



Ref. No.: HIL/EC/GP-IV/5/2018/05-47

Date: 28.05.2018

Shri Kanwarjeet Singh (IFS)

Additional Principal Chief Conservator of Forest,
Ministry of Environment Forests & Climate Change (MoEF)
Regional Office, (West Central Zone)
Ground Floor, East Wing
New Secretary Building,
Civil Lines, Nagpur -440001

Sub.: Six Monthly Environment Clearance Compliance Status Report for Gare Palma - IV/5 Coal Mine along with Environmental Monitoring reports of Ambient Air, Water, and Noise etc.

Ref. Environment Clearance No. J-11015/ 8/1998-IA.II (M) Dated: - 16th April 2015.

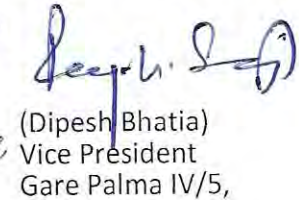
Sir,

With reference to subject matter on referred letter, we are submitting the six monthly Environmental Clearance Compliance status report along with environmental monitoring reports for Ambient Air, Water, Noise, during the period of **October 2017 to March 2018**.

This is for your kind information please.

Thanking you,

Yours faithfully,
For Hindalco Industries Limited,


(Dipesh Bhatia)
Vice President
Gare Palma IV/5,

Encl. : **Six Monthly Environmental Clearance Compliance Report as Annexure-A.**

CC To:

1. Zonal Officer, Central Pollution Control Board, Sahkar Bhawan, 3rd Floor, North T.T. Nagar, Bhopal – 462 003 (M. P.)
2. The Member Secretary, Chhattisgarh Environment Conservation Board, Paryavas Bhavan, Naya Raipur Chhattisgarh.
3. Regional Officer, Chhattisgarh Environment Conservation Board (CECB), T.V. Tower Road, Raigarh (C.G.)

Hindalco Industries Limited

Gare Palma Mines (IV / 4 & IV / 5), Vill & PO: Milupara, Tehsil: Tamnar, Dist: Raigarh-496107, Chhattisgarh, T: +91 7762 228212

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Corporate Identity No. L27020MH1958PLC011238.



Compliance Report on conditions of Environment Clearance for Gare-Palma IV/5 coal mining project Transfer by Ministry of Environment & Forests vide letter no. J-11015/ 8/1998-IA.II (M) Dated: - 16th April 2015 for Under Ground Mining 1.0 Million Ton/Annum Production Capacity

SI No	Conditions	Status
1	Any change in scope of work will attract the provisions of Environment Protection Act (EPA), 1986 and Environment Impact Assessment Notification, 2006 in conjunction with the subsequent amendments/circulars.	Noted please.
2	All conditions stipulated in the EC letter No.J-11015/8/1998-IA.II (M) dated 31 st August, 2000 shall remain unchanged.	Noted please.
3	The successful bidder shall be liable, if any, for any act of violation of the EPA 1986/EIA Notification 2006/subsequent amendments and circulars which it has inherited during the transfer.	Noted please.
4	Successful bidder shall be liable for compliance of all court directions, if any.	Noted please.

Compliance Report on conditions of Environment Clearance for Gare-Palma IV/5 coal mining project given by Ministry of Environment & Forests vide letter no. J-11015/ 8/1998-IA.II (M) Dated: - 31st August 2000 for Under Ground Mining 1.0 Million Ton/Annum Production Capacity

SI no	Specific Conditions	Status
i	Regular Monitoring of subsidence movement on the surface over working areas and impact on water bodies/ vegetation/ structures/ surroundings should be continued till movement ceases completely. In case of observation of any high rates of subsidence movement, appropriate measures should be taken to avoid loss of life and materials. Cracks should be effectively plugged with ballast and clayey soil/ suitable material.	The method of mining at Gare Palma IV/5 coal mine is Bord & Pillar. Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural pattern, water bodies, vegetation, structure, roads and surroundings is being done internal expert. During the observation no subsidence movement has been observed. In future, if any, appropriate effective corrective measures will be taken to avoid loss of life and material. Cracks will be effectively plugged with ballast and clayey soil/suitable material if observed.
ii	Adequate underground barrier should be left in consultation with the Director General of Mines & Safety (DGMS). Depillaring should also be carried out after taking approval from DGMS.	Adequate underground barrier as required are being maintained between the working face and the river in consultation with DGMS and also at other places whenever required. Depillaring will be carried out after taking prior approval of the DGMS.
iii	Garland drains should be constructed around the waste rock and ore stockpiles to prevent surface run-off.	Garland drain have been constructed around the coal stock yard to prevent the surface run-off.
iv	A Green Belt of adequate width should be raised by planting the local species along the mine	Planation in mines area is being done. At present around 37000 nos. of trees have been planted

Gare Palma IV/5 Coal Mine, Milupara



	boundary, Waste rock dumps, ore stockpile, ventilation fan road and selected open areas in consultation with local DFO/ Agriculture Department. Density of tree should be at least 2500 plants per ha.	including the Mine boundary and other places. Trees species planted are Gulmohar, Ashoka Aam, Imli, Shisam, Eucalyptus, Neem, Jamun, Accassia spp. etc. in consultation with DFO. Plantation has been carried out @2500 per hectare and will also be ensure in future. Plantation details enclosed as Annexure –I.
v	Compensation to the 14 land losers from whom private land will be acquired should be paid as per the state government norms.	Compensation to the 14 land losers has been paid by the company.
vi	The project authority should conduct a subsidence estimation study and submit the report to the Ministry within six months.	Subsidence estimation study report has been submitted to the Ministry by Prior allottee.
vii	The project proponent will construct "Check dams "at the sites proposed by the State Ground water Department in their report. While undertaking the proposed mining, the construction of the check dams should be carried out in with Ground water survey department, Government of MP (presently Chhattisgarh) and should have necessary financial provision and technical expertise. This should be communicated to the MoEF and CGWB.	As per requirement the check dams at the site will be constructed in consultation with state forest department and Ground water survey department, Government of Chhattisgarh and will be communicated to MOEF& CC and CGWB.
viii	Regular monitoring of the Ground water level and quality should be carried out by establishing a network of existing wells and constructing new Piezometer during the mining operations. The interval of monitoring should be four times a year- Pre monsoon (April to May), Monsoon (August), Post Monsoon (November) and winter (January). The data thus collected may be sent regularly to MoEF and CGWB for information.	Regular monitoring of groundwater level and quality is being carried out by establishing a network of existing wells. Report on ground water level monitoring and quality is enclosed as Annexure-II.
ix	Digital processing of the entire lease using remote sensing technique should be regularly once in three years for monitoring land use pattern and report submitted to MoEF and its regional officer.	Study report on digital processing of entire mine lease area has been submitted in last six monthly report.
x	A detailed mine decommissioning plan should be submitted to the MoEF, five years in advance for approval.	Detailed mine decommissioning plan will be submitted to the Ministry of Environment and forests, five years in advance for approval.
B	General Conditions	
i	No change in mining technology and scope of working should be made without prior approval of the MoEF.	Agreed and will be complied accordingly.
ii	No change in the calendar plan including excavation quantum of mineral coal and waste should be made.	Agreed and will be complied accordingly.
iii	Four ambient air quality stations should be established in the core zone as well as the buffer zone for RPM, SPM, SO ₂ , NO _x & CO Monitoring. Location of stations should be decided based on	Four ambient air quality monitoring stations have been established in consultation with the State Pollution Control Board and regular monitoring is

Gare Palma IV/5 Coal Mine, Milupara



	the meteorology data, topographical features and environmental and ecologically sensitive targets in consultation with the State Pollution Control Board.	being carried out. Monitoring Report is enclosed as Annexure -III.
iv	Data of ambient air quality (RPM, SPM, SO ₂ , NO _x & CO) should be regularly submitted to the Ministry including its Regional Officer at Bhopal (Currently Raipur) and the State Pollution Control Board & Central Pollution Control Board (Currently Raipur).	Ambient air quality monitoring report is enclosed as Annexure -III.
v	Drill should be wet operated.	Wet drilling is under practice.
vi	Fugitive dust emission from all the sources should be controlled, regularly monitored and the data recorded properly. Water spraying arrangement on haul roads, Wagons, loading dump trucks (loading and unloading) should be provided and properly maintained.	Fixed type water sprinkler has been provided at all along the roads, and loading points etc. to control the fugitive dust emission.
vii	Adequate measures should be taken for control of noise level below 80db in the work environment. Workers engaged in blasting and drilling operation, operations of HEMM etc. should be provided with ear plugs/ muffs	Ear muffs/plugs has been provided to the all workers engaged in blasting and drilling operations, operations of HEMM etc. The Noise monitoring report is enclosed as Annexure-IV.
viii	Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform on the standards prescribed under GSR 422 dated 19.05.1993 and 31.12.1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents in to the pond.	06 nos. Settling ponds with two numbers of Lamella clarifier (ETP-2 x200 m ³ per hour) plant has been installed for treatment of mine water. Report on water quality is enclosed as Annexure-V
ix	Acid mine water if any has to be treated and disposed off after conforming to the standards prescribed by the competent authority.	There is no acid mine water. Lamella clarifier (ETP) plant has been installed for treatment of mine water. Report on water quality is enclosed as Annexure-V.
x	Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board	Environmental laboratory has been established with adequate number and type of pollution monitoring and analysis equipment in consultation with the state pollution control Board. However we have engaged NABL laboratory for environmental quality monitoring of the mines area.
xi	Personnel working in dust area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance of the workers should be undertaken periodically to observe any contractions due to exposure to coal dust and take corrective measures if needed.	Personnel working in dusty areas are wearing protective respiratory devices and they have also been provided with adequate training and information on safety and health aspect. Occupational health surveillance programme of the workers is being undertaken periodically to observe any contraction due to exposure to coal dust and corrective measures will be taken accordingly.
xii	A separate environmental management cell with suitable qualified personnel should be set up under	Environmental Management cell has been established. Copy enclosed as Annexure-VI.

Gare Palma IV/5 Coal Mine, Milupara



	the control of a senior executive who will report directly to the Head of the Organization.	
xiii	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 Ministry.	The funds earmarked for environmental protection measures has been kept in separate account and not been diverted for other purposes. Annexure-VII.
xiv	The Regional Officer of the ministry located at Bhopal (currently Raipur) shall monitor compliance of the stipulated conditions. The project authorities should extent full co-operation to the officer (s) of the Regional Officer by furnishing requisite data information / monitoring reports	Agreed and cooperation will be extended on time to time.
xv	A copy of the clearance letter will be marked to concerned Panchayat/ local NGO if any from whom suggestion / representation has been received while processing the proposal	Complied by Prior Allottee.
xvi	State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's Office/ Tehsildar's office for 30 days	Complied by Prior Allottee.
xvii	The project authorities should advertise at least two local newspapers widely circulated around the project one of which shall be in vernacular language of the locality concerned informing that the project has been accorded environmental clearance and the copy of the clearance letter is available with the State Pollution Control Board and may also be seen at web site of the MoEF at http://envfor.nic.in	Complied by Prior Allottee.



Annexure-I

Year wise Plantation Detail for Gare-Palma IV/5 Coal Mines

(Milupara Underground coal mine)

Sl. No.	Year	Plantation area in Acre	Numbers of saplings planted. (Approx.)	Nos. of saplings
1	Upto 2015	Coal mine lease area.	30000	<i>Neem, Mahua, , Jamun, Mango, Guava, Imli, Drumstick, Teak, Shivan / Ghamar, Sisham, Sirus, Bamboo, Peltafarm, Nilgiri etc.</i>
2	2016	Coal mine lease area	2000	
3	2017	Coal mine lease area	5000	
Total			37000	



Annexure-II

Ground water level monitoring in and around the Coal Mine area
(October 2017)

Sr.No.	Location	Types of structure	Water level (MBGL) October 17
1	Bankheta (Near HIL Office)	Borewell	9.0
2	Banjikhhol (Near Office)	Dugwell	3.45
3	Milupara (PHC-HIL)	Dugwell	3.50
4	Urba (Near Intermediate school)	Dugwell	4.80
5	Sakta (Near Primary School)	Dugwell	2.20
6	Sidarpara (Primary School compound)	Dugwell	7.0
7.	Beljor Village	Dugwell	5.5

Gare Palma IV/5 Coal Mine, Milupara



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Water Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2223		Date: 28.11.2017	
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	15.11.2017
Sample Received On	16.11.2017		
Start of Analysis	16.11.2017	End of Analysis	21.11.2017
Monitoring for	Ground Water		
Sampling Location	Borewell Water Village - Kondkel		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	Acceptable Limit for Drinking Water (IS 10500:2012)	Method Reference
1	Turbidity	NTU	5.96	1.0 (max)	APHA 22 nd Ed.2012,2130-B,2-13
2	pH	-	6.77	6.5 To 8.5	APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92
3	Electrical Conductivity	µS/cm	302	--	IS 3025(part-14):1984, RA 2013
4	Residual Chlorine	mg/Lit	N.D.	0.2 (max)	APHA 22 nd Ed.2012,4500-Cl-G, 4 – 69
5	Total Solid	mg/Lit	189	--	APHA 22 nd Ed.2012,2540-B, 2-64
6	Total Dissolved Solids	mg/Lit	181	500 (max)	IS 3025(part-16):1984, RA 2006
7	Total Suspended Solids	mg/Lit	8	--	APHA 22 nd Ed.2012,2540-D, 2-66
8	Alkalinity Total (as CaCO ₃)	mg/Lit	80.0	200 (max)	IS 3025(part-23):1986, RA 2003
9	Total Hardness (as CaCO ₃)	mg/Lit	92.0	200 (max)	APHA 22 nd Ed.2012,2340-C, 2-44,45
10	Calcium Hardness (as CaCO ₃)	mg/Lit	60.0	--	APHA 22 nd Ed.2012,3500-Ca-B, 3-67
11	Magnesium Hardness (as CaCO ₃)	mg/Lit	32.0	--	APHA 22 nd Ed.2012,3500-Mg-B, 3-84
12	Calcium (as Ca)	mg/Lit	24.0	75 (max)	APHA 22 nd Ed.2012,3500-Ca-B, 3-67
13	Magnesium (as Mg)	mg/Lit	5.8	30 (max)	APHA 22 nd Ed.2012,3500-Mg-B, 3-84
14	Chloride (as Cl)	mg/Lit	28.7	250 (max)	APHA 22 nd Ed.2012,4500-Cl-B, 4-72
15	Sulphate (as SO ₄)	mg/Lit	9.6	200 (max)	APHA 22 nd Ed.2012,4500-SO ₄ -E, 4-190
16	Nitrate (as NO ₃)	mg/Lit	1.2	45 (max)	APHA 22 nd Ed.2012,4500-NO ₃ -B, 4-122



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Report No. 2223 Cont....

Sr. No.	Parameter	Unit	Result	Acceptable Limit for Drinking Water (IS 10500:2012)	Method Reference
17	Phosphate (as P)	mg/Lit	3.1	--	APHA 22 nd Ed.2012,4500-P-C, 4-153
18	Sodium (as Na)	mg/Lit	13.5	--	APHA 22 nd Ed.2012,3500-Na-B, 3-97
19	Potassium (as K)	mg/Lit	2.3	--	APHA 22 nd Ed.2012,3500-K-B, 3-87
20	Boron (as B)	mg/Lit	N.D.	0.5 (max)	APHA 22 nd Ed.2012,4500-B-B, 4-25
21	Iron (as Fe)	mg/Lit	0.05	0.3 (max)	APHA 22 nd Ed.2012,3111-B,3-18
22	Fluoride (as F)	mg/Lit	0.2	1.0 (max)	APHA 22 nd Ed.2012,4500-F-B & D, 4-84 & 87
23	Manganese (as Mn)	mg/Lit	0.19	0.1 (max)	APHA 22 nd Ed.2012,3111-B, 3-18
24	Lead (as Pb)	mg/Lit	N.D.	0.01 (max)	APHA 22 nd Ed.2012,3111-B, 3-18
25	Nickel (as Ni)	mg/Lit	N.D.	0.02 (Max)	APHA 22 nd Ed.2012,3500-Ni, 3-108
26	Zinc (as Zn)	mg/Lit	0.05	5.0 (max)	APHA 22 nd Ed.2012,3111-B, 3-18
27	Copper (as Cu)	mg/Lit	N.D.	0.05 (max)	APHA 22 nd Ed.2012,3111-B, 3-18
28	Cadmium (as Cd)	mg/Lit	N.D.	0.003 (Max)	APHA 22 nd Ed.2012,3500-Cd, 3-105
29	Mercury (as Hg)	mg/Lit	N.D.	0.001 (max)	APHA 22 nd Ed.2012,3112-B, 3-23
30	Arsenic (as As)	mg/Lit	N.D.	0.01 (max)	APHA 22 nd Ed.2012,3114-C, 3-38
31	Selenium (as Se)	mg/Lit	N.D.	0.1 (max)	APHA 22 nd Ed.2012,3114-C, 3-38
32	Chromium (as Cr)	mg/Lit	N.D.	0.001 (max)	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
33	Anionic Detergent (as MBAS)	mg/Lit	N.D.	0.02 (max)	APHA 22 nd Ed.2012,5540-C, 5-53
34	Phenolic Compound (as C ₆ H ₅ OH)	mg/Lit	N.D.	0.001 (max)	APHA 22 nd Ed.2012,5540-B & C, 5-47
35	Poly-nuclear Aromatic Hydrocarbon (PAH)	µg/Lit	N.D.	0.0001 (max)	APHA 22 nd Ed.2012,6440-6-93
36	Mineral Oil	mg/Lit	N.D.	0.05 (max)	IS 3025 (part-39) : 1991, RA 2003, Ed. 2.1
37	Oil & Grease	mg/Lit	N.D.	--	IS 3025 (Part 39):1991, RA 2003, Ed 2.1



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 Website : globalmining.in

Report No. 2223 Cont....

Sr. No.	Parameter	Unit	Result	Acceptable Limit for Drinking Water (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Coliforms	MPN/100 ML	N.D.	Shall not be detectable in any 100 ml sample	APHA 22 nd Ed.2012,9921-B & C, 9-66 & 69
Pesticides					
1	p,p DDT	µg/L	N.D.	1	US EPA 508-1995
2	o,p DDT	µg/L	N.D.	1	US EPA 508-1995
3	p,pDDE	µg/L	N.D.	1	US EPA 508-1995
4	p,p DDD	µg/L	N.D.	1	US EPA 508-1995
5	O,p DDD	µg/L	N.D.	1	US EPA 508-1995
6	Gamma-HCH (Lindane)	µg/L	N.D.	2	US EPA 508-1995
7	Alpha-HCH	µg/L	N.D.	0.01	US EPA 508-1995
8	Beta-HCH	µg/L	N.D.	0.04	US EPA 508-1995
9	Delta HCH	µg/L	N.D.	0.04	US EPA 508-1995
10	Alpha-Endosulfan	µg/L	N.D.	0.4	US EPA 508-1995
11	Beta-Endosulfan	µg/L	N.D.	0.4	US EPA 508-1995
12	Endosulfansulphate	µg/L	N.D.	0.4	US EPA 508-1995
13	Monocrotophos	µg/L	N.D.	1	US EPA 8141A-1994
14	Ethion	µg/L	N.D.	3	US EPA 8141A-1994
15	Chloropyrifos	µg/L	N.D.	30	US EPA 8141A-1994
16	Phorate	µg/L	N.D.	2	US EPA 8141A-1994
17	Phoratesulphoxide	µg/L	N.D.	-	US EPA 8141A-1994
18	Phoratesulphone	µg/L	N.D.	-	US EPA 8141A-1994
19	2,4-D	µg/L	N.D.	30	US EPA 515.1-1995
20	Alachlor	µg/L	N.D.	20	US EPA 508-1995
21	Atrazine	µg/L	N.D.	2	US EPA 532-2000
22	Methyl parathion	µg/L	N.D.	0.3	US EPA 8141A-1994
23	Methyl paraxone	µg/L	N.D.	-	US EPA 8141A-1994
24	Malathion	µg/L	N.D.	190	US EPA 8141A-1994
25	Malaoxon	µg/L	N.D.	-	US EPA 8141A-1994
26	Aldrin	µg/L	N.D.	0.03	US EPA 508-1995
27	Dieldrin	µg/L	N.D.	0.03	US EPA 508-1995
Remarks: N.D.- Not Detected					

For Global Environment & Mining Services

S. N. Gulhane
 Chief (Laboratory)



Note:

1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without written approval of the laboratory.



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Website : globalmining.in

Ambient Air Quality Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/1966			Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	26.10.2017
Sample Received On	28.10.2017		
Start of Analysis	28.10.2017	End of Analysis	01.11.2017
Monitoring for	Ambient Air Quality Monitoring		
Sampling Location	Office Area, Milupara		
Sampling Procedure	As per method reference		
Sample Quantity/Packing	Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No.		

Meteorological Data/ Environmental Conditions

Avg. Wind Velocity	Prominent Wind Direction	Relative Humidity (%)		Temperature (°C)	
		Max.	Min.	Max.	Min.
--	--	--	--	--	--
Location	Near Office	Duration of Sampling		24 Hours	
Parameter	Unit	Result	NAAQM Standard	Method Reference	
Particulate Matter size less than 10 microns (PM10)	µg/m ³	68	100	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I	
Particulate Matter size less than 2.5 microns (PM2.5)	µg/m ³	28	60	CPCB Guidelines Vol.-I	
Sulphur Dioxide (SO ₂)	µg/m ³	21	80	IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I	
Nitrogen Dioxide (NO ₂)	µg/m ³	26	80	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I	
Carbon Monoxide (CO)*	mg/m ³	2.1	4	IS 5182(Part 10):1999, RA 2003	
Arsenic as As	ng/m ³	N.D.	6	EPA Method IO-3.2	
Nickel as Ni	ng/m ³	N.D.	20	EPA Method IO-3.2	
Mercury as Hg	ng/m ³	N.D.	-	EPA Method IO-5	
Cadmium as Cd	ng/m ³	N.D.	-	EPA Method IO-3.2	
Chromium as Cr	ng/m ³	N.D.	-	EPA Method IO-3.2	
Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected					

For Global Environment & Mining Services

S. N. Gulhane
Chief (Laboratory)



Note:

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Ambient Air Quality Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/1967			Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order / Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	26.10.2017
Sample Received On	28.10.2017		
Start of Analysis	28.10.2017	End of Analysis	01.11.2017
Monitoring for	Ambient Air Quality Monitoring		
Sampling Location	ETP Area, Kondkel		
Sampling Procedure	As per method reference		
Sample Quantity/Packing	Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No.		

Meteorological Data/ Environmental Conditions

Avg. Wind Velocity	Prominent Wind Direction	Relative Humidity (%)		Temperature (°C)	
		Max.	Min.	Max.	Min.
--	--	--	--	--	--
Location	Near ETP	Duration of Sampling		24 Hours	
Parameter	Unit	Result	NAAQM Standard	Method Reference	
Particulate Matter size less than 10 microns (PM10)	µg/m ³	66	100	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I	
Particulate Matter size less than 2.5 microns (PM2.5)	µg/m ³	32	60	CPCB Guidelines Vol.-I	
Sulphur Dioxide (SO ₂)	µg/m ³	19	80	IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I	
Nitrogen Dioxide (NO ₂)	µg/m ³	23	80	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I	
Carbon Monoxide (CO)*	mg/m ³	2.3	4.0	IS 5182(Part 10):1999, RA 2003	
Arsenic as As	ng/m ³	N.D.	6	EPA Method IO-3.2	
Nickel as Ni	ng/m ³	N.D.	20	EPA Method IO-3.2	
Mercury as Hg	ng/m ³	N.D.	-	EPA Method IO-5	
Cadmium as Cd	ng/m ³	N.D.	-	EPA Method IO-3.2	
Chromium as Cr	ng/m ³	N.D.	-	EPA Method IO-3.2	
Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected					

For Global Environment & Mining Services

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Chief (Laboratory)



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Ambient Air Quality Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/1968			Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited , Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order / Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	27.10.2017
Sample Received On	29.10.2017		
Start of Analysis	29.10.2017	End of Analysis	01.11.2017
Monitoring for	Ambient Air Quality Monitoring		
Sampling Location	HIL Staff Quarter, Milupara		
Sampling Procedure	As per method reference		
Sample Quantity/Packing	Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No.		

Meteorological Data/ Environmental Conditions					
Avg. Wind Velocity	Prominent Wind Direction	Relative Humidity (%)		Temperature (°C)	
		Max.	Min.	Max.	Min.
--	--	--	--	--	--
Location	HIL Staff Quarter	Duration of Sampling		24 Hours	
Parameter	Unit	Result	NAAQM Standard	Method Reference	
Particulate Matter size less than 10 microns (PM10)	µg/m ³	62	100	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I	
Particulate Matter size less than 2.5 microns (PM2.5)	µg/m ³	20	60	CPCB Guidelines Vol.-I	
Sulphur Dioxide (SO ₂)	µg/m ³	14	80	IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I	
Nitrogen Dioxide (NO ₂)	µg/m ³	18	80	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I	
Carbon Monoxide (CO)*	mg/m ³	1.8	4.0	IS 5182(Part 10):1999, RA 2003	
Arsenic as As	ng/m ³	N.D.	6	EPA Method IO-3.2	
Nickel as Ni	ng/m ³	N.D.	20	EPA Method IO-3.2	
Mercury as Hg	ng/m ³	N.D.	-	EPA Method IO-5	
Cadmium as Cd	ng/m ³	N.D.	-	EPA Method IO-3.2	
Chromium as Cr	ng/m ³	N.D.	-	EPA Method IO-3.2	
Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected					

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Ambient Air Quality Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/1969			Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order / Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	27.10.2017
Sample Received On	29.10.2017		
Start of Analysis	29.10.2017	End of Analysis	01.11.2017
Monitoring for	Ambient Air Quality Monitoring		
Sampling Location	HIL Colony, Kondkel		
Sampling Procedure	As per method reference		
Sample Quantity/Packing	Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No.		

Meteorological Data/ Environmental Conditions

Avg. Wind Velocity	Prominent Wind Direction	Relative Humidity (%)		Temperature (°C)	
		Max.	Min.	Max.	Min.
--	--	--	--	--	--
Location	HIL Colony	Duration of Sampling		24 Hours	
Parameter	Unit	Result	NAAQM Standard	Method Reference	
Particulate Matter size less than 10 microns (PM10)	µg/m ³		100	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I	
Particulate Matter size less than 2.5 microns (PM2.5)	µg/m ³	34	60	CPCB Guidelines Vol.-I	
Sulphur Dioxide (SO ₂)	µg/m ³	16	80	IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I	
Nitrogen Dioxide (NO ₂)	µg/m ³	20	80	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I	
Carbon Monoxide (CO)*	mg/m ³	2.0	4.0	IS 5182(Part 10):1999, RA 2003	
Arsenic as As	ng/m ³	N.D.	6	EPA Method IO-3.2	
Nickel as Ni	ng/m ³	N.D.	20	EPA Method IO-3.2	
Mercury as Hg	ng/m ³	N.D.	-	EPA Method IO-5	
Cadmium as Cd	ng/m ³	N.D.	-	EPA Method IO-3.2	
Chromium as Cr	ng/m ³	N.D.	-	EPA Method IO-3.2	
Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected					

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Ambient Air Quality Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2942			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block-Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	23.01.2018
Sample Received On	25.01.2018		
Start of Analysis	25.01.2018	End of Analysis	28.01.2018
Monitoring for	Ambient Air Quality Monitoring		
Sampling Location	Office Area, Milupara		
Sampling Procedure	As per method reference		
Sample Quantity/Packing	Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No.		

Meteorological Data/ Environmental Conditions					
Avg. Wind Velocity	Prominent Wind Direction	Relative Humidity (%)		Temperature (°C)	
		Max.	Min.	Max.	Min.
--	--	--	--	--	--
Location	Near Office	Duration of Sampling		24 Hours	
Parameter	Unit	Result	NAAQM Standard	Method Reference	
Particulate Matter size less than 10 microns (PM10)	µg/m ³	75	100	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I	
Particulate Matter size less than 2.5 microns (PM2.5)	µg/m ³	32	60	Instrument Manufacturer Operating Instructions.	
Sulphur Dioxide (SO ₂)	µg/m ³	24	80	IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I	
Nitrogen Dioxide (NO ₂)	µg/m ³	36	80	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I	
Carbon Monoxide (CO)*	mg/m ³	2.2	4.0	IS 5182(Part 10):1999, RA 2003	
Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected					

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Ambient Air Quality Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2943			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block-Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	23.01.2018
Sample Received On	25.01.2018		
Start of Analysis	25.01.2018	End of Analysis	28.01.2018
Monitoring for	Ambient Air Quality Monitoring		
Sampling Location	ETP Area, Kondkel		
Sampling Procedure	As per method reference		
Sample Quantity/Packing	Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No.		

Meteorological Data/ Environmental Conditions

Avg. Wind Velocity	Prominent Wind Direction	Relative Humidity (%)		Temperature (°C)	
		Max.	Min.	Max.	Min.
--	--	--	--	--	--
Location	Near ETP	Duration of Sampling		24 Hours	
Parameter	Unit	Result	NAAQM Standard	Method Reference	
Particulate Matter size less than 10 microns (PM10)	µg/m ³	64	100	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I	
Particulate Matter size less than 2.5 microns (PM2.5)	µg/m ³	38	60	Instrument Manufacturer Operating Instructions.	
Sulphur Dioxide (SO ₂)	µg/m ³	27	80	IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I	
Nitrogen Dioxide (NO ₂)	µg/m ³	33	80	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I	
Carbon Monoxide (CO)*	mg/m ³	2.0	4.0	IS 5182(Part 10):1999, RA 2003	
Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected					

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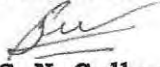
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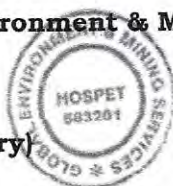
Ambient Air Quality Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2944			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block-Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order / Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	24.01.2018
Sample Received On	26.01.2018		
Start of Analysis	26.01.2018	End of Analysis	29.01.2018
Monitoring for	Ambient Air Quality Monitoring		
Sampling Location	HIL Staff Quarter, Milupara		
Sampling Procedure	As per method reference		
Sample Quantity/Packing	Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No.		

Meteorological Data/ Environmental Conditions					
Avg. Wind Velocity	Prominent Wind Direction	Relative Humidity (%)		Temperature (°C)	
		Max.	Min.	Max.	Min.
--	--	--	--	--	--
Location	HIL Staff Quarter	Duration of Sampling		24 Hours	
Parameter	Unit	Result	NAAQM Standard	Method Reference	
Particulate Matter size less than 10 microns (PM10)	µg/m ³	67	100	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I	
Particulate Matter size less than 2.5 microns (PM2.5)	µg/m ³	36	60	Instrument Manufacturer Operating Instructions.	
Sulphur Dioxide (SO ₂)	µg/m ³	22	80	IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I	
Nitrogen Dioxide (NO ₂)	µg/m ³	30	80	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I	
Carbon Monoxide (CO)*	mg/m ³	1.1	4.0	IS 5182(Part 10):1999, RA 2003	
Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected					

For Global Environment & Mining Services


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Ambient Air Quality Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2945			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block-Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	24.01.2018
Sample Received On	26.01.2018		
Start of Analysis	26.01.2018	End of Analysis	29.01.2018
Monitoring for	Ambient Air Quality Monitoring		
Sampling Location	HIL Colony, Kondkel		
Sampling Procedure	As per method reference		
Sample Quantity/Packing	Filter Paper (PM10): 1X1 No., Filter Paper (PM2.5): 1X1 No. SO ₂ : 30mLX1 No. PVC Bottle, NO ₂ : 30mLX1 No. PVC Bottle Rubber Bladder: 1X1 No.		

Meteorological Data/ Environmental Conditions					
Avg. Wind Velocity	Prominent Wind Direction	Relative Humidity (%)		Temperature (°C)	
		Max.	Min.	Max.	Min.
--	--	--	--	--	--
Location	HIL Colony	Duration of Sampling		24 Hours	
Parameter	Unit	Result	NAAQM Standard	Method Reference	
Particulate Matter size less than 10 microns (PM10)	µg/m ³	72	100	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol.-I	
Particulate Matter size less than 2.5 microns (PM2.5)	µg/m ³	34	60	Instrument Manufacturer Operating Instructions.	
Sulphur Dioxide (SO ₂)	µg/m ³	21	80	IS 5182 (Part 2): 2001, RA 2006 & CPCB Guidelines Vol.-I	
Nitrogen Dioxide (NO ₂)	µg/m ³	38	80	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol.-I	
Carbon Monoxide (CO)*	mg/m ³	2.0	4.0	IS 5182(Part 10):1999, RA 2003	
Remarks: * Except CO, all results are on the basis of 24 hour sampling., N.D. - Not Detected					

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Noise Level Monitoring Report

TEST REPORT	
Report No.: GEMS/TR/17-18/1978	Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited , Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.
Order / Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017
Sample Drawn By	Laboratory Date of Sampling 27.10.2017
Sample Received On	Not Applicable
Monitoring for	Noise Level Monitoring
Sampling Location	Inside Coal Mine & Outside Coal Mine (As described below)
Sampling Procedure	Manufacturer's Instruction
Sample Quantity/Packing	Not Applicable

Location	Unit	Result		Limit (Industrial Zone)	
		Day Time	Night Time	Day Time	Night Time
Office Area, Milupara	dB(A)	67	54	75	70
Incline Area, Milupara	dB(A)	65	49		
Bunker Area, Milupara	dB(A)	68	59		
Weighbrige Area, Milupara	dB(A)	71	64		
DG Set Area, Kondkel	dB(A)	72	69		
Bunker Area, Kondkel	dB(A)	73	68		
Office Area, Kondkel	dB(A)	69	56		

Location	Unit	Result		Limit (Residential Area)	
		Day Time	Night Time	Day Time	Night Time
Outside Plant				55	45
HIL Staff Quarter	dB(A)	50	36		
HIL Colony, Kondkel	dB(A)	49	38		
Sidarpara Village	dB(A)	51	40		

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Chief (Laboratory)

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Noise Level Monitoring Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2954			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, GarePlama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block -Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	26.01.2018
Sample Received On	Not Applicable		
Monitoring for	Noise LevelMonitoring		
Sampling Location	Inside Coal Mine& Outside Coal Mine (As described below)		
Sampling Procedure	Manufacturer's Instruction		
Sample Quantity/Packing	Not Applicable		

Location	Unit	Result		Limit (Industrial Zone)	
		Day Time	Night Time	Day Time	Night Time
Office Area, Milupara	dB(A)	64	58	75	70
Incline Area, Milupara	dB(A)	60	56		
Bunker Area, Milupara	dB(A)	62	52		
Weighbrige Area, Milupara	dB(A)	65	58		
DG Set Area, Kondkel	dB(A)	72	60		
Bunker Area, Kondkel	dB(A)	62	66		
Office Area, Kondkel	dB(A)	68	62		

Location	Unit	Result		Limit (Residential Area)	
		Day Time	Night Time	Day Time	Night Time
Outside Plant				55	45
HIL Staff Quarter	dB(A)	49	41		
HIL Colony, Kondkel	dB(A)	54	44		
Sidarpara Village	dB(A)	46	40		

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Chief (Laboratory)



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Effluent Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/1974			Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited, Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	16.10.2017
Sample Received On	18.10.2017		
Start of Analysis	18.10.2017	End of Analysis	24.10.2017
Monitoring for	Effluent Water		
Sampling Location	ETP Inlet		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
1	Colour and Odour	Hazen & -	Absent	See 6 of Annexure-I	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Temperature	°C	27.2	Shall not exceed 5°C above the receiving water temperature	APHA 22 nd Ed. 2012, 2130-B, 2-13
3	pH	-	7.18	5.5 to 9.0	APHA 22 nd Ed. 2012, 4500-H ⁺ -B, 4-92
4	Total Residual Chlorine	mg/Lit	0.1	1.0	APHA 22 nd Ed. 2012, 4500-Cl-G, 4 – 69
5	Total Suspended Solids	mg/Lit	126	100	APHA 22 nd Ed. 2012, 2540-D, 2-66
6	Dissolved Phosphate (as P)	mg/Lit	N.D.	5.0	APHA 22 nd Ed. 2012, 4500-P-C, 4-153
7	Fluoride (as F)	mg/Lit	1.8	2.0	APHA 22 nd Ed. 2012, 4500-F-B & D, 4-84 & 87
8	Lead (as Pb)	mg/Lit	N.D.	0.1	APHA 22 nd Ed. 2012, 3111-B, 3-18
9	Zinc (as Zn)	mg/Lit	N.D.	5.0	APHA 22 nd Ed. 2012, 3111-B, 3-18
10	Copper (as Cu)	mg/Lit	N.D.	3.0	APHA 22 nd Ed. 2012, 3111-B, 3-18
11	Cadmium (as Cd)	mg/Lit	N.D.	2.0	APHA 22 nd Ed. 2012, 3500-Cd, 3-105



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Report No. 1974 Cont....

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
12	Mercury (as Hg)	mg/Lit	N.D.	0.01	APHA 22 nd Ed.2012,3112-B, 3-23
13	Arsenic (as As)	mg/Lit	N.D.	0.2	APHA 22 nd Ed.2012,3114-C, 3-38
14	Selenium (as Se)	mg/Lit	N.D.	0.05	APHA 22 nd Ed.2012,3114-C, 3-38
15	Total Chromium (as Cr)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
16	Chemical Oxygen Demand (COD)	mg/Lit	92	250	APHA 22 nd Ed.2012, 5520-B, 5-17
17	Biochemical Oxygen Demand (BOD)	mg/Lit	18	30	IS 3025 (Part 44):1993, RA 2003
18	Oil & Grease	mg/Lit	N.D.	10	IS 3025 (Part 39):1991, RA 2003, Ed 2.1
19	Phenoile Compounds (as C ₆ H ₅ OH)	mg/Lit	N.D.	1.0	IS 3025 (Part 43):1992, RA 2003

Remarks: N.D.- Not Detected

For Global Environment & Mining Services


S. N. Gulhane
Chief (Laboratory)



Note:

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Effluent Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/1975			Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited , Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	16.10.2017
Sample Received On	18.10.2017		
Start of Analysis	18.10.2017	End of Analysis	24.10.2017
Monitoring for	Effluent Water		
Sampling Location	ETP Outlet - I		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
1	Colour and Odour	Hazen & -	Absent	See 6 of Annexure-I	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Temperature	°C	26.8	Shall not exceed 5°C above the receiving water temperature	APHA 22 nd Ed. 2012, 2130-B, 2-13
3	pH	-	7.35	5.5 to 9.0	APHA 22 nd Ed. 2012, 4500-H ⁺ -B, 4-92
4	Total Residual Chlorine	mg/Lit	N.D.	1.0	APHA 22 nd Ed. 2012, 4500-Cl-G, 4 – 69
5	Total Suspended Solids	mg/Lit	24	100	APHA 22 nd Ed. 2012, 2540-D, 2-66
6	Dissolved Phosphate (as P)	mg/Lit	N.D.	5.0	APHA 22 nd Ed. 2012, 4500-P-C, 4-153
7	Fluoride (as F)	mg/Lit	1.7	2.0	APHA 22 nd Ed. 2012, 4500-F-B & D, 4-84 & 87
8	Lead (as Pb)	mg/Lit	N.D.	0.1	APHA 22 nd Ed. 2012, 3111-B, 3-18
9	Zinc (as Zn)	mg/Lit	N.D.	5.0	APHA 22 nd Ed. 2012, 3111-B, 3-18
10	Copper (as Cu)	mg/Lit	N.D.	3.0	APHA 22 nd Ed. 2012, 3111-B, 3-18
11	Cadmium (as Cd)	mg/Lit	N.D.	2.0	APHA 22 nd Ed. 2012, 3500-Cd, 3-105



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Report No. 1975 Cont....

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
12	Mercury (as Hg)	mg/Lit	N.D.	0.01	APHA 22 nd Ed.2012,3112-B, 3-23
13	Arsenic (as As)	mg/Lit	N.D.	0.2	APHA 22 nd Ed.2012,3114-C, 3-38
14	Selenium (as Se)	mg/Lit	N.D.	0.05	APHA 22 nd Ed.2012,3114-C, 3-38
15	Total Chromium (as Cr)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
16	Chemical Oxygen Demand (COD)	mg/Lit	54	250	APHA 22 nd Ed.2012, 5520-B, 5-17
17	Biochemical Oxygen Demand (BOD)	mg/Lit	8	30	IS 3025 (Part 44):1993, RA 2003
18	Oil & Grease	mg/Lit	N.D.	10	IS 3025 (Part 39):1991, RA 2003, Ed 2.1
19	Phenoile Compounds (as C ₆ H ₅ OH)	mg/Lit	N.D.	1.0	IS 3025 (Part 43):1992, RA 2003

Remarks: N.D.- Not Detected

For Global Environment & Mining Services


S. N. Gulhane
Chief (Laboratory)



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Effluent Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/1976			Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited , Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	16.10.2017
Sample Received On	18.10.2017		
Start of Analysis	18.10.2017	End of Analysis	24.10.2017
Monitoring for	Effluent Water		
Sampling Location	ETP Outlet - II		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
1	Colour and Odour	Hazen & -	Absent	See 6 of Annexure-I	APHA 22 nd Ed. 2012,2120-B,2-6
2	Temperature	°C	27	Shall not exceed 5°C above the receiving water temperature	APHA 22 nd Ed.2012,2130-B,2-13
3	pH	-	7.64	5.5 to 9.0	APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92
4	Total Residual Chlorine	mg/Lit	N.D.	1.0	APHA 22 nd Ed.2012,4500-Cl-G, 4 – 69
5	Total Suspended Solids	mg/Lit	20.6	100	APHA 22 nd Ed.2012,2540-D, 2-66
6	Dissolved Phosphate (as P)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,4500-P-C, 4-153
7	Fluoride (as F)	mg/Lit	1.6	2.0	APHA 22 nd Ed.2012,4500-F-B & D, 4-84 & 87
8	Lead (as Pb)	mg/Lit	0.004	0.1	APHA 22 nd Ed.2012,3111-B, 3-18
9	Zinc (as Zn)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,3111-B, 3-18
10	Copper (as Cu)	mg/Lit	N.D.	3.0	APHA 22 nd Ed.2012,3111-B, 3-18
11	Cadmium (as Cd)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cd, 3-105



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Report No. 1976 Cont....

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
12	Mercury (as Hg)	mg/Lit	N.D.	0.01	APHA 22 nd Ed.2012,3112-B, 3-23
13	Arsenic (as As)	mg/Lit	N.D.	0.2	APHA 22 nd Ed.2012,3114-C, 3-38
14	Selenium (as Se)	mg/Lit	N.D.	0.05	APHA 22 nd Ed.2012,3114-C, 3-38
15	Total Chromium (as Cr)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
16	Chemical Oxygen Demand (COD)	mg/Lit	43	250	APHA 22 nd Ed.2012, 5520-B, 5-17
17	Biochemical Oxygen Demand (BOD)	mg/Lit	12	30	IS 3025 (Part 44):1993, RA 2003
18	Oil & Grease	mg/Lit	N.D.	10	IS 3025 (Part 39):1991, RA 2003, Ed 2.1
19	Phenoile Compounds (as C ₆ H ₅ OH)	mg/Lit	N.D.	1.0	IS 3025 (Part 43):1992, RA 2003

Remarks: N.D.- Not Detected

For Global Environment & Mining Services


S. N. Gulhane
Chief (Laboratory)



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Effluent Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/1977			Date: 03.11.2017
Name and Address of Customer	Hindalco Industries Limited , Gare Plama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block - Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	16.10.2017
Sample Received On	18.10.2017		
Start of Analysis	18.10.2017	End of Analysis	24.10.2017
Monitoring for	Effluent Water		
Sampling Location	Canal Water		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
1	Colour and Odour	Hazen & -	Absent	See 6 of Annexure-I	APHA 22 nd Ed. 2012,2120-B,2-6
2	Temperature	°C	27	Shall not exceed 5°C above the receiving water temperature	APHA 22 nd Ed.2012,2130-B,2-13
3	pH	-	7.63	5.5 to 9.0	APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92
4	Total Residual Chlorine	mg/Lit	N.D.	1.0	APHA 22 nd Ed.2012,4500-Cl-G, 4 – 69
5	Total Suspended Solids	mg/Lit	48	100	APHA 22 nd Ed.2012,2540-D, 2-66
6	Dissolved Phosphate (as P)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,4500-P-C, 4-153
7	Fluoride (as F)	mg/Lit	0.36	2.0	APHA 22 nd Ed.2012,4500-F-B & D, 4-84 & 87
8	Lead (as Pb)	mg/Lit	N.D.	0.1	APHA 22 nd Ed.2012,3111-B, 3-18
9	Zinc (as Zn)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,3111-B, 3-18
10	Copper (as Cu)	mg/Lit	N.D.	3.0	APHA 22 nd Ed.2012,3111-B, 3-18
11	Cadmium (as Cd)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cd, 3-105



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Report No. 1977 Cont....

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
12	Mercury (as Hg)	mg/Lit	N.D.	0.01	APHA 22 nd Ed.2012,3112-B, 3-23
13	Arsenic (as As)	mg/Lit	N.D.	0.2	APHA 22 nd Ed.2012,3114-C, 3-38
14	Selenium (as Se)	mg/Lit	N.D.	0.05	APHA 22 nd Ed.2012,3114-C, 3-38
15	Total Chromium (as Cr)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
16	Chemical Oxygen Demand (COD)	mg/Lit	54	250	APHA 22 nd Ed.2012, 5520-B, 5-17
17	Biochemical Oxygen Demand (BOD)	mg/Lit	22	30	IS 3025 (Part 44):1993, RA 2003
18	Oil & Grease	mg/Lit	N.D.	10	IS 3025 (Part 39):1991, RA 2003, Ed 2.1
19	Phenoile Compounds (as C ₆ H ₅ OH)	mg/Lit	N.D.	1.0	IS 3025 (Part 43):1992, RA 2003

Remarks: N.D.- Not Detected

For Global Environment & Mining Services

S. N. Gulhane
Chief (Laboratory)



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Effluent Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2946			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, GarePlama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block-Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	23.01.2018
Sample Received On	25.01.2018		
Start of Analysis	25.01.2018	End of Analysis	29.01.2018
Monitoring for	Effluent Water		
Sampling Location	ETP InletKondkel		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
1	Colour and Odour	Hazen&-	Absent	See 6 of Annexure-I	APHA 22 nd Ed. 2012,2120-B,2-6
2	Temperature	NTU	26.5	Shall not exceed 5°C above the receiving water temperature	APHA 22 nd Ed.2012,2130-B,2-13
3	pH	-	7.13	5.5 to 9.0	APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92
4	Total Residual Chlorine	mg/Lit	N.D.	1.0	APHA 22 nd Ed.2012,4500-Cl-G, 4 – 69
5	Total Suspended Solids	mg/Lit	31	100	APHA 22 nd Ed.2012,2540-D, 2-66
6	Dissolved Phosphate (as P)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,4500-P-C, 4-153
7	Fluoride (as F)	mg/Lit	0.21	2.0	APHA 22 nd Ed.2012,4500-F-B &D, 4-84 & 87
8	Lead (as Pb)	mg/Lit	N.D.	0.1	APHA 22 nd Ed.2012,3111-B, 3-18
9	Zinc (as Zn)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,3111-B, 3-18
10	Copper (as Cu)	mg/Lit	N.D.	3.0	APHA 22 nd Ed.2012,3111-B, 3-18
11	Cadmium (as Cd)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cd, 3-105



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Report No. 2946 Cont....

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
12	Mercury (as Hg)	mg/Lit	N.D.	0.01	APHA 22 nd Ed.2012,3112-B, 3-23
13	Arsenic (as As)	mg/Lit	N.D.	0.2	APHA 22 nd Ed.2012,3114-C, 3-38
14	Selenium (as Se)	mg/Lit	N.D.	0.05	APHA 22 nd Ed.2012,3114-C, 3-38
15	Total Chromium (as Cr)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
16	Chemical Oxygen Demand (COD)	mg/Lit	42	250	APHA 22 nd Ed.2012, 5520-B, 5-17
17	Biochemical Oxygen Demand (BOD)	mg/Lit	10.5	30	IS 3025 (Part 44):1993, RA 2003
18	Oil & Grease	mg/Lit	N.D.	10	IS 3025 (Part 39):1991, RA 2003, Ed 2.1
19	Phenoile Compounds (as C ₆ H ₅ OH)	mg/Lit	N.D.	1.0	IS 3025 (Part 43):1992, RA 2003

Remarks: N.D.- Not Detected

For Global Environment & Mining Services


S. N. Gulhane
Chief (Laboratory)



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Effluent Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2947			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, GarePlama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block-Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	23.01.2018
Sample Received On	25.01.2018		
Start of Analysis	25.01.2018	End of Analysis	29.01.2018
Monitoring for	Effluent Water		
Sampling Location	ETP Outlet –IKondkel		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
1	Colour and Odour	Hazen& -	Absent	See 6 of Annexure-I	APHA 22 nd Ed. 2012,2120-B,2-6
2	Temperature	NTU	25.9	Shall not exceed 5°C above the receiving water temperature	APHA 22 nd Ed.2012,2130-B,2-13
3	pH	-	7.17	5.5 to 9.0	APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92
4	Total Residual Chlorine	mg/Lit	N.D.	1.0	APHA 22 nd Ed.2012,4500-Cl-G, 4 – 69
5	Total Suspended Solids	mg/Lit	18	100	APHA 22 nd Ed.2012,2540-D, 2-66
6	Dissolved Phosphate (as P)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,4500-P-C, 4-153
7	Fluoride (as F)	mg/Lit	1.4	2.0	APHA 22 nd Ed.2012,4500-F-B &D, 4-84 & 87
8	Lead (as Pb)	mg/Lit	N.D.	0.1	APHA 22 nd Ed.2012,3111-B, 3-18
9	Zinc (as Zn)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,3111-B, 3-18
10	Copper (as Cu)	mg/Lit	N.D.	3.0	APHA 22 nd Ed.2012,3111-B, 3-18
11	Cadmium (as Cd)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cd, 3-105



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Report No. 2947 Cont....

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
12	Mercury (as Hg)	mg/Lit	N.D.	0.01	APHA 22 nd Ed.2012,3112-B, 3-23
13	Arsenic (as As)	mg/Lit	N.D.	0.2	APHA 22 nd Ed.2012,3114-C, 3-38
14	Selenium (as Se)	mg/Lit	N.D.	0.05	APHA 22 nd Ed.2012,3114-C, 3-38
15	Total Chromium (as Cr)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
16	Chemical Oxygen Demand (COD)	mg/Lit	88	250	APHA 22 nd Ed.2012, 5520-B, 5-17
17	Biochemical Oxygen Demand (BOD)	mg/Lit	18	30	IS 3025 (Part 44):1993, RA 2003
18	Oil & Grease	mg/Lit	N.D.	10	IS 3025 (Part 39):1991, RA 2003, Ed 2.1
19	Phenoile Compounds (as C ₆ H ₅ OH)	mg/Lit	N.D.	1.0	IS 3025 (Part 43):1992, RA 2003

Remarks: N.D.- Not Detected

For Global Environment & Mining Services


S. N. Gulhane
Chief (Laboratory)



Note:

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Effluent Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2948			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, GarePlama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block-Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	23.01.2018
Sample Received On	25.01.2018		
Start of Analysis	25.01.2018	End of Analysis	29.01.2018
Monitoring for	Effluent Water		
Sampling Location	ETP Outlet – IIKondkel		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
1	Colour and Odour	Hazen& -	Absent	See 6 of Annexure-I	APHA 22 nd Ed. 2012,2120-B,2-6
2	Temperature	NTU	27.4	Shall not exceed 5°C above the receiving water temperature	APHA 22 nd Ed.2012,2130-B,2-13
3	pH	-	7.29	5.5 to 9.0	APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92
4	Total Residual Chlorine	mg/Lit	N.D.	1.0	APHA 22 nd Ed.2012,4500-Cl-G, 4 – 69
5	Total Suspended Solids	mg/Lit	18.6	100	APHA 22 nd Ed.2012,2540-D, 2-66
6	Dissolved Phosphate (as P)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,4500-P-C, 4-153
7	Fluoride (as F)	mg/Lit	0.35	2.0	APHA 22 nd Ed.2012,4500-F-B &D, 4-84 & 87
8	Lead (as Pb)	mg/Lit	N.D.	0.1	APHA 22 nd Ed.2012,3111-B, 3-18
9	Zinc (as Zn)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,3111-B, 3-18
10	Copper (as Cu)	mg/Lit	N.D.	3.0	APHA 22 nd Ed.2012,3111-B, 3-18
11	Cadmium (as Cd)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cd, 3-105



GLOBAL ENVIRONMENT & MINING SERVICES

(Consulting Engineers, Mine designers, Geologist & Surveyors)

3rd Main Road, Basaveswara Badavane,
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Ph : +918394 229433, 651111

e-mail : gems_hpt@yahoo.com


Website : globalmining.in

Report No. 2948 Cont....

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
12	Mercury (as Hg)	mg/Lit	N.D.	0.01	APHA 22 nd Ed.2012,3112-B, 3-23
13	Arsenic (as As)	mg/Lit	N.D.	0.2	APHA 22 nd Ed.2012,3114-C, 3-38
14	Selenium (as Se)	mg/Lit	N.D.	0.05	APHA 22 nd Ed.2012,3114-C, 3-38
15	Total Chromium (as Cr)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
16	Chemical Oxygen Demand (COD)	mg/Lit	28	250	APHA 22 nd Ed.2012, 5520-B, 5-17
17	Biochemical Oxygen Demand (BOD)	mg/Lit	7	30	IS 3025 (Part 44):1993, RA 2003
18	Oil & Grease	mg/Lit	N.D.	10	IS 3025 (Part 39):1991, RA 2003, Ed 2.1
19	Phenoile Compounds (as C ₆ H ₅ OH)	mg/Lit	N.D.	1.0	IS 3025 (Part 43):1992, RA 2003

Remarks: N.D.- Not Detected

For Global Environment & Mining Services


S. N. Gulhane
Chief (Laboratory)



Note:

1. The result listed refers only to the tested sample(s) and applicable parameter(s).
2. This report is not to be reproduced except in full, without written approval of the laboratory.



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Website : globalmining.in

Effluent Sample Analysis Report

TEST REPORT			
Report No.: GEMS/TR/17-18/2949			Date: 31.01.2018
Name and Address of Customer	Hindalco Industries Limited, GarePlama – IV/5, Milupara U/G Coal Mine, Village – Milupara, Block-Tamnar, Distt. - Raigarh (C.G.) 496 107.		
Order /Reference:	M/PO/SRV/1718/0125, dtd. 02.08.2017		
Sample Drawn By	Laboratory	Date of Sampling	23.01.2018
Sample Received On	25.01.2018		
Start of Analysis	25.01.2018	End of Analysis	29.01.2018
Monitoring for	Effluent Water		
Sampling Location	Canal Water Kondkel		
Sampling Procedure	IS:3025(Part I):1987 RA 2003; APHA 22 nd Ed. 2012, 1060-B, 1-39		
Sample Quantity/Packing	5 L X 1 No. PVC Can 1 L X 1 No. Glass Bottle		

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
1	Colour and Odour	Hazen&-	Absent	See 6 of Annexure-I	APHA 22 nd Ed. 2012,2120-B,2-6
2	Temperature	NTU	26.2	Shall not exceed 5°C above the receiving water temperature	APHA 22 nd Ed.2012,2130-B,2-13
3	pH	-	7.23	5.5 to 9.0	APHA 22 nd Ed.2012,4500-H ⁺ -B, 4-92
4	Total Residual Chlorine	mg/Lit	N.D.	1.0	APHA 22 nd Ed.2012,4500-Cl-G, 4 – 69
5	Total Suspended Solids	mg/Lit	16.2	100	APHA 22 nd Ed.2012,2540-D, 2-66
6	Dissolved Phosphate (as P)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,4500-P-C, 4-153
7	Fluoride (as F)	mg/Lit	0.45	2.0	APHA 22 nd Ed.2012,4500-F-B &D, 4-84 & 87
8	Lead (as Pb)	mg/Lit	N.D.	0.1	APHA 22 nd Ed.2012,3111-B, 3-18
9	Zinc (as Zn)	mg/Lit	N.D.	5.0	APHA 22 nd Ed.2012,3111-B, 3-18
10	Copper (as Cu)	mg/Lit	N.D.	3.0	APHA 22 nd Ed.2012,3111-B, 3-18
11	Cadmium (as Cd)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cd, 3-105



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Website : globalmining.in

Report No. 2949 Cont....

Sr. No.	Parameter	Unit	Result	The Environment (Protection) Rules, 1986 [SCHEDULE-VI] PART-A Inland Surface Water	Method Reference
12	Mercury (as Hg)	mg/Lit	N.D.	0.01	APHA 22 nd Ed.2012,3112-B, 3-23
13	Arsenic (as As)	mg/Lit	N.D.	0.2	APHA 22 nd Ed.2012,3114-C, 3-38
14	Selenium (as Se)	mg/Lit	N.D.	0.05	APHA 22 nd Ed.2012,3114-C, 3-38
15	Total Chromium (as Cr)	mg/Lit	N.D.	2.0	APHA 22 nd Ed.2012,3500-Cr-B, 3-69
16	Chemical Oxygen Demand (COD)	mg/Lit	18	250	APHA 22 nd Ed.2012, 5520-B, 5-17
17	Biochemical Oxygen Demand (BOD)	mg/Lit	4	30	IS 3025 (Part 44):1993, RA 2003
18	Oil & Grease	mg/Lit	N.D.	10	IS 3025 (Part 39):1991, RA 2003, Ed 2.1
19	Phenoile Compounds (as C ₆ H ₅ OH)	mg/Lit	N.D.	1.0	IS 3025 (Part 43):1992, RA 2003

Remarks: N.D.- Not Detected

For Global Environment & Mining Services


S. N. Gulhane
Chief (Laboratory)



Note:

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Annexure –VI

Environment Management Cell



Date: 02.03.2016

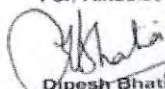
Environment Management Cell

An Environment Management Cell of Gare Palma IV/5 Coal Mine is hereby constituted consisting of the following persons which will take care of Environment related matters such as Pollution Monitoring, Pollution Control, Plantation, Waste management, Awareness & Training Programs etc in the mine area.

Sr. No.	Name of person	Designation in the mine	Designation in the EMD Cell
1.	Dipesh Bhatia	Astt. Vice President	Chairman
2.	Dr. V. Mishra	DGM (HR & Admin)	Member
3.	A. N. Swamy	DGM (Mines)	Vice -Chairman
4.	S. K. Jain	DGM (E & M)	Member
5.	B. Gopal Krishna	AGM (MINES)	Member
6.	Ajay Agrawal	AGM (Commercial)	Member
7.	Dipankar Khan	DGM (Geology)	Member
8.	Sandeep Kumar Mishra	Manager (EMD)	Secretary
9.	B. P. Chandra	Jr. Engineer (Civil)	Member
10.	Girja Shankar Tamrakar	Jr. Engineer (EMD)	Member

The Environment Cell Meeting will be held on every 4th day of the month. All members are requested to be present in the meeting and to discuss on issues related to Environmental Management.

For, Hindalco Industries Limited


Dipesh Bhatia

Chairman (Environment Management Cell)
Gare Palma IV/5 Coal Mine

HINDALCO INDUSTRIES LIMITED
Gare Palma IV / 4 & IV / 5
VIII & P.O. Milupara, Tehsil - Tamnar
Dist : Raigarh 496 107, Chhattisgarh

REGISTERED OFFICE
Century Bhawan, 3rd Floor, Dr. Annie
Besant Road, Worli, Mumbai 400 030
Telephone +91 22 6062 6666

Website: www.hindalco.com
E-mail: hindalco@adityabirla.com
Corporate Identity No. L27020MH1058PLC011238

Gare Palma IV/5 Coal Mine, Milupara



Annexure –VII

Environment Expenditure 2017-18		
Sl.No	Description	Amount
A. Water Management		
1	Chemical	₹ 526,022.63
2	Maintenance	₹ 557,988.04
3	Water Treatment Plant	₹ 356,950.00
4	Others	₹ 20,779.48
		₹ 1,461,740.15
B. Air Management		
1	Environmental Monitoring	₹ 560,382.00
2	Dust suppression	₹ 215,383.57
		₹ 775,765.57
C. Green belt Maintenance		
1	PLANTATION	₹ 188,800.00
2	Electric Lawn Mower	₹ 29,524.32
3	Electric brush cutter	₹ 28,253.92
4	Fertilizers	₹ 15,839.10
		₹ 262,417.34
D. Others		
1	Painting and writing work at WTP	₹ 9,000.00
2	painting work of flower pot	₹ 3,990.00
3	Canal cleanning	₹ 109,200.00
		₹ 122,190.00
Grand Total (A+B+C+D)		₹ 2,622,113.06

Gare Palma IV/5 Coal Mine, Milupara



Annexure –VIII

M/s Hindalco Industries Limited , Gare Palma Mines IV/5	
CSR -Activity Wise Details FY-2017-18	
Focus Areas/Project Activities	Summary Costs (Lakhs)
Education	29.82
Health & Sanitation	7.79
Sustainable Livelihood	0.23
Infra-structure	40.96
Social	39.77
Total (Rs.)	118.57

Gare Palma IV/5 Coal Mine, Milupara