



To,
**The Additional Principal Chief Conservator of Forest,
Regional Office (Eastern Central Zone)
Ministry of Environment, Forests and Climate Change, Govt. of India
Bungalow No. A-2, Shyamali Colony,
Ranchi – 834002, Jharkhand.**

Ref No. - JMB/ENV/LMSL/60/ *403* /2021

May 28, 2021

Ref.: Environmental Clearance letter No.-J-11015/426/2008-IA.II(M),Dated-27th February,2013.

**SUB: Half Yearly Compliance Status Report of Environment Clearance conditions issued
by MoEF&CC, New Delhi to Lagla Mahal Sand Lease, Tata Steel Limited,
Dhanbad for the period October'20 to March'21**

Dear Sir,

We are enclosing herewith compliance report for the period **October'20 to March'21** for the EC granted vide letter no.- J-11015/426/2008-IA.II (M), Dated-27th February,2013 issued by Ministry of Environment, Forest and Climate Change, New Delhi.

Copy of the compliance report is also being sent in soft format through email at ro.ranchi-mef@gov.in for your kind perusal. We trust the information furnished is in line with your requirement.

Thanking you,

Yours faithfully,

**Head (Planning)
Jharia Division, Tata Steel Ltd.**

Encl: As above.

Copy to: Member Secretary, CPCB, Eastern Zonal Office, Southend Conclave, 502, 5th Floor
1582, Rajdanga Main Road, Kolkata -700107.

Copy to: Member Secretary, JSPCB, T.A. Division Building (Ground Floor), H.E.C, Dhurwa,
Ranchi - 834004.

Copy to: Regional Officer, JSPCB, HIG-1 Sardar Patel Nagar, Housing Colony, Hirapur,
Dhanbad

TATA STEEL LIMITED

Jharia Collieries Jamadoba 828 112 Dhanbad India

Tel 91 326 2320263/2320265/2320267 Fax 91 326 2320268

Head Office: Ranchi, Jharkhand, India. E-mail: info@tatasteel.com

HALF YEARLY COMPLIANCE REPORT
(PERIOD: OCTOBER'20 – MARCH'21)

LAGLA MAHAL SAND LEASE
(CAPACITY: 0.1 MTPA RIVER BED SAND)
VILLAGE: LAGLA & MAHAL, DIST: BOKARO,
JHARKHAND



TATA STEEL LIMITED, JHARIA DIVISION
P.O.- JAMADOBA, DIST. - DHANBAD,
STATE- JHARKHAND, PIN CODE – 828112

**ENVIRONMENTAL CLEARANCE GRANTED VIDE LETTER NO. - J-
11015/426/2008-IA.II(M) DATED- 27.02.2013 ISSUED BY GOVT. OF INDIA,
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE, NEW
DELHI.**

Compliance status of Environmental Clearance of Lagla and Mahal Sand Lease Mining project of M/s Tata Steel Ltd., Village Lagla and Mahal, dist. Bokaro, Jharkhand vide MoEFCC Letter no J-11015/426/2008-IA.II (M) dated February 27, 2013

S. No.	Condition	Compliance Status
Specific Condition		
(i)	The project proponent shall obtain Consent to Establish and Consent to Operate from the Jharkhand State Pollution Control Board, and effectively implement all the conditions stipulated therein.	The Consent to Establish has been granted by JSPCB vide letter no. PC/NOC/DHN/17/2010-D-497(N) dated 31.03.2015. The current CTO is valid till 31.03.2026. All the conditions as stipulated in the consent are being complied with.
(ii)	The project proponent shall comply with section 3 of the Mines Act.	It is being complied.
(iii)	Sand collection shall be done at the middle/ main stream and not at the bank of the river to avoid any change of the river course due to the project.	Sand excavation is done by leaving 1/5th of the width of the river intact for maintaining the embankment. It will be ensured that no change in the river course takes place.
(iv)	Particulate level (PM2.5) shall be monitored regularly and the result placed in the public domain.	Monitoring of PM2.5 has been carried out in this period. The report is given as Annexure-I .
(v)	The project proponent shall identify the degraded area within the mine lease and undertake plantation/afforestation in the area identified by planting the native species.	The mine lease area is a riverbed. Hence, we approach the villagers and assist them in planting the native species as well as fruit plants in the villages. Some of the native species are Pipal, Ber, Jamun, Alostromia, Palash, Karanj, Kadamb etc.
(vi)	Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out of haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	It is being complied. Water spraying is done on the transportation roads on regular basis. The ambient air quality is regularly monitored and analyses by own as well as by NABL and MoEF&CC recognized lab and conform to the prescribed standards. Reports are enclosed as Annexure-I .
(vii)	The project proponent shall undertake adequate safeguard measures during extraction of river bed material and ensure that due to this activity the	The extraction of sand is done with utmost care of the environment. There is no extraction of water as well as no change in river course involved hence there will be no

Compliance status of Environmental Clearance of Lagla and Mahal Sand Lease Mining project of M/s Tata Steel Ltd., Village Lagla and Mahal, dist. Bokaro, Jharkhand vide MoEFCC Letter no J-11015/426/2008-IA.II (M) dated February 27, 2013

	<p>hydrogeological regime of the surrounding area shall not be affected. Regular monitoring of ground water level and quality shall be carried out around the mine lease area by establishing a network of existing well and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January)); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.</p>	<p>impact on the hydrogeological regime. The monitoring report of the ground water level and quality is given as Annexure-I.</p>
(viii)	<p>The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite of water (surface water and groundwater), if any, required for the project.</p>	<p>No water is required for the operation of project. Drinking water required by the workers is arranged by the company.</p>
(ix)	<p>Appropriate mitigative measures shall be taken to prevent pollution of the river in consultation with the State Pollution Control Board. It shall be ensured that there is no leakage of oil and grease in the river from the vehicles used for transportation.</p>	<p>Adequate monitoring of the health of the vehicles used for transportation of sand is ensured to avoid any oil & grease leakage. Higher capacity trucks have been deployed. Without valid fitness certificates and PUC, the vehicles are not allowed to ply and it is regularly checked.</p>

Compliance status of Environmental Clearance of Lagla and Mahal Sand Lease Mining project of M/s Tata Steel Ltd., Village Lagla and Mahal, dist. Bokaro, Jharkhand vide MoEFCC Letter no J-11015/426/2008-IA.II (M) dated February 27, 2013

(x)	Vehicular emissions shall be kept under control and regularly monitored. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	The vehicles used are regularly checked and maintained. Only vehicles having PUC certificates can ply. Transportation of sand is always done via tarpaulin-covered trucks which are optimally loaded. This is monitored whenever vehicles enter premises at weighbridge
(xi)	No drilling and blasting operation shall be carried out.	Not applicable as it is a sand mining project.
(xii)	Mineral handling area shall be provided with the adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Sand, being coarse in nature and having high moisture content, does not get air borne during gathering & transportation. Sand stored in the sand yards is transferred to underground voids through surface bunkers in a slurry form. However, dust control measures while transporting of sand is in place through water tanker, coverage of trucks and optimal loading.
(xiii)	Periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	As per our policy, PME's (Periodical Medical Examination) are conducted at regular intervals.
(xiv)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	The workers are from the neighboring villages and hence new housing facilities are not required.
(xv)	The critical parameters such as RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NOx in the ambient air within the impact zone shall be monitored periodically. Further, quality of discharge water shall also be monitored [(TDS, DO,	The monitoring of the air parameters has been done in this period. There is no use of water for mining operation hence there is no discharge. Details of air quality monitoring are given in Annexure-I . The monitoring reports are regularly uploaded on company's

Compliance status of Environmental Clearance of Lagla and Mahal Sand Lease Mining project of M/s Tata Steel Ltd., Village Lagla and Mahal, dist. Bokaro, Jharkhand vide MoEFCC Letter no J-11015/426/2008-IA.II (M) dated February 27, 2013

	PH, Fecal Coliform and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the company in public domain. The Circular No. J-20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	website along with half-yearly EC compliance reports.
(xvi)	The Company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter-alia provide for (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders.	The Company already has an Environment Policy approved by the Managing Director and it addresses all the issues mentioned. The status of adherence to the policy and compliance to Environmental laws and regulations is regularly discussed at higher levels. Any non-compliance noticed is corrected at divisional level. If any issue is beyond our control, it is brought to the notice of higher management. The environment management cell directly reports to General Manager and it is reviewed on weekly basis. We have an online system (Legatrix) to monitor the statutory requirements and compliance in time. This is reviewed by Board of Directors at company's level.

B.	GENERAL CONDITIONS	
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and forests.	It will be complied with.
(ii)	No change in the calendar plan including excavation, quantum of sand	It will be complied with.

Compliance status of Environmental Clearance of Lagla and Mahal Sand Lease Mining project of M/s Tata Steel Ltd., Village Lagla and Mahal, dist. Bokaro, Jharkhand vide MoEFCC Letter no J-11015/426/2008-IA.II (M) dated February 27, 2013

	from river bed and waste should be made.	
(iii)	Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife department and effectively implemented.	No rare species are found in the area.
(iv)	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10micron i.e., PM10) and NOx monitoring. Location of stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	The monitoring stations have been established and monitoring jobs are being performed regularly. The ambient air quality analysis reports are attached as Annexure-I .
(v)	Data on ambient air quality [(RSPM(Particulate matter with size less than 10micron i.e., PM10) and NOx] should be regularly submitted to the Ministry including its regional office at Bhubaneswar and to the State Pollution Control Board/ Central Pollution Control Board once in six months.	It is being submitted as Annexure-I in this compliance report.
(vi)	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Sand, being coarse in nature and having high moisture content, does not get air borne during gathering & transportation. However, dust control measures while transporting of sand is in place through water tanker, coverage of trucks and optimal loading.
(vii)	Measures should be taken for control of noise levels below 85 dBA in work Environment. Workers engaged in	Proper PPE's are provided to all the workers.

Compliance status of Environmental Clearance of Lagla and Mahal Sand Lease Mining project of M/s Tata Steel Ltd., Village Lagla and Mahal, dist. Bokaro, Jharkhand vide MoEFCC Letter no J-11015/426/2008-IA.II (M) dated February 27, 2013

	operations of HEMM, etc. should be provided with ear plugs / muffs.	
(viii)	Industrial waste water (Workshop and Waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. Oil and Grease trap should be installed before discharge of Workshop effluents.	No waste water generation will take place.
(ix)	Personnel working in dusty area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspect. Occupational Health Surveillance programme of the worker should be undertaken periodically to observe any contraction due to exposure to dust and take corrective measures, if needed.	It is being complied during operating hours.
(x)	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.	We have a separate Environmental Management Cell with qualified personnel's. The reporting of Environmental Cell is directly to General Manager of the Division.
(xi)	The funds earmarked for environmental protection measures should be kept in separate A/C and should not be diverted for other purposes. Year wise expenditure should be reported to this ministry and its regional office located at Bhubaneswar.	Expenditure on Environmental Protection measures is monitored separately. It is provided in the Environment Statement every year. The annual expenditure for the financial year 2019-20 included Rs.2 lakhs for water spraying activities on transport road
(xii)	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities	The CTE and CTO of the project have been granted by JSPCB. The permission for lifting of sand from the river bed has also been granted by District Mining Officer, Bokaro.

Compliance status of Environmental Clearance of Lagla and Mahal Sand Lease Mining project of M/s Tata Steel Ltd., Village Lagla and Mahal, dist. Bokaro, Jharkhand vide MoEFCC Letter no J-11015/426/2008-IA.II (M) dated February 27, 2013

	and the date of start of land development work.	
(xiii)	The regional office of this ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full co-operation to the officer (s) of the regional office by furnishing the requisite Data/information/ monitoring reports.	It will be complied with.
(xiv)	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environment clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the MoEF, its Regional Office Bhubaneswar, the respective zonal office of CPCB and the SPCB. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF, Bhubaneswar, the respective Zonal Officer of CPCB and the SPCB.	It is being complied with. We are submitting the six-monthly compliance reports to MoEF&CC, its regional office, CPCB and SPCB twice a year. In adherence with the guideline as per notification dt. 26.11.2018, from now onwards, we are sending only soft copy of the compliance status report over mail.
(xv)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	It has been complied with.
(xvi)	The State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District	The copy of clearance letter has been sent to JSPCB office and its compliance report is also submitted to JSPCB.

Compliance status of Environmental Clearance of Lagla and Mahal Sand Lease Mining project of M/s Tata Steel Ltd., Village Lagla and Mahal, dist. Bokaro, Jharkhand vide MoEFCC Letter no J-11015/426/2008-IA.II (M) dated February 27, 2013

	Industry Centre and the Collector's Office / Tehsildar's Office for 30 days.	
(xvii)	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and also be sent to the respective Regional Office of the Ministry on Environment and Forests, Bhubaneswar by e-mail.	The environmental statement for financial year 2019-20 has been submitted to JSPCB on 28 th September 2020 vide letter no. JMB/ENV/ESSA/05/890/ 2020 and it is also uploaded on the company website. The soft copy of Environment Statement is also sent to MOEF by email at ro.ranchi-mef@gov.in.
(xviii)	The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at website 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 at Bhubaneswar.	It has been complied with.

Environment Quality Report

Annexure- I

Ambient Air Quality Analysis Report

Period- October'20 to December'20

Name of Industry : Lagla Mahal Sand Mining Project

No. of sampling points : 4

Sampling Location	Date of Sampling/ Weather Condition		
	October'20	November'20	December'20
Mahal School Near Izri River	22.10.2020/Rainy	17.11.2020/ Clear	23.12.2020/ Clear
Lagla Gram Panchayat	22.10.2020/ Rainy	17.11.2020/ Clear	23.12.2020/ Clear
Bagula School	23.10.2020/ Clear	18.11.2020/ Clear	24.12.2020/ Clear
Shahar Juri School	23.10.2020/ Clear	18.11.2020/ Clear	24.12.2020/ Clear

Location	Latitude/ Longitude	Date	PM ₁₀	PM _{2.5}	SO ₂	NO _x
			PM ₁₀ Level : 24 Hourly Limit 100µg/m ³	PM _{2.5} Level : 24 Hourly Limit-60µg/m ³	SO _x Level: 24 Hourly Limit- 80µg/m ³	NO _x Level: 24 Hourly Limit- 80µg/m ³
Mahal School Near Izri River	23°38'06.1"N / 86°23'41.2" E	22.10.2020	64.2	34.5	12.2	13.2
		17.11.2020	67.3	36.4	13.1	14.5
		23.12.2020	66.7	35.3	12.7	13.5
Lagla Gram Panchayat	23°37'21.3" N/ 86°23'35.3" E	22.10.2020	55.0	31.5	11.6	12.2
		17.11.2020	59.0	32.5	12.0	13.3
		23.12.2020	62.0	35.2	12.5	13.4
Bagula School	23°36'27.3" N/ 86°21'59.7" E	23.10.2020	58.0	32.7	11.0	12.7
		18.11.2020	61.2	33.5	11.2	13.1
		24.12.2020	63.5	34.5	12.3	13.5
Shahar Juri School	23°36'26.6" N/ 86°20'58.9" E	23.10.2020	63.4	30.5	11.5	13.0
		18.11.2020	63.5	32.2	12.4	13.5
		24.12.2020	65.0	35.0	12.8	13.5
Minimum			55.0	30.5	11.0	12.2
Maximum			67.3	36.4	13.1	14.5
Average			62.4	33.65	12.1	13.28

Sr. Manager (Environment)

Environment Quality Report

Annexure- I

Ambient Air Quality Analysis Report

Period- January'21 to March'21

Name of Industry : Lagla Mahal Sand Mining Project

No. of sampling points : 4

Sampling Location	Date of Sampling/ Weather Condition		
	January'21	February'21	March'21
Mahal School Near Izri River	19.01.2021/ Clear	23.02.2021/ Clear	24.03.2021/ Clear
Lagla Gram Panchayat	19.01.2021/ Clear	23.02.2021/ Clear	24.03.2021/ Clear
Bagula School	20.01.2021/ Clear	24.02.2021/ Clear	25.03.2021/ Clear
Shahar Juri School	20.01.2021/ Clear	24.02.2021/ Clear	25.03.2021/ Clear

Location	Latitude/ Longitude	Date	PM ₁₀	PM _{2.5}	SO ₂	NO _x
			PM ₁₀ Level: 24 Hourly Limit-100µg/m ³	PM _{2.5} Level: 24 Hourly Limit- 60µg/m ³	SO _x Level: 24 Hourly Limit- 80µg/m ³	NO _x Level: 24 Hourly Limit- 80µg/m ³
Mahal School Near Izri River	23°38'06.1"N / 86°23'41.2" E	19.01.2021	63.8	34.2	12.1	12.5
		23.02.2021	66.4	35.4	12.7	13.2
		24.03.2021	65.5	35.3	12.2	12.4
Lagla Gram Panchayat	23°37'21.3" N/ 86°23'35.3" E	19.01.2021	54.7	31.2	11.3	12.7
		23.02.2021	58.9	32.3	12.4	13.2
		24.03.2021	61.0	34.7	12.2	13.4
Bagula School	23°36'27.3" N/ 86°21'59.7" E	20.01.2021	57.5	32.1	11.0	12.6
		24.02.2021	60.8	33.4	11.2	12.8
		25.03.2021	62.5	34.2	12.5	13.1
Shahar Juri School	23°36'26.6" N/ 86°20'58.9" E	20.01.2021	63.2	30.5	11.5	13.0
		24.02.2021	63.5	31.7	11.4	13.2
		25.03.2021	64.7	34.0	12.3	13.4
Minimum			54.7	30.5	11.0	12.4
Maximum			66.4	35.4	12.7	13.4
Average			61.94	33.28	11.9	12.95

Sr. Manager (Environment)

Environment Quality Report

Annexure- I

Ground Water Quality Analysis

Ground water level fluctuation in and around Core & Buffer zone area of sand mining lease Post- Monsoon Season- November'20

S.No	Date	Location	Time	Sample Parameter			
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$	Total Hardness (as CaCO_3), mg/l
1	17.11.2020	Prem Singhdih	10:40AM	2.15	7.2	604	402
2	17.11.2020	Lagla	11:33AM	2.05	7.1	488	332
3	17.11.2020	Alakdih	11:25AM	1.45	7.0	496	340
4	17.11.2020	Joradih	12:50PM	2.10	7.1	564	402
5	17.11.2020	SEB Quarters	11:35AM	2.04	7.2	668	310
6	17.11.2020	Kargali	02:40PM	2.16	7.0	480	302
7	17.11.2020	Kumargora	01:30PM	1.35	7.0	594	308
8	17.11.2020	Bhojudih	01:25PM	1.23	7.1	582	436
9	17.11.2020	Mahal	12:00PM	1.24	7.0	500	312
10	17.11.2020	Sudamdih	1:45PM	1.54	7.1	588	340

Winter Season- January'21

S.No	Date	Location	Time	Sample Parameter			
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$	Total Hardness (as CaCO_3), mg/l
1	19.01.2021	Prem Singhdih	10:15AM	2.23	7.2	612	412
2	19.01.2021	Lagla	11:30AM	2.25	7.1	504	342
3	19.01.2021	Alakdih	10:55AM	2.15	7.0	516	354
4	19.01.2021	Joradih	01:45PM	2.30	7.1	588	424
5	19.01.2021	SEB Quarters	11:10AM	2.24	7.2	674	333
6	19.01.2021	Kargali	01:45PM	2.46	7.0	488	328
7	19.01.2021	Kumargora	11:45PM	1.65	7.0	608	318
8	19.01.2021	Bhojudih	12:50PM	1.83	7.1	592	452
9	19.01.2021	Mahal	12:25PM	2.14	7.0	522	336
10	19.01.2021	Sudamdih	12:15PM	2.24	7.1	596	358

Sr. Manager (Environment)

Environment Quality Report

Annexure- I

Surface Water Quality Analysis

Sl. No.	Location	Sampling Date	Sampling Time	Temp	pH	TSS	BOD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	30 mg/l	10 mg/l
1.	River Gowai Up Stream	18.11.2020	10:30 AM	27.2	7.6	22	3.8	0.5
2.	River Damodar Down Stream	18.11.2020	10:45 AM	28.0	7.7	23	4.1	0.8
3.	Laghla (Pond)	18.11.2020	01:25 PM	26.8	7.5	21	4.2	0.1
4.	Alakhdi (Pond)	18.11.2020	01:35 PM	26.4	7.6	22	3.6	0.1
5.	Joradi (Pond)	18.11.2020	11:40 AM	27.3	7.4	22	3.2	0.1
6.	SEB Quarters (Pond)	18.11.2020	11:15 AM	28.0	7.4	23	3.3	0.2
7.	Kargali (Pond)	18.11.2020	12:25 PM	27.6	7.5	25	3.1	0.2
8.	Kumargora (Pond)	18.11.2020	12:55 PM	27.2	7.6	23	4.0	0.2
9.	Bhojudi (Pond)	18.11.2020	12:45 PM	27.0	7.4	23	2.4	0.1

Sr. Manager (Environment)

ECOMEN LABORATORIES PVT. LTD.

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Phone No. : (91-522) 2746282, 2745726 Telefax No.: (91 - 522) 2745726

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z1

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LABORATORIES PVT. LTD.

An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-1/11/2020

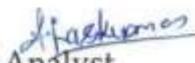
TEST REPORT ISSUE DATE: 11.12.2020

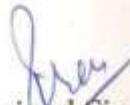
TEST REPORT OF AMBIENT AIR*

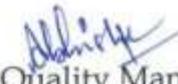
Name of the Customer : Tata Steel Colliery (Sand Lease Area)
Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
Date of Sampling : 10.11.2020
Sample Collected By : Mr.Virendra Pandey
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : Lagla Gram Panchayat

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	48.5	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	92.4	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	15.5	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	32.2	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	14.8	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	16.6	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.63	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit


Analyst


Authorized Signatory


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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-2/11/2020
TEST REPORT ISSUE DATE: 11.12.2020

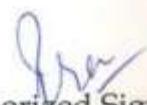
TEST REPORT OF AMBIENT AIR*

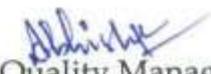
Name of the Customer : Tata Steel Colliery (Sand Lease Area)
Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
Date of Sampling : 11.11.2020
Sample Collected By : Mr.Virendra Pandey
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : Saharjuri School

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	39.5	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	74.8	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	13.9	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	17.6	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	11.8	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	18.8	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.83	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit


Analyst


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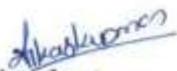
FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-3/11/2020
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF AMBIENT AIR*

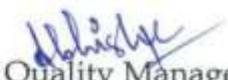
Name of the Customer : Tata Steel Colliery (Sand Lease Area)
Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
Date of Sampling : 08.11.2020
Sample Collected By : Mr.Virendra Pandey
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : Icchar High School

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	47.5	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	79.7	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	12.6	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	20.8	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	13.8	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	14.6	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	BDL	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit


Analyst


Authorized Signatory


Quality Manager

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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO:ECO LAB/AAQ-4/11/2020
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sand Lease Area)
Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
Date of Sampling : 09.11.2020
Sample Collected By : Mr.Virendra Pandey
Sampling Method : IS: 5182
Instrument Used : RDS & FDS
Location : Railway Colony Bhojudih

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	48.6	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	78.6	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	16.3	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	18.8	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	13.7	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	16.64	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.37	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit.

Ashish Kumar
Analyst

[Signature]
Authorized Signatory

[Signature]
Quality Manager

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FORMAT NO. ECO/QS/FORMAT/10

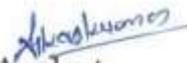
TEST REPORT NO: ECO LAB/MCPM/11/20

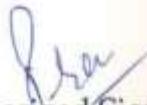
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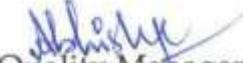
MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Month : November, 2020

S.NO.	Locations	Date of Sampling	Mineralogical Composition (in %)			
			Silica (SiO ₂)	Ferrous oxide (FeO)	Alumina (Al ₂ O ₃)	Calcium Oxide CaO
1	Saharjuri School	11.11.2020	2.30	0.24	137	2.73
2	Lagla Gram Panchayat	10.11.2020	1.50	0.18	1.20	2.68


Analyst


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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AN/11/20

TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF AMBIENT NOISE LEVEL

Name of the Customer : Tata Steel Colliery (Sand Lease Area)
Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
Sample Collected By : Mr. Virendra Pandey
Instrument Used : Noise Meter (HTC)

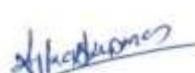
Sl. No.	Locations	Date of Monitoring	Day Time			Night Time		
			Max.	Min.	Leq.	Max.	Min.	Leq.
1.	Lagla Gram Panchayat	10.11.2020	64.5	58.5	59.6	55.3	49.8	50.2
2.	Saharjuri School	11.11.2020	66.8	57.5	62.5	50.5	48.3	49.3
3.	Icchar High School	08.11.2020	68.5	52.7	62.3	46.5	43.3	44.7
4.	Railway Colony Bhojudih	09.11.2020	70.8	48.2	50.8	50.5	44.6	46.6

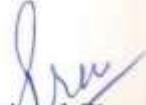
Noise (Ambient Standard)

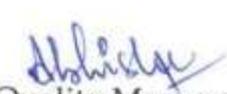
Area Code	Category of area	Limit in dB (A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note:

1. Day time is reckoned in between 6:00 AM and 10:00 PM.
2. Night time is reckoned in between 10:00 PM and 6:00 AM
3. Silence zone is defined as area up to 100m around such premises as hospitals, Educational institutions & courts. The silence zones are to be declared by a competent authority.
4. Mixed categories of areas should be declared as one of the four above-mentioned Categories by the competent authority and the corresponding standard shall apply.


Analyst


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Quality Manager

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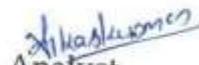
TEST REPORT NO: ECO LAB/SW/1244/11/20
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF SURFACE WATER*

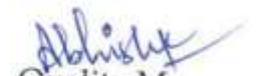
Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Gowai River, Up Stream
Sample ID Code : ELW-12605

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed. 2017, 4500H+A+B,	7.92	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	13.4	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017 (2540C)	596.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed. 2017 (4500 A+C)	5.9	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed. 2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	44.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017 (4500 -C)	0.41	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017 (4500 -SO ₄ ²⁻ E)	53.1	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
BDL - Below Detection Limit


Analyst


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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/11/20
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Gowai River, Down Stream
Sample ID Code : ELW-12606

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed. 2017, 4500H+A+B,	8.02	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	24.4	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017 (2540C)	694.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed. 2017 (4500 A+C)	6.4	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed. 2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	50.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017 (4500 - C)	0.46	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017 (4500 -SO ₄ ²⁻ E)	64.2	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
BDL - Below Detection Limit

Ashish Kumar
Analyst

[Signature]
Authorized Signatory

[Signature]
Quality Manager

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/11/20

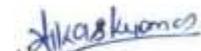
TEST REPORT ISSUE DATE: 11.12.2020

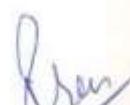
TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Izri River, Up Stream
Sample ID Code : ELW-12607

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed. 2017, 4500H+A+B,	7.46	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	9.2	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017 (2540C)	634.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed. 2017 (4500 A+C)	6.0	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed. 2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	60.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017 (4500 -C)	0.49	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017 (4500 -SO ₄ ²⁻ E)	60.1	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
BDL - Below Detection Limit


Analyst


Authorized Signatory


Quality Manager

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/11/20

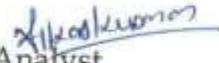
TEST REPORT ISSUE DATE: 11.12.2020

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112
Sampling Method : APHA, 23rd Ed. 2017
Sample Collected by : Mr. Virendra Pandey
Sample Quantity : As per requirement
Date of Sampling : 10.11.2020 to 12.11.2020
Date of Sample Receiving : 18.11.2020
Date of Analysis : 18.11.2020 to 02.12.2020
Source of Sample : Izri River, Down Stream
Sample ID Code : ELW-12608

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed. 2017, 4500H+A+B,	7.76	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	18.4	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017 (2540C)	672.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed. 2017 (4500 A+C)	5.5	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed. 2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	68.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017 (4500 - C)	0.53	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017 (4500 -SO ₄ ²⁻ E)	66.0	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
BDL - Below Detection Limit


Analyst


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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-1/02/2021
TEST REPORT ISSUE DATE: 09.04.2021**TEST REPORT OF AMBIENT AIR***

Name of the Customer : Tata Steel Colliery (Sand Lease Area)
 Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
 Date of Sampling : 12.02.2021
 Sample Collected By : Mr.Arvind Singh
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Lagla Gram Panchayat

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	46.8	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	92.5	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	14.8	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	26.4	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	17.32	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	18.24	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.68	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit

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Analyst

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Arvind Singh
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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-1/02/2021

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sand Lease Area)
 Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
 Date of Sampling : 12.02.2021
 Sample Collected By : Mr.Arvind Singh
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Saharjuri School

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	39.6	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	76.8	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	14.32	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	18.23	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	14.6	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	19.6	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.81	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-1/02/2021

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sand Lease Area)
 Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
 Date of Sampling : 13.02.2021
 Sample Collected By : Mr.Arvind Singh
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Iechar High School

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	46.2	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	81.28	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	13.20	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	21.46	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	14.3	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	17.2	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	BDL	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. Note: Below Detection Limit

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Analyst

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FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO:ECO LAB/AAQ-1/02/2021
TEST REPORT ISSUE DATE: 09.04.2021**TEST REPORT OF AMBIENT AIR***

Name of the Customer : Tata Steel Colliery (Sand Lease Area)
 Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
 Date of Sampling : 13.02.2021
 Sample Collected By : Mr.Arvind Singh
 Sampling Method : IS: 5182
 Instrument Used : RDS & FDS
 Location : Railway Colony Bhojudih

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1.	PM _{2.5} (µg/m ³)	SOP NO. A -15, Issue No.1 date 26.07.2016 (Gravimetric Method)	48.1	12.5-1000	60
2.	PM ₁₀ (µg/m ³)	IS:5182 (Part-23)	81.56	12.5-1000	100
3.	SO ₂ (µg/m ³)	IS:5182 (Part-2)	15.84	9-200	80
4.	NO ₂ (µg/m ³)	IS:5182 (Part-6)	18.80	6-200	80
5.	NH ₃ (µg/m ³)	SOP NO. A -26, Issue No.1 date 26.07.2016 (Indophenol Method)	15.12	2-700	400
6.	O ₃ (µg/m ³)	IS:5182(Part-9)	18.20	2-200	180
7.	CO (mg/m ³)	IS:5182 (Part-10)	0.38	0.2-500	04
8.	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100	1.0
9.	Cr (µg/m ³)	SOP NO. A -23, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
10.	Cd (µg/m ³)	SOP NO. A -24, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	-
11.	As (ng/m ³)	SOP NO. A -22, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	06
12.	Ni (ng/m ³)	SOP NO. A -21, Issue No.1 date 26.07.2016 (CPCB-NAAQM Guideline)	BDL	1-100	20

*The results is related only to tested item. **Note:** Below Detection Limit.

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Analyst

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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AN/03/21
 TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF AMBIENT NOISE LEVEL

Name of the Customer : Tata Steel Colliery (Sand Lease Area)
 Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
 Sample Collected By : Mr. Arvind Singh
 Instrument Used : Noise Meter (HTC)

Sl. No.	Locations	Date of Monitoring	Day Time			Night Time		
			Max.	Min.	Leq.	Max.	Min.	Leq.
1.	Lagla Gram Panchayat	12.02.2021	62.1	55.2	58.2	54.5	46.8	49.8
2.	Saharjuri School	12.02.2021	64.9	56.8	62.1	47.3	46.9	45.6
3.	Icchar High School	13.02.2021	63.8	52.2	64.3	44.8	41.6	43.4
4.	Railway Colony Bhojudih	13.02.2021	69.2	47.6	50.3	48.8	43.2	45.7

Noise (Ambient Standard)

Area Code	Category of area	Limit in dB (A) Leq	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Note:

1. Day time is reckoned in between 6:00 AM and 10:00 PM.
2. Night time is reckoned in between 10:00 PM and 6:00 AM
3. Silence zone is defined as area up to 100m around such premises as hospitals, Educational institutions & courts. The silence zones are to be declared by a competent authority.
4. Mixed categories of areas should be declared as one of the four above-mentioned Categories by the competent authority and the corresponding standard shall apply.

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 Analyst

Ropna
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Ropna
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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/MCPM/03/21

TEST REPORT ISSUE DATE: 09.04.2021

MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)

Address of the Customer : Jamadoba,
Distt. Dhanbad - 828 112

Month : February, 2021

S.NO.	Locations	Date of Sampling	Mineralogical Composition (in %)			
			Silica (SiO ₂)	Ferrous oxide (FeO)	Alumina (Al ₂ O ₃)	Calcium Oxide CaO
1	Ichhar High School	13.02.2021	2.42	0.28	1.42	2.78
2	Railway Colony Bhojudih	13.02.2021	1.58	0.21	1.21	2.79

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : Gowai River, Up Stream

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA,23 rd Ed.2017,4500H+A+B,	7.80	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	13.9	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA,23 rd Ed.2017 (2540C)	812.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA,23 rd Ed.2017 (4500 A+C)	6.2	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA,23 rd Ed.2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	51.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA,23 rd Ed.2017 (4500 -C)	0.46	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA,23 rd Ed.2017 (4500 -SO ₄ ²⁻ E)	54.3	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
 BDL - Below Detection Limit

Archana
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Roop
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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : Gowai River, Down Stream

Sl No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA,23 rd Ed.2017, 4500H+A+B,	8.16	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	26.3	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA,23 rd Ed.2017 (2540C)	716.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA,23 rd Ed.2017 (4500 A+C)	6.8	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA,23 rd Ed.2017 (5210A+B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	52.3	5-1000	-
7.	Fluorides as F (mg/l)	APHA,23 rd Ed.2017 (4500 - C)	0.52	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA,23 rd Ed.2017 (4500 -SO ₄ ²⁻ E)	66.3	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
 BDL - Below Detection Limit

Anchana
Analyst

Reena
Authorized Signatory

Reena
Quality Manager

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An approved Laboratory from Ministry of Environment, Forest and Climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : Izri River, Up Stream

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA,23 rd Ed.2017,4500H+A+B,	7.52	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	9.8	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA,23 rd Ed.2017 (2540C)	648.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA,23 rd Ed.2017 (4500 A+C)	5.8	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA,23 rd Ed.2017 (5210A+ B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	56.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA,23 rd Ed.2017 (4500 -C)	0.52	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA,23 rd Ed.2017 (4500 -SO ₄ ²⁻ E)	62.4	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
 BDL - Below Detection Limit

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Analyst

Roopa
Authorized Signatory

Roopa
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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO-LAB/SW/02/21

TEST REPORT ISSUE DATE: 09.04.2021

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sand Lease Area)
 Address of the Customer : Jamadoba,
 Distt. Dhanbad - 828 112
 Sampling Method : APHA, 23rd Ed. 2017
 Sample Collected by : Mr. Arvind Singh
 Sample Quantity : As per requirement
 Date of Sampling : 10.02.2021 to 13.02.2021
 Date of Sample Receiving : 16.02.2021
 Date of Analysis : 16.02.2021 to 27.02.2021
 Source of Sample : Izri River, Down Stream

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA, 23 rd Ed.2017, 4500H+A+B,	7.82	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	19.2	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed.2017 (2540C)	678.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA, 23 rd Ed.2017 (4500 A+C)	5.2	2-10	4.0
5.	Biochemical Oxygen Demand as BOD (mg/l)	APHA, 23 rd Ed.2017 (5210A+B)	BDL	5-10000	3.0
6.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	72.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA, 23 rd Ed.2017 (4500 - C)	0.56	0.05-10	1.5
8.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed.2017 (4500 -SO ₄ ²⁻ E)	62.50	1.0-250	400.0

*The result are related only to item tested - The parameters are not included in IS: 2296 Class-C
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