



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/BAC/39/ 878 /2021
November 27, 2021

Ref.: Environmental Clearance letter no. - J-11015/29/2012-IA.II(M) dated- April 28, 2017.

Sub: Half Yearly Compliance Status Report of Environment Clearance conditions issued by MoEF&CC, New Delhi to Bhelatand A. Colliery & Bhelatand Coal Washery, Tata Steel Limited, Dhanbad for the period April'21 to September'21

Dear Sir,

We are enclosing herewith compliance report for the period **April'21 to September'21** for the EC granted vide letter no.- J-11015/29/2012-IA.II(M) dated- April 28, 2017 issued by Ministry of Environment, Forest and Climate Change, New Delhi.

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

HALF YEARLY COMPLIANCE REPORT
(PERIOD: APRIL'21 – SEPTEMBER'21)

BHELATAND A. COLLIERY
(EXPANSION FROM 0.38 MTPA TO 0.41 MTPA OF RAW
COAL PRODUCTION)
AND
BHELATAND COAL WASHERY
(EXPANSION FROM 0.96 MTPA TO 1.5 MTPA RAW COAL
THROUGHPUT)

P.O.: BHELATAND, DIST: DHANBAD, JHARKHAND



TATA STEEL LIMITED, JHARIA DIVISION

**P.O.- JAMADOBA, DIST. – DHANBAD,
STATE- JHARKHAND, PIN CODE – 828112.**

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status																		
Specific Condition																				
(i)	The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.	<p>It is being strictly followed. The EC capacity of Bhelatand A. Colliery is for 0.41 MTPA raw coal production is well within the limit. The EC capacity of Bhelatand Coal Washery is for 1.5 MTPA raw coal throughput which is also being maintained within the limit. The production details of last five years are as follow-</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Bhelatand A. Colliery- Raw Coal Production (MTPA)</th> <th>Bhelatand Coal Washery- Raw Coal Throughput (MTPA)</th> </tr> </thead> <tbody> <tr> <td>FY17</td> <td>0.270</td> <td>0.685</td> </tr> <tr> <td>FY18</td> <td>0.207</td> <td>0.625</td> </tr> <tr> <td>FY19</td> <td>0.295</td> <td>0.899</td> </tr> <tr> <td>FY20</td> <td>0.233</td> <td>0.729</td> </tr> <tr> <td>FY21</td> <td>0.245</td> <td>0.337</td> </tr> </tbody> </table>	Year	Bhelatand A. Colliery- Raw Coal Production (MTPA)	Bhelatand Coal Washery- Raw Coal Throughput (MTPA)	FY17	0.270	0.685	FY18	0.207	0.625	FY19	0.295	0.899	FY20	0.233	0.729	FY21	0.245	0.337
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(ii)	The washery shall be as per the project report submitted and presented to EAC.	It is being strictly complied with.																		
(iii)	The validity of the EC is for the life of mine or as specified in the EIA Notification, 2006, whichever is earlier.	The mining lease of Bhelatand A. Colliery is valid for 999 years i.e. 20.01.2903 and life of mine as per approved mining plan is 25 years (Base year is FY13-14). However, the validity of EC for mines as per EIA Notification amendment dt. 14.09.2016 is kept as 30 years. Therefore, the EC is valid till 31.03.2038.																		
(iv)	Transportation of coal should be carried out by covered conveyor belts. Mitigative measures to be undertaken to control dust and other fugitive emission all along the roads by providing sufficient numbers of water sprinklers.	<ul style="list-style-type: none"> •The transportation of coal from underground colliery to coal handling plant (CHP) is through covered conveyor belt networks. •Dry-fog system has been already installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. •Fixed-type water sprinklers are also installed on the internal roads of the washery. These are operated effectively at all times to check the fugitive emissions. •Fugitive dust emission monitoring is done on half-yearly basis. The values are within the stipulated norms. 																		

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

(v)	Continuous monitoring of occupational safety and other health hazards, and the corrective action need to be ensured.	The periodic health checkup of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) centre approved by DGMS where 20 % of the workers identified from workforce engaged in active mining operations and washery plant are subjected to full medical checkup every year including hearing impairment checkup, etc. These results are regularly submitted to DGMS as per mines rules.
(vi)	Modern practices for agriculture to be encouraged with promotion of organic farming through training and demonstration (where ever feasible)	Farmers have been effectively trained in SRI (Systems of root intensification) which helps in more production of quality grains with lesser seed requirements. This helps farmers to produce grains at lesser cost. Matka Khad, etc. promotes organic farming which helps farmers to use less chemicals (pesticides, insecticides etc.). In this programmes farmers received hands on demonstration and training on organic farming.
(vii)	Special emphasis should be on training and demonstration on conservation of crops and foods and food processing (Wherever feasible)	For the conservation of crops and foods, the following training programs are being through our CSR wing, TSRDS (Tata Steel Rural Development Society)- <ul style="list-style-type: none"> • SRI • Second crops (Rabi crops) • Dry land farming • Fisheries training Pisciculture • Mushroom cultivation • Vegetable cultivation
(viii)	CCTV cameras to be installed at washery gate to check compliance of covering of trucks.	CCTV cameras at washery entrance gate and near weigh bridge gate have been provided. It is to be mentioned here that no truck is allowed into the premises which are not covered by tarpaulin sheets.
(ix)	This is an underground mine. Afforestation /green belt development takes place every year on the open surface within leasehold areas. Massive plantation shall be carried out in open spaces in and around the mine and a 3-tier avenue plantation along the main approach road to the mine.	<ul style="list-style-type: none"> • Tree plantation activities are carried out every year on the barren/ degraded areas, areas along road-side, infrastructure, etc of the colliery leasehold. Apart from these, fruit plants are distributed to employees and also to villagers, schools, institutions, etc. • Avenue plantation is done in residential colony and along the road side every year.
(x)	There will be no external /internal OB dumps	Since this is an underground mine, it is not applicable.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

(xi)	Wastewater shall be effectively treated and recycled completely either for washery or maintenance of green belt around the plant.	Washery is already operating on a zero-discharge principle. No wastewater is discharged into the drains/ natural water systems. The recycled water is again used for plant operations and green-belt development.
(xii)	The assurances given during the Public Hearing and as per the Action plan developed by the proponent should be implemented.	The assurances given during the public hearing with respect to environment and CSR are already being executed.
(xiii)	Hoppers of the coal crushing unit and washer unit shall be fitted with high efficiency bag filters or mist spray water sprinkling system and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of closed belt conveyor systems and from transportation roads.	<ul style="list-style-type: none"> • Dry-fog system has been installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. • Fixed-type water sprinklers are also installed on the internal roads of the washery. • The Dust Extraction system (Bag filters) is installed at Coal Handling Plant. Extracted dust is mixed in water and then fed into the Tailing Thickener. <p>These are operated effectively at all times to check the fugitive emissions.</p>
(xiv)	All approach roads shall be black topped and internal roads shall be concreted. The roads shall be regularly cleaned with mechanical sweepers.	All the internal roads have been concreted while the approach roads are black-topped. There is a facility for parking of trucks within the unit. Mechanical sweepers were mobilized for internal roads.
(xv)	Records of quantum and ash content of raw coal being washed and clean coal and coal rejects produced from every batch of washing shall be maintained and details thereof be made available to Ministry whenever directed.	Proper records of quantity and ash content of raw coal being washed, clean/washed coal, and other by-products are being maintained regularly.
(xvi)	No ground water shall be used for the plant operations. Any additional water requirement envisaged shall be obtained by recycle/reuse of treated effluent and from rainwater harvesting measure.	No ground water is used for washery plant operations. Since, washery is operating on Zero Liquid Discharge Principle; all processed water is recycled back and reused for operations. The make-up water requirement is met by mine water from adjoining Bhelatand Colliery and Katri river. There are total 8 ponds (Capacity- 20622 m ³) for tailing management which also act as surface runoff and rainwater storage ponds. In addition to that, Rooftop rainwater harvesting structure has been constructed in office premises of Bhelatand washery.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

(xvii)	Socio – economic and welfare measures for the local communities for the adjoining villages shall be implemented under CSR. Activities to be undertaken for the adjoining villages shall be identified in consultation with the local authorities, the details of status of implementation of CSR and expenditure thereon which should be annually updated on the company website.	CSR activities are being carried out through our CSR wing, TSRDS, which is managed by a team of experts who are full time involved in providing benefits and improving standard of living in over 30 villages. The list of activities are developed in consultation with the village representatives and implemented in a time-bound manner. The annual expenditure on CSR is updated in Integrated Report of Tata Steel every year which is uploaded in company’s website.
(xviii)	Heavy metal content in raw coal, and washed coal shall be analysed once in a year and records maintained thereof.	Heavy metal content analysis in raw coal and washed coal is being done from a NABL approved lab & the data are being maintained.
General Conditions:		
A. Mining		
(i)	No change in mining technology and scope of work shall be made without prior approval of the Ministry of Environment Forest and climate Change. No change in the calendar plan including excavation, quantum of coal and waste should be made.	It is being strictly followed and complied with.
(ii)	Mining shall be carried out as per the approved mining plan, and also abiding by the relevant laws related to coal mining and the circulars issued by Directorate General Mines Safety (DGMS) An approved progressive Mine Closure Plan shall strictly be complied with and submitted.	It is being strictly followed. Mining is being carried out as per the approved mining plan in accordance with other mining rules, DGMS permissions etc. The mine closure plan was also approved along with mining plan by Ministry of Coal, Govt of India. The provisions of mine closure plan are being complied with. As per progressive closure activities, plantation for green cover in and around leasehold area is being done.
B. Land Reclamation		
(i)	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment, Forest and Climate Change its Regional Office.	Complied. The land use study has been completed by Indian School of Mines (IIT-ISM) Dhanbad and the report is submitted vide letter no. JMB/ENV/BAC/39/466/2021 dated: 27.06.2021 to Regional Office, MoEFCC at Ranchi
(ii)	Final mine void depth should not be more than 40m. The void area should	It is not applicable as this is an underground mine.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

	be converted into water body. The remaining area should be back filled up to ground level and covered with thick top soil. The land after mining should be restored for agriculture or forestry purpose.	
(iii)	The top soil, if any, shall temporarily be stored at earmarked site (s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The overburden dumps should be vegetated with suitable native species to prevent erosion and surface run off. The entire excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self – sustaining Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.	There is no generation of top soil due to mining activities as this is an underground mine. Mining is being done by Board and Pillar method with sand stowing. The rehabilitation is also not applicable in this case as there is no change in land use pattern due to underground mining operation.
(iv)	Greenbelt shall be developed all along the mine lease area in a phased manner. The width of the green belt along forest area should not be less than 7.5 m, and the total area covered by 3 tier green belt shall not be less than 100 ha. A 3-tier green belt comprising of a mix of native species shall be developed all along the major approach roads.	<ul style="list-style-type: none"> • Greenery has been developed in many areas around the colliery and washery premises. There is no forest land in core and buffer zone. However, green belt is being developed in the leasehold area. • 3-Tier plantation along the roads with native species is done on available vacant areas.
C. Emissions, Effluents, and waste Disposal		
(i)	Transportation of coal by road should be carried out by covered trucks only. Effective measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM 2.5 such as haul road, loading and unloading point and transfer points.	<ul style="list-style-type: none"> • Transportation of raw coal from Bhelatand A. Colliery to washery is done through underground belt conveyors. The washed coal from washery is sent via rail network. The sand used for stowing is transported through Tarpaulin sheet covered trucks only. • Dry-fog system has been already installed to suppress the dust generated at CHP and transfer

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	Fugitive dust emission from all the sources shall be controlled regularly it shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board in this regard.	points of belt conveyer systems. Fixed-type water sprinklers are also installed on the internal roads of the washery. In addition to these, movable water sprinkler ply on regular intervals for dust suppression. The ambient air quality report is submitted to SPCB every quarter.
(ii)	Vehicular emission shall be kept under control and regularly. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centres.	Raw coal transportation is done through underground belt network. Only the vehicles having valid PUC certificates are being allowed to operate for sand transportation.
(iii)	Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10 PM2.5 SO2 and NOX. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive in consultation with the state pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	<p>Based on meteorological data, total four ambient air quality stations are established in core zone and buffer zone. Monitoring and analysis of PM10, PM2.5, SO2, NO2 are done on monthly basis.</p> <p>The Air quality monitoring stations are:</p> <ul style="list-style-type: none"> (i) Bhelatand Office Area (Core Zone) (ii) Russi Vihar Colony, Sijua (Buffer Zone) (iii) Malkera Colony (Buffer Zone) (iv) Bhelatand Colony (Buffer Zone) <p>Monitoring of heavy metals in ambient air is being performed by an independent laboratory (recognised by NABL/MoEFCC) once in six months. The results are enclosed as Annexure-I.</p>
(iv)	Crusher / feeder and breaker material transfer points should invariably be provided with dust suppression system. Belt – Conveyors should be fully covered to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.	<p>The following measures have been implemented:</p> <ul style="list-style-type: none"> i) Dry-fog system at all transfers points of CHP. ii) Dust extraction system (Bag filters) in CHP ii) Enclosures around crushers. iii) Belts have been covered on top and both sides. <p>These arrangements will protect the coal mass moving on belt from blowing wind. In this way, the dust getting air borne is being minimized.</p>

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

		<p>iv) Fixed water sprinklers on the haulage roads.</p> <p>v) In addition, movable water sprinklers are also being deployed on the roads for dust suppression.</p>
(v)	<p>The project proponent shall not alter the major channels around the site. Appropriate embankment should be provided along the side of the river/nallah flowing near or adjacent to the mine. The embankment constructed along the river/nallah boundary should be of suitable dimensions and critical patches should be strengthened by stone pitching on the river front side and stabilised with plantation so as to withstand the peak water flow and prevent mine inundation.</p>	<p>During the course of action, there is no proposed diversion or rechannelling of the water course is involved. The prominent stream in the region is Katri Nadi, a tributary of Damodar river. Appropriate embankment along the Katri river is already provided. Stone pitching has been provided on the embankment. The dense vegetation already exists between the river channel and lease which shall be strengthened further to check the peak water flow and prevent mine inundation.</p>
(vi)	<p>Rainwater harvesting shall be implemented for conservation and augmentation of ground water resource in the area in consultation with Central Ground Water Board.</p>	<p>Every year Tata Steel through its CSR wing constructed as well as renovate the old pond by removal of silts in and around Bhelatand lease area for conservation and augmentation of ground water. These ponds act as surface reservoir for rainwater. In addition to that, Rooftop rainwater harvesting structure has been constructed in office premises of Bhelatand washery .</p>
(vii)	<p>Catch drain and siltation ponds of appropriate size shall be constructed around the mine working coal heaps and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area. Roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. Sump capacity should provide adequate retention</p>	<ul style="list-style-type: none"> • There are no soil or OB dumps in the colliery and washery premises. Only the by-products are stored in the stockyards located in the washery premises which are sold off within 10-15 days. • Garland drains of adequate size and gradient already exist around the washery area to channelize the surface runoff. The runoff is diverted to the tailing ponds and clear water after settle is re-utilized in the washery.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

	period to allow proper setting of silt material. Dimension of the retaining wall to be constructed at the toe of the dump and OB benches within the mine to check run – off and siltation should be based on the rainfall.	
(viii)	Industrial waste water (CHP, workshop and waste water from the mine) should be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	No waste-water is discharged outside the washery premises. 100% water is re-circulated back for re-use in the washery. There is a central workshop and garage in Jamadoba where Effluent Treatment Plant having oil and grease trap facility has been provided. Some of the mine water is sent back into underground during stowing and remaining water is used for dust suppression, washery make-up water, greenbelt development and drinking water supply to colonies and stakeholders. We have also commissioned an STP for canteen wastewater in Colliery premises. Treated water of STP is used in horticulture and greenbelt development.

D. Noise & Vibration Control

(i)	Adequate measure shall be taken for control of noise levels below 85dBA in the work environment Workers engaged in blasting in drilling operation of HEMM, etc shall be provided with plugs/muffs.	Regular noise survey is being conducted in the underground work environment. Workers are provided with ear-plugs/ muffs in high noise areas. Since this is an underground mine where no HEMM is used. Coal preparation is done by drilling & solid blasting. The noise levels report is provided as Annexure- I .
(ii)	Controlled blasting techniques should be practiced with use of delay detonators to mitigate ground vibrations and fly rocks.	Not applicable as it is an underground mine. However, due to implementation of various mitigation measures, and use of delay detonators due to blasting in underground vibration does not cause damage to any structure on the surface.

E. Occupational Health & Safety

(i)	Besides carrying out regular periodic health check – up of their workers, 20% of the workers identified from workforce engaged in active mining operation shall be subjected to health check – up for occupational diseases and hearing impairment ,if any,	The periodic health check-up of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) centre approved by DGMS where 20 % of the workers identified from workforce engaged in active mining
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Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

	through an specialised agency / institution within the District/ State and the results reported to this Ministry and to DGMS.	operations are subjected to full medical check-up every year including hearing impairment check-up, etc. These results are regularly submitted to DGMS as per mines rules.
(ii)	Personal working in dusty area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Supervisory staff shall be held responsible for ensuring compulsory wearing of dust mask.	Persons working in dusty area have been provided with dust masks & have been given awareness training on safety & health aspects. Regular PME (Periodic Medical Examinations) are also being done.
(iii)	In case of outsourcing of work through MDO, the project proponent shall ensure the strict enforcement of above condition.	Not applicable

F. Biodiversity

(i)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the state Forest and Wildlife Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	Tata Steel has engaged a global organisation viz. IUCN (International Union for Conservation of Nature) which work in the field of faunal and floral conservation. We have prepared a Biodiversity Management Plan (BMP) and thereafter prepared BMP action plan (BAP) in association with IUCN for enhancement of biodiversity. We have already started to implement the BAP in our area for conservation and enhancement of flora and fauna. Some key initiatives for biodiversity enhancement are medicinal garden development, Native species plantation and Butterfly park development, artificial niche nesting etc.
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G. Implementation of Action Plan as per public Hearing And CSR Activities

(i)	Implementation of Action Plan on the issues raised during the Public Hearing shall be ensured. The Project proponent shall complete all the tasks as per Action plan submitted with budgetary provisions during the public Hearing. Land oustees should be compensated as per the norms laid out R&R Policy of the Company or the National R&R Policy of the State Government, whichever is higher.	The implementation of action plan on the issues raised during public hearing is already in progress. R&R is not applicable in this project.
(ii)	The Board of every company, shall ensure that the company spends in	The proposed CSR expenditure for the entire company is decided as per the new Company Rules.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

	every financial year, at least two per cent. of the average net profits of the company made during the three immediately preceding financial year, in pursuance of its corporate Social Responsibility policy under Section 135 of the Companies Act,2013, for the socio economic development of the neighbourhood.	Once the CSR budget for company is fixed, a share of that amount is dedicated and utilized for implementing the CSR activities at our Jharia Division level. The CSR expenditure of Tata Steel -Jharia Division in FY 21 was Rs.3.29 crores.
H. Corporate Environment Responsibility		
(i)	The Company should have a well laid down Environment Policy approved by the Board of Directors.	The Company already has an Environment Policy approved by the Managing Director.
(ii)	To have proper checks and balances, the Company should a well laid down system of reporting of non – compliances / violations of environmental norms to the Board of Directors of the Company and / or shareholders or stakeholders at large.	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.
(iii)	A separate environment 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. The reporting of Environmental Cell is directly to General Manager of the Division.
(iv)	The funds earmarked for environment protection measures should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office.	The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The year-wise expenditure is being already submitted to JSPCB as Environment Statement in Form-V. The total annual environmental expenditure for the financial year 2020-21 is Rs. 354.43 lakhs.
I. Statutory Obligations		
(i)	Environment clearance is granted subject to final outcome of Hon'ble Supreme Court of India, High Court, NGT and any other Court of Law, if any, as may be applicable to the project.	It shall be strictly followed.
(ii)	This Environmental Clearance is subject to obtaining requisite NBWL Clearance from the Standing Committee of National Board for	Not applicable.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

	Wildlife , if any , applicable to the project	
(iii)	The project proponent shall obtain Consent to Establish and Consent to Operate from the concerned State Pollution Control Board prior to increase in capacity of washery and effectively implement all the conditions stipulated therein.	The consent to establish has been granted by JSPCB (Ref no.- JSPCB/HO/RNC/CTE-342731/2017/686 dt. 20.11.2017). The Consent to Operate has been granted by JSPCB (Ref no.- JSPCB/HO/RNC/CTO-1581391/2018/1733 dt. 01.11.2018) valid till 31.03.2023 The conditions of CTE and CTO are being complied with and submitted to JSPCB.
(iv)	Project proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) for drawl of water (surface and ground water).	No Objection Certificate for withdrawal of mine water has already been applied for to Central Ground Water Board in March'17 and it is under consideration at CGWA, Delhi.
J. Monitoring of Project		
(i)	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year pre – monsoon (April-May) , monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground water Authority and Regional Director , Central Ground Water Board.	The monitoring of groundwater level and quality is done four times a year. The groundwater quality report & groundwater level are provided in Annexure-I .
(ii)	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, central Pollution Control Board and State Pollution Control Board.	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.
(iii)	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project	It shall be complied with.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

	authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	
(iv)	The activities pertaining to development of green belt/horticulture shall be reported to concern Regional Office of MoEF&CC on six monthly basis from the data of commencement of mining operation.	In our leasehold area, every year plantation of sapling is being done and saplings are distributed every year outside the leasehold area. In addition to above, maintenance of old saplings (converted into plants) and developing green area of the region is also being done. The greenbelt development plan has been submitted to MoEF&CC earlier.
(v)	For half yearly monitoring reports. The data should be monitored for period of April to September and October to March of the financial years and submitted to the concerned authorities Within 2 months of the completion of periodicity of monitoring.	The cycle of April to September and October to March of every financial year is being followed for submission of compliance and monitoring reports.
K. Miscellaneous		
(i)	A copy of clearance letter will be marked to concerned panchayat/local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	The copy of Clearance letter has been sent to District Commissioner, Municipal Commissioner and other government offices on 11 th May, 2017.
(ii)	An electronic copy of the EC letter shall be marked to the concerned State Pollution Control Board, Regional office , District Industry Sector and Collector's Office / Tehsildar Office for information in public domain within 30 days.	The electronic copy of EC letter has been forwarded to DC office, JSPCB Dhanbad office, JSPCB Ranchi office via mail on 11 th May, 2017.
(iii)	The EC letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM10, PM2.5, SO2 and Nox (ambient) and critical sectoral	The EC letter is already uploaded in company's website. The compliance reports shall also be uploaded once in six months in company's website with all monitoring reports. The display board at entrance of mine and washery covers all environment quality parameters and applicable statutory requirements as per the guidelines.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

	parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	
(iv)	The project authorities should advertise at least in two local newspapers 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 SPCB and also at web site of the Ministry of Environment, Forest and Climate Change at www.environmentclearance.nic.in and a copy of the same should be forwarded to the Regional Office	The Notice has been advertised in two local newspapers viz. Prabhat Khabar (Hindi) and Hindustan (Hindi) on May 05, 2017.
(v)	The Environmental Statement for each financial year ending 31 March in Form-V is mandated to be submitted by the PP for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the Company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Office of the MoEF&CC by e-mail.	The environmental statement for financial year 2020-21 has been submitted to JSPCB vide letter no. JMB/ENV/ESSA/05/734/2021 on 28 th September 2021 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 .

AIR QUALITY REPORT

Core zone & Buffer zone

Period- April'21 to June'21

No. of sampling points: 4

Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)							
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 µg/m ³	RSPM 24 Hourly Limit- 300 µg/m ³	SO ₂ 24 Hourly Limit- 120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
Sijua Mine Office Area	23°46'33.2" N/ 86°19'51" E	05.04.21	Clear	218.2	87.4	11.6	13.2
		21.05.21	Clear	194.8	80.7	10.5	11.6
		14.06.21	Rainy	168.7	69.5	10.2	11.4
Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	08.04.21	Clear	208.4	88.7	14.8	15.6
		19.05.21	Clear	180.6	72.3	12.7	13.4
		16.06.21	Rainy	174.2	70.6	10.9	12.8
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m ³	PM2.5 24 Hourly Limit- 60µg/m ³	SO ₂ 24 Hourly Limit-80µg/m ³	NO ₂ 24 Hourly Limit-80µg/m ³
Sijua Russi Vihar Colony	23°46'45.8" N/ 86°20'18.6" E	20.04.21	Clear	88.2	46.6	12.4	13.8
		17.05.21	Rainy	73.2	39.6	11.6	12.8
		03.06.21	Clear	76.2	40.1	12.7	13.5
Malkera Colony	23°47'10" N/ 86°17'39" E	15.04.21	Clear	82.7	39.5	11.7	12.2
		20.05.21	Clear	78.4	37.9	12.8	13.7
		07.06.21	Rainy	73.5	39.2	11.4	12.7
Bhelatand Colony	23°46'10.7" N/ 86°18'49"E	07.04.21	Clear	87.1	43.4	10.2	11.9
		13.05.21	Clear	80.6	38.2	12.5	14.8
		10.06.21	Clear	80.7	41.3	10.8	11.6



Sr. Manager (Environment)

AIR QUALITY REPORT

Core zone & Buffer zone

Period- July'21 to September'21

No. of sampling points: 4

Core zone (as per Air quality standards for coal mines in EPA Notification, 1988)							
Location	Latitude/ Longitude	Date	Weather Condition	SPM 24 Hourly Limit- 700 µg/m ³	RSPM 24 Hourly Limit- 300 µg/m ³	SO ₂ 24 Hourly Limit- 120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
Sijua Mine Office Area	23°46'33.2" N/ 86°19'51" E	20.07.21	Clear	194.6	73.2	12.6	13.8
		12.08.21	Clear	189.4	71.2	11.3	13.4
		16.09.21	Clear	192.4	74.2	11.7	12.6
Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	15.07.21	Clear	188.2	71.8	11.7	12.6
		05.08.21	Clear	198.6	76.4	12.7	13.8
		10.09.21	Cloudy	174.3	71.6	10.4	11.8
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m ³	PM2.5 24 Hourly Limit- 60µg/m ³	SO ₂ 24 Hourly Limit-80µg/m ³	NO ₂ 24 Hourly Limit-80µg/m ³
Sijua Russi Vihar Colony	23°46'45.8" N/ 86°20'18.6" E	22.07.21	Cloudy	69.8	33.6	10.2	11.4
		04.08.21	Cloudy	68.9	32.5	10.9	11.8
		20.09.21	Clear	76.2	38.6	11.2	12.4
Malkera Colony	23°47'10" N/ 86°17'39" E	19.07.21	Clear	71.3	37.4	10.7	11.2
		11.08.21	Clear	74.4	35.3	12.6	13.2
		21.09.21	Clear	73.3	34.7	10.4	11.8
Bhelatand Colony	23°46'10.7" N/ 86°18'49"E	21.07.21	Cloudy	68.7	32.9	11.2	12.4
		09.08.21	Clear	73.6	34.9	10.6	12.1
		07.09.21	Cloudy	69.8	30.5	11.3	12.9


Sr. Manager (Environment)

**Ground Water Quality Analysis (Hand Pump & Dugwell)
Pre - Monsoon Season- May'2021**

S.No	Date	Location	Time	Sample Parameter		
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$
1	24.05.21	Ruddi Basti	02:45 PM	2.96	7.2	748
2	24.05.21	Rampur Basti	11:35 AM	6.72	7.4	592
3	24.05.21	Malkera Trigunait Basti	12:20 PM	3.88	7.2	928
4	24.05.21	Sijua 6 No	12:50 PM	4.25	7.3	812
5	24.05.21	Sijua 12 No	01:15 PM	4.14	7.4	726
6	24.05.21	Rampur Basti, (Road Side)	12:05 PM	9.80	7.2	762
7	24.05.21	Bansh Kapuria	02:15 PM	6.47	7.3	705
8	24.05.21	Pasitand Basti	11:55 AM	4.59	7.2	645
9	24.05.21	Bhelatand 500 Qtr.(Back Side)	01:55 PM	1.72	7.3	620



Sr. Manager (Environment)

**Ground Water Quality Analysis (Hand Pump & Dugwell)
Monsoon Season- August'2021**

S.No	Date	Location	Time	Sample Parameter		
				Depth in meter (m)	pH	Electrical Conductivity, $\mu\text{S/m}$
1	05.08.21	Ruddi Basti	02:20 PM	1.02	7.1	648
2	05.08.21	Rampur Basti	12:25 PM	1.92	7.0	668
3	05.08.21	Malkera Trigunait Basti	11:40 AM	1.40	7.1	746
4	05.08.21	Sijua 6 No	12:50 PM	1.86	7.2	628
5	05.08.21	Sijua 12 No	01:10 PM	1.71	7.1	735
6	05.08.21	Rampur Basti, (Road Side)	12:10 PM	4.72	7.0	734
7	05.08.21	Bansh Kapuria	01:45 PM	3.28	7.1	694
8	05.08.21	Pasitand Basti	11:55 AM	2.47	7.2	594
9	05.08.21	Bhelatand 500 Qtr.(Back Side)	01:30 PM	0.76	7.0	726



Sr. Manager (Environment)

NOISE SURVEY REPORT- Bhelatand A. Colliery

Date- 21.07.2021

S.No	Unit / Place	Equipment / Location	Distance (meter)	Leq (dB 'A')	Exposure Hours
1	14 to 15 Seam (S.O.F)	2 nd D / ML (H. T Pump)	-	87.2	4hrs./shift
2		3 rd D / 'O' L (6 L 3 Pump)	-	84.9	2 hrs./shift
3		4 th D / P L (Roto Pump)	-	76.4	2 hrs./shift
4		2 nd D / DL (Belt Conveyor)	-	68.2	6 hrs./shift
5		2 nd A D / NL (Auxiliary Fan)	-	86.1	2 hrs./shift
6		P L /4 th D- 5 th D (Auxiliary Fan)	-	84.7	2 hrs./shift
7	Surface	Compressor Room	-	72.3	8 hrs./shift
8		Workshop	-	65.2	8 hrs./shift
9		Fan House (MMV)	-	78.2	8 hrs./shift
10		1 Pit Engine Room	-	69.1	8 hrs./shift



Sr. Manager (Environment)

NOISE SURVEY REPORT- Bhelatand Coal Washery

Date-28.08.2021

S.No.	Unit / Place	Equipment / Location	Distance (meter)	Leq (dB 'A')	Exposure Hours
1	BCPP- NRD	Laboratory Room	-	60.5	8 hrs./shift
2		Laboratory Furnace Room	-	64.2	8 hrs./shift
3		Chemist Room	-	62.3	8 hrs./shift
4		Roller Crusher Area	-	80.2	8 hrs./shift
5		Jaw Crusher Area	-	82.5	8 hrs./shift
6		Sample Preparation Room	-	67.3	8 hrs./shift

The warning limit is 85dB "A" and the danger limit is 90 dB "A" for 8 (Eight) hours of working. All the values are within permissible limit.



Sr. Manager (Environment)

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10 TEST REPORT NO: ECO LAB/AAQ-1/05/2021
TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
Address of the Customer : Jamadoba, Distt. Dhanbad Jharkhand
Sample Collected By : Mr. Arvind Singh
Sampling Method : IS: 5182
Date of Sampling : May 26th , 2021
Date of Testing : 29.05.2021 to 04.06.2021
Environmental Condition : A.Temp(°C) : 36°C, Humidity(%) : 66,
Weather Condition –Shiny
Instrument Name & Lab ID : Fine Dust Sampler / Respirable Dust Sampler
Location : Bhelatand Officers Colony

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1	PM ₁₀ (µg/m ³)	IS:5182(Part-23)	84.25	2-1000(µg/m ³)	100
2	PM _{2.5} (µg/m ³)	IS:5182(Part-24)	39.40	2-100(µg/m ³)	60
3	SO ₂ (µg/m ³)	IS:5182 (Part-2)	14.28	5-200(µg/m ³)	80
4	NO _x (µg/m ³)	IS:5182 (Part-6)	25.32	5-200(µg/m ³)	80
5	NH ₃ (µg/m ³)	IS:5182(Part-25)	12.10	0.02-700(µg/m ³)	400
6	O ₃ (µg/m ³)	IS:5182(Part-9)	20.50	1-200(µg/m ³)	180
7	CO (mg/m ³)	IS:5182 (Part-10)	0.56	0-500(mg/l)	4.0
8	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100(µg/m ³)	1.0
9	C ₆ H ₆ (µg/m ³)	IS:5182(Part-11)	BDL	-	05
10	BaP (ng/m ³)	IS:5182(Part-12)	BDL	>2(ng/m ³)	01
11	As (ng/m ³)	NAAQM Guideline Volume-I by CPCB	BDL	1-100(ng/m ³)	06
12	Ni (ng/m ³)	IS:5182(Part-26)	BDL	1-100(ng/m ³)	20

*The results is related only to tested item.

Note: Below Detection Limit

Aravind Singh
Analyst

Ravi Bhargava
Authorized Signatory,
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-2/05/2021

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
Address of the Customer : Jamadoba, Distt. Dhanbad, Jharkhand
Sample Collected By : Mr. Arvind Singh
Sampling Method : IS: 5182
Date of Sampling : May 25th , 2021
Date of Testing : 29.05.2021 to 04.06.2021
Environmental Condition : A.Temp(°C) : 36°C, Humidity(%) : 66,
Weather Condition –Shiny
Instrument Name & Lab ID : Fine Dust Sampler / Respirable Dust Sampler
Location : WTP Malkera

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1	PM ₁₀ (µg/m ³)	IS:5182(Part-23)	88.75	2-1000(µg/m ³)	100
2	PM _{2.5} (µg/m ³)	IS:5182(Part-24)	41.58	2-100(µg/m ³)	60
3	SO ₂ (µg/m ³)	IS:5182 (Part-2)	16.50	5-200(µg/m ³)	80
4	NO _x (µg/m ³)	IS:5182 (Part-6)	24.82	5-200(µg/m ³)	80
5	NH ₃ (µg/m ³)	IS:5182(Part-25)	16.05	0.02-700(µg/m ³)	400
6	O ₃ (µg/m ³)	IS:5182(Part-9)	21.0	1-200(µg/m ³)	180
7	CO (mg/m ³)	IS:5182 (Part-10)	1.25	0-500(mg/l)	4.0
8	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100(µg/m ³)	1.0
9	C ₆ H ₆ (µg/m ³)	IS:5182(Part-11)	BDL	-	05
10	BaP (ng/m ³)	IS:5182(Part-12)	BDL	>2(ng/m ³)	01
11	As (ng/m ³)	NAAQM Guideline Volume-I by CPCB	BDL	1-100(ng/m ³)	06
12	Ni (ng/m ³)	IS:5182(Part-26)	BDL	1-100(ng/m ³)	20

*The results is related only to tested item.

Note: Below Detection Limit

Akshay
Analyst

Rohan
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Akhil
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-3/05/2021

TEST REPORT ISSUE DATE: 04.06.2021

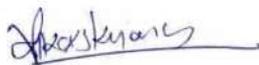
TEST REPORT OF AMBIENT AIR*

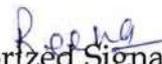
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Weather Condition –Shiny
Instrument Name & Lab ID : Fine Dust Sampler / Respirable Dust Sampler
Location : Sijua Colliery 15 Pit

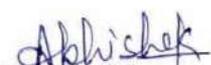
Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1	PM ₁₀ (µg/m ³)	IS:5182(Part-23)	86.45	2-1000(µg/m ³)	100
2	PM _{2.5} (µg/m ³)	IS:5182(Part-24)	42.60	2-100(µg/m ³)	60
3	SO ₂ (µg/m ³)	IS:5182 (Part-2)	15.36	5-200(µg/m ³)	80
4	NO _x (µg/m ³)	IS:5182 (Part-6)	28.50	5-200(µg/m ³)	80
5	NH ₃ (µg/m ³)	IS:5182(Part-25)	17.20	0.02-700(µg/m ³)	400
6	O ₃ (µg/m ³)	IS:5182(Part-9)	22.60	1-200(µg/m ³)	180
7	CO (mg/m ³)	IS:5182 (Part-10)	1.05	0-500(mg/l)	4.0
8	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100(µg/m ³)	1.0
9	C ₆ H ₆ (µg/m ³)	IS:5182(Part-11)	BDL	-	05
10	BaP (ng/m ³)	IS:5182(Part-12)	BDL	>2(ng/m ³)	01
11	As (ng/m ³)	NAAQM Guideline Volume-I by CPCB	BDL	1-100(ng/m ³)	06
12	Ni (ng/m ³)	IS:5182(Part-26)	BDL	1-100(ng/m ³)	20

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Analyst


Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726


Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AAQ-4/05/2021

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF AMBIENT AIR*

Name of the Customer : Tata Steel Colliery (Sijua Group)
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Sampling Method : IS: 5182
Date of Sampling : May 25th , 2021
Date of Testing : 29.05.2021 to 04.06.2021
Environmental Condition : A.Temp(°C) : 36°C, Humidity(%) : 66,
Weather Condition –Shiny
Instrument Name & Lab ID : Fine Dust Sampler / Respirable Dust Sampler
Location : Russi Vihar Colony

Sl. No.	Tests Conducted	Method	Results	Detection Range	NAAQ Standards as per CPCB, New Delhi, Nov. 18 th , 2009
1	PM ₁₀ (µg/m ³)	IS:5182(Part-23)	81.86	2-1000(µg/m ³)	100
2	PM _{2.5} (µg/m ³)	IS:5182(Part-24)	40.75	2-100(µg/m ³)	60
3	SO ₂ (µg/m ³)	IS:5182 (Part-2)	15.22	5-200(µg/m ³)	80
4	NO _x (µg/m ³)	IS:5182 (Part-6)	21.50	5-200(µg/m ³)	80
5	NH ₃ (µg/m ³)	IS:5182(Part-25)	14.10	0.02-700(µg/m ³)	400
6	O ₃ (µg/m ³)	IS:5182(Part-9)	19.10	1-200(µg/m ³)	180
7	CO (mg/m ³)	IS:5182 (Part-10)	1.25	0-500(mg/l)	4.0
8	Pb(µg/m ³)	IS:5182(Part-22)	BDL	1-100(µg/m ³)	1.0
9	C ₆ H ₆ (µg/m ³)	IS:5182(Part-11)	BDL	-	05
10	BaP (ng/m ³)	IS:5182(Part-12)	BDL	>2(ng/m ³)	01
11	As (ng/m ³)	NAAQM Guideline Volume-I by CPCB	BDL	1-100(ng/m ³)	06
12	Ni (ng/m ³)	IS:5182(Part-26)	BDL	1-100(ng/m ³)	20

*The results is related only to tested item.

Note: Below Detection Limit.

Analyst

Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No. 8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/WW/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : Bhelatand A. Colliery

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23 rd Ed. 2017, 4500H ¹ A+B	7.76	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23 rd Ed. 2017, 2540D	18.50	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017, 2540C	768.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23 rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23 rd Ed. 2017, 5210 A+B	12.50	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23 rd Ed. 2017, 5220 A+B	32.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

Abhishek
Analyst

Roena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601,GSTIN : 09AAACE6076H1Z

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TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : 15 Pit Sijua Colliery

Sl. No.	TESTS	PROTOCOL	RESULT	Range of Testing / Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H ¹ A+B	7.53	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	15.80	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	862.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	11.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	46.0	5-50000	250.0

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Abhishek
Analyst

Reena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601,GSTIN : 09AAACE6076H1Z

ecoMen
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TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : BCPP (Final Settling Pond)

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H ⁺ A+B	7.25	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	36.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	738.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017,5210 A+B	9.5	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	60.0	5-50000	250.0

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Aravind Singh
Analyst

Rajna
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector H, Aliganj, Lucknow -226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601,GSTIN : 09AAACE6076H1Z

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TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : ETP Inlet Sijua Canteen

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	8.49	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	152.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	926.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017,5210 A+B	33.50	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	232.0	5-50000	250.0

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[Signature]
Analyst

[Signature]
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

[Signature]
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

ecoMen
LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

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TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : ETP Outlet Sijua Canteen

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.21	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	35.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	836.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	17.60	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	76.0	5-50000	250.0

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Abhishek
Analyst

Reena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

ecoMen
LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

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TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample :ETP Inlet Bhelatand Canteen

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.85	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	146.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	786.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	29.50	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	172.0	5-50000	250.0

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Ravi Bhargava
Analyst

Ravi Bhargava
Authorized Signatory,
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601,GSTIN : 09AAACE6076H1Z

ecoMen
LABORATORIES PVT LTD.

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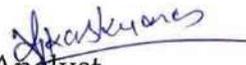
TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : ETP Outlet Bhelat and Canteen

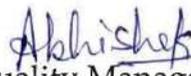
Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	7.56	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	55.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	796.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017,5210 A+B	15.0	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	68.0	5-50000	250.0

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BDL = Below Detection Limit


Analyst


Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726


Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601,GSTIN : 09AAACE6076H1Z

ecoMen
LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

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TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : STP Inlet Adarsh Nagar

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection
1	pH	APHA, 23rd Ed. 2017, 4500H' A+B	8.25	2-12
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	166.0	5-5000
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	872.0	10-10,000
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017,5210 A+B	47.0	5-10000
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	432.0	5-50000

*The result are related only to item tested.

BDL = Below Detection Limit

Arvind Singh
Analyst

Reena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

ecoMen
LABORATORIES PVT LTD.

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TEST REPORT OF WASTE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : STP Outlet Adarsh Nagar

Sl. No.	TESTS	PROTOCOL	RESULT	Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23rd Ed. 2017, 4500H A+B	7.71	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23rd Ed. 2017, 2540D	41.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23rd Ed. 2017, 2540C	927.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23rd Ed. 2017, 5210 A+B	18.50	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23rd Ed. 2017, 5220 A+B	144.0	5-50000	250.0

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Ravi Bhargava
Analyst

Raghu
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph. 2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : 8 Pit Sijua Colliery

Sl. No.	TESTS	PROTOCOL	RESULT	Range of Testing / Limits of Detection	G.S.R 422(E)
					Desirable Limit
1	pH	APHA, 23 rd Ed. 2017, 4500H' A+B	7.72	2-12	5.5-9.0
2	Total Suspended Solid as TSS (mg/l)	APHA, 23 rd Ed. 2017, 2540D	39.0	5-5000	100.0
3	Total Dissolved Solids as TDS (mg/l)	APHA, 23 rd Ed. 2017, 2540C	726.0	10-10,000	-
4	Oil & Grease as O & G (mg/l)	APHA, 23 rd Ed. 2017, 5520 (A+D)	BDL	5-600	10.0
5	Biochemical Oxygen Demand as BOD (mg/l) 3days at 27°C	APHA, 23 rd Ed. 2017, 5210 A+B	5.2	5-10000	30.0
6	Chemical Oxygen Demand as COD (mg/l)	APHA, 23 rd Ed. 2017, 5220 A+B	12.0	5-50000	250.0

*The result are related only to item tested.

BDL = Below Detection Limit

Abhishek
Analyst

Rohan
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601,GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/MCPM/05/21

TEST REPORT ISSUE DATE: 04.06.2021

MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)

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

Month : May, 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	Bhelatand Officer Colony	26.05.2021	2.24	0.17	1.48	3.46
2	WTP Malkera	26.05.2021	2.35	0.25	1.51	3.41

Atkash Kumar
Analyst

Reena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

ecoMen
LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : Ruddi Basti

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	31.8	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	1020.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	456.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.48	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+ B	216.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	220.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	62.40	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	15.52	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.21	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	36.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO42- E	36.50	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO3- B	12.0	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.51	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.14	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit

Ravi Bhargava
Analyst

Reena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No. 8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph. 2746282 Fax- 2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : Rampur Basti

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	31.6	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	936.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	584.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.56	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+ B	212.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	248.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	65.6	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	20.41	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.48	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	60.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO42- E	42.50	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO3- B	13.0	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.32	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.22	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit

Akshay
Analyst

Reena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : Sijua 6 No.

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	32.0	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	796.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	488.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.48	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+ B	180.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	232.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	64.0	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	17.49	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.21	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	52.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO42- E	46.0	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO3- B	12.0	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.44	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.23	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd Ed. 2017, 4500CN , A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit

Anshu Kumar
Analyst

Reena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No. 8 Second Floor Arif Chamber
Sector H, Aliganj, Lucknow-226024
Ph. 2746282 Fax- 2745726

Akhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : Bansh Kapuria

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991(Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	31.4	10-100	-	-
3.	Electrical Conductivity (μ mhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	846.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	490.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.47	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+B	192.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	228.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	51.20	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	24.30	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.21	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	30.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO42- E	34.50	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO3- B	15.75	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.35	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.16	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd Ed. 2017, 4500CN , A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit.

Abhishek
Analyst

Ricene
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No. 8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph. 2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601,GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/GW/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF GROUND WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample : Pasitand Basti

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	INDIAN STANDARDS as per IS 10500:1991 (Reaff:2012)	
					Desirable	Permissible
1.	Colour (Hazen unit)	APHA, 23 rd Ed. 2017, 2120 B	<5.0	5-100	5.00	15.0
2.	Temperature (0C)	APHA, 23 rd Ed. 2017, (2550 A+B)	32.2	10-100	-	-
3.	Electrical Conductivity (umhos/cm)	APHA, 23 rd Ed. 2017, 2510-A+B	676.0	1-2000	-	-
4.	Dissolved Solids (mg/l)	APHA, 23 rd Ed. 2017 (2540B)	412.0	5-10000	-	-
5.	pH	APHA, 23 rd Ed. 2017, 4500H+ A+B	7.34	2-12	6.5-8.5	No Relax.
6.	Alkalinity (mg/l)	APHA, 23 rd Ed. 2017, 2320 A+B	176.0	5-1500	200	600
7.	Total Hardness as CaCO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 2340 A+C	188.0	5-1500	200.0	600.0
8.	Calcium as Ca (mg/l)	APHA, 23 rd Ed. 2017, 3500 Ca A+B	43.20	5-1000	75.0	200.0
9.	Magnesium as Mg (mg/l)	APHA, 23 rd Ed. 2017, 3500 Mg A+B	19.44	5-1000	30.0	100.0
10.	Copper as Cu (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-5	0.05	1.5
11.	Iron as Fe (mg/l)	APHA, 23 rd Ed. 2017, 3500 Fe B	0.15	0.02-50	0.3	No Relax.
12.	Chloride as Cl (mg/l)	APHA, 23 rd Ed. 2017, 4500 Cl A+B	38.0	5-1000	250.0	1000.0
13.	Sulfate as SO ₄ (mg/l)	APHA, 23 rd Ed. 2017, 4500-SO ₄ -E	42.75	1.0-250	200.0	400.0
14.	Nitrate Nitrogen as NO ₃ (mg/l)	APHA, 23 rd Ed. 2017, 4500-NO ₃ -B	14.57	5-100	45.0	No Relax.
15.	Fluorides as F (mg/l)	APHA, 23 rd Ed. 2017, 4500-C	0.34	0.05-10	1.0	1.5
16.	Mercury as Hg (mg/l)	APHA, 23 rd Ed. 2017, 3112 A+B	BDL	0.001-1	0.001	No Relax.
17.	Cadmium as Cd (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.002-2	0.003	No Relax
18.	Nickel as Ni (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.02-2	0.02	No Relax
19.	Arsenic as As (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-2.0	0.01	No Relax
20.	Lead as Pb (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.01-1.0	0.01	No Relax.
21.	Zinc as Zn (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	0.18	0.02-50	5	15
22.	Total Chromium as Cr (mg/l)	APHA, 23 rd Ed. 2017, 3111 A+B	BDL	0.05-50	0.05	No Relax
23.	Cyanide as CN (mg/l)	APHA, 23 rd Ed. 2017, 4500CN, A+D	BDL	0.02-10	0.05	No Relax.

*The result are related only to item tested. BDL = Below Detection Limit.

Abhishek
Analyst

Reena
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

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LABORATORIES PVT LTD.

An approved Laboratory from Ministry of Environment , Forests and climate Change, Govt. of India, New Delhi

FORMAT NO. ECO/QS/FORMAT/10

TEST REPORT NO: ECO LAB/AN/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF AMBIENT NOISE LEVEL

Name of the Customer : Tata Steel Colliery (Sijua Group)
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.	Bhelatand Officers Colony	26.05.2021	53.1	47.3	50.2	49.8	43.9	46.8
2.	WTP Malkera	26.05.2021	60.1	51.8	55.9	52.3	45.2	48.7
3.	Sijua Colliery 15 Pit	25.05.2021	60.5	48.0	54.2	58.9	51.8	55.3
4.	RussiVihar Colony	25.05.2021	57.7	49.1	53.4	48.1	42.9	45.5

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.

[Signature]
Analyst

[Signature]
Authorized Signatory
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

[Signature]
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601, GSTIN : 09AAACE6076H1Z

ecoMen
LABORATORIES PVT LTD.

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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample :Katri River, Up Stream

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA,23 rd Ed.2017,4500H+A+B,	7.26	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	15.0	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA,23 rd Ed.2017 (2540C)	578.0	5-10000	1500
4.	Dissolved Oxygen as DO (mg/l)	APHA,23 rd Ed.2017 (4500 A+C)	5.6	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	88.0	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)	57.50	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

Abhishek
Analyst

R. Singh
Authorized Signatory,
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

ECOMEN LABORATORIES PVT. LTD.

Flat No. 8, 2nd Floor, Arif Chamber-V, Sector H, Aliganj, Lucknow - 226 024

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

E-mail: ravi.bhargava@gmail.com, Website: www.ecomen.in, CIN - U74210UP1989PTC010601,GSTIN : 09AAACE6076H1Z

ecoMen
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FORMAT NO. ECO/QS/FORMAT/07

TEST REPORT NO: ECO LAB/SW/05/21

TEST REPORT ISSUE DATE: 04.06.2021

TEST REPORT OF SURFACE WATER*

Name of the Customer : M/s Tata Steel Ltd. (Sijua Group)
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 : 24.05.2021 to 28.05.2021
Date of Sample Receiving : 29.05.2021
Date of Analysis : 29.05.2021 to 03.06.2021
Source of Sample :Katri River, Down Stream

Sl. No.	TESTS	PROTOCOL	RESULT	Detection Range	IS:2296 Class-C
1.	pH	APHA,23 rd Ed.2017, 4500H+A+B,	7.79	2-12	8.5
2.	Turbidity as (NTU)	APHA, 23 rd Ed. 2017, 2130-A+B	13.98	1-100	-
3.	Total Dissolved Solids as TDS (mg/l)	APHA,23 rd Ed.2017 (2540C)	656.0	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	82.0	5-1000	-
7.	Fluorides as F (mg/l)	APHA,23 rd Ed.2017 (4500 - C)	0.64	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

Ravi Bhargava
Analyst

R. Singh
Authorized Signatory,
Ecomen Laboratories Pvt. Ltd.
Flat No.8 Second Floor Arif Chamber
Sector-H, Aliganj, Lucknow-226024
Ph.2746282 Fax-2745726

Abhishek
Quality Manager

M/S TATA STEEL LIMITED

(SIJUA GROUP)



ADITI R&D SERVICES

Testing Laboratory

NABL ACCREDITED

(A Constituent Board of Quality Council of India)

ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified

Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O.- Domgarh, Dist.- Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2682

Date: 12.08.2021

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 09.08.2021 to 10.08.2021
- Date of Testing : 11.08.2021
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION - RUSSI VIHAR COLONY				
	Avg. Ambient Temperature	29°C	Avg. Humidity	70%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	78.4	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	43.50	60 µg/m ³	
3.	SO ₂ , µg/m ³	19.44	80 µg/m ³	
4.	NO ₂ , µg/m ³	28.83	80 µg/m ³	
5.	Ozone, µg/m ³	28.6	180 µg/m ³	
6.	NH ₃ , µg/m ³	16.61	400 µg/m ³	
7.	CO, mg/m ³	2.1	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6 ng/m ³	
10.	Ni, ng/m ³	BDL	20 ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




Technical Manager
Aditi R&D Services

Statements :

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Testing Laboratory

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Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O.- Domgarh, Dist.- Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2683

Date: 12.08.2021

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 09.08.2021 to 10.08.2021
- Date of Testing : 11.08.2021
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – SIJUA COLLIERY, 15 PIT				
	Avg. Ambient Temperature	29°C	Avg. Humidity	70%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	93.20	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	47.30	60 µg/m ³	
3.	SO ₂ , µg/m ³	21.73	80 µg/m ³	
4.	NO ₂ , µg/m ³	23.30	80 µg/m ³	
5.	Ozone, µg/m ³	22.03	180 µg/m ³	
6.	NH ₃ , µg/m ³	17.82	400 µg/m ³	
7.	CO, mg/m ³	1.64	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6 ng/m ³	
10.	Ni, ng/m ³	BDL	20 ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




Technical Manager
Aditi R&D Services

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Testing Laboratory

NABL ACCREDITED

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ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified

Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O. - Domgarh, Dist. - Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/2684

Date: 12.08.2021

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 09.08.2021 to 10.08.2021
- Date of Testing : 11.08.2021
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – BHELATAND OFFICER COLONY			
	Avg. Ambient Temperature	29°C	Avg. Humidity
SI No.	Particulars	Value	70%
1.	Particulate Matter (PM ₁₀), µg/m ³	87.36	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	41.16	60 µg/m ³
3.	SO ₂ , µg/m ³	22.24	80 µg/m ³
4.	NO ₂ , µg/m ³	18.68	80 µg/m ³
5.	Ozone, µg/m ³	16.20	180 µg/m ³
6.	NH ₃ , µg/m ³	21.35	400 µg/m ³
7.	CO, mg/m ³	0.608	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, µg/m ³	BDL	6 µg/m ³
10.	Ni, µg/m ³	BDL	20 µg/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzoapyrene µg/m ³	BDL	1 µg/m ³

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




Technical Manager
Aditi R&D Services

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Testing Laboratory

NABL ACCREDITED

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ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified

Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O. - Domgarh, Dist. - Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2685

Date: 12.08.2021

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 09.08.2021 to 10.08.2021
- Date of Testing : 11.08.2021
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – MALKERA (WTP) NEAR KALI MANDIR				
	Avg. Ambient Temperature	29 ^o C	Avg. Humidity	70%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	94.20	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	43.50	60 µg/m ³	
3.	SO ₂ , µg/m ³	17.23	80 µg/m ³	
4.	NO ₂ , µg/m ³	23.05	80 µg/m ³	
5.	Ozone, µg/m ³	16.44	180 µg/m ³	
6.	NH ₃ , µg/m ³	16.53	400 µg/m ³	
7.	CO, mg/m ³	1.34	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, µg/m ³	BDL	6 µg/m ³	
10.	Ni, µg/m ³	BDL	20 µg/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene µg/m ³	BDL	1 µg/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air Quality Standard.

NOTE: BDL - Below Detection Limit

S. D. Reg

Sr. Chemist
Aditi R&D Services



[Signature]
Technical Manager
Aditi R&D Services

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ADITI R&D SERVICES

Testing Laboratory

NABL ACCREDITED

(A Constituent Board of Quality Council of India)

ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified

Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O. - Domgarh, Dist. - Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2805

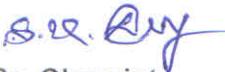
Date: 18.08.2021

TEST REPORT OF SURFACE WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Katri River (Up Stream)
2. Katri River (Down Stream)
- Date of Sample Collection: 09.08.2021
- Date of Testing : 11.08.2021 – 16.08.2021
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO₄

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Katri River (Up Stream)	Katri River (Down Stream)		
1.	pH,	7.70	7.82	6.5 - 8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	515	565	1500(Max.)	IS-3025 (P-16): 1984
3.	Turbidity, NTU	8.0	16.5	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	5.5	5.4	4 (Min.)	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	1.0	1.2	3	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	74.0	83.0	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.60	0.68	1.5 (Max.)	IS-3025 (P-60):2008
8.	Sulphate as SO ₄ , mg/l	50.45	59.2	400 (Max.)	IS-3025 (P-24):1986


Sr. Chemist
Aditi R&D Services




Technical Manager
Aditi R&D Services, Sindri

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ADITI R&D SERVICES

Testing Laboratory

NABL ACCREDITED

(A Constituent Board of Quality Council of India)

ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified

Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O.- Domgarh, Dist.- Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2806

Date: 18.08.2021

TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. 15 Pit Sijua Colliery
2. 8 Pit Sijua Colliery
3. 2 Pit Sijua Colliery
- Date of Sample Collection: 09.08.2021
- Date of Testing : 11.08.2021- 17.08.2021
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE			Limit as per IS-2296 Class B (For Bathing)	Test Method
		15 Pit Sijua Colliery	8 Pit Sijua Colliery	2 Pit Sijua Colliery		
1.	pH,	7.34	7.70	7.76	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	780	746	530	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	12.8	14.4	14.5	-	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	1.3	1.2	1.2	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	30.1	36.1	36.9	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	BDL	BDL	BDL	-	IS-3025 (P-39):2021


Sr. Chemist
Aditi R&D Services




Technical Manager
Aditi R&D Services, Sindri

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Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O. - Domgarh, Dist. - Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2806

Date: 18.08.2021

TEST REPORT OF EFFLUENT

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. BCPP (Final Settling Pond)
- Date of Sample Collection: 09.08.2021
- Date of Testing : 11.08.2021- 17.08.2021
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE	MoEF&C Notification 1 st Jan.2016 Permissible Max. Desirable Limit	Test Method
		BCPP (Final Settling Pond)		
1.	pH,	7.45	6.0 - 9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	704	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	28.0	100	IS-3025 (P-17): 1984
4.	Bio.chemical Oxygen Demand, mg/l	1.4	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	58	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	BDL	10	IS-3025 (P-39):2021

S. R. Dey

Sr. Chemist
• Aditi R&D Services



J. M. J.

Technical Manager
Aditi R&D Services, Sindri

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Sindri, Industrial Area,
P.O.- Domgarh, Dist.- Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2807

Date: 18.08.2021

TEST REPORT OF DRINKING WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. W.T.P. (Malkera)
2. WTP (Bhelatand)
- Date of Sample Collection: 09.08.2021
- Date of Testing : 11.08.2021 - 17.08.2021
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boran.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		W.T.P. Malkera	W.T.P. Bhelatand	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste,	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	1	1	1.0	5.0	IS 3025 (P-10):1984
5.	pH	7.54	7.74	6.5-8.5	No. Relax.	IS-3025(P-11): 1983
6.	Total Hardness as CaCO ₃ , mg/l	220.0	232	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl, mg/l	62.0	45.0	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl ₂ mg/l	BDL	BDL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	494.0	568	500	2000	IS 3025 (P-16):1984
10.	Calcium as Ca, mg/l	52.8	56.0	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992

Continued on Page 2



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Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O.- Domgarh, Dist.- Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirnds-services.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

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Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		W. T. P. (Malkera)	W.T.P. (Bhelatand)	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO ₄ , mg/l	44.64	42	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO ₃ , mg/l	13.8	1288	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.44	0.26	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C ₆ H ₅ OH) mg/l	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	0.14	0.10	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO ₃ , mg/l,	172.0	186	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




Technical Manager
Aditi R&D Services, Sindri

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Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O. - Domgarh, Dist.- Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2808

Date: 18.08.2021

TEST REPORT OF GROUND WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. Malkera Trigunati Basti
2. Sijua 12 No.
3. Rampur Basti (Road side)
4. Bhelatand Basti (Near 500 Quarters)
- Date of Sample Collection : 09.08.2021
- Date of Testing : 11.08.2021 – 16.08.2021
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Hexavalent Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

TEST RESULT

Sl. No	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Malkera Trigunail Basti	Sijua 12 No	Rampur Basti (Road side)	Bhelatand Basti (Near 500 Quarters)	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	2	2	1	5	15	IS 3025 (P-4):2021
2.	Temperature °C	25	26	25	26	-	-	-
3.	Electrical Conductivity, µmhos/cm	896	928	972	966	-	-	-
4.	Total Dissolved Solids, mg/l	510	556	580	584	-	-	IS 3025(P-16):1984
5.	pH	7.74	7.42	7.62	7.8	6.5-8.5	No Relax	IS-3025(P-11):1983
6.	Total Hardness as CaCO ₃ , mg/l	218	242	260	228	200	600	IS 3025(P-21):2009
7.	Calcium as Ca, mg/l	52.0	58	63	55	75	200	IS 3025(P-40):1991
8.	Magnesium as Mg, mg/l	21.1	24	25	22	30	100	IS 3025(P-46):1994
9.	Chloride as Cl, mg/l	31.2	64	60	38.9	250	1000	IS 3025(P-32):1988
10.	Fluoride as F, mg/l	0.33	0.40	0.58	0.50	1.0	1.5	IS 3025(P-60):2008

Continued on Page -2



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Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O. - Domgarh, Dist. - Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirnds.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

- 2 -

Sl. No.	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Malkera Trigunati Basti	Sijua 12 No	Rampur Basti (Road side)	Bhelatand Basti(Near 500 Quarters)	Desirable	Permissible	
11	Sulphate as SO ₄ , mg/l	42.6	52	44.1	35.0	200	400	IS 3025(P-24):1986
12	Nitrate as NO ₃ , mg/l	12.6	11.5	11.2	10.6	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO ₃ , mg/l,	186	192	244	218	200	600	IS 3025(P-23):1983
14	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15	Zinc as Zn, mg/l,	0.24	0.11	0.17	0.22	5	15	IS 3025(P-42):1992
16	Iron a Fe, mg/l	0.15	0.11	0.14	0.18	0.3	No. Relax	IS 3025(P-53):2003
17	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	0.05	1.5	IS3025 (P-42):1992
18	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




Technical Manager
Aditi R&D Services, Sindri

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Plot No. - I-B-17 (P)
Sindri, Industrial Area,
P.O. - Domgarh, Dist. - Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/ 2809

Date: 18.08.2021

TEST REPORT OF WASTE WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code : STP – AADARSH NAGRI (Inlet and Outlet)
- Date of Sample Collection: 10.08.2021
- Date of Testing : 11.08.2021 – 16.08.2021
- Test : pH, TDS, TSS, BOD, COD AND OIL & GREASE

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		G.S.R. 422(E) Desirable Limit	Test Method
		STP INLET – AADARSH NAGARI	STP OUTLET - AADARSH NAGARI		
1.	pH,	8.25	8.10	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	583	509	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids	105	12	100	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	20.2	15.4	30.0	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	220	92.8	250	IS-3025 (P-58):2006
6.	Oil & Grease	BDL	BDL	10	IS-3025 (P-39):2021


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Sindri, Industrial Area,
P.O.- Domgarh, Dist.- Dhanbad
Jharkhand - 828107
Email ID: sindriaditi@gmail.com
Website: aditimdservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date	NAME AND ADDRESS OF THE CLIENT			
ARDS/21-22/2686 Date:12.08.2021	TATA STEEL JHARIA DIVISION			
Date of Monitoring	TATA STEEL COLLIERY (SIJUA GROUP)			
	DIST. - DHANBAD (JHARKHAND)			
09.08.2021 – 10.08.2021	Avg. Ambient Temperature (°C)	Average Humidity (%)	Weather Condition	Status of the plant
Work Order 4700092573/932 Dt. 20.07.2021	29	68	Clear	Running

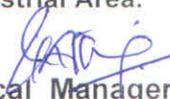
MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leq	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
	LOCATION								
	SIJUA GROUP							Industrial Area	Industrial Area
1.	WTP Malkera	60.8	58.1	59.66	50.6	48.2	49.56	75	70
2.	Sijua Colliery 15 Pit	72.8	68.9	71.27	58.4	54.9	56.99		
								Residential Area	Residential Area
3.	Russi Vihar Colony	52	48	50.45	42	38	40.45	55	45
4.	Bhelatand Officer Colony	50	46	48.45	40	36	38.45		

Remarks: Noise level is well within the standard specified limit for Industrial Area.


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Aditi R&D Services, Sindri

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Email ID: sindriaditi@gmail.com
Website: aditirndservices.com
Phone: 0326-2952377 (O)
Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/21-22/2810

Date: 18.08.2021

TEST REPORT OF MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Date of Sample Collection : 10.08.2021
- Date of Testing : 11.08.2021 – 14.08.2021
- Test Procedure : As per IS

TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO ₂	FeO	Al ₂ O ₃	CaO
1.	Sijua Colliery , 15 PIT	1.65	0.07	1.16	2.1
2.	Russi Vihar Colony	1.98	0.10	1.21	2.90


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Aditi R&D Services




Technical Manager
Aditi R&D Services, Sindri

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