfall.
(xiii)	The void left unfilled in an area of 4.5ha shall be converted into water body. The higher benches of excavated void/mining pit shall be terraced and plantation done to stabilize the slopes. The slope of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out all along the excavated area.	Will be implemented at the end of conceptual mining period. Around 2150 nos of saplings have been planted during 2015-16 within this mine.
(xiv)	Plantation shall be raised in an area of 24.09ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around reclaimed area, mine benches, around water body, along the roads etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1500 plants per hectare. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	It is already in practice. Phase wise plantation of native species in consultation with forest department is being carried out within the safety zone and mined out/reclaimed pits.
(xv)	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. Extensive water sprinkling	Mobile water tankers have been provided for sprinkling of water on haul roads and are generally being engaged at the places where active mining is in progress to contain fugitive dust.

	shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	AAQ parameters are monitored from time to time.
(xvi)	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	A plan will be drawn on the basis of discussions with Scientists of State unit office of Central Ground Water Board, Ranchi to implement suitable conservation measures to augment ground water resources in the area.
(xvii)	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.	This is being done by engaging recognized agency.
(xviii)	Appropriate mitigative measures should be taken to prevent pollution of the Chaupat Nadi, the Kisko Nadi and the Shankh Nadi in consultation with the State Pollution Control Board.	Being complied, There is no discharge of mine water into any drainage network. Monitoring is being done.
(xix)	The project proponent shall obtain necessary prior permission of the competent authorities	As per the terms and conditions in Mining lease deed, we have the

	for drawl of requisite quantity of ground water, required for the project.	liberty to use water. water cess is being paid regularly to Jharkhand State Pollution Control Board, Ranchi.
(xx)	The project proponent shall practice suitable rainwater harvesting measures on long term basis and work out a detailed scheme for rainwater harvesting in consultation with the Central Groundwater Authority and submit a copy of the same to the Ministry of Environment and Forests and its Regional Office, Bhubneswar.	A suitable scheme for rainwater harvesting is under preparation.
(xxi)	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	Regular maintenance of vehicles are undertaken to minimize vehicular emission. All the transporters have been instructed to obtain PUC for their vehicles from the competent authority and submit to the concerned officer for verification. Bauxite are transported through tarpaulin cover trucks only.
(xxii)	Drills shall either be operated with the dust extractors or equipped with water injection system.	Wet drilling is done in the drill holes intermittently for dust suppression by pumping water.
(xiii)	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting at Mines is done at fixed blasting period i.e. 12.00 Noon to 1.00 PM on working days. Mobile mining activities are not being practiced during blasting. All the precautionary and mitigative measures to control ground vibration and to arrest fly rocks are being implemented.
(xxiv)	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be	We are exploring the possibilities. However, water sprinkling is being carried out regularly at loading and unloading areas as well as at all the transfer points by water

	properly maintained and operated.	sprinkler/ mobile water tanker.
(xxv)	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	There is no discharge of effluent from mine, hence ETP is not required. The sewage water for working population is planned to be collected through Septic Tank/Soak Pit and treated in Sewage Treatment Plant.
(xxvi)	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	System is already in place.
(xxvii)	It shall be ensured that the fluoride level in the drinking water to be used by the workers in the project as well as to be provided to the public, if any, should meet the prescribed norms in this regard.	There is no issue found in respect of fluoride in and around the mines. Water monitoring report is annexed with this report.
(xxviii)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely python, leaf monkey (Presbyits phayrei) etc. spotted in the study area. The critical habitats in the area including dens of python, fox and bear should be protected by adopting appropriate wildlife conservation measures and the conservation plan prepared specific to this project in consultation with the State Forest and Wildlife Department should effectively address the same. All the safeguard measures brought out in the Wildlife Conservation Plan prepared specific to this project site shall be effectively implemented in consultation with the State Forest and Wildlife Department A copy of approved wildlife conservation plan shall be submitted to the Ministry and its Regional Office, Bhubaneswar within 3 months.	All precautionary measures during mining operation for conservation and protection of endangered fauna are being taken care in consultation with forest Dept.

(xxix)	Provision shall he made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile sTp, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Since the project is in operation. Necessary infrastructure and facilities are already in place.
(xxx)	The critical parameters such as RSPM (Particulate matter with size less than 10 micron i.e PM10) and NOx in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically . Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2005-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	Complied Monitoring Reports is enclosed as **Annexure.** Presently, there is no discharge of water from the mines.
(xxxi)	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Progressive Mine Closure Plan has been duly approved by Indian Bureau of Mine. FMCP related provision will be compiled as per statue.

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Sl No	General Conditions	Compliance Status
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Being adhered to.
(ii)	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Excavation of Over Burden and Bauxite is being done as per the approved calendar plan. Details of excavation, quantum of mineral, OB, etc have been furnished for the financial year 2015-16 as Annexure
(iii)	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10micron i.e., P1410) and NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Complied Monitoring Reports is enclosed as **Annexure**
(iv)	Data on ambient air quality RSPM(Particulate matter with size less than 10micron i.e., PM10) and N0x) should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	Complied, Monitoring Reports is enclosed as **Annexure.**
(v)	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Mobile water tankers have been provided for sprinkling of water on haul roads and are generally being engaged at the places where active mining is in progress to arrest fugitive dust emission.

(vi)	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Noise monitoring is being done regularly at various locations of the work zone area Workers engaged in operation of HEMMs, etc have been provided with PPEs,ear plug and ear muffs.
(vii)	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There is no effluent discharge from Mine. Workshop has an Oil Catchment Pit to trap oil and grease. It is being ensured to make it operational and effective as and when required.
(viii)	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed	Complied. Use of Personal Protective Equipment (PPE) by the individuals is being ensured. All the mine workers are being regularly and periodically sent to our own hospital for health checkup for any contraction of diseases due to exposure in dusty and noisy areas. Training on safety, health and environmental aspects of mining is being regularly imparted through VT centre and also through various other training programmes conducted by the State Government, recognized agencies, etc
(ix)	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively. Copy enclosed as Annexure.
(x)	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	Statement of budgetary provision and actual expenses for environmental protection measure is enclosed as Annexure It is once again reiterated that the funds so ear marked shall not be

		diverted for any other purposes other than it is committed at the beginning of the financial year.
(xi)	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work	Complied. Yearly date of financial closure is 31st March.
(xii)	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Agreed.
(xiii)	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.	Being complied
(xiv)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Duly submitted.

(xv)	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Displayed.
(xvi)	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubneswar by e-mail.	Duly submitted.
(xvii)	The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at littp://envfonnic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Complied in due time.

GEMS PROJECTS PVT.LTD.
In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
(NABL ACCREDITED LABORATORY)

M/S HINDALCO INDUSTRIES LIMITED

MINES DIVISION, DIST.-LOHARDAGA, JHARKHAND

REPORT

OF

ENVIRONMENTAL MONITORING DATA OF PAKHAR PLATEAU

FOR

(JULY TO SEPTEMBER QUARTER-2015)

1236/2 Lajpat Nagar, Near Lala Lajpat Rai School, Pundag, Argora, Ranchi, Jharkhand- 834004
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4	Pakhar Plateau Pakhar Mines(15.58 ha, Minerals & Minerals)
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2	Pakhar Mine (115.13 ha.) Pakhar Plateau
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4	Pakhar Mine (15.58 ha. Minerals & Minerals) Pakhar Plateau
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2	Pakhar Mines (109.507 ha. Of Minerals and Minerals)
	STACK MONITORING OF DG SETS (FLUE GAS)
1	Pakhar Mines Office-Pakhar Plateau

GEMS PROJECTS PVT.LTD.

In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
(NABL ACCREDITED LABORATORY)

Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer: **AMBIENT AIR QUALITY MONITORING**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **AMBIENT AIR QUALITY MONITORING**
Received: 26.09.2015
Registered: 26.09.2015
Marks on Sample: Location: **Pakhar Plateau- Pakhar Hindalco Colony**
Sample collected on:26.09.2015
Test Start/End Date: 26.09.2015/27.09.2015

LOCATION/IDENTIFICATION: **Pakhar Plateau- Pakhar Hindalco Colony**

PARAMETERS		UNIT	LIMIT	METHOD	Concentration
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	16.00
Nitrogen Dioxide	NO_x	$\mu g/m^3$	80	IS:5182 (Part-6): 1975(Reaff:2004)	19.50
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part-23)	54.3
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR (40) Appendix-L	32.6
Carbon Monoxide	CO	$\mu g/m^3$	2	EPA 600/P-99/001F	0.15

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Report No: SEPT004/2015-16 Date: 3rd October 2015

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Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **AMBIENT AIR QUALITY MONITORING**
Received: 26.09.2015
Registered: 26.09.2015
Marks on Sample: Location: **Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4**
Sample collected on: 26.09.2015
Test Start/End Date: 26.09.2015/27.09.2015

LOCATION/IDENTIFICATION: **Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4**

PARAMETERS		UNIT	LIMIT	METHOD	Concentration
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	55.50
Nitrogen Dioxide	NO_x	$\mu g/m^3$	80	IS:5182 (Part-6):1975(Reaff:2004)	65.80
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part-23)	65.8
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR (40) Appendix-L	33.7
Carbon Monoxide	CO	$\mu g/m^3$	2	EPA 600/P-99/001F	0.55

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Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer: **AMBIENT AIR QUALITY MONITORING**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
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State: Jharkhand
Country: India
Sample Type: **AMBIENT AIR QUALITY MONITORING**
Received: 26.09.2015
Registered: 26.09.2015
Marks on Sample: Location: **Pakhar Plateau- Pakhar 109.507 ha. (Minerals & Minerals) working Pit**
Sample collected on:26.09.2015
Test Start/End Date: 26.09.2015/27.09.2015

LOCATION/IDENTIFICATION: **Pakhar Plateau- Pakhar 109.507 ha. (Minerals & Minerals) working Pit**

PARAMETERS		UNIT	LIMIT	METHOD	Concentration
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	26.50
Nitrogen Dioxide	NOx	$\mu g/m^3$	80	IS:5182 (Part-6):1975(Reaff:2004)	39.00
Particulate Matter (size less than10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part-23)	68.3
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR (40) Appendix-L	41.7
Carbon Monoxide	CO	$\mu g/m^3$	2	EPA 600/P-99/001F	0.09

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(NABL ACCREDITED LABORATORY)

Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer: **AMBIENT AIR QUALITY MONITORING**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **AMBIENT AIR QUALITY MONITORING**
Received: 26.09.2015
Registered: 26.09.2015
Marks on Sample: Location: **Pakhar Plateau Pakhar Mines(15.58 ha, Minerals & Minerals)**
Sample collected on:26.09.2015
Test Start/End Date: 26.09.2015/27.09.2015

LOCATION/IDENTIFICATION: **Pakhar Plateau Pakhar Mines(15.58 ha, Minerals & Minerals)**

PARAMETERS		UNIT	LIMIT	METHOD	Concentration
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	12.50
Nitrogen Dioxide	NOx	$\mu g/m^3$	80	IS:5182 (Part-6):1975(Reaff:2004)	19.00
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part-23)	59.6
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR (40) Appendix-L	29.5
Carbon Monoxide	CO	$\mu g/m^3$	2	EPA 600/P-99/001F	0.12

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GEMS PROJECTS PVT.LTD.

In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
(NABL ACCREDITED LABORATORY)

Report No: SEPT004/2015-16	Date: 3rd October 2015
Sample described by customer: Measurement of Noise	
Client Name: **Hindalco Industries Limited** Client Address: Lohardaga Postal Code: 835203 State: Jharkhand Country: India Sample Description: **Measurement of Noise** Sampling Method: Instrumental, using Sound level Metter Test Start: 25.09.2015 End Date: 26.09.2015	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result)	Dates
Month			Average of 16 continuous hours in Sep-15		Average of 8 continuous hours in Sep-15	
Pakhar HINDALCO Colony	dB (A) L_{eq}	75	58.7	70	48.6	26/09/2015

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Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer: **Measurement of Noise**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Test Start: 25.09.2015
End Date: 26.09.2015

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result)	Dates
Month			Average of 16 continuous hours in Sep-15		Average of 8 continuous hours in Sep-15	
Pakhar Mine (115.13 ha.)	dB (A) L_{eq}	75	71.3	70	52.3	26/09/2015

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Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer: **Measurement of Noise**

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Test Start: 25.09.2015
End Date: 26.09.2015

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result)	Dates
Month			Average of 16 continuous hours in Sep-15		Average of 8 continuous hours in Sep-15	
Pakhar Mine (109.507 ha. of Minerals & Minerals)	dB (A) L_{eq}	75	69.3	70	48.3	26/09/2015

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Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer: **Measurement of Noise**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Test Start: 25.09.2015
End Date: 26.09.2015

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result)	Dates
Month			Average of 16 continuous hours in Sep-15		Average of 8 continuous hours in Sep-15	
Pakhar Mine (15.58 ha. of minerals & Minerals)	dB (A) L_{eq}	75	61.2	70	45.6	26/09/2015

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Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer: **Measurement of Spot Noise**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Spot Noise**
Sampling Method: Instrumental, using Sound level Metter
Test Start: 26.09.2015
End Date: 26.09.2015

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mine (115.13 ha.)				
Near Poclain	dB (A) L_{eq}	75	68.5	26/09/2015

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Report No: SEPT004/2015-16	Date: 3rd October 2015
Sample described by customer: **Measurement of Spot Noise**	
Client Name: **Hindalco Industries Limited** Client Address: Lohardaga Postal Code: 835203 State: Jharkhand Country: India Sample Description: **Measurement of Spot Noise** Sampling Method: Instrumental, using Sound level Metter Test Start: 26.09.2015 End Date: 26.09.2015	

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mine (109.507 ha. Of Minerals & Minerals)				
Loading point near Dumper	dB (A) L_{eq}	75	72.3	26/09/2015

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In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
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Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer : **DRINKING WATER**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **DRINKING WATER**
Received: 25.09.2015
Registered: 25.09.2015
Marks on Sample: Location: **Canteen Drinking Water of Pakhar Mines**
Sample collected on:25.09.2015
Quantity: 5 L X 2 No. PVC Can
Test Start/End Date: 25.09.2015/29.09.2015
Sample collected by: **M/S GEMS PROJECT PVT LTD.**

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.4	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.2	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	95	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-ClG, 4-69
9	Dichioramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-ClG, 4-69
10	Total hardness (as CaCO3)	mg/l	60	200 max	APHA 22nd Ed. 2012, 4500-ClG, 4-69
11	Alkalinirty Total (as CaCO3)	mg/l	68	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	15.0	250 max	APHA 22nd Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO4)	mg/l	7.0	200 max	APHA 22nd Ed. 2012, 4500-so4-e, 4-190
14	Nitrate (as NO3)	mg/l	1.30	45 max	APHA 22nd Ed. 2012, 4500-NO3-E, 4-125
15	Fluoride (as F)	mg/l	0.20	1 max	APHA 22nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.10	0.5 max	APHA 22nd Ed. 2012, 4500-BB, 4-25

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Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
17	Calcium (as Ca)	mg/l	20.0	75 max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	4.5	30 max	APHA 22nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22nd Ed. 2012, 4500-NH3-F, 4-115
20	Iron (as Fe)	mg/l	0.18	0.3 max	APHA 22nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.05	0.02 max	APHA 22nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C6H5OH)	mg/l	N.D	0.001 max	APHA 22nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-S2-C 4- 175 & F 4-178

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Colliforms	MPN/100mL	<1.1	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	Absent	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
Pesticides Residues					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindance)	µg/L	<0.01	2	US EPA 508-1995
10	α –HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β–HCH	µg/L	N.D	0.04	US EPA 508-1995
12	δ- HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
16	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23	Phorate	µg/L	N.D	2	US EPA 8141A-1994
24	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A-1994
25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

Note: Water tested and found to suitable for drinking purpose

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(NABL ACCREDITED LABORATORY)

Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer : **SURFACE WATER**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **SURFACE WATER**
Received: 25.09.2015
Registered: 25.09.2015
Marks on Sample: Location: **Pakhar Mines (115.13 ha.). Water harvesting Pond**
Sample collected on:25.09.2015
Quantity: 5 L X 2 No. PVC Can
Test Start/End Date: 25.09.2015/29.09.2015
Sample collected by: **M/S GEMS PROJECT PVT LTD.**

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.45	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.3	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.05	0.2 min	APHA 22nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	105	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-ClG, 4-69
9	Dichioramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-ClG, 4-69
10	Total hardness (as CaCO3)	mg/l	65	200 max	APHA 22nd Ed. 2012, 4500-ClG, 4-69
11	Alkalinirty Total (as CaCO3)	mg/l	74	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	14.0	250 max	APHA 22nd Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO4)	mg/l	8.0	200 max	APHA 22nd Ed. 2012, 4500-so4-e, 4-190
14	Nitrate (as NO3)	mg/l	1.50	45 max	APHA 22nd Ed. 2012, 4500-NO3-E, 4-125
15	Fluoride (as F)	mg/l	0.25	1 max	APHA 22nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.10	0.5 max	APHA 22nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	20.0	75 max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67

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Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
18	Magnesium (as Mg)	mg/l	3.8	30 max	APHA 22nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22nd Ed. 2012, 4500-NH3-F, 4-115
20	Iron (as Fe)	mg/l	0.08	0.3 max	APHA 22nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.05	0.03 max	APHA 22nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.05	5 max	APHA 22nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-18
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed. 2012, 3112-B, 3-18
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-18
31	Nickel (as Ni)	mg/l	<0.05	0.02 max	APHA 22nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C6H5OH)	mg/l	N.D	0.001 max	APHA 22nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-S2-C 4- 175 & F 4-178

RANCHI

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Colliforms	MPN/100mL	<1.1	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	Absent	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
Pesticides Residues					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindance)	µg/L	<0.01	2	US EPA 508-1995
10	α –HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β–HCH	µg/L	N.D	0.04	US EPA 508-1995
12	δ- HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
16	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23	Phorate	µg/L	N.D	2	US EPA 8141A-1994
24	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A-1994
25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

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GEMS PROJECTS PVT.LTD.

In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
(NABL ACCREDITED LABORATORY)

Report No: SEPTOO4/2015-16 Date: 3rd October 2015

Sample described by customer : **SOIL**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: **SOIL**
Received: 25.09.2015
Registered: 25.09.2015
Marks on Sample: Location: **Pakhar Mines (115.13 ha.)**
Sample collected on:25.09.2015
Quantity: 2KGS
Test Start/End Date: 25.09.2015/26.09.2015
Sample collected by: **M/S GEMS PROJECT PVT LTD**

Sl. No.	Analysis		Method	Result	Unit
1	Colour	--	--	Gray	
2	Texture	--	F.A.U.N (2007)	Loamy Sand	
3	Bulk density	--	By Bulk density Apparatus	1.13	gm/cm3
4	Water Holding Capacity	--	F.A.U.N (2007)	31.0	%
5	pH	--	F.A.U.N (2007)	6.60	--
6	Electrical Conductivity	--	F.A.U.N (2007)	195.0	µs/cm
7	Organic Carbon	--		0.65	%
8	Organic matter	--	Black & White Wet Digestion method	1.15	%
9	Available Nitrogen	--		105.0	mg/kg
10	Available Phosphorus	--		17.0	mg/kg
11	Available Potassium	--		340	mg/kg
12	Exchangeable calcium			25.00	meq/100gm
13	Exchangeable Magnesium			1.40	meq/100gm
14	Exchangeable Sodium			2.40	meq/100gm
15	Exchangeable Potassium			1.60	meq/100gm
16	Total Exchangeable bases		USEPA 3052	35.00	meq/100gm
17	Manganese		USEPA 3052	0.40	mg/kg
18	Arsenic		USEPA 3052	2.4	mg/kg
19	Silica		USEPA 3052	55.0	%
20	Aluminum		USEPA 3052	8.0	%
21	Iron		USEPA 3052	5.00	%
22	Calcium		USEPA 3052	8.00	%
23	Magnesium		USEPA 3052	2.30	%
24	Sodium		USEPA 3052	0.20	%
25	Potassium		USEPA 3052	0.20	%
26	Sulphate		USEPA 3052	0.60	%

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GEMS PROJECTS PVT.LTD.

In Association with M/s MAHARASTRA ENVIRO POWER LTD, Nagpur
(NABL ACCREDITED LABORATORY)

Report No: SEPT004/2015-16 Date: 3rd October 2015

Sample described by customer : **SOIL**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: SOIL
Received: 25.09.2015
Registered: 25.09.2015
Marks on Sample: Location: **Pakhar Mines (109.507 ha. Of Minerals and Minerals)**
Sample collected on:25.09.2015
Quantity: 2KGS
Test Start/End Date: 25.09.2015/26.09.2015
Sample collected by: **M/S GEMS PROJECT PVT LTD**

Sl. No.	Analysis		Method	Result	Unit
1	Colour	--	--	Gray	
2	Texture	--	F.A.U.N (2007)	Loamy Sand	
3	Bulk density	--	By Bulk density Apparatus	1.10	gm/cm3
4	Water Holding Capacity	--	F.A.U.N (2007)	31.5	%
5	pH	--	F.A.U.N (2007)	6.70	--
6	Electrical Conductivity	--	F.A.U.N (2007)	210.0	µs/cm
7	Organic Carbon	--		0.63	%
8	Organic matter	--	Black & White Wet Digestion method	1.10	%
9	Available Nitrogen	--		98.0	mg/kg
10	Available Phosphorus	--		17.0	mg/kg
11	Available Potassium	--		350	mg/kg
12	Exchangeable calcium			25.00	meq/100gm
13	Exchangeable Magnesium			1.50	meq/100gm
14	Exchangeable Sodium			2.60	meq/100gm
15	Exchangeable Potassium			1.80	meq/100gm
16	Total Exchangeable bases		USEPA 3052	35.00	meq/100gm
17	Manganese		USEPA 3052	0.70	mg/kg
18	Arsenic		USEPA 3052	2.1	mg/kg
19	Silica		USEPA 3052	54.0	%
20	Aluminum		USEPA 3052	7.5	%
21	Iron		USEPA 3052	5.50	%
22	Calcium		USEPA 3052	8.50	%
23	Magnesium		USEPA 3052	2.70	%
24	Sodium		USEPA 3052	0.60	%
25	Potassium		USEPA 3052	0.30	%
26	Sulphate		USEPA 3052	0.65	%

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Report no: SEPT004/2015-16 Date: 3rd October, 2015

SAMPLE DRAWN BY M/S GEMS PROJECT PVT LTD

Sample described as: **FLUE GAS**
Name of the Industry: **M/S HINDALCO INDUSTRIES LIMITED**
Address: Mines Division, Lohardaga, Jharkhand, Pin-835302

Date & time of Sampling: 25.09.2015 (11.30-12.00 Hrs)
Sampling Site: **Pakhar Mines Office-Pakhar Plateau**

A. General Information about Stack
- Stack connected to: DG-Set (250 KVA)
- Emission due to Burning of H.S.D
- Material OF construction: M.S
- Shape of Stack: Circular
- Whether stack is provided with permanent platform & ladder: Yes
- Capacity. 250 KVA

B. Physical characteristics of stack
- Height of the stack (a) from ground level: 7.0
- Diameter of the Stack at Sampling point: 0.2030
- Height of the sampling point from GL. 6.25

C. Analysis/Characteristic of Stock
- Fuel used: H.S.D
- Fuel Consumption: 30 lt/hr

D. Analysis Report

Sl. No.	PARAMETERS	PROTOCOL	RESULTS	Limits as per MoEF G.S.R.448(E)
1	Temperature of Emission (^{0}C)	IS 11255 Part: 3 1985 (Realf 2008)	290	---
2	Barometric pressure (mm of Hg)	IS 11255 Part: 3 1985 (Realf 2008)	655	---
3	Velocity of Gas (m/Sec)	IS 11255 Part: 3 1985 (Realf 2008)	10.0	---
4	Quantity of Gas flow (Nm^3/hr)	IS 11255 Part: 3 1985 (Realf 2008)	495	---
5	Concentration of CO2 (% v/v)	IS 11255 Part: 3 1985 (Realf 2008)	4.2	5.0
6	Concentration of CO (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2008)	0.20	--
7	Concentration of SO2 (mg/Nm3)	USEPA-6C	40	--
8	Concentration of NO2 (gm/kw-h)	USEPA-7E	0.60	9.2
9	Concentration of Particulate Matters (gm/kw-h)	IS 11255 Part: 3 1985 (Realf 2003)	0.15	0.3

E. Pollution Control Device
Details of pollution control devices attached with the stack: Nil

F. Remarks: Nil

GEMS PROJECTS PVT. LTD. RANCHI

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Mahabal Enviro Engineers Pvt. Ltd.

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PAKHAR PLATEAU- ENVIRONMENTAL MONITORING REPORT

JUNE 2015

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : JUNE023/2015-16 **Date:** 20th June, 2015

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: AMBIENT AIR QUALITY MONITORING
Marks on Sample: Location: Pakhar Plateau- Pakhar Hindalco Colony
Sample collected on: 20.05.2015
Received:28.05.2015
Registered: 28.05.2015
Test Start/End Date: 17.06.2015/19.06.2015

LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar Hindalco Colony

PARAMETERS		UNIT	LIMIT	METHOD	20/05/2015
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	28.6
Nitrogen Dioxide	NO_2	$\mu g/m^3$	80	IS:5182(Part-6):1975 (Reaff:2004)	32.1
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part 23)	52.2
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR(40) Appendix-L	28.9
Carbon Monoxide	CO	mg/m^3	2	EPA 600/P-99/001F	0.16

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Report no: : JUNE024/2015-16 **Date:** 20th June, 2015

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: AMBIENT AIR QUALITY MONITORING
Marks on Sample: Location: Pakhar Plateau- Pakhar 115.13 Pit
Sample collected on: 20.05.2015
Received:28.05.2015
Registered: 28.05.2015
Test Start/End Date: 17.06.2015/19.06.2015

LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar 115.13 Pit

PARAMETERS		UNIT	LIMIT	METHOD	20/05/2015
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	68.4
Nitrogen Dioxide	NO_2	$\mu g/m^3$	80	IS:5182(Part-6):1975 (Reaff:2004)	69.9
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part 23)	63.4
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR(40) Appendix-L	37.9
Carbon Monoxide	CO	mg/m^3	2	EPA 600/P-99/001F	0.57

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Report no: : JUNE025/2015-16 **Date:** 20th June, 2015

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: AMBIENT AIR QUALITY MONITORING
Marks on Sample: Location: Pakhar Plateau- Pakhar 109.507 Dumarpat Village
Sample collected on: 20.05.2015
Received:28.05.2015
Registered: 28.05.2015
Test Start/End Date: 17.06.2015/19.06.2015

LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar 109.507 Dumarpat Village

PARAMETERS		UNIT	LIMIT	METHOD	20/05/2015
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	**36.7**
Nitrogen Dioxide	NO_2	$\mu g/m^3$	80	IS:5182(Part-6):1975 (Reaff:2004)	**51.9**
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part 23)	**77.8**
Particulate Matter (size less than 2.5 µm)	$PM_{2.5}$	$\mu g/m^3$	60	USEPA CFR(40) Appendix-L	**45.4**
Carbon Monoxide	CO	mg/m^3	2	EPA 600/P-99/001F	**0.67**

Vijay Pandey
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Report no: : JUNE026/2015-16 **Date:** 20th June, 2015

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: AMBIENT AIR QUALITY MONITORING
Marks on Sample: Location: Pakhar Plateau- Pakhar 84.38 Pokhrapat
Sample collected on: 20.05.2015
Received:28.05.2015
Registered: 28.05.2015
Test Start/End Date: 17.06.2015/19.06.2015

LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar 84.38 Pokhrapat

PARAMETERS		UNIT	LIMIT	METHOD	20/05/2015
Sulphur Dioxide	SO_2	$\mu g/m^3$	80	IS:5182 (Part-2):2001 (Reaff:2006)	48.9
Nitrogen Dioxide	NO_2	$\mu g/m^3$	80	IS:5182(Part-6):1975 (Reaff:2004)	55.2
Particulate Matter (size less than 10 µm)	PM_{10}	$\mu g/m^3$	100	IS:5182 (Part 23)	57.1
Particulate Matter (size less than 2.5 µm)	PM_{25}	$\mu g/m^3$	60	USEPA CFR(40) Appendix-L	41.2
Carbon Monoxide	CO	mg/m^3	2	EPA 600/P-99/001F	0.51

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Report no: : JUNE027/2015-16 **Date:** 20th June, 2015

Sample described by customer: SOIL

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: SOIL
Marks on Sample: Location: Pakhar Mines
Sample collected on: 20.05.2015
Quantity: 2 kgs
Sample collected by: Mahabal Enviro Engineers Pvt Limited
Received:28.05.2015
Registered: 28.05.2015
Test Start/End Date: 17.06.2015/19.06.2015

S.No	Analysis		Method	Result	Unit
1.	Colour	--	--	Gray	-
2.	Texture	--	F.A.U.N (2007)	Loamy Sand	-
3.	Bulk Density	--	By Bulk density Apparatus	1.0	gm/cm3
4.	Water Holding Capacity	--	F.A.U.N (2007)	23.5	%
5.	pH	--	F.A.U.N (2007)	6.9	-
6.	Electrical Conductivity	--	F.A.U.N (2007)	20.5	µs/cm
7.	Organic Carbon	--		0.53	%
8.	Organic Matter	--	Black & White Wet Digestion Method	0.68	%
9.	Available Nitrogen	--	Soil & Water Book by P.K Gupta	112.0	mg/kg
10.	Available Phosphorus	--	Soil & Water Book by P.K Gupta	14.9	mg/kg
11.	Available Potassium	--	Soil & Water Book by P.K Gupta	379	mg/kg
12.	Exchangeable Calcium	Ca	Soil & Water Book by P.K Gupta	22.5	meq/100gm
13.	Exchangeable Magnesium	Mg	Soil & Water Book by P.K Gupta	1.89	meq/100gm
14	Exchangeable Sodium	Na	Soil & Water Book by P.K Gupta	2.23	meq/100gm
15.	Exchangeable Potassium	K	Soil & Water Book by P.K Gupta	1.48	meq/100gm
16	Total Exchangeable Bases		Soil & Water Book by P.K Gupta	30.5	meq/100gm
17	Manganese	Mn	USEPA 3052	0.50	mg/kg
18	Arsenic	As	USEPA 3052	2.30	mg/kg
19	Silica	SiO_2	USEPA 3052	60.0	%
20.	Aluminum	Al_2O_3	USEPA 3052	6.9	%
21.	Iron	Fe_2O_3	USEPA 3052	5.0	%
22.	Calcium	CaO	USEPA 3052	8.94	%
23.	Magnesium	MgO	USEPA 3052	1.90	%
24.	Sodium	Na_2O	USEPA 3052	0.38	%
25.	Potassium	K_2O	USEPA 3052	0.22	%
26.	Sulphate	SO_4	USEPA 3052	0.84	%

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Report no: : JUNE028/2015-16 **Date:** 20th June, 2015

Sample described by customer: SURFACE WATER

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample type: SURFACE WATER
Marks on Sample: Location: Water Harvesting Pond (Pakhar Mines)
Sample collected on: 19.05.2015
Quantity: 5 L X 2 No. PVC Can
Sample collected by: Mahabal EnviroEngineers Pvt Limited
Received:28.05.2015
Registered: 28.05.2015
Test Start/End Date: 15.06.2015/17.06.2015

S.No	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method Reference
1.	Colour	Hazen	< 1	5 Max	APHA 22nd Ed. 2012, 2120-B, 2-6
2.	Odour	-	Agreeable	Agreeable	IS 3025 (Part 5):1983, Reaffirmed 2006
3.	Taste	-	Agreeable	Agreeable	IS 3025 (Part 7):1984, Reaffirmed 2006
4.	Turbidity	NTU	0.3	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5.	pH	-	7.0	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6.	Free Chlorides(Residual)	mg/l	<0.05	0.2 min	APHA 22nd Ed. 2012, 4500-Cl G, 4-69
7	Total Dissolved Solids	mg/l	97	500 Max	IS 3025 (Part 16):1984 Reaffirmed 2006
8.	Monochloramines	mg/l	<0.05	-	APHA 22nd Ed. 2012, 4500-ClG, 4-69
9.	Dichloramines	mg/l	<0.05	-	APHA 22nd Ed. 2012, 4500-ClG, 4-69
10.	Total Hardness (as $CaCO_3$)	mg/l	45	200 Max	APHA 22nd Ed. 2012, 2340-C, 2-44,45
11.	Alkalinity Total (as $CaCO_3$)	mg/l	63	200 Max	IS 3025 (Part 23):1986 Reaffirmed 2009
12.	Chloride (as Cl)	mg/l	7.0	250 Max	APHA 22nd Ed. 2012, 4500-Cl-B, 4-72
13.	Sulphate (as SO_4)	mg/l	3.9	200 Max	APHA 22nd Ed. 2012, 4500-SO4-E, 4-190

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Continuation Sheet

S.No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14.	Nitrate (as NO3)	mg/l	1.1	45 Max	APHA 22nd Ed. 2012, 4500-NO3-E, 4-125
15.	Fluoride (as F)	mg/l	0.23	1 Max	APHA 22nd Ed. 2012, 4500-FB& D, 4-84, 4-87
16.	Boron (as B)	mg/l	0.18	0.5 Max	APHA 22nd Ed. 2012, 4500-BB, 4-25
17.	Calcium(as Ca)	mg/l	15.2	75 Max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18.	Magnesium (as Mg)	mg/l	3.9	30 Max	APHA 22nd Ed. 2012, 3500- Mg- B, 3-84
19.	Ammonical Nitrogen/ Total Ammonia	mg/l	<0.1	-	APHA 22nd Ed. 2012, 4500 NH3-F, 4-115
20.	Iron (as Fe)	mg/l	0.09	0.3 Max	APHA 22nd Ed. 2012, 3111-B,3-18
21.	Manganese (as Mn)	mg/l	N.D	0.1 Max	APHA 22nd Ed. 2012, 3111-B, 318
22.	Aluminium (as Al)	mg/l	0.06	0.03 Max	APHA 22nd Ed. 2012, 3500- Al-B, 3-61
23.	Cadmium (as Cd)	mg/l	N.D	0.003 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
24.	Chromium Total (as Cr)	mg/l	N.D	0.05 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
25.	Copper (as Cu)	mg/l	N.D	0.05 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
26.	Lead (as Pb)	mg/l	N.D	0.01 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
27.	Zinc (as Zn)	mg/l	0.10	5 Max.	APHA 22nd Ed. 2012, 3111-B,3-18
28.	Arsenic (as As)	mg/l	<0.01	0.01 Max.	APHA 22nd Ed. 2012, 3114-C,3-38
29.	Mercury (as Hg)	mg/l	N.D	0.001 Max.	APHA 22nd Ed. 2012, 3112-B,3-23
30.	Selenium (as Se)	mg/l	N.D.	0.01 Max.	APHA 22nd Ed. 2012, 3114-C, 3-38
31.	Nickel (as Ni)	mg/l	<0.06	0.02 Max.	APHA 22nd Ed. 2012, 3111 B,3-18
32.	Mineral Oil	mg/l	N.D.	0.5 Max.	IS 3025 (Part 39): 1991, Reaffirmed 2003, Ed. 2.1
33.	Cyanide (as CN)	mg/l	N.D.	0.05 Max.	APHA 22nd Ed. 2012, 4500-CN, C & E, 4-39 & 4-44
34.	Anionic detergents as MBAS	mg/l	<0.1	0.2 Max.	APHA 22nd Ed. 2012, 5540-C, 5-53
35.	Phenolic compounds (as C_6H_5OH)	mg/l	N.D	0.001 Max.	APHA 22nd Ed. 2012, 5530- B & C, 5-47
36.	Polynuclear aromatic hydrocarbons (PAH)	µg/L	N.D	0.0001 mg/L Max	APHA 22nd Ed. 2012, 6440, 6-93
37.	Polychlorinated Biphenyls (PCBs)	µg/L	N.D	0.0005 mg/l Max.	USEPA Method 8082
38.	Sulphide (as S)	mg/l	N.D	-	APHA 22nd Ed. 2012, 4500- S2-C 4-175 & F 4-178

Mahabal Enviro Engineers Pvt. Ltd.

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Continuation Sheet

S.No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1.	Total Colliforms	MPN/ 100 mL	<1.1	N.D	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69
2.	E-Coli	MPN/ 100 mL	Absent	N.D	APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9- 76
Pesticides Residues					
3.	p,p DDT	µg/L	N.D	1	US EPA 508-1995
4.	o,p DDT	µg/L	N.D	1	US EPA 508-1995
5.	p,p DDE	µg/L	N.D	1	US EPA 508-1995
6.	o,p DDE	µg/L	N.D	1	US EPA 508-1995
7.	p,p DDD	µg/L	N.D	1	US EPA 508-1995
8.	o,p DDD	µg/L	N.D	1	US EPA 508-1995
9.	γ-HCH (Lindane)	µg/L	<0.01	2	US EPA 508-1995
10.	α-HCH	µg/L	<0.01	0.01	US EPA 508-1995
11.	β-HCH	µg/L	N.D	0.04	US EPA 508-1995
12	δ - HCH	µg/L	N.D	0.04	US EPA 508-1995
13.	Butachlor	µg/L	N.D	125	US EPA 508-1995
14.	Alachlor	µg/L	N.D	20	US EPA 508-1995
15.	Atrazine	µg/L	N.D	2	US EPA 532-2000
16.	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17.	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18.	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19.	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20.	Malathion	µg/L	N.D	190	US EPA 8141A -1994
21.	Methyl Parathion	µg/L	N.D	0.3	US EPA 8141A -1994
22.	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23.	Phorate	µg/L	N.D	2	US EPA 8141A -1994
24.	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A -1994
25.	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26.	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

Conclusion: The Physical & Chemical Analysis report indicates that water is not contaminated.

Vijay Pandey
SENIOR EXECUTIVE

ADITYA BIRLA

HINDALCO

Date:26.11.2015

OFFICE ORDER

In connection with the earlier office order dated 10.11.2014 the re constituted team of Environment management cell to ensure compliance of various environmental Acts, regulations & rules at Mines Division, Hindalco, Lohardaga as follows:

The Environment Management Cell will consist of:

1. B. K. Mahapatra, DGM (Quality & Environment), Convenor.

Members:

2. Ajay Kumar Pandey, Manager (Bagru Mines)
3. A Anbarasu, Mines Manager (Serengdag Mines)
4. S P Jha, Mines Manager (Pakhar Mines)
5. Kiran Sankar Singh, Mines Manager (Gurdari)
6. Vidya Sagar Singh, Mines Manager (Kujam)
7. Amar Bharati, Mines Manager (Amtipani)
8. Rajesh Ambastha, Mines Manager (Chiro Kukud & Orsa)
9. Ananda Sahu, Mines Manager (Bimarla Bauxite Mines)
10. Biplab Mukherjee (Asst. Manager- Geology)

By order

Bijesh Kumar Jha
Joint President (Mines)

Cc to: - All Mines Manager
All Department head
Notice Board.

HINDALCO INDUSTRIES LIMITED
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BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2015-16

The composite cost during the year 2015-16 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115,13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha),*Pakhar (8.09 Ha),Pakhar (35.12Ha)*, Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.97 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud, *Orsa pat(196.36 Ha)*, Bhusar (65.31 Ha)& *Bimarla Bauxite Mines (134.52 Ha)*.

Sl No	Description	Budget (in Rupees) FY 2015-16	Actual (in Rupees) FY 2015-16 (from April to Sep'2015)
1	Pollution Control & Environment monitoring	**15,40,000/-**	**2,62,293/-**
2	Reclamation/ Back filing & Rehabilitation	**3,89,90,000/-**	**1,45,51,281/-**
3	Green belt & Plantation	**60,00,000/-**	**28,68,213/-**
4	Rural Development	**1,64,71,000/-**	**1,04,36,128/-**

**Part of OB removed cost.

Convener
Environment Management Cell
Hindalco Industries Limited

PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-15 TO SEP-15

NAME OF THE MINES	MINING LEASE AREA (IN HA)	MINED OUT AREA (HA)	BACK FILLED AREA (HA)	PRODUCTION (In MT)	OVERBURDEN (In Cu.M)
Shrengdag Bauxite Mines	155.81	4.04	3.50	140103.00	428240.00
Gurdari Bauxite Mines	584.19	5.66	4.92	175340.00	273881.00
Jalim & Sanai	12.14	0.50	0.05	23569.00	16500.00
Serangdag	140.06	0.00	0.00	0.00	0.00
Pakhar Buxite Mines	115.13	1.43	1.90	104145.00	143361.70
Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
Kujam-I	80.87	1.54	0.47	84970.00	82735.79
Kujam-II	157.38	3.46	1.26	77365.00	215398.22
Amtipani	190.95	2.27	1.53	89045.00	121267.01
Chiro-Kukud	152.57	1.28	2.97	51890.00	80377.18
Orsa Bauxite Mines	196.36	0.00	0.00	0.00	0.00
Hisri New	14.55	0.00	0.00	0.00	0.00
Bhusar	65.31	0.00	0.00	0.00	0.00
Bagru	75.41	0.00	0.00	0.00	0.00
Minerals & Minerals Limited					
Pakhar Buxite Mines	109.51	1.40	1.62	157280.00	137012.31
Pakhar Buxite Mines	15.58	0.00	0.00	0.00	0.00
Bimarla Bauxite Mines	134.53	0.00	0.00	0.00	0.00

Convener
Environment Management Cell
Hindalco Industries Limited

Monitored water level (FY 2015-16)

Fig in meter

Location (Mines)	Elevation (Mtr)	Well type	Monsoon (July-Sep)		Post Monsoon (November)		Winter (January)		Pre Monsoon (April-May)	
			Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML
Bagru	905	Open Well		21.74		24.13				
	910	Open Well		24.32		24.55				
	915	Open Well		29.41		28.43				
	903	Open Well		22.83		33.11				
	909	Open Well		17.54		28.74				
	1000	Open Well		24.95		22.69				
Pakhar	1083	Hand Pump	35.36		31.63					
Sherengdag	1027	Open Well		25.84		28.36				
	1094	Hand Pump	41.74		39.55					
	1081	Hand Pump	39.65		31.30					
	1055	Hand Pump	33.07		27.53					
	1066	Hand Pump	27.76		26.27					
Gurdari	1045	Hand Pump	29.32		27.85					
	1061	Hand Pump	28.36		24.93					
	1059	Hand Pump	38.11		36.20					
	1075	Hand Pump	27.98		26.82					
	1075	Hand Pump	28.37		29.33					
Kujam	1040	Open Well		33.97		21.88				
	1041	Open Well		33.66		24.85				
	1064	Hand Pump	31.55		28.68					
	1052	Hand Pump	22.39			21.12				
Chiro Kukud	1148	Hand Pump	33.40		28.39					
	1151	Hand Pump	37.62		31.85					
	1084	Hand Pump	34.25		33.11					

Convenor
(Quality & Environment)