

JSPL/ EMD/ EC/ JSPL-RGH/ A20-S21/ 2021

30.11.2021

To,

**Ministry of Environment, Forests & Climate Change**  
Integrated Regional Office,  
Aranya Bhawan, North Block,  
Sector – 19, Naya Raipur  
Atal Nagar,  
Chhattisgarh - 492002

**Sub: Compliance of conditions stipulated in Environmental Clearance**

Dear Sir,

Please find enclosed herewith six monthly (April 2021 to September 2021) compliance status of conditions stipulated in Environment Clearance as listed below along with environmental monitoring results for the said period –

1. Environment Clearance Reference - J-11011/ 799/ 2008-IA II (I) dated 04.11.2009
2. Environment Clearance Reference - J-11011/ 799/ 2008-IA II (I) dated 11.03.2015

We hope you will find it in order.

Thanking you

Yours faithfully,  
For Jindal Steel & Power Limited



**DP Singh**  
**HOD – Environment, CC & Sustainability**

- CC: 1) The Member Secretary  
Central Pollution Control Board  
Parivesh Bhawan,  
East Arjun Nagar,  
New Delhi – 110032
- 2) Chhattisgarh Environment Conservation Board  
Paryavas Bhavan, North Block Sector-19,  
Naya Raipur - 492002  
Chhattisgarh
- 3) The Regional Office  
Chhattisgarh Environment Conservation Board  
TV Tower Road,  
Raigarh – 496001 (CG)

Jindal Steel & Power Limited

Work Office Jindal Steel & Power Limited, PB # 16, Kharsia Road, Raigarh 496001 (CG)

T +91 7762 227001-10 (10 lines) F +91 7762 227021-22 W www.jindalsteelpower.com

Registered Office O. P. Jindal Marg, Hisar, 125 005, Haryana

Six monthly compliance of  
EC condition  
with monitoring report

JSPL Raigarh

(April 2021 to September 2021)

## COMPLIANCE STATUS OF ENVIRONMENTAL CLEARANCE AS ON DATE

EC Reference : J-11011/ 799/ 2008-IA II (I) dated 04.11.2009  
 EC Granted for : Steel Melting Shop, Structure Mill, Mini Blast Furnace & Oxygen Plant

### A. SPECIFIC CONDITION

SN	Condition	Compliance status
i	Environment clearance is subject to the final order of the Hon'ble Court of Chhattisgarh at Bilaspur in the matter of Remesh Agrawal vs Union of India in Writ Petition (Civil) No. 2662 of 2009, as may be applicable to this project.	Agreed for the same
ii.	No construction activity should be started at the site without obtaining prior approval from the Central/ State Govt. for the diversion of forest land under the Forest (Conservation) Act, 1980 and subsequent amendments, if any.	Agreed for the same. No FDP proposed.
iii.	Efforts shall be made to reduce RSPM levels in the ambient air and a time bound action plan shall be submitted. Continuous stack monitoring facilities for all the stacks shall be provided and sufficient air pollution control devices viz. gas cleaning plant (GCP) and bag filters etc. shall be provided to keep the prescribed levels below 50 mg/Nm <sup>3</sup> . At no time the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit.	We have taken adequate steps to maintain ambient air quality within prescribed standards. Opacity meters are installed in all major stacks and data is linked to the server installed at CECB/ CPCB. We have ensured the stack emission within prescribed limit and the report is submitted to the board regularly. Please refer <b>Annexure – 1&amp;2</b> .
iv.	As proposed, gas cleaning plant (GCP) comprising of cyclone separator and 2-stage venturi scrubber shall be provided to the blast furnace to control particulate matter from blast furnace (BF) shall be kept below 10 mg/Nm <sup>3</sup> . Bag filters shall be provided to BF, EAF and LRF to keep particulate matter below 50 mg/Nm <sup>3</sup> . BF gas shall be reused in BF stoves and reheating furnaces of rolling mill. Dust extraction system with bag filters shall be provided to stock house of SMS. Steel melting shop (SMS, electric arc furnace and ladle refining furnace) shall be provided with hood, fume extraction system with bag filters and stack of adequate height to control particulate emissions within 50 mg/Nm <sup>3</sup> . Flue gases from reheating furnace shall be let out through a stack of adequate height.	The Gas Cleaning Plant (GCP) consisting of cyclone separator and 2-stage venturi scrubber provided to clean blast furnace gas to keep dust level within prescribed standard. Blast Furnace gas is utilized to the maximum in mills, stoves, power plants etc. High efficiency bag filters are provided to control emission from material handling areas, SMS and Blast Furnace. Clean flue gas from reheating furnace of MLSM is discharge through the stack of 50 meter height.
v.	As proposed, water sprinkling devices, closed	The fugitive emissions generation points in



	conveyors and bag houses shall be provided to control fugitive emissions. Dust suppression (DS) system i.e. water sprinkling or dust extraction systems with bag filters shall be provided to raw material handling, loading/unloading points of the plant. Dust collectors shall be provided at all crushers, transfer points of conveyors, raw material and coal yard. Adequate stack height shall be provided to rolling mill and other plants. Fugitive emission shall be regularly monitoring and records maintained.	blast furnace complex like various transfer and junction points, product hoppers, and loading points are provided with appropriate suction device connected to bag filter. Where provision of bag filter and other control devices are not feasible, water spraying arrangements provided. Fume Extraction System with bag filter provided in the SMS for EAF & LRF. Truck mounted water spraying tankers provided for roads and other dust generating points. All internal roads are made pucca. Good housekeeping practices adopted. All roads and shop floors cleaned regularly. Fully automatic road sweeping machine deployed to clean the road and road-side dust.
vi.	Data on ambient air quality stack emissions and fugitive emissions shall be regularly submitted online to the Ministry's Regional Office at Bhopal, Chhattisgarh Environment Conservation Board (CECB) and Central Pollution Control Board (CPCB) as well as hard copy once in six months. Data on SPM, SO <sub>2</sub> and NO <sub>x</sub> shall also be displayed outside the premises at the appropriate place for the general public.	Data is regularly sent to statutory bodies and results are displayed at a prominent place in plant area and at main gate.
vii.	Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines/ Code of Practice issued by the CPCB shall be followed. New standards issued by the Ministry for the sponge iron plant in May, 2008 shall be followed.	Gaseous emission level including secondary fugitive emission from all sources are controlled and maintained below allowable limits across the plant.
viii.	Vehicular pollution due to transportation of raw material and finished product shall be controlled. Proper arrangements shall also be made to control dust emission during loading and unloading of the raw material and finished product. Efforts shall also be made to reduce impact of the transport of the raw materials and end products on the surrounding environment including agricultural land. All the raw materials including fly ash shall be transported in the closed containers only and shall not be overloaded. Vehicular emissions shall be regularly monitored and records kept.	Vehicular exhaust emission checks are done regularly. Efforts are made to keep dust levels low during loading/ unloading. All internal roads are made pucca. Transportation of raw material is done only in covered trucks and overloading is restricted. Vehicular emission monitoring carried out regularly.



ix.	Total water requirement from Kelo & Mahanadi River after proposed expansion shall not exceed 2,563 kl/hr as per the permission accorded by the concerned department vide letter dated 23 <sup>rd</sup> May, 1997, 31 <sup>st</sup> January, 2003 and 12 <sup>th</sup> April, 1999. All the cooling tower blow down and blow down water from blast furnace (BF) and steel melting shop (SMS) shall be used for dust scrubbing. Blow down water from oxygen plant shall be used for slag granulation. All the wastewater including slurry from ventury scrubber shall be treated in the effluent treatment plant (ETP) and treated wastewater shall be reused for gas scrubbing, slag granulation, dust suppression and green belt development. Domestic wastewater shall be treated in sewage treatment plant and reused for gardening.	All cooling tower blow down water from production units are used in slag yard/ dust control. Wastewater from GCP of Blast furnace is treated in effluent treatment plant and recycled back in gas scrubbing. Domestic wastewater is treated in STPs and treated water is reused in garden/ green belt development.
x.	'Zero' effluent discharge shall be strictly followed and no wastewater shall be discharged outside the premises.	No wastewater is allowed to discharge outside the factory premises. Only storm water is discharged in rainy season.
xi.	The water consumption shall not exceed 16 m3/T of steel as per prescribed standards.	Innovative practices are done time to time for conservation of natural resource. We are in much below the water consumption norms.
xii.	Regular monitoring of effluent and influent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the E(P) Act whichever are more stringent. Leachate study for the effluent generated and analysis shall also be regularly carried out and report submitted to the Ministry's Regional Office at Bhopal, CECB and CPCB.	Regular monitoring of effluent and influent surface, sub-surface and groundwater and treated wastewater is conducted at regular intervals. STP treated water quality report is enclosed as <b>Annexure – 5</b> . Surface water quality report is enclosed as <b>Annexure – 6</b>
xiii.	Ground water monitoring around the solid waste disposal site/ secured landfill (SLF) shall be carried out regularly and report submitted to the ministry's Regional Office at Bhopal, CPCB and CECB.	Groundwater monitoring around solid waste disposal sites are regularly conducted and report submitted to statutory bodies. Please refer <b>Annexure – 4 &amp; 7</b> .
xiv.	All the dust, thickener sludge from gas cleaning plant (GCP) of BF and bag filter dust, mill scale from SMS shall be used in sinter plant. All the blast furnace (BF) slag shall be granulated and provided to cement manufacturers for further utilization. SMS slag after metal recovery shall also be properly utilized. All the slag shall be used for land filling inside the plant or used as building material only after passing through Toxic Chemical Leachability Potential (TCLP) test. Toxic slag be disposed in secured landfill	The Fe containing dust/ bag filter dust, thickener sludge and mill scale are used in sinter plant. Granulated slag reutilized for cement manufacturing. SMS slag is reused in making PSB (Precious Slag Balls), road making and landfill. Used/ spent oil sold to registered recycler under Hazardous & Other Wastes (Management, Handling & Transboundary Movement) Rules.

	as per CPCB guidelines. Otherwise, hazardous substances shall be recovered from the slag and output waste and be disposed in secured landfill as per CPCB guidelines. All the other solid waste including broken refractory mass shall be properly disposed off in environment-friendly manner. Oily waste shall be provided to authorized recyclers/ re-processors.	
xv.	A time bound action plan shall be submitted to reduce solid waste, its proper utilization and disposal.	Solid waste generation is regularly monitored and efforts are constantly made to reduce their generation and maximize its reuse.
xvi.	Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/ hazardous waste shall be submitted to the Ministry's Regional Office at Bhopal, CECB and CPCB.	Solid wastes are handled, stored and utilized in an environment friendly manner. Toxicity of waste is checked at periodic intervals. Details are regularly submitted to statutory bodies. Please refer <b>Annexure – 4 &amp; 7</b> .
xvii.	A disaster management plan shall be prepared and submitted to the Ministry's Regional Office at Bhopal, CECB and CPCB within 3 months of issue of environment clearance letter.	Disaster management plan including onsite emergency plan has already been incorporated in EIA and submitted to statutory bodies.
xviii.	As proposed, green belt shall be developed in 660 acres (more than 33% area) out of total 1800 acres land within and around the plant premises to mitigate the effects or air emissions as per the CPCB guidelines in consultation with DFO.	Thick green belt has been developed along the boundary of the JSPL complex as well as wherever open space is available within plant premises. Nursery and gardens have also been developed in plant areas as well as colonies.
xix.	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the steel plants shall be implemented.	Implemented.
xx.	Prior permission from the state forest department shall be taken regarding likely impact of the expansion of the proposed steel plant on the reserve forests viz Urdana and Rabo Forests. Measures shall be taken to prevent impact of particulate emission/ fugitive emission, if any from the proposed plant on the surrounding reserve forests located within 10 km radius of the project. Further, conservation plan for the conservation of wild fauna in consultation with the state forest department shall be prepared and implemented.	Forest conservation plan have been prepared and submitted.
xxi.	Prior permission from the Archeological Survey of India/ State Govt. shall be taken regarding likely impact of the expansion of the proposed steel plant on the rock caves of Singhanpur and Basnajar. Further, conservation plan for the	The sites are beyond the impact zone of the plant and hence there will be no impact on adjoining forests is anticipated.





	conservation of rock caves of Singhanpur and Basnajar in consultation with the Archeological Survey of India/ State Govt. shall be prepared and implemented, if necessary.	
xxii.	All the commitments made in the public during the Public Hearing/ Public Consultation meeting held on 28 <sup>th</sup> May 2009 shall be satisfactorily implemented.	Implemented
xxiii.	The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Implemented

#### A. GENERAL CONDITION

SN	Condition	Compliance status as on date
i	The project authorities must strictly adhere to the stipulations made by the Chhattisgarh Environment Conservation Board (CECB) and the State Govt.	Implemented
ii.	No further expansion or modification in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	No further expansion shall be undertaken without prior approval of statutory bodies.
iii.	The gaseous emissions from various process units shall conform to the load/ mass based standards notified by this Ministry on 19 <sup>th</sup> May, 1993 and standards prescribed from time to time. The State Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location.	The gaseous emission from various process units are under control. We have also ensured that units shall not run in the event of failure of the pollution control equipment, and restarted only after appropriate rectification. Pollution control devices are regularly maintained and monitoring reports are submitted to the Board as per schedule.
iv.	In plant control measures for checking fugitive emissions from all the vulnerable sources like spillage/ raw material/ coal handling etc. shall be provided. Further specific measures like provision of dust suppression system consisting of water sprinkling, suction hoods, fan and bag filter etc shall be installed at material transfer points, blast furnace stock house and other enclosed raw material handling areas. Centralized de-dusting system i.e. collection of fugitive emissions through suction hood and subsequent treatment through bag filter or any other device and finally emitted through a stack	The fugitive emissions generation points in blast furnace complex like various transfer and junction points, product hoppers, and loading points are provided with appropriate suction device connected to bag filter. Where provision of bag filter and other control devices are not feasible, water spraying arrangements is provided, particularly in RMH yard. Fume Extraction System with bag filter provided in the SMS for EAF & LRF. Bag filter is provided common for FES and raw material section. Truck mounted water



	of appropriately designed height confirming to the standards for inducing furnace existing in the industry and proposed induction and arc furnace.	spraying tankers is provided for roads and other dust generating points. All internal roads are made pucca. Good housekeeping practices adopted by implementing 5 "S". All roads and shop floors are cleaned regularly. Fully automatic road sweeping machine to clean the road and road-side dust deployed. Stack heights are designed on the basis of best engineering practices.
v.	At least four ambient air quality monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO <sub>2</sub> and NO <sub>x</sub> are anticipated in consultation with the CECB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including Regional Office at Bhopal and the CECB/ CPCB once in six months.	Four online continuous ambient air quality monitoring stations installed at plant premises and one at Raigarh town as per direction of the Board. Results of same are submitted every month to statutory bodies and also linked in website.
vi.	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	For treatment of industrial effluent, effluent treatment plant (ETP) installed in the Blast furnace and oil skimmer installed in Structure Mill. Domestic wastewater is being treated in six Sewage treatment plants, which is fully utilized for green belt development activities.
vii.	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dBA (daytime) and 70 dBA (nighttime).	Noise levels in plant and the ambient noise levels are regularly monitored on regular basis and reports are submitted to the Board. Noise control measures such as dampers, mufflers, silencers are provided at all required locations. Please refer <b>Annexure – 3</b> .
viii.	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Health check-up of the workers and employees is being done time to time.
ix.	The company shall develop surface water harvesting structures to harvest the rainwater for utilization in lean season besides recharging the ground water table.	Rainwater harvesting practices are done in our existing steel plant by creating injection wells, re-charging structures, roof water harvesting, ponds & reservoirs.
x.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/ EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programs, education programs, drinking water supply and health care etc.	The company has complied with all major provisions for environment protection as mentioned in EIA/ EMP report. Various socio-economic measures are regularly undertaken for welfare of society.
xi.	As proposed Rs. 32.00 Crores and Rs. 6.5 Crores shall be earmarked towards capital cost and	Implemented





	recurring cost/ annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Govt. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Bhopal. The funds so provided shall not be diverted for any other purpose.	
xii.	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban local Body and the local NGO, if any from whom suggestions/ representations, if any were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Implemented
xiii.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitoring data on their website and shall upload the same periodically. It shall simultaneously be sent to the Regional Office of the MoEFCC at Bhopal, the respective Zonal Office of CPCB and the CECB. The criteria pollutant levels namely; SPM, RSPM, SO <sub>2</sub> and NO <sub>x</sub> (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	The compliance details are also periodically sent to statutory bodies at regular intervals. Electronic display board installed at main gate of the factory and monitoring data continuously displayed.
xiv.	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copy as well as by email) to the Regional Office of MoEFCC, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhopal/ CPCB/ CECB shall monitor the stipulated conditions.	Compliance status is submitted at six months interval.
xv.	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated to be submitted by the project proponent to the concerned state pollution control board as prescribe under the Environment (Protection) Rules 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MoEFCC at Bhopal by email.	Environmental Statement is regularly submitted well before the stipulated time. Environment Statement for the FY 2020-21 is already submitted to the Board Vide letter No. JSPL/ EMD/ ES/ 2021.



xvi.	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the CECB and may also be seen at website of Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> . This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to Regional Office at Bhopal.	Implemented
xvii.	Project authorities shall inform the Regional Office as well as Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	Agreed and being done accordingly.



## COMPLIANCE STATUS OF ENVIRONMENTAL CLEARANCE AS ON DATE

EC Reference : J-11011/ 799/ 2008-IA II (I) dated 11.03.2015

EC amended for : Blast Furnace-1 (from 0.42 to 0.525 MTPA), Blast Furnace-2 (from 1.25 to 1.60 MTPA, SMS-II A (from 0.75 to 1.10 MTPA) & Sinter Plant (from 2.50 to 2.85 MTPA)

### ADDITIONAL CONDITIONS

SN	Condition	Compliance status
I	A CSR Plan shall be prepared and the company earmark 2% of their net retain profits for CSR initiatives (Health, Education, Sanitation, Health Skill Development and infrastructure requirements such as strengthening of village roads, avenue plantation etc.) activities in consultation with the local communities and administrations.	The CSR plan is prepared and implemented.
II	A separate budget head shall be created and the annual capital and revenue expenditure on various activities of the plan shall be submitted as part of the Compliance Report to RO, Bhopal.	Agreed for the same.
III	The details of the CSR Plan shall be uploaded on the company website and shall also be provided in the Annual Report of the company.	Agreed for the same.



**STACK EMISSION MONITORING REPORT**  
**(APRIL 2021 – SEPTEMBER 2021)**

Unit	Stack attached with	PCE	Conc. of PM (mg/Nm <sup>3</sup> )					
			APR	MAY	JUN	JUL	AUG	SEPT
Power Plant – I	WHRB # 1 & 2	ESPs	27	31	32	29	31	28
	WHRB # 3 & 4	ESPs	32	30	29	27	28	30
	WHRB # 5 & 6	ESPs	28	28	29	28	29	29
Power Plant – II (2X55 MW)	AFBC 55 MW – I	ESPs	32	30	33	29	31	30
	AFBC 55 MW – II	ESPs	**	**	33	30	32	31
Power Plant-II (2X25 MW)	WHRB # 7 & 8	ESPs	28	29	28	27	28	29
	WHRB # 9 & 10	ESPs	29	25	28	26	29	30
Power Plant -III	WHRB # 11 & 12	*	26	25	28	26	28	26
	WHRB #13 & 14	*	27	27	29	28	27	28
	WHRB #15 & 16	*	28	29	28	26	28	29
	WHRB # 17 & 18	*	27	24	27	28	29	28
	CFBC (ESP)	ESP	31	32	33	34	29	28
DRI - I	Coal Dryer	Cyclone	26	28	25	28	28	26
DRI - II	RMH	Bag Filter	29	30	33	28	29	29
	Product Hopper	Bag Filter	28	27	29	27	28	28
Blast Furnace-I	Stoves	GCP	28	26	28	24	28	26
	RMH Area	Bag Filter	27	28	29	28	27	28
Blast Furnace-II	Stove	GCP	26	28	27	29	28	29
	Cast House dedusting	Bag Filter	27	26	28	26	28	27
	Stock House dedusting	Bag Filter	29	28	27	28	27	28
SAF	Furnace	Bag Filter	28	29	28	27	25	27
SMS - II	LRF – 1	Bag Filter	28	27	29	28	29	28
	LRF – 2 & 3	Bag Filter	32	30	33	26	27	29
	EAF-1	Bag Filter	28	29	31	28	27	28
	EAF-2	Bag Filter	32	30	33	34	31	30
	Raw Material Mixing	Bag Filter	28	29	28	27	28	27
	Ground Hopper	Bag Filter	26	27	26	28	32	28
SMS - III	EAF & LRF	Bag Filter	30	32	30	31	32	30
RUBM	Reheating Furnace	*	28	27	29	28	29	28
	Tandem Mill	*	27	26	27	26	27	26
Plate Mill	Reheating Furnace	*	29	28	32	30	31	30
MLSM	Reheating Furnace	*	27	30	31	29	27	28
Sinter Plant	Reheating Furnace	ESPs	31	30	33	29	28	30
	RMH	Bag Filter	28	29	28	27	30	28
LDP	Lime Kiln # 01	Bag Filter	27	30	32	30	28	30
	Lime Kiln # 02	Bag Filter	28	29	30	31	30	29
	Lime Kiln # 03	Bag Filter	29	27	29	28	29	32
	Lime Storage	Bag Filter	27	26	29	28	29	27
	Delivery System	Bag Filter	28	29	28	27	30	25

**Remark :** Emission Limit : PM 50 mg/Nm<sup>3</sup>

\* Not required

\*\* Plant under shutdown



### AMBIENT AIR QUALITY MONITORING REPORT

Month	Date	Location																			
		Plant East Side (STP II)					Plant West Side (STP - I)					Plant North Side (E&F Colony)					Plant South Side (Near Ash Dyke)				
		PM10	PM2.5	SO2	NO2	CO	PM10	PM2.5	SO2	NO2	CO	PM10	PM2.5	SO2	NO2	CO	PM10	PM2.5	SO2	NO2	CO
APR 21	Min	42	14	12	12	277	46	16	20	27	382	38	12	16	21	334	46	13	15	17	347
	Max	68	26	29	31	655	68	24	37	35	674	68	25	27	35	687	66	24	31	31	575
	Avg	55	20	22	24	484	58	21	27	30	564	48	17	22	26	463	54	18	22	25	466
MAY 21	Min	45	12.7	11	11	259	44	14.8	20	23	460	38	11.2	12	17	325	40	12.6	11	16	325
	Max	67	25	26	21	596	68	26	35	38	897	66	24	34	32	787	58	21	26	28	512
	Avg	57	21	18	16	412	60	22	26	30	613	50	17	20	24	480	50	17	18	22	406
JUN 21	Min	42	10.2	11	15	314	39	10.2	16	18	225	37	10.5	18	13	275	38	11.4	16	11	242
	Max	66	24.3	23	27	832	66	23.4	35	42	637	61	18.9	32	29	675	59	24.1	32	32	894
	Avg	55	18	17	17	436	52	18	26	29	456	48	15	25	24	449	45	14	21	21	440
JUL 21	Min	39	12	11	16	266	35	12	20	17	269	36	10	12	12	253	32	10	18	19	233
	Max	65	24	22	24	489	63	25	38	44	712	55	19	32	35	687	55	17	31	32	574
	Avg	49	16	16	20	345	54	19	26	30	449	46	14	21	23	378	43	13	24	25	368
AUG 21	Min	33	11	17	21	281	40	12	17	21	242	38	11	19	18	265	34	11	17	18	232
	Max	68	24	26	32	687	62	23	36	32	1075	59	16	31	35	704	68	22	25	32	420
	Avg	52	17	21	26	391	52	16	26	27	544	49	14	22	27	401	47	15	21	24	323
SEPT 21	Min	26	9	17	16	201	28	9	17	16	225	24	9	12	14	135	21	9	12	16	216
	Max	58	16	29	32	587	60	18	31	33	721	58	16	26	32	458	55	15	33	29	562
	Avg	46	14	23	25	386	49	14	25	26	452	40	12	20	22	297	42	12	21	22	334

Limit: PM10 - 100 µg/m<sup>3</sup>, PM2.5 - 60 µg/m<sup>3</sup>, SO<sub>2</sub> - 80 µg/m<sup>3</sup>, NO<sub>2</sub> - 80 µg/m<sup>3</sup>, CO - 2000 µg/m<sup>3</sup>



**AMBIENT NOISE LEVEL MONITORING REPORT**

Sr. No.	Location	APR 21		MAY 21		JUN 21		JUL 21		AUG 21		SEPT 21	
		Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
1	Plant East Side	67-68	57-59	66 - 69	56 - 59	66 - 69	54-58	66-70	55-60	67-68	55-61	66-69	57-60
2	Plant West Side	66-69	55-59	65 - 69	53 - 60	64-67	53-59	65-66	53-58	64-67	54-58	65-68	53-59
3	Plant North Side	67-69	52-57	65 - 70	54 - 55	63-68	52-58	62-69	55-59	63-70	53-57	65-70	55-56
4	Plant South Side	63-66	52-55	60 - 66	51 - 54	62-66	51-55	60-65	51-54	61-64	51-54	62-65	50-52


Limit : Day/Night – 75/70 dB (A)



# GROUND WATER (PIEZOMETER) REPORT

## Location – Ash Dyke

Format No. : UES/FORM/0

		HDD-272, Phase III - Near JP Chowk Ring Road No.-2, Kabir Nagar, Raipur (C.G.) - 492099 Ph : 0771 - 4027777   Email : ultimatenviro@gmail.com	
Recognized by Ministry of Environment Forest and Climate Change under EP act 1986			
<b>Name &amp; Address Of The Customer</b> <b>To,</b> <b>Jindal Steel &amp; Power Limited.</b> <b>Post Box No. 16, Kharsia Road,</b> <b>Raigarh (C.G.) 496001</b>		<b>Report No.</b> UES/TR/21-22/1763	<b>Lab Ref No.</b> UES/21-22/W/2702
		<b>Date of Sampling</b> 04/08/2021	<b>Date of Receipt</b> 06/08/2021
		<b>Date of Report</b> 17/08/2021	<b>Date of analysis</b> Start:06/08/2021      End:16/08/2021
<b>SAMPLE DETAILS</b>			
<b>Customer Sample id /Sampling Location</b> Piezometer/Ash dyke/East side			
<b>Customer Ref. No. &amp; Date</b> 4511520108, DATED: 22.07.2021			
<b>Sample Type</b> Drinking Water			
<b>Packing of Sample</b> Plastic Bottle (5 ltr.) Glass Bottle (350 ml)			
<b>Sample Collected By</b> Customer			
<b>Sample Condition at Receipt</b> Ok			

REPORT NO.1763

TEST REPORT						
SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012		RESULT
				Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	
A. Organoleptic & Physical Parameters						
1	Colour	Hazen	IS:3025:(Part-4)	5	15	<1
2	Odour	-	IS 3025(part-5)	Agreeable	Agreeable	Agreeable
3	pH Value at 25.2°C	-	IS:3025:(Part-11)	6.5-8.5	No Relaxation	7.64
4	Taste	-	IS 3025(part-8)	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	IS 3025:(Part-10)	1	5	16.4
6	Total Dissolved Solids	mg/L	IS:3025:(Part-16)	500	2000	479.2
B. General Parameters Concerning Substances undesirable in excessive amounts						
1	Aluminum (as Al)	mg/L	IS 3025(part-55)	0.03	0.2	N.D.
2	Ammonia (as total ammonia-N)	mg/L	IS 3025(part-34)	0.5	No Relaxation	N.D.
3	Anionic Detergent (as MBAS)	mg/L	Annex K of IS:13428	0.2	1.0	N.D.
4	Barium (as Ba)	mg/L	Annex F of IS:13428	0.7	No Relaxation	N.D.
5	Boron (as B)	mg/L	IS 3025:(Part-57)	0.5	1.0	N.D.
6	Calcium (as Ca)	mg/L	IS 3025:(Part-40)	75	200	64.2
7	Chloramines (as Cl <sub>2</sub> )	mg/L	IS 3025:(Part-26)	4.0	No Relaxation	N.D.
8	Chloride (as Cl)	mg/L	IS 3025:(Part-32)	250	1000	58.9
9	Copper (as Cu)	mg/L	IS 3025(part-42)	0.05	1.5	N.D.
10	Fluoride (as F)	mg/L	IS 3025(part-60)	1	1.5	0.08
11	Free Residual Chlorine	mg/L	IS 3025:(Part-26)	0.2	1	N.D.
12	Iron (as Fe)	mg/L	IS 3025(part-53)	0.3	No Relaxation	0.08
13	Magnesium (as Mg)	mg/L	IS 3025:(Part-46)	30	100	13.1



TEST REPORT						
SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012		RESULT
				Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	
14	Manganese (as Mn)	mg/L	IS 3025(part-59)	0.1	0.3	N.D.
15	Mineral Oil	mg/L	Clause 6 of IS 3025 (Part-39) Infrared partition method	0.5	No Relaxation	N.D.
16	Nitrate (as NO <sub>3</sub> )	mg/L	IS 3025(part-34)	45	No Relaxation	1.6
17	Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025(part-43)	0.001	0.002	N.D.
18	Selenium (as Se)	mg/L	IS 3025(part-56)	0.01	No Relaxation	N.D.
19	Silver (as Ag)	mg/L	Annex J of IS 13428	0.1	No Relaxation	N.D.
20	Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025:(Part-24)	200	400	102.2
21	Sulphide (as H <sub>2</sub> S)	mg/L	IS 3025:(Part-29)	0.05	No Relaxation	N.D.
22	Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025:(Part-23)	200	600	164.0
23	Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025:(Part-21)	200	600	196.0
24	Zinc (as Zn)	mg/L	IS 3025(part-49)	5	15	N.D.
<b>C. Parameters concerning toxic substances:-</b>						
1	Cadmium (as Cd)	mg/L	IS 3025(part-41)	0.003	No Relaxation	N.D.
2	Cyanide (as CN)	mg/L	IS 3025(part-27)	0.05	No Relaxation	N.D.
3	Lead (as Pb)	mg/L	IS 3025(part-47)	0.01	No Relaxation	N.D.
4	Mercury (as Hg)	mg/L	IS 3025(part-48)	0.001	No Relaxation	N.D.
5	Molybdenum (as Mo)	mg/L	IS 3025(part-2)	0.07	No Relaxation	N.D.
6	Nickel (as Ni)	mg/L	IS 3025(part-54)	0.02	No Relaxation	N.D.
7	Polychlorinated biphenyls	mg/L	ASTM 5175	0.0005	No Relaxation	N.D.
8	Polynuclear aromatic hydrocarbons (as PAH)	mg/L	APHA 6440	0.0001	No Relaxation	N.D.
9	Arsenic (as As)	mg/L	IS 3025(part-37)	0.01	0.05	N.D.
10	Chromium (as Cr)	mg/L	IS 3025(part-52)	0.05	No Relaxation	N.D.
11	<b>Trihalomethanes:</b>					
a)	Bromoform	mg/L	APHA 6232	0.1	No Relaxation	N.D.
b)	Dibromochloromethane	mg/L	APHA 6232	0.1	No Relaxation	N.D.
c)	Bromodichloromethane	mg/L	APHA 6232	0.06	No Relaxation	N.D.

TEST REPORT						
SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012		RESULT
				Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	
d)	Chloroform	mg/L	APHA 6232	0.2	No Relaxation	N.D.
D.	<b>Pesticides:-</b>					
1	Alpha HCH	µg/l	USEPA 508	0.01		N.D.
2	Beta HCH	µg/l	USEPA 508	0.04		N.D.
3	Delta HCH	µg/l	USEPA 508	0.04		N.D.
4	Alachlor	µg/l	USEPA 525.2, 507	20		N.D.
5	Aldrin / Dieldrin	µg/l	USEPA 508	0.03		N.D.
6	Atrazine	µg/l	USEPA 525.2, 8141 A	2		N.D.
7	Butachlor	µg/l	USEPA 525.2, 8141 A	125		N.D.
8	Chlorpyrifos	µg/l	USEPA 525.2, 8141 A	30		N.D.
9	DDT (o,p and p, p- Isomers of DDT, DDE and DDD)	µg/l	USEPA 508	1		N.D.
10	Gamma HCH	µg/l	USEPA 508	2		N.D.
11	2,4- Dichlorophenoxyacetic Acid	µg/l	USEPA 515.1	30		N.D.
12	Endosulphan (alpha, beta and sulphate)	µg/l	USEPA 508	0.4		N.D.
13	Ethion	µg/l	USEPA 1657 A	3		N.D.
14	Isoproturon	µg/l	USEPA 532	9		N.D.
15	Malathion	µg/l	USEPA 8141 A	190		N.D.
16	Methyl Parathion	µg/l	USEPA 8141 A	0.3		N.D.
17	Monocrotophos	µg/l	USEPA 8141 A	1		N.D.
18	Phorate	µg/l	USEPA 8141 A	2		N.D.
E.	<b>Microbial Parameters</b>					
1	Total Coliform	MPN/ 100ml	IS:1622:1981:RA:20 14	-		Absent
2	E. Coli	MPN/ 100ml	IS:1622:1981:RA: 2014	-		Absent

Note: mg/lit.: milligram per liter, N.D.: Not Detected.

**Terms & conditions**

- > The use of the report for publication, arbitration or as legal dispute is forbidden.
- > Test sample will be retained for 10 days after issue of test report unless otherwise agreed with customer.
- > This is for information as the party has asked for above test(s) only.

 <b>PREPARED BY</b>		<b>For ULTIMATE ENVIROLYTICAL SOLUTIONS</b>  <b>AUTHORIZED SIGNATORY</b>
---	---	---

-----End of the test report-----

**STP TREATED EFFLUENT QUALITY ANALYSIS REPORT**  
**(APRIL 2021 – SEPTEMBER 2021)**

SN.	Parameter	Limit	STP – I					
			APR	MAY	JUN	JUL	AUG	SEPT
1	pH	5.5 – 9.0	7.35	7.4	7.29	7.43	7.45	7.48
2	SS	100 mg/L	37	43	43	40	29	35
3	COD	250 mg/L	40	44	40	48	44	40
4	BOD	30 mg/L	12	13	12	15	13	10
5	Oil & grease	10 mg/L	NIL	NIL	NIL	NIL	NIL	NIL
6	Residual chlorine	1 ppm	0.1	0.1	0.1	0.1	0.1	0.1

SN.	Parameter	Limit	STP – II					
			APR	MAY	JUN	JUL	AUG	SEPT
1	pH	5.5 – 9.0	7.26	7.29	7.38	7.61	7.44	7.42
2	SS	100 mg/L	42	39	39	33	35	34
3	COD	250 mg/L	44	48	44	40	48	44
4	BOD	30 mg/L	11	15	14	12	14	12
5	Oil & grease	10 mg/L	NIL	NIL	NIL	NIL	NIL	NIL
6	Residual chlorine	1 ppm	0.1	0.1	0.1	0.1	0.1	0.1

SN.	Parameter	Limit	STP – III					
			APR	MAY	JUN	JUL	AUG	SEPT
1	pH	5.5 – 9.0	7.36	7.45	7.26	7.38	7.36	7.43
2	SS	100 mg/L	41	45	45	28	42	41
3	COD	250 mg/L	44	40	48	44	40	40
4	BOD	30 mg/L	14	11	14	13	12	13
5	Oil & grease	10 mg/L	NIL	NIL	NIL	NIL	NIL	NIL
6	Residual chlorine	1 ppm	0.1	0.1	0.1	0.1	0.1	0.1

SN.	Parameter	Limit	STP – IV					
			APR	MAY	JUN	JUL	AUG	SEPT
1	pH	5.5 – 9.0	7.34	7.36	7.44	7.4	7.44	7.36
2	SS	100 mg/L	38	31	31	32	35	28
3	COD	250 mg/L	48	44	40	44	40	44
4	BOD	30 mg/L	13	12	11	12	11	12
5	Oil & grease	10 mg/L	NIL	NIL	NIL	NIL	NIL	NIL
6	Residual chlorine	1 ppm	0.1	0.1	0.1	0.1	0.1	0.1


SS - Suspended Solids  
 COD - Chemical oxygen demand  
 BOD - Biochemical Oxygen Demand





## SURFACE WATER (KELO &amp; MAHANADI) ANALYSIS REPORT

Format No. : UES/FORM/09

 <b>Ultimate</b> ENVIROLYTICAL SOLUTIONS	<b>HDD-272, Phase III - Near JP Chowk</b> <b>Ring Road No.-2, Kabir Nagar, Raipur (C.G.) - 492099</b> <b>Ph : 0771 - 4027777   Email : ultimatenviro@gmail.com</b>	
	Recognized by Ministry of Environment Forest and Climate Change under EP act 1986	

<b>Name &amp; Address Of The Customer</b> <b>To,</b> <b>Jindal Steel &amp; Power Limited</b> <b>Post Box No. 16, Kharsia Road,</b> <b>Raigarh (C.G.) 496001</b>	Report No	UES/TR/21-22/1773	
	Lab Ref No	UES/21-22/W/2712	
	Date of Sampling	04/08/2021	
	Date of Receipt	06/08/2021	
	Date of Report	17/08/2021	
	Date of analysis	Start:06/08/2021	End:16/08/2021
<b>SAMPLE DETAILS</b>			
Customer Sample Id /Sampling Location	Surface Water/Kelo River		
Customer Ref. No. & Date	4511520108, DATED: 22.07.2021		
Sample Type	Surface Water		
Packing of Sample	Plastic Bottle (5 ltr.) Glass Bottle (350 ml)		
Sample Collected By	Customer		
Sample Condition at Receipt	Ok		

REPORT NO.1773

## TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS : 2296	RESULT
				TOLERANCE LIMITS FOR INLAND SURFACE WATER, CLASS-A (MAXIMUM)	
1	Colour	Hazen	IS:3025: (Part-4)	10.0	15.5
2	Odour	-	IS 3025(part-5)	Unobjectionable	Agreeable
3	pH Value at 25.2°C	-	IS:3025: (Part-11)	6.5 to 8.5	7.87
4	Taste	-	IS 3025(part-8)	Agreeable Taste	Agreeable
5	Total Dissolved Solids	mg/L	IS:3025: (Part-16)	500.0	132.5
6	Dissolved Oxygen	mg/L	IS:3025: (Part-44)	6.0	5.8
7	Bio-chemical Oxygen Demand at 27°C for three day	mg/L	IS:3025: (Part-44): 1993 RA 2014	2.0	5.26
8	Anionic Detergent (as MBAS)	mg/L	Annex K of IS:13428	0.2	N.D.
9	Barium (as Ba)	mg/L	Annex F of IS:13428	1.0	N.D.
10	Chloride (as Cl)	mg/L	IS 3025: (Part-32)	250.0	17.9
11	Copper (as Cu)	mg/L	IS 3025(part-42)	1.5	0.06
12	Fluoride (as F)	mg/L	IS 3025(part-60)	1.5	0.10
13	Iron (as Fe)	mg/L	IS 3025(part-53)	0.3	N.D.
14	Magnesium (as Mg)	mg/L	IS 3025: (Part-46)	100.0	4.3
15	Manganese (as Mn)	mg/L	IS 3025(part-59)	0.5	N.D.
16	Mineral Oil	mg/L	Clause 6 of IS 3025 (Part-39) Infrared partition method	0.01	N.D.
17	Nitrate (as NO <sub>3</sub> )	mg/L	IS 3025(part-34)	20.0	2.1
18	Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025(part-43)	0.002	N.D.
19	Selenium (as Se)	mg/L	IS 3025(part-56)	0.01	N.D.
20	Silver (as Ag)	mg/L	Annex J of IS 13428	0.05	N.D.
21	Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025: (Part-24)	400.0	42.7
22	Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025: (Part-21)	300.0	84.0





REPORT NO.1773

## TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS : 2296	RESULT
				TOLERANCE LIMITS FOR INLAND SURFACE WATER, CLASS-A (MAXIMUM)	
23	Calcium Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025: (Part-40)	200.0	74.0
24	Zinc (as Zn)	mg/L	IS 3025 (part-49)	15.0	0.28
25	Cadmium (as Cd)	mg/L	IS 3025 (part-41)	0.01	N.D.
26	Cyanide (as CN)	mg/L	IS 3025 (part-27)	0.05	N.D.
27	Lead (as Pb)	mg/L	IS 3025 (part-47)	0.1	N.D.
28	Mercury (as Hg)	mg/L	IS 3025 (part-48)	0.001	N.D.
29	Poly nuclear aromatic hydrocarbons (as PAH)	mg/L	APHA 6440	0.2	N.D.
30	Arsenic (as As)	mg/L	IS 3025 (part-37)	0.05	N.D.
31	Chromium (as Cr)	mg/L	IS 3025 (part-52)	0.05	N.D.

### Pesticides:-

32	Alpha HCH	µg/L	USEPA 508	0.01	N.D.
33	Beta HCH	µg/L	USEPA 508	0.04	N.D.
34	Delta HCH	µg/L	USEPA 508	0.04	N.D.
35	Alachlor	µg/L	USEPA 525.2, 507	20	N.D.
36	Aldrin / Dieldrin	µg/L	USEPA 508	0.03	N.D.
37	Atrazine	µg/L	USEPA 525.2, 8141 A	2	N.D.
38	Butachlor	µg/L	USEPA 525.2, 8141 A	125	N.D.
39	Chlorpyrifos	µg/L	USEPA 525.2, 8141 A	30	N.D.
40	DDT (o,p and p, p-Isomers of DDT, DDE and DDD)	µg/L	USEPA 508	1	N.D.
41	Gamma HCH	µg/L	USEPA 508	2	N.D.
42	2,4-Dichlorophenoxyacetic Acid	µg/L	USEPA 515.1	30	N.D.
43	Endosulphan (alpha, beta and sulphate)	µg/L	USEPA 508	0.4	N.D.
44	Ethion	µg/L	USEPA 1657 A	3	N.D.
45	Isoproturon	µg/L	USEPA 532	9	N.D.
46	Malathion	µg/L	USEPA 8141 A	190	N.D.
47	Methyl Parathion	µg/L	USEPA 8141 A	0.3	N.D.
48	Monocrotophos	µg/L	USEPA 8141 A	1	N.D.
49	Phorate	µg/L	USEPA 8141 A	2	N.D.
50	Total Coliform Organisms	MPN/100ml	IS:1622:1981:RA:2019	50	22.0

Note: mg/lit.: milligram per liter, N.D.: Not Detected.

#### Terms & conditions

- > The use of the report for publication, arbitration or as legal dispute is forbidden.
- > Test sample will be retained for 10 days after issue of test report unless otherwise agreed with customer.
- > This is for information as the party has asked for above test(s) only.

 <b>PREPARED BY</b>		<b>For ULTIMATE ENVIROLYTICAL SOLUTIONS</b>  <b>AUTHORIZED SIGNATORY</b>
---	---	---

-----End of the test report-----



<b>Name &amp; Address Of The Customer</b>  <b>To,</b> <b>Jindal Steel &amp; Power Limited</b> <b>Post Box No. 16, Kharsia Road,</b> <b>Raigarh (C.G.) 496001</b>	Report No	UES/TR/21-22/1774	
	Lab Ref No	UES/21-22/W/2713	
	Date of Sampling	04/08/2021	
	Date of Receipt	06/08/2021	
	Date of Report	17/08/2021	
	Date of analysis	Start:06/08/2021	End:16/08/2021
<b>SAMPLE DETAILS</b>			
Customer Sample Id /Sampling Location	SurfaceWater /Mahanadi River		
Customer Ref. No. & Date	4511520108, DATED: 22.07.2021		
Sample Type	Surface Water		
Packing of Sample	Plastic Bottle (5 ltr.) Glass Bottle (350 ml)		
Sample Collected By	Customer		
Sample Condition at Receipt	Ok		

REPORT NO.01774

## TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS : 2296	RESULT
				TOLERANCE LIMITS FOR INLAND SURFACE WATER, CLASS-A (MAXIMUM)	
1	Colour	Hazen	IS:3025: (Part-4)	10.0	10.5
2	Odour	-	IS 3025(part-5)	Unobjectionable	Agreeable
3	pH Value at 25.2°C	-	IS:3025: (Part-11)	6.5 to 8.5	7.97
4	Taste	-	IS 3025(part-8)	Agreeable Taste	Agreeable
5	Total Dissolved Solids	mg/L	IS:3025: (Part-16)	500.0	111.0
6	Dissolved Oxygen	mg/L	IS:3025: (Part-44)	6.0	4.6
7	Bio-chemical Oxygen Demand at 27°C for three day	mg/L	IS:3025: (Part-44) : 1993 RA 2014	2.0	7.36
8	Anionic Detergent (as MBAS)	mg/L	Annex K of IS:13428	0.2	N.D.
9	Barium (as Ba)	mg/L	Annex F of IS:13428	1.0	N.D.
10	Chloride (as Cl)	mg/L	IS 3025: (Part-32)	250.0	13.9
11	Copper (as Cu)	mg/L	IS 3025(part-42)	1.5	N.D.
12	Fluoride (as F)	mg/L	IS 3025(part-60)	1.5	0.11
13	Iron (as Fe)	mg/L	IS 3025(part-53)	0.3	N.D.
14	Magnesium (as Mg)	mg/L	IS 3025: (Part-46)	100.0	5.3
15	Manganese (as Mn)	mg/L	IS 3025(part-59)	0.5	N.D.
16	Mineral Oil	mg/L	Clause 6 of IS 3025 (Part-39) Infrared partition method	0.01	N.D.
17	Nitrate (as NO <sub>3</sub> )	mg/L	IS 3025(part-34)	20.0	1.7
18	Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025(part-43)	0.002	N.D.
19	Selenium (as Se)	mg/L	IS 3025(part-56)	0.01	N.D.
20	Silver (as Ag)	mg/L	Annex J of IS 13428	0.05	N.D.
21	Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025: (Part-24)	400.0	38.2
22	Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025: (Part-21)	300.0	26.4





REPORT NO.01774

## TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS : 2296	RESULT
				TOLERANCE LIMITS FOR INLAND SURFACE WATER, CLASS-A (MAXIMUM)	
23	Calcium Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025: (Part-40)	200.0	72.0
24	Zinc (as Zn)	mg/L	IS 3025 (part-49)	15.0	0.14
25	Cadmium (as Cd)	mg/L	IS 3025 (part-41)	0.01	N.D.
26	Cyanide (as CN)	mg/L	IS 3025 (part-27)	0.05	N.D.
27	Lead (as Pb)	mg/L	IS 3025 (part-47)	0.1	N.D.
28	Mercury (as Hg)	mg/L	IS 3025 (part-48)	0.001	N.D.
29	Poly nuclear aromatic hydrocarbons (as PAH)	mg/L	APHA 6440	0.2	N.D.
30	Arsenic (as As)	mg/L	IS 3025 (part-37)	0.05	N.D.
31	Chromium (as Cr)	mg/L	IS 3025 (part-52)	0.05	N.D.
<b>Pesticides :-</b>					
32	Alpha HCH	µg/L	USEPA 508	0.01	N.D.
33	Beta HCH	µg/L	USEPA 508	0.04	N.D.
34	Delta HCH	µg/L	USEPA 508	0.04	N.D.
35	Alachlor	µg/L	USEPA 525.2, 507	20	N.D.
36	Aldrin / Dieldrin	µg/L	USEPA 508	0.03	N.D.
37	Atrazine	µg/L	USEPA 525.2, 8141 A	2	N.D.
38	Butachlor	µg/L	USEPA 525.2, 8141 A	125	N.D.
39	Chlorpyrifos	µg/L	USEPA 525.2, 8141 A	30	N.D.
40	DDT (o,p and p, p- Isomers of DDT, DDE and DDD)	µg/L	USEPA 508	1	N.D.
41	Gamma HCH	µg/L	USEPA 508	2	N.D.
42	2,4-Dichlorophenoxyacetic Acid	µg/L	USEPA 515.1	30	N.D.
43	Endosulphan (alpha, beta and sulphate)	µg/L	USEPA 508	0.4	N.D.
44	Ethion	µg/L	USEPA 1657 A	3	N.D.
45	Isoproturon	µg/L	USEPA 532	9	N.D.
46	Malathion	µg/L	USEPA 8141 A	190	N.D.
47	Methyl Parathion	µg/L	USEPA 8141 A	0.3	N.D.
48	Monocrotophos	µg/L	USEPA 8141 A	1	N.D.
49	Phorate	µg/L	USEPA 8141 A	2	N.D.
50	Total Coliform Organisms	MPN/100ml	IS:1622:1981:RA:2019	50	17.0

Note: mg/lit.: milligram per liter, N.D.: Not Detected.

**Terms & conditions**

- > The use of the report for publication, arbitration or as legal dispute is forbidden.
- > Test sample will be retained for 10 days after issue of test report unless otherwise agreed with customer.
- > This is for information as the party has asked for above test(s) only.

<p><i>Chakras</i> 17/08/2021</p> <p>PREPARED BY</p>		<p>For ULTIMATE ENVIROLYTICAL SOLUTIONS</p> <p><i>Chakras</i> 17/08/2021</p> <p>AUTHORIZED SIGNATORY</p>
---	---	--

-----End of the test report-----

*3*



# GROUND WATER (PIEZOMETER) REPORT

Location – Solid waste dumping area

Format No. : UES/FORM/C

 <b>Ultimate</b> ENVIROLYTICAL SOLUTIONS	HDD-272, Phase III - Near JP Chowk Ring Road No.-2, Kabir Nagar, Raipur (C.G.) - 492099 Ph : 0771 - 4027777   Email : ultimatenviro@gmail.com	
	Recognized by Ministry of Environment Forest and Climate Change under EP act 1986	

<b>To,</b> <b>Jindal Steel &amp; Power Limited</b> <b>Post Box No. 16, Kharsla Road,</b> <b>Raigarh (C.G.) 496001</b>	Report No	UES/TR/21-22/1764	
	Lab Ref No	UES/21-22/W/2703	
	Date of Sampling	04/08/2021	
	Date of Receipt	06/08/2021	
	Date of Report	17/08/2021	
	Date of analysis	Start:06/08/2021	End:16/08/2021

SAMPLE DETAILS	
Customer Sample Id /Sampling Location	Ground Water/Piezometer/Solid waste dump Area
Customer Ref. No. & Date	4511520108, DATED: 22.07.2021
Sample Type	Drinking Water
Packing of Sample	Plastic Bottle (5 ltr.) Glass Bottle (350 ml)
Sample Collected By	Customer
Sample Condition at Receipt	Ok

REPORT NO.1764

TEST REPORT						
SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012		RESULT
				Requirement t (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	
A. Organoleptic & Physical Parameters						
1	Colour	Hazen	IS:3025:(Part-4)	5	15	<1
2	Odour	-	IS 3025(part-5)	Agreeabl e	Agreeable	Agreeable
3	pH Value at 25.2°C	-	IS:3025:(Part-11)	6.5-8.5	No Relaxation	7.77
4	Taste	-	IS 3025(part-8)	Agreeabl e	Agreeable	Agreeable
5	Turbidity	NTU	IS 3025:(Part-10)	1	5	0.64
6	Total Dissolved Solids	mg/L	IS:3025:(Part-16)	500	2000	382.6
B. General Parameters Concerning Substances undesirable in excessive amounts						
1	Aluminum (as Al)	mg/L	IS 3025(part-55)	0.03	0.2	N.D.
2	Ammonia (as total ammonia-N)	mg/L	IS 3025(part-34)	0.5	No Relaxation	N.D.
3	Anionic Detergent (as MBAS)	mg/L	Annex K of IS:13428	0.2	1.0	N.D.
4	Barium (as Ba)	mg/L	Annex F of IS:13428	0.7	No Relaxation	N.D.
5	Boron (as B)	mg/L	IS 3025:(Part-57)	0.5	1.0	N.D.
6	Calcium (as Ca)	mg/L	IS 3025:(Part-40)	75	200	77.7
7	Chloramines (as Cl <sub>2</sub> )	mg/L	IS 3025:(Part-26)	4.0	No Relaxation	N.D.
8	Chloride (as Cl)	mg/L	IS 3025:(Part-32)	250	1000	45.9
9	Copper (as Cu)	mg/L	IS 3025(part-42)	0.05	1.5	N.D.
10	Fluoride (as F)	mg/L	IS 3025(part-60)	1	1.5	0.07
11	Free Residual Chlorine	mg/L	IS 3025:(Part-26)	0.2	1	N.D.
12	Iron (as Fe)	mg/L	IS 3025(part-53)	0.3	No Relaxation	0.09



Recognized by Ministry of Environment Forest and Climate Change under EP act 1986

REPORT NO.1784

## TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012		RESULT
				Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	
13	Magnesium (as Mg)	mg/L	IS 3025: (Part-46)	30	100	15.5
14	Manganese (as Mn)	mg/L	IS 3025 (part-59)	0.1	0.3	N.D.
15	Mineral Oil	mg/L	Clause 6 of IS 3025 (Part-39) Infrared partition method	0.5	No Relaxation	N.D.
16	Nitrate (as NO <sub>3</sub> )	mg/L	IS 3025 (part-34)	45	No Relaxation	8.0
17	Phenolic Compound (as C <sub>6</sub> H <sub>5</sub> OH)	mg/L	IS 3025 (part-43)	0.001	0.002	N.D.
18	Selenium (as Se)	mg/L	IS 3025 (part-56)	0.01	No Relaxation	N.D.
19	Silver (as Ag)	mg/L	Annex J of IS 13428	0.1	No Relaxation	N.D.
20	Sulphate (as SO <sub>4</sub> )	mg/L	IS 3025: (Part-24)	200	400	63.1
21	Sulphide (as H <sub>2</sub> S)	mg/L	IS 3025: (Part-29)	0.05	No Relaxation	N.D.
22	Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	IS 3025: (Part-23)	200	600	162
23	Total Hardness (as CaCO <sub>3</sub> )	mg/L	IS 3025: (Part-21)	200	600	284
24	Zinc (as Zn)	mg/L	IS 3025 (part-49)	5	15	0.16
<b>C. Parameters concerning toxic substances:-</b>						
1	Cadmium (as Cd)	mg/L	IS 3025 (part-41)	0.003	No Relaxation	N.D.
2	Cyanide (as CN)	mg/L	IS 3025 (part-27)	0.05	No Relaxation	N.D.
3	Lead (as Pb)	mg/L	IS 3025 (part-47)	0.01	No Relaxation	N.D.
4	Mercury (as Hg)	mg/L	IS 3025 (part-48)	0.001	No Relaxation	N.D.
5	Molybdenum (as Mo)	mg/L	IS 3025 (part-2)	0.07	No Relaxation	N.D.
6	Nickel (as Ni)	mg/L	IS 3025 (part-54)	0.02	No Relaxation	N.D.
7	Polychlorinated biphenyls	mg/L	ASTM 5175	0.0005	No Relaxation	N.D.
8	Polynuclear aromatic hydrocarbons (as PAH)	mg/L	APHA 6440	0.0001	No Relaxation	N.D.
9	Arsenic (as As)	mg/L	IS 3025 (part-37)	0.01	0.05	N.D.
10	Chromium (as Cr)	mg/L	IS 3025 (part-52)	0.05	No Relaxation	N.D.
11	<b>Trihalomethanes:</b>					
a)	Bromoform	mg/L	APHA 6232	0.1	No Relaxation	N.D.
b)	Dibromochloromethane	mg/L	APHA 6232	0.1	No Relaxation	N.D.



## TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012		RESULT
				Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	
c)	Bromodichloromethane	mg/L	APHA 6232	0.06	No Relaxation	N.D.
d)	Chloroform	mg/L	APHA 6232	0.2	No Relaxation	N.D.
<b>D. Pesticides:-</b>						
1	Alpha HCH	µg/L	USEPA 508	0.01		N.D.
2	Beta HCH	µg/L	USEPA 508	0.04		N.D.
3	Delta HCH	µg/L	USEPA 508	0.04		N.D.
4	Alachlor	µg/L	USEPA 525.2, 507	20		N.D.
5	Aldrin / Dieldrin	µg/L	USEPA 508	0.03		N.D.
6	Atrazine	µg/L	USEPA 525.2, 8141 A	2		N.D.
7	Butachlor	µg/L	USEPA 525.2, 8141 A	125		N.D.
8	Chlorpyrifos	µg/L	USEPA 525.2, 8141 A	30		N.D.
9	DDT (o,p and p, p- Isomers of DDT, DDE and DDD)	µg/L	USEPA 508	1		N.D.
10	Gamma HCH	µg/L	USEPA 508	2		N.D.
11	2,4- Dichlorophenoxyacetic Acid	µg/L	USEPA 515.1	30		N.D.
12	Endosulphan (alpha, beta and sulphate)	µg/L	USEPA 508	0.4		N.D.
13	Ethion	µg/L	USEPA 1657 A	3		N.D.
14	Isoproturon	µg/L	USEPA 532	9		N.D.
15	Malathion	µg/L	USEPA 8141 A	190		N.D.
16	Methyl Parathion	µg/L	USEPA 8141 A	0.3		N.D.
17	Monocrotophos	µg/L	USEPA 8141 A	1		N.D.
18	Phorate	µg/L	USEPA 8141 A	2		N.D.
<b>E. Microbial Parameters</b>						
1	Total Coliform	MPN/ 100ml	IS:1622:1981:RA:2014	-		Absent
2	E. Coli	MPN/ 100ml	IS:1622:1981:RA:2014	-		Absent

Note: mg/lit.: milligram per liter, N.D.: Not Detected.

**Terms & conditions**

- > The use of the report for publication, arbitration or as legal dispute is forbidden.
- > Test sample will be retained for 10 days after issue of test report unless otherwise agreed with customer.
- > This is for information as the party has asked for above test(s) only.

<p><i>Shikha</i> 17/08/2021 PREPARED BY</p>		<p>For ULTIMATE ENVIROLYTICAL SOLUTIONS <i>[Signature]</i> 17/08/2021 AUTHORIZED SIGNATORY</p>
---	---	--

-----End of the test report-----

*[Handwritten Signature]*