



**Deputy Director General of Forests (C),  
Ministry of Environment, Forest and Climate Change,  
Integrated Regional Office, (IRO) – Ranchi  
2nd floor, Headquarter, Jharkhand State Housing Board Harmu Chowk,  
Harmu Housing Colony, Argora, Jharkhand – 834002.**

Ref No. - JMB/ENV/KOCP/24/ 904 /2023  
November 29<sup>th</sup>, 2023

Ref.: Environmental Clearance letter no. - J-11015/252/2005-IA. II (M) dated June 22, 2006

**SUB: Half Yearly Compliance Status Report of Environment Clearance conditions  
issued by MoEFCC, New Delhi to Kalimela Open Cast Project, Tata Steel  
Limited, Dhanbad for the period April'23 to September'23.**

Dear Sir,

We are enclosing herewith compliance report for the period **April'23 to September'23** for the EC granted vide letter no.- J-11015/252/2005-IA.II(M), Dated-22<sup>nd</sup> June 2006 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,

*f - Jit*

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

Encl: As above.

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

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

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

**TATA STEEL LIMITED**

Jharia Collieries Jamadoba 828 112 Dhanbad India  
Tel 91 326 2320263/2320265/2320267 Fax 91 326 2320268  
Regd. Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001  
Tel 91 22 66658282 Fax 91 22 66657724  
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

**HALF YEARLY COMPLIANCE REPORT  
(PERIOD: APRIL'23 – SEPTEMBER'23)**

**OCP KALIMELA PROJECT  
UNDER JAMADOBA COLLIERY**



**TATA STEEL LIMITED, JHARIA DIVISION**

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

**ENVIRONMENTAL CLEARANCE GRANTED VIDE LETTER NO. - J-11015/252/2005-  
IA.II(M) DATED- 22<sup>ND</sup> JUNE 2006 ISSUED BY GOVT. OF INDIA, MINISTRY OF  
ENVIRONMENT & FOREST, NEW DELHI.**

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

S. No.	Condition	Compliance Status
<b>Specific Condition:</b>		
(i)	All the conditions stipulated by SPCB in their NOC no N-35 dated 31.01.2005 are to be implemented effectively.	NOC conditions are being complied with. The open cast operations have ceased, and no raw coal production is taking place.  Currently the backfilling of the mine void by the OB has been completed and biological reclamation work is in progress.
(ii)	The bund/embankment shall be designed taking into account highest flood level, based on past data, in the Damodar River/ Dungri Jore so as to guard against mine inundation.	The embankment exists along Dungri Jore. The HFL (Highest flood line) of Damodar river is way below the surface level of open cast mine hence bunds across the river is not necessary.
(iii)	Topsoil should be stacked properly with proper slope at earmarked sites and should not be kept active and shall be used for reclamation and development of green belt.	No further top soil will be generated as coal mining activity has been ceased. The back filling has been completed and the top soil is being used for biological reclamation of backfilled and OB area.
(iv)	OB should be stacked at earmarked external OB dumpsite(s) within ML area and shall be a maximum height of 60m only and consist of benches of 10m each. The ultimate slope of the dump shall not exceed 28°. Backfilling shall begin at the end of 3rd year in the decoaled area. Monitoring and management of existing reclaimed dumpsites should continue until the vegetation becomes self-sustaining. Compliance Status should be submitted to the MOEF and its regional office at Bhubaneswar on yearly basis.	OB was stacked within ML area at an area of 12 ha approx. About 24.08 lakh cum of OB generated has been stacked with an approximate height reached of 50 mts. The other conditions are being followed as well.  This OB has been used for backfilling the mine pit as part of our mine closure plan. Now the backfilling work has been completed and biological reclamation work is in progress.
(v)	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development, etc. The drains should be regularly desilted and maintained properly. Garland drains (size, gradient and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of slit material.	Catch drain and siltation ponds have been constructed to arrest the debris, silt and sediment flows from OB dumps. Collected water had been used for watering mine area, roads & plantation. Total length of catch drains was 2200 mts. Garland drains (about 1790 mts) had been completely constructed around the mine site to ensure runoff water during rainy season is properly drained off. Since mine area has not going to expand, no additional garland drains are required as of now.

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

(vi)	Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data	Retention wall (or Toe wall) of about 2200 mts. exists around the dump area to check run-off and siltation.
(vii)	The effluents from the coal washery shall be treated to prescribed norms before discharge from the lease.	There is no separate coal washery for OCP Kalimela. We have a central coal washery for Jamadoba group of mines, about 1.5 kms away, which has a closed water circuit system to maintain zero discharge.
(viii)	Crushers at the CHP should be operated with high efficiency bag filters, water sprinkling system should be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.	There is no separate CHP for OCP Kalimela. The existing CHP for Jamadoba group of mines already has adequate measures in place such as water sprinkling system (fixed and movable) and dry fog system.
(ix)	Drills should be wet operated.	It is not applicable now as mining has ceased.
(x)	Controlled blasting should be practiced only during daytime with use of delay detonators. The mitigative measures for control of ground vibration and to arrest the fly rocks and boulders should be implemented.	It is not applicable now as mining has ceased.
(xi)	Area brought under afforestation includes reclaimed external OB dump (12.89 ha), backfilled area (25.15 ha), along ML boundary, along roads (0.45 ha) and in undisturbed area (1.14 ha) within the lease area by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.	The backfilling work has been completed and the biological reclamation work is in progress .
(xii)	A progressive closure plan shall be implemented by reclamation of quarry area of 25.15 ha which shall be backfilled and afforested by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha. The balance 1.10 ha of decoaled area shall be converted into a water reservoir, the upper benches of which shall be gently sloped and stabilized and reclaimed with plantation.	The reclamation work is in progress as per the progressive mine closure Plan.  The mine closure plan of KOCP is under mining plan of Jamadoba Colliery (including MCP of Kalimela) has been approved by MOC, Delhi.
(xiii)	Conservation Plan for endangered species, if any, found in and around the project area shall be formulated, if required, in consultation with the State Forest and Wildlife Departments.	Not Applicable.

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

(xiv)	The company shall obtain prior approval of CGWA/ CGWB Regional Office for use of groundwater if any, for mining operations.	Not Applicable.
(xv)	Regular monitoring of groundwater level and quality should be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity should be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected should be submitted to the Ministry of Environment & Forest and to the Central Pollution Control Board quarterly within one month of monitoring.	Now there will be no impact on ground water as mining has ceased. However, quality of groundwater is regularly analysed as required and attached in <b>Annexure</b>
(xvi)	The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource. The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.	Now there will be no impact on ground water as mining has ceased. However, quality of groundwater is regularly analysed as required and attached in <b>Annexure-I</b>
(xvii)	ETP should also be provided for workshop, coal washery and CHP wastewater.	It is not applicable. Though ETP for Central Workshop has been commissioned having facility of Oil & Grease Trap.
(xviii)	R&R shall not be less than the norms laid down by the State Government and shall be completed within a specified time-frame.	It is not applicable.
(xix)	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests for approval 5 years in advance of final mine closure for approval.	It has been approved by MOC, Delhi and submitted to MoEF&CC.
(xx)	Consent to operate shall be obtained before starting mining operations.	Consent to operate was obtained from JSPCB vide letter ref. No. SPCB/HO/RNC/CTO-13226858/2022/959 dated-04.07.2022, which was valid up to 30.09.2023, for backfilling and reclamation. The activities were completed, and biological reclamation is ongoing with trees plantation. Hence, the CTO was surrendered on 20.07.2023 vide letter no. JMB/ENV/SPCB/08/519/2023. Letter attached as an Annexure.
<b>General Conditions:</b>		
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and forest.	All mining excavation activities are terminated. Reclamation work is in progress

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

(i)	No change in the calendar plan including excavation, quantum of mineral coal and waste should be made.	All mining excavation activities are terminated. Reclamation work is in progress.
(ii)	Four Ambient Air quality monitoring station should be established in the core zones as well as in the buffer zone SPM, RSPM, SO <sub>2</sub> and NO <sub>X</sub> monitoring location of the stations should be decided based on the metrological data & topographical features & environmentally & ecologically sensitive targets in consultation with SPCB.	The operations have now ceased. The ambient air monitoring is done at 4 locations and the reports are attached as <b>Annexure</b>
(iii)	Fugitive dust emissions (SPM & RSPM) from all the sources should be controlled regularly monitored & data recorded properly. Water spraying arrangement on haul roads, wagon loading, and dump trucks (loading & unloading) points should be provided & properly maintained.	Presently no coal excavation and coal transportation jobs are going on. However, water sprinkling on roads is being done regularly.
(iv)	Data on ambient air quality (SPM, RSPM, SO <sub>x</sub> & NO <sub>x</sub> ) should be regularly submitted to the Ministry including its regional office at Bhubaneswar and to the SPCB & CPCB once in six months.	The ambient air monitoring is done at 4 locations and the reports are submitted to SPCB, CPCB & MoEFCC on half yearly basis ( <b>Annexure</b> ).
(v)	Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations of HEMM etc. All should be provided with Ear Plug/Muff.	It is not applicable now.
(vi)	Industrial waste water (Workshop and Waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharged. Oil and Grease trap should be installed before discharge of Work shop effluent.	There is no generation of wastewater.
(vii)	Vehicular emissions should be kept under control and regularly monitored. Vehicle used for transporting the mineral should be covered with tarpaulins and optimally loaded.	No mineral is being transported now. The vehicles carrying OB are only allowed to ply after securing full compliance on vehicle check list. Check list ensures the optimum load, good condition, emissions under limit.
(viii)	Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the SPCB.	We have a fully equipped Environment Cell Laboratory with qualified personnel. The monitoring and analysis are also done at regular intervals by a NABL and JSPCB recognised laboratory

**Compliance status of Environmental Clearance of Kalimela Open Cast Mining Project (0.34 MTPA) of M/s Tata Steel Ltd., Village Dungri, Tehsil Jharia, dist. Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/252/2005-IA.II (M) dated June 22, 2006**

(ix)	Personnel working in dusty area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspect. Occupational Health Surveillance programme of the worker should be undertaken periodically to observe any contraction due to exposure to dust and to take corrective measures if needed.	It is not applicable now.
(x)	A separate Environmental Management cell with suitable qualified personnel should be set up under the control of a senior executive, who will report directly to the Head of the Company.	We have a separate Environmental Management Cell with four qualified personnel. The reporting of Environmental Cell is directly to General Manager of the Division.
(xi)	Funds earmarked for environmental protection measures should be kept in separate A/C and should not be diverted for other purposes. Year wise expenditure should be reported to this ministry and its regional office at Bhubaneswar.	The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements.
(xii)	The regional office of this ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities shall extend full co-operation to the officer of regional office by furnishing the requisite Data/ information/ monitoring report.	Being complied. All data is being furnished in the compliance report and during inspection.



Rajeev Sinha  
Section Head, Dhanbad  
Jharkhand State Pollution Control Board,  
T.A. Building, HEC Complex, Dhurwa, Ranchi-834004

RefNo.: JMB/ENV/SPCB/08/519/2023

20<sup>th</sup> July 2023

**Sub: Regarding surrender of CTO of Kalimela Opencast of Tata Steel Limited, Jharia**

**Ref: JSPCB/HO/RNC/CTO-13226858/2022/959 dt. 04.07.2022**

Dear Sir,

This is in reference to existing CTO number JSPCB/HO/RNC/CTO-13226858/2022/959 dt. 04.07.2022 valid till 30.09.2023 for Backfilling and reclamation work only in Kalimela Opencast project of Tata Steel Limited, Jharia Division.

In this context we would like to inform you that the permitted activities of existing CTO i.e. backfilling and reclamation work only has been completed and there is no any activities of physical reclamation (machine movement) ongoing or planned in future. The biological reclamation of the site has been initiated and is part of gradual improvement. Currently, we are neither emitting any air pollutant nor any effluent/water discharge from the unit. In future we'll ensure to continue the same.

Hence, we are keen to not renew the existing CTO and surrender the same.

All the condition of the existing CTO is being complied and copy of the CTO compliance status has been attached for reference. Also, we are complying with the conditions of existing EC and will continue the same.

Based on this, consider our request to surrender the CTO for mentioned unit.

Thanking you,  
Yours sincerely,

General Manager  
Jharia Division, Tata Steel Ltd.

Encl: As above

CC: Regional Officer, JSPCB, Dhanbad (Jharkhand)

Received  
Duty  
21/8/2023



**TATA STEEL LIMITED**

Jharia Collieries Jamadoba 828 112 Dhanbad India  
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Tel 91 22 66658282 Fax 91 22 66657724  
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com



**AIR QUALITY REPORT**  
Core zone & Buffer zone

Period- April'23 to June'23

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 <sup>3</sup>	RSPM 24 Hourly Limit- 300 µg/m <sup>3</sup>	SO <sub>2</sub> 24 Hourly Limit- 120 µg/m <sup>3</sup>	NO <sub>x</sub> 24 Hourly Limit-120 µg/m <sup>3</sup>
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	07.04.23	Clear	337.9	96.4	15.8	18.6
6&7 Pits Kalimandir area	23°43'15" N/ 86°24'12" E	08.05.23	Clear	248.5	89.9	14.8	18.4
		16.06.23	Clear	278.9	84.5	16.8	18.7
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100µg/m <sup>3</sup>	PM2.5 24 Hourly Limit- 60µg/m <sup>3</sup>	SO <sub>2</sub> 24 Hourly Limit- 80µg/m <sup>3</sup>	NO <sub>2</sub> 24 Hourly Limit- 80µg/m <sup>3</sup>
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	05.04.23	Clear	85.6	43.2	12.1	14.5
		04.05.23	Cloudy	68.4	32.7	13.5	17.9
		13.06.23	Clear	87.0	45.3	14.1	19.4
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	06.04.23	Clear	89.7	48.5	14.2	17.3
		09.05.23	Clear	93.4	49.7	16.4	19.3
		14.06.23	Clear	90.5	47.1	15.8	17.2
6&7 Pits Kalimandir colony	23°43'15" N/ 86°24'12" E	04.04.23	Clear	94.3	50.2	16.8	19.5
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	03.05.23	Clear	72.3	35.1	12.8	16.8
		15.06.23	Clear	82.6	40.2	17.9	20.1



**Sr. Manager (Environment)**

**AIR QUALITY REPORT**  
Core zone & Buffer zone

Period- July'23 to September'23

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 $\mu\text{g}/\text{m}^3$	RSPM 24 Hourly Limit- 300 $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> 24 Hourly Limit- 120 $\mu\text{g}/\text{m}^3$	NO <sub>x</sub> 24 Hourly Limit-120 $\mu\text{g}/\text{m}^3$
6&7 Pits Kalimandir area	23°43'15" N/ 86°24'12" E	04.07.23	Clear	208.3	68.4	13.5	16.1
		11.08.23	Cloudy	186.4	65.7	15.6	18.3
		05.09.23	Cloudy	192.8	67.1	17.8	20.4
Buffer zone (as per NAAQS 2009 for ambient air quality standards)							
Location	Latitude/ Longitude	Date	Weather Condition	PM10 24 Hourly Limit- 100 $\mu\text{g}/\text{m}^3$	PM2.5 24 Hourly Limit- 60 $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> 24 Hourly Limit- 80 $\mu\text{g}/\text{m}^3$	NO <sub>2</sub> 24 Hourly Limit- 80 $\mu\text{g}/\text{m}^3$
Digwadih 12 No. Colony	23°41'42" N/ 86°24'45.3" E	07.07.23	Clear	84.2	42.6	13.9	17.3
		10.08.23	Cloudy	72.4	36.8	15.3	18.5
		08.09.23	Cloudy	70.5	35.2	16.7	19.4
New Village Colony, Jamadoba	23°41'51" N/ 86°23'19" E	05.07.23	Clear	70.4	38.2	16.3	18.0
		09.08.23	Cloudy	68.3	34.1	17.8	20.6
		06.09.23	Cloudy	65.2	31.7	15.3	18.2
Jamadoba Group Office	23°42'15.3" N/ 86°24'11" E	06.07.23	Cloudy	66.3	36.4	15.8	19.7
		07.08.23	Cloudy	63.1	32.4	14.6	17.2
		07.09.23	Cloudy	66.4	33.9	18.2	21.7



**Sr. Manager (Environment)**

**Ground Water Quality Analysis (Hand Pump & Dung Well)  
(Pre- Monsoon Season- May'2023)**

S.No	Date	Location	Time	Depth in meter	pH	Electrical Conductivity, $\mu\text{S/m}$
1	30.05.23	Purnadih (Jorapokhar)	11:50 AM	6.54	7.2	948
2	30.05.23	Bhowra 13 No	12:25 PM	4.17	7.3	987
3	30.05.23	Mohalbani Basti	12:50 PM	7.21	7.4	859
4	30.05.23	Digwadih 10 No F & J	01:15 PM	4.39	7.3	1147
5	30.05.23	Kalimela Shivmandir	11:05 AM	2.63	7.1	931
6	30.05.23	Kalimela Kalimandir	11:20 AM	5.89	7.2	1092
7	30.05.23	Lower Dungari	10:40 AM	7.25	7.3	757
8	30.05.23	Upper Dungari	10:15 AM	4.86	7.2	843
9	30.05.23	Pattia Basti	09:55 AM	5.34	7.4	829
10	30.05.23	Kenduadih Basti	09:35 AM	3.67	7.2	784
11	30.05.23	Jorapokhar Kushtand	11:30 AM	6.21	7.3	1037
12	30.05.23	6&7 Pits (Ayodhya Nagri)	02:05 PM	4.52	7.1	870
13	30.05.23	Jorapokhar Basti Chhattand	01:35 PM	3.63	7.3	753
14	30.05.23	Jorapokhar Babu Basa	12:05 PM	5.37	7.0	1046



**Sr. Manager (Environment)**




**Ground Water Quality Analysis (Hand Pump & Dung Well)  
(Monsoon Season- August'2023)**


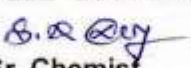


S.No	Date	Location	Time	Depth in meter	pH	Electrical Conductivity $\mu\text{S/m}$
1	16.08.23	Purnadih (Jorapokhar)	12:35 PM	4.37	7.3	968
2	16.08.23	Bhowra 13 No	12:55 PM	1.56	7.2	1218
3	16.08.23	Mohalbani Basti	03:10 PM	2.87	7.0	1210
4	16.08.23	Digwadih 10 No F & J	01:30 PM	1.93	7.4	1217
5	16.08.23	Kalimela Shivmandir	11:10 AM	0.98	7.2	938
6	16.08.23	Kalimela Kalimandir	11:25 AM	3.64	7.3	1179
7	16.08.23	Lower Dungari	10:50 AM	3.84	7.5	684
8	16.08.23	Upper Dungari	10:30 AM	1.64	7.3	862
9	16.08.23	Pattia Basti	10:05 AM	3.51	7.3	869
10	16.08.23	Kenduadih Basti	09:40 AM	1.98	7.6	826
11	16.08.23	Jorapokhar Kushtand	11:55 AM	2.76	7.8	1310
12	16.08.23	6&7 Pits (Ayodhya Nagri)	02:25 PM	1.53	7.5	764
13	16.08.23	Jorapokhar Basti Chhattand	01:50 PM	0.64	7.2	879
14	16.08.23	Jorapokhar Babu Basa	12:15 PM	1.51	7.6	929


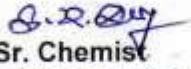




**Sr. Manager (Environment)**


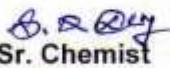





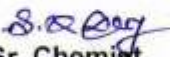

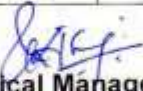
ADITI R&D SERVICES		Testing Laboratory		NABL ACCREDITED	
(A Constituent Board of Quality Council of India)		ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified		Plot No. - I-B-17 (P) Sindri, Industrial Area, P.O. - Domgarh, Dist. - Dhanbad Jharkhand - 828107 Email ID: sindriaditi@gmail.com Website: aditirndservices.com Phone: 0326-2952377 (O), Fax: 0326-2952377 Mobile: 09471358492, 09431512608	
Ref. No.: - ARDS/23-24/340			Date: 22.05.2023		
<b>TEST REPORT OF AMBIENT AIR QUALITY</b>					
•	Name of the industry	: M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)			
•	Work Order Ref. NO.:	: 4700092573/932 Dt. 20.07.2021			
•	Date of Sample Collection	: 16.05.2023 to 17.05.2023			
•	Date of Testing	: 18.05.2023 to 20.05.2023			
•	Test Procedure	: As per IS-5182			
<b>TEST RESULTS</b>					
LOCATION – 6 & 7 PITS COLLIERY OFFICE					
	Avg. Ambient Temperature	38°C	Avg. Humidity	27%	
SI No.	Particulars	Value	NAAQ - CPCB STANDARD		
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	84.33	100 µg/m <sup>3</sup>		
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	53.62	60 µg/m <sup>3</sup>		
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	18.04	80 µg/m <sup>3</sup>		
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	32.93	80 µg/m <sup>3</sup>		
5.	Ozone, µg/m <sup>3</sup>	16.88	180 µg/m <sup>3</sup>		
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	17.54	400 µg/m <sup>3</sup>		
7.	CO, mg/m <sup>3</sup>	0.98	4 mg/m <sup>3</sup>		
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>		
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>		
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>		
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>		
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>		
NOTE: BDL - Below Detection Limit					
 Sr. Chemist Aditi R&D Services				 Technical Manager Aditi R&D Services, Sindri	
Statements :					
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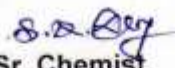


ADITI R&D SERVICES		Testing Laboratory		NABL ACCREDITED	
		(A Constituent Board of Quality Council of India) ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified		Plot No. - I-B-17 (P) Sindri, Industrial Area, P.O. - Domgarh, Dist. - Dhanbad Jharkhand - 828107 Email ID: sindriaditi@gmail.com Website: aditimservices.com Phone: 0326-2952377 (O), Fax: 0326-2952377 Mobile: 09471358492, 09431512608	
				Ref. No.: - ARDS/23-24/341	
<b>TEST REPORT OF AMBIENT AIR QUALITY</b>					
<ul style="list-style-type: none"> <li>Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021</li> <li>Date of Sample Collection : 16.05.2023 to 17.05.2023</li> <li>Date of Testing : 18.05.2023 to 20.05.2023</li> <li>Test Procedure : As per IS-5182</li> </ul>					
<b>TEST RESULTS</b>					
LOCATION – OFFICERS COLONY, 12 NO. DIGWADIH					
	Avg. Ambient Temperature	38 <sup>o</sup> C	Avg. Humidity	27 %	
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD		
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	85.15	100 µg/m <sup>3</sup>		
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	52.12	60 µg/m <sup>3</sup>		
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	19.35	80 µg/m <sup>3</sup>		
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	26.72	80 µg/m <sup>3</sup>		
5.	Ozone, µg/m <sup>3</sup>	17.59	180 µg/m <sup>3</sup>		
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	14.88	400 µg/m <sup>3</sup>		
7.	CO, mg/m <sup>3</sup>	0.83	4 mg/m <sup>3</sup>		
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>		
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>		
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>		
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>		
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>		
NOTE: BDL - Below Detection Limit					
 Sr. Chemist Aditi R&D Services				 Technical Manager Aditi R&D Services, Sindri	
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<p>Ref. No.: - ARDS/23-24/342</p>	<p>Date: 22.05.2023</p>				
<h3 style="margin: 0;"><u>TEST REPORT OF AMBIENT AIR QUALITY</u></h3>					
<ul style="list-style-type: none"> <li>• Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>• Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021</li> <li>• Date of Sample Collection : 16.05.2023 to 17.05.2023</li> <li>• Date of Testing : 18.05.2023 to 20.05.2023</li> <li>• Test Procedure : As per IS-5182</li> </ul>					
<h3 style="margin: 0;"><u>TEST RESULTS</u></h3>					
<p><b>LOCATION – CENTRAL WORKSHOP AREA , JAMADOBA</b></p>					
	Avg. Ambient Temperature	38 <sup>o</sup> C	Avg. Humidity	27%	
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD		
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	90.35	100 µg/m <sup>3</sup>		
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	53.25	60 µg/m <sup>3</sup>		
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	20.45	80 µg/m <sup>3</sup>		
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	28.69	80 µg/m <sup>3</sup>		
5.	Ozone, µg/m <sup>3</sup>	16.52	180 µg/m <sup>3</sup>		
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	17.83	400 µg/m <sup>3</sup>		
7.	CO, mg/m <sup>3</sup>	1.10	4 mg/m <sup>3</sup>		
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>		
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>		
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>		
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>		
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>		
<p>NOTE: BDL - Below Detection Limit</p>					
 Sr. Chemist Aditi R&D Services			 Technical Manager Aditi R&D Services, Sindri		
<p>Statements :</p> <ol style="list-style-type: none"> <li>1. The test report refers only to the particular item(s) submitted for testing.</li> <li>2. The test results reported in this report are valid at the time of and under the stated condition of measurement.</li> <li>3. This particular test report cannot be reproduced except in full, without prior written permission of Quality Manager of the laboratory.</li> </ol>					



ADITI R&D SERVICES		Testing Laboratory		NABL ACCREDITED	
		(A Constituent Board of Quality Council of India) <b>ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified</b>		Plot No. - I-B-17 (P) Sindri, Industrial Area. P.O.- Domgarh, Dist.- Dhanbad Jharkhand - 828107 Email ID: sindriaditi@gmail.com Website: aditimservices.com Phone: 0326-2952377 (O), Fax: 0326-2952377 Mobile: 09471358492, 09431512608	
Ref. No.: - ARDS/23-24/343			Date: 22.05.2023		
<b>TEST REPORT OF AMBIENT AIR QUALITY</b>					
<ul style="list-style-type: none"> <li>Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021</li> <li>Date of Sample Collection : 16.05.2023 to 17.05.2023</li> <li>Date of Testing : 18.05.2023 to 20.05.2023</li> <li>Test Procedure : As per IS-5182</li> </ul>					
<b>TEST RESULTS</b>					
LOCATION – TATA CENTRAL HOSPITAL					
	Avg. Ambient Temperature	38 <sup>o</sup> C	Avg. Humidity	40%	
SI No.	Particulars	Value	NAAQ - CPCB STANDARD		
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	76.01	100 µg/m <sup>3</sup>		
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	44.61	60 µg/m <sup>3</sup>		
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	16.52	80 µg/m <sup>3</sup>		
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	32.37	80 µg/m <sup>3</sup>		
5.	Ozone, µg/m <sup>3</sup>	17.45	180 µg/m <sup>3</sup>		
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	14.30	400 µg/m <sup>3</sup>		
7.	CO, mg/m <sup>3</sup>	0.89	4 mg/m <sup>3</sup>		
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>		
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>		
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>		
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>		
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>		
NOTE: BDL - Below Detection Limit					
 Sr. Chemist Aditi R&D Services				 Technical Manager Aditi R&D Services, Sindri	
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	<h2 style="margin:0;">ADITI R&amp;D SERVICES</h2> <h3 style="margin:0;">Testing Laboratory</h3> <p style="margin:0;"><b>NABL ACCREDITED</b></p> <p style="margin:0;">(A Constituent Board of Quality Council of India)</p> <p style="margin:0;"><b>ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified</b></p>	Plot No. - I-B-17 (P) Sindri, Industrial Area, P.O. - Domgarh, Dist. - Dhanbad Jharkhand - 828107 Email ID: sindriaditi@gmail.com Website: aditirdservices.com Phone: 0326-2952377 (O), Fax: 0326-2952377 Mobile: 09471358492, 09431512608							
<h3 style="margin:0;">TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING</h3>									
Ref. No. & Date <b>ARDS/23-24/344 Date: 22.05.2023</b>	NAME AND ADDRESS OF THE CLIENT <b>M/S TATA STEEL, JAMADOBA,</b>								
Date of Monitoring <b>16.05.2023 TO 17.05.2023</b>	<b>TATA STEEL LIMITED, JAMADOBA GROUP PLANT,</b> <b>DIST. - DHANBAD (JHARKHAND)</b>								
Work Order 4700092573/932 Dt. 20.07.2021	Avg. Ambient Temperature (°C) <b>38</b>	Average Humidity (%) <b>27</b>	Weather Condition <b>Clear</b>	Status of the plant <b>Running</b>					
<b>MONITORING RESULTS</b>									
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	
	LOCATION	MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
	JAMADOBA GROUP							Industrial Area	Industrial Area
1.	Central Workshop	69.5	56.7	66.71	57.4	44.5	54.61	75	70
2.	6 & 7 Pits Colliery Office	66.4	54.8	63.68	59.6	49.4	56.99		
								Residential Area	Residential Area
3.	Officer Colony 12 No. Digwadih	56.5	48.9	54.19	49.5	44.8	47.76	65	55
								Silence Zone	Silence Zone
4.	Tata Central Hospital	49	46.0	47.75	39	35.10	37.47	50	40
 Sr. Chemist Aditi R&D Services					 Technical Manager Aditi R&D Services, Sindri				
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	<h2 style="margin: 0;">ADITI R&amp;D SERVICES</h2> <h3 style="margin: 0;">Testing Laboratory</h3> <p style="margin: 0;"><b>NABL ACCREDITED</b></p> <p style="margin: 0;">(A Constituent Board of Quality Council of India)</p> <p style="margin: 0;"><b>ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified</b></p>	<p style="font-size: small;">Plot No. - I-B-17 (P) Sindri, Industrial Area, P.O. - Domgarh, Dist. - Dhanbad Jharkhand - 826107 Email ID: sindriaditi@gmail.com Website: aditrnds-services.com Phone: 0326-2952377 (O), Fax: 0326-2952377 Mobile: 09471358482, 09431512608</p>																						
Ref. No.: - ARDS/23-24/345	Date: 22.05.2023																							
<p><b><u>TEST REPORT OF MINERALOGICAL COMPOSITION</u></b></p> <p><b><u>OF PARTICULATE MATTER</u></b></p>																								
<ul style="list-style-type: none"> <li>• Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>• Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021</li> <li>• Date of Sample Collection : 17.05.2023</li> <li>• Date of Testing : 18.05.2023 – 20.05.2023</li> </ul>																								
<p><b><u>TEST RESULTS</u></b></p>																								
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Sl No.</th> <th rowspan="2">Particulars</th> <th colspan="4">Mineralogical Composition (%)</th> </tr> <tr> <th>SiO<sub>2</sub></th> <th>FeO</th> <th>Al<sub>2</sub>O<sub>3</sub></th> <th>CaO</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Central Workshop area, jamadoba</td> <td>1.78</td> <td>0.16</td> <td>1.25</td> <td>2.35</td> </tr> <tr> <td>2.</td> <td>Officer's colony, 12 no. Digwadih</td> <td>1.69</td> <td>0.10</td> <td>1.29</td> <td>2.94</td> </tr> </tbody> </table>			Sl No.	Particulars	Mineralogical Composition (%)				SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO	1.	Central Workshop area, jamadoba	1.78	0.16	1.25	2.35	2.	Officer's colony, 12 no. Digwadih	1.69	0.10	1.29	2.94
Sl No.	Particulars	Mineralogical Composition (%)																						
		SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO																			
1.	Central Workshop area, jamadoba	1.78	0.16	1.25	2.35																			
2.	Officer's colony, 12 no. Digwadih	1.69	0.10	1.29	2.94																			
 Sr. Chemist Aditi R&D Services		 Technical Manager Aditi R&D Services, Sindri																						
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Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Damodar River Up Stream	Damodar River Dn Stream		
1.	pH	7.3	7.4	6.5 -8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	356	368	1500	IS-3025 (P-16): 1984
3.	Turbidity, NTU	01	01	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	6.4	6.8	4.0	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	2.0	2.2	3.0	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	32	36	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.52	0.54	1.5	IS-3025 (P-60):2008
8.	Sulphate as SO <sub>4</sub> , mg/l	44.2	47.9	400	IS-3025 (P-24):1986

*S. R. Singh*  
Sr. Chemist  
Aditi R&D Services



*S. R. Singh*  
Technical Manager  
Aditi R&D Services, Sindri

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Sl. No.	PARAMETERS OF TEST	VALUE					Limit as per IS-2296 Class B (For Bathing)	Test Method
		2 Pit Jamadoba Colliery	3 Pit Jamadoba Colliery	2 Incline Jamadoba Colliery	6 & 7 Pits Colliery	Digwadih Colliery		
1.	pH,	7.2	7.9	7.7	7.6	8.2	6.5-8.5	IS-3025 (P-11): 1983 RA 2022
2.	Total Dissolved Solids, mg/l	710	738	810	720	875	-	IS-3025 (P-16): 1984 RA 2023
3.	Total Suspended Solids, mg/l	39	35	39	28	38	-	IS-3025(P-17) : 1984 RA 2022
4.	Bio chemical Oxygen Demand, mg/l	1.2	2.4	1.8	1.8	2.2	3	IS-3025 (P-44):1994 RA 2019
5.	Chemical Oxygen Demand, mg/l	55	71	78	63	63	-	IS-3025 (P-58):2006 RA 2022
6.	Oil & Grease, mg/l	0.4	0.3	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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# 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)  
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Fax: 0326-2952377  
Mob: 09471358492, 09431512608

Ref. No.: - ARDS/23-24/365

Date: 24.05.2023

## TEST REPORT OF SEWAGE

- Name of the industry : M/S TATA STEEL, JAMADOBA,  
TATA STEEL LIMITED  
JAMADOBA GROUP PLANT,  
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. S.T.P. Outlet J.C.P.P. Canteen  
2. S.T.P. Outlet Jamadoba Canteen  
3. S.T.P. Outlet Railway Colony
- Date of Sample Collection: 16.05.2023 to 17.05.2023
- Date of Testing : 18.05.2023 to 23.05.2023
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

### TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE			General Standards For Discharge Of Environmental Pollutants, Inland Surface Water By The MOEF&C	Test Method
		S.T.P. Outlet J.C.P.P. Canteen	S.T.P. Outlet Jamadoba Canteen	S.T.P. Outlet Railway Colony		
1.	pH,	7.6	7.9	8.4	5.5-9.0	IS-3025 (P-11):1983 RA 2022
2.	Total Dissolved Solids, mg/l	728	648	760	2100	IS-3025 (P-16):1984 RA 2023
3.	Total Suspended Solids, mg/l	26	28	42	100	IS-3025(P-17):1984 RA 2022
4.	Bio chemical Oxygen Demand, mg/l	6.6	3.6	8.4	30	IS-3025 (P-44):1994 RA 2019
5.	Chemical Oxygen Demand, mg/l	63	55	71	250	IS-3025 (P-58):2006 RA 2022
6.	Oil & Grease, mg/l	BDL	BDL	1.2	10	IS-3025 (P-39):2021

*S. R. Roy*  
Sr. Chemist  
Aditi R&D Services



*S. R. Roy*  
Technical Manager  
Aditi R&D Services, Sindri

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Sl. No.	PARAMETERS OF TEST	VALUE		General Standards For Discharge Of Environmental Pollutants, Inland Surface Water By The MOEF&C	Test Method
		E.T.P. Outlet T.C.H	E.T.P. Outlet Garage		
1.	pH,	8.4	8.3	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	850	870	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	31	25	100	IS-3025(P-17) : 1984
4.	Bio chemical Oxygen Demand, mg/l	6.6	3.2	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	55	47	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	0.4	0.4	10	IS-3025 (P-39):2021

**TEST RESULT**

Ref. No.: - ARDS/23-24/366 Date: 24.05.2023

**TEST REPORT OF EFFLUENT**

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. E.T.P. Outlet T.C.H.  
2 E.T.P. Outlet Garage
- Date of Sample Collection: 16.05.2023 to 17.05.2023
- Date of Testing : 18.05.2023 to 23.05.2023
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

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Email ID: sindriaditi@gmail.com  
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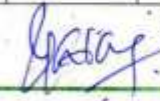
Sr. Chemist  
Aditi R&D Services

Technical Manager  
Aditi R&D Services, Sindri

Statements :

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	<h2 style="margin:0;">ADITI R&amp;D SERVICES</h2> <h3 style="margin:0;">Testing Laboratory</h3> <p style="margin:0;"><b>NABL ACCREDITED</b></p> <p style="margin:0;">(A Constituent Board of Quality Council of India)</p> <p style="margin:0;"><b>ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified</b></p>	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), Fax: 0326-2952377 Mobile: 09471358482, 09431512608						
Ref. No.: - ARDS/23-24/367	Date: 24.05.2023							
<b>TEST REPORT OF DRINKING WATER</b>								
<ul style="list-style-type: none"> <li>• Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>• Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021</li> <li>• Sample Code :                              <ul style="list-style-type: none"> <li>1. Canteen - Jamadoba Colliery</li> <li>2. Canteen - Digwadih Colliery</li> <li>3. Canteen - 6 &amp; 7 Pit Colliery</li> <li>4. Canteen - Jamadoba Washery</li> </ul> </li> <li>• Date of Sample Collection: 16.05.2023 to 17.05.2023</li> <li>• Date of Testing : 18.05.2023 to 23.05.2023</li> <li>• 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 &amp; Boron.                         </li> </ul>								
<b>TEST RESULT</b>								
Sl. No	PARAMETERS OF TEST	VALUE				IS as per IS 10500:2012		Test Method
		Canteen Jamadoba Colliery	Canteen Digwadih Colliery	Canteen 6 & 7 Pit Colliery	Canteen Jamadoba Washery	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	NIL	NIL	NIL	NIL	1.0	5.0	IS 3025 (P-10):1984
5.	pH	7.9	8.1	7.8	8.0	6.5-8.5	No. Relax.	IS-3025 (P-11):1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	368	348	172	336	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl <sub>1</sub> , mg/l	64	66	32	62	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl <sub>2</sub> , mg/l	NIL	NIL	NIL	NIL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	815	780	381	835	500	2000	IS 3025 (P-16):1984
10.	Calcium as Ca, mg/l	41.6	33.6	28.8	33.6	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992

Continued on Page 2

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- 2 -

Sl. No.	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Canteen Jamadoba Colliery	Canteen Digwadih Colliery	6 & 7 Pit Colliery	Jamadoba Washery Canteen	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO <sub>4</sub> , mg/l	46	38.15	33.2	46.2	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO <sub>3</sub> , mg/l	4.2	3.1	2.0	2.1	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.32	0.29	0.30	0.25	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C <sub>6</sub> H <sub>5</sub> OH) mg/l	BDL	BDL	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l	0.16	0.10	0.14	0.16	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO <sub>3</sub> , mg/l	452	444	160	452	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

*S. R. Singh*  
Sr. Chemist  
Aditi R&D Services



*S. R. Singh*  
Technical Manager  
Aditi R&D Services, Sindri

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SI No		VALUE							IS as per IS 10500:1991		Test Method
PARAMETERS OF TEST		Upper Dungi	Jorapukhar Kushtand	Kenduwedi h Basti	Jamadoba 3 No	Lower Dungi	Ayodha ya Nagari	Digwadih No 10	Desirable	Permissible	
1.	Colour, (Hazen Unit)	2	1	1	1	1	1	1	5	15	IS 3025 (P-4):2021
2.	Temperature °C	34	33	33	34	34	34	34	-	-	-
3.	Electrical Conductivity, µmhos/cm	830	1330	860	770	1310	830	1260	-	-	-
4.	Total Dissolved Solids, mg/l	536	866	560	490	852	545	825	-	-	IS 3025(P-16):1984
5.	pH	7.4	8.4	8.1	7.8	7.3	7.7	7.6	6.5-8.5	No Relax	IS-3025(P-11):1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	328	420	344	220	476	356	368	200	600	IS 3025(P-21):2009
7.	Calcium as Ca, mg/l	72	94.4	67.2	51.2	92.8	72	78.4	75	200	IS 3025(P-40):1991
8.	Magnesium as Mg, mg/l	35.5	44.2	42.2	22.1	58.5	42.2	41.2	30	100	IS 3025(P-46):1994
9.	Chloride as Cl, mg/l	50	80	66	34	72	36	44	250	1000	IS 3025(P-32):1988
10.	Fluoride as F, mg/l	0.48	0.31	0.38	0.32	0.46	0.32	0.29	1.0	1.5	IS 3025(P-60):2008

**TEST RESULT**

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Mobile: 09471358492, 09431512608

Sl. No.	PARAMETERS OF TEST	VALUE							IS as per IS 10500:1991		Test Method
		Upper Dungri	Jorapukhar Kushtand	Kenduwedih Basti	Jamado ba 3 No	Lower Dungri	Ayodhya Nagari	Digwadih No 10	Desirable	Permissible	
11	Sulphate as SO <sub>4</sub> , mg/l	59.8	47.4	49.2	43	52.7	52.2	45	200	400	IS 3025(P-24):1986
12	Nitrate as NO <sub>3</sub> , mg/l	10.3	12.2	9.9	9.4	8.5	9.1	12.6	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO <sub>3</sub> , mg/l,	316	448	316	152	392	368	348	200	600	IS 3025(P-23):1983
14	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15	Zinc as Zn, mg/l,	0.18	0.14	0.16	0.12	0.2	0.14	0.16	5	15	IS 3025(P-42):1992
16	Iron as Fe, mg/l	0.03	0.02	0.04	0.03	0.04	0.03	0.04	0.3	No. Relax	IS 3025(P-53):2003
17	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.05	1.5	IS3025 (P-42):1992
18	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit


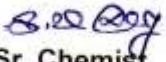


*B. S. Singh*  
Sr. Chemist  
Aditi R&D Services


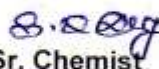




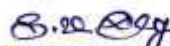


*[Signature]*  
Technical Manager  
Aditi R&D Services, Sindri

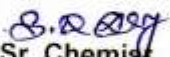


**Statements :**


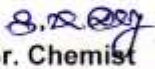


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				Ref. No.: - ARDS/23-24/0997	
<b><u>TEST REPORT OF AMBIENT AIR QUALITY</u></b>					
<ul style="list-style-type: none"> <li>Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021</li> <li>Date of Sample Collection : 21.08.2023 to 22.08.2023</li> <li>Date of Testing : 23.08.2023 to 26.08.2023</li> <li>Test Procedure : As per IS-5182</li> </ul>					
<b><u>TEST RESULTS</u></b>					
LOCATION – 6 & 7 PITS COLLIERY OFFICE					
Avg. Ambient Temperature		34 <sup>o</sup> C	Avg. Humidity		69%
SI No.	Particulars	Value	NAAQ - CPCB STANDARD		
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	87.30	100 µg/m <sup>3</sup>		
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	52.12	60 µg/m <sup>3</sup>		
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	21.28	80 µg/m <sup>3</sup>		
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	26.52	80 µg/m <sup>3</sup>		
5.	Ozone, µg/m <sup>3</sup>	18.73	180 µg/m <sup>3</sup>		
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	15.64	400 µg/m <sup>3</sup>		
7.	CO, mg/m <sup>3</sup>	0.86	4 mg/m <sup>3</sup>		
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>		
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>		
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>		
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>		
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>		
NOTE: BDL - Below Detection Limit					
 Sr. Chemist Aditi R&D Services				 Technical Manager Aditi R&D Services, Sindri	
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Ref. No.: - ARDS/23-24/0998			Date: 29.08.2023		
<b>TEST REPORT OF AMBIENT AIR QUALITY</b>					
<ul style="list-style-type: none"> <li>Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021</li> <li>Date of Sample Collection : 21.08.2023 to 22.08.2023</li> <li>Date of Testing : 23.08.2023 to 26.08.2023</li> <li>Test Procedure : As per IS-5182</li> </ul>					
<b>TEST RESULTS</b>					
LOCATION – OFFICERS COLONY, 12 NO. DIGWADIH					
	Avg. Ambient Temperature	34 <sup>o</sup> C	Avg. Humidity	69%	
SI No.	Particulars	Value	NAAQ - CPCB STANDARD		
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	76.22	100 µg/m <sup>3</sup>		
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	45.28	60 µg/m <sup>3</sup>		
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	18.42	80 µg/m <sup>3</sup>		
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	28.30	80 µg/m <sup>3</sup>		
5.	Ozone, µg/m <sup>3</sup>	17.90	180 µg/m <sup>3</sup>		
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	14.95	400 µg/m <sup>3</sup>		
7.	CO, mg/m <sup>3</sup>	0.81	4 mg/m <sup>3</sup>		
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>		
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>		
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>		
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>		
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>		
NOTE: BDL - Below Detection Limit					
 Sr. Chemist Aditi R&D Services				 Technical Manager Aditi R&D Services, Sindri	
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Ref. No.: - ARDS/23-24/0999			Date: 29.08.2023		
<b>TEST REPORT OF AMBIENT AIR QUALITY</b>					
Name of the industry		: M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)			
Work Order Ref. NO.		: 4700092573/932 Dt. 20.07.2021			
Date of Sample Collection		: 21.08.2023 to 22.08.2023			
Date of Testing		: 23.08.2023 to 26.08.2023			
Test Procedure		: As per IS-5182			
<b>TEST RESULTS</b>					
LOCATION – CENTRAL WORKSHOP AREA , JAMADOBA					
Avg. Ambient Temperature		34°C	Avg. Humidity		69%
SI No.	Particulars	Value	NAAQ - CPCB STANDARD		
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	84.90	100 µg/m <sup>3</sup>		
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	50.93	60 µg/m <sup>3</sup>		
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	22.80	80 µg/m <sup>3</sup>		
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	29.36	80 µg/m <sup>3</sup>		
5.	Ozone, µg/m <sup>3</sup>	16.84	180 µg/m <sup>3</sup>		
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	17.89	400 µg/m <sup>3</sup>		
7.	CO, mg/m <sup>3</sup>	1.03	4 mg/m <sup>3</sup>		
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>		
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>		
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>		
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>		
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>		
NOTE: BDL - Below Detection Limit					
 Sr. Chemist Aditi R&D Services				 Technical Manager Aditi R&D Services, Sindri	
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Ref. No.: - ARDS/23-24/1000		Date: 29.08.2023	
<b>TEST REPORT OF AMBIENT AIR QUALITY</b>			
<ul style="list-style-type: none"> <li>Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021</li> <li>Date of Sample Collection : 21.08.2023 to 22.08.2023</li> <li>Date of Testing : 23.08.2023 to 26.08.2023</li> <li>Test Procedure : As per IS-5182</li> </ul>			
<b>TEST RESULTS</b>			
LOCATION – TATA CENTRAL HOSPITAL			
	Avg. Ambient Temperature	34°C	Avg. Humidity
			69%
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD
1.	Particulate Matter (PM <sub>10</sub> ), µg/m <sup>3</sup>	73.85	100 µg/m <sup>3</sup>
2.	Particulate Matter (PM <sub>2.5</sub> ), µg/m <sup>3</sup>	44.30	60 µg/m <sup>3</sup>
3.	SO <sub>2</sub> , µg/m <sup>3</sup>	18.32	80 µg/m <sup>3</sup>
4.	NO <sub>2</sub> , µg/m <sup>3</sup>	26.85	80 µg/m <sup>3</sup>
5.	Ozone, µg/m <sup>3</sup>	16.25	180 µg/m <sup>3</sup>
6.	NH <sub>3</sub> , µg/m <sup>3</sup>	17.15	400 µg/m <sup>3</sup>
7.	CO, mg/m <sup>3</sup>	0.83	4 mg/m <sup>3</sup>
8.	Pb, µg/m <sup>3</sup>	BDL	1 µg/m <sup>3</sup>
9.	As, ng/m <sup>3</sup>	BDL	6 ng/m <sup>3</sup>
10.	Ni, ng/m <sup>3</sup>	BDL	20 ng/m <sup>3</sup>
11.	Benzene, µg/m <sup>3</sup>	BDL	5 µg/m <sup>3</sup>
12.	Benzoapyrene ng/m <sup>3</sup>	BDL	1 ng/m <sup>3</sup>
NOTE: BDL - Below Detection Limit			
 Sr. Chemist Aditi R&D Services			
		 Technical Manager Aditi R&D Services, Sindri	
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<b>TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING</b>									
Ref. No. & Date <b>ARDS/23-24/1001 Date: 29.08.2023</b>	NAME AND ADDRESS OF THE CLIENT <b>M/S TATA STEEL, JAMADOBA,</b> <b>TATA STEEL LIMITED, JAMADOBA GROUP PLANT,</b> <b>DIST. - DHANBAD (JHARKHAND)</b>								
Date of Monitoring <b>21.08.2023 TO 22.08.2023</b>	Avg. Ambient Temperature (°C) <b>34</b>	Average Humidity (%) <b>77</b>	Weather Condition <b>Clear</b>						
Work Order 4700092573/932 Dt. 20.07.2021	Status of the plant <b>Running</b>								
<b>MONITORING RESULTS</b>									
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								Industrial Area	Industrial Area
JAMADOBA GROUP									
1.	Central Workshop	66.8	54.4	64.03	53.2	45.2	50.83	75	70
2.	6 & 7 Pits Colliery Office	68.8	62.4	66.69	57.6	51.8	55.60		
								Residential Area	Residential Area
3.	Officer Colony 12 No. Digwadih	50.8	46.8	49.25	44.5	41.8	43.36	65	55
								Silence Zone	Silence Zone
4.	Tata Central Hospital	47.2	45.8	46.56	38.2	36.4	37.39	50	40
 Sr. Chemist Aditi R&D Services					 Technical Manager Aditi R&D Services, Sindri				
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Ref. No.: - ARDS/23-24/1002	Date: 29.08.2023																							
<p><b><u>TEST REPORT OF MINERALOGICAL COMPOSITION</u></b></p> <p><b><u>OF PARTICULATE MATTER</u></b></p>																								
<ul style="list-style-type: none"> <li>• Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)</li> <li>• Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021</li> <li>• Date of Sample Collection : 22.08.2023</li> <li>• Date of Testing : 23.08.2023 – 26.08.2023</li> </ul>																								
<p><b><u>TEST RESULTS</u></b></p>																								
<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Sl No.</th> <th rowspan="2">Particulars</th> <th colspan="4">Mineralogical Composition (%)</th> </tr> <tr> <th>SiO<sub>2</sub></th> <th>FeO</th> <th>Al<sub>2</sub>O<sub>3</sub></th> <th>CaO</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>6 &amp; 7 Pits Colliery Office</td> <td>1.76</td> <td>0.04</td> <td>1.32</td> <td>2.6</td> </tr> <tr> <td>2.</td> <td>Tata Central Hospital</td> <td>2.05</td> <td>0.10</td> <td>1.29</td> <td>2.83</td> </tr> </tbody> </table>			Sl No.	Particulars	Mineralogical Composition (%)				SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO	1.	6 & 7 Pits Colliery Office	1.76	0.04	1.32	2.6	2.	Tata Central Hospital	2.05	0.10	1.29	2.83
Sl No.	Particulars	Mineralogical Composition (%)																						
		SiO <sub>2</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	CaO																			
1.	6 & 7 Pits Colliery Office	1.76	0.04	1.32	2.6																			
2.	Tata Central Hospital	2.05	0.10	1.29	2.83																			
 Sr. Chemist Aditi R&D Services		 Technical Manager Aditi R&D Services, Sindri																						
<p><b>Statements :</b></p> <ol style="list-style-type: none"> <li>1. The test report refers only to the particular item(s) submitted for testing.</li> <li>2. The test results reported in this report are valid at the time of and under the stated condition of measurement.</li> <li>3. This particular test report cannot be reproduced except in full, without prior written permission of Quality Manager of the laboratory.</li> </ol>																								

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Damodar River Up Stream	Damodar River Dn Stream		
1.	pH	6.9	7.2	6.5 -8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	398	420	1500	IS-3025 (P-16): 1984
3.	Turbidity, NTU	02	03	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	5.9	6.1	4.0	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	1.9	1.8	3.0	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	26	27.9	-	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.54	0.61	1.5	IS-3025 (P-60):2008
8.	Sulphate as SO <sub>4</sub> , mg/l	63.3	63.7	400	IS-3025 (P-24):1986

*Anandita*  
*22/08/23*  
 Sr. Chemist  
 Aditi R&D Services



*[Signature]*  
 Technical Manager  
 Aditi R&D Services, Sindri


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Sl. No.	PARAMETERS OF TEST	VALUE					Limit as per IS-2296 Class B (For Bathing)	Test Method
		2 Pit Jamadoba Colliery	3 Pit Jamadoba Colliery	2 Incline Jamadoba Colliery	6 & 7 Pits Colliery	Digwadih Colliery		
1.	pH,	7.1	7.8	7.2	7.7	6.9	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	825	892	789	850	810	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	40	28	41	35	39	-	IS-3025(P-17) : 1984
4.	Bio chemical Oxygen Demand, mg/l	1.8	3.1	1.9	1.6	2.0	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	67	29	77	96	67	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	BDL	0.8	BDL	0.4	BDL	-	IS-3025 (P-39):2021

**Sr. Chemist**  
*Anandita*  
 Aditi R&D Services

**Technical Manager**  
*[Signature]*  
 Aditi R&D Services, Sindri



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**Testing Laboratory**

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Ref. No.: - ARDS/23-24/1005

Date: 29.08.2023

## TEST REPORT OF SEWAGE

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. S.T.P. Outlet J.C.P.P. Canteen  
2. S.T.P. Outlet Jamadoba Canteen  
3. S.T.P. Outlet Railway Colony  
4. S.T.P. Supervisor Apartment Digwadih 12 No  
5. S.T.P. Officer Colony Digwadih 12 No
- Date of Sample Collection: 21.08.2023 to 22.08.2023
- Date of Testing : 23.08.2023 to 28.08.2023
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

## TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE					General Standards For Discharge Of Environmental Pollutants, Inland Surface Water By The MOEF&C	Test Method
		S.T.P. Outlet J.C.P.P. Canteen	S.T.P. Outlet Jamadoba Canteen	S.T.P. Outlet Railway Colony	S.T.P. Supervisor Apartment Digwadih 12 No	S.T.P. Officer Colony Digwadih 12 No		
1.	pH,	8.1	7.8	8.4	7.7	7.9	5.5-9.0	IS-3025 (P-11):1983
2.	Total Dissolved Solids, mg/l	689	780	899	895	865	2100	IS-3025 (P-16):1984
3.	Total Suspended Solids, mg/l	32	34	35	42	38	100	IS-3025(P-17):1984
4.	Bio chemical Oxygen Demand, mg/l	3.2	1.8	2.6	9	4.8	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	96	57	67	105	58	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	0.8	BDL	1.2	1.2	0.8	10	IS-3025 (P-39):2021

*Anandita*  
Sr. Chemist  
Aditi R&D Services



*J. A. G.*  
Technical Manager  
Aditi R&D Services, Sindri

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Sl. No.	PARAMETERS OF TEST	VALUE		General Standards For Discharge Of Environmental Pollutants, Inland Surface Water By The MOEF&C	Test Method
		E.T.P. Outlet T.C.H	E.T.P. Outlet Garage		
1.	pH,	8.1	8.5	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	822	852	2100	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	40	36	100	IS-3025(P-17) : 1984
4.	Bio chemical Oxygen Demand, mg/l	4.8	3.0	30	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	115	86	250	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	1.2	0.8	10	IS-3025 (P-39):2021

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Ref. No.: - ARDS/23-24/1006 Date: 29.08.2023

**TEST REPORT OF EFFLUENT**

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code : 1. E.T.P. Outlet T.C.H.  
2 E.T.P. Outlet Garage
- Date of Sample Collection: 22.08.2023
- Date of Testing : 23.08.2023 to 28.08.2023
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

**TEST RESULT**

*Anandita*  
Sr. Chemist  
Aditi R&D Services



*[Signature]*  
Technical Manager  
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/23-24/1007

Date: 29.08.2023

**TEST REPORT OF DRINKING WATER**

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700092573/932 Dt. 20.07.2021
- Sample Code :
  1. Canteen - Jamadoba Colliery
  2. Canteen - Digwadih Colliery
  3. Canteen - 6 & 7 Pit Colliery
  4. Canteen - Jamadoba Washery
- Date of Sample Collection: 21.08.2023 – 22.08.2023
- Date of Testing : 23.08.2023 – 28.08.2023
- 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 10500:2012		Test Method
		Canteen Jamadoba Colliery	Canteen Digwadih Colliery	Canteen 6 & 7 Pit Colliery	Canteen Jamadoba Washery	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	1	NIL	NIL	NIL	1.0	5.0	IS 3025 (P-10):1984
5.	pH	7.7	7.8	7.6	7.4	6.5-8.5	No. Relax.	IS-3025 (P-11):1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	384	388	200	412	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl, mg/l	66.9	63.2	40.9	65	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl <sub>2</sub> , mg/l	NIL	NIL	NIL	NIL	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	725	625	398	359	500	2000	IS 3025 (P-16):1984
10.	Calcium as Ca, mg/l	80	76.8	56	88	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	BDL	BDL	BDL	BDL	0.05	1.5	IS 3025 (P-42):1992

Continued on Page 2

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- 2 -

Sl. No.	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Canteen Jamadoba Colliery	Canteen Digwadih Colliery	6 & 7 Pit Colliery	Jamadoba Washery Canteen	Desirable	Permissible	
12.	Manganese as Mn, mg/l	BDL	BDL	BDL	BDL	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO <sub>4</sub> , mg/l	63	54.2	72	50.6	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO <sub>3</sub> , mg/l	4.1	3.4	1.3	1.2	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.32	0.45	0.28	0.24	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C <sub>6</sub> H <sub>5</sub> OH) mg/l	BDL	BDL	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	0.18	0.16	0.14	0.10	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Hexavalent Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO <sub>3</sub> , mg/l,	476	440	208	456	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

*Anandita*  
Sr. Chemist  
Aditi R&D Services



*[Signature]*  
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

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Mobile: 09471358492, 09431512608

Ref. No.: - ARDS/23-24/1008

Date: 29.08.2023

## TEST REPORT OF GROUND WATER

- Name of the industry : M/S TATA STEEL, JAMADOBA, TATA STEEL LIMITED, JAMADOBA GROUP PLANT, DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700092573/932 Dt. 20.07.2021
- Sample Code :
  - 1. Moholbani Basti
  - 2. Jorapukhar Kushtand
  - 3. Bhowra 13 No
  - 4. Lower Dungri
- Date of Sample Collection : 21.08.2023 – 22.08.2023
- Date of Testing : 23.08.2023 – 28.08.2023
- 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
		Moholbani Basti	Jorapukhar Kushtand	Bhowra 13 No	Lower Dungri	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	2	1	1	5	15	IS 3025 (P-4):2021
2.	Temperature °C	29°C	29°C	29°C	28°C	-	-	-
3.	Electrical Conductivity, µmhos/cm	1220	2400	1400	580	-	-	-
4.	Total Dissolved Solids, mg/l	790	1562	914	381	-	-	IS 3025(P-16):1984
5.	pH	6.9	7.8	7.3	7.6	6.5-8.5	No Relax	IS-3025(P-11):1983
6.	Total Hardness as CaCO <sub>3</sub> , mg/l	444	832	464	192	200	600	IS 3025(P-21):2009
7.	Calcium as Ca, mg/l	110.4	179.2	94.4	41.6	75	200	IS 3025(P-40):1991
8.	Magnesium as Mg, mg/l	40.3	92.2	54.7	21.1	30	100	IS 3025(P-46):1994
9.	Chloride as Cl, mg/l	91.1	171.0	105	37.2	250	1000	IS 3025(P-32):1988
10.	Fluoride as F, mg/l	0.48	0.48	0.36	0.45	1.0	1.5	IS 3025(P-60):2008

Continued on Page -2

*Anandita*



*[Signature]*

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- 2 -

Sl. No	PARAMETERS OF TEST	VALUE				IS as per IS 10500:1991		Test Method
		Moholbani Basti	Jorapukhar Kushtand	Bhowra 13 No	Lower Dungri	Desirable	Permissible	
11	Sulphate as SO <sub>4</sub> , mg/l	46.8	62.2	65.3	47.7	200	400	IS 3025(P-24):1986
12	Nitrate as NO <sub>3</sub> , mg/l	9.3	9.4	11.1	9.7	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO <sub>3</sub> , mg/l,	252	624	264	144	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,	0.10	0.12	0.08	0.18	5	15	IS 3025(P-42):1992
16	Iron a Fe, mg/l	0.08	0.12	0.11	0.07	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

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Technical Manager  
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