



Ref No: HIL/LHD/JP (M)/MoEF/ 099

Date: 25.05.2015

To,
Joint Director(S)
MoEF ,GOI, Eastern Regional Office
A/3,Chandrashekharpur,
Bhubaneswar- 751023 (Orissa)

Sub: Compliance Report of EC conditions for Shrengdag (155.81 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period Oct'14 to March'15.

Ref: Environmental Clearance letter no J-11015/125/2006-IA II(M) dated 13th April 2007


Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Shrengdag (155.81 ha) Bauxite Mining project** of M/s Hindalco located in Gumla, Jharkhand for the period **Oct'14 to March'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

Compliance of conditions laid down in Environmental Clearance

SHRENGDAG BAUXITE MINES(155.81 Ha)

Period :Oct'14 -March'15

J-11015/125/2006-IA.II (M)Dated 13.4.2007

Sl No	Conditions	Compliance Status
Specific Conditions		
1	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Implementations of the stipulated conditions are fulfilled.
2	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	Mining Lease is granted/renewed by the State Govt. after due consideration and Cabinet approval on recommendation of DC who is the competent authority to give permission for using the agricultural land for non-agricultural purpose
3	The exploration shall be completed within 2.5 years and thereafter the proponent shall come up with a firm proposal for mining, based on the estimated reserves. The reclamation plan, post mine land use and progressive greenbelt development plan shall also be prepared and submitted with the revised proposal.	Mining is going on as per duly approved mining plan. The reclamation plan, post mine land use and progressive greenbelt development plan have been covered in Mining Plan.
4	Mining shall not intersect groundwater. The mine working shall be restricted to ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	Now, maximum depth of mining is 20 m. As per the survey, the ground water table is reported at 45-60 m below ground level. Hence there will be no intersecting of the ground water table due to mining activities.
5	The Project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operations.	It is being ensured. No natural water course has been obstructed as yet.
6	Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Sequential backfilling and reclamation of the mined out area are being exercised during mining operation. Whenever backfilling will be done to the mined out area, subsoil will be used for backfilling to reclaim and restore the damage area up to the extent possible.
7	The waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-	Overburden and waste rock from the crushing pit are being used for back filling. Year wise backfilling and plantation raised over the back filled area is provided. (Enclosed Annexure).

	sustaining. Compliance status should be submitted to the Ministry of Environment & Forest on six month basis.	
8	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. 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 monsoon and maintained properly.</p> <p>Garland drain (size, gradient and length) shall be constructed for mine pit 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 period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	No run off is being generated from mining activities. However, to collect and manage rainwater during monsoon, part of mined out area is used as settling tank. Settled water is being used for sprinkling of quarry, roads, green belt development, etc.
9	Plantation shall be raised in an area of 70.68 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha.	In 2014-15, we have planted 2500 saplings.
10	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 has already been prepared 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 and is also submitted to the Regional Director, Central Ground Water Board, Patna, for any suggestions. Recommendation of CGWB shall be implemented to augment the ground water resources of the area. Copy of letter already submitted to regional office.
11	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a	It is being monitored. Monitoring report is enclosed as Annexure

	year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground water Authority and Regional Director Central Ground Water Board.	
12	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Rainwater harvested during rainy season is being used for sprinkling on haul roads and raising plantation. Spring water is drawn from the down the hill pockets ponds for drinking purposes. Hence, as per the terms and conditions in Part III, Clause 6 of Mining lease deed, we have obtained permission from the Deputy Commissioner for drawl of water from the surface water bodies. Water cess is being paid to JSPCB on regular basis.
13	Water monitoring both for quality and quantity shall be carried out at four locations namely one spring and three streams. Sixmonthly report should be submitted to the Ministry of Environment and Forest and its Regional Office located at Bhubneshwar.	Analysis of water quality at four locations is being carried out. Analysis data for period of reporting is enclosed in Annexure
14	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	To keep vehicular emissions in control, company vehicles are periodically checked and repaired as and when required. All the transporters have been instructed to obtain PUC for their vehicles from the competent authority and submit to the concerned officer for verification
15	Drills should either be operated with dust extractors or should be equipped with water injection system.	Wet drilling is being done in the drill holes for dust suppression.
16	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration 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 is being exercised.
17	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	There is no proposal for production enhancement.
18	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	There is no effluent from mine, hence ETP has not been installed. The sewage water from domestic uses is being collected through individual Septic Tank and Soak

		Pits.
19	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Indian Python, <i>Presbytis phayrei</i> , <i>Melurus ursinus</i> etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	Action plan for conservation of flora and fauna spotted in the study area was prepared after due consultation with the local DFO and a copy of the same has already been submitted to the DFO for his comments, any suggestion and modification. On receipt of the same after vetting of State Forest Department, the action plan will be submitted to the MoEF
20	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	Final Mine Closure Plan of surrendered (part) area duly approved by Indian Bureau of Mines. Final mine closure plan along with details of corpus fund will be submitted to MoEF in due time.

GENERAL CONDITIONS

Sl No	Conditions	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest	Being adhered to.
2	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 2014-15 is Annexed
3	Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Monitoring locations have been fixed after due consultation of SPCB and regular monitoring is being carried out. Monitoring Reports is enclosed as Annexure

4	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Monitoring locations have been fixed after due consultation of SPCB. Monitoring Reports is enclosed as Annexure
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Two nos. of water tanker 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. Water spraying at loading, unloading, etc is also being done manually.
6	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs.	Noise monitoring is being done regularly at various locations of the work zone area. Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and ear muffs.
7	Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st 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 and accordingly the O&M department is taking its due care.
8	Personnel working in dusty areas should wear protective respiratory devices and they should also 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.
9	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
10	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final	Not applicable. The mine is running since 1976.

	approval of the project by the concerned authorities and the date of start of land development work.	
11	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 Bhubneshwar.	Statement of budgetary provision and actual expenses for the year 2014-15 for environmental protection measure is enclosed. Separate funds earmarked for environmental protection measures.
12	The Regional Office of this Ministry located at Bhubneshwar 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.
13	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Officer, Bhubaneshwar, Central Pollution Control Board and State Pollution Control Board.	Duly submitted.
14	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Complied.
15	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.	Displayed.
16	The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days 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 http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Complied. Copies, of the advertisement made in the local newspapers, have already been submitted to the Regional Office.



Date: 10.11.14

OFFICE ORDER

In connection with the earlier office order dated 30.10.2013 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, AGM (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. Biplab Mukherjee (Asst Manager- Geology)

By order


Bijesh Kumar Jha
Joint President (Mines)

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

PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-14 TO MAR-15

Name of Mines	Mining lease area (Ha)	Mined Out area (in Acres)	Backfilled area (in Acres)	Production (in MT)	Overburden Removal (in Cub.M.)
Shrengdag Bauxite Mines	155.81	16.19	14.33	255,035.00	492,188.00
Gurdari Bauxite Mines	584.19	17.20	35.48	323,655.00	790,462.00
Jalim & Sanai	12.14	1.68	1.48	43,675.00	20,400.00
Serangdag	140.06	2.00	0.50	31,650.00	18,956.06
Pakhar Buxite Mines	115.13	5.32	5.87	283,210.00	438,667.43
Pakhar Buxite Mines	8.09	-	-	-	-
Pakhar Buxite Mines	38.95	-	-	-	-
Kujam-I	80.87	7.76	7.51	149,360.00	200,998.43
Kujam-II	157.38	14.85	13.24	149,685.00	369,386.19
Amtipani	190.95	10.90	13.20	149,515.00	300,401.63
Chiro-Kukud	152.57	6.03	5.21	75,631.00	87,664.51
Orsa Bauxite Mines	196.36	-	-	-	-
Hisri New	14.55	1.29	0.65	54,529.00	9,471.00
Bagru	75.41	-	-	-	-
Bhusar	65.31	0.94	1.50	82,032.00	82,626.00
Minerals & Minerals Limited					
Pakhar Buxite Mines	109.507	5.86	6.48	277,855.00	334,282.84
Pakhar Buxite Mines	15.58	0.30	0.20	31,175.00	98,966.29

Monitored water level (FY 2014-15)

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	Inside ML	Outside ML	Inside ML	Outside ML
			Fig in meter											
Bagru	905	Open Well		21.72			24.15					27.23		29.23
	910	Open Well		24.30			24.55					26.80		27.15
	915	Open Well		29.40			28.44					30.15		31.25
	903	Open Well		22.85			33.12					35.25		35.89
	909	Open Well		17.55			28.75					29.20		30.28
Pakhar	1000	Open Well		24.90			22.66					24.50		25.9
	1083	Hand Pump	35.35			31.65				34.34			35.49	
	1027	Open Well		25.85			28.35					30.50		31.45
Shrengdag	1094	Hand Pump	41.75			39.54				42.13			42.56	
	1081	Hand Pump	39.65			31.30				41.30			41.31	
	1055	Hand Pump	33.05			27.55				35.35			35.35	
	1066	Hand Pump	27.75			26.25				29.10			30.25	
Gurdari	1045	Hand Pump	29.30			27.84				29.64			30.41	
	1061	Hand Pump	28.35			24.90				25.42			26.79	
	1059	Hand Pump	38.15			36.63				35.21			35.98	
	1075	Hand Pump	28.22			26.88				28.49			29.53	
	1075	Hand Pump	28.36			29.30				30.2			30.05	
Kujam	1040	Open Well		33.95			21.85					35.21		36.78
	1041	Open Well		33.65			24.82					36.54		39.52
	1064	Hand Pump	31.58			28.65				35.91			42.12	
Chiro Kukud	1052	Hand Pump					21.12					24.13		23.54
	1148	Hand Pump	33.45			28.40				34.12			37.26	
	1151	Hand Pump	37.60			31.80				36.62			36.21	
	1084	Hand Pump	34.35			36.86				35.69			39.29	

Bahar

ADITYA BIRLA



BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2014-15

The composite cost during the year 2014-15 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).

SI No	Description	Budget (in Lakh Rupees) FY 2014-15	Actual (in Lakh Rupees) FY 2014-2015
1	Pollution Control & Environment monitoring	5.50	8.58
2	Reclamation/ Back filing & Rehabilitation	42.50	98.51
3	Green belt & Plantation	60.03	98.87
4	Rural Development	85.29	282.62

**Part of OB removed cost.


Convener

Environment Management Cell
Hindalco Industries Limited

HINDALCO INDUSTRIES LIMITED

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Regd. Office

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Tel. +91 22 66626666

Website www.hindalco.com

Email hindalco@adityabirla.com

Corporate Identity No. L27020MH1958PLC011238



Eco Ventures Pvt. Ltd.

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Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

SHERENDAG PLATEAU- ENVIRONMENTAL MONITORING REPORT

DECEMBER 2014

Vijay Pandey
SENIOR EXECUTIVE



Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:Environmental Monitoring report

December 2014

Report no: DEC018/2014-15	Date: 12 th January, 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: 27.12.2014	
Registered: 27.12.2014	
Marks on Sample: Location: Sherengdag Plateau- Sherengdag A Pit Quarry No 1	
Sample collected on: 26.12.2014	
Test Start/End Date: 29.12.2014/30.12.2014	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag A Pit Quarry No 1					
PARAMETERS		UNIT	LIMIT	METHOD	30/12/2014
Sulphur Dioxide	SO ₂	µg/m ³	80	IS:5182 (Part-2):2001 (Reaff:2006)	52.65
Nitrogen Dioxide	NO ₂	µg/m ³	80	IS:5182(Part-6):1975 (Reaff:2004)	50.8
Particulate Matter (size less than 10 µm)	PM ₁₀	µg/m ³	100	IS:5182 (Part 23)	62.3
Particulate Matter (size less than 2.5 µm)	PM _{2.5}	µg/m ³	60	USEPA CFR(40) Appendix-L	40.5
Carbon Monoxide	CO	mg/m ³	2	EPA 600/P-99/001F	0.51

Vijay Pandey
SENIOR EXECUTIVE



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December 2014

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Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Received: 27.12.2014	
Registered: 27.12.2014	
Marks on Sample: Location: Sherengdag Plateau- Sherengdag Village-1	
Sample collected on: 26.12.2014	
Test Start/End Date: 29.12.2014/30.12.2014	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag Village-1

PARAMETERS	UNIT	LIMIT	METHOD	30/12/2014
Sulphur Dioxide	SO ₂ µg/m ³	80	IS:5182 (Part-2):2001 (Reaff:2006)	48.7
Nitrogen Dioxide	NO ₂ µg/m ³	80	IS:5182(Part-6):1975 (Reaff:2004)	51.25
Particulate Matter (size less than 10 µm)	PM ₁₀ µg/m ³	100	IS:5182 (Part 23)	54.8
Particulate Matter (size less than 2.5 µm)	PM _{2.5} µg/m ³	60	USEPA CFR(40) Appendix-L	36.1
Carbon Monoxide	CO mg/m ³	2	EPA 600/P-99/001F	0.59

Vijay Pandey

SENIOR EXECUTIVE



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December 2014

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Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Received: 27.12.2014	
Registered: 27.12.2014	
Marks on Sample: Location: Sherengdag Plateau- Sherengdag B Pit	
Sample collected on: 26.12.2014	
Test Start/End Date: 29.12.2014/30.12.2014	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag B Pit

PARAMETERS	UNIT	LIMIT	METHOD	30/12/2014
Sulphur Dioxide	SO ₂ µg/m ³	80	IS:5182 (Part-2):2001 (Reaff:2006)	50.2
Nitrogen Dioxide	NO ₂ µg/m ³	80	IS:5182(Part-6):1975 (Reaff:2004)	53.6
Particulate Matter (size less than 10 µm)	PM ₁₀ µg/m ³	100	IS:5182 (Part 23)	49.9
Particulate Matter (size less than 2.5 µm)	PM _{2.5} µg/m ³	60	USEPA CFR(40) Appendix-L	42.1
Carbon Monoxide	CO mg/m ³	2	EPA 600/P-99/001F	0.46

Vijay Pandey
SENIOR EXECUTIVE



Mahabal Enviro Engineers Pvt. Ltd.

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Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Received: 27.12.2014	
Registered: 27.12.2014	
Marks on Sample: Location: Sherengdag Plateau- Jalim & Sanai Pit	
Sample collected on: 26.12.2014	
Test Start/End Date: 29.12.2014/30.12.2014	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Jalim & Sanai Pit

PARAMETERS	UNIT	LIMIT	METHOD	30/12/2014
Sulphur Dioxide	SO ₂ µg/m ³	80	IS:5182 (Part-2):2001 (Reaff:2006)	52.3
Nitrogen Dioxide	NO ₂ µg/m ³	80	IS:5182(Part-6):1975 (Reaff:2004)	52.1
Particulate Matter (size less than 10 µm)	PM ₁₀ µg/m ³	100	IS:5182 (Part 23)	43.6
Particulate Matter (size less than 2.5 µm)	PM _{2.5} µg/m ³	60	USEPA CFR(40) Appendix-L	37.6
Carbon Monoxide	CO mg/m ³	2	EPA 600/P-99/001F	0.38

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Mahabal Enviro Engineers Pvt. Ltd.

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SHERENDAG PLATEAU- ENVIRONMENTAL MONITORING REPORT

MARCH 2015

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Hindalco Industries:Environmental Monitoring report

March 2015

Report no: APR050/2015-16	Date: 13 th April, 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	
Marks on Sample: Location: Spring water near Sherengdag	
Sample collected by: Mahabal Enviro Engineers Pvt Limited	
Sample collected on: 26.02.2015	
Quantity: 5 L X 2 No. PVC Can	
Received:10.03.2015	
Registered: 10.03.2015	
Test Start/End Date: 26.03.2015/28.03.2015	

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	0.4	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5.	pH	-	6.7	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-CI G, 4-69
7.	Total Dissolved Solids	mg/l	92	500 Max	IS 3025 (Part 16):1984 Reaffirmed 2006
8.	Monochloramines	mg/l	<0.05	-	APHA 22nd Ed. 2012, 4500-CIG, 4-69
9.	Dichloramines	mg/l	<0.05	-	APHA 22nd Ed. 2012, 4500-CIG, 4-69
10.	Total Hardness (as CaCO ₃)	mg/l	58	200 Max	APHA 22nd Ed. 2012, 2340-C, 2-44,45
11.	Alkalinity Total (as CaCO ₃)	mg/l	70	200 Max	IS 3025 (Part 23):1986 Reaffirmed 2009
12.	Chloride (as Cl)	mg/l	8.1	250 Max	APHA 22nd Ed. 2012, 4500-Cl-B, 4-72
13.	Sulphate (as SO ₄)	mg/l	5.0	200 Max	APHA 22nd Ed. 2012, 4500-SO4-E, 4-190



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Hindalco Industries: Environmental Monitoring report

March 2015

S.No	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14.	Nitrate (as NO ₃)	mg/l	1.0	45 Max	APHA 22nd Ed. 2012, 4500-NO ₃ -E, 4-125
15.	Fluoride (as F)	mg/l	0.21	1 Max	APHA 22nd Ed. 2012, 4500-FB& D, 4-84, 4-87
16.	Boron (as B)	mg/l	0.19	0.5 Max	APHA 22nd Ed. 2012, 4500-BB, 4-25
17.	Calcium(as Ca)	mg/l	17.2	75 Max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18.	Magnesium (as Mg)	mg/l	3.0	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 NH ₃ -F, 4-115
20.	Iron (as Fe)	mg/l	0.15	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	0.08	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	0.02	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 ₆ H ₅ OH)	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

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Hindalco Industries: Environmental Monitoring report

March 2015

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.

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Hindalco Industries: Environmental Monitoring report

March 2015

Report no: APR051/2015-16	Date: 13 th April, 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: Sherengdag Plateau- Sherengdag A Pit Quarry No 1	
Sample collected on: 26.02.2015	
Received: 10.03.2015	
Registered: 10.03.2015	
Test Start/End Date: 26.03.2015/28.03.2015	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag A Pit Quarry No 1					
PARAMETERS		UNIT	LIMIT	METHOD	26/02/2015
Sulphur Dioxide	SO ₂	µg/m ³	80	IS:5182 (Part-2):2001 (Reaff:2006)	53.6
Nitrogen Dioxide	NO ₂	µg/m ³	80	IS:5182(Part-6):1975 (Reaff:2004)	51.1
Particulate Matter (size less than 10 µm)	PM ₁₀	µg/m ³	100	IS:5182 (Part 23)	59.2
Particulate Matter (size less than 2.5 µm)	PM _{2.5}	µg/m ³	60	USEPA CFR(40) Appendix-L	41.2
Carbon Monoxide	CO	mg/m ³	2	EPA 600/P-99/001F	0.57

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Hindalco Industries:Environmental Monitoring report

March 2015

Report no: APR052/2015-16	Date: 13 th April, 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: Sherengdag Plateau- Sherengdag Village-1	
Sample collected on: 26.02.2015	
Received: 10.03.2015	
Registered: 10.03.2015	
Test Start/End Date: 26.03.2015/28.03.2015	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag Village-1					
PARAMETERS		UNIT	LIMIT	METHOD	26/02/2015
Sulphur Dioxide	SO ₂	µg/m ³	80	IS:5182 (Part-2):2001 (Reaff:2006)	51.4
Nitrogen Dioxide	NO ₂	µg/m ³	80	IS:5182(Part-6):1975 (Reaff:2004)	53.7
Particulate Matter (size less than 10 µm)	PM ₁₀	µg/m ³	100	IS:5182 (Part 23)	58.2
Particulate Matter (size less than 2.5 µm)	PM _{2.5}	µg/m ³	60	USEPA CFR(40) Appendix-L	40.9
Carbon Monoxide	CO	mg/m ³	2	EPA 600/P-99/001F	0.64

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Hindalco Industries: Environmental Monitoring report

March 2015

Report no: APR053/2015-16	Date: 13 th April, 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: Sherengdag Plateau- Sherengdag B Pit	
Sample collected on: 26.02.2015	
Received: 10.03.2015	
Registered: 10.03.2015	
Test Start/End Date: 26.03.2015/28.03.2015	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Sherengdag B Pit					
PARAMETERS		UNIT	LIMIT	METHOD	26/02/2015
Sulphur Dioxide	SO ₂	µg/m ³	80	IS:5182 (Part-2):2001 (Reaff:2006)	52.4
Nitrogen Dioxide	NO ₂	µg/m ³	80	IS:5182(Part-6):1975 (Reaff:2004)	57.1
Particulate Matter (size less than 10 µm)	PM ₁₀	µg/m ³	100	IS:5182 (Part 23)	51.4
Particulate Matter (size less than 2.5 µm)	PM _{2.5}	µg/m ³	60	USEPA CFR(40) Appendix-L	42.7
Carbon Monoxide	CO	mg/m ³	2	EPA 600/P-99/001F	0.53

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March 2015

Report no: APR054/2015-16	Date: 13 th April, 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: Sherengdag Plateau- Jalim & Sanai Pit	
Sample collected on: 26.02.2015	
Received: 10.03.2015	
Registered: 10.03.2015	
Test Start/End Date: 26.03.2015/28.03.2015	

LOCATION / IDENTIFICATION: Sherengdag Plateau- Jalim & Sanai Pit					
PARAMETERS		UNIT	LIMIT	METHOD	26/02/2015
Sulphur Dioxide	SO ₂	µg/m ³	80	IS:5182 (Part-2):2001 (Reaff:2006)	53.5
Nitrogen Dioxide	NO ₂	µg/m ³	80	IS:5182(Part-6):1975 (Reaff:2004)	54.6
Particulate Matter (size less than 10 µm)	PM ₁₀	µg/m ³	100	IS:5182 (Part 23)	49.4
Particulate Matter (size less than 2.5 µm)	PM _{2.5}	µg/m ³	60	USEPA CFR(40) Appendix-L	41.1
Carbon Monoxide	CO	mg/m ³	2	EPA 600/P-99/001F	0.38

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Hindalco Industries: Environmental Monitoring report

March 2015

Report no: APR055/2015-16	Date: 13 th April, 2015
Sample Description: Measurement of Noise	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Description: Measurement of Noise Level.	
Sampling Method: Instrumental, Using Sound level Meter	
Sampling Done by: Mahabal Enviro Engineers Pvt. Ltd.	
Data Collection Date: 26.02.2015	
Analyse Date: 28.03.2015	

Location / Identification	Unit	Limit (day)	Result Average of 24 continuous	Limit (night)	Result Average of 24 continuous	Dates
Sherendag Mining Area	dB(A) Leq	75	64.8	70	52.9	26/02/2015

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Hindalco Industries: Environmental Monitoring report

March 2015

Report no: APR056/2015-16	Date: 13 th April, 2015
Sample Description: Measurement of Noise: Spot Noise	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Location: Sherengdag Mine Pit	
Sample Description: Measurement of Noise Level.	
Sampling Method: Instrumental, Using Sound level Meter	
Sampling Done by: Mahabal Enviro Engineers Pvt. Ltd.	
Data Collection Date: 26.02.2015	
Analyse Date: 28.03.2015	

Location / Identification	Unit	Limit (day)	Result	Dates
POCKLAN	dB(A) L_{eq}	75	67.9	26/02/2015
COMPRESSOR	dB(A) L_{eq}	75	72.9	26/02/2015
WAGAN DRILL	dB(A) L_{eq}	75	73.7	26/02/2015

Note : (i) The value is the Leq. of twenty readings taken in location (Day time).

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