

JSPL/GLM/2021/13

Date: 30.11.2021

To,

The Additional Principal Chief Conservator of Forests,
Ministry of Environment, Forest & Climate Change,
Government of India,
Integrated Regional Office,
Aranya Bhawan, North Block, Sector 19, Naya Raipur,
Atal Nagar, Chhattisgarh.

**Sub: Six monthly compliance status for the period April. 2021 to September 2021 in respect of
Godadih MahalNo.2 Limestone mine at village Godadih, Tehsil-Masturi, and District- Bilaspur (C.G)
of M/s Jindal Steel & Power Limited (JSPL).**

**Ref: Environmental Clearance (EC) vide letter No. J-11015/29/2010-IA-II (M) dated 02.09.2013 &
Amendment vide letter no. F. No. J-11015/29/2010-IA-II (M) dated 23.08.2019**

Dear Sir,

Please find enclosed herewith the six monthly compliance status for the period April. 2021 to September' 2021 as per clause no.(xiii) of B (General conditions), stipulated in Environment Clearance and its amendment for granted mining Lease in favour of Godadih Mahal No.2 Limestone Mine at village-Godadih, Tehsil-Masturi, District-Bilaspur, Chhattisgarh of M/s Jindal Steel & Power Limited.

Submitted for your kind information & record please.

Thanking You

Yours faithfully,

M/s Jindal Steel & Steel Power Limited.



(Nitesh Raghuvanshi)

Mines Agent / A.V.P – Limestone Mines

Godadih Mahal No.2 Limestone Mine

Encl. : As above.

Copy to:

1. Central Pollution Control Board, Bhopal,(M.P)
2. Chhattisgarh Environment Conservation Board, Raipur(CG)
3. Regional Office CECB, Bilaspur(CG)

Jindal Steel & Power Limited

Work Office Godadih Mahal No 2 Limestone Mine, PO # Godadih, Tehsil – Masturi, Dist – Bilaspur, 495551 (CG)

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

COMPLIANCE STATUS (April' 2021 TO September'2021)

COMPLIANCE STATUS OF CONDITIONS STIPULATED IN ENVIRONMENT CLEARANCE FOR GODADIH MAHAL NO. 2 LIMESTONE MINES OF M/S JINDAL STEEL & POWER, LOCATED AT VILLAGE GODADIH MAHAL NO.2, TEHSIL MASTURI, DISTRICT BILASPUR, CHHATTISGARH (ML AREA: 120.313 HA; CAP. 1.54 MTPA [ROM]) VIDE LETTER NO. J-11015/ 29/ 2010-IA.II (M), DATED 02.09.2013.

A. Specific conditions:

SN	Condition	Compliance status
i.	The project proponent shall obtain consent to establish and consent to operate from the Chhattisgarh Environment Conservation Board and effectively implement all the conditions stipulated therein.	1. Consent to Establish granted vide letter No.6647/TS/CECB/2018 dated 22.02.2018 by the Chhattisgarh Environment Conservation Board, Raipur. 2. Renewal of Consent to Operate granted vide letter no. 575/ TS/ CECB/ 2021 dated 24.05.2021 by the Chhattisgarh Environment Conservation Board, Raipur. Reports submitted to the concerned authorities of CECB time to time for implementation of the conditions.
ii.	Production from the mine shall not exceed 1.54 Million TPA (ROM) at any point of time.	Production will not exceed 1.54 Million TPA (ROM).
iii.	Land losers and landless agricultural labours shall be compensated as per Model R&R Policy of Chhattisgarh, 2007 and its amendment at the earliest.	R & R policy of CG State Government shall be followed regarding land losers and landless agricultural labours.
iv.	The water supply to the affected population/ users shall be ensured.	Water supply to the affected population/ users is ensured.
v.	Additional grazing land outside ML area shall be identified prior to start of mining activities for proper fodder cultivation and irrigation support for high yield feed product.	The grazing land outside ML area has been identified and cultivation of fodder will be done accordingly.
vi.	The Wild Life Conservation Plan for Schedule-I animals should be in place for implementation before start of mining activity.	Wild life conservation plan submitted by JSPL has been approved by PCCF (wild Life) C.G. Govt. vide letter no 1861, Raipur dated 04.08.2011. Proposed amount of Rs 154.30 lac submitted with State wild life for implementation of approved conservation plan.
vii.	The top soil shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The top soil shall be used for land reclamation and plantation.	The top soil is being continuously utilized in plantation and afforestation purpose. Balance top soil is being stored separately for plantation purposes.
viii.	Garland drains, catch drains, check dams and siltation ponds of appropriate size shall be constructed around the mine working, soil and mineral dumps to prevent run-off of water and flow of sediments. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted, particularly after the monsoon, and maintained properly.	700m Garland drain had been completed. Catch drains and ponds will be constructed and the collected water will be utilized for plantation, sprinkling on haul roads etc.
ix.	Dimension of the retaining wall at the toe of the OB benches within the mine to check run-off and siltation should be based on the rainfall data.	Retaining wall at toe of OB benches shall be constructed based on rainfall data.
x.	A 15 meter wide greenbelt on Sodadih village side including a 7.5 meter wide greenbelt all around the mining lease, reclaimed and rehabilitated areas, around water body, roads etc. by planting the native species in consultation with the local DFO/ Agriculture Department shall be raised in a phased	Development of a 15 meter wide greenbelt on village Sodadih side is under progress. Peripheral green belt of 7.5 meters is being developed around mining lease area. Total 9007 nos. of saplings planted inside and outside the lease area (Out of which 2344 Nos of plants has been planted in 15M wide corridor)

	manner and shall be completed within first five years. The ultimate area to be planted/ afforested shall not be less than 37.23 ha. The density of the trees should be around 2000 plants per ha.	Plantation in and around lease area to be continued as per stipulated norms.
xi.	The project authority shall implement suitable conservation measures including suitable rain water harvesting measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	02 nos. of Rainwater harvesting pits have already been constructed to recharge groundwater resources.
xii.	Groundwater table shall be monitored regularly and it shall be ensured that there is no depletion of groundwater in the area. Necessary groundwater recharging structures shall be built.	Regular monitoring of groundwater table is being done and recharging structures will be created as per requirement in near future.
xiii.	Regular monitoring of groundwater level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operations. The periodic monitoring (at least four times in a year – pre-monsoon (April-May), Monsoon (August), post monsoon (November) and winter (January); once in each season) shall be carried out in consultation with State Ground Water Board/ Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment & Forests and its Regional Office, Bhopal, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.	Annual Groundwater level monitoring report has been submitted on dated 24.05.2021 for FY 2020-2021. Report is enclosed as Annexure-1. The pre-monsoon and monsoon water quality report already submitted to concerned govt. authorities on 08.06.2021 and 30.09.2021 respectively. Reports enclosed as Annexure-2. Piezometer has been installed on 31st October 2020 at the mine site. Regular reports are being submitted to the concerned Govt. authorities. Reports (from April-21 to September-21) are enclosed as Annexure – 3.
xiv.	The mineral transportation up to railway siding shall be by road and thereafter, it will be by rail only.	Mineral transportation from mine to railway siding being done in tarpaulin covered dumpers and thereafter it is being done by rail.
xv.	Vehicular emission shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicle used in mining operations and in transportation of mineral within the lease up to the stockyard. The mineral transportation within the mine lease shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded. The mineral transportation outside the mine lease shall be carried out through the tarpaulin covered trucks/ closed trucks only and the vehicle carrying the mineral shall not be overloaded. There shall be no spillage of mineral enroute up the delivery point.	All vehicles are being covered by tarpaulins during mineral transportation to avoid fugitive emission. PUC of vehicles engaged in mining operation and transportation are being done time to time.
xvi.	Soon after commencement of blasting operations in the mine, studies shall be undertaken to set out the pattern of controlled blasting (Muffled blasting where needed), to be practiced when the mining operations approach sensitive areas like the village.	Work order has been issued to Central Institute of Mining and Fuel Research (CIMFR), Dhanbad and Council of Scientific Industrial Research (CSIR) vide dated 04.01.2018 for scientific study of blasting to minimize the impact of blasting in nearby areas. They have taken 10 readings for blast study and submitted the report(Attached as Annexure-4). Blasting is being done on the basis of recommendations made by CIMFR after the above studies.
xvii.	The optimum charge for blasting shall be determined based on vibration study. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting is being performed strictly as per guideline specified under regulations and recommendations of CIMFR. Blasting is carried out only in day time. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders are being implemented during blasting. Please refer Annexure -4.
xviii.	Drills shall be either be operated with dust extractors or equipped with water injection system.	The drill machines are being operated within built water injection systems.

xix.	Use of rock breaker from the nearby habitation up to 75 meter inward to mining area complying with DGMS guidelines shall be done.	Rock breakers have been deployed for breaking of boulders and to avoid blasting. DGMS guidelines are also being followed.
xx.	Regular monitoring of vibration and its impact, if any, in the close by villages shall be carried out and if at any stage any damage is felt on the village buildings/ structure, necessary corrective measures should be taken in this regard immediately.	Vibration studies during blasting have been done by CIMFR. Blasting operation is being carried out by using Nonel and electronic delay detonators as per recommendations suggested by CIMFR to minimize ground vibration during blasting. Please refer Annexure-4 . Till date no damage on the village buildings/ structures has been reported yet.
xxi.	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Efficient dust extraction system has been provided at material handling area. Water sprinkling on haul roads, benches, near office premises etc. are being done and wet drilling has been implemented for dust suppression. All machines are maintained
xxii.	ETP shall also be provided for the workshop and wastewater generated during the mining operation.	Workshop effluent will be treated in oil-water separator.
xxiii.	Mineralogical compositing of the dust to assess the silica content in the dust particles and particle size analysis shall be carried out periodically and records maintained. Personnel exposure of monitoring for dust shall also be carried out for the workers.	Sampling & analysis are being done through M/s Ultimate Envirolytical Solutions, Kabir Nagar, Raipur.
xxiv.	Occupational health cell be carried at the company under the charge of an officer of adequate seniority who is the qualified person in occupational health. Occupational health and safety measures for the workers including identification of work related health hazard, training of malaria eradication, HIV and health effect on exposure to mineral dust etc. shall be carried out. The company shall engage a full time qualified doctor who is trained in occupational health. Periodic monitoring of exposure to respirable mineral dust on the workers shall be conducted and records maintained including health records of the workers. Awareness programme for workers on impact of mining on their health and precautionary measures like use of personal equipments etc. shall be carried out periodically. Review of impact of various health measures undertaken (at interval of five years or less) shall be conducted followed by follow-up action wherever required.	Occupational health care centre has been established. Regular health check-up are being carried out at regular intervals by outsourcing. Photo attached as Annexure- 5. Awareness campaign and health impact assessment conducted at prescribed intervals.
xxv.	The company shall stress upon the preventive aspects of occupational health. Pre-placement medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Regular medical check-up for employees engaged in the project activities is being done on regular intervals and records are being maintained.
xxvi.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Major percentage of the workers is employed from the local villages who do not require any accommodation at the mining site. Rest of the workers and executives has been provided with accommodation and required facilities at the site.
xxvii.	The critical parameters such as RSPM (Particulate matter with size less than 10 micron i.e. PM10) and NOx in the ambient air within the impact zone, peak particle velocity at 300 M distance or within the nearest habitation, whichever is closer shall also	All prescribed ambient air quality and effluent quality parameters along with peak particle velocity are being monitored as per guideline and monthly reports are being submitted regularly. The Ambient Air quality Monitoring report for the year 2021-2022

	be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, pH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the company in public domain. The Circular No. J20012/ 1/ 2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment & Forests, which is available on the website of the Ministry www.envfor.nic.in shall be referred in this regard for the compliance.	(April- Sept) is enclosed as Annexure –6 . Online Air monitoring system had been established. Photo attached as Annexure-7 . The work is under process for uploading of monitoring data on the website of the company and display board at the suitable site.
xxviii.	A final Mine closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & forests 5 years in advance of final mine closure for approval.	Final mine closure plan along with details of Corpus fund will be submitted to MoEF within the stipulated period.

B. General conditions:

SN	Condition	Compliance status
i.	No change in mining technology and scope of working should made without prior approval of the Ministry of Environment & Forests.	There will be no change in mining technology and scope of working.
ii.	No change in the calendar plan including excavation, quantum of mineral limestone and waste should be made.	There will be no change in calendar plan including excavation, quantum of mineral limestone and waste.
iii.	At least four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e. PM10) and NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	04 offline Ambient Air quality monitoring system have been installed in May 2020 at Chiilhati village, Godadih village, Loharsi village and our mine substation premises. Offline monitoring data since April 2021 to September 2021 submitted to your good office. Please refer Annexure 6. Presently 01 No. AAQMS has been procured and installed. Rest 03 AAQMS will be installed in phase wise. Please refer Annexure7
iv.	Data on ambient air quality [RSPM (Particulate matter with size less than 10 micron i.e. PM10) and NOx] should be regularly submitted to the Ministry including its Regional Office located at Bhopal and the State Pollution Control Board/ Central Pollution Control Board once in six months.	Please refer Annexure -6 .
v.	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Water spraying system at source; haul roads, near office, benches etc. provided. Dust suppression system (water sprinkling) done regularly on the roads used for transportation, loading and unloading points and temporary stock piles.
vi.	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/ muffs.	Appropriate noise control measures adopted and earplugs provided to the workers working at high noise areas. Report of Noise Level Monitoring is submitted regularly. Please refer Annexure 6 .
vii.	Industrial wastewater (work shop and wastewater from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluent.	Workshop effluent will be treated in oil-water separator and the construction is under process.
viii.	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information	Appropriate dust protective devices have been provided to the workers. Occupational health campaigns and training session are being

	on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	conducted time to time.
ix.	A separate environment management cell with suitable qualified personnel should be setup under the control of a senior executive, who will report directly to the head of the organization.	Separate environment management cell has been established under the control of Mr. Mukesh Kumar Singh, A.G.M.
x.	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhopal.	Separate funds are made available for environment management activities. Year-wise expenditure details enclosed as Annexure -8.
xi.	The project authorities should inform to the Regional Office located at Bhopal regarding date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.	Details enclosed as Annexure - 9.
xii.	The Regional Office of the Ministry at Bhopal shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing the requisite data/ information/ monitoring reports.	Full cooperation will be extended to the statutory bodies.
xiii.	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment & Forests, its Regional Office Bhopal, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Officer of the Ministry of Environment & forests, Bhopal, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.	Compliance report is being submitted at prescribed intervals.
xiv.	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, ZilaParisad/ 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.	Complied.
xv.	The State Pollution Control board should display a copy of the clearance letter at the regional Office, District Industry Centre and the Collector's Office/ Tehsildar's Office, for 30 days.	Complied.
xvi.	The project authorities should advertise at least in two local newspapers of the district or state in which project is located and widely circulated one of which shall be in vernacular language of the locality concerned within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution	Complied

	Control board and also at website of the Ministry of environment & forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhopal.	
xvii.	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment & Forests, Bhopal by e-mail.	Environmental Statement (Form-V) has been submitted on 30.09.2021 as prescribed under the Environment (Protection) rules, 1986. (Copy enclosed as Annexure 10).

	
COMPREHENSIVE GROUND WATER MONITORING REPORT	
IN AND AROUND	
GODADHI MAHAL No.2 LIMESTONE MINE AREA	
BLOCK & TEHSIL: MASTURI	
DISTRICT: BILASPUR (CHHATTISGARH)	
FOR	
RENEWAL OF NOC	
YEAR - 2020	
(FOR RENEWAL OF NOC TO EXTRACT GROUND WATER & MINE WASTE WATER)	
	
By	
M/s JINDAL STEEL AND POWER LIMITED	
PREPARED BY	
	
ENVIRON TECHNO CONSULTANTS	
(Accredited Consultant in CGWB - Bilaspur)	
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Comprehensive Ground Water Monitoring Report for the Year 2020

Jindal Steel & Power Ltd. – Godadhi Mahal No.2 Limestone Mine

Village : Godadhi, Block & Tehsil : Masturi,

District : Bilaspur, Chhattisgarh

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1 BACKGROUND

M/s Jindal Steel & Power Ltd. (Cement Division) a leading Industrial House of the country has acquired lease over an area of 121.69 Ha at village Godadhi, Tehsil Mashuri, Bilaspur (C.G.). The company intends to establish a 1.0 MTPA clinkerization plant near to its existing steel plant at Raigarh. The clinker will be used for manufacturing slag cement. The limestone from Godadhi will be used as raw material for the proposed plant. The limestone mining shall be done by adopting open cast mining technique down to a maximum depth of 43 m below ground during current plan. The water table will be intersected during mining period. The mine seepage needs to be evaluated precisely in order to plan mine drainage for uninterrupted mining and evaluate the impact on prevailing ground water storage.

As per the Environmental Clearance issued vide letter (No.J-11015/210/2010-1A. II (M) dated 18th Sept, 2014 for the mining lease area 1236.479 hac) a detailed hydro geological study has been carried out and mitigation measures to prevent adverse impact on ground water environment has been suggested. Also suitable rainwater harvesting techniques for artificial recharge of ground water has been stabilized. The present report is an attempt to present the overall findings of the monitoring surveillance and impact of mining on the ground water regime in time and space. Accordingly, a detailed account of hydrogeological set up and management measures have been outlined along with mitigation measures."

The monitoring work has been started since January 2016. In the present report, the monitored data January 2016 to Nov.2020 been presented and the overall picture of ground water storage behavior due to continuous abstraction of groundwater has been analyzed. As per the directives has been contained in the issued NOC of CGWA vide NOC No.& Date : CGWA/NOC/MIN/ORIG/2018/3831 and File No.: 21-4 (828) / CT / MIN / 2018-1498, Date: 23rd July, 2018 as indicated in Annexure: 1, the monitoring is to be carried out four times in a year i.e. May, August, November and January. The present report depicts the behavior of ground water for the period for the year 2016-2020. The monitoring data is of immense help in management of the water resources as well as protecting the ground water storage. Study envisages regular monitoring of water level at selected locations to observe the variation of the ground water level and water quality due to ground water withdrawal over a period of time. The detailed comprehensive monitoring of ground water level with analysis has been completed and report is as below.

2 GENERAL DESCRIPTION OF THE AREA

2.1 LOCATION AND ACCESSIBILITY:

The limestone deposit covering an area of 121.69 hectare is located in Godadhi village of Masturi Block of Bhaspur district, Chhattisgarh State and falls under the Survey of India Topo-sheet No. 64K/1, 64K/5, 64K/2 and 64K/6 in parts (1:50000 scale). For the present study, a buffer zone of area of 10 km of radius around the project site has been demarcated and falls under the Survey of India Topo sheet No. 64K/1, 64K/5, 64K/2 and 64K/6 in parts (1:50000 scale). The applied area falls within the Survey of India Toposheet No. 64 K/5. The applied area is bounded by Latitudes 21°47' 26.2" and 21°48' 13.8" N and Longitudes 82°18' 3.1" and 82°19' 21.2" E.

The area is well connected by road as well as Rail networks. Jairam Nagar Railway Station, on Mumbai- Howrah Broad Gauge main line of the South Eastern-Central Railway is situated around 35km south of the project area. Chakrabhata is nearest Airport and is about 28 km from the study area which is also approachable by road. The Vivekanand International Airport is situated about 140km away from proposed project site of limestone mines. The block head quarter Masturi is about 25 km away from the project area, located on east side. There are 97 villages present in the area within 10 km of radius of the project area. The block is located at a distance of over 0.5 km from Chilhadi village which is lying on south of the block. Chilhadi village is about 35 km towards south (by road) of Jairam Nagar Railway Station. The location map of the proposed project site and study area is given in Fig. 2.1, Topo-sheet in Fig 2.2, Satellite image map and Google map of the area is given in Fig 2.3.

2.2 DEMOGRAPHY

The population as per 2011 Census records is 135225 (for 30 km radius buffer zone). Scheduled Caste fraction of the population of the study area (10 km) is 35357 (26.15%) and Scheduled Tribe 16153 (11.95%). Percentage of literacy is 66% and that of workers those actually engaged in occupation is 47.82% including 51.94% of Male workers & 48.05 % of female workers. Rest 52.18 % of the total population, are considered as non workers (as shown in Table- 2.1).

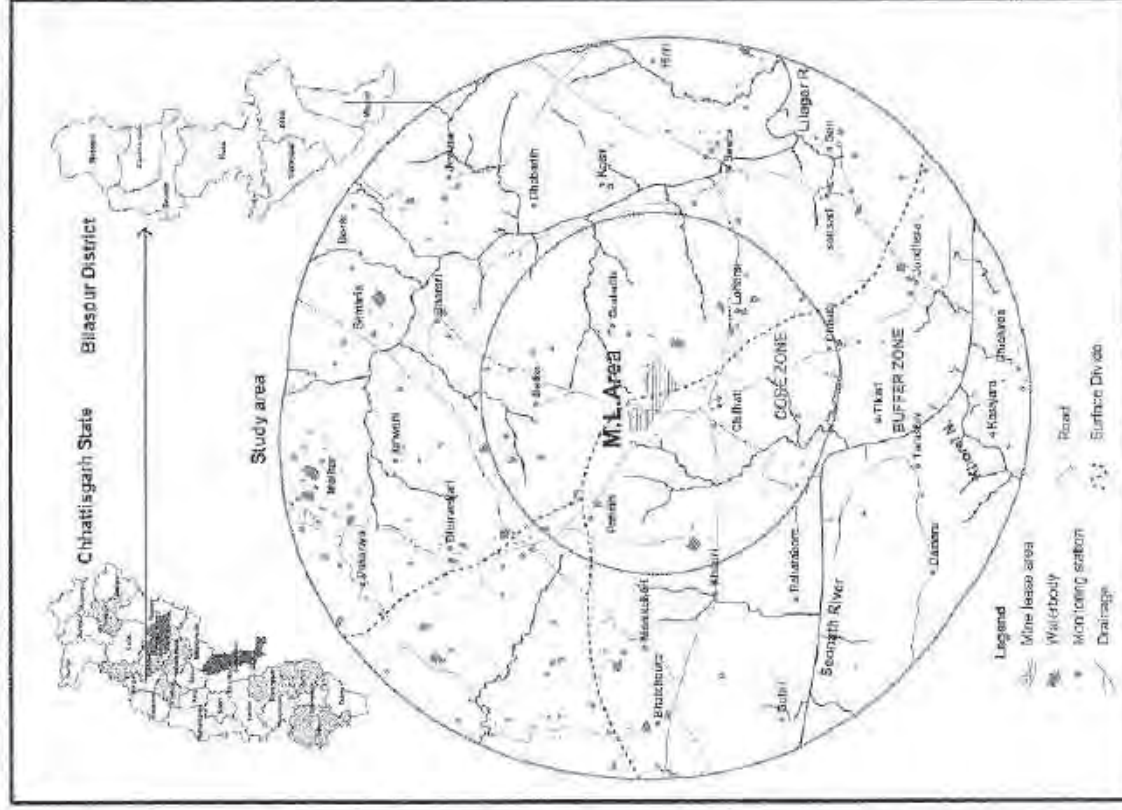


Fig. 2.1: Location map of the Study Area

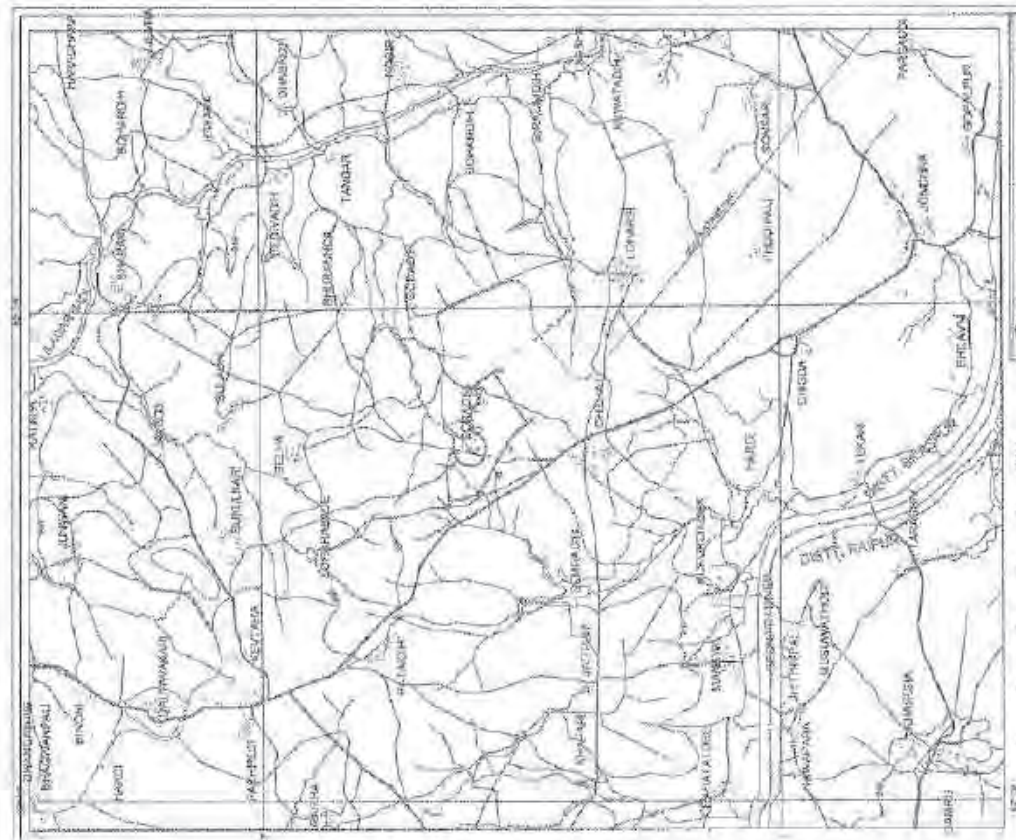


Fig. 2.2: Topo sheet of the Study Area

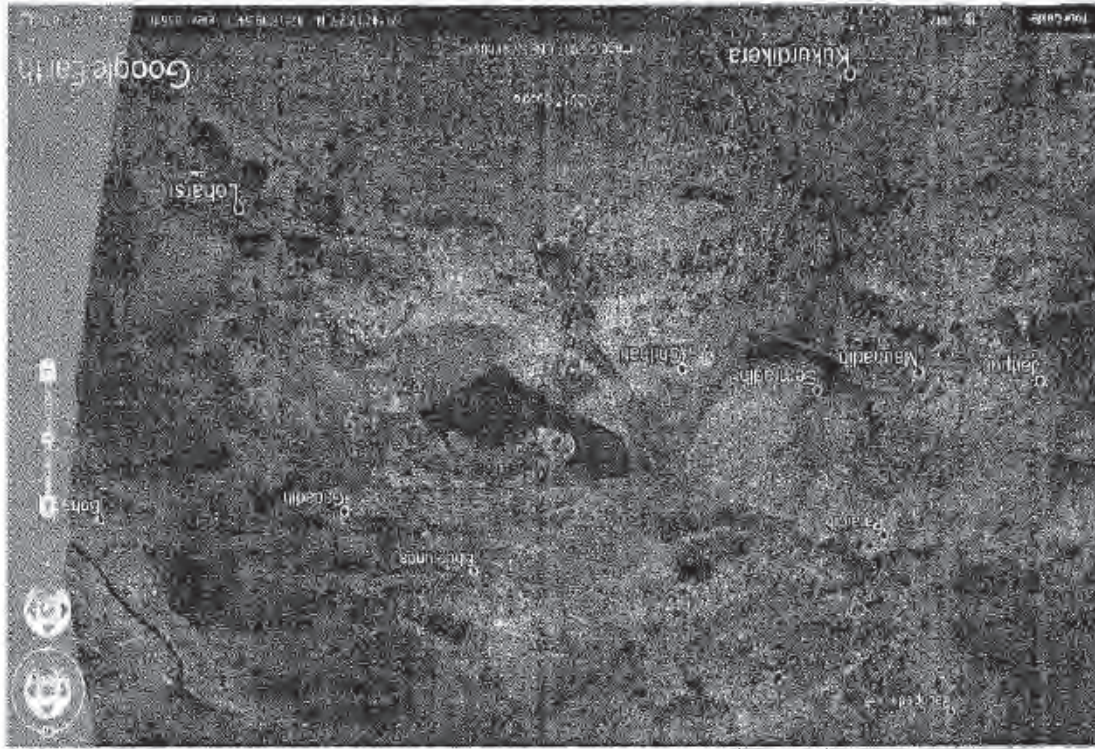


Fig. 2.3: Satellite map of the Study Area

TABLE - 2.1 DEMOGRAPHIC DETAILS OF STUDY AREA

District	Village	No. HH	TOT_P	TOT_M	TOT_F	P_SC	P_ST	TOT_WOR_K_E_P	TOT_WOR_K_IM	TOT_WOR_K_F	NON_WOR_K_P
Bilaspur	Amrasora	186	738	349	389	0	482	349	159	190	389
Bilaspur	Amrasora	215	1285	670	615	3.0	820	580	265	315	705
Bilaspur	Banetara	416	1572	784	788	274	165	783	375	408	771
Bilaspur	Belha	215	730	349	381	377	292	358	176	181	351
Bilaspur	Beljari	38	130	100	30	11	34	90	57	33	90
Bilaspur	Bhalua	115	547	271	276	373	0	293	138	155	264
Bilaspur	Bhawanipali	165	595	301	294	587	0	305	148	157	358
Bilaspur	Bhulali	489	2098	1056	1042	321	129	1211	506	705	1687
Bilaspur	Bhutan	259	1384	639	745	154	23	841	407	434	1002
Bilaspur	Bherkunda	342	1372	676	696	253	116	699	346	353	672
Bilaspur	Bidyadhi	231	1030	523	507	663	77	478	247	231	551
Bilaspur	Bhauri	313	1234	633	601	837	2	639	315	324	630
Bilaspur	Bokasra	445	1950	978	972	1146	0	1360	599	761	770
Bilaspur	Chakrapostha	221	1098	573	525	1054	0	501	302	199	538
Bilaspur	Chikhat	749	3508	1627	1881	293	630	1738	853	885	1790
Bilaspur	Chikla	471	2218	1046	1172	26	763	984	476	508	1234
Bilaspur	Chingawan	274	1207	638	568	1125	0	635	330	305	572
Bilaspur	Churukhari	582	2452	1174	1278	1002	94	1137	592	545	1315
Bilaspur	Dongara	109	523	265	258	232	0	210	107	103	313
Bilaspur	Edinpur	408	1477	713	765	270	0	784	365	419	581
Bilaspur	Sobari	203	872	403	469	124	394	303	191	108	484
Bilaspur	Goddadi	407	1549	788	761	1078	86	866	445	421	1053
Bilaspur	Gonsapur	200	1039	536	503	3	15	663	331	332	376
Bilaspur	Hardi	108	379	200	179	350	0	184	63	91	195
Bilaspur	Hardi	262	895	483	412	4	564	346	253	293	419
Bilaspur	Hardi	195	806	361	445	2	654	354	168	186	452
Bilaspur	Jatpur	180	728	372	356	12	37	362	178	184	352
Bilaspur	Jalau	513	1373	618	755	650	252	625	318	307	688
Bilaspur	Jandhra	905	4885	2353	2532	218	8	2360	1203	1157	2425
Bilaspur	Jarawan	335	1216	615	601	313	5	371	315	256	645
Bilaspur	Kartha	135	728	351	377	0	05	346	163	183	372
Bilaspur	Kewandhi	402	1546	805	741	720	18	770	363	407	876
Bilaspur	Kewandhi	283	1171	589	582	693	8	557	268	289	617
Bilaspur	Kewandhi	303	1471	725	746	1455	0	508	315	263	573
Bilaspur	Kharari	282	1115	568	547	472	134	541	277	264	578
Bilaspur	Kobadi	276	1270	621	649	88	173	663	340	323	687
Bilaspur	Kurukhara	502	1538	793	745	72	233	835	415	420	708
Bilaspur	Kurukhara	193	740	351	389	11	368	323	177	156	407
Bilaspur	Lehari	1528	6808	3432	3376	1137	401	3367	1655	1671	3521
Bilaspur	Machhanda	377	1719	873	846	202	210	792	459	323	927
Bilaspur	Madhar (N)	1595	8505	4410	4095	1436	347	4078	2095	1789	4151
Bilaspur	Masara	301	1174	586	588	285	05	671	374	297	703
Bilaspur	Mankour	540	2272	1117	1155	391	600	1079	532	547	1193
Bilaspur	Nawari	295	926	476	449	177	223	640	307	333	485
Bilaspur	Odeor	837	3197	1576	1621	175	79	1787	758	630	1495
Bilaspur	Pachpedi	623	2525	1458	1067	3166	71	1314	700	614	1602

**Comprehensive Ground Water Monitoring Report of JSRL - Godadhi Mahal No. 2 Limestone Mine,
Located at Village: Godadhi, Block & Taluk: Wavarni, District: Belgaum (UG) for the Year 2020**

Distric	Village	No. HH	TOT_P	TOT_M	TOT_F	P_SC	P_ST	TOT_WOR	TOT_M	TOT_F	TOT_WOR	TOT_F	NON WORK
Belgaum	Belgaum	64	300	150	150	115	0	220	109	111	20	20	20
Belgaum	Belgaum	237	2232	505	527	35	787	851	312	349	571	571	571
Belgaum	Belgaum	265	1100	593	597	403	64	500	246	254	550	550	550
Belgaum	Belgaum	238	999	484	515	134	127	412	226	186	587	587	587
Belgaum	Belgaum	155	738	375	363	295	13	407	210	197	111	111	111
Belgaum	Belgaum	1	15	6	7	0	7	5	4	5	4	4	4
Belgaum	Belgaum	127	518	246	272	8	150	250	112	138	268	268	268
Belgaum	Belgaum	647	2812	1383	1430	88	315	1452	680	772	1371	1371	1371
Belgaum	Belgaum	056	3150	1565	1585	137	250	1435	780	646	1784	1784	1784
Belgaum	Belgaum	465	1961	986	975	931	52	888	419	254	1273	1273	1273
Belgaum	Belgaum	254	1138	592	546	516	36	714	354	360	524	524	524
Belgaum	Belgaum	749	3405	1766	1719	2158	90	1785	978	807	1700	1700	1700
Belgaum	Belgaum	285	1448	722	726	28	582	825	413	412	628	628	628
Belgaum	Belgaum	151	509	294	310	0	158	256	150	146	308	308	308
Belgaum	Belgaum	519	2182	1110	1059	1780	0	771	437	334	1398	1398	1398
Belgaum	Belgaum	28	419	210	209	218	7	230	114	106	199	199	199
Belgaum	Belgaum	400	2010	1015	994	1208	0	854	481	418	1116	1116	1116
Belgaum	Belgaum	133	591	300	291	109	95	305	152	153	286	286	286
Belgaum	Belgaum	225	2130	1160	1170	305	70	1103	550	613	1167	1167	1167
Belgaum	Belgaum	555	2515	1268	1249	1435	115	1171	567	564	1344	1344	1344
Belgaum	Belgaum	695	3163	1498	1667	400	132	1643	805	838	1720	1720	1720
Belgaum	Belgaum	279	1198	593	606	752	37	655	448	307	610	610	610
Belgaum	Belgaum	275	1158	570	595	502	22	600	300	300	148	148	148
Belgaum	Belgaum	110	450	192	208	272	0	209	106	103	161	161	161
Belgaum	Belgaum	96	453	222	231	33	179	440	178	113	213	213	213
Belgaum	Belgaum	116	612	305	307	0	311	318	154	163	204	204	204
Belgaum	Belgaum	304	1619	791	822	202	569	753	387	366	860	860	860
Belgaum	Belgaum	114	526	315	291	0	348	117	161	155	289	289	289
Belgaum	Belgaum	418	2634	1382	1347	286	79	1560	658	643	1334	1334	1334
Belgaum	Belgaum	120	835	444	441	0	0	404	207	137	480	480	480
Belgaum	Belgaum	96	520	280	251	225	20	243	134	109	277	277	277
Belgaum	Belgaum	768	4101	2095	2005	234	976	1494	970	924	2600	2600	2600
Belgaum	Belgaum	412	2720	1360	1360	87	425	1481	723	758	1239	1239	1239
Belgaum	Belgaum	242	1523	760	754	15	301	348	137	11	1175	1175	1175
Belgaum	Belgaum	80	1306	191	208	0	6	197	85	109	202	202	202
Belgaum	Belgaum	182	1154	634	620	0	0	636	350	336	568	568	568
Belgaum	Belgaum	369	2145	1030	1107	25	593	1156	549	607	989	989	989
Belgaum	Belgaum	279	1034	520	514	127	110	477	235	239	557	557	557
Belgaum	Belgaum	20247	135225	67128	67897	35357	16153	64667	35927	31075	70558	70558	70558

Source: Census 2011

2.3 CLIMATE AND RAINFALL

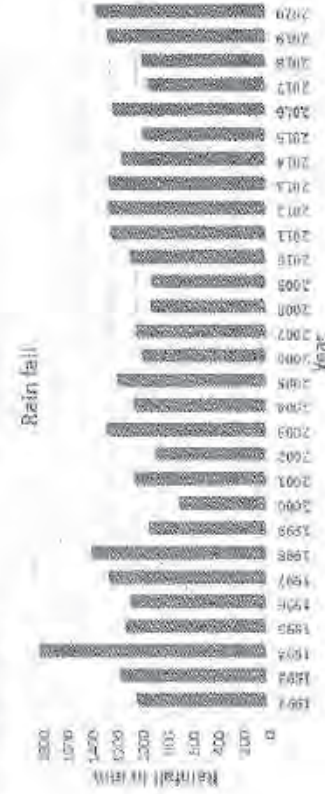
The area has a tropical wet and dry climate. Temperatures remain moderate for most of the year, except for summer i.e. March to June, which can be extremely hot. Winters season lasts from November to February and is mild, although temperature can fall to 5°C (42 °F). The area receives an average rainfall of 1098.35 mm / annum with around 65 rainy days, mostly during monsoon season i.e. from June to early October.

2.3.1 Rainfall: The annual rainfall of the area for last 29 years (1992 to 2020) is as mentioned in the table given below in Table 2.2:

Table 2.2 Rain Fall data from the year 1992 to Year 2020

Year	Rain fall	Year	Rain fall	Year	Rain fall
1992	1010.2	2002	861.1	2012	1230.7
1993	1148.4	2003	1241.8	2013	1229
1994	1794.9	2004	1028.2	2014	1129.9
1995	1099.5	2005	1161.3	2015	959.5
1996	1057.8	2006	960.9	2016	1198
1997	1233.9	2007	1014.5	2017	916
1998	1375	2008	892.8	2018	958
1999	916.5	2009	850	2019	1235
2000	674.5	2010	1060.5	2020	1334
2001	1027.8	2011	1212.2	Average	1098.35

From the table 2.1 above, it may be observed that there is large variation in annual rainfall in last twenty-nine years, the minimum annual rainfall observed is 675 in the year 2000 and the maximum rainfall observed is to the tune of 1795 mm in the year 1994; while the average of the rain fall is 1098.35 mm.



Source: Revenue Department, Govt. of Chhattisgarh

Environ Tecno Consultants

2.3.2 METEOROLOGY AND OTHER CLIMATIC PARAMETERS

Meteorology plays a vital role in determining the transport and diffusion pattern of air pollutants released into atmosphere. The principal variables include horizontal connective transport (average wind speed and direction), vertical connective transport (atmospheric stability) and topography of the area. Meteorological characteristics of an area are very much important in deciding the project installation, assessing possible environmental impacts and in preparing environmental management plan. Since meteorological factors show wide fluctuations with time, meaningful interpretation can be drawn only from long term reliable data. Such source of data is the Indian Meteorological Department (IMD), which maintains a network of meteorological stations at several important locations.

The nearest IMD station to the project site is located in Bilaspur. The Meteorological data i.e. temperature, relative humidity, rainfall, wind speed, and wind direction, recorded at two synoptic hours i.e. 08:30 and 17:30 for Summer Season, 2020 was obtained from this station to study meteorology of the study area.

Meteorological station was set-up at site to record surface meteorological parameter during Summer Season. Wind speed and wind direction data recorded during the study period has enabled identifying the influence of meteorology on the air quality of the area. Based on the collected meteorological data, relative percentage frequencies of different wind directions were calculated and plotted as wind roses for twenty-four-hour duration. Maximum and minimum temperatures including percentage relative humidity were also recorded simultaneously. It is observed that the predominant over all wind patterns for the study period was SW direction. Wind speed during this period varied from 03 km/hr to 21 km/hr.

TABLE – 2.3 Monthly average of different parameters of weather for the period 1980 to 2020.

Month	Mean Temp.(°C)		Relative Humidity (%)	Wind Velocity (Km/Hr)	EPT(mm)
	Max	Min			
January	28	10	51	6	114
February	29.6	14	38	7	132
March	33	21	30	7.8	185
April	41	27	28	9.5	221
May	43	29.2	30.3	11.1	258
June	38	25	59	119.2	195

July	30	23	81.0	12.8	125
August	30	23.2	82.2	11	122
September	30	24.8	75.2	7	125
October	29	26.1	62	6	144
November	28	15.1	54	5	114
December	26	11.3	50	3.9	104
Avg./Total	32.13	20.80	53.39	17.9	153.25

Source: Meteorological Station at Site

2.4 GEOMORPHOLOGY

2.4.1 GEOMORPHIC SET UP

The study area is characterized by more or less flat undulating terrain with regional slope to the south. It has gradual and very gentle rise and fall, elevation and depressions, repetitive in nature.

As a whole the area has southwesterly downward gentle gradient. The highest RL is 250m and the lowest RL is 229 m. Thus, maximum surface relief is 31m only over an aerial distance of about 10 km. Geo-morphologically the study area represents old Flood Plain/Valley Fill and Pediplain. The Physiography of the area is controlled by geological formations namely limestone and shale, et places seen as surface outcrops. In response to lithology of rocks, their chemical composition, their relative deposition, tectonic set up, they were chiseled into various geomorphic and hydrogeomorphic surfaces; in this case flood plain. The geomorphological map of the study area is given in Fig. 2.4.

2.4.1.1 FLOOD PLAIN/VALLEY FILLS

The flood plain/valley fills is exposed in south & northern part of study area along river courses. It consists of sand, siltstone and clay etc. This geomorphic unit is developed in patches, in northern and southern parts of the study area, mainly close to river courses. It is characterized by gently undulating and flat terrain. It is developed on Proterozoic rocks namely limestone & shale with extensive fractures and joints, having erosional surfaces is covered with detritus of rock and thin to moderate cover of soil.



2.4.1.2 PEDIPPLAIN

The development of this unit is resultant of polycyclic erosional and depositional processes. It is concealed and covered under thin soil cover. Major part of area is occupied shallow, moderate and deep pediplain in the study area. It is identified at an elevation of 729 to 767 m. amsl.

2.5 LAND USE

Land use pattern with Khasara plan in the study area within 10 km radius is summarized as below in Table 2.4 & 2.5 and map shown in the Fig 2.5 & Fig 2.6 respectively. From the geographical distribution of various land use types it may be observed that nearly 50.58% of the land is under agriculture and 18.86% is Cultivable waste land. Forest land covers 5.47% while Area not available for cultivation constitutes around 7.28%. Hence it is pertinent that the mine planning shall take utmost care so that the water resources available in the area for agriculture and other purposes is not affected due to any of the mining operations.

Table 2.4: Details of land Use Types and their area

Land use	Area (ha)	% of total land area
Irrigated land	153	50.58
Unirrigated land	7096	17.81
Cultivable waste land	7517	18.86
Area not available for cultivation	2900	7.28
Forest land	2181	5.47
Total	39847	100

Table 2.5 Mine lease area -Land use pattern (ha) as on 31-12-2020

Sl. NO	Particulars	Area in Ha.	Percentage to total lease area	Remarks
1	Area under mining	1.800	1.496	With BWH Pit
2	Plantation	1.518	1.345	Within Lease Area
3	Magazine Building	0.150	0.125	
4	Road	1.222	1.016	
5	Office premises including Substation building, Switch yard,	0.510	0.424	
6	Weigh Bridge	0.015	0.012	
	Sub Total (Area disturbed)	5.315	4.417	
	Undisturbed Area	114.598	95.583	
	Grand Total (ML Area)	120.313	100	



Fig 2.4 Geomorphological map of the Study area

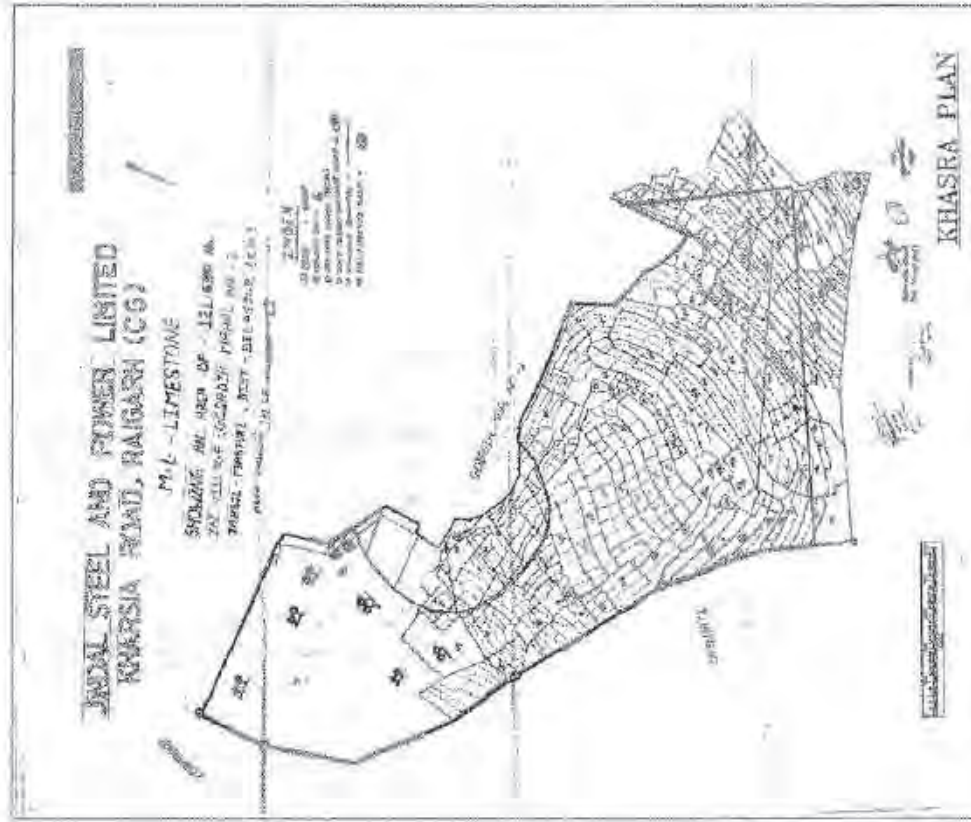


Fig. 2.5 Kharsa plan

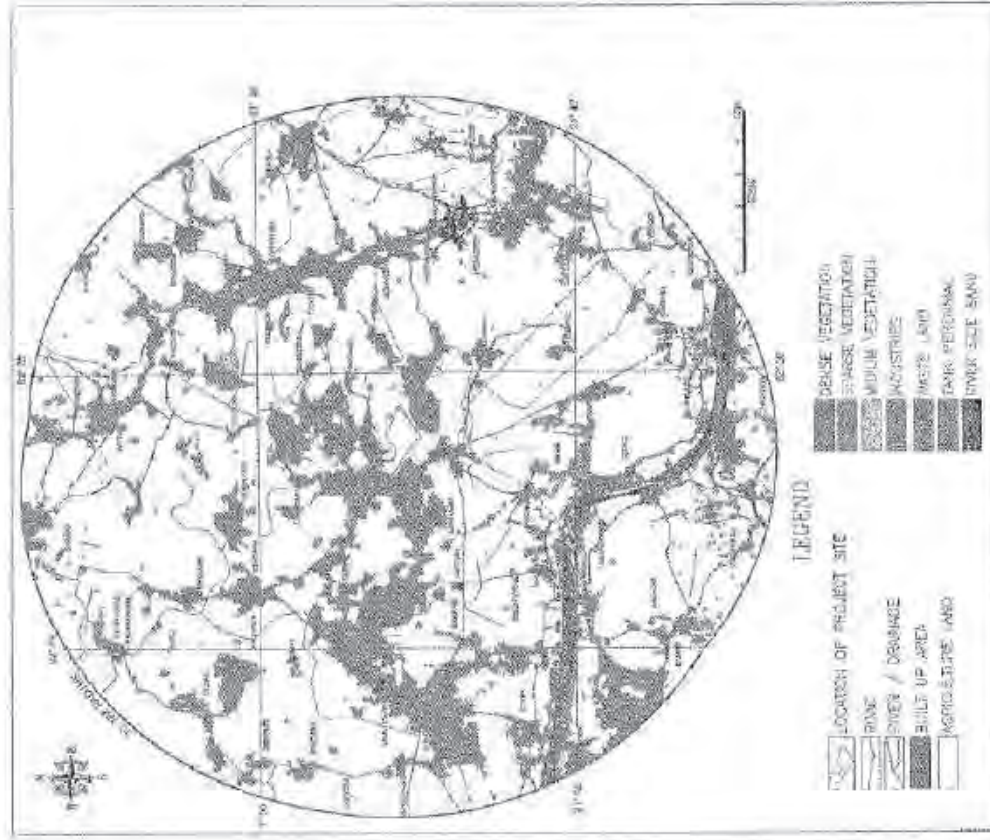


Fig. 2.6 Land Use Map of the Study Area

2.6 SOILS

In the study area two main soil categories are present namely Vertisol and Ultisol. The details of the soil types is described below.

2.4.1.3 ULTISOL

In the study area the Ultisol is locally known as red and yellow soil which is present in the southern part of the study. It is the ultimate product of continuous weathering of minerals in a humid climate. This is a highly weathered and leached acid soil with high levels of clay below top layer. They are characterized by a humus-rich surface horizon and by a layer of clay that has migrated below the surface horizon. This soil has variety of clay minerals but in many cases the dominant mineral is Kaolinite. This clay has good bearing capacity and no shrink-swell property. They are red to yellow in color and are quite acidic having pH less than 5. The red and yellow color results from the accumulation of iron oxide which is highly insoluble in water.

2.4.1.4 VERTISOLS

The major area is covered by Vertisols locally known as Medium black soil and deep black. Deep black soil covers the north-wester parts and medium black soil covered major remaining part of the study area. It is a soil in which the content of clay size particles is 30% or more by mass in all horizons of the upper half-meter of the soil profile. They are characterized by a high content of montmorillonite. They may also be characterized by salinity and well defined layers of calcium carbonate or gypsum. Depending on the parent material and the climate, they can range from gray or red to the more familiar deep black. It contains high level of plant nutrients, but, owing to their high clay content, they are not well suited to cultivation without painstaking management. It is especially suitable for rice because they are almost impermeable when saturated. Rain fed farming is very difficult because Vertisols can be worked only under a very narrow range of moisture conditions as they become very hard when dry and become very sticky when wet. The soil map of the Study area is presented in Fig 2.7.

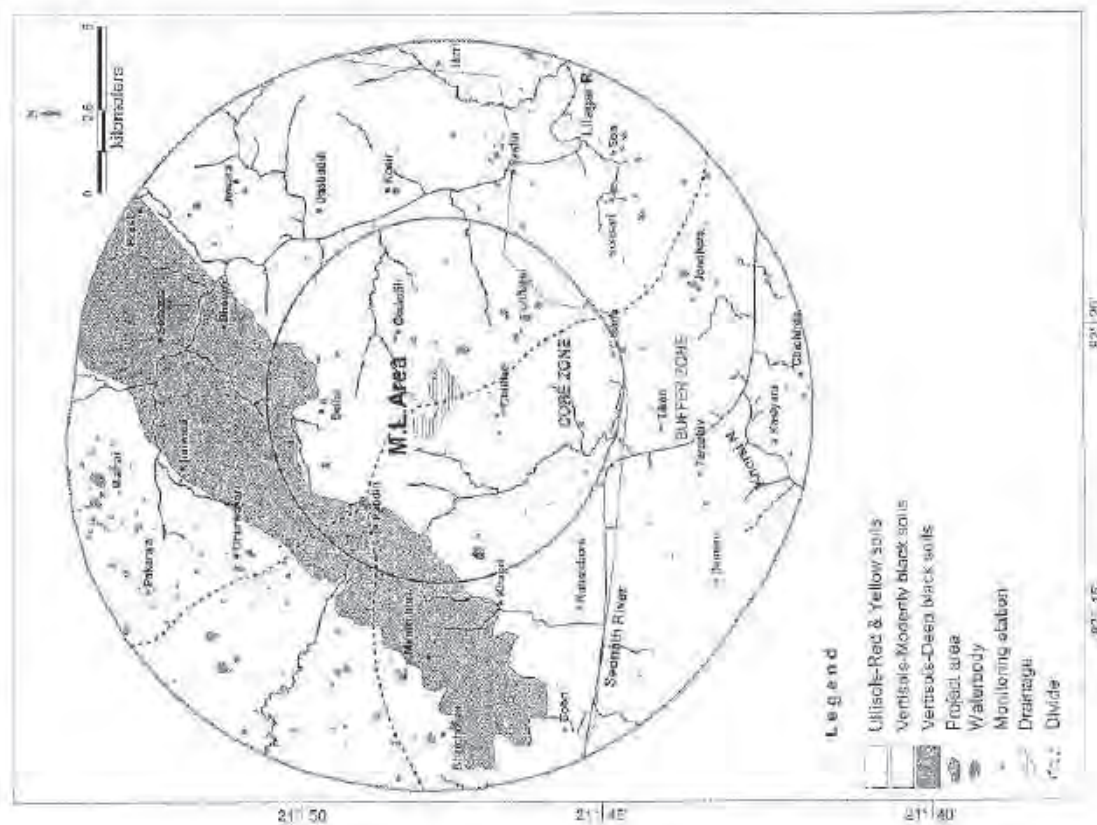


Fig 2.7: Soils of the Study Area

2.7 DRAINAGE

The area is drained by Shonath and Ulagar River. This tributary system comes under Mahanadi basin. The drainage pattern in the area is sub-parallel and dendritic in nature with medium drainage density indicating the formations in the area are moderately porous & permeable in nature and are having moderate surface run-off. The drainage density in the central part near to mine lease area is low as compare to remaining area. The drainage map of the study area is presented in Fig 2.8. The Kharsi Nala is the only perennial source of water in the area and controls the drainage system of the area. However, a man-made canal exists in mid part of the area which passes from north to south by the side of village Jaitpuri. There is no perennial surface water source in the area. The only perennial source of water is the Shonath River which flows WNW to ESE far away in the western side of the mine lease area, Ulagarh River flowing north to south located far away due east of the area.

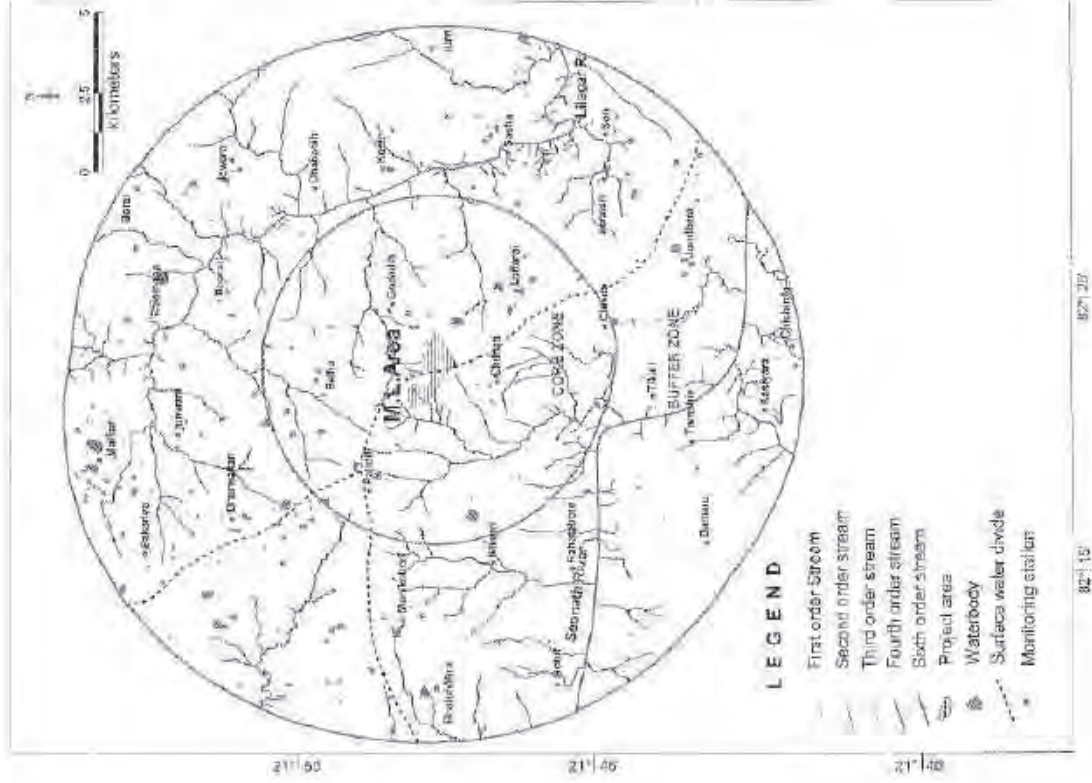


Fig 2.8: Drainage Map of the Study Area

3. GEOLOGICAL SET UP

3.1 REGIONAL GEOLOGY

The rocks of the Chhattisgarh super group overlain unconformably over the basement crystalline are represented by limestone and shale. A thin layer of alluvium/ laterite belonging to Quaternary period. The generalized stratigraphic sequence of formation in and around the area is given in Table 3.1 below.

Table-3.1 Generalized stratigraphic sequence of Bilaspur District.

Age	Super Group	Group	Formation	Lithology
QUATERNARY	Recent to sub-recent		Alluvium and Laterite	Sand, Silt, Clay and lateritic Soil
PROTEROZOIC	Chhattisgarh Super Group	Raipur Group	Mariyati	Gypsiferous Shale
			Hirani	Dolomitic limestone
			Tarangani	Shale & Dolomite
			Chandani	Limestone & Shale
			Gunderdihani	Shale
		Chandrapur Group	Chandrapur	Limestone & Shale
			Kauspathani	Sandstone, Siltstone Shale & Conglomerate
			Choparadhi	
		Bilari group Senakhan gr Baya group	Lohardi	
			Intrusive, Senakhan gr, Iakhadani, Jonk & Chikhal	Quartz veins, basic dyse, Meta basalt Schist & Gneisses
ARCHAEN	Basement Crystallines - Granite, Gneisses, Granulite and Amphibolite			

BASEMENT CRYSTALLINE

The basement crystallines belongs to Archaean age mainly consists of Granite, gneisses, granulite, phyllites and amphibolites. At places it is intruded by quartz veins. The overlying sedimentaries

belongs to Chhattisgarh Super-group of rocks. The contact between the Archeans and the sedimentaries is faulted along the western margin of the basin.

CHHATTISGARH SUPERGROUP

The crescent shaped Chhattisgarh basin within the Central Indian Craton can be subdivided into a small Baradwar sub-basin in the east and main Hirni sub-basin in the west. The entire succession of Chhattisgarh supergroup is divided into three groups. Lowermost Pairi group consists of sandstone, conglomerate, limestone and shale over lie unconformably on crystalline group and developed in the Baradwar sub-basin. The middle Chandrapur group is conformably overlying the Singhora group or older basement and consists of arenite formations and third is Raipur group at the top, comprising argillite-carbonate suite of rock.

CHANDRAPUR GROUP

The sequence of Chandrapur group shows a variable thickness ranging from 20m to as much as 90m. The maximum thickness is attained in SE part of the basin, thinning westward as well as NE side and directly overlying the crystalline basement.

RAIPUR GROUP

The Raipur group comprising of predominantly argillite sequence conformably overlies the Chandrapur group with a gradational contact. The group has been subdivided into six sub divisions representing three cycles of carbonate-argillite sediments are as follows:

Charmuda, dominantly carbonate sequence and is conformably overlain by Gunderdehi formation. Gunderdehi, dominantly a calcareous argillite, purple coloured shale with intercalated limestone is dominant member.

Chandi, comprise a major stromatolitic limestone sequence developed around southern side of Hirni sub-basin as arcuate outcrop pattern and is medium to coarse grained dolomitic limestone. Tarenga, conformably overlies the Chandi formation and comprise cherty shale, calcareous shale and argillaceous dolomite, green and white clay.

Hirni, conformably overlies the Tarenga formation in south and Pandana formation (coalesce of Charmuda, Gunderdehi, Chandi and Tarenga formation) in the north. At places intra formational conglomerate, dolomite and black shale contained gypsum as layer parallel to bedding.

Maniyari, named after the river along which the rock is best developed. It represents the closing phase of deposition in Chhattisgarh basin and consists of lower gypsiferous grey siltstone and shale followed by reddish brown calcareous and non-calcareous shale with limestone and dolomite.

RECENT TO SUB-RECENT

LATERITE

In situ and rolled laterite occurs at many places in isolated patches. These are blanket deposits and few centimeters to few meters in thickness. The ferruginous rock formations of Chhattisgarh Supergroup are responsible for the formation of thin capping of laterite due to leaching and concentration of iron oxide from sandstone of Chandrapur group and also of limestone and shale of Raipur group.

ALLUVIUM

The alluvium consists of sand, silt and clay. The sands are fine to coarse grained and poorly sorted. The alluvial soils are mostly of residual in nature and are the weathered products of shale and limestone. The thickness of soil varies from few centimeters to over 10m in places. The Geological map is presented in Fig 3.1.

3.2 LOCAL GEOLOGY

The area is underlain by thin layer alluvial/laterite belonging to Quaternary period. Thick pile of rocks belonging to Raipur group of younger Proterozoic period consisting of limestone and shale, underlie the alluvial sediments. The formation have general strike in NE-SW direction with very low dips of 2° to 3° due NW. Two sets of vertical joints trending in N50°E-550°W and NE-SW direction are prominent in the area. The gap between joint plan is large from few centimeters to 5meters and are mostly interconnected. Sunderbhi shale show rolling dips and there is no sign of any tectonic disturbance. Subsidence collapsing of laterite masses at places suggests the presence of cavernous limestone. The joint persists up to 10 to 12 m in the shale and limestone. The lithological characters of these various formations present in the study area are described as follows:

Formation	Thickness
Soil	2.23 m. (Average)
Massive limestone	27.22 m. Max.
Shaly limestone	about 35 m.
Shale	(Thickness not ascertained)

The beds have a regional ENE - WSW trend with gentle northerly dips (2° - 5°). Rolling dips in the almost flat beds give rise to local gentle folds, which have an E-W axial trend, and often occur as doubly plunging folds. Steeper dips up to 30° - 35° are noted occasionally on the limbs of these minor folds. The geological map of the study area is given in Fig. 3.1.

These features are best seen in the massive limestone. In relation to the regional attitude of these conformable beds, the basal beds of shale occur in the south close to the southern boundary of the block and are in turn followed towards the north successively by the shaly limestones, massive limestones and finally dolomitic limestones and dolomites which lie along the northern boundary of the block. The massive limestone is confined to the middle portion of the block.

There are no significant structural disturbances in the block. Two prominent sets of vertical joints, parallel and perpendicular to the axis of the minor folds, with strikes in E-W and N-S directions respectively are noticed. Oblique joints with strike directions ENE-WSW and ESE-WNE are also noticed. These joints are vertical in nature. No basic intrusive has been noticed in the block. Sink holes are noticed in the limestone at places. All the rock types in the successions are exposed on the surface, and well sections give a good idea of the succession of the formations.

DESCRIPTION OF THE ROCK TYPES

SHALE

The oldest rock unit of the block is the shale. A good section of the shale was intersected in borehole CHT-7. The thickness of the shale is more than 30 m. They are prominently pink in color, occasionally grey, often calcareous, very fine grained, laminated and fractured, the fractures sometimes filled with calcite veins.

SHALY LIMESTONE

This is usually pink in colour, occasionally grey fine grained, well-bedded and jointed showing nodular features on the bedding planes, and tubular structures throughout its entire vertical thickness in the boreholes. The gradation from massive limestone to shaly limestone is clearly depicted by the composition of the tubular structures and the matrix which surround these tubes. In shaly limestone, the matrix surrounding the tubes is more shaly in composition, while the tubes themselves may still be of purer limestone.

MASSIVE LIMESTONE

The massive limestone has the widest areal extent of all the rock units in the area explored. The zone stretches from east of Salheghori to the east of Patadhi between Sonath river in the west and Lilagarh river in the east, over a strike length of nearly 15 km. The boundary between the shaly limestone and massive limestone reflects normal disposition conformable to the regional strike of the beds. On the other hand, the boundary between the massive limestone and dolomites is mostly transgressive and reflects many abnormalities caused due to the process of dolomitisation of the limestone. The massive limestone usually shows a mixture of grey and pink color sometimes grading to purple grey or purely pink. No definite correlation of individual horizons on the basis of color is, however, possible. Limestone is fine grained (rarely medium grained) and well jointed with the fractures sometimes filled with calcite veins. Weathering has produced nodular features on its exposures, which are the traverse section of tubular structures. These tubes are seen throughout its entire vertical thickness in the boreholes. Unlike the shaly limestone the tubes are more calcareous and the matrix surrounding the tubes tends to be calcareous and nearly homogeneous, the boundary between the tubes and the surrounding matrix is also not well defined due to the homogeneity in their composition. This physical appearance itself acts as a visual guide to reckon the purity of the limestone, i.e. the more ill-defined is the boundary between the tubes and the surrounding matrix, and the purer is the limestone. The maximum thickness of the massive limestone is 37.75m. Under the microscope, the texture of the massive limestone is fine grained, onomorph and rarely medium grained. In the fine grained variety, the matrix is calcareous with a few calcite grains. The fine grained matrix exhibits star like extinction probably due to the re-crystallized calcite. Authigenic quartz, feldspar and some chlorite/sericite, making up to 2-3% of the rock, is present in same. Thin veins of calcite also occur and crystals of pyrite are rarely present. Some shaly contamination is also observed in some specimens.

SOIL/LATERITE:

The major part of the area is underlain by alluvial residual soil covers which are loam and sandy loam. Laterites occur as capping associated with limestone and shale. The thickness of overburden varies from 2 to 5 m. The Geological map of the study area for 10 km radius is shown in Fig 3.1 and Conceptual plan of Limestone mine is given in Fig 3.2.

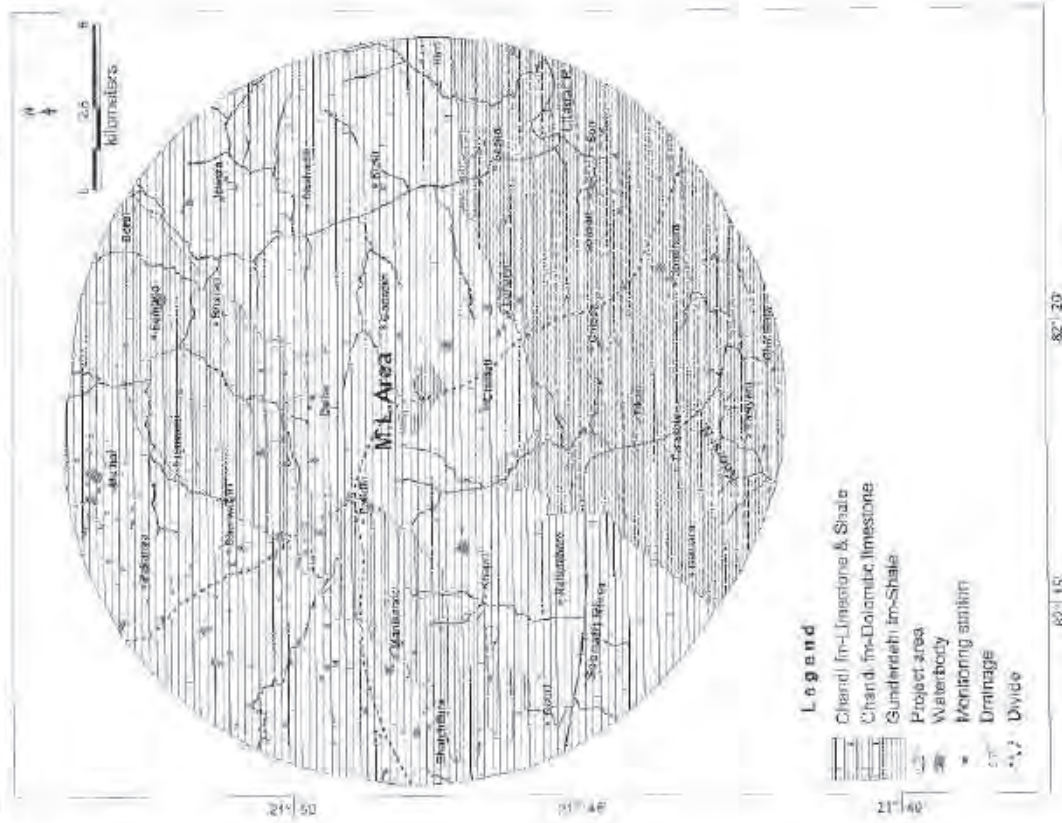


Fig. 3.1: Geological Map of the Study Area

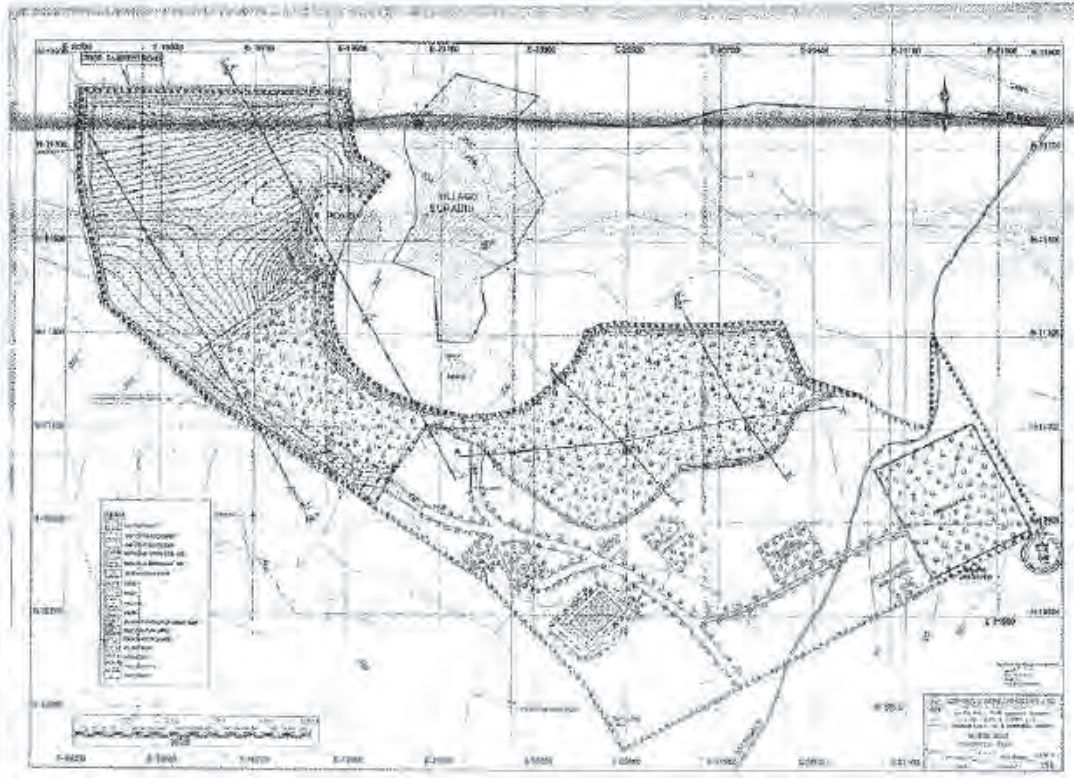


Fig 3.2 Conceptual plan

4 HYDROGEOLOGY

4.1 AQUIFER SYSTEMS

In the area, ground water occurs under phreatic condition in weathered portion of rocks and semi-confined to confined conditions in fractures/cavernous part of rocks i.e. limestone and shale at depths. The shallow aquifers of the study area occur within an average depth of 20 m. They are composed of weathered mantle. The configuration of water table in the shallow aquifer follows the topography due to which the ground water movement is generally towards valleys or topographic low. The recharging bodies such as tanks, canals and streams also influence the occurrence and movement of ground water in shallow aquifers. The shallow aquifers of the area are mostly developed by way of dug wells in the area whose depth varies from 7 to 10 m. In general, the yield of dug wells ranges from 25 to 40 m³/day. Deep aquifer system in the area mainly formed by the Nalpur group of rocks mainly Chandl & Taranga formations which comprises of limestone and shale. The deep aquifers of the area are mostly developed by way of bore wells in the area whose depth varies from 50 to 80 m. In general, the yield of bore wells ranges from 1 to 5 lps. The transmissivity ranges from 40-100 m²/day and it goes up to 150 m²/day for the deeper aquifer made up of limestone and shale. The potential fractures for boreholes up to 80 m bgl depth in the area are recorded at various depths i.e. 40-45, 60-65, 75-80 m bgl and are 3 to 4 in numbers.

4.2 WATER TABLE CONFIGURATION AND FLOW DIRECTION

The ground water flow direction is of two directions i.e. in southern and northern part of the study area, it is in north to south and in eastern part of the study area, it is in west direction indicating the surface water divide in the central portion of the study area north to south. A local variation in flow direction is also observed in the mining lease area located in the zone of surface water divide. The water table elevation in the study area ranges between 230 to 250 mamsl. Northern part of the area is having high altitude of water table elevation i.e. 250 mamsl while water table elevation decreases to south & is minimum i.e. 230 mamsl. The gradient of water table is variable. The hydrogeological map of the study area is given in Fig 4.1.

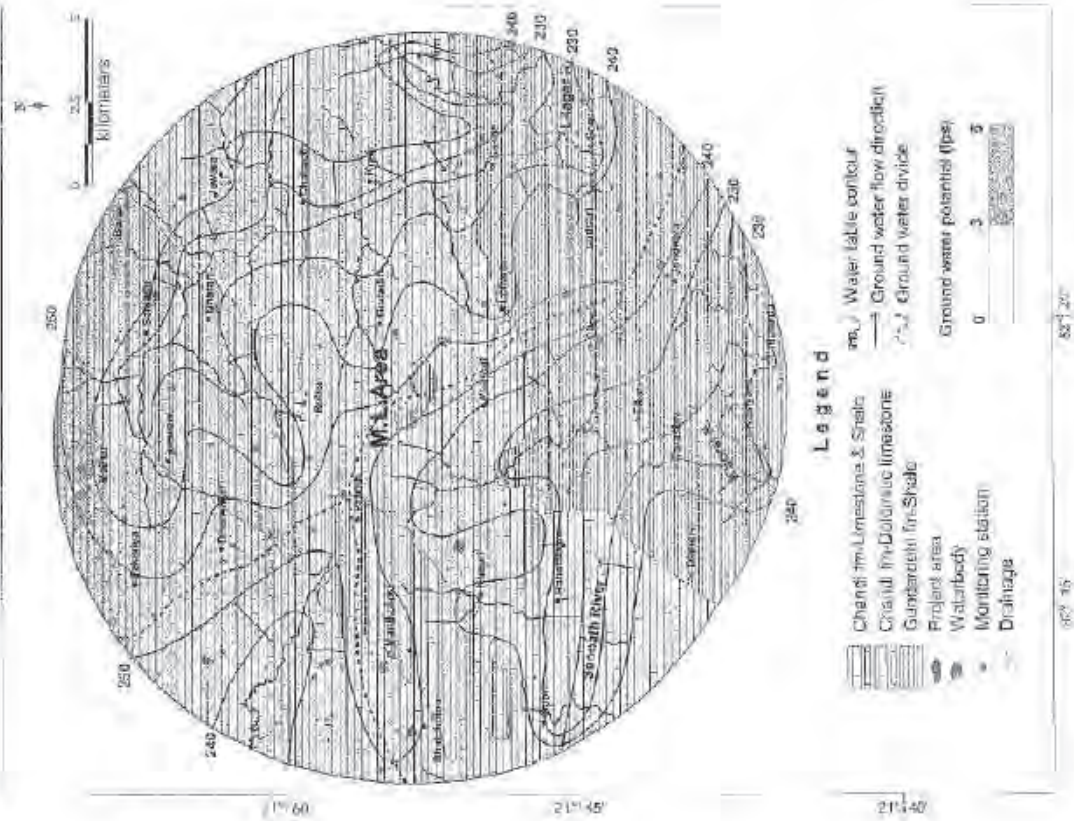


Fig 4.1: Hydrogeological map of the study area

5.0 GROUND WATER REGIME MONITORING

5.1 INTRODUCTION

Ground water regime monitoring comprises water level measurements on the fixed time at pre specified locations. Such study envisages regular monitoring of water level at selected locations to observe the variation of the ground water level and the changes in water quality with respect to ground water withdrawal over a period of time and space. The monitoring data is of immense help in management of the water resources as well as planning various recharges and discharge interventions and also tells about the overall health of aquifers. It is obvious that any ground water development in a particular area would bring changes in the immediate vicinity of the development area.

The objective is to identify the potential areas that have registered change in ground water levels, and quality which in turn would help in identifying the appropriate measures for adoption of artificial recharge to neutralize the negative impact of the envisaged ground water development.

In the present report, the monitored data has been presented and the overall picture of the response of continuous abstraction of ground water on the storage behavior has been analyzed for the period from January 2016 to November 2020. The monitoring was carried out four times in a year i.e. January, May, August and November. The water level data of the month of May and November are taken as pre-monsoon and post-monsoon levels respectively. Some photographs are shown in Plate : I, which were taken during monitoring of ground water levels of the year 2020.

5.2 DISTRIBUTION OF MONITORING STATIONS

To study the change in ground water regime in and around study area, a total of 32 monitoring wells (DW & BW) were selected at different locations for regular monitoring of ground water level (Core zone- 7 nos., Buffer zone- 25 nos). The monitoring schedule undertaken in and around the plant area has been bifurcated in core and buffer zone to have a better understanding about the changes that is being observed in the ground water regime. The separate analysis of the long term ground water behavior in core and buffer zone would enable to demarcate the areas that bear direct impact of any ground water development that has triggered its impact in the surrounding areas has also been discussed in subsequent headings. The basic details of these monitoring wells are presented in Table 5.1 and their distribution is presented in Fig 5.1.

Table 5.1 Basic details of established wells for Ground water monitoring in the Study area

SN	Village	Locate details	Type of well	Depth (m)	Dia (m)	M.P (mgl)
CORE ZONE						
1	adhi	Public well near Buddha Dev temple	DW	6.90	1.70	GL
2	Chilhari	Irrigation bungalow	DW	13.00	1.80	0.90
3	Chisda	Badli of Siva Ku. Katar	DW	10.00	1.20	0.20
4	Gadadhi	Near Shri Mandir Badrang chowk	DW	5.90	2.40	0.30
5	Lohani	In House of Shri Salik Ram Tewari	DW	9.20	1.60	0.60
6	Patidih	In Rameyan Rajak House	DW	12.00	1.80	0.50
7	PTM	In mine lease area (Piezometer)	BW	70.00	0.10	0.75
RUPPER ZONE						
8	Bharani	Near Dama bada & Nitish Verma house	DW	12.60	1.40	0.25
9	Shachoura	Locate in lower side of the village in house of Shri Japdev Prasad Patel	DW	8.80	2.30	0.60
10	Barsi	In Anjan Ram Rame house	DW	9.45	1.70	0.70
11	Chibanda	Near Office of T.S. & G. Pandey	DW	9.10	3.30	0.80
12	Damku	Dug well is located near Primary School beside the main road.	DW	10.70	2.10	0.60
13	Dubadhi	Dug well is located near Govt. Primary School.	DW	12.00	3.00	0.20
14	Dhurwakari	At road junction near Sri Baba temple	DW	12.40	3.00	0.60
15	Gabri	In Don Ram Patel house	DW	11.00	2.90	0.55
16	Hirni	In house of Shri Bass. Doctor	DW	10.15	2.20	0.30
17	Jewara	In Avas para near house of Shri Har. Kacharya	DW	12.50	2.20	0.45
18	Jondharia	Near House of Shri Bans. Lal Khatwat	DW	8.70	1.50	0.50
19	Jonvani	Near school, in Kalash Singh Yadav house	DW	7.60	1.70	GL
20	Kachyara	Near Patel cycle store	DW	8.70	4.20	0.60
21	Khapri	By side of road in Agriculture land of Shri Badi Ram Yadav	DW	8.20	3.60	GL
22	Kosir	In front of Panchayat bhawan	DW	11.30	1.50	0.50
23	Malhar	In Market area near Pancheshwar Mahadeo Mandir	DW	11.00	3.00	0.50
24	Manikchoti	Irrigation Bangle	DW	15.00	2.90	0.80
25	Pakariya	In Badli of Khadhu Ram Anchal	DW	7.00	1.90	0.5
26	Rahatabore	In front of Bisahu Lal Khatwat house	DW	8.80	3.50	GL
27	Sasha	In the house of Shri Bhujbal Yadav	DW	7.30	1.70	0.80
28	Semana	Rajendra Gautam	DW	9.50	2.90	0.25
29	Son	By the side of road in the house of Shri Dattar singh Palera house	DW	8.40	1.40	0.45
30	sonari	Dukharam Gandhi Chowk	DW	9.00	1.40	GL
31	Tarashiv	In front of Shri Bhagat Ram Patel house	DW	7.00	2.40	GL
32	Tekari	Saman Yadav house	DW	6.50	2.50	0.50

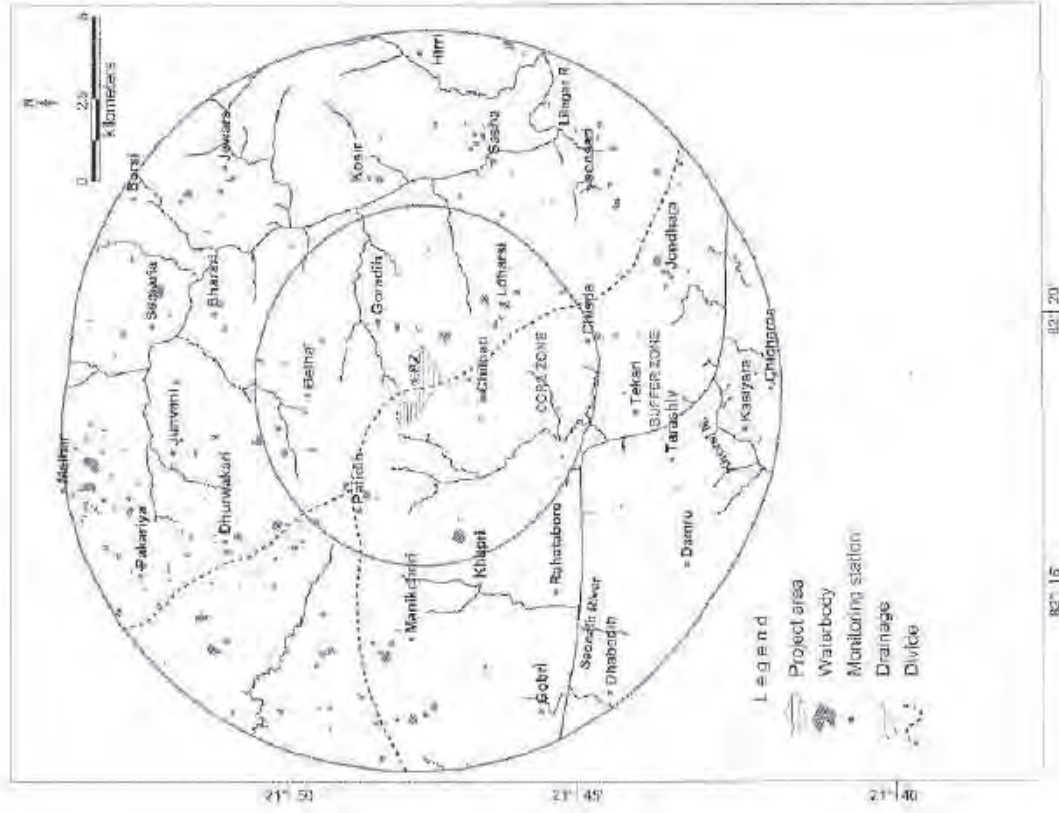


Fig 5.1 Location of monitoring wells in the Study area

6 ANALYSIS OF WATER LEVEL

6.1 INTRODUCTION

Water level or piezometric heads is the resultant of all the input and output to the ground water reservoir, considering it to behave as a system with defined boundaries. Ground water is a dynamic system. The variables required to be monitored, namely water level or head, chemical quality are subject to changes both due to natural and manmade causes. The zones of aeration and saturation play important roles in ground water recharge and ground water level fluctuations, as also in evolution of its quality. Hence assessment of chemical quality and temperature monitoring are essential parts of the ground water regime monitoring system.

6.2 GROUND WATER LEVELS

The configuration of the water table depends upon by topography, geology, climate, water yielding and water bearing properties of rocks in the zones of aeration and saturation, which control ground water recharge. The upper surface of the zone of saturation is the water table. In case of wells penetrating confined aquifers, the water level represents the pressure or piezometric head at that point. The water level is dependent on static or time independent topographical features and also Dynamic or time dependent variables.

Monitoring network planning is basic to groundwater assessment and development programmed. The groundwater, being subterranean resource can only be accessed through the indirect reflection in the form of water level fluctuations. The systematic and regular monitoring of groundwater levels can bring out the changes taking place in the regime. The data so generated are of immense help for regional groundwater flow modeling to serve as a groundwater management tool, and to provide the necessary advance information to the user agencies to frame contingency plans in case of unfavorable groundwater recharge situation. The data have also immense utility in implementing the legal provisions of groundwater regulation, and for providing expert advice in legal issues arising out of conflicting interests of ground water users.

The seasonal water levels in different years have been collected, analyzed for every set of measurements and write up with maps are presented in following sections. It is observed that, one water divide is going through the central part, hence all the villages of core zone and buffer zone have been considered for analysis.

6.3. ANALYSIS OF WATER LEVELS (2020)

The water level data collected four times during the year 2020 from the observation wells in core zone as well as buffer zone is presented in Table No.6.1.

Table 6.1: Depth to water levels monitored in the study area (during 2020)

SN	Village	X	Y	Depth to water level Jan'2020 (mbsgl)	Depth to water level May'2020 (mbsgl)	Depth to water level Aug'2020 (mbsgl)	Depth to water level Nov'2020 (mbsgl)	Fluctuation (m)	SL pre-monsoon water level (mbsgl)
CORE ZONE									
1	Bellur	82.309	21.828	3.40	4.52	0.30	2.10	2.42	245.48
2	Chilhal	82.308	21.780	5.60	6.30	1.30	2.90	3.40	244.70
3	Chisda	82.325	21.751	6.40	6.80	2.04	4.10	2.70	228.70
4	Gadadalli	82.331	21.809	3.80	4.00	0.20	2.45	1.55	239.00
5	Uttarad	82.336	21.775	4.20	4.87	0.45	1.35	3.52	240.13
6	Pandali	82.275	21.814	7.00	7.30	0.70	3.70	3.60	252.70
7	PZ	82.311	21.799	7.10	12.00	0.70	0.35	11.05	239.00
BUFFER ZONE									
8	Bharani	82.333	21.854	4.75	5.80	0.95	3.35	2.45	232.10
9	Bhatnara	82.215	21.796	3.45	4.55	1.20	2.90	2.05	244.44
10	Bonsi	82.367	21.876	4.00	4.70	1.35	2.81	2.39	236.30
11	Chidandi	82.311	21.701	5.30	5.65	1.40	4.10	1.55	231.35
12	Damru	82.259	21.774	5.75	6.32	0.90	3.23	3.09	237.08
13	Dhabadli	82.171	21.742	5.60	5.72	0.20	2.30	3.41	240.28
14	Dhurwakari	82.266	21.861	4.12	5.65	0.80	1.60	4.05	247.35
15	Ebbur	82.216	21.764	4.20	5.30	0.60	3.10	3.20	228.70
16	Hiri	82.319	21.980	6.20	6.50	1.40	4.10	2.40	241.50
17	Jewara	82.376	21.851	3.25	3.90	1.30	2.58	1.32	237.10
18	Jondhara	82.344	21.728	3.80	4.03	1.40	3.30	0.70	229.00
19	Juvanti	82.292	21.865	3.90	4.10	0.60	1.20	2.90	238.90
20	Kasiyara	82.299	21.708	3.80	4.41	0.40	1.40	3.04	226.56
21	Khapri	82.253	21.781	3.45	4.01	0.20	1.00	3.01	236.36
22	Kosur	82.373	21.811	4.80	5.32	0.50	3.58	2.74	230.58
23	Malhar	82.281	21.895	5.32	6.32	1.80	2.89	3.43	245.68
24	Manikchani	82.237	21.800	8.10	9.30	3.00	5.80	3.50	245.70
25	Pekariya	82.256	21.874	2.90	4.05	0.90	1.80	2.25	247.95
26	Rahababore	82.251	21.760	5.90	6.32	1.25	4.05	2.27	226.88
27	Sakta	82.398	21.777	3.50	4.32	0.90	2.40	1.92	225.68
28	Semanti	82.329	21.871	5.78	6.20	2.40	3.55	2.65	232.80
29	Son	82.384	21.751	5.21	5.40	0.80	2.01	3.39	223.60
30	Sorsani	82.370	21.751	4.23	4.56	0.70	2.80	1.76	229.44
31	Tarashiv	82.290	21.728	3.89	4.60	1.80	2.89	1.71	230.40
32	Tekari	82.304	21.758	3.00	4.12	0.40	1.10	3.02	227.88

6.3.1 PRE-MONSOON DEPTH TO WATER LEVEL (MAY' / JUNE' 2020)

The depth to water level map has been prepared based on ground water monitoring data of May/ June 2020. From the perusal of Table 6.1, it is observed that the overall depth to water level in area remains between 3.9 to 12.0 meters below ground level in core and buffer zone. The pre-monsoon depth to water indicates that water levels between 5 to 10 mbgl are observed in Chihlati, Chasda and Patidih villages of core zone and 52 % of villages of buffer zone. Deeper water levels of more than 10 mbgl are observed in the village at PZ of Core zone (as shown in Fig 6.1). Water levels of less than 5 mbgl are observed in Goradlihi, Belha and Loharsi of core zone and 48 % of villages of buffer zone. As such the deeper water level of more than 10 mbgl has been observed in and around the project area and also fall on the water divide.

6.3.2 POST-MONSOON DEPTH TO WATER LEVEL (NOVEMBER 2020)

The depth to water level map has been prepared based on ground water monitoring data of November 2020. From the perusal of the Table 6.2, it is observed that the overall depth to water level in area remains between 0.95 to 5.8 meters below ground level in core and buffer zone. The spatial distribution of post-monsoon depth to water broadly follows similar pattern as of pre-monsoon water level. In the villages of core zone namely Chasda and Patidih water levels observed lies between 3 to 5 mbgl. Similarly water level is between 3-5 mbgl in about 32 % of the villages of buffer zone. Water level 0 to 3 mbgl is observed in Sarla, PZM, Chihlati, Goradlihi and Loharsi villages of core zone and 64 % villages of buffer zone. Water level more than 5 mbgl is observed in the villages Manikhot of buffer zone as shown in Fig 6.2. In the project area in general the depth to water level is more than 5 m bgl has been observed in and around the project area and also fall on the water divide area.

6.3.3 SEASONAL WATER LEVEL FLUCTUATION (MAY' / JUNE' 2020 VS NOV'2020).

Based on the pre-monsoon & post-monsoon data water level fluctuation in the study area is calculated & respective map (as shown in Fig 6.3) has also been prepared. It is observed that in the study area water level fluctuation varies from 0.7 to 11.05 meters. Lower range of water level fluctuation is also observed along the river course followed by 4 to 6, > 6 & 2 to 4 m.

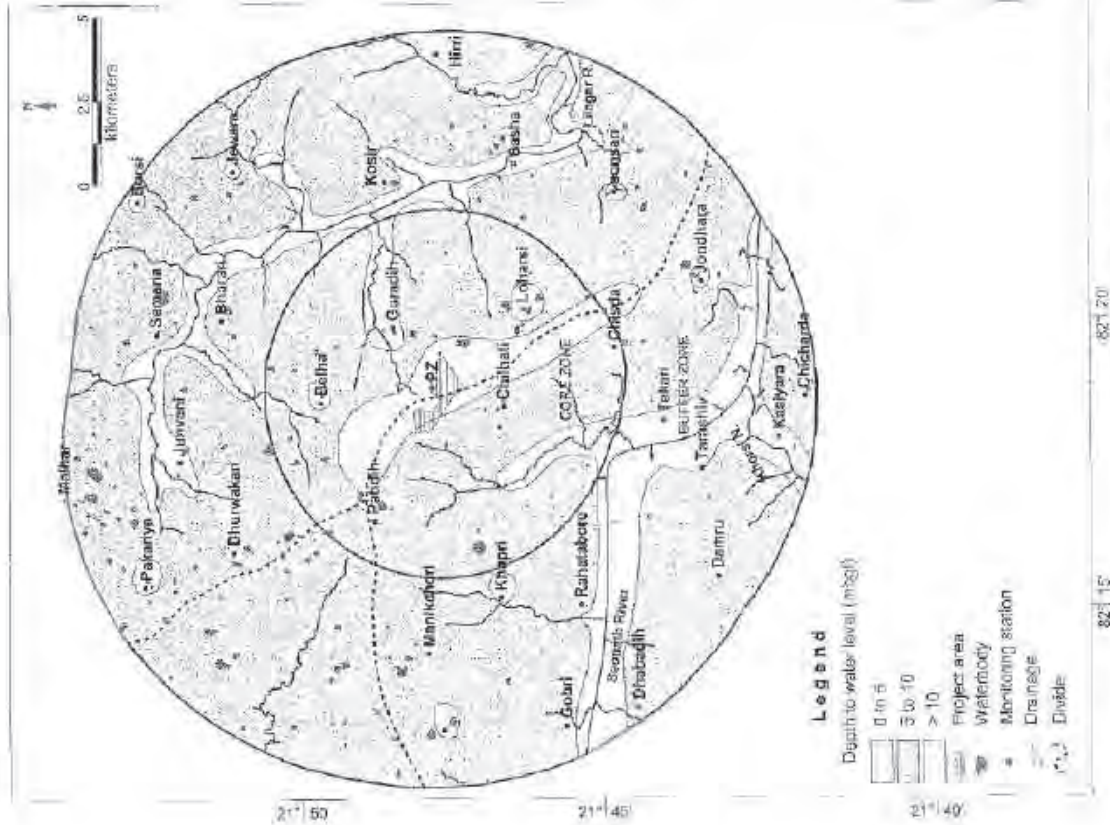


Fig 6.1 Pre-monsoon depth to water level (May / June' 2020) map of the Study area



Fig 6.2 Post-monsoon depth to water level (Nov/2020) map of the Study area



Fig 6.3: Seasonal Water Level Fluctuation (May 2020 vs Nov 2020)

6.4 COMPARISONS OF WATER LEVELS OVER THE YEARS

The ground water levels in the area have been monitored 4 times in a year as mentioned earlier. Mean water level (2015-2019) has been compared with water levels of year 2020, for pre-monsoon and post-monsoon period, separately in core and buffer zones, to assess the change in ground water level over the years. Keeping this in view, the water level data of last three years has been analyzed to assess the change in water level behavior.

The water level data for last four years have been analyzed to assess decline or rise in the ground water level within the study area. The said water levels of year 2015-2019 (mean) compared with respect to year 2020, both for pre-monsoon and post-monsoon period separately for core and buffer zones are presented in Table 6.2.

6.4.1 PRE-MONSOON DEPTH TO WATER LEVEL TREND

While comparing mean pre-monsoon average water levels of (2015-2019) with that of 2020 (Table 6.2), it is found that all the villages in core zone showing rise in the range of 0.57 to 2.58 m, except PZ which is showing decline of water level of - 0.48 m, and all the villages in buffer zone are showing rising in range of 0.56 to 5.38 m. (Fig 6.4). The decline observed during 2020 from the average ground water level of last five years could be attributed to two main reasons such as reduction in rainfall vis-à-vis recharge or increase in ground water draft for irrigation, domestic or other purposes.

The area showing falling trend more than 20 cm/yr are of considerable significance, but in present context the villages of core zone and buffer zone shows decline less than 1.0 m, over the period of five years, so it is evident that in there is a marginal decline in water level trend in pre-monsoon period over the period of five years.

Table 6.2: Comparisons of water levels (2016-2019)

with reference to Water levels of the year 2020

SN	Village	Mean depth to water level May 2016-19 mbgl	Mean depth to water level November 2016-19 mbgl	Depth to water level May/June 2020 (mbgl)	Depth to water level Nov 2020 (mbgl)	Change (m) Pre- monsoon	Change (m) post- monsoon
CORE ZONE							
1	Bolia	5.91	1.60	4.52	2.10	1.39	-0.50
2	Chilhal	8.49	3.33	6.30	2.90	2.19	0.43
3	Chida	7.77	4.55	6.80	4.10	0.97	0.55
4	Godadib	5.66	2.66	4.00	2.45	1.66	0.24
5	Lohari	7.16	3.06	4.87	1.85	2.29	1.71
6	Petadib	9.98	7.05	7.30	3.70	4.68	3.35
7	PZM	11.53	5.01	12.00	0.95	-0.48	4.06
BUFFER ZONE							
8	Baran	10.98	4.43	5.80	3.35	5.15	1.08
9	Bhatkora	7.33	2.42	4.56	2.50	2.77	-0.08
10	Boisi	7.70	3.60	4.70	2.31	3.00	1.29
11	Chichada	7.50	4.20	5.55	4.10	1.85	0.10
12	Darui	8.78	4.97	5.92	3.23	2.46	1.74
13	Dhabadib	8.48	3.61	5.72	2.30	2.76	1.31
14	Churwakari	11.03	3.03	5.55	1.60	5.38	1.43
15	Gokri	8.06	3.00	5.30	3.10	2.76	-0.11
16	Hum	8.60	5.31	6.50	4.10	2.10	1.71
17	Jewara	6.81	2.83	3.30	2.58	2.91	0.22
18	Jondhara	5.10	3.48	4.00	3.30	1.70	0.18
19	Junvani	5.90	3.12	4.10	1.70	1.80	1.92
20	Kalyara	7.50	2.87	4.44	1.40	3.06	1.47
21	Khapri	5.17	2.85	4.01	1.00	1.16	1.95
22	Kosir	6.18	3.42	5.32	2.58	0.86	0.84
23	Mahar	10.22	4.46	6.32	2.89	3.90	1.59
24	Manikchori	10.47	5.00	9.30	5.80	1.17	-0.80
25	Palariya	6.30	2.74	4.05	1.80	2.25	0.94
26	Bahatabore	7.55	3.25	6.32	4.05	1.23	-0.80
27	Sasha	6.34	2.63	4.32	2.40	2.02	0.25
28	Senaria	7.84	3.91	6.20	3.55	1.64	0.36
29	Son	7.61	3.45	5.40	2.01	2.21	1.44
30	Sonsari	6.33	3.59	4.56	2.80	1.77	0.79
31	Tarashiv	7.98	2.56	4.60	2.89	2.88	-0.34
32	Tekari	4.68	1.69	4.12	1.10	0.56	0.59



Fig. 6.4 Pre-monsoon water level trend (May 2016-May 2019 Vs May 2020)

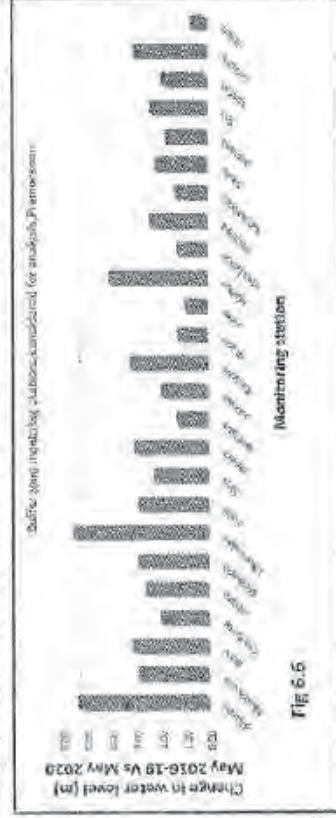
6.4.1.1 CORE ZONE:

The comparison of mean pre-monsoon water levels (2016-2019) with reference to pre-monsoon water levels of the year 2020, for core zone has been made. The ground water fluctuation results show that, all the villages in core zone showing rise in the range of 0.97 to 2.68 m, except PZ which is showing decline of water level of -0.48 m, so it is evident that in there is a marginal decline in water level trend in pre-monsoon period over the period of five years



6.4.1.2 Buffer zone

The comparison of mean pre-monsoon water levels (2016-2019) with reference to pre-monsoon water levels of the year 2020, it is observed that, all the villages in buffer zone are showing rising in range of 0.56 to 5.38 m., which can be considered as no decline. (As shown in Fig.6.6).



6.4.2 POST-MONSOON DEPTH TO WATER LEVEL FLUCTUATION

While comparing mean post-monsoon average water levels of (2016-2019) with that of 2020 (Table 6.2), it is found that all the villages in core zone which are showing rise in the range of 0.24 to 4.06 m, except village Beltha which is showing decline in water level of 0.5 m, and 80 % villages buffer zone are rise in range of 0.1 to 1.95 m, and remaining 20 % villages are showing decline in water level in the range of -0.08 to -0.8 m. (As shown in Fig 6.7). The decline observed during 2020 from the average ground water level of last four years could be attributed to two main reasons such as reduction in rainfall vis-a-vis recharge or increase in ground water draft for irrigation, domestic or other purposes.

The area showing falling trend more than 20 cm/yr are of considerable significance. But in present context the villages of core zone and buffer zone shows decline less than 1.0 m over the period of five years (i.e. 2.0 m), so it is evident that in there is a marginal decline in water level trend in post-monsoon period over the period of five years.



Fig. 6.7 Post-monsoon water level trend (Nov 2015–Nov 2019 Vs Nov 2020)

Overall, from the comparison of mean water levels of the year 2016 to 2019 with respect to the years 2020 in pre-monsoon periods it is found that all the villages in core zone showing rise in the range of 0.97 to 2.68 m, except PZM which is showing decline of water level of -0.48 m, and all the Villages in buffer zone are showing rising in range of 0.56 to 5.38 m. While comparing mean post-monsoon average water levels of (2016-2019) with that of 2020, it is found that all the villages in core zone which are showing rise in the range of 0.24 to 4.06 m, except village Belha which is showing decline in water level of -0.5 m, and 80 % villages buffer zone are rise in range of 0.1 to 1.95 m, and remaining 20 % villages are showing decline in water level in the range of -0.08 to -0.8 m.

The area showing falling trend more than 20 cm/yr are of considerable significance, But in present context the villages of core zone and buffer zone shows decline less than 1.0 m over the period of five years, so it is evident that in there is a marginal decline in water level trend in pre-monsoon and post-monsoon period over the period of five years

The decline trend is observed during the year-2020 from the average ground water level of last five years could be attributed to two main reasons such as reduction in rainfall vis-a-vis recharge or increase in ground water drain for irrigation, domestic or other purposes.

6.5 HYDROGRAPHS:

In order to study the changes in ground water level with respect to time, time series analysis through analysis of hydrographs has been attempted. The variation in ground water level recorded systematically for a longer period is plotted in the form of graph (hydrograph). Some representative hydrographs are given below for core and buffer zone for the period of January 2016 to November 2020 in Fig. 6.10 to Fig. 6.21. These representative hydrographs presented here also shows the decline in water levels over the period of observation. The decline rate is more in core zone and comparatively low in buffer zone. In general the hydrograph indicates cyclic and sinusoidal changes representing the recharge and discharge of ground water from the storage. Seasonal fluctuations are clearly seen in the hydrographs.

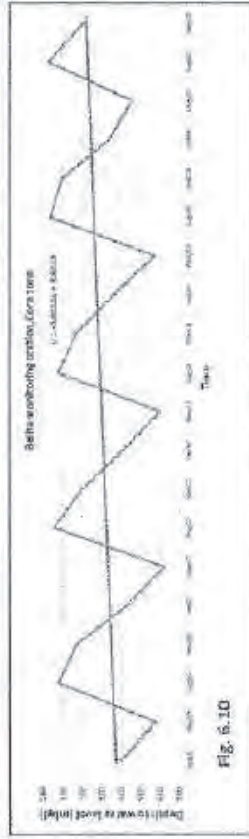


Fig 6.10

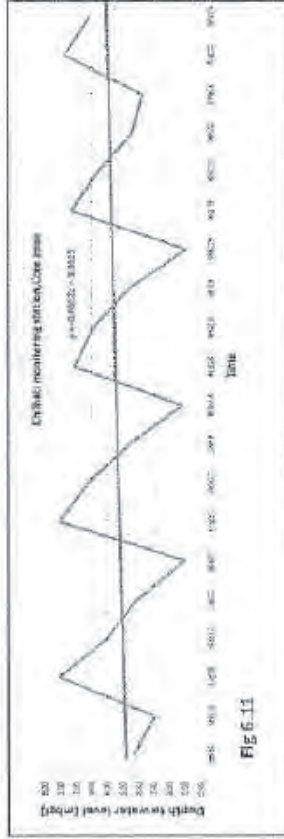


Fig 6.11

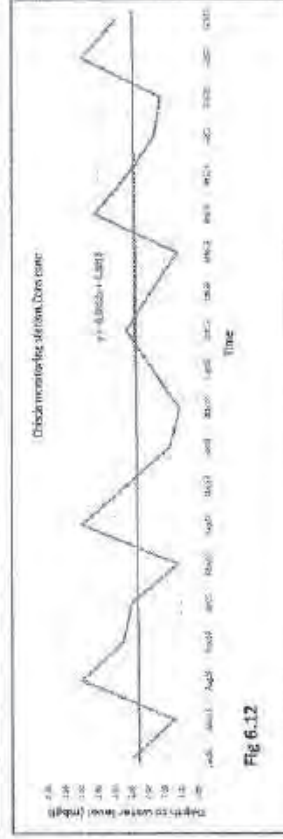


Fig 6.12

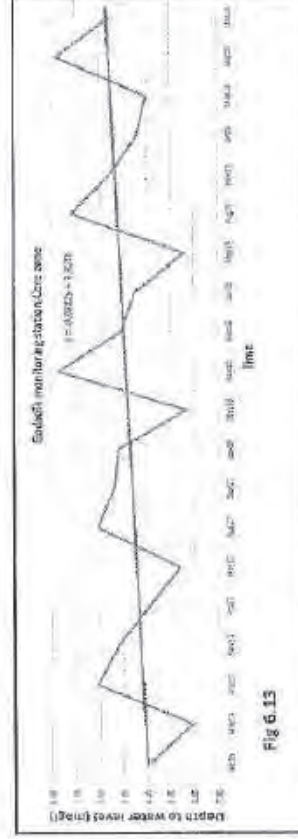


Fig 6.13

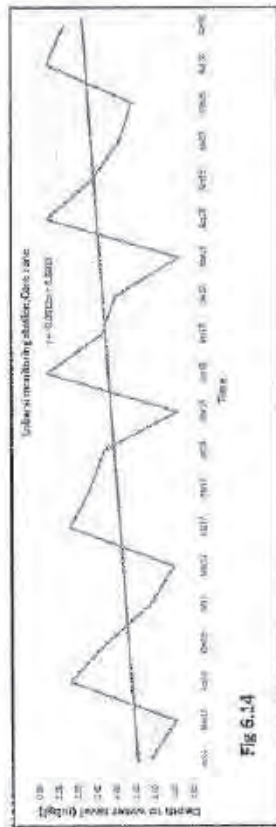


Fig 6.14

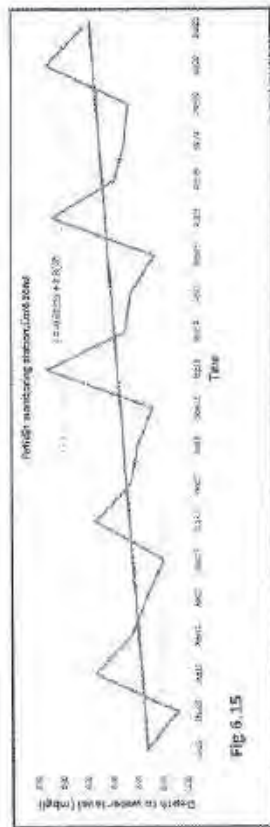


Fig 6.15

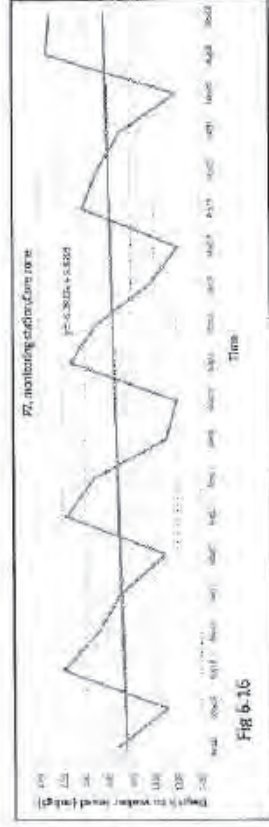


Fig 6.16

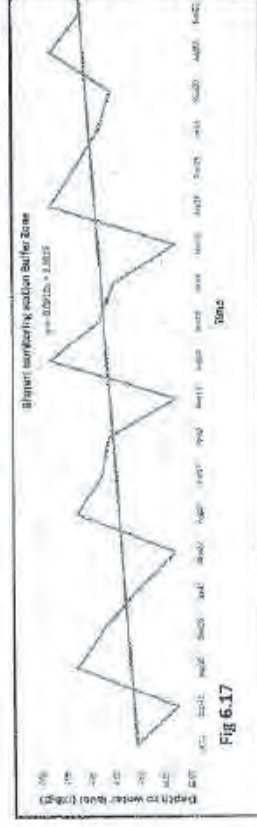


Fig 6.17

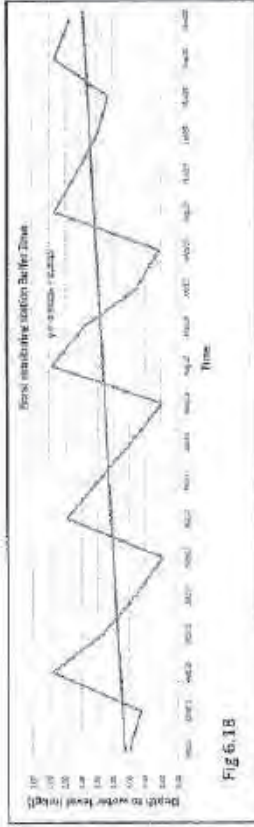


Fig 6.18

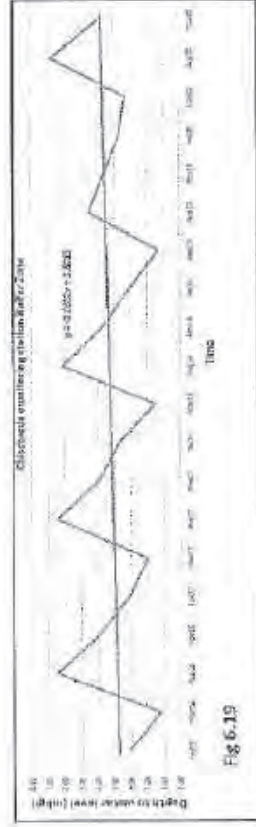


Fig 6.19

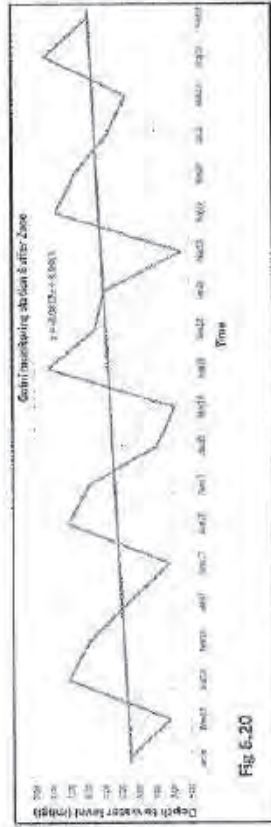


Fig 6.20

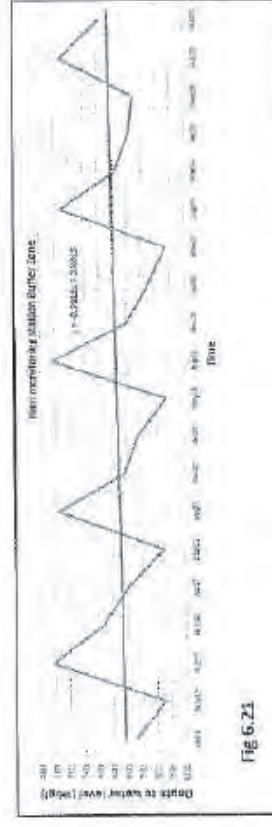


Fig 6.21

7 CHEMICAL QUALITY OF GROUND WATER

The suitability of ground water for drinking/irrigation/industrial purposes is determined keeping in view the effects of various chemical constituents present in water on the growth of human being, animals, and various plants and also on industrial requirement. However, many ions are very essential for the growth of plants and human body but when present in excess, have an adverse effect on health and growth. For estimation of the quality of ground water, 10 ground water samples have been collected in study area. The ground water samples were analyzed for major as well as heavy chemical constituents. The photographs of some sample station were taken during sampling of ground water from hand pumps are shown in Plate: II. The ranges of different chemical constituents present in ground water are given in Table 7.1 and details are given below and location of water sampling is given in Fig 7.1.

Table 7.1: Summarized results of chemical quality of ground water in the study area for Pre-monsoon period of the Year 2020

Sr. No.	Parameter	Unit	Desirable limit of 15:10500: 2012	Permissible limit of 15:10500: 2012	Observed value
1	Colour	Hazen unit	5	15	<5
2	Odour		Agreeable	Agreeable	Unobj
3	Taste		Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	1	5	<1
5	pH		6.5-8.5	No relaxation	6.75
6	Conductivity	µS/cm		-	475
7	Free Residual Chlorine (mg/L)	mg/L	0.2	1	<0.1
8	Total Dissolved Solids	mg/L	500	2000	279
9	Phenol (as C6H5OH)	mg/L	0.001	No relaxation	<0.001
10	Total Hardness (as CaCO ₃)	mg/L	200	500	194
11	Total Alkalinity (as CaCO ₃)	mg/L	200	500	190
12	Carbonates (as CO ₃)	mg/L	-	-	<1
13	Bi-Carbonates (as mg/L)	mg/L	-	-	190
14	Chloride (as Cl)	mg/L	250	1000	8
15	Sulphate (as SO ₄)	mg/L	200	400	12
					55

Sr. No.	Parameter	Unit	Desirable limit of 15:10500; 2012	Permissible limit of 15:10500; 2012	Observed value
16	Nitrate (as NO ₃)	mg/L	45	No relaxation	2.8
17	Fluoride (as F)	mg/L	1	1.5	<0.05
18	Calcium (as Ca)	mg/L	75	200	58
19	Magnesium (as Mg)	mg/L	300	100	8
20	Sodium (as Na)	mg/L	0.5	No relaxation	5
21	Potassium (as K)	mg/L	-	-	0.5
22	Ammonia (as Total NH ₃ -N)	mg/L	-	-	<0.05
23	Boron (as B)	mg/L	0.5	2.4	<0.2
24	Chromium (as Cr)	mg/L	0.05	No relaxation	<0.05
25	Copper (as Cu)	mg/L	0.05	1.5	<0.05
26	Manganese (as Mn)	mg/L	0.1	0.3	<0.05
27	Zinc (as Zn)	mg/L	5	15	<0.05
28	Cadmium (as Cd)	mg/L	0.003	No relaxation	<0.003
29	Iron (as Fe)	mg/L	1	No relaxation	0.15
30	Lead (as Pb)	mg/L	0.01	No relaxation	<0.01
31	Silver (as Ag)	mg/L	0.1	No relaxation	<0.05
32	Aluminium (as Al)	mg/L	0.3	0.2	<0.03
33	Nickel (as Ni)	mg/L	0.02	No relaxation	<0.01
34	Arsenic (as As)	ppb	10	No relaxation	<2
35	Total Coliforms	MPN/100 ml	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample	N.D.
36	E. Coli	MPN/100 ml	Shall not be detectable in any 100 ml sample	Shall not be detectable in any 100 ml sample	N.D.

According to above table, majority of chemical constituent of all samples are within permissible limit and suitable for drinking, irrigation and industrial use, location of water sampling is given in

Fig 7.1.

GEOCHEMICAL CLASSIFICATION OF GROUND WATER

The geochemical classification of ground water, of study area has been carried out by using Piper Diagram. The ground water is of Ca/Mg-Na-HCO₃ Cl type. The analysis of ground water samples collected from the area suggests that type of water in the major part is bicarbonate dominating type, Table 7.2. The type of ground water found in each ground water sample collected is given in the Table 7.2.

Table 7.2 The type of ground water

Station ID	Location	X	Y	Water Type	El. Cond. $\mu S/cm$	TDS mg/l
GW1	BW No1 near Sub station	82.313	21.798	Ca-Mg-HCO ₃ -Cl	724	421
GW2	Godadithi Mines Pit	82.313	21.798	Ca-Mg-Na-HCO ₃ -Cl	641	368
GW3	Bolha	82.309	21.828	Ca-Na-HCO ₃ -Cl	724	415
GW4	Godadithi	82.331	21.809	Ca-Mg-HCO ₃ -Cl	819	483
GW5	Chuhari	82.308	21.78	Ca-HCO ₃ -Cl	724	421
GW6	Kharai(jat)	82.253	21.781	Ca-Mg-HCO ₃	505	294
GW7	Petadi	82.275	21.614	Ca-Mg-HCO ₃	533	380
GW8	Manikchuri	82.237	21.8	Ca-Na-HCO ₃	612	361
GW9	Jondhara	82.344	21.728	Ca-Mg-HCO ₃	585	344
GW10	Pakariva	82.256	21.874	Ca-Mg-Na-HCO ₃ -Cl	693	411

SUITABILITY OF GROUND WATER FOR DRINKING AND IRRIGATION PURPOSES THE SUITABILITY OF GROUND WATER FOR DRINKING PURPOSE

The suitability of ground water for drinking purpose is determined keeping in view the effects of various chemical constituents present in water on the biological system of human being. The standards proposed by the Bureau of Indian Standards (BIS) for drinking water (BIS-2012, revised) were used to decide the suitability of ground water that occur in study area for drinking purpose. The classification of ground water samples falling below desirable limit (DL), between desirable & maximum permissible limit (DL-MPL) and above maximum permissible limit (MPL) for drinking water purpose limit is shown in the following Table 7.3.

Table 7.3: Classification of Ground Water Samples for Drinking Purposes.

Parameters	Drinking water Standards (IS-10500-91, Revised 2012)		Total No. of GW Samples	Samples (<DL)		Samples (DL-MPL)		Samples (>MPL)	
	Desirable Limit (DL)	Maximum Permissible Limit (MPL)		No.	%	No.	%	No.	%
pH	6.5-8.5	No relaxation	10	0	0	10	100	0	0
TDS (mg/L)	500	2000	10	10	100	0	0	0	0
TH (mg/L)	300	600	10	6	60	4	40	0	0
Ca (mg/L)	75	200	10	6	60	4	40	0	0
Mg (mg/L)	30	100	10	10	100	0	0	0	0
Cl (mg/L)	250	1000	10	10	100	0	0	0	0
SO ₄ (mg/L)	200	400	10	10	100	0	0	0	0
NO ₃ (mg/L)	45	-	10	10	100	0	0	0	0

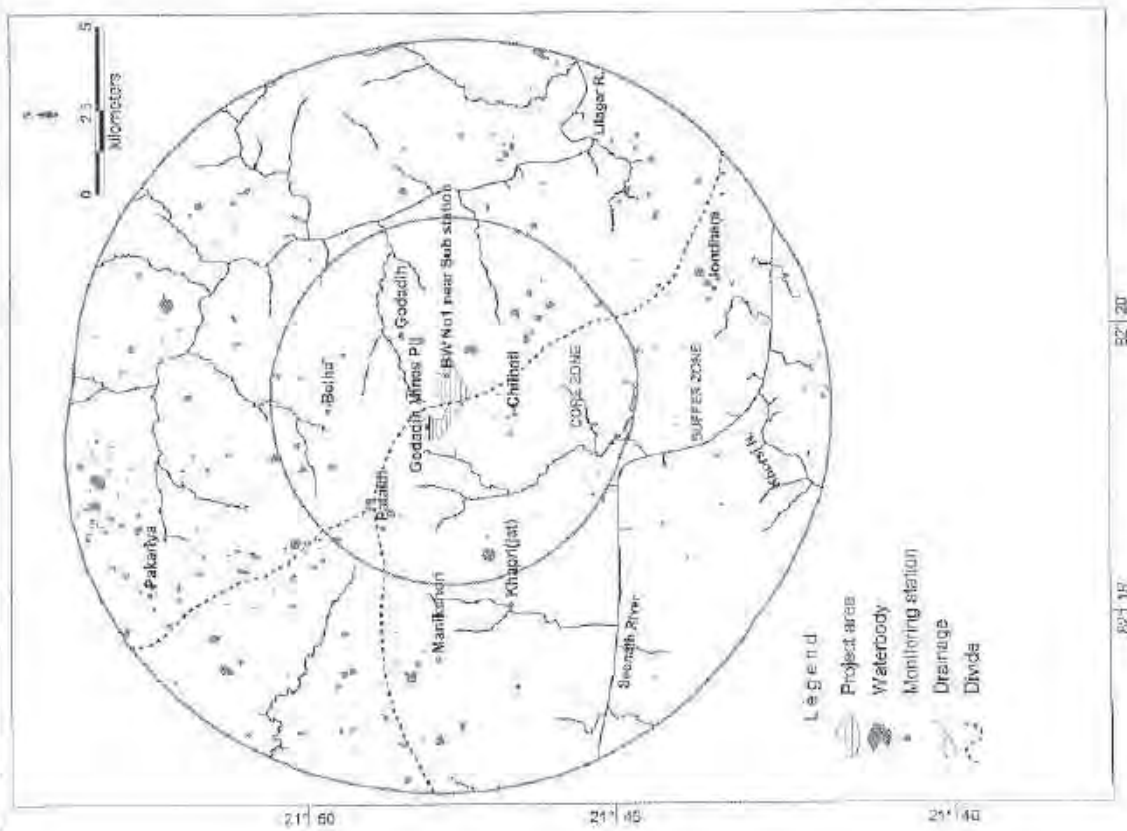


Fig-7.1: Location of water sampling

It is observed from the above Table 7.3, shows that 100% of samples are suitable for drinking purposes. It is also observed that only 22% of samples show the PH, TDS, TH, Ca and Mg concentration above the desirable limit but within permissible limit of BIS Standards. Therefore, it is concluded that the potability of ground water in major part of study area

THE SUITABILITY OF GROUND WATER FOR IRRIGATION PURPOSE

Water is one of the most important constituents, which is required for plant growth, which not only provides the liquid for food processing of the plants but also provides important nutrients for the growth of the plants. But when concentration of ions, are found in excess in the water, it affects the plant growth and reduces the plant yield. Therefore, it is necessary to know the quality of the water before applying in the field, so that the maximum crop yield can be obtained.

SODIUM ADSORPTION RATIO (SAR)

SAR is an expression pertaining to cation makes up of water and soil solution and is used for characterizing the sodium hazard of irrigation water. The main problem with high sodium concentration is its effect on soil permeability & water irrigation. Sodium also contributes directly to the total salinity of the water and may be toxic to sensitive crops such as fruit trees. SAR is calculated from the following equation- Where the concentration of cations is expressed in meq/L

$$SAR = \frac{Na^+}{\sqrt{(Ca^{2+} + Mg^{2+})/2}}$$

RESIDUAL SODIUM CARBONATE (RSC)

Water containing carbon dioxide on way gets saturated with carbon dioxide and forms bicarbonates. The excess bicarbonates of Mg and Ca are precipitated out as carbonates. This produces impermeable to the top soil. Bicarbonate concentration of water has been suggested as additional criteria of suitability of irrigation water. Residual sodium carbonate is determined by using the following formula. $RSC = (CD3 + HCO3) - (Ca + Mg)$

The suitability of ground water of study area for irrigation purpose was considered on the basis of U S Salinity diagram in which electrical conductivity value in $\mu S/cm$ at $25^\circ C$ upto $5000 \mu S/cm$ at $25^\circ C$ is plotted on one axis and the SAR values upto 10 on the other. The electrical conductivity and the corresponding SAR & RSC values of each ground water sample collected from the study area is given in the Table 7.4, and the EC and SAR values are plotted in Wilcox Diagram (Fig 7.2)

and Piper (Fig 7.3). The number of ground water samples based on Sodium Absorption Ratio (SAR) characteristics falling under Good, Good to Permissible, Doubtful & Bad (Unsuitable) categories is shown in the following Table 7.4

Table 7.4. Classification of ground water for Irrigation based on SAR values

EC microsiemens/cm at 25°C	Quality	Total No. of Samples	SAR Value			
			<10 (S1)	10-18 (S2)	18-26 (S3)	>26 (S4)
			Good	Good to Permissible	Doubtful	Bad (Unsuitable)
			No. of samples	No. of samples	No. of samples	No. of samples
< 100			-	-	-	-
100-250 (C1)						
250-750 (C2)	9		90	-	-	-
750-2250 (C3)	1		10	-	-	-
2250-5000 (C4)						
> 5000						
Total		10	10			

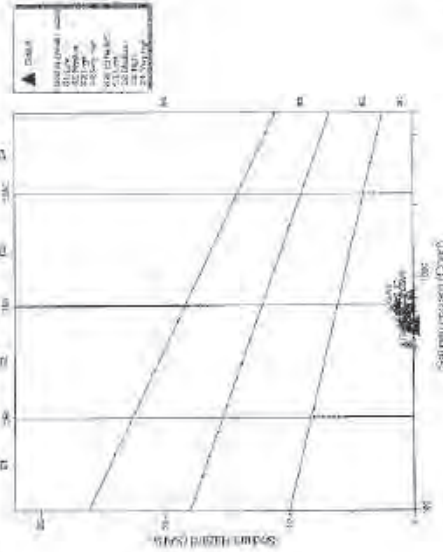


Fig 7.2 Wilcox Diagram

From the Table 8.4, it is observed that 100% of samples show SAR values below 10 and falling in the Low Sodium (alkali) Hazard Zone (S1). Such type of water can be used for irrigation on almost all soils with little danger of development of sodium exchangeable problem. Out of 10 samples collected from study area all samples having EC above < 2250 $\mu\text{S}/\text{cm}$ at 25°C. The High Salinity Water (C3) cannot be used on soils with poor drainage. Even with adequate drainage, special

management for salinity control may be required and plants with good salt tolerance should be selected.

The Very High Salinity Water (CV) is not at all suitable for irrigation under ordinary conditions, but may be used occasionally if the soil is permeable by providing adequate drainage and irrigation water must be applied in excess to provide considerable leaching and very salt tolerant crops should be selected.

Based on above table 7.4, ground water samples are classified with respect to salinity and sodium hazard and is presented in Table 7.5.

Type of Classification	Characteristics	No. of samples falling in	%
C1S1		0	0
C1S2		0	0
C2S1	Medium salinity and low sodium water	9	90
C3S1	High salinity and low sodium water	1	10
C4S1	Very high salinity and low sodium water	0	0
Total		10	100

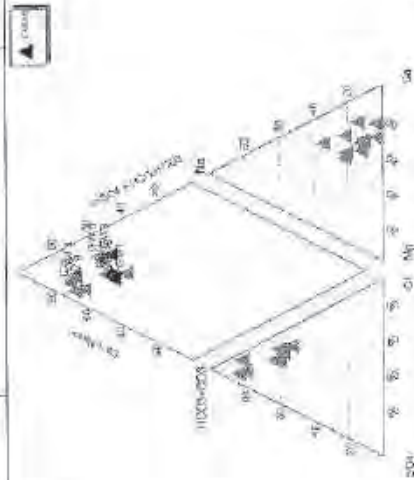


Fig 7.3 Trainer piper diagram

The Electrical conductivity map of ground water has been prepared and presented as Fig 7.4. On perusal of the map, it is observed that the electrical conductivity for shallow aquifer in study district ranges from 505 $\mu\text{mhos/cm}$ (Khapri) to 819 $\mu\text{mhos/cm}$ (Goradhi). The electrical conductivity for shallow aquifer is within Permissible Limit (750-2750 $\mu\text{mhos/cm}$ @ 25°C) Fig 7.4.



8 CONCLUSION AND SUGGESTIVE MEASURES (IMPLEMENTED BY COMPANY)

8.1 CONCLUSION

M/s. Hindal Steel & Power Ltd. (Cement Division) a leading Industrial House of the country has acquired lease over an area of 121.69 Ha (Existing 120.313 ha) at village Godadih, Tehsil Masuri, Bilaspur (C.G.). The company intends to establish a 1.0 MTPA clinkerization plant near to its existing steel plant at Raigarh. The limestone from Godadih will be used as raw material for the proposed plant. The lime stone mining shall be done by adopting open cast mining technique down to a maximum depth of 42 m below ground during current plan. It is expected that the water table will be intersected during mining period. For the present study, a buffer zone of area of 10 km of radius around the project site has been demarcated. The applied area falls within the Survey of India Topo-sheet No. 64 K/5. There are 97 villages present in the area within 10 km of radius of the project area. The population as per 2011 Census records is 135225 (for 10 km radius buffer zone).

The area has a tropical wet and dry climate and receives an average rainfall of 1098.35 mm/annum with around 65 rainy days, mostly during monsoon season i.e. from June to early October. The study area is characterized by more or less flat undulating terrain with regional slope to the south. Geo-morphologically the study area represents old flood plain/valley fill and Pediplain. The highest RL is 260 m due northeast near lease boundary and the lowest RL is 229 m, due south west part near lease boundary. This maximum surface relief is 31m only over an areal distance of about 10 km.

Analysis of land use pattern in the study area indicates that nearly 50.58 % of the land is under agriculture and 18.86% is Cultivable waste land. Forest land covers 5.47% while Area not available for cultivation constitutes around 7.28%. In the study area two main soil categories are present namely Vertisol and Ultisols. The area is drained by Sheonath and Ulagar River. This tributary system comes under Mahanadi basin. The drainage pattern in the area is sub-parallel and dendritic in nature with medium drainage density indicating the formations in the area are moderately porous & permeable in nature and are having moderate surface run-off.

Geologically the area is occupied by the rocks of the Chhattisgarh super group overlain unconformable over the basement crystalline are represented by limestone and shale. A thin layer of alluvium/ laterite is belonging to Quaternary period.

In the area, ground water occurs under phreatic condition in weathered portion and semi-confined to confined conditions in fractures/cavernous part of rocks i.e. limestone and shale at depths. To decipher the behaviour of the ground water storage, the water level monitoring was carried out in the study area by establishing 32 nos. of observation stations (Dug Well) at different villages within 10 km of radius during pre-monsoon and post-monsoon season (2020) i.e. 7 wells in core zone and 25 wells in buffer zone.

The ground water flow direction is not coherent in the area and local variation in flow direction is also observed in the mining lease area located in the zone of surface water divide. The water table elevation in the study area ranges between 230 to 250 m amsl. Northern part of the area is having high altitude of water table elevation i.e. 250 m amsl while water table elevation decreases to south & is minimum i.e. 230 m amsl.

During pre-monsoon (May 2020) overall depth to water level in area remains between 3.9 to 12.0 meters below ground level in core and buffer zone. The pre-monsoon depth to water indicates that water levels between 5 to 10 mbgl are observed in Chilhati, Chisda and Patidih villages of core zone and 52 % of villages of buffer zone. Deeper water levels of more than 10 mbgl are observed in the village at PZM of Core zone. Water levels of less than 5 mbgl are observed in Goradhi, Belha and Loharsi of core zone and 48 % of villages of buffer zone. As such the deeper water level of more than 10 mbgl has been observed in and around the project area and also fall on the water divide

The depth to water level of November 2020 in area remains between 0.95 to 5.8 meters below ground level in core and buffer zone. The spatial distribution of post-monsoon depth to water broadly follows similar pattern as of pre monsoon water level. In the villages of core zone namely Chisda and Patidih, water levels observed lies between 3 to 5 mbgl, similarly water level is between 3-5 mbgl in about 32 % of the villages of buffer zone. Water level 0 to 3 mbgl is observed in Bilha PZM, Chilhati, Goradhi and Loharsi villages of core zone and 64 % villages of buffer zone. Water level more than 5 mbgl is observed in the villages Manikchori of buffer zone as shown in **Fig 6.2**. In the project area in general the depth to water level is more than 5 m bgl

has been observed in and around the project area and also fall on the water divide area. Water level fluctuation in the study area is varies from 0.7 to 11.05 meters. Lower range of water level fluctuation is also observed along the river course followed by 4 to 6, > 6 & 2 to 4 m.

Overall, from the comparison of mean water levels of the year 2016 to 2019 with respect to the years 2020 in pre-monsoon periods it is found that all the villages in core zone showing rise in the range of 0.97 to 2.58 m, except PZM which is showing decline of water level of -0.48 m, and all the villages in buffer zone are showing rising in range of 0.55 to 5.38 m. While comparing mean post-monsoon average water levels of (2016-2019) with that of 2020, it is found that all the villages in core zone which are showing rise in the range of 0.24 to 4.06 m, except village Solha which is showing decline in water level of -0.5 m, and 80 % villages buffer zone are rise in range of 0.1 to 1.95 m and remaining 20 % villages are showing decline in water level in the range of -0.08 to -0.8 m.

The area showing falling trend more than 20 cm/yr are of considerable significance. But in present context the villages of core zone and buffer zone shows decline less than 10 m over the period of five years, so it is evident that in there is a marginal decline in water level trend in pre-monsoon and post-monsoon period over the period of five years. The decline trend is observed during the year 2020 from the average ground water level of last five years could be attributed to two main reasons such as reduction in rainfall vis-a-vis recharge or increase in ground water draft for irrigation, domestic or other purposes.

From the ground water quality analysis results it has been observed that, almost all the parameters are within desirable & permissible limits of Bureau of Indian Standards for drinking purposes and irrigation purpose.

In the Gadadhi Mahal No.2 limestone mine the mining activity has reached ultimate depth of 215 m RL i.e. 42 m below the ground level at the present point. The average water levels in pre-monsoon is 7.99 mbgl and in post-monsoon it is 6.17 mbgl. At the end of the mine operation, it is proposed to convert part of the mining area into artificial pond to store rain water. The pre-emptive action for water harvesting and recharge to ground water needs to be implemented to strike a balance between proposed mine dewatering thereby preventing any adverse impact on the ground water regime of the area. It has been found that the Gadadhi mine area offers enough scope and options for water harvesting and recharge to ground water.

8.2 SUGGESTIVE MEASURES & IMPLEMENTATION BY COMPANY

To maintain the ground water balance in the area, few measures are suggested below:

i) The ground water regime (both core and buffer zone) should be regularly monitored and the distribution of the observation stations should be maintained denser in the core zone especially. Piezometers can be installed at suitable locations to have a closer observation of ground water level behavior in the core zone. Regarding this JSPCL Company has been installed 1 number piezometer station within mine lease area in year 2020 and fitted with AWLR & Telemetry system to observation of ground water level fluctuation. The reading of piezometer is taking regularly. Reading of Piezometer to observe the ground water level fluctuation will be submitting with monitoring report in CGWB-NCOR - Raipur.

ii) Pumping schedule of ground water withdrawal should be monitored particularly in mine area and precaution should be taken for not exceeding the ground water withdrawal to ground water recharge. Regarding this Digital Water Flow Meter has been provided and log book is maintaining by the Firm.

iii) The selection and proper design of artificial recharge and water harvesting structures should be based on proper understanding of hydrology, hydrogeology of the project area. Geophysical survey is suggested for knowing the areas suitable for recharge, exact depth of recharge wells and aquifer geometry in the area. Regarding this Rain water harvesting technique has been adopted by construction of pond / pit in mining lease area to recharge ground water.

*Suitable additional ground water recharges mechanism need to be adopted in the core zone of the project area. Additional ponds may be considered for enhancing the ground water recharge. Regarding this ponds deepening and construction ponds will be done in nearby villages.

*The long term water level monitoring in and around the area for the pre-monsoon & post monsoon period over the years, reveals that the villages of core zone buffer zone close to core zone which have registered marginal decline which may be accorded priority for taking up of recharge measures. Such initiatives would ease out the long term negative impact of any ground water decline. Water level monitoring for the pre-monsoon & post-monsoon period over the years in core zone & buffer zone is taking regularly and submitting CGWB - NCOR - Raipur.

"Firm should recycle & reuse the effluent water. Agreed, At present No effluent water is being generated.

"The chemical quality of ground water for core and buffer zone indifferent seasons should be monitored properly and regularly to watch change in chemical quality of ground water in and around the area over the period of observation. Regarding this report of pre & post monsoon Ground Water quality is being observed by NABL accredited Lab and analysis report is submitting regularly

ALWAYS
RECHARGE
THE GROUND WATER,
AVAILABLE
FROM
RAIN WATER, THANKS...

M/s JINDAL STEEL & POWER LIMITED
GODADHI MAHAL No.2 LIMESTONE MINE




J.R. Verma

Monitoring Report Prepared by Shri J.R. Verma (F&E & Coordinator)

NOC FOR GROUND WATER

ABSTRACTION

&

MINE SEEPAGE DEWATERING

ACCORDED BY

CGWA : NEW DELHI

Date : 23/07/2018

ANNEXURE - I



भारत सरकार
केन्द्रीय मृदा एवं जल संवर्धन
वर्त संसाधन, नदी विकास
और जल संवर्धन विभाग

Government of India
Central Ground Water Authority
Ministry of Water Resources,
River Development & Ganga Rejuvenation

Regional Director

File No. - 21-00205/CT/MIN/2018 - (19/8)
NOC No. - CGWA/NO/COM/IN/2018/18341

Date: 23 JUL 2018

To
M/s. Jindal Steel and Power Limited,
Plant No. No. 10, Kharsa Road,
Block & District: Navsari, Chhatrapur - 492101

Subject: NOC for ground water withdrawal in M/s. Jindal Steel and Power Limited in
respect of their proposed "Godadali Bore Well No. 2 Limestone Mine" located at Village
Godadali, Block Navsari, District Bilaspur, Chhattisgarh - 183.

Refer to your application for issue of NOC for ground water withdrawal dated 23/02/2018
based on recommendations of Regional Director, Central Ground Water Board, North
Central Chhattisgarh Region, Raipur also his letter dated 23/04/2018 and further
considerations on the subject, the NOC of Central Ground Water Authority for ground water
withdrawal is hereby issued to M/s. Jindal Steel and Power Limited in respect of their
proposed "Godadali Bore Well No. 2 Limestone Mine" located at Village Godadali, Block
Navsari, District Bilaspur, Chhattisgarh. The NOC is valid from 18/07/2018 to 18/07/2020
and is subject to the following conditions:-

1. The firm shall abstract 110 cum/day of ground water from not exceeding 40.150
cum/day through two (2) screened bore wells and one existing (not exceeding
1.44250 cum/day) existing hand-dug well, situated through the (a) proposed
zone has an estimate of mining, inter-related, the water table, the bore well, estimated
should not exceed 806 cum/day (not exceeding 134,898 cum/year). No additional
deepening and ground water abstraction shall be carried out for the
purpose without prior approval of the CGWA. For development/extension in flow of
ground water, the mine pit should be reported to the concerned Regional
Director, Central Ground Water Board, Central Ground Water Board, North Central
Chhattisgarh Region, Raipur.
2. The water and monitoring studies shall be filed with digital water meters by the
firm at its own cost and monitoring of monthly ground water abstraction data of each
well must be recorded in a log book. Compliance to this condition shall be reported
within one month from the date of issue of this letter.
3. M/s. Jindal Steel and Power Limited, in consultation with the Regional Director,
Central Ground Water Board, Central Ground Water Board, North Central
Chhattisgarh Region, Raipur shall implement ground water monitoring measures
related to the total of 40.150 cum/day as proposed for abstracting the ground
water resources of the area and ensure that ground water level does not fall
below ground level. Firm shall report the compliance within six months from the date
of issuance of this letter. Firm shall also undertake periodic maintenance or recharge
structures at its own cost.
4. The photographs of the recharge structures after completion of construction of the
same shall be furnished immediately to the Regional Director, Central Ground Water
Board, Central Ground Water Board, North Central Chhattisgarh Region, Raipur for
verification under intimation to this office.

19-71, Jangpore House, Narsingh Road, New Delhi-110011
Phone : (011) 23333961 Fax : 33322061, 33386283

Website: www.cgwa.gov.in
Water G.O. No. - 1/21/2018/CGWA
CGWA/NO/COM/IN/2018/18341

6. The firm, at its own cost, shall conduct one (1) observation well (determined) with digital water level recorder having telemetry system to submit return along the periphery of the mine for monthly ground water level monitoring. Further, the firm shall ensure ground water level monitoring data (4) times a year (January, May, August and November) in core and buffer zone by establishing sufficient number of key wells in consultation with the Regional Director, Central Ground Water Board, Central Ground Water Board, North Central Circle, Chhattisgarh Region. The firm shall share the use, ID and password of the telemetry system with the Regional Director, Central Ground Water Board, North Central Circle, Chhattisgarh Region, Raipur.
6. The ground water quality shall be monitored once in a year (during the monsoon period).
7. The monitoring data in respect of S. No. 2, 3, 4, 5 shall be submitted to the Regional Director, Central Ground Water Board, Central Ground Water Board, North Central Circle, Chhattisgarh Region, Raipur at regular basis at least once in a year.
8. The firm shall ensure proper recycling and reuse of waste water after adequate treatment.
9. Action taken report in respect of S. No. 1 to 8 shall be submitted to CGWB within one year period.
10. The NOC is liable to be cancelled in case of non-compliance of any of the conditions as mentioned in S. No. 1 to 8.
11. This NOC is subject to prevailing Central State Government regulations or Orders issued related to construction of open cast ground water withdrawal/interference of workings or conservation structure/mechanism or efforts or any such matter as applicable.
12. The firm shall reset well computer online to the website www.cgwb.gov.in within one year from the date of issue of this NOC.
13. This NOC does not absolve the applicant's responsibility of this obligation / requirement to submit other statutory and administrative clearances from other statutory and administrative authorities.
14. The NOC shall not apply until other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities should consider the project on merits and the following conditions independently of the NOC.


Regional Director

Copy to:

1. The Member Secretary, Chhattisgarh Environment Conservation Board, Bhanu, North Block, Sector-15, Naya Raipur, Chhattisgarh with a request to ensure that the conditions mentioned in the NOC are complied by the firm in consultation with the District Collector & Magistrate, District Belgaum, Chhattisgarh.
2. The District Collector & Magistrate, District Belgaum, Chhattisgarh for necessary action.
3. The Regional Director, Central Ground Water Board, North Central Circle, Chhattisgarh Region, Raipur. The firm has returned to your recommendation dated 23/04/2018.
4. Serial File 2018-10.


Regional Director



Plate I

JINDAL STEEL & POWER LIMITED

Godadali Mahal No. 2 Limestone Mine

PHOTOGRAPHS OF GROUND WATER LEVEL MONITORING IN TIDE & RIVER ZONE YEAR 2020



Village : Chikari



Village : Godadali



Village : Jandhara



Village : Pataldi



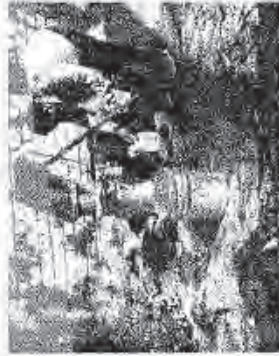
Village : Manikchoti



Village : Kachhi

Plate 13

JINDAL STEEL & POWER LIMITED
 Godadli Mahal No. 2 Limestone Mine
 PHOTOGRAPHS OF SAMPLE COLLECTED IN CORE & BUFFER ZONE
 FOR WATER QUALITY ANALYSIS YEAR 2020



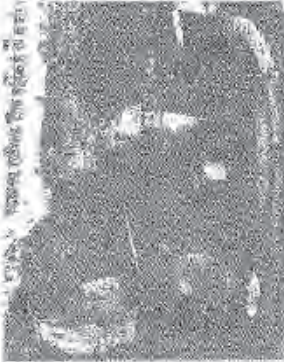
Village : Bafra



Village : Chibari



Village : Jondhara



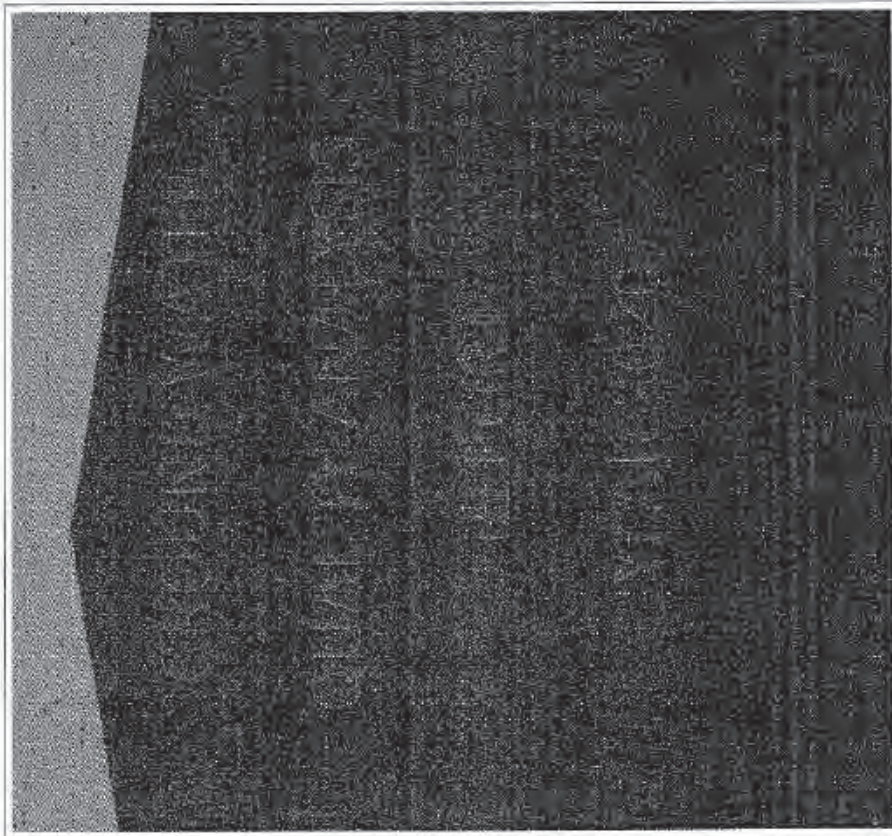
Village : Sakha



Village : Kharaj (G)



Village : Pandri





Envirotech East Pvt. Limited

AN ISO 9001:2015, ISO 14001:2005 & ISO 45001:2018 Certified Company

1. Laboratory Registration No. 348546 C, Govt. of India

2. Approved Recipient No. 113072

3. Approved EIA Consultant for JICA-AMT

100, Kallapur, Madhurabad, Kolkata - 700 297, West Bengal, India

☎ + 91 93 46030312/43 33702443 6128; Fax - + 91 93 2448 5128, 47481; email: info@envirotech.com

CEX No: 17423833040001768

Sl. No.	Parameter	Unit	GW1	GW2	GW3	GW4	GW5	Desirable Limit of IS: 10500, 2012	Permissible Limit of IS: 10500, 2012
25	Total Solids	mg/l	ND	ND	ND	ND	ND	Should not be desirable in any 100 ml sample	Should not be desirable in any 100 ml sample
26	E-Coli	MUN/100 ml	ND	ND	ND	ND	ND	Should not be desirable in any 100 ml sample	Should not be desirable in any 100 ml sample

C.R. - Limit / Unobjectionable, N.D. - Not Detected

For ENVIROTECH EAST PRIVATE LIMITED

[Signature]

(Authorized Signatory)



Envirotech East Pvt. Limited

As ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

* Laboratory Recognized by MCL & C. Government of India.

* Laboratory Recognized by NABL

140, Kailashpur, Minardaha, Kolkata - 700 107, West Bengal, India

Reg. No. 11 31 406501124412173443 8120 1498 - 1 91 33 2443 8120, email: info@envirotech.com

EN 9147:2019/ISO 9001:2015

Report Reference No.:	ISO/ENIR/2020/1489	Date: 18.11.2020
Name & address of Client:	JPR - GODLADHI MAHAL NO. 2 LIMESTONE MINE, Project: Godladhi Mahal No. 2 Limestone Mine, Village: Godladhi, Block: Masturi, District: Bilaspur, Chhattisgarh.	
Sample Reference:	Code	Location
	GW-6	Kasipal Village
	GW-7	Prithvi Village
	GW-8	Manikpuri Village
Sample Reference:	GW-9	Godladhi Village
	GW-10	Prithvi Village
Sampling Date: 18/11/2020		
Sample Collection and suggested by: MCL, Enirotech Technology Consultants, 14/21, Netaji Subhas Road, Bhubaneswar		
Description of Sample: Ground Water (Bore well / Hand pump water)		

Sl. No	Parameter	Unit	GW 6	GW 7	GW 8	GW 9	GW 10	Desirable Limit of IS: 10500 2012	Permissible Limit of IS: 10500 2012
1	Color	Platinum unit	<5	<5	<5	<5	<5	5	15
2	Odour		None	None	None	None	None	None	None
3	Taste		None	None	None	None	None	None	None
4	Hardness	mg/L	<1	<1	<1	<1	<1	1	5
5	pH		7.21	6.97	7.15	6.75	6.97	6.5-8.5	30-40
6	Conductivity	µS/cm	575	455	612	305	603	-	-
7	Total Hardness (mg/L)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	1
8	Total Dissolved Solids	mg/L	294	180	361	144	411	500	2000
9	Dissolved Solids (mg/L)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001
10	Total Hardness (mg/L)	mg/L	212	305	250	220	270	200	500
11	Total Alkalinity (mg/L)	mg/L	240	305	250	264	260	200	500
12	Carbonates (as CaCO ₃)	mg/L	<1	<1	<1	<1	<1	-	-
13	Bicarbonates (as CaCO ₃)	mg/L	240	305	250	264	260	-	-
14	Chloride (as Cl ⁻)	mg/L	5	18	18	18	18	50	1000

Page 4 of 5



Enviroftech East Pvt. Limited

APR 2017 (2017), ISO 14001:2015 & ISO 45001:2018 Certified Company

Laboratory Recognized by MESTSC, Govt. of India

Laboratory Recognized by NABL

Accredited by NABL

100, Kallam, Madhuvada, Noida - 201 407, West Bengal, India

GP - 81 25 494500/2148 3127/2448 8128; E-mail: info@enviroftech.com

GP: 81 25 494500/2148 3127/2448 8128; E-mail: info@enviroftech.com

Sr. No.	Parameters	Unit	GW 6	GW 7	GW 8	GW 9	GW 10	Desirable Limit of IS: 10500: 2012	Permissible Limit of IS: 10500: 2012
15	Sulphate (as SO ₄)	mg/L	25.5	3.5	1.2	29	46	200	500
16	Nitrate (as NO ₃)	mg/L	10.5	2.8	5.1	20	2.3	45	250
17	Fluoride (as F)	mg/L	<0.05	0.06	<0.05	<0.05	<0.05	1	1.5
18	Cadmium (as Cd)	mg/L	0.8	0.4	7.1	19	65	74	300
19	Manganese (as Mn)	mg/L	1.6	1.6	1.1	20	26	30	300
20	Selenium (as Se)	mg/L	1.5	5	30	5	35	-	-
21	Vanadium (as V)	mg/L	0.9	0.5	1.3	0.8	1.1	-	-
22	Ammonia (as Total NH ₄ -N)	mg/L	<0.15	<0.05	<0.05	<0.05	<0.05	0.5	No relaxation
23	Boron (as B)	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	2.4
24	Chloride (as Cl)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	No relaxation
25	Copper (as Cu)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1.5
26	Manganese (as Mn)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.3
27	Zinc (as Zn)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	5	15
28	Calcium (as Ca)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.003	No relaxation
29	Iron (as Fe)	mg/L	0.15	0.22	0.23	0.25	0.19	1	No relaxation
30	Lead (as Pb)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
31	Silver (as Ag)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	No relaxation
32	Aluminium (as Al)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	0.2
33	Nickel (as Ni)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	No relaxation
34	Arsenic (as As)	ppb	<2	<2	<2	<2	<2	10	No relaxation

Envirotech

Envirotech East Pvt. Limited

AN ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 CERTIFIED COMPANY

Lab. No. 17/2020

Approved E&E Consultant No. JCTLS-14/2020

100, Kalligum, Maduravada, Kulkarni - 700 307, Vinnu Beguda, Andhra

Pr. - 91 93 4905011/2-4E 817/2443 8123; Fax. - 91 93 2443 8123; email: info@envirotech.in

CIN: NO-ETG1605290707000000

Sr. No.	Parameter	Unit	GW 6	GW 7	GW 8	GW 9	GW 10	Desirable Limit of IS:10500-2012	Permissible Limit of IS:10500-2012
1	Total Hardness	mg/l	N.D.	N.D.	N.D.	N.D.	N.D.	Should not be detectable in any 100 ml sample	Should not be detectable in any 100 ml sample
2	Ca	mg/l	N.D.	N.D.	N.D.	N.D.	N.D.	Should not be detectable in any 100 ml sample	Should not be detectable in any 100 ml sample

N.D. - Not Detectable; N.D. - Not Detected

For ENVIROTECH EAST PRIVATE LIMITED

[Signature]

Authorized Signatory



Envirotech East Pvt. Limited

AN ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

Labatory Recognized by NABL & CC, Govt. of India

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Report Reference No.	ENV/2020/0002/14	Date: 25.11.2020
Client's Name	ISPL, A POWER LINES PROJECT, Goddadi Mahal No.2 Limestone Mine, Village: Goddadi, Block: Masurdi, District: Bilaspur, Chhattisgarh.	
Sample Reference:		
Code	Location	Sample Code
GW 1	BW No.1 over land surface	N17
GW 2	Goddadi Mines Bl.	N18
GW 3	Bellu Village	N19
GW 4	Goddadi Village	N20
GW 5	Chilum Village	N21
Sampling Date:	25/11/2020	
Sample Depth and Location	10m, Eastern Trench, Chhattisgarh, 10/21, Bilaspur District, India.	
Description of Sample	Ground Water (from well / Hand pump/water)	

Sr. No.	Parameter	Unit	GW 1	GW 2	GW 3	GW 4	GW 5	Regulation Limit of IS (2010) 2012	Remarks
1	Color	SIEMENS	<5	<5	<5	<5	<5	15	
2	Odor		Undetectable	Undetectable	Undetectable	Undetectable	Undetectable	Acceptable	
3	Taste		Undetectable	Undetectable	Undetectable	Undetectable	Undetectable	Acceptable	
4	Turbidity	NTU	<1	<1	<1	<1	<1	1	
5	pH		6.97	7.78	7.08	7.02	7.16	6.5-8.5	No relaxation
6	Conductivity	µS/cm	571	585	583	566	526		
7	Total Dissolved Solids (TDS)	mg/L	<50	<50	<50	<50	<50	500	
8	Total Dissolved Solids (TDS)	mg/L	385	339	391	418	249	500	
9	Hardness (as CaCO ₃)	mg/L	<100	<100	<100	<100	<100	500	
10	Total Hardness (as CaCO ₃)	mg/L	290	225	220	240	190	500	
11	Total Alkalinity (as CaCO ₃)	mg/L	270	212	210	250	180	500	
12	Dissolved Oxygen (DO)	mg/L	<5	<5	<5	<5	<5		
13	Total Hardness (as CaCO ₃)	mg/L	290	212	210	240	190	500	
14	Chloride (as Cl ⁻)	mg/L	62	46	80	62	21	250	1000



Envirotech East Pvt. Limited

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Water Monitoring Services by Vaidh & Co., (Pvt.) Ltd.

Water Sampling Services by Vaidh & Co., (Pvt.) Ltd.

At: Gadadri, Bhatnagar, District: Bhatnagar, State: Punjab, India

Phone: +91 98150 98150, Email: info@envirotech.com

Sr. No.	Parameter	Unit	GW 1	GW 2	GW 3	GW 4	GW 5	Desirable Limit of IS 10500-2012	Permissible limit of IS 10500-2012
15	Sulfate (as SO ₄)	mg/L	32	33	31	31	45	18	400
16	Chloride (as Cl ⁻)	mg/L	14.5	14	13	13	20	9.5	45
17	Fluoride (as F ⁻)	mg/L	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	1
18	Cadmium (as Cd)	mg/L	74	61	65	97	62	75	200
19	Magnesium (as Mg)	mg/L	26	15	13	24	6	30	100
20	Sodium (as Na)	mg/L	15	25	50	15	10	-	-
21	Potassium (as K)	mg/L	0.8	1.2	0.9	1.3	0.5	-	-
22	Ammonia (as N) (NH ₄ ⁺)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	No relaxation
23	Boron (as B)	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	7.4
24	Chromium (as Cr)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	No relaxation
25	Copper (as Cu)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1.5
26	Manganese (as Mn)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.3
27	Zinc (as Zn)	mg/L	0.11	0.08	<0.05	<0.05	0.11	5	15
28	Cadmium (as Cd)	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	0.003	No relaxation
29	Iron (as Fe)	mg/L	0.21	0.19	0.14	0.22	0.24	1	No relaxation
30	Lead (as Pb)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
31	Silver (as Ag)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	No relaxation
32	Aluminium (as Al)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.2
33	Nickel (as Ni)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
34	Arsenic (as As)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation

Page 2 of 6



Envirotech East Pvt. Limited

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

• Laboratory Recognized by: MAF&CC, Govt. of India

• Laboratory Recognized by: WSPCB

• Accredited EIA Consultant by G.O. No. 1073

109, Noida, Noida, Noida, Noida - 700 107, West Bengal, India

☎ +91 22 4663501/2/3/4/5 8037241/2/3/4/5; Fax: +91 22 4445 8138; e-mail: info@envirotech.com

URL: www.envirotech.com

Sr. No.	Parameter	Unit	GW1	GW2	GW3	GW4	GW5	Desirable Limit of IS:10503, 2012	Permissible Limit of IS:10503, 2012
35	Total Chloride	mg/l	N.D.	N.D.	N.D.	N.D.	N.D.	Should not be detectable in any 100 ml sample	Should not be detectable in any 100 ml sample
36	T-Cd	mg/l	N.D.	N.D.	N.D.	N.D.	N.D.	Should not be detectable in any 100 ml sample	Should not be detectable in any 100 ml sample

N.D. - Not Detectable, N.D. - Not Detected

FOR ENVIROTECH EAST PRIVATE LIMITED

[Signature]

(Authorized Signatory)



Envirotech East Pvt. Limited

AN ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

+ Laboratory Accredited by NABL/6078

+ Accredited EIA Consultant by OJES/NABL/13

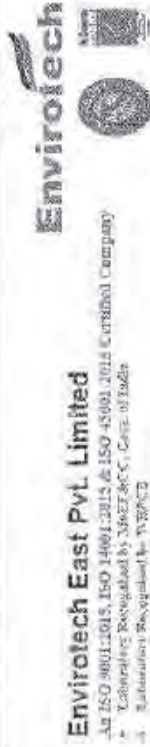
104, Kamajori, Madhupura, Kolkata - 700 197, West Bengal, India

☎ + 91 33 4060611/2/4/3 4127/443 8135 : Fax : + 91 33 3443 8135, email: sales@envirotech.in

125760 : 27104781306773047813

Report Reference No.:	2020/ENV/CG/0002714	Date: 29.11.2020		
Name & address of Client:	JINDAL STEEL & POWER LIMITED, Project : Goudalla Madad No. 2 Limestone Mine, Village : Goudalla, Block : Masur, District : Bilaspur, Chhattisgarh.			
Sample Reference :	Code	Location	Sample Code	Zone
	GW- 6	Manupura Village	N11	Core
	GW- 7	Manupura Village	N4	Core
	GW- 8	Manupura Village	N3	Buffer
	GW- 9	Manupura Village	N5	Buffer
Sampling Date:	GW- 10	Pokhara Village	N6	Buffer
	09/11/2020			
Sample Drawn and Analyzed by:	M.S. Easwaran Techno Consultants, 207/1 Nohar Nagar East, Bhubaneswar			
Description of Sample:	Ground Water (Bore well / Hand pump sources)			

Sr. No.	Parameter	Unit	GW 6	GW 7	GW 8	GW 9	GW 10	Desirable Limit of IS 10500	Permissible Limit of IS 10500
1	Colour	Razen unit	<5	<5	<5	<5	<5	5	5
2	Odour		Unobj.	Unobj.	Unobj.	Unobj.	Unobj.	Acceptable	Acceptable
3	TDS		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	<5	<5	<5	<5	<5	5	5
5	pH		7.34	6.89	6.26	6.81	6.89	6.5-8.5	No requirement
6	Conductivity	µS/cm	452	407	552	944	663		
7	Free Residual Chlorine (mg/L)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	1
8	Total Dissolved Solids	mg/L	270	243	249	370	389	500	500
9	Fluoride (as CaF ₂)	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	No requirement
10	Total Hardness (as CaCO ₃)	mg/L	204	200	209	268	260	200	600
11	Total Alkalinity (as CaCO ₃)	mg/L	210	200	208	222	220	200	600
12	Carbonates (as CaCO ₃)	mg/L	<1	<1	<1	<1	<1	-	-
13	BH Carbonates (as CaCO ₃)	mg/L	270	243	249	370	389		
14	Chloride (as Cl ⁻)	mg/L	9	15	26	14	52	250	1000



Envirotech East Pvt. Limited

AN ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

Lab Address: Bhopal Road, Bhopal, Madhya Pradesh, India

Lab Address: Bhopal Road, Bhopal, Madhya Pradesh, India

Lab Address: Bhopal Road, Bhopal, Madhya Pradesh, India

Lab Address: Bhopal Road, Bhopal, Madhya Pradesh, India

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Sr. No.	Parameter	Unit	GW 6	GW 7	GW 8	GW 9	GW 10	Desirable Limit of IS:10500-2012	Permissible Limit of IS:10500-2012
15	Sulphate (as SO ₄)	mg/L	10	82	9	17	41	200	400
16	Chloride (as Cl ⁻)	mg/L	9.3	1.5	4.9	25	15	25	No Relaxation
17	Fluoride (as F ⁻)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	1	1.5
18	Cadmium (as Cd)	mg/L	55	94	59	27	53	75	300
19	Magnesium (as Mg)	mg/L	16	13	15	15	25	30	100
20	Sodium (as Na)	mg/L	10	5	25	5	50	-	-
21	Potassium (as K)	mg/L	0.3	0.5	1.1	0.1	0.9	-	-
22	Ammonia (as NH ₃ -N)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	No Relaxation
23	Boron (as B)	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	2.4
24	Chromium (as Cr)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	No Relaxation
25	Copper (as Cu)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1.5
26	Manganese (as Mn)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.3
27	Zinc (as Zn)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	5	15
28	Cadmium (as Cd)	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	0.005	No Relaxation
29	Iron (as Fe)	mg/L	0.15	0.15	0.15	0.21	0.17	1	No Relaxation
30	Lead (as Pb)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
31	Silver (as Ag)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	No Relaxation
32	Aluminium (as Al)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.2
33	Nickel (as Ni)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	No Relaxation
34	Arsenic (as As)	ppb	<2	<2	<2	<2	<2	10	No Relaxation

Comprehensive Ground Water Monitoring Report of EPL - Goddard Mahal No. 2 Limestone Mine,
Located at Village: Goddard, Block & Tehsil : Masturi, District : Bolnagar (CG) for the Year 2020



Envirotech East Pvt. Limited

AN ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 CERTIFIED COMPANY

Corporate Registered by MCA 21
Authorized EPL Consultant by O.C.E.S.E.R.F

Head Office: Vignaraha, Kollur - 760 107, West Bengal, India
Phone : 91 93 4063611/2482 8127/2483 8128 ; Fax : + 91 93 2443 8228; email: envis@envirotech.com
EPL 3033 074100039002047803

Sr. No.	Parameter	Unit	GW 1	GW 2	GW 3	GW 4	GW 5	GW 10	Desirable Limit of 2012	Permissible Limit of 2012
35	Total Calcium	mg/l	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Desirable in any 100 ml sample	Permissible in any 100 ml sample
36	E. Coli	MPN/100 ml	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Desirable in any 100 ml sample	Permissible in any 100 ml sample

* N.D. - N/A - Unobjectionable, N/A - Not Detected

For Envirotech East Private Limited

[Signature]

(Authorized Signatory)

Page 81 of 81

F No. Q-130/80423012-CWA

Government of India
Ministry of Environment, Forest and Climate Change
(CC Division)

Agri/231, Jharkhand Panchayat Building,
1st Floor, 1st Floor,
New Delhi - 110013,
Dated: 15th October 2018

To

M/s. Environment West Pvt. Ltd.
Bengal Ambuja Commercial Complex,
G/F-13, 13th Floor, Survey Park,
Kolkata-700073

Subject: Renewal of Recognition of M/s. Environment West Pvt. Ltd., Bengal Ambuja Commercial Complex, G/F-13, 13th Floor, Survey Park, Kolkata-700073, as Environmental Laboratory under the Environment (Protection) Act, 1986 - regarding

Sir,

I am directed to refer to your application dated 08.04.2017 for renewal of recognition of your laboratory under Environment (Protection) Act, 1986. Based on the recommendations of the Expert Committee for Recognition of Environmental Laboratories in its 51st meeting held on 17.09.2018 and your acceptance of the revised terms and conditions at Annexure-B & C of the Guidelines for recognition of Environmental Laboratories, this Ministry approves the renewal of recognition of M/s. Environment West Pvt. Ltd., Bengal Ambuja Commercial Complex, G/F-13, 13th Floor, Survey Park, Kolkata-700073 for the year 2018-19 as valid for the purpose of the Government of India.

2. As sought in your aforementioned application, M/s. Environment West Pvt. Ltd. may undertake the following tests:

- (i) **Physical Tests:** Conductivity, Colour, pH, Fixed & Volatile Solids, Total Solids, Total Dissolved Solids, Total suspended solids, Turbidity, Temperature, Viscosity & discharge measurement of industrial effluent streams, Odour, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Organic Carbon (TOC), Total Dissolved Solids (TDS), Chloride residual, Dissolved oxygen, Fluoride, Total hardness, Total Kjeldahl nitrogen (TKN), Nitrate nitrogen, Nitrite nitrogen, Phosphate, Sulphate, Carbon dioxide, Sulphur, Silver, Cyanide and Sulfide.
- (ii) **Inorganic (Trace metals):** Boron, Cadmium, Cobalt, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Potassium, Sodium, Sodium absorbance index, Zinc, Arsenic, Aluminum, Barium, Bismuth, Molybdenum, Selenium, Silver, Tin, Vanadium, Vanadium, Vanadium.
- (iii) **Organics (General) and Trace Organics:** Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Oil & grease, Phenol, Petrol, Petroleum, Organic nitrogen, Phosphorus, surfactants, Poly-chlorinated biphenyl (PCBs), Lead, Polynuclear aromatic hydrocarbons (PAHs) etc.
- (iv) **Microbiological Tests:** Total Coliform, Faecal Coliform, Faecal streptococci, E. coli, Total Plate Count, Enterobacteriaceae and Coliforme.
- (v) **Toxicological Tests:** Bioassay method for evaluation of toxicity in long life, Measurement of toxicity using zebra fish (Danio rerio toxicity test).
- (vi) **Biological Tests:** Benthic Organism Identification and count, Phytoplankton Identification count, Chlorophyll.
- (vii) **Hazardous Waste:** Preparation of Leachate (TCLP extract), Toxicity and Measurement of heavy metals/particles in the waste leachate.

- (12) Soil Storage, Nutrient and Solid Waste: Boron, Cadmium Exchange Capacity (CEC), Electrical Conductivity, Nitrogen available, Organic carbon, water potential, acidity, pH, Phosphorus (available), Phosphorus (total), Potassium (total), Sulfur, Salt in soil extract, Sodium, Soluble molybdenum, TDS, Calcium-salts, Calcium chloride, Chloride, Heavy metal, Magnesium, Nitrate-Nitrite, P, Pb, Petroleum, Polysaccharides, Silica, Sulphate, Sulphate and water holding capacity, Zinc, Zn, Air & fugitive emissions: Ammonia, ammonia dioxide (NH_3), Sulphur dioxide (SO_2), Total suspended particulate matter, Suspended particulate matter (PM₁₀). A continuous service monitoring station, Kumbhari is assigned for particulate matter (PM₁₀) at Anandnagar, Gurgaon.
- (13) Toxic Substances (TSC's): Polyethylene aromatic hydrocarbon (PAH) Benzo (a) Pyrene, Chrysene, Benzo (k) Fluoranthene, Benzo (e) Anthracene, I-methyl, Methylbenz, Oxalene, Benzene, Tri-n-octyl Carbazole, Cresols and related.
- (14) Fresh Ground Surface Water/Lake: Hydrocarbons, nitrate, sulphate, nitrite, Volatile & fixed, Colours, Dissolved Oxygen, Temperature, Oxygen, Conductivity of oxygen, Hardness, Ammoniacal Phosphate (Ammoniacal Phosphate), Sulphate-Sulphate acid, Total Sulphate content and Hydrogen Sulphide.
- (15) Noise Levels: Noise level measurement (20 to 140 dbA), Ambient Noise & Source-specific Noise Measurement, Ambient temperatures, Wind direction, Wind speed, Relative Humidity and Rainfall.
- (16) The laboratory shall categorically participate in the Analytical Quality Control (AQCC) exercise conducted by the Central Pollution Control Board (CPCB) at least once a year to ascertain the capability of the laboratory and analyses carried out and shall submit quarterly progress reports to this Ministry.
- (17) Periodic surveillance of the recognized environmental laboratory will be undertaken by the Laboratory/CPCB to assess its proper functioning, systematic operation and reliability of data generated at the laboratory.
- (18) It is also mandatory for the laboratory to have requisite accreditation of one or more ISO 9001 and/or ISO 14001 and to conform to the international rules. Enforcement in this regard is subject to such conditions as may be notified from time to time.
- (19) The laboratory should compulsorily follow the accepted Tamil Nadu Government standards compliance of any of the tests not specified, the laboratory may be black-listed for a minimum period of two years and until minimal improvements are applicable only, be allowed for accounting violations. In case of the Government or an authorized agency.

Young, Robert E.

Phucan
(Dr. Phucan, Hanoi, Viet Nam)
Scientist Dr.
Tel: +84 91 374 40 000
Email: phucan@phucan.vn

- [illegible]

Cheney
12/1/2000



June 08, 2021



To,

The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District - Raipur - 492002, Chhattisgarh,

Sub : Submission of Pre-monsoon water analysis report.

Ref : Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Pre-monsoon water analysis report in respect of Godadith Mahal
No. 2 Limestone Mine (Mine Code-38CGH02003), Block - Masturi, District - Bilaspur (CG)
over an area of 120.313 Ha. granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please

Thanking You.

Yours faithfully,
for M/s Jindal Steel & Power Limited.

(N. K. Mishra)
Mines Manager
Godadith Mahal No. 2 Limestone Mines.

Encl : a/a

Cc : The Regional Officer,
Regional Office, C.E.C.B., Bilaspur,
Vyapar Vihar, Naar Deendayaj Upadhyay garden, Bilaspur (CG)

Jindal Steel & Power Limited
Works Office Jindal Steel & Power Limited, 98 & 10, Kshetra Road, Raigarh 492001 (CG)
T +91 7752 224301 to 110 to 114 | F +91 7761 233001 to 11 | M www.jindalsteel.com/corp
Regional Office - C. E. C. B., Bilaspur, Naar Deendayaj Upadhyay garden, Bilaspur (CG)



HDD-272, Phase II - Near J.P. Chowk
Ring Road No-2, Kairi Nagar, Rajpur (C.G.) - 492099
Ph. 0771-4027777 | Email: ultimateenv@gmail.com

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Name & Address of the Customer		Report ID	UES/TS/21-22/0480
TO, JINDAL STEEL & POWER LIMITED GODADIH Limestone Mines, BILASPUR (C.G.)		Lab Ref No.	UES/21-23/W/0580
Customer Ref. No. & Date		Date of Sampling	29/05/2021
Sample Type		Date of Receipt	30/05/2021
Packaging of Sample		Date of Analysis	04/06/2021
Sample Collected By		Start Date	23/05/2021
Sample Condition at Receipt		End Date	04/06/2021
SAMPLE DETAILS			
Customer Sampling / Sampling Location		STATION (NOMENCLATURE SITE OFFICE)	
Container Ref. No. & Date		VEHICLE COMMUNICATION WITH HIR. P.H. Level	
Sample Type		Drinking Water	
Packaging of Sample		Plastic Bottle (5 lit.)	
Sample Collected By		Customer	
Sample Condition at Receipt		OK	

REPORT NO:480

TEST REPORT						
SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012		RESULT
				Permissible Limit in Absence of Alternate Source	Permissible Limit in presence of Alternate Source	
A. Organoleptic & Physical Parameters						
1	Colour	None	IS:3025: (Part-4)	5	15	OK
2	Odour	-	IS:3025: (Part-5)	Acceptable	Acceptable	Acceptable
3	pH Value at 25.2°C	-	IS:3025: (Part-11)	6.5-8.5	Relaxation	7.26
4	Taste	-	IS:3025: (Part-8)	Acceptable	Acceptable	Acceptable
5	Turbidity	NTU	IS:3025: (Part-10)	1	5	0.89
6	Total Dissolved Solids	mg/L	IS:3025: (Part-16)	500	2000	272
B. General Parameters Concerning Substances Undesirable in excessive amounts						
1	Aluminium (as Al)	mg/L	IS:3025: (Part-59)	0.02	0.2	N.D.
2	Arsenic (as total arsenic-As)	mg/L	IS:3025: (Part-34)	0.5	Relaxation	N.D.
3	Ascorbic Derivative (as Vb5)	mg/L	Ames X OF IS:13128	0.2	LO	N.D.
4	Barium (as Ba)	mg/L	Ames X OF IS:13128	0.7	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-60)	15	200	226
7	Chloramines (as Cl ₂)	mg/L	IS:3025: (Part-26)	2.0	Relaxation	N.D.
8	Chloride (as Cl)	mg/L	IS:3025: (Part-32)	250	1000	18.9
9	Copper (as Cu)	mg/L	IS:3025: (Part-60)	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	Relaxation	0.11
13	Magnesium (as Mg)	mg/L	IS:3025: (Part-56)	30	100	15.0



HDD-772, Phase II, Near JP Chowk,
Ring Road No. 2, Khar-Nagar, Raipur (C.G.) - 492009
Ph: 0771-4077777 | Email: ultimateenv@gmail.com

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REPORT NO.0490

TEST REPORT						
Sr. No.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10503:2012 Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	RESULT
14	Manganese (as Mn)	mg/L	IS 3025 (part-39)	0.1	0.3	N.D.
15	Mineral OIL	mg/L	Clause 6 of IS 3025 (Part-39) Trivalent partition method	0.5	No Relaxation	N.D.
16	Nitrate (as NO ₃)	mg/L	IS 3025 (part-31)	05	No Relaxation	1.2
17	Phenolic Compound (as C6H5OH)	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 II of IS 13426	0.1	No Relaxation	N.D.
20	Sulphate (as SO ₄)	mg/L	IS 3025 (part-24)	200	400	18.4
21	Sulphide (as H ₂ S)	mg/L	IS 3025 (part-22)	0.05	No Relaxation	N.D.
22	Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (part-23)	200	600	128.0
23	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (part-21)	200	600	159.0
24	Zinc (as Zn)	mg/L	IS 3025 (part-49)	5	15	0.12
C. Parameters concerning toxic substances:-						
1	Cadmium (as Cd)	mg/L	IS 3025 (part-42)	0.005	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-21)	0.07	No Relaxation	N.D.
6	Nickel (as Ni)	mg/L	IS 3025 (part-34)	0.02	No Relaxation	N.D.
7	Polychlorinated biphenyls	mg/L	APHA 5175	0.0005	No Relaxation	N.D.
8	Polynuclear aromatic hydrocarbons (as PAH)	mg/L	APHA 5440	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.
D. Trihaloethane:						
25	Bromoform	mg/L	APHA 5232	0.1	No Relaxation	N.D.
26	Dibromo-chloromethane	mg/L	APHA 5232	0.1	No Relaxation	N.D.
27	Bromodichloromethane	mg/L	APHA 5232	0.06	No Relaxation	N.D.



H03-772 Phases II, New Techno
 Ring Road No. 1, Kari Nagar, Rajpur (C.G.)-492035
 Ph: 0771-4027771 Email: ultimateenv@gmail.com

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REPORT NO.0100

TEST REPORT					
SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012	
				Requirement (Acceptable Limit)	Formulate limit in the Absence of Source Reclamation
07	Chloroform	mg/L	IS 2286 0.012	0.2	N.D.
D. Pesticides:-					
1	Alpha BHC	µg/l	USEPA 508	0.01	N.D.
2	Beta BHC	µg/l	USEPA 508	0.04	N.D.
3	Gamma BHC	µg/l	USEPA 508	0.04	N.D.
4	Aldrin	µg/l	USEPA 508 2, 501	20	N.D.
5	Dieldrin	µg/l	USEPA 508	0.03	N.D.
6	Atrazine	µg/l	USEPA 525 1, 9, 11 A	2	N.D.
7	Endosulfan	µg/l	USEPA 525 2, 8, 11 A	125	N.D.
8	Chlorpyrifos	µg/l	USEPA 525 2, 8, 11 A	30	N.D.
9	DDT (o,p and p,p'- and DDD)	µg/l	USEPA 508	1	N.D.
10	Gamma BHC	µg/l	USEPA 508	2	N.D.
11	Dichlorophenoxycetic Acid	µg/l	USEPA 515 2	30	N.D.
12	Endosulfan (alpha, beta and sulphatol)	µg/l	USEPA 508	0.4	N.D.
13	Endosulfan	µg/l	USEPA 1651 2	3	N.D.
14	Geoproturon	µg/l	USEPA 532	9	N.D.
15	Malathion	µg/l	USEPA 814 A	140	N.D.
16	Methyl Parathion	µg/l	USEPA 814 A	0.3	N.D.
17	Monocrotophos	µg/l	USEPA 814 A	1	N.D.
18	Fluoride	µg/l	USEPA 814 A	2	N.D.
E. Microbial Parameters					
1	Total Coliform	MPN/100ml	IS 15789:1986 18A-20	-	Absent
2	E. Coli	MPN/100ml	IS 15789:1986 18A-20	-	Absent

Note: µg/l = milligram per liter, N.D. Not Detectable.

Terms & Conditions

- The use of this report for publication, circulation or as legal evidence is forbidden.
- Test sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- For it to be in compliance to the party has to follow the standard.

Prepared by: <u>03/06/2021</u>	Ultimate Environmental Solutions
Prepared by: <u>03/06/2021</u>	Ultimate Environmental Solutions

End of the test report



HDD-272, Phase II, Near Jh Chok
Ring Road No-2, Kabi Nagar, Raipur (C.G.) - 492099
Ph: 0771-402777 | Email: ultimatevp@gmail.com

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

TO,

**JINDAL STEEL & POWER LIMITED,
GODADRI Limestone MINES,
BILASPUR (C.G.)**

Report No.	UES/TR/21-22/0481
Lab Ref No.	UES/21-22/W/0581
Date of Sampling	29/05/2021
Date of Receipt	30/05/2021
Date of Report	04/06/2021
Date of Analysis	Start:29/05/2021 End:04/06/2021

SAMPLE DETAILS

Customer Sample ID / Sampling Location	GODADRI VILLAGE (BILASPUR)
Customer Ref. No. & Date	VERBAL COMMUNICATION WITH MR. D.P. PATEL
Sample Type	Drinking Water
Packing of Sample	Plastic Bottle (500 ml)
Sample Collected By	Customer
Sample Condition & Receipt	OK

REPORT NO:J-81

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 Alternative Source	
A. Organoleptic & Physical Parameters						
1	Colour	pcu/l	IS:3025: (Part-4)	5	15	CL
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	7.03
4	Taste	-	IS:3025: (Part-4)	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	IS:3025: (Part-19)	1	5	0.82
6	Total Dissolved Solids	mg/L	IS:3025: (Part-16)	500	2000	414
B. General Parameters Concerning Substances undesirable in excessive amounts						
1	Aluminium (as Al)	mg/L	IS:3025: (Part-35)	0.05	0.2	N.D.
2	Ammonia (as total ammonia-N)	mg/l	IS:3025: (Part-34)	0.5	No Relaxation	N.D.
3	Antonie Debarment (as MBAS)	mg/L	Antonie R of IS:13426	0.2	1.0	N.D.
4	Barium (as Ba)	mg/L	Antonie R of IS:13426	0.7	No Relaxation	N.D.
5	Boron (as B)	mg/L	IS:3025: (Part-37)	0.8	1.0	N.D.
6	Calcium (as Ca)	mg/L	IS:3025: (Part-40)	75	200	36.4
7	Chloramines (as Cl ₂)	mg/L	IS:3025: (Part-26)	4.0	No Relaxation	N.D.
8	Chloride (as Cl)	mg/L	IS:3025: (Part-32)	250	1000	28.9
9	Copper (as Cu)	mg/L	IS:3025: (Part-40)	0.05	1.5	0.14
10	Fluoride (as F)	mg/L	IS:3025: (Part-25)	1	1.5	0.08
11	Free Residual Chlorine	mg/L	IS:3025: (Part-24)	0.2	1	N.D.
12	Iron (as Fe)	mg/L	IS:3025: (Part-33)	0.3	No Relaxation	0.16
13	Magnesium (as Mg)	mg/L	IS:3025: (Part-36)	30	100	26.9



HDD-272 Phase II, Near J.P. Chowk
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REPORT NO. 0491

TEST REPORT					
SIR. NO.	PANAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012 Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source
14	Manganese (as Mn)	mg/L	IS 3025 (part-5): Clause 5 of IS 3025 (Part-35) Initiated partition method	0.3	0.3
15	Mineral OIL	mg/L		0.5	No Relaxation
16	Nitrate (as NO ₃)	mg/L	IS 3025 (part-34)	45	No Relaxation
17	Phenolic Compound (as C ₆ H ₅ OH)	mg/L	IS 3025 (part-43)	0.001	0.003
18	Selenium (as Se)	mg/L	IS 3025 (part-56)	0.01	No Relaxation
19	Silver (as Ag)	mg/L	Annex D of IS 11428	0.1	No Relaxation
20	Sulphate (as SO ₄)	mg/L	IS 3025 (part-24)	200	400
21	Sulphide (as H ₂ S)	mg/L	IS 3025 (part-39)	0.05	No Relaxation
22	Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (part-28)	200	500
23	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (part-21)	200	500
24	Iron (as Fe)	mg/L	IS 3025 (part-49)	5	15
C. Parameters concerning toxic substances:-					
1	Cadmium (as Cd)	mg/L	IS 3025 (part-41)	0.003	No Relaxation
2	Cyanide (as CN)	mg/L	IS 3025 (part-27)	0.05	No Relaxation
3	Lead (as Pb)	mg/L	IS 3025 (part-42)	0.01	No Relaxation
4	Mercury (as Hg)	mg/L	IS 3025 (part-48)	0.001	No Relaxation
5	Molybdenum (as Mo)	mg/L	IS 3025 (part-2)	0.07	No Relaxation
6	Nickel (as Ni)	mg/L	IS 3025 (part-54)	0.03	No Relaxation
7	Polybrominated Biphenyls Polynuclear aromatic hydrocarbons (as PAH)	mg/L	ASTM D1535	0.005	No Relaxation
8	Polychlorinated Biphenyls Polynuclear aromatic hydrocarbons (as PAH)	mg/L	ASTM D1535	0.005	No Relaxation
9	Antimony (as Sb)	mg/L	IS 3025 (part-37)	0.01	0.05
10	Chromium (as Cr)	mg/L	IS 3025 (part-52)	0.05	No Relaxation
D. Trihalomethanes:-					
11	Trihalomethanes	mg/L	ASTM D1535	0.1	No Relaxation
12	Bromofore	mg/L	ASTM D1535	0.1	No Relaxation
13	Dibromochloromethane	mg/L	ASTM D1535	0.1	No Relaxation
14	Bromodichloromethane	mg/L	ASTM D1535	0.06	No Relaxation



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REPORT NO.08/04

TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012		RESULT
				Requirement (Acceptance Limit)	Permissible Limit in the Absence of Standard Reference	
10	Chloroform	mg/l	IS: 6222	0.2	To be determined	N.D.
D. Pesticides:-						
1	Alpha HCH	mg/l	IS: 6222	0.01	0.01	N.D.
2	Beta HCH	mg/l	IS: 6222	0.04	0.04	N.D.
3	Gamma HCH	mg/l	IS: 6222	0.04	0.04	N.D.
4	Alachlor	mg/l	IS: 6222	20	20	N.D.
5	Alachlor / Endosulfan	mg/l	IS: 6222	0.05	0.05	N.D.
6	Azinphos	mg/l	IS: 6222	2	2	N.D.
7	Endosulfan	mg/l	IS: 6222	125	125	N.D.
8	Chlorpyrifos	mg/l	IS: 6222	30	30	N.D.
9	DDT (o,p and p,p' and DDE and DDD)	mg/l	IS: 6222	1	1	N.D.
10	Gamma HCH	mg/l	IS: 6222	2	2	N.D.
11	Dichlorodiphenylacetic Acid	mg/l	IS: 6222	30	30	N.D.
12	Endosulfan (alpha, beta and sulfate)	mg/l	IS: 6222	0.8	0.8	N.D.
13	Ethion	mg/l	IS: 6222	8	8	N.D.
14	Isoproturon	mg/l	IS: 6222	9	9	N.D.
15	Malathion	mg/l	IS: 6222	400	400	N.D.
16	Methyl Parathion	mg/l	IS: 6222	0.3	0.3	N.D.
17	Monocrotophos	mg/l	IS: 6222	1	1	N.D.
18	Thiophos	mg/l	IS: 6222	2	2	N.D.
E. Microbial Parameters						
1	Total Coliform	MPN/100ml	IS: 16221:2013:30	-	-	Absent
2	E. Coli	MPN/100ml	IS: 16221:2013:30	-	-	Absent

Note: and this information per Test No. Not Detected.

Tests & observations

- > The use of this report for publication, submission or as legal document is prohibited.
- > Test results will be valid only for 15 days after issue of test report unless otherwise agreed with customer.
- > This is for information on the part of the client only.

Prepared by 02/06/2024	Ultimate Analytical Solutions ANALYTICAL SOLUTIONS AUTHORIZED SIGNATORY
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End of test report



100-272, Phase II - Near JP Chowk
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TO:		JINDAL STEEL & POWER LIMITED	
GODADH LIMESTONE MINES,		BILASPUR (C.G.)	
Customer Name / Sampling Location		BILASPUR CHOWK (GODADH LIMESTONE MINES)	
Customer Ref No. & Date		VERBAL COMMUNICATION WITH Mr. D.P. Tiwari	
Sample Type		Drinking Water	
Packaging of Sample		Plastic Bottle (5 Litre)	
Sample Collected By		Customer	
Sample Description (Part 2)		CL	
Report No.		UES/18/23-22/0082	
Lab Ref No.		UES/23-22/W/0582	
Date of Sampling		29/05/2021	
Date of Report		30/05/2021	
Date of Review		05/06/2021	
Date of Validity		Start: 29/05/2021 End: 04/06/2021	
SAMPLE DETAILS			
Customer Sample No. / Sampling Location			
Customer Ref No. & Date			
Sample Type			
Packaging of Sample			
Sample Collected By			
Sample Description (Part 2)			

REPORT NO. 0482

TEST REPORT

Sr. No.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012 Requirement (Acceptable Limit)	Particulate Limit in the Absence of Alternate Source	RESULT
A. Organoleptic & Physical Parameters						
1	Colour	g/l	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-21)	6.5-8.5	No Relaxation	7.24
4	Taste	-	IS 3025: (Part-8)	Agreeable	Agreeable	Agreeable
5	Turbidity	NTU	IS 3025: (Part-10)	1	5	0.48
6	Total Dissolved Solids	mg/l	IS 3025: (Part-16)	500	2000	356
B. General Parameters Concerning Substances Undesirable in Excessive Amounts						
1	Aluminium (as Al)	mg/l	IS 3025: (Part-35)	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	Antichloro Disinfectant (as N2O5)	mg/l	IS 13428	0.2	1.0	N.D.
4	Barium (as Ba)	mg/l	IS 13428	0.7	No Relaxation	N.D.
5	Boron (as B)	mg/l	IS 3025: (Part-32)	0.5	1.0	N.D.
6	Calcium (as Ca)	mg/l	IS 3025: (Part-40)	75	200	22.8
7	Chloramines (as Cl ₂)	mg/l	IS 3025: (Part-26)	4.0	No Relaxation	N.D.
8	Chloride (as Cl)	mg/l	IS 3025: (Part-32)	250	1000	22.9
9	Copper (as Cu)	mg/l	IS 3025: (Part-43)	0.05	1.5	0.08
10	Fluoride (as F)	mg/l	IS 3025: (Part-60)	1	1.5	0.12
11	Free Residual Chlorine	mg/l	IS 3025: (Part-46)	0.2	1	N.D.
12	Iron (as Fe)	mg/l	IS 3025: (Part-53)	0.3	No Relaxation	0.12
13	Magnesium (as Mg)	mg/l	IS 3025: (Part-46)	30	100	22.4

AN ISO 9001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY



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REPORT NO. 0-093

TEST REPORT

SRL NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 19500:2012		RESULT
				Requirement (Acceptable Limit)	Permissible Limit in the Absence of Alternate Source	
14	Manganese (as Mn)	mg/L	IS 3025 (part-55)	0.1	0.1	N.D.
15	Mineral Oil	mg/L	Clause 6 of IS 3025 (part-49) Infrared scattering method	0.5	No Relaxation	N.D.
16	Nitrate (as NO ₃)	mg/L	IS 3025 (part-34)	45	No Relaxation	4.2
17	Phenolic Compound (as C ₆ H ₅ 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 F of IS 3025	0.1	No Relaxation	N.D.
20	Sulphate (as SO ₄)	mg/L	IS 3025 (part-24)	200	400	18.4
21	Sulphide (as H ₂ S)	mg/L	IS 3025 (part-25)	0.05	No Relaxation	N.D.
22	Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (part-23)	200	500	148.0
23	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (part-21)	200	500	176.0
24	Zinc (as Zn)	mg/L	IS 3025 (part-49)	5	15	0.24
C. Parameters concerning toxic substances:-						
1	Cadmium (as Cd)	mg/L	IS 3025 (part-01)	0.003	No Relaxation	N.D.
2	Cyanide (as CN)	mg/L	IS 3025 (part-47)	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	Polybromum (as Br)	mg/L	IS 3025 (part-4)	0.07	No Relaxation	N.D.
6	Nickel (as Ni)	mg/L	IS 3025 (part-31)	0.02	No Relaxation	N.D.
7	Polychlorinated Biphenyls	mg/L	IS 3025 (part-31)	0.0005	No Relaxation	N.D.
8	Polynuclear aromatic Hydrocarbons (as PAH)	mg/L	IS 3025 (part-31)	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-32)	0.05	No Relaxation	N.D.
Tributylmethanes:						
a)	Bromoform	mg/L	IS 3025 (part-32)	0.1	No Relaxation	N.D.
b)	Dibromochloromethane	mg/L	IS 3025 (part-32)	0.1	No Relaxation	N.D.
c)	Bromodichloromethane	mg/L	IS 3025 (part-32)	0.05	No Relaxation	N.D.

REPORT NO. 0402

TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10506:2012		RESULT
				Requirement (Acceptable Limit)	Findings (Limit in the Absence of a Source Evaluation)	
H)	Chloroform	mg/l	IS 6842	0.1	No Relaxation	N.D.
D. Pesticides:-						
1	Alpha BHC	mg/l	IS 6842	0.01		N.D.
2	Beta BHC	mg/l	IS 6842	0.04		N.D.
3	Delta BHC	mg/l	IS 6842	0.04		N.D.
4	Alachlor	mg/l	IS 6842	10		N.D.
5	Aldrin / Dieldrin	mg/l	IS 6842	0.05		N.D.
6	Azinphos	mg/l	IS 6842	2		N.D.
7	Endosulfan	mg/l	IS 6842	125		N.D.
8	Chlorpyrifos	mg/l	IS 6842	30		N.D.
9	DOP (o,p and p,p' isomers of DOP, DDE and DDD)	mg/l	IS 6842	1		N.D.
10	Gamma BHC	mg/l	IS 6842	2		N.D.
11	2,4-Dichlorophenoxyacetic acid	mg/l	IS 6842	30		N.D.
12	Hexachlorocyclopentadiene (alpha, beta and gamma)	mg/l	IS 6842	0.5		N.D.
13	Endrin	mg/l	IS 6842	3		N.D.
14	Permethrin	mg/l	IS 6842	9		N.D.
15	Malathion	mg/l	IS 6842	190		N.D.
16	Methyl Parathion	mg/l	IS 6842	0.3		N.D.
17	Monocrotophos	mg/l	IS 6842	1		N.D.
18	Phorate	mg/l	IS 6842	2		N.D.
E. Microbial Parameters						
1	Total Coliform	MPN/100ml	IS 6211	100		Present
2	E. Coli	MPN/100ml	IS 6211	10		Absent

Note: mg/l is equivalent to µg/ml. N.D. is Not Detected.

Terms of Reference:

- The use of the report for publication, advertising or as legal document is prohibited.
- For sample off the record for 12 days after issue of test report (written) otherwise client will be liable.
- This is for information as the sample is not for use as a legal document.

Prepared By: <i>[Signature]</i> Date: 03/10/2021	Q'ultimate ENVIRONMENTAL SOLUTIONS INDIAN CERTIFICATION MARK ISO 9001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY	Authorized Signatory: <i>[Signature]</i> Date: 03/10/2021
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End of the test report

Report No. 5022-2015-0125-0126-0127

TO:
JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.G.)

Report No. UES/IR/21-22/0483
Lab Ref No. UES/21-22/W/0583
Date of Sampling: 29/05/2021
Date of Report: 30/05/2021
Date of Start: 04/06/2021
Date of Sample: 29/05/2021
End of Sample: 05/06/2021

SAMPLE DETAILS

Customer: Sample Id / Sampling Location: DRUMD OFFICE (CORNWELL)
Customer Ref No. & Date: VERBAL COMMUNICATION WITH M. D. P. Patel
Sample Type: Drinking Water
Packaging of Sample: Plastic Bottle (5 lit.)
Sample Collected by: Gitesh Mehta (ISO 9001)
Sample Condition at Receipt: Clean

REPORT NO. 5022-2015-0125-0126-0127

TEST REPORT

Sr. No.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012	RESULT
A. Organoleptic & Physical Parameters					
1	Colour	gallon	IS: 3025 (part-1)	5	15
2	Odour	-	IS: 3025 (part-1)	Agreeable	Agreeable
3	pH Value at 25.0°C	-	IS: 3025 (part-1)	6.5-8.5	7.28
4	Taste	-	IS: 3025 (part-1)	Agreeable	Agreeable
5	Turbidity	DTU	IS: 3025 (part-1)	1	0.54
6	Total Dissolved Solids	mg/L	IS: 3025 (part-1)	500	2100
B. General Parameters Concerning Substances undesirable in excessive amounts					
1	Aluminum (as Al)	mg/L	IS: 3025 (part-1)	0.05	0.1
2	Ammonia (as total ammonia-N)	mg/L	IS: 3025 (part-1)	0.5	Relaxation
3	Antonie Detergent (as Hard)	mg/L	IS: 1343	0.2	1.8
4	Barium (as Ba)	mg/L	IS: 1343	0.7	30
5	Borax (as B)	mg/L	IS: 3025 (part-1)	0.5	Relaxation
6	Calcium (as Ca)	mg/L	IS: 3025 (part-1)	75	200
7	Chlorides (as Cl)	mg/L	IS: 3025 (part-1)	1.0	446
8	Chloride (as Cl)	mg/L	IS: 3025 (part-1)	1.0	Relaxation
9	Copper (as Cu)	mg/L	IS: 3025 (part-1)	1.0	1.00
10	Fluoride (as F)	mg/L	IS: 3025 (part-1)	0.05	1.5
11	Free Residual Chlorine	mg/L	IS: 3025 (part-1)	0.2	1.5
12	Iron (as Fe)	mg/L	IS: 3025 (part-1)	0.3	Relaxation
13	Magnesium (as Mg)	mg/L	IS: 3025 (part-1)	30	100



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REPORT NO./481

TEST REPORT					
Sr. No.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012 Requirement (Acceptable Limit)	Permissible Limit in the Absence of Ambient Source
14	Manganese (as Mn)	mg/l	IS 3025 (part-59)	0.1	0.3
15	Mineral Oil	mg/l	Clause 6 of IS 3025 (Part-39) Infrared Distillation method	0.5	No Relaxation
16	Nitrate (as NO ₃)	mg/L	IS 3025 (part-34)	0.5	No Relaxation
17	Phenolic Compound (as C ₆ H ₅ OH)	mg/l	IS 3025 (part-45)	0.001	0.002
18	Selenium (as Se)	mg/l	IS 3025 (part-56)	0.01	No Relaxation
19	Silver (as Ag)	mg/l	Annex A of IS 13428	0.1	No Relaxation
20	Sulphate (as SO ₄)	mg/l	IS 3025 (Part-24)	200	500
21	Sulphide (as S ₂)	mg/l	IS 3025 (Part-23)	0.05	No Relaxation
22	Total Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part-23)	100	500
23	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (Part-21)	200	500
24	Zinc (as Zn)	mg/l	IS 3025 (part-45)	5	15
C. Parameters concerning toxic substances:-					
1	Cadmium (as Cd)	mg/l	IS 3025 (part-11)	0.005	No Relaxation
2	Cyanide (as CN)	mg/l	IS 3025 (part-27)	0.05	No Relaxation
3	Lead (as Pb)	mg/l	IS 3025 (part-41)	0.01	No Relaxation
4	Mercury (as Hg)	mg/l	IS 3025 (part-49)	0.001	No Relaxation
5	Molybdenum (as Mo)	mg/l	IS 3025 (part-20)	5.07	No Relaxation
6	Nickel (as Ni)	mg/l	IS 3025 (part-54)	0.02	No Relaxation
7	Polychlorinated Biphenyls	mg/l	APHR 5175	0.0005	No Relaxation
8	Polynuclear aromatic hydrocarbons (as B[a]P)	mg/l	APHR 6440	0.0001	No Relaxation
9	Antimony (as Sb)	mg/l	IS 3025 (part-37)	0.01	0.05
20	Chromium (as Cr)	mg/l	IS 3025 (part-52)	0.05	No Relaxation
D. Trihalomethanes:					
21	Acetone	mg/l	APHR 6232	0.1	No Relaxation
22	Dibromochloromethane	mg/l	APHR 6233	0.1	No Relaxation
23	Bromodichloromethane	mg/l	APHR 6232	0.05	No Relaxation

AN ISO : 9001:2015 / ISO : 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY



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REPORT NO. 4182

TEST REPORT					
SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10506:2012 Acceptable (Acceptable Limit)	RESULT
d)	Chloroform	mg/L	IS: 5024, 5025	0.7	N.D.
D. Pesticides:-					
1	Alpha HCH	µg/L	USEPA 508	0.01	N.D.
2	Beta HCH	µg/L	USEPA 508	0.01	N.D.
3	Delta HCH	µg/L	USEPA 508	0.01	N.D.
4	Alachlor	µg/L	USEPA 508, 509	30	N.D.
5	Aldrin / Dieldrin	µg/L	USEPA 508	0.03	N.D.
6	Azinphos	µg/L	USEPA 508, 5141 A	2	N.D.
7	Bifenthrin	µg/L	USEPA 508, 5141 A	135	N.D.
8	Chlorpyrifos	µg/L	USEPA 508, 5141 A	30	N.D.
9	DDT (o,p and p,p, DDE and DDD)	µg/L	USEPA 508	1	N.D.
10	Gamma HCH	µg/L	USEPA 508	1	N.D.
11	Endosulfan (alpha, beta and sulphate)	µg/L	USEPA 508	30	N.D.
12	Endosulfan (alpha, beta and sulphate)	µg/L	USEPA 508	64	N.D.
13	Ethion	µg/L	USEPA 508	3	N.D.
14	Isoproturon	µg/L	USEPA 508	9	N.D.
15	Malathion	µg/L	USEPA 508	150	N.D.
16	Methyl Parathion	µg/L	USEPA 508	0.3	N.D.
17	Monocrotophos	µg/L	USEPA 508	1	N.D.
18	Phorate	µg/L	USEPA 508	2	N.D.
E. Microbial Parameters					
1	Total Coliform	MPN/100ml	IS: 1632:1982, IS: 1632:2018	-	Absent
2	E. Coli	MPN/100ml	IS: 1632:1982, IS: 1632:2018	-	Absent

Note: mg/L = milligram per liter, µg/L = Not Detected

Terms & conditions

- The use of the report for publication, advertisement or any legal document is forbidden.
- Test results will be returned for 15 days after "not" or "not report" unless otherwise agreed with customer.
- There is no information as the party had asked for above parameters.

 PREPARED BY	 AUTHORIZED SIGNATORY
-----------------	--------------------------

End of the test report

September 30, 2021

To,
The Member secretary
Interstate Environment Conservation Board,
Prayas Bhawan, North Block, Sector-19,
Kirti Kallan, Arad Nagar,
Ghaziabad-201002, Uttar Pradesh.

Subject: Submission of monsoon water analysis report.

Re: Consent to Operate permission vide letter No. ST/ITS/CECB/2021, Gurgaon, dated 24.06.2021.

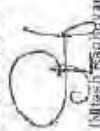
Sir,

We are submitting herewith monsoon water analysis report in respect of Goddadi Mills No. 2, Phosphor
Mills (M/s. Cross-Steel India Pvt. Ltd.), Block No. 1, Sector-19, Gurgaon (G) over an area of 120.253 Ha.

Submitted for kind information and record, please.

Thanking You,

Yours Truly,
For, Jindal Steel & Power Limited


(M/s. Jindal Steel & Power Limited)
A.P. & Agent Mills
Goddadi Mills No. 2, Udaipur 311001.

End: As above

Copy to:

The Regional Officer,
Regional Office, C.E.C.B., Bhopal,
Vijay Vihar, Near Deekshapal, Lodhly garden, Bhopal (M.P.)

Jindal Steel & Power Limited
CIN No. L27105MH1979PLC005913
Corporate Office: Jindal, Maruti Nagar, Sector-19, Gurgaon
T: +91 771 8051 600 P: +91 771 2471 120 W: www.jindalsteel.com
Regional Office: M/s. Jindal Steel, Block No. 1, Sector-19, Gurgaon

		ADD-2/2 Phase II - Near JP Chowk, Ring Road No. 2, Kabi Nagar, Rajpur G.G.T - 492003 Ph: 0774-4027777 Email: ultimateenviro@gmail.com	
Recognized by Ministry of Environment Forest and Climate Change under EP act 1986			
TO, JINDAL STEEL & POWER LIMITED, GOODAH LIMESTONE MINER, BILASPUR		Report No.: JES/TN/21-22/7345 Test No.: 185/21-22/7345/251 Issue Date: 04/09/2021 Date of Issue: 06/09/2021 Date of Report: 17/09/2021 Date of Sample: 04/09/2021	
Category: Solid Sampling location: SUBSTANTIAL (WASTEWATER) SITE OFFICE		SAMPLE ANALYSIS:	
Channel (Ref. No. in Site): Sample Type:	Acid Process effluent (mg/L) Pending (mg/L)	Method:	
Fielded Sample: Sample collected by:	Plastic Bottle (500 ml) Glass Bottle (500 ml)	Method:	
Sample condition at Receipt:	Clean	Method:	

TEST REPORT			
S/N	PARAMETER	UNIT	RESULT
A. Organoleptic & Physical Parameters			
1	Colour	PCU	13:1025 (Part-1)
2	Odour	-	13:1025 (Part-1)
3	pH Value at 25.0°C	-	13:1025 (Part-1)
4	Turbidity	NTU	13:1025 (Part-1)
5	Total Dissolved Solids	mg/L	13:1025 (Part-1)
B. General Parameters Concerning Substances undesirable in effluents			
1	Aluminium (as Al)	mg/L	13:1025 (Part-1)
2	Ammonia (as total ammonia-N)	mg/L	13:1025 (Part-1)
3	Antimony (Antimony)	mg/L	13:1025 (Part-1)
4	Barium (as Ba)	mg/L	13:1025 (Part-1)
5	Boron (as B)	mg/L	13:1025 (Part-1)
6	Calcium (as Ca)	mg/L	13:1025 (Part-1)
7	Chlorides (as Cl)	mg/L	13:1025 (Part-1)
8	Chloride (as Cl)	mg/L	13:1025 (Part-1)
9	Copper (as Cu)	mg/L	13:1025 (Part-1)
10	Fluoride (as F)	mg/L	13:1025 (Part-1)
11	Iron (as Fe)	mg/L	13:1025 (Part-1)
12	Magnesium (as Mg)	mg/L	13:1025 (Part-1)



HDD-72, Phase II, Near JP Chowk
Reg. Ref. No. 2, Khar Nagar, Raipur (C.G.) - 492004
Ph: 0781 - 4027777 Email: ultimateindia@gmail.com

Formal No: UESFORM-09

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

Report No: 2018

TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST / REF. NO.	AS PER IS 10300:2012	
				Measurement Conc. of Pollutant in Sample	Result After 10 days of incubation at 30°C
14	Manganese (as Mn)	mg/l	IS 3025 (part-45)	0.1	0.3
15	Mercury (as Hg)	mg/l	Clause 6 of IS 3025 (part-45) Inducted Perfusion method	0.5	No Relamination
16	Nitrate (as NO ₃)	mg/l	IS 3025 (part-45)	0.5	No Relamination
17	Nitrite (as NO ₂)	mg/l	IS 3025 (part-45)	0.001	0.1
18	Sulfate (as SO ₄)	mg/l	IS 3025 (part-45)	0.01	No Relamination
19	Sulfate (as SO ₄)	mg/l	IS 3025 (part-45)	0.1	No Relamination
20	Sulfate (as SO ₄)	mg/l	IS 3025 (part-45)	0.01	No Relamination
21	Sulfate (as SO ₄)	mg/l	IS 3025 (part-45)	0.01	No Relamination
22	Total Alkalinity (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
23	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
24	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
25	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
26	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
27	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
28	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
29	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
30	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
31	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
32	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
33	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
34	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
35	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
36	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
37	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
38	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
39	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
40	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
41	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
42	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
43	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
44	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
45	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
46	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
47	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
48	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
49	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
50	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
51	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
52	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
53	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
54	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
55	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
56	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
57	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
58	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
59	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
60	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
61	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
62	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
63	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
64	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
65	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
66	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
67	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
68	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
69	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
70	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
71	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
72	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
73	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
74	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
75	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
76	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
77	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
78	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
79	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
80	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
81	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
82	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
83	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
84	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
85	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
86	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
87	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
88	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
89	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
90	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
91	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
92	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
93	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
94	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
95	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
96	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
97	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
98	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
99	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination
100	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (part-45)	0.01	No Relamination

AN ISO 9001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY



H00-272, Phase II - Near JP Clock
 Ring Road W-2, Khat Nagesh, Rajahmundry (C.D.) - 490099
 PH: 9271-492777 | Email: ultimateinfo@gmail.com

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

TEST REPORT

SR. NO.	PARAMETER	UNIT	REFERENCE OF TEST	AS PER IS 10500:2013		RESULT
				Acceptable Limit in this Laboratory (ppm)	Acceptable Limit in this Laboratory (ppm)	
1	Chloride	mg/L	ASPCA 5132	0.5	No	N.D.
D. Pesticides:						
1	Alpha BHC	mg/L	ISIRI 508	0.01	0.01	N.D.
2	Beta BHC	mg/L	ISIRI 508	0.04	0.04	N.D.
3	Gamma BHC	mg/L	ISIRI 508	0.04	0.04	N.D.
4	Alachlor	ppm	ISIRI 507, 507	30	30	N.D.
5	Alachlor / Disulfoton	ppm	ISIRI 508	0.03	0.03	N.D.
6	Atrazine	ppm	ISIRI 508, 514, 514	1	1	N.D.
7	Endosulfate	ppm	ISIRI 508, 514, 514	225	225	N.D.
8	Endosulfate	ppm	ISIRI 508, 514, 514	30	30	N.D.
9	DDT (o,p and p,p' and DDT)	ppm	ISIRI 508	1	1	N.D.
10	Gamma BHC	ppm	ISIRI 508	3	3	N.D.
11	Endosulfate	ppm	ISIRI 515, 1	80	80	N.D.
12	Endosulfate (active)	ppm	ISIRI 508	84	84	N.D.
13	Beta and gamma BHC	ppm	ISIRI 508	3	3	N.D.
14	Isoprene	ppm	ISIRI 508	8	8	N.D.
15	Malathion	ppm	ISIRI 511, 511	250	250	N.D.
16	Malathion	ppm	ISIRI 511, 511	250	250	N.D.
17	Monocrotophos	ppm	ISIRI 514, 514	1	1	N.D.
18	Thiophan	ppm	ISIRI 514, 514	1	1	N.D.
C. Microbial Parameters						
1	Total coliform	MPN	ISIRI 508, 514, 514	-	-	Absent
2	F. Coli	MPN	ISIRI 508, 514, 514	-	-	Absent

REFERENCE: RESULTS ARE AS ABOVE

Page 4 of 4

1. The test is not repeatable, a minimum of 3 test results is required.
 2. The sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
 3. This is for information to the party concerned only.

 ANALYST	 SUPERVISOR	 CUSTOMER REPRESENTATIVE	 LABORATORY REPRESENTATIVE

AN ISO 15001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY

H.B.D-224, Phase III, Near JP Chowk,
Ring Road, No. 2, Kabil Nager, Rajour (C.G.) - 492006
Ph: 9241-402777, Email: officialenrdd@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EP act 1988

Report No.		URSTR/13-22/15/14	
Lab Ref No.		UR/21-22/W/1532	
Date of Sampling		04/08/2021	
Date of Receipt		05/08/2021	
Date of Report		17/08/2021	
Project Ref No.		GWS-04-05/2021	
Project Name		URSTR/13-22/15/14	
Customer: Sample to: Forwarding Location		COLLIERY	
Customer: Job No. & Date		4-22/20/2014 PATTEN/20/04/2022	
Sample Type		Blasting Waste	
Blasting of Sample		Pneumatic (15m)	
Sample Container &		Water added (litre only)	
Sample Description of Receipt		Carbonate	
		EN	

TEST REPORT

TEST REPORT					
ANAL. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	PREPARED BY (Name, Signature, Date)	ANALYST'S SIGNATURE, DATE
1	Aggravation & related parameters				
1	Color	None	15 JVA (Part-1)	5	15
2	Odor	-	15 JVA (Part-1)	Aggravation	Aggravation
3	pH Value at 25 °C	-	15 JVA (Part-1)	5-9.5	Aggravation
4	Taste	-	15 JVA (Part-1)	Aggravation	Aggravation
5	Viscosity	cp/L	15 JVA (Part-1)	1	Aggravation
6	Total Dissolved Solids	mg/L	15 JVA (Part-1)	300	3000
7	General Parameters Concerning Substances Undetectable in Gravimetric Analysis				
1	Aluminum (as Al)	mg/L	15 JVA (Part-1)	0.05	0.2
2	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.5	Aggravation
3	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation
4	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation
5	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation
6	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation
7	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation
8	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation
9	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation
10	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation
11	Ammonia (as N)	mg/L	15 JVA (Part-1)	0.2	Aggravation

AN ISO : 9001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY



HDP-272 Phase II - Near IP Oilwell
 Ring Road No. 2, Rajiv Nagar, Rajpur C.O., 492008
 Ph: 0771-422777 (Email: ultimate@ultimatean.com)

Report No. 2016
 Recognized by Ministry of Environment Forest and Climate Change under EP act 1986

TEST REPORT

Sr. No.	PARAMETER	UNIT	METHOD OF TEST REF. TO	AS PER IS 3050:2012	
				Relevant Parameter as per IS 3050	Result
12	Iron (as Fe)	mg/L	IS 3050 (part-5)	5.3	No contamination N.D.
13	Manganese (as Mn)	mg/L	IS 3050 (part-40)	30	107 N.D.
14	Magnesium (as Mg)	mg/L	IS 3050 (part-59)	0.1	0.3 N.D.
15	Methanol	mg/L	Standard 8 of IS 3050 (part-39) Distilled partition method	0.05	No contamination N.D.
16	Nitrate (as N)	mg/L	IS 3050 (part-24)	24	80 contamination 1.8
17	Phenolic Compound (as C6H5OH)	mg/L	IS 3050 (part-13)	0.002	0.002 N.D.
18	Selenium (as Se)	mg/L	IS 3050 (part-56)	0.01	No contamination N.D.
19	Silver (as Ag)	mg/L	Standard 9 of IS 3050	0.1	No contamination N.D.
20	Sulphate (as SO ₄)	mg/L	IS 3050 (part-24)	250	400 N.D.
21	Sulphide (as S)	mg/L	IS 3050 (part-29)	0.05	No contamination N.D.
22	Total Alkalinity (as CaCO ₃)	mg/L	IS 3050 (part-23)	200	400 N.D.
23	Total Hardness (as CaCO ₃)	mg/L	IS 3050 (part-21)	250	400 N.D.
24	Total Diss. Sol.	mg/L	IS 3050 (part-49)	5	14 N.D.
25	Barium (as Ba)	mg/L	IS 3050 (part-11)	0.05	No contamination N.D.
26	Cyanide (as CN)	mg/L	IS 3050 (part-27)	0.05	No contamination N.D.
27	Lead (as Pb)	mg/L	IS 3050 (part-47)	0.05	No contamination N.D.
28	Manganese (as Mn)	mg/L	IS 3050 (part-48)	0.005	No contamination N.D.
29	Nickel (as Ni)	mg/L	IS 3050 (part-21)	0.005	No contamination N.D.
30	Polychlorinated biphenyls	mg/L	ASTM D155	0.005	No contamination N.D.
31	Acetic Acid	mg/L	ASTM D155	0.005	No contamination N.D.
32	Hydrocarbons (as BTEX)	mg/L	ASTM D155	0.005	No contamination N.D.
33	Ammonia (as NH ₃)	mg/L	IS 3050 (part-37)	100	0.05 N.D.
34	Chromium (as Cr)	mg/L	IS 3050 (part-52)	0.05	No contamination N.D.
35	Triclinomethanes	mg/L	IS 3050 (part-52)	0.05	No contamination N.D.
36	Disinfectant	mg/L	IS 3050 (part-52)	0.05	No contamination N.D.

AN ISO 9001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY



Ultimate
ENVIRONMENTAL SOLUTIONS

ISO 2772, Phase II - Year JP Chokk
Kott Road No. 2, Kott Nagar, Rajapet (G.) - 580009
Ph: 0771-4227777 Email: ultimateinfo@gmail.com

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

TEST REPORT					
Sr. No.	PARAMETER	UNIT	METHOD OF TEST REF TO	AS PER IS 10500:2013 Requirement Acceptance Limit	REMARKS Remarks Remarks Remarks
b)	Chloroacetonitrile	mg/L	ISIRI 5212	4.1	No No No No
c)	Hexachlorocyclopentadiene	mg/L	ISIRI 5212	0.05	No No No No
d)	Chloroform	mg/L	ISIRI 5233	0.3	No No No No
Pesticides :-					
1	Alpha BHC	mg/L	ISIRI 5011	0.05	N.D.
2	Beta BHC	mg/L	ISIRI 5011	0.04	N.D.
3	Gamma BHC	mg/L	ISIRI 5011	0.04	N.D.
4	Alachlor	mg/L	ISIRI 5212, 507	20	N.D.
5	Azinphos Methyl	mg/L	ISIRI 5011	0.03	N.D.
6	Azinphos	mg/L	ISIRI 5212, 5011, 5	2	N.D.
7	Butoxide	mg/L	ISIRI 5212, 5011, 5	35	N.D.
8	Chlorpyrifos	mg/L	ISIRI 5212, 5011, 5	30	N.D.
9	DDT (p,p' and p,p'-isomers of DDT, DDE and DDD)	mg/L	ISIRI 5011	4	N.D.
10	Carbofent	mg/L	ISIRI 5011	2	N.D.
11	2,4-Dichlorophenoxyacetic acid	mg/L	ISIRI 515, 4	20	N.D.
12	2,4-Dichlorophenoxyacetic acid and sulphate	mg/L	ISIRI 5011	0.4	N.D.
13	Ethion	mg/L	ISIRI 5212, 507	4	N.D.
14	Imidacloprid	mg/L	ISIRI 5212	9	N.D.
15	Malathion	mg/L	ISIRI 5011, 5	100	N.D.



Ultimate
BIOLOGICAL SOLUTIONS

HDD-272, Phase II - New J.P. Chowk
King Road No. 2, Kabi Nabal Rajpur G.G-1-162009,
Bh. 0311-4277771 Email: ultimatebiol@gmail.com

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

TEST REPORT					
Sl. No.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10500:2012	RESULT
				Preparation of sample in the laboratory & Analysis in the laboratory	
11	Metriol Faculties	µg/L	ASER 6.1.2	0.5	N.D.
12	Monocrotophos	µg/L	ASER 6.1.1.2	2	N.D.
13	Thiouracil	µg/L	ASER 6.1.1.2	2	N.D.
B. Microbial Parameters					
1	Total Coliform	MPN/100ml	IS 1662:1987, IS 1663:2019	—	Absent
2	St. Coli	MPN/100ml	IS 1662:1987, IS 1663:2019	—	Absent

REMARKS: RESULTS ARE AS ABOVE

Test Conditions

- The test at the above test conditions, and/or at any other place is not applicable.
- Test results will be reported after 14 days after date of test report on test conditions agreed with customer.
- This is for information at the time of sample collection above test results only.



REVIEWED BY



FOR ULTIMATE BIOLOGICAL SOLUTIONS



AUTHORIZED SIGNATURE

End of the test report



Ultimate
ENVIRONMENTAL SOLUTIONS

HQD-272, Phase III, Near J.P. Chowk,
Ring Road No-2, Kalyan Nagar, Palwal (C.G.)-202024
Ph: 0771-4027771 Email: ultimateenvs@gmail.com

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

Place of Analysis of the Sample: Report No: UES/CR/0109

Client: JINDAL STEEL & POWER LIMITED
BODADHI LIMESTONE MINES,
BILASPUR

Lab Address: UES/CR/0109

Lab No: UES/CR/0109

Date of Sample: 04/08/2021

Date of Report: 15/08/2021

Date of Analysis: 15/08/2021

Sample Name: SOODHRI VILLAGE (HINDAL)

Sample Type: Drinking water

Location of Sample: Block Boda (B.S.)

Sample Collected By: Customer

Sample Location at Field: 05

Report No. 23-85

TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST (IS: 10)	AS PER IS: 10000-2015 Agreement of Lab. to the Authority of Lab.	RESULT
A.	Organoleptic & Physical Parameters				
1.	Colour	Hazen	IS: 3025 (Part-4)	5	15
2.	Odour	-	IS: 3025 (Part-5)	Agreeable	Agreeable
3.	pH Value at 25°C	-	IS: 3025 (Part-1)	9.5-10.5	9.7
4.	Taste	-	IS: 3025 (Part-6)	Agreeable	Agreeable
5.	Turbidity	NTU	IS: 3025 (Part-10)	1	5
6.	Total Dissolved Solids	mg/L	IS: 3025 (Part-16)	400	400
B.	General Parameters Concerning Inorganic Substances				
1.	Aluminium (as Al)	mg/L	IS: 3025 (Part-50)	0.05	0.1
2.	Iron (as Fe)	mg/L	IS: 3025 (Part-44)	0.3	0.3
3.	Anticloric Compounds (as HCO ₃)	mg/L	IS: 3025 (Part-15)	0.2	1.0
4.	Barium (as Ba)	mg/L	IS: 3025 (Part-53)	0.2	0.2
5.	Boron (as B)	mg/L	IS: 3025 (Part-51)	0.3	1.0
6.	Calcium (as Ca)	mg/L	IS: 3025 (Part-40)	75	200
7.	Chloride (as Cl)	mg/L	IS: 3025 (Part-15)	4.0	50
8.	Chloride (as Cl)	mg/L	IS: 3025 (Part-37)	250	1500
9.	Copper (as Cu)	mg/L	IS: 3025 (Part-43)	0.05	1.5
10.	Fluoride (as F)	mg/L	IS: 3025 (Part-40)	1	2.5
11.	Free Sulfide	mg/L	IS: 3025 (Part-26)	0.2	1
12.	Iron (as Fe)	mg/L	IS: 3025 (Part-53)	0.3	0.3
13.	Magnesium (as Mg)	mg/L	IS: 3025 (Part-40)	30	100
14.	Magnesium (as Mg)	mg/L	IS: 3025 (Part-40)	30	100



HDB 272, Phase III - Near UP, Chaw
Rm Road No. 2, Kabin Village, Rajpur G.G. - 410039
Ph: 0771 - 4027771 Email: ultimatew@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under IP Act 1986

Report No. 2148

TEST REPORT

Sl. No.	PARAMETER	UNIT	METHOD OR TEST REF. TO	Apparent Concentration (as received)	Percentage Moisture in the sample	RESULT
14	Mercuric Chloride (as Hg)	mg/L	IS 3025 (part-3)	0.1	0.3	N.D.
15	Mineral Oil	mg/L	Clause 6 of IS 3025 (Part-3) Infra-red filtration method	0.5	No determination	N.D.
16	Nitrate (as NO ₃)	mg/L	IS 3025 (part-3)	18	30	2.2
17	Phenolic Compound (as C ₆ H ₅ OH)	mg/L	IS 3025 (part-3)	0.002	0.002	N.D.
18	Selenium (as Se)	mg/L	IS 3025 (part-3)	0.01	30	N.D.
19	Silver (as Ag)	mg/L	Annex Q of IS 13428	0.1	30	N.D.
20	Sulphate (as SO ₄)	mg/L	IS 3025 (part-3)	0.03	100	21.3
21	Sulphide (as H ₂ S)	mg/L	IS 3025 (part-3)	0.05	30	N.D.
22	Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (part-3)	0.00	0.00	218
23	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (part-3)	100	0.00	250
24	Free Chlorine	mg/L	IS 3025 (part-3)	0	15	N.D.
C. Parameters concerning toxic substances:-						
1	Chlorine (as Cl)	mg/L	IS 3025 (part-3)	0.001	30	N.D.
2	Cyanide (as CN)	mg/L	IS 3025 (part-3)	0.05	No determination	N.D.
3	Lead (as Pb)	mg/L	IS 3025 (part-3)	0.01	No determination	N.D.
4	Mercury (as Hg)	mg/L	IS 3025 (part-3)	0.001	No determination	N.D.
5	Nickel (as Ni)	mg/L	IS 3025 (part-3)	0.07	No determination	N.D.
6	Polychlorinated Biphenyls	mg/L	IS 3025 (part-3)	0.02	No determination	N.D.
7	Polycyclic aromatic hydrocarbons (as PAH)	mg/L	IS 3025 (part-3)	0.0005	No determination	N.D.
8	Phenol (as C ₆ H ₅ OH)	mg/L	IS 3025 (part-3)	0.0005	No determination	N.D.
9	Acetaldehyde (as CH ₃ CHO)	mg/L	IS 3025 (part-3)	0.01	50	N.D.
10	Chromium (as Cr)	mg/L	IS 3025 (part-3)	0.00	No determination	N.D.
11	Trichloroethylene (as C ₂ HCl ₃)	mg/L	IS 3025 (part-3)	0.00	No determination	N.D.
12	Styrene	mg/L	IS 3025 (part-3)	0.1	No determination	N.D.
13	Dibenzodioxane	mg/L	IS 3025 (part-3)	0.1	No determination	N.D.
14	Perchloroethylene	mg/L	IS 3025 (part-3)	0.00	No determination	N.D.



100/272, Phase III, Near JP Chowk
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Recognized by Ministry of Environment Forest and Climate Change under EP act 1986

TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST REF. TO	AS PER IS STANDARD			RESULT
				Reagent/Indicator Colour	Reagent/Indicator Amount of Absorbance	Reagent/Indicator Amount of Absorbance	
1	Calcium	mg/l	AS 12-8212	Ind	30	Ind	N.D.
D. Pesticides:-							
1	Alachlor	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
2	Meta NDE	mg/l	IS 1539-508	Ind	0.04	Ind	N.D.
3	Delta NDE	mg/l	IS 1539-508	Ind	0.04	Ind	N.D.
4	Alachlor	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
5	Alachlor / Field-In	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
6	Alachlor	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
7	Alachlor	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
8	Chlorpyrifos	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
9	DDT (p,p' and o,p'- isomers of DDT, DDE and DDD)	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
10	Alachlor	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
11	Alachlor	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
12	Endosulfan (alpha- beta and epsilon)	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
13	Endosulfan (gamma- delta and epsilon)	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
14	Endosulfan	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
15	Endosulfan	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
16	Endosulfan	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
17	Endosulfan	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
18	Endosulfan	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
19	Endosulfan	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
20	Endosulfan	mg/l	IS 1539-508	Ind	0.01	Ind	N.D.
E. Microbial Parameters							
1	Total Coliforms	100ml	IS 1539-508	Ind	0.01	Ind	Present
2	E. Coli	100ml	IS 1539-508	Ind	0.01	Ind	Absent

REMARKS/RESULTS ARE AS ABOVE

Remarks:

- The test of the report is preliminary, calibration is to be done in the lab.
- The sample will be tested for 15 days after the test of the report unless otherwise agreed with customer.
- For the information on the test, the test is for 15 days after the test.

Signature: _____
Date: 15/10/2018
AUTHORIZED BY: _____

Signature: _____
Date: 15/10/2018
AUTHORIZED BY: _____

Signature: _____
Date: 15/10/2018
AUTHORIZED BY: _____

AN ISO: 9001:2015 / ISO: 14001:2015 / ISO: 45001:2018 CERTIFIED LABORATORY

105-276 Phase II - Near JTC Crew
Ring Road No. 2 (K-6) Nagar Naur (C-6) -492393
24-9274-4027771 Email: jtc@nagar.naur.ki.govt

Coordinated by Ministry of Environment Forest and Climate Change under EIP act 1988

[illegible]

TEST REPORT

SR NO.	PARAMETER	UNIT	METHOD OF TEST		AS PER IS 10130:2012		REMARKS
			REF: TO	REQUIREMENT	TESTING PROCEDURE	ACCEPTANCE CRITERIA	
A. Organoleptic & Physical Parameters							
1	Colour	Visual	IS 3025 (Part-1)	Agreeable	15	Agreeable	<1
2	Odour	-	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
3	pH Value at 25°C	-	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
4	Taste	-	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
5	Water Solubility	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
6	Total Dissolved Solids	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
B. Chemical Parameters							
1	Aluminium (as Al)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
2	Ammonia (as NH ₃)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
3	Calcium (as Ca)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
4	Chloride (as Cl)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
5	Copper (as Cu)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
6	Fluoride (as F)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
7	Iron (as Fe)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
8	Magnesium (as Mg)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
9	Manganese (as Mn)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
10	Nitrate (as N)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
11	Phosphate (as P)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
12	Sulfate (as S)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
13	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
14	Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
15	Total Acidity (as CaCO ₃)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
16	Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
17	Biochemical Oxygen Demand (BOD ₅)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
18	Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
19	Free Residual Chlorine (FRC)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10
20	Total Residual Chlorine (TRC)	mg/L	IS 3025 (Part-1)	Agreeable	6-8-8	Agreeable	7-10

AN ISO 9001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY



HPO-072, Phase II - Near J.P. Chowk
Ring Road No. 2, Kalyan Nagar, Rajkot (GJ) - 360005
Ph : 079 - 3627177 | Email : ultimateinfo@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EP and 1886

Report No: 229

TEST REPORT

S.C. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 15025-12	
				Important Information about the sample or the sample	RESULT
22	Iron (as Fe)	mg/L	IS 1025 (Part-3)	0.3 No Relaxation	N.D.
23	Magnesium (as Mg)	mg/L	IS 1025 (Part-4)	36 No Relaxation	0.8
24	Manganese (as Mn)	mg/L	IS 1025 (Part-5)	0.1 No Relaxation	N.D.
25	Mineral Oil	mg/L	Clause 5 of IS 1025 (Part-3) Infra-red partition method	0.5 No Relaxation	N.D.
26	Nitrate (as NO ₃)	mg/L	IS 1025 (Part-3)	45 No Relaxation	2.0
27	Phenolic Compound (as C ₆ H ₅ OH)	mg/L	IS 1025 (Part-3)	0.01 No Relaxation	N.D.
28	Selenium (as Se)	mg/L	IS 1025 (Part-5)	0.01 No Relaxation	N.D.
29	Silver (as Ag)	mg/L	Clause 5 of IS 1025 (Part-3)	0.5 No Relaxation	0.1
30	Sulphate (as SO ₄)	mg/L	IS 1025 (Part-3)	200 No Relaxation	N.D.
31	Sulphide (as S ²⁻)	mg/L	IS 1025 (Part-3)	0.01 No Relaxation	N.D.
32	Total Alkalinity (as CaCO ₃)	mg/L	IS 1025 (Part-3)	100 No Relaxation	200
33	Total Hardness (as CaCO ₃)	mg/L	IS 1025 (Part-3)	200 No Relaxation	258
34	Zinc (as Zn)	mg/L	IS 1025 (Part-5)	5 No Relaxation	N.D.
C. Parameters concerning toxic substances -					
3	Cadmium (as Cd)	mg/L	IS 1025 (Part-4)	0.01 No Relaxation	N.D.
4	Copper (as Cu)	mg/L	IS 1025 (Part-3)	0.05 No Relaxation	N.D.
5	Lead (as Pb)	mg/L	IS 1025 (Part-3)	0.01 No Relaxation	N.D.
6	Mercury (as Hg)	mg/L	IS 1025 (Part-3)	0.001 No Relaxation	N.D.
7	Molybdenum (as Mo)	mg/L	IS 1025 (Part-5)	0.07 No Relaxation	N.D.
8	Nickel (as Ni)	mg/L	IS 1025 (Part-3)	0.02 No Relaxation	N.D.
9	Polyhalogenated biphenyls (PBHs)	mg/L	IS 1025 (Part-3)	0.0005 No Relaxation	N.D.
10	Polycyclic aromatic hydrocarbons (as PAHs)	mg/L	IS 1025 (Part-3)	0.001 No Relaxation	N.D.
11	Phenol (as C ₆ H ₅ OH)	mg/L	IS 1025 (Part-3)	0.01 No Relaxation	N.D.
12	Chromium (as Cr)	mg/L	IS 1025 (Part-5)	0.05 No Relaxation	N.D.
13	Tribhalomethanes	mg/L	IS 1025 (Part-3)	0.01 No Relaxation	N.D.
14	Tricloromethanes	mg/L	IS 1025 (Part-3)	0.01 No Relaxation	N.D.

ANISO : 9001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY



HDD-372, Phase II - Near JP Chowk
Ring Road New-2, Kirti Nagar, Rajpur (C-6) - 440036
Ph: 0771-4227771 Email: ultimateinfo@gmail.com

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

TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST REF TO	Methodology adopted in the laboratory	As per IS 10500:2012	RESULT
1	Diflomethionmethane	mg/L	USEPA 6232	3.1	No adulteration	N.D.
2	Endosulfanmethane	mg/L	USEPA 6232	0.06	No adulteration	N.D.
3	Chloroform	mg/L	USEPA 6232	0.0	No adulteration	N.D.
Pesticides:						
1	Alpha HCH	µg/L	USEPA 505	0.01		N.D.
2	Beta HCH	µg/L	USEPA 505	0.04		N.D.
3	Gamma HCH	µg/L	USEPA 505	0.04		N.D.
4	Alachlor	µg/L	USEPA 505, 2, 107	25		N.D.
5	Alachlor / Disulfide	µg/L	USEPA 505	0.09		N.D.
6	Alachlor	µg/L	USEPA 505, 2, 107, 2	2		N.D.
7	Endosulfan	µg/L	USEPA 505, 2, 107, 2	125		N.D.
8	Chlorpyrifos	µg/L	USEPA 505, 2, 107, 2	30		N.D.
9	DDT (o,p and p,p'- isomers of DDT, DDE and DDD)	µg/L	USEPA 505	1		N.D.
10	Gamma HCH	µg/L	USEPA 505	2		N.D.
11	2,4-Dichlorophenoxyacetic acid	µg/L	USEPA 515, 1	30		N.D.
12	Endosulfan (alpha, beta and sulfate)	µg/L	USEPA 505	0.4		N.D.
13	Alachlor	µg/L	USEPA 505, 2, 107, 2	2		N.D.
14	Endosulfan	µg/L	USEPA 505	9		N.D.
15	Malathion	µg/L	USEPA 505, 2, 107, 2	250		N.D.

AN ISO : 9001:2015 / ISO : 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY



HDD 2014-2015 Annual Report
 HHS (HDD) 2014-2015 Annual Report (C) 1-432989
 HHS (HDD) 2014-2015 Annual Report (C) 1-432989
 HHS (HDD) 2014-2015 Annual Report (C) 1-432989

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

TEST REPORT

S/N	PARAMETER	UNIT	METHOD OF TEST	RESULT	REMARKS
16	Methyl Parathion	ug/l	10000 ug/l	10000	10000
17	Metachlorophenol	ug/l	10000 ug/l	10000	10000
18	Phosphate	ug/l	10000 ug/l	10000	10000
19	Microbial Parameters				
20	Total Coliforms	1000/100ml	1000/100ml	1000	1000
21	F. Coli	1000/100ml	1000/100ml	1000	1000

REMARKS: RESULTS ARE AS ABOVE

Form 101-1 (Rev. 10/2010)

- 1. The use of the report for submission, distribution or any other purpose is prohibited.
- 2. The report will be retained for 1 year after the date of test report or less otherwise specified.
- 3. The report is for information only and is not to be used for any other purpose.

 REVIEWED BY	 AUTHORIZED SIGNATURE	 ULTIMATE ENVIRONMENTAL SOLUTIONS

Drishti-2018 : Encardio-rite Electronics Pvt. Ltd.					
SiteName : Jindal Steel and Power Limited, chattisgarh					
Dates Between: From 2021-04-01 11:52:20 To 2021-04-30 11:52:20					
DATE & TIME	DATA LOGGER ID	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (degC)	BAROMETRIC (hpa)
01-04-21 21:00	null	7.36	-3.16	28.9	970.7
02-04-21 9:00	null	7.35	-3.18	28.9	975.5
02-04-21 21:00	null	7.37	-3.19	28.9	971.9
03-04-21 9:00	null	7.36	-3.21	28.9	976.2
03-04-21 21:00	null	7.36	-3.22	28.9	973.7
04-04-21 9:00	null	7.35	-3.24	28.9	978.6
04-04-21 21:00	null	7.36	-3.24	28.9	975.3
05-04-21 9:00	null	7.35	-3.26	28.9	980.1
05-04-21 21:00	null	7.36	-3.27	28.9	975.8
06-04-21 9:00	null	7.35	-3.28	28.9	979.9
06-04-21 21:00	null	7.37	-3.29	28.9	975.5
07-04-21 9:00	null	7.35	-3.31	28.9	978.8
07-04-21 21:00	null	7.36	-3.32	28.9	974.6
08-04-21 9:00	null	7.35	-3.33	28.9	976.9
08-04-21 21:00	null	7.36	-3.35	28.9	973.7
09-04-21 9:00	null	7.35	-3.36	28.9	978.1
09-04-21 21:00	null	7.36	-3.38	28.9	976.5
10-04-21 9:00	null	7.35	-3.41	28.9	980.8
10-04-21 21:00	null	7.34	-3.44	28.9	977.8
11-04-21 9:00	null	7.34	-3.47	28.9	981.6
11-04-21 21:00	null	7.34	-3.51	28.9	978.4
12-04-21 9:00	null	7.34	-3.55	28.9	982.6
12-04-21 21:00	null	7.33	-3.57	28.9	978.1
13-04-21 9:00	null	7.33	-3.6	28.9	981.4
13-04-21 21:00	null	7.32	-3.63	28.9	976.6
14-04-21 9:00	null	7.33	-3.66	28.9	979.6
14-04-21 21:00	null	7.33	-3.69	28.9	976.2
15-04-21 9:00	null	7.33	-3.72	28.9	979.9
15-04-21 21:00	null	7.32	-3.74	28.9	975.5
16-04-21 9:00	null	7.33	-3.77	28.9	979.2
16-04-21 21:00	null	7.31	-3.79	28.9	975.3
17-04-21 9:00	null	7.32	-3.82	28.9	979.5
17-04-21 21:00	null	7.32	-3.84	28.9	975.8
18-04-21 9:00	null	7.32	-3.87	28.9	980.1
18-04-21 21:00	null	7.31	-3.89	28.9	975.8
19-04-21 9:00	null	7.32	-3.91	28.9	979.1
19-04-21 21:00	null	7.3	-3.93	28.9	974.3
20-04-21 9:00	null	7.32	-3.95	28.9	976.8
20-04-21 21:00	null	7.31	-3.96	28.9	974.4
21-04-21 9:00	null	7.32	-3.99	28.9	977.9
21-04-21 21:00	null	7.32	-4.01	28.9	976
22-04-21 9:00	null	7.32	-4.04	28.9	979.2

Drishti-2018 : Encardio-rite Electronics Pvt. Ltd.

SiteName : Jindal steel and power chattisgarh

Dates Between: From 2021-05-01 15:18:42 To 2021-05-31 15:18:42

DateTime	DATALOGGER ID	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (degC)	BAROMETRIC (hPa)
01-05-21 21:00	null	7.32	-4.37	28.9	974.7
02-05-21 9:00	null	7.32	-4.39	28.9	979
02-05-21 21:00	null	7.32	-4.41	28.9	975.3
03-05-21 9:00	null	7.32	-4.44	28.9	978
03-05-21 21:00	null	7.31	-4.45	28.9	974.3
04-05-21 9:00	null	7.33	-4.48	28.9	978.5
04-05-21 21:00	null	7.33	-4.5	28.9	974
05-05-21 9:00	null	7.33	-4.51	28.9	978.2
05-05-21 21:00	null	7.32	-4.54	28.9	973.9
06-05-21 9:00	null	7.33	-4.56	28.9	978.7
06-05-21 21:00	null	7.33	-4.43	28.9	975.6
07-05-21 9:00	null	7.33	-4.46	28.9	980
07-05-21 21:00	null	7.33	-4.48	28.9	977.9
08-05-21 9:00	null	7.33	-4.5	28.9	981
08-05-21 21:00	null	7.33	-4.52	28.9	976.1
09-05-21 9:00	null	7.32	-4.55	28.9	978.3
09-05-21 21:00	null	7.32	-4.57	28.9	975.3
10-05-21 9:00	null	7.32	-4.59	28.9	978.1
10-05-21 21:00	null	7.34	-4.62	28.9	973.4
11-05-21 9:00	null	7.32	-4.26	28.9	978.5
11-05-21 21:00	null	7.33	-4.25	28.9	972.8
12-05-21 9:00	null	7.33	-4.22	28.9	975
12-05-21 21:00	null	7.33	-4.17	28.9	969.5
13-05-21 9:00	null	7.33	-4.12	28.9	974.3
13-05-21 21:00	null	7.33	-4.08	28.9	971.3
14-05-21 9:00	null	7.34	-4.05	28.9	974.2
14-05-21 21:00	null	7.33	-4.02	28.9	971.6
15-05-21 9:00	null	7.33	-4.01	28.9	975.1
15-05-21 21:00	null	7.33	-3.99	28.9	972.4
16-05-21 9:00	null	7.32	-3.99	28.9	976.2
16-05-21 21:00	null	7.33	-3.99	28.9	973.3
17-05-21 9:00	null	7.32	-3.99	28.9	976.9
17-05-21 21:00	null	7.32	-3.99	28.9	972.3
18-05-21 9:00	null	7.32	-4	28.9	975.6
18-05-21 21:00	null	7.33	-4.01	28.9	972.8
19-05-21 9:00	null	7.33	-4.02	28.9	974.9
19-05-21 21:00	null	7.33	-4.03	28.9	971.5
20-05-21 9:00	null	7.33	-4.04	28.9	972.8
20-05-21 21:00	null	7.33	-4.05	28.9	972.2
21-05-21 9:00	null	7.33	-4.07	28.9	974.9
21-05-21 21:00	null	7.33	-4.07	28.9	973.4

22-05-21 9:00	null		7.32	-4.1	28.9	974.7
22-05-21 21:00	null		7.33	-4.1	28.9	971.1
23-05-21 9:00	null		7.32	-4.12	28.9	974.6
23-05-21 21:00	null		7.32	-4.13	28.9	971.5
24-05-21 9:00	null		7.33	-4.14	28.9	973.4
24-05-21 21:00	null		7.32	-4.15	28.9	970.3
25-05-21 9:00	null		7.33	-4.16	28.9	970.7
25-05-21 21:00	null		7.33	-4.16	28.9	966.5
26-05-21 9:00	null		7.33	-4.17	28.8	967.1
26-05-21 21:00	null		7.33	-4.18	28.9	966
27-05-21 9:00	null		7.33	-4.19	28.8	967
27-05-21 21:00	null		7.33	-4.2	28.9	967.6
28-05-21 9:00	null		7.33	-4.21	28.8	970.8
28-05-21 21:00	null		7.33	-4.22	28.8	970.1
29-05-21 9:00	null		7.33	-4.24	28.8	973.2
29-05-21 21:00	null		7.33	-4.24	28.9	970.5
30-05-21 9:00	null		7.33	-4.26	28.8	973.6
30-05-21 21:00	null		7.33	-4.27	28.8	970.2
31-05-21 9:00	null		7.33	-4.29	28.8	971.6

Drishti-2018 : Encardio-rite Electronics Pvt. Ltd.
SiteName : Jindal steel and power chattisgarh

Dates Between: From 2021-06-01 15:14:00 To 2021-06-30 15:14:00

DateTime	DATALOGGER ID	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (degC)	BAROMETRIC (hPa)
01-06-21 21:00	null	7.33	-4.34	28.8	971
02-06-21 9:00	null	7.33	-4.35	28.8	974.3
02-06-21 21:00	null	7.33	-4.37	28.8	973.5
03-06-21 9:00	null	7.34	-4.38	28.8	976
03-06-21 21:00	null	7.35	-4.4	28.9	977.3
04-06-21 9:00	null	7.34	-4.42	28.8	978
04-06-21 21:00	null	7.35	-4.42	28.8	974.7
05-06-21 9:00	null	7.34	-4.45	28.8	977
05-06-21 21:00	null	7.35	-4.47	28.8	973.4
06-06-21 9:00	null	7.34	-4.49	28.8	976.3
06-06-21 21:00	null	7.35	-4.5	28.8	971.8
07-06-21 9:00	null	7.34	-4.52	28.8	974.1
07-06-21 21:00	null	7.35	-4.54	28.8	970.9
08-06-21 9:00	null	7.34	-4.56	28.8	972.2
08-06-21 21:00	null	7.36	-4.58	28.8	970.3
09-06-21 9:00	null	7.34	-4.6	28.8	970.8
09-06-21 21:00	null	7.36	-4.62	28.8	969.3
10-06-21 9:00	null	7.36	-4.64	28.8	969.2
10-06-21 21:00	null	7.37	-4.66	28.8	967.1
11-06-21 9:00	null	7.35	-4.68	28.8	967.8
11-06-21 21:00	null	7.36	-4.69	28.8	967
12-06-21 9:00	null	7.35	-4.72	28.8	968.3
12-06-21 21:00	null	7.36	-4.74	28.8	968.1
13-06-21 9:00	null	7.36	-4.76	28.8	968.6
13-06-21 21:00	null	7.37	-4.79	28.8	967.2
14-06-21 9:00	null	7.36	-4.74	28.8	967.1
14-06-21 21:00	null	7.37	-4.6	28.8	965.3
15-06-21 9:00	null	7.36	-3.64	28.8	966.5
15-06-21 21:00	null	7.37	-2.94	28.8	965.8
16-06-21 9:00	null	7.36	-2.8	28.8	969
16-06-21 21:00	null	7.37	-2.68	28.8	967.7
17-06-21 9:00	null	7.36	-2.32	28.8	968.5
17-06-21 21:00	null	7.37	-1.93	28.8	967.7
18-06-21 9:00	null	7.36	-1.86	28.8	969.4
18-06-21 21:00	null	7.37	-1.82	28.8	971.1
19-06-21 9:00	null	7.37	-1.63	28.8	972
19-06-21 21:00	null	7.37	-1.68	28.8	971.6
20-06-21 9:00	null	7.36	-1.72	28.8	973.3
20-06-21 21:00	null	7.36	-1.75	28.8	972
21-06-21 9:00	null	7.36	-1.8	28.8	973.4
21-06-21 21:00	null	7.36	-1.84	28.8	971.1

22-06-21 9:00	null		7.35	-1.88	28.8	971.8
22-06-21 21:00	null		7.37	-1.92	28.8	972
23-06-21 9:00	null		7.36	-1.95	28.8	971.8
23-06-21 21:00	null		7.38	-1.99	28.8	971.6
24-06-21 9:00	null		7.37	-2.02	28.8	972
24-06-21 21:00	null		7.37	-2.03	28.8	969.9
25-06-21 9:00	null		7.37	-2.05	28.8	970.1
25-06-21 21:00	null		7.37	-1.76	28.8	969.9
26-06-21 9:00	null		7.37	-1.83	28.8	971
26-06-21 21:00	null		7.37	-1.66	28.8	971
27-06-21 9:00	null		7.37	-1.45	28.8	974.3
27-06-21 21:00	null		7.37	-1.37	28.8	972.6
28-06-21 9:00	null		7.35	-1.37	28.8	974.8
28-06-21 21:00	null		7.37	-1.39	28.8	972.7
29-06-21 9:00	null		7.35	-1.42	28.8	974
29-06-21 21:00	null		7.36	-1.45	28.8	971.2
30-06-21 9:00	null		7.35	-1.48	28.8	972.4

Drishti-2018 : Encardio-rite Electronics Pvt. Ltd.						
SiteName : linal steel and power chattisgarh						
Dates Between: From 2021-07-01 17:10:15 To 2021-07-31 17:10:15						
DateTime	DATALOGGE R ID	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATU RE (degC)	BAROMETRIC (hPa)	
01-07-21 21:00	null	7.37	-1.6	28.8	971	
02-07-21 9:00	null	7.37	-1.59	28.8	971.3	
02-07-21 21:00	null	7.37	-1.61	28.8	972.7	
03-07-21 9:00	null	7.36	-1.62	28.8	973.5	
03-07-21 21:00	null	7.37	-1.64	28.8	972	
04-07-21 9:00	null	7.36	-1.67	28.8	974.3	
04-07-21 21:00	null	7.38	-1.6	28.8	974.4	
05-07-21 9:00	null	7.37	-1.42	28.8	975	
05-07-21 21:00	null	7.37	-1.28	28.8	972.6	
06-07-21 9:00	null	7.37	-1.29	28.8	973.3	
06-07-21 21:00	null	7.36	-1.3	28.8	970.5	
07-07-21 9:00	null	7.35	-1.33	28.8	972.1	
07-07-21 21:00	null	7.37	-1.34	28.8	970.5	
08-07-21 9:00	null	7.37	-1.24	28.8	973.3	
08-07-21 21:00	null	7.37	-1.22	28.8	970.2	
09-07-21 9:00	null	7.37	-1.24	28.8	971	
09-07-21 21:00	null	7.37	-1.26	28.8	969	
10-07-21 9:00	null	7.35	-1.28	28.8	970.3	
10-07-21 21:00	null	7.37	-1.3	28.8	968.5	
11-07-21 9:00	null	7.35	-1.32	28.8	971.1	
11-07-21 21:00	null	7.36	-1.34	28.8	969.7	
12-07-21 9:00	null	7.36	-1.37	28.8	972.6	
12-07-21 21:00	null	7.37	-1.4	28.8	970.7	
13-07-21 9:00	null	7.36	-1.42	28.8	971	
13-07-21 21:00	null	7.37	-1.44	28.8	970.4	
14-07-21 9:00	null	7.36	-1.41	28.8	970.8	
14-07-21 21:00	null	7.37	-1.4	28.8	969.6	
15-07-21 9:00	null	7.36	-1.41	28.8	972.4	
15-07-21 21:00	null	7.37	-1.4	28.8	970.9	
16-07-21 9:00	null	7.34	-1.42	28.8	975.9	
16-07-21 21:00	null	7.36	-1.43	28.8	973.3	
17-07-21 9:00	null	7.34	-1.45	28.8	975.2	
17-07-21 21:00	null	7.36	-1.46	28.8	972.2	
18-07-21 9:00	null	7.35	-1.48	28.8	972	
18-07-21 21:00	null	7.37	-1.49	28.8	971	
19-07-21 9:00	null	7.36	-1.51	28.8	971.3	
19-07-21 21:00	null	7.37	-1.51	28.8	969.1	
20-07-21 9:00	null	7.36	-1.52	28.8	970.8	
20-07-21 21:00	null	7.37	-1.52	28.8	969.8	
21-07-21 9:00	null	7.36	-1.53	28.8	969.2	

21-07-21 21:00	null	7.37	-1.53	28.8	965.9
22-07-21 9:00	null	7.35	-1.54	28.8	965.6
22-07-21 21:00	null	7.37	-1.55	28.8	964
23-07-21 9:00	null	7.36	-1.57	28.8	966.3
23-07-21 21:00	null	7.36	-1.55	28.8	964.4
24-07-21 9:00	null	7.36	-1.44	28.8	965.5
24-07-21 21:00	null	7.37	-1.35	28.8	966
25-07-21 9:00	null	7.36	-1.36	28.8	968.7
25-07-21 21:00	null	7.36	-1.37	28.8	968.7
26-07-21 9:00	null	7.36	-1.38	28.8	969.7
26-07-21 21:00	null	7.36	-1.39	28.8	967.7
27-07-21 9:00	null	7.37	-1.41	28.8	966.8
27-07-21 21:00	null	7.37	-1.25	28.8	968.1
28-07-21 9:00	null	7.37	-1.13	28.8	969.2
28-07-21 21:00	null	7.37	-1.14	28.8	968.9
29-07-21 9:00	null	7.37	-1.15	28.8	969.2
29-07-21 21:00	null	7.36	-1.09	28.8	968.9
30-07-21 9:00	null	7.37	-1.11	28.8	969.4
30-07-21 21:00	null	7.37	-1.13	28.8	968.4
31-07-21 9:00	null	7.37	-1.15	28.8	969.1

Drishti-2018 : Encardio-rite Electronics Pvt. Ltd.						
SiteName : Jindal steel and power chattisgarh						
Dates Between: From 2021-08-01 05:32:23 To 2021-08-31 17:32:23						
DateTime	DATALOGGER ID	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (degC)	BAROMETRIC (hPa)	
08-01-21 9:00	null	7.37	-1.17	28.8	969.2	
08-01-21 21:00	null	7.37	-1.18	28.8	969.2	
08-02-21 9:00	null	7.36	-1.19	28.8	970.4	
08-02-21 21:00	null	7.37	-1.2	28.8	971	
08-03-21 9:00	null	7.36	-1.21	28.8	972.8	
08-03-21 21:00	null	7.36	-1.22	28.8	972	
08-04-21 9:00	null	7.36	-1.24	28.8	973.4	
08-04-21 21:00	null	7.37	-1.24	28.8	971.3	
08-05-21 9:00	null	7.36	-1.26	28.8	970.9	
08-05-21 21:00	null	7.36	-1.27	28.8	969.7	
08-06-21 9:00	null	7.36	-1.29	28.8	970.6	
08-06-21 21:00	null	7.36	-1.3	28.8	969.7	
08-07-21 9:00	null	7.36	-1.32	28.8	972.6	
08-07-21 21:00	null	7.36	-1.33	28.8	971.8	
08-08-21 9:00	null	7.36	-1.34	28.8	974.3	
08-08-21 21:00	null	7.36	-1.35	28.8	974	
08-09-21 9:00	null	7.36	-1.36	28.8	975	
08-09-21 21:00	null	7.36	-1.37	28.8	973	
08-10-21 9:00	null	7.35	-1.38	28.8	973.1	
08-10-21 21:00	null	7.37	-1.39	28.8	971.6	
08-11-21 9:00	null	7.37	-1.4	28.8	972.8	
08-11-21 21:00	null	7.36	-1.4	28.8	973	
08-12-21 9:00	null	7.36	-1.4	28.8	974.7	
08-12-21 21:00	null	7.36	-1.41	28.8	973.6	
8/13/2021 9:00	null	7.36	-1.42	28.8	974.2	
8/13/2021 21:00	null	7.36	-1.42	28.8	971.2	
8/14/2021 9:00	null	7.35	-1.43	28.8	971.7	
8/14/2021 21:00	null	7.35	-1.42	28.8	969.9	
8/15/2021 9:00	null	7.35	-1.43	28.8	971.7	
8/15/2021 21:00	null	7.36	-1.44	28.8	971.2	
8/16/2021 9:00	null	7.34	-1.45	28.8	973.5	
8/16/2021 21:00	null	7.35	-1.45	28.8	973.1	
8/17/2021 9:00	null	7.35	-1.45	28.8	974.2	
8/17/2021 21:00	null	7.36	-1.45	28.8	972.4	
8/18/2021 9:00	null	7.35	-1.39	28.8	972	
8/18/2021 21:00	null	7.35	-1.36	28.8	970	
8/19/2021 9:00	null	7.35	-1.34	28.8	971.1	
8/19/2021 21:00	null	7.37	-1.29	28.8	969.9	
8/20/2021 9:00	null	7.36	-1.29	28.8	973.4	
8/20/2021 21:00	null	7.36	-1.27	28.8	974.2	
8/21/2021 9:00	null	7.36	-1.22	28.8	977.2	
8/21/2021 21:00	null	7.36	-1.19	28.8	974.9	

8/22/2021 9:00	null	7.35	-1.16	28.8	977.5
8/22/2021 21:00	null	7.36	-1.16	28.8	973.8
8/23/2021 9:00	null	7.36	-1.18	28.8	976
8/23/2021 21:00	null	7.36	-1.19	28.8	973.8
8/24/2021 9:00	null	7.35	-1.2	28.8	975.3
8/24/2021 21:00	null	7.37	-1.2	28.8	972.8
8/25/2021 9:00	null	7.35	-1.21	28.8	973.4
8/25/2021 21:00	null	7.36	-1.21	28.8	970.8
8/26/2021 9:00	null	7.35	-1.22	28.8	971.2
8/26/2021 21:00	null	7.36	-1.23	28.8	971
8/27/2021 9:00	null	7.34	-1.24	28.8	972.9
8/27/2021 21:00	null	7.36	-1.25	28.8	971
8/28/2021 9:00	null	7.36	-1.26	28.8	971.2
8/28/2021 21:00	null	7.37	-1.27	28.8	969.5
8/29/2021 9:00	null	7.35	-1.27	28.8	969.8
8/29/2021 21:00	null	7.36	-1.28	28.8	969.7
8/30/2021 9:00	null	7.36	-1.3	28.8	972.4
8/30/2021 21:00	null	7.36	-1.3	28.8	972.6
8/31/2021 9:00	null	7.35	-1.28	28.8	975.2

Drishti-2018 : Encardio-rite Electronics Pvt. Ltd.						
SiteName : Jindal steel and power chattisgarh						
Dates Between: From 2021-09-01 09:36:53 To 2021-09-30 22:36:53						
DateTime	DATALOGGER ID	BATTERY VOLTAGE (V)	WATER LEVEL (mWC)	TEMPERATURE (degC)	BAROMETRIC (hPa)	
09-01-21 21:00	null	7.36	-1.28	28.8	974.2	
09-02-21 9:00	null	7.34	-1.29	28.8	976.2	
09-02-21 21:00	null	7.36	-1.29	28.8	973.9	
09-03-21 9:00	null	7.35	-1.3	28.8	974.3	
09-03-21 21:00	null	7.36	-1.31	28.8	972.4	
09-04-21 9:00	null	7.35	-1.32	28.8	974.2	
09-04-21 21:00	null	7.35	-1.33	28.8	970.8	
09-05-21 9:00	null	7.35	-1.34	28.8	972.4	
09-05-21 21:00	null	7.35	-1.34	28.8	970.9	
09-06-21 9:00	null	7.34	-1.34	28.8	972.9	
09-06-21 21:00	null	7.35	-1.31	28.8	969.1	
09-07-21 9:00	null	7.35	-1.27	28.8	971.4	
09-07-21 21:00	null	7.35	-1.25	28.8	970.3	
09-08-21 9:00	null	7.34	-1.27	28.8	973.8	
09-08-21 21:00	null	7.35	-1.28	28.8	972.6	
09-09-21 9:00	null	7.34	-1.3	28.8	974.3	
09-09-21 21:00	null	7.35	-1.31	28.8	972.8	
09-10-21 9:00	null	7.35	-1.33	28.8	973.9	
09-10-21 21:00	null	7.36	-1.33	28.8	971.3	
09-11-21 9:00	null	7.35	-1.34	28.8	972.4	
09-11-21 21:00	null	7.35	-1.34	28.8	970.3	
09-12-21 9:00	null	7.35	-1.3	28.8	970.9	
09-12-21 21:00	null	7.35	-1.15	28.8	968.5	
9/13/2021 9:00	null	7.36	-1.16	28.8	969.2	
9/13/2021 21:00	null	7.35	-1.08	28.8	966.6	
9/14/2021 9:00	null	7.35	-1.09	28.8	967.5	
9/14/2021 21:00	null	7.35	-1.1	28.8	967.3	
9/15/2021 9:00	null	7.36	-1.03	28.8	970.1	
9/15/2021 21:00	null	7.35	-1.05	28.8	971.4	
9/16/2021 9:00	null	7.36	-1.06	28.8	973	
9/16/2021 21:00	null	7.36	-1.04	28.8	971.9	
9/17/2021 9:00	null	7.35	-1.06	28.8	973.2	
9/17/2021 21:00	null	7.36	-1.06	28.8	973	
9/18/2021 9:00	null	7.35	-1.07	28.8	975.5	
9/18/2021 21:00	null	7.36	-1.09	28.8	975.2	
9/19/2021 9:00	null	7.35	-1.1	28.8	977.4	
9/19/2021 21:00	null	7.36	-1.11	28.8	976.6	
9/20/2021 9:00	null	7.35	-1.1	28.8	977	
9/20/2021 21:00	null	7.36	-1.09	28.8	973.6	
9/21/2021 9:00	null	7.36	-1.09	28.8	974.7	
9/21/2021 21:00	null	7.36	-1.1	28.8	972	

9/22/2021 9:00	null	7.34	-1.05	28.8	973
9/22/2021 21:00	null	7.36	-1.03	28.8	970.8
9/23/2021 9:00	null	7.35	-1.04	28.8	973.4
9/23/2021 21:00	null	7.36	-1.05	28.8	973.3
9/24/2021 9:00	null	7.35	-1.06	28.8	976.1
9/24/2021 21:00	null	7.36	-1.07	28.8	973.6
9/25/2021 9:00	null	7.35	-1.08	28.8	975.6
9/25/2021 21:00	null	7.36	-1.09	28.8	973.1
9/26/2021 9:00	null	7.35	-1.1	28.8	973.5
9/26/2021 21:00	null	7.36	-1.11	28.8	971.2
9/27/2021 9:00	null	7.35	-1.11	28.8	972.7
9/27/2021 21:00	null	7.37	-1.1	28.8	970.6
9/28/2021 9:00	null	7.35	-1.12	28.8	974.7
9/28/2021 21:00	null	7.36	-1.12	28.8	974
9/29/2021 9:00	null	7.36	-1.14	28.8	977
9/29/2021 21:00	null	7.37	-1.14	28.8	975.2
9/30/2021 9:00	null	7.36	-1.16	28.8	977.9
9/30/2021 21:00	null	7.37	-1.17	28.8	976.6

Find data and press **OK** to display data and **Exit** to return to previous screen.

DATE: 10/10/2000



Amplitude: 10.00



Time: 10.00

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These data are from the 1990-1991 season. The data were collected from the 1990-1991 season.

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These data are from the 1990-1991 season. The data were collected from the 1990-1991 season.

Seismic and geologic investigation through water table and basement profile

Brassfield (1981) and (1982)

Figure 1. Seismicity map



Legend
1. Low seismicity
2. Medium seismicity
3. High seismicity
4. Very high seismicity



Legend
1. Low seismicity
2. Medium seismicity
3. High seismicity
4. Very high seismicity

CSIR - CENTRAL INSTITUTE OF MINING and FUEL RESEARCH
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 Barwa Road, Dhanbad – 826 001



Report on

Study and advice for optimization of blast design parameters at Godadih Mahal No. 2 Limestone Mines of M/s Jindal Steel & Power Limited to control ground vibration within safe limit for the safety of structures in the periphery of the mines



PROJECT NO.: CNP/4927/2019-20

MAY 2021

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REPORT ON

**Study and advice for optimization of blast design parameters
at Godadih Mahal No. 2 Limestone Mines of M/s Jindal Steel
& Power Limited to control ground vibration within safe limit
for the safety of structures in the periphery of the mines**

BY

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Project Title

Study and advice for optimization of blast design parameters at Godadhi Mahal No. 2 Limestone Mines of M/s Jindal Steel & Power Limited to control ground vibration within safe limit for the safety of structures in the periphery of the mines

Project No. : CNP/4927/2019-20

This report is meant for internal use of your organization only and it should not be published in full or part by your organization. It should not be communicated or circulated to outside parties except concerned departments. However, CSIR-CIMFR reserves the right to publish the results of the investigations for the benefit of the industry. The conclusions and recommendations are based on the results of investigations. It is hoped that the recommendations will be implemented to get the optimum results without hampering production, productivity and safety. The recommendations are the guidelines, which should be implemented in letter and spirit.

Since the day-to-day blasting operations are not under the control of CSIR-CIMFR, the research team will not be held responsible for any untoward incidence caused by blasting.

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EXECUTIVE SUMMARY

This report relates to the study conducted by CSIR-Central Institute of Mining & Fuel Research (CIMFR), Dhanbad to study and advise for optimization of blast design parameters at Limestone Mines of M/s Jindal Steel and Power Limited (JSPL), Musam to control ground vibration within safe limits for the safety of structures in the periphery of the mines with improved production and productivity. The study involved trials with varying blast designs and changing patterns, monitoring of ground vibration, air over-pressure/noise at various locations in the periphery of the mines. The questions of flyrock from blasting operations were also monitored. The results of investigation, analysis of data and recommendations made thereof are summarised below:

- ❖ Ten blasts were conducted at different benches of the Limestone Mines (Godadhi Mahal, No.2 Block) of M/s Jindal Steel and Power Limited (JSPL), Musam.
- ❖ Maximum ground vibration recorded was 7.048 mm/s with associated dominant peak frequency of 33.25 Hz at 100 m from the blast conducted on 1st bench. In this blast, the total explosive weight and explosive weight per delay were 725 kg and 16.7 kg respectively.
- ❖ The ground vibration monitoring instruments were installed near sensitive structures such as nearest house of the village from the mines, near village road of Godadhi village. The vibration data at the nearest houses of the village were below 0.5 mm/s as the instruments were not triggered in any one of the blast.
- ❖ The maximum air over-pressure recorded from the production blast conducted at Limestone 1st bench, the recorded air over-pressure was 139.1 dB(1) at 180 m. In this blast, explosives detonated in a blasting round and explosives weight per delay were 1850 kg and 50 kg respectively.
- ❖ All the recorded vibration data were well within the safe limit at the houses/structures concerned. The dominant peak frequencies of ground vibrations were in the range of 19.63 Hz to 141.5 Hz. So, the safe level of vibration has been taken as 10 mm/s for the safety of houses/structures of the surrounding villages as per DTMS standard.
- ❖ There were no ejection of flyrock in any of the blast. Out of ten blasts, eight blasts were initiated with Nonel initiation system whereas rest two blast was conducted using electronic delay initiating system from the bottom of the hole.
- ❖ Attempts were made to record the blast induced vibration near habitation structure, VILLAGE Road and accordingly the explosives to be detonated in the delay and total amount of explosives to be fired has been computed.

- ❖ Propagation equation for the prediction of blast vibration has been established and is given as Equation 1. The permissible explosive weight per delay may be computed from the Equation to contain vibration within safe limit for distances of houses/structures concerned. For convenience, the recommended explosive weight per delay and predicted ground vibration level has been computed and is given in Annexure as Table A3 and Table A4 respectively. Recommended total explosive charge to be detonated in a blasting round is presented in Annexure as Table A5.
- ❖ The delay interval between the holes in a row should be 17 ms whereas between the rows, it should be 42 ms or more depending upon the number of rows and effective burden. If the numbers of rows are more than two, the delay interval between rows should be increased by 15% in successive rows.
- ❖ The recommended blast designs should be followed for day-to-day blasting operations for safe and efficient blasting operations. The Blast designs Annexure as Figures A1-A2, will also ensure the safety of the houses/structures, life of human beings and other property in the periphery of the mines.

1. Introduction

M/s Jindal Steel and Power Limited (JSPL), entrusted Director, CSIR-Central Institute of Mining & Fuel Research (CIMFR), Dhanbad, vide work order no. 4511513272 dated 04.10.2018 for a scientific study and advice for blast vibration prediction & suggestion of blast design for mining operation at Goddadih Mahal No. 2 Limestone Mines to control ground vibration within safe limits for the safety of structures in the periphery of the mines with improved production and productivity.

The Rock Excavation Engineering Research Group of Central Institute of Mining & Fuel Research Dhanbad carried out field investigations on August 25, 2020, September 05, 2020, October 01, 2020, February 17, 2021 and during March 12-27, 2021. Altogether, ten (10) trial blasts were conducted. Blast induced ground vibration and air over-pressure/noise were monitored at various locations in the periphery of the mines. The monitoring locations were back-side of the blast free face, near Lake area, crusher plant, village road and in the Goddadih Mahal No. 2 village.

2. Location and geology

M/s Jindal Steel and Power Limited (JSPL), Masuri has been granted mining lease of limestone over an area of 120.313 hectares at village Goddadih Mahal no.2, Tehsil: Masuri, District: Bhojpur in Chhatisgarh state vide letter no F-3-SG/2007/1233 dated 03.01.2017 under the mines and minerals (Development and Regulations) act 1957 as amended up to date. The Goddadih Mahal No.2 Block (allotted to M/s Jindal Steel and Power Limited, Masuri), extends over an area of 120.313 Ha, falling in Village Goddadih Mahal No.2, in the Bilaspur District of Chhatisgarh and lies between Longitude $82^{\circ}17'54.55''$ E to $82^{\circ}19'14.66''$ E and Latitude $21^{\circ}47'32.63''$ N to $21^{\circ}48'20.52''$ N in the Survey of India Toposheet No. 64 K/5. The geological map of the mining lease area of M/s Jindal Steel and Power Limited, Masuri is shown in Figure 1. Geologically, The Goddadih Mahal No.2 ML area is part of the Central part of Chhhatti Block which is located in the North - Central portion of the Chhatisgarh basin and Saurmahals have been reported from Chhatisgarh basin, these indicate middle and upper Riphean age. The geological formations in this Block include Shale, stromatolitic limestone, shaly limestone and dolomite limestone, etc. The general strike of limestone and all the associated formations in the adjoining area is the ENE-WNW with a gentle dip (2° to 4°) predominantly in the NW direction. There is no major structural disturbance in this block except some folds and joints are seen in the allotted area of M/s JSPL. In the southern portion of the vast open country of Bilaspur district is a very gently undulating plain traversed by a series of convergent streams and the topographic elevation varies from 238 m to 263 m above the MSL with a gentle slope (1 in 100) towards South. The major part of the area on the surface is covered with soil. The view of Limestone Mines of M/s Jindal Steel and Power Limited, Masuri is shown in photograph 1.

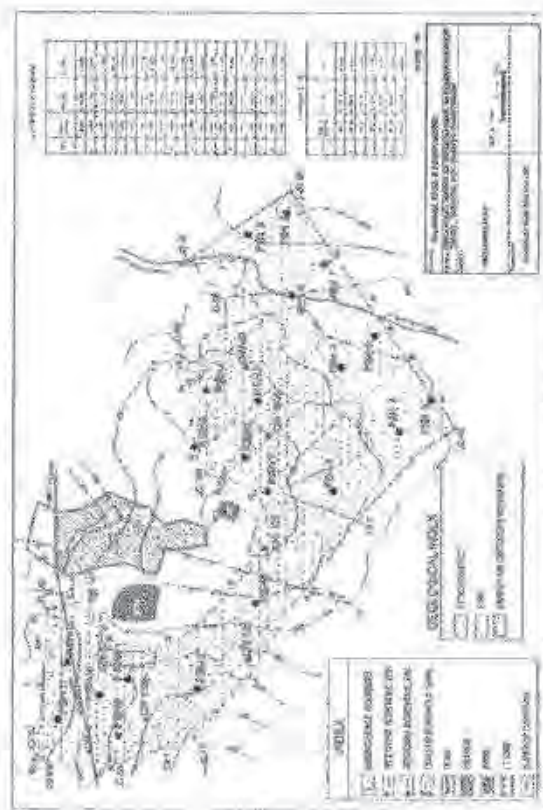


Figure 1. The geometrical shape of the trailing (case area of M/s Jindal Steel and Power Limited, Mahanadi).



Photograph 1. The view of Limestone Mines of M/s. Model Steel and Power Limited, Wazir.

3. Instrumentations

Blast induced vibrations were monitored by seismographs namely, MicroMate, MiniMate D8-077, MiniMate Plus and MiniMate Blaster (Made in Canada by M/s Instanet Inc.) are four-channel seismographs provided with one tri-axial transducer(s) for monitoring vibration (in mm/s) and one channel(s) for monitoring air-over-pressure noise in dB(L). All the seismographs record vibration in three directions i.e., Longitudinal (L), Vertical (V), and Transverse (T). They also record the principal frequency of vibration and compute the peak vector sum of the vibration.

The equipment used for monitoring consists of a micro-processor-based logger, tri-axial geophone and a mic with 1.5 m three-piece stand. These instruments are manufactured by Instanet, Canada, described in Figure 2. Geophone in the seismographs is a solenoid and it works on the principle of mutual induction. The geophone records vibration in terms of Peak Particle Velocity (PPV) in mm/s in all the three orthogonal directions (Transverse, Longitudinal and Vertical). Mic unit records peak air overpressure induced by blasting. The air overpressure can be recorded in A-weight as well as linear scale. These are portable, high precision instrument which measures vibration intensity in terms of Amplitude, Peak Particle Velocity, Frequency and Air overpressure in British as well as Metric units. Instrument permits full wave recording at any instant of time for a preset duration. Sensors are having an articulation of spikes for proper coupling with the ground for more precise reading of particle velocity. This instrument is four channel seismographs provided with one tri-axial transducer for monitoring of vibration (in mm/s or in/s) and one channel for monitoring of air overpressure/noise in dB (L) or Pa. These record vibrations in three orthogonal directions [i.e. Longitudinal (L), Vertical (V) and Transverse (T)] and peak frequency of vibration in individual directions as well as indicate the Peak Vector Sum of vibrations. The instruments permit full wave recording at any instant of time for a preset duration. Sensors are having an articulation of spikes for proper coupling with the ground for more precise reading of particle velocity.

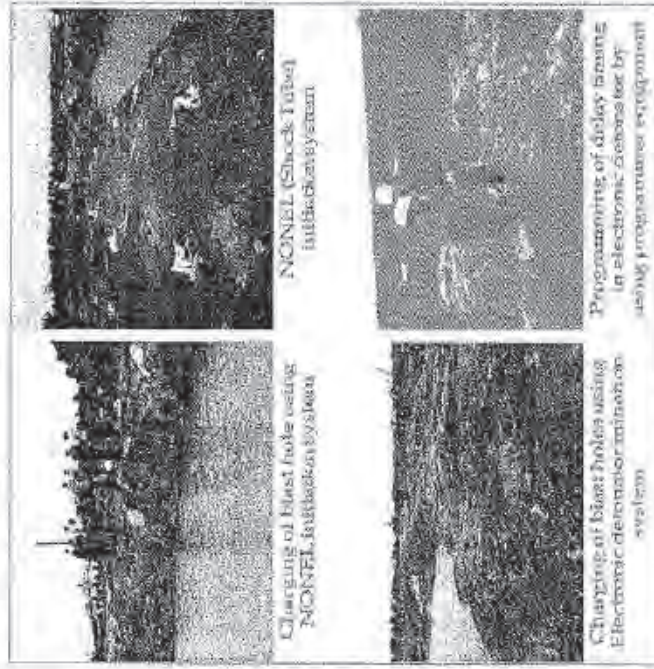


Figure 2. Blast vibration Monitoring Equipment (MicroMate seismograph).

4. Blasting details

Ten blasts were conducted on different benches of Limestone Mines. The number of blast holes detonated in production blasting varied from 45 to 188. The diameters of blast holes were 130 mm. The depth of blast holes varied from 3 to 6 m and the explosives loaded in a hole varied from 5.6 to 25 kg. The explosive's weight per delay ranged between 16.7 to 50 kg. Total explosive weight detonated in a round of production blast varied between 522 and 2650 kg. The blasts were conducted using the Nonel delay as well as Electronic delay initiation system. The vibration measuring distances varied from 100 m to 400 m. Details of blast design parameters experienced during the period of investigation are given in Annexure as Table A.

The explosive used for breaking the rock mass is the emulsion slurry cartridges of $\text{N}/\frac{1}{2}$ TDI Explosive Ltd., Sakri patne & column of M/s Special Blast Limited and Mega prime cartridges of M/s CDET Ltd. NONEL (Shock tube/Electronic Detector (eDET)) were used for initiating the cartridge of emulsion slurry explosive. The Delay of 17/25ms to between consecutive holes and 42ms in a successive row was provided to reduce the maximum charge per delay (MCPD) as blast-induced ground vibration is a function of MCPD and distance. Photograph 2 depicts some of the blast faces, charging of blast holes, and connection with different initiation systems in the mines.



Photograph 2. The charging and connection of the Limestone 2nd and OH 1st benches of Limestone Mines of M/s India Steel and Power Limited, Mysuru

5. Monitoring of ground vibrations

Monitoring locations were chosen considering the size of the blast, blast location, the distance of the critical structures from the blast site, presence of any domestic structures, etc. In all the cases, measurements were carried out in the direction of houses and crushers, and critical structures to record maximum vibration as well as air overpressure intensity. During the investigation and monitoring program, priority in monitoring location was given to the houses which were closer to the mine lease. The view of blast vibration monitoring locations during various field visits in the periphery of the mines and towards the Godadith Mahal No.2 village are shown in Photographs 3.

Vibrations were monitored in terms of peak particle velocity (PPV) that varied from 0.5 mm/s to 7.048 mm/s in case of production blast depending upon the distance of measuring transducers of seismographs from the blasting face and the amount of explosives detonated in particular delay of the blast. The recorded levels of air over-pressure ranged from 103.5 dB(A) – 138.1 dB(L). Recorded blast-induced ground vibrations and air over-pressure are presented in Annexure as Table A2.



Photograph 3 Monitoring of blast vibration at different locations from the blast location (linear direction with Godadith Mahal No. 2 villager's house) in the periphery of the Limestone Mines or near to crusher plant and mine boundary.

6. Analyses of recorded vibration data

Ground vibrations data recorded were grouped for statistical analysis. An empirical relationship has been established correlating the maximum explosive weight per delay (Q_{max} in kg), the distance of vibration measuring transducers from the blasting face (R in m), and recorded peak particle velocity (v in mm/s). The established equation for the mines is:

$$V = 619 \left[\frac{R}{\sqrt{Q_{max}}} \right]^{-1.545} \dots [1]$$

Correlation co-efficient (R)= 85.5 %

Where,

v = Peak particle velocity (mm/s)

R = Distance between vibration monitoring point and blasting face (m)

Q_{max} = Maximum explosive weight per delay (kg)

The above equation is site-specific and applicable only for Limestone Mines (Gobalith Mahal No.2 Block). It may be used to compute the maximum explosive weight to be detonated in a delay for distances of concern from the blasting area. For predictor equation of the Limestone Mines was incorporated in the regression analysis. The regression plot of vibration data recorded at their respective scaled distances is presented in Figure 3.

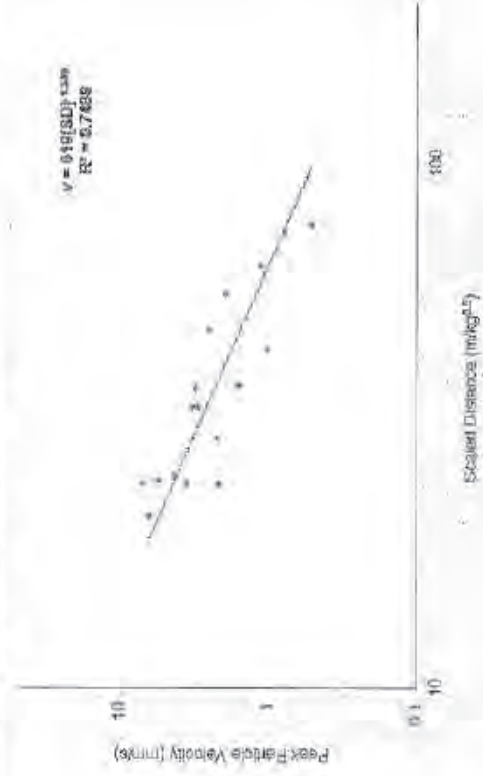


Figure 3. Regression plot of recorded PPV with their respective scaled distances.

6.1 Frequency of blast vibration

The dominant peak frequencies of ground vibrations recorded were in the range of 19.63 – 141.5 Hz whereas the most vibration range lies between 30 and 78 Hz. Most of the vibration measuring stations were on compact ground surfaces. The dominant peak frequency recorded at corresponding monitoring locations is presented in Figure 4.

The blast wave signature recorded near village road towards village (Distance - 150 m, PPV - 6.468 mm/s) from the blast conducted at 1st bench of Goddith Mahal No 2 Limestone Mines is depicted in Figure 5 and its Fast Fourier Transform (FFT) analysis of frequency is shown in Figure 6. The blast wave signature recorded at Security Gate near village road (Distance - 240 m, PPV - 3.133 mm/s) from the blast conducted at 2nd bench is shown in Figure 7. Fast Fourier Transform (FFT) analysis of frequency of the vibration signature is presented in Figure 8. The Fast Fourier Transform (FFT) analysis of frequencies indicate high frequency vibrations recorded in blasting.

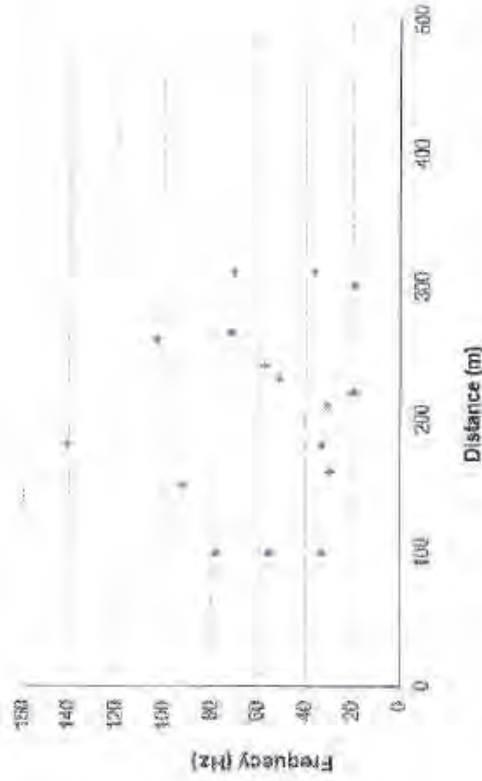


Figure 4. Plot of dominant frequency with respect to respective distances.

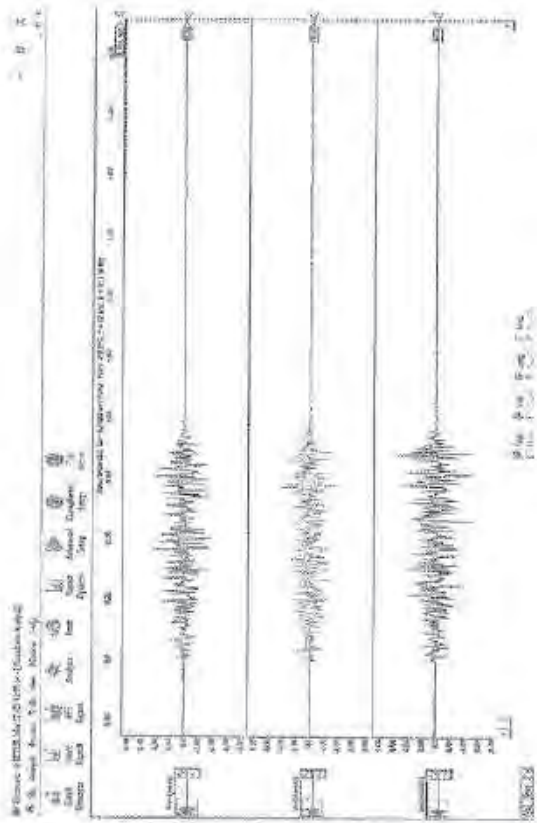


Figure 5. Blast wave signature recorded near village road towards village from the blast conducted at 1st bench of Goddali Malai No. 2 Limestone Mines.

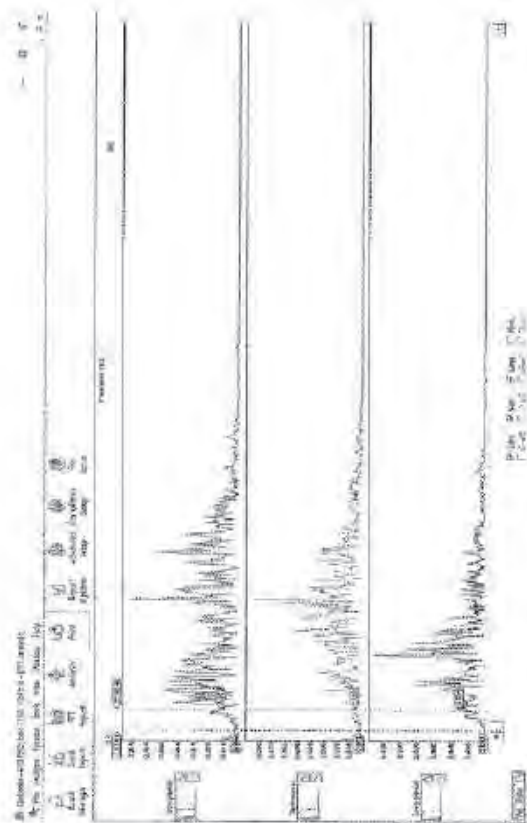


Figure 6. FFT analyses of frequencies of vibration presented in Figure 5.

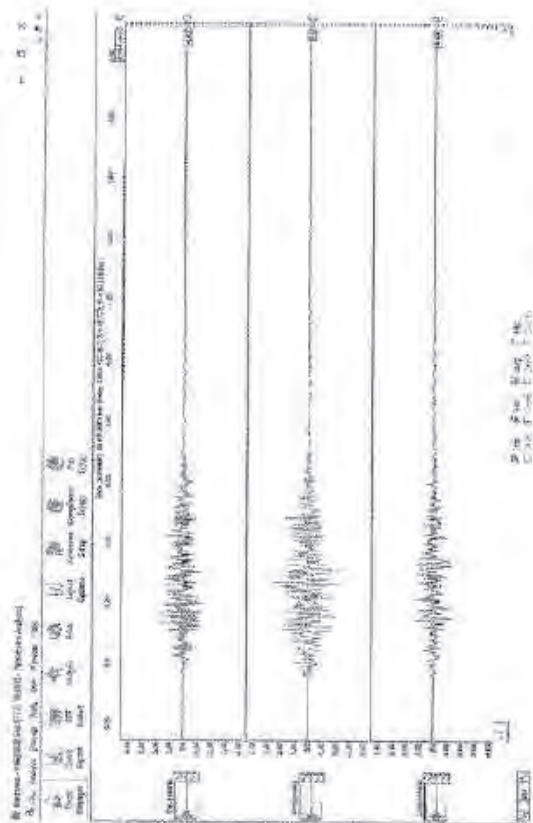


Figure 7. Blast wave signature recorded at Security Gate near village road from the blast conducted at OB 2nd bench of Goddali Mahal No. 2 Limestone Mines.

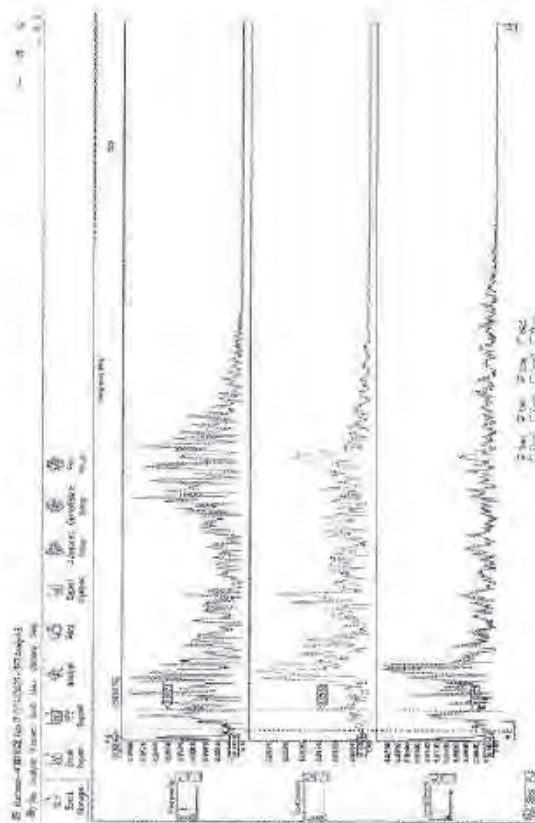


Figure 8. FFT analyses of frequencies of vibration presented in Figure 7.

7. Existing vibration standard and criteria to prevent damage

Peak particle velocity (PPV) has been globally used in practice for the assessment of blast-induced damage to the structures. Different countries adopt different standards depending on their type of industrial/residential buildings. In India, presently DGMS technical circular 7 of 1997 is considered as vibration standard for the safety of surface structures in mining areas. The DGMS standard is given in Table 1.

Table 1 DGMS technical circular 7 of 1997 concerning blast vibration standard in mm/s

Type of structure	Dominant excitation frequency, Hz		
	< 8 Hz	8-25 Hz	> 25 Hz
(A) Buildings/structures did not belong to the owner			
1. Domestic houses/structures (Kutchha, brick & cement)	5	10	15
2. Industrial buildings	10	20	25
3. Objects of historical importance and sensitive structures	2	5	10
(B) Buildings belonging to owner with limited span of life			
1. Domestic houses/structures	10	15	25
2. Industrial buildings	15	25	50

8. Air over-pressure/noise

Air overpressure in the mining or quarrying context is the superposition of several impulsive air pressures as a result of the detonation of explosives in the ground. Air over-pressure can be measured in the pressure unit as well as sound pressure level (SPL).

$$SPL \text{ (dB)} = 20 \log (p/p_0)$$

Where, p = measured over-pressure in Pascal (Pa)

p_0 = reference pressure level of the lowest sound that can be heard, i.e., zero dB
 $= 2 \times 10^{-5}$ Pa.

United States Bureau of Mines (USBM) has correlated the damage due to air over-pressure. The recommended values are given below

Over-pressure (dB)	Over-pressure (kPa)	Air Blast Effects
177	14	All windows break
170	6	Most windows break
150	0.63	Some windows break
140	0.20	Some large plate glass windows may break, desk and windows rattle
130	0.13	USBM interim limit for allowable air blast
126	0.05	Complaints likely

The maximum level of air overpressure recorded from the production blast was 138.1 dB(L) at 180 m, the blast was conducted in Limestone 1st bench. In this blast, 96 blast holes were loaded with 1850 kg of explosives and fired with the explosive weight per delay of 50 kg. The threshold level of air overpressure/noise is 136 dB(L) as per OSHM standard.

9. Human response to blasting

The tolerance and reactions of human beings to vibrations are important when standards are based on annoyance, interference, work productivity and health. Human beings notice and react to blast induced vibrations at levels that are lower than the damage thresholds.

It is impossible to establish a vibration level where nobody will complain. There are always some persons in a population who will complain no matter how small the disturbance is. Several researchers recognized that the duration of the vibration was critical. Most evident was that a higher level could be tolerated if the event was of short duration. Consequently, steady state vibration data could not be realistically applied to blasting except for events that exceed several seconds duration.

10. Conclusions and recommendations

- ❖ Maximum vibration recorded from the production blast was 7 (648 mm/s with associated dominant peak frequency of 33.2 Hz at 100 m from blasting site. The explosives weight per delay was 16.7 kg. The PPV recorded at 310 m from the same blast was 0.516 mm/s. Fast attenuation of vibration were encountered.
- ❖ The maximum air over-pressure recorded from the production blast was 138.1 dB(L) at 180 m from the blasting site. In this blast, explosives detonated in a blasting round was 1850 kg. The Nonel initiation system and electronic detonator reduces the noise to a greater extent and improves the blasting performance too. There was no ejection of flyrock in any of the blast.
- ❖ All the recorded data (blast vibrations, air overpressures and flyrock) were well within the safe limit at the houses/structures concerned. The dominant peak frequencies of ground vibrations were in the range of 19.63 Hz to 141.5 Hz. So the safe level of vibration has been taken as 10 mm/s for the safety of houses/structures of the surrounding villages as per DGM'S standard.
- ❖ Propagation equation for the prediction of blast vibration has been established and is given in Equation 1. The permissible explosive weight per delay may be computed from the Equation to contain vibration within safe limits for distance of houses/structures concerned. For convenience, the recommended explosives weight per delay and predicted vibration level has been computed and is given in Annexure as Table A3 and Table A4. Recommended total explosive charge to be detonated in a blasting round is presented in Annexure as Table A5.

- ❖ The delay interval between the holes in a row should be 17 ms whereas between the rows, it should be 42 ms or more depending upon the number of rows and effective burden. If the numbers of rows are more than two, the delay interval between rows should be increased by 15% in successive rows.
- ❖ It is recommended that the existing Novel initiation system should be continued in the blasting operations and Electronic initiation systems should be practical on the benches near to the structures for more precise and accurate delay design. The sub-grade drilling should be 0.3 to 0.5 m for a blasthole depth of 5 to 7 m and should be initiated from the bottom of the hole.
- ❖ This is recommended to use stem plug or stone chips of size 4 mm to 10 mm to prevent vertical ejection through stemming area. This will help in minimizing total explosive weight and ground vibration.
- ❖ The recommended blast designs should be followed for day-to-day blasting operations for safe and efficient blasting operations. The blast designs given in Annexure as Figures A1-A2, will ensure the safety of the houses/structures, life of human beings and other property in the periphery of the mines.

Acknowledgements

The research team is thankful to M/s Hindal Steel and Power Limited (HSPCL) Museum for sponsoring the study. The sincere co-operation and help extended to the team by the following officials in completing this study successfully are thankfully acknowledged.

Shri Nitesh Raghuvanshi	AVP & Head - Limestone Mines
Shri Narendra Kumar Mishra	Mines Manager
Shri Mukesh Kumar Singh	AGM-Survey
Shri Pramod Kumar	Dy. Manager (Mining & Blasting)
Shri Rishod Kumar	Manager Mining
Shri Sudhdeo Salari	Manager-Geology
Shri Ajit Kumar Sarangi	Blasting Foreman

The research team also expresses their gratitude to the inhabitants of nearby villagers for their co-operation in blast vibration and air overpressure monitoring.

Table A1. Summary of blast performed during the period of study at Godadih Mahal No. 2 Limestone Mines of M/s JSPL (CG).

S. No.	Date of Blast	Location of Blast	No. of holes	Hole dia. [mm]	Hole depth [m]	Burden [m] × Spacing [m]	Top Stemming [m]	Avg. explosive Per hole [kg]	Total explosive Weight [kg]	Remarks
1.	25/08/20	1 st bench	73	100	3	2 × 2	1.8	5.6 – 8.3	522	❖ NONEL: DTH- 250ms, TLD- 17 & 42ms
2.	25/08/20	1 st bench	91	100	3	2 × 2	1.8	5.6 – 8.3	725	❖ NONEL: DTH- 250ms, TLD- 17 & 42ms
3.	05/09/20	1 st bench	91	100	3	2.5 × 2.5	1.8	5.6 – 8.3	725	❖ Electronic Delay Detonator
4.	01/10/20	1 st bench	154	100	3	2.5 × 2.5	1.8	5.6	875	❖ Electronic Delay Detonator
5.	17/02/21	2 nd bench	134	100	3-5	2 × 2.5	1.8 – 3.3	8.3-16.7	1650	❖ NONEL: DTH- 250ms, TLD- 17 & 42ms
6.	12/03/21	1 st bench	188	100	5	2 × 2.5	3	13.9-16.7	2650	❖ NONEL: DTH- 250ms, TLD- 17 & 42ms
7.	17/03/21	1 st bench	134	100	3-5	3 × 3	1.8 – 2.6	8.3-16.7	1675	❖ NONEL: DTH- 500ms, TLD- 17 & 42ms
8.	20/03/21	1 st bench	96	100	3-6	3 × 3	1.8 – 3.0	8.3-25	1850	❖ NONEL: DTH- 500ms, TLD- 17 & 42ms
9.	26/03/21	1 st bench	136	100	3-4	3 × 3	1.8 – 2	8.3-13.9	1800	❖ NONEL: DTH- 500ms, TLD- 25ms (Twindet)
10.	27/03/21	1 st bench	45	100	3-5	3 × 3	1.8	8.3-16.7	650	❖ NONEL: DTH- 500ms, TLD- 25ms (Twindet)

Table A2. Blast induced vibration monitored at different location in and around of Godadih Mahal No. 2 Limestone Mines of M/s JSPL (CG).

Blast No.	Location of Blast	Total Explosives detonated in round [Kg]	Maximum Explosives weight /delay [Kg]	Location of measuring instruments	Distance of measuring point from blasting face [m]	Peck particle velocity (PPV) [mm/s]	Dominant peck frequency [Hz]	Air over-pressure/noise [dB (L.)]
1.	1 st bench	522	16.7 (2 holes)	➤ Back side (Towards village) ➤ Back side (Towards village) ➤ Back side (Towards village)	100 250 400	3.576 <0.5 <0.5	78 - -	122.2 - -
2.	1 st bench	725	16.7 (2 holes)	➤ Back side (Towards village) ➤ Back side (Towards village) ➤ Back side (Towards village)	100 180 310	7.048 1.023 0.516	33.25 33.5 70.13	130.4 121.5 117.2
3.	1 st bench	725	16.7 (2 holes)	➤ Before Crusher Plant (Right side) ➤ At Crusher plant (Right side) ➤ Road behind Crusher plant (Right side)	100 300 350	2.183 0.784 <0.5	55.63 19.63 -	136.7 103.5 -
4.	1 st bench	875	16.8 (3 holes)	➤ Back side (Towards village) ➤ Back side (Towards village)	230 260	1.966 1.136	51.63 103.1	134.5 132.3
5.	2 nd bench	1650	41.7 (3 holes)	➤ Security Gate near Road	240	3.133	57.63	136.3
6.	1 st bench	2650	41.7 (3 holes)	➤ Back side near village Road	220	3.326	19.75	136.6
7.	1 st bench	1675	50 (3 holes)	➤ Near village road (Towards Village) ➤ Back side near Lake ➤ Back side of the blast Face	150 210 265	6.468 2.286 1.611	92.5 31.13 71.75	135.9 135.5 137
8.	1 st bench	1850	50 (2 holes)	➤ Back side of the blast Face ➤ Back side near village	180 345	4.35 <0.5	141.5 -	138.1 -
9.	1 st bench	1800	41.7 (3 holes)	➤ Back side of the blast Face ➤ Back side near Lake ➤ Back side near mines boundary	160 220 310	5.603 2.985 2.495	30 20.63 37.13	128.4 125.1 121.8
10.	1 st bench	650	27.8 (2 holes)	➤ Back side near Lake ➤ Back side near village	210 320	<0.5 <0.5	- -	- -

Table A3. Recommended explosives weight per delay to be detonated in a blasting round for the safety of houses/structures taking 10 mm/s (for the houses/structures not belonging to the Owner) and 15 mm/s (for the houses/structures belonging to the Owner) as safe limit of peak particle velocity for Godindh Mahal No. 2 Limestone Mines of M/s ISPL (CG)

Distance of structures from the blast face [m]	Maximum explosive weight to be detonated in a delay at Godindh Mahal No 2 Limestone Mines of M/s ISPL (CG) [kg]	
	10 mm/s	15 mm/s
100	48	81
125	75	127
150	108	182
175	147	248
200	192	324
225	243	410
250	300	506
275	363	613
300	431	729
325	507	853
350	587	993
400	767	1296
450	971	1641
500	1198	2020

Table A4. Predicted peak particle velocity levels at various distance due to detonation of explosive weight per delay of 10, 25, 50 & 75 kg at Godindh Mahal No. 2 Limestone Mines of M/s ISPL (CG).

Distance of structures from the blast face [m]	Predicted peak particle velocity levels [mm/s]			
	10 kg	25 kg	50 kg	75 kg
100	3.0	6.0	10.3	14.1
125	2.1	4.3	7.3	10.0
150	1.6	3.2	5.5	7.6
175	1.3	2.5	4.4	6.0
200	1.0	2.1	3.5	4.8
225	0.9	1.7	3.0	4.0
250	0.7	1.5	2.5	3.4
275	0.6	1.3	2.2	3.0
300	0.5	1.1	1.9	2.6
350	0.4	0.9	1.5	2.0
400	0.3	0.7	1.2	1.7
450	0.3	0.6	1.0	1.4
500	0.2	0.5	0.9	1.2

Table A5. Recommended total explosive charge to be detonated in a blasting round considering the safety of houses/structures in the village and taking 10 mm/s (Domestic houses/structures not belong to the owner) as safe limit of peak particle velocity for Giddadih Mahal No. 2 Limestone Mines of M/s JSPL (C.G).

Distance of structures from the blast face [m]	total explosive weight to be detonated in a delay Considering 10 mm/s as safe limit of vibration [kg]
100	579
125	905
150	1303
175	1774
200	2317
225	2952
250	3620
275	4381
300	5213
350	7996
400	9268
450	11730
500	14481

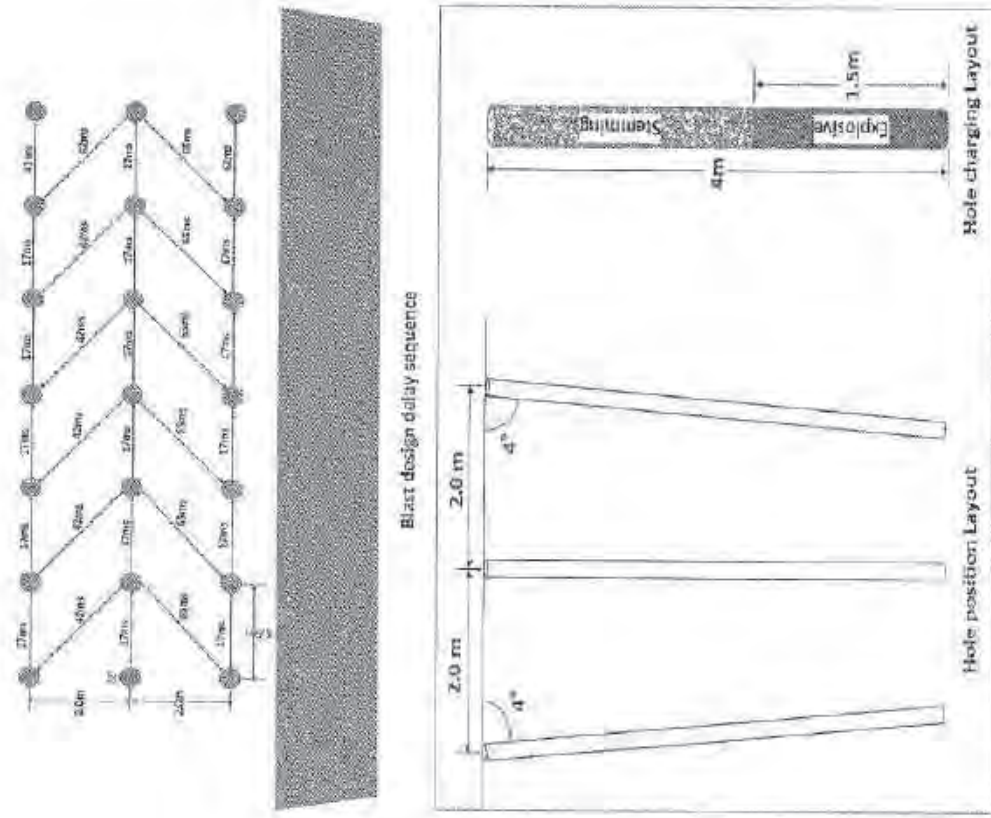
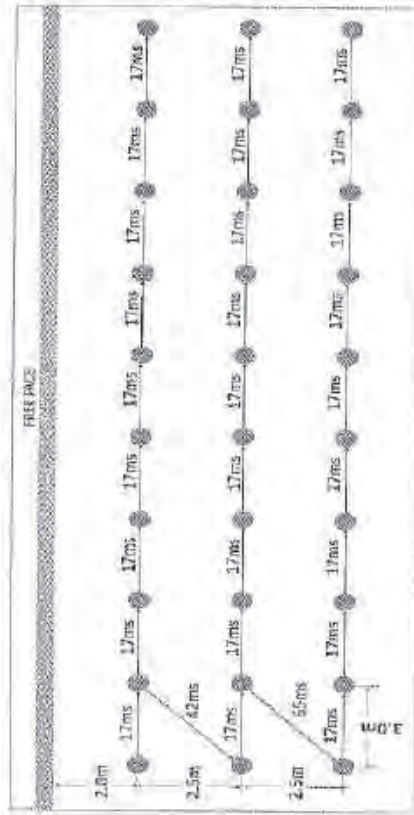


Figure A1. Box-cut design for formation of benches in Godadlin Mahal No. 2 Limestone Mines of M/s. Indal Steel & Power Limited (IG).



Blast design delay sequence

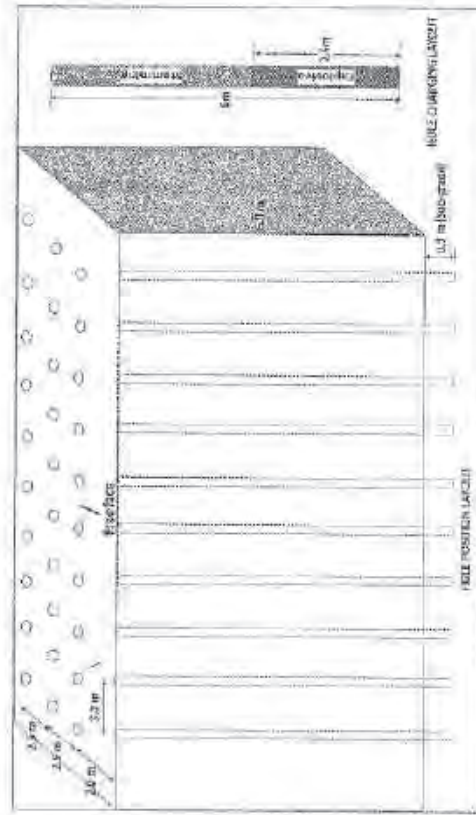


Figure A2: Blast design pattern for 6m benches at Goddikh Mahal No. 2 Limestone Mines of M/s Jindal Steel & Power Limited (JSPL).



Event Report

Serial Number: 10017406 V (10017406) 951111
Expiry Level: 2.0 10.10
Unit Calibration: January 13, 2009 10:10:30
Title: 27.44 30.2003.951 951111

MEASUREMENTS

Author's address:

monoclonality (Mcl):
 rank = Mcl; weight = 1; negl = 0

- all other things being equal
- the more the better
- the more the worse
- the more the better or worse

Time scale has been modified and may not represent actual length of the record period.
True Scale: 0.00 cm/s. Amplitude Scale: 0.01 s. Velocity Scale: 10 cm/s. Scale: 0.01 s.

George Chivadi

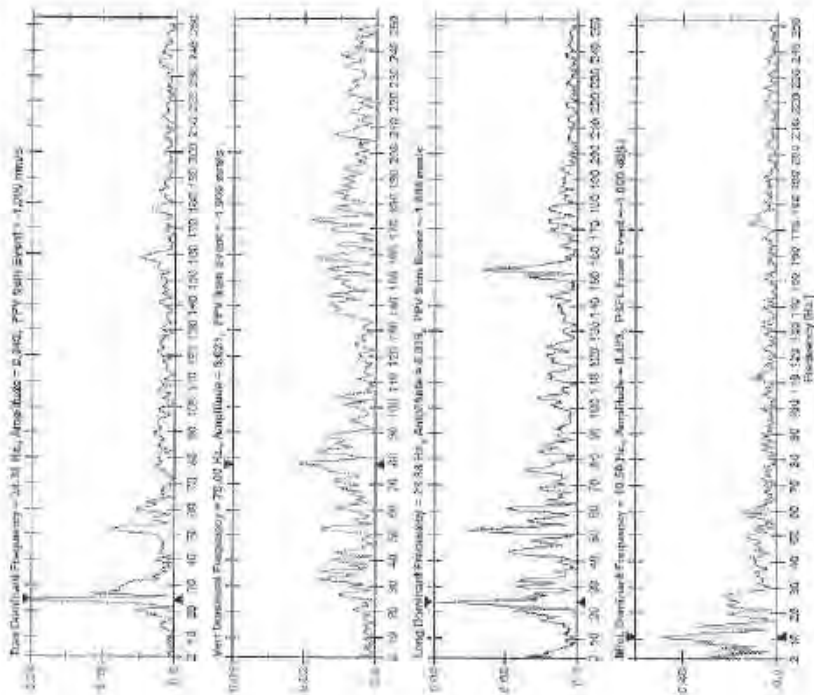


Instant

FFT Report

Date/Time: 19/01/2022 08:04:35, 2022
Trigger Source: 5.0 Vrms
Filtering: 20-50 Hz
Record Time: 5.0 sec at 400 Hz
Operational Mode: On/Off (300 Hz) (100 Hz)
Name: 100 Hz (300 Hz) (100 Hz)
Location: 100 Hz (300 Hz) (100 Hz)
Client: 100 Hz (300 Hz) (100 Hz)
Site: 100 Hz (300 Hz) (100 Hz)
Signal:

Serial Number: 100 Hz (300 Hz) (100 Hz)
Building Level: 5.0 Vrms
Unit Calibration: 100 Hz (300 Hz) (100 Hz)
File Name: 100 Hz (300 Hz) (100 Hz)
Extension/Notes:
200 Hz (300 Hz) (100 Hz)
Features and Damage Potential at 100 Hz (300 Hz)





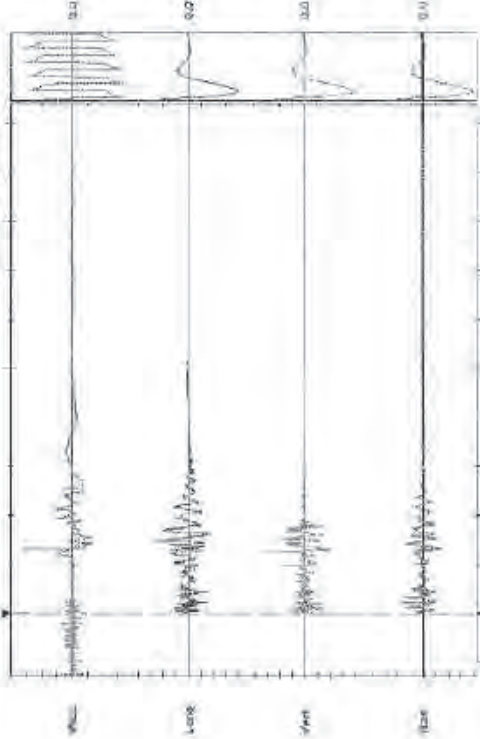
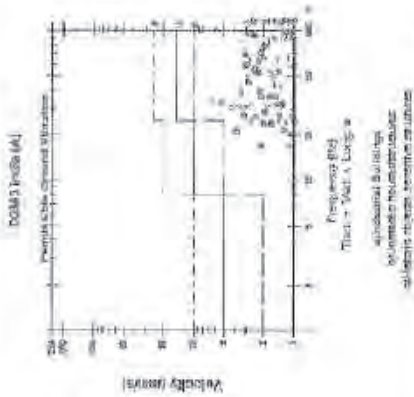
BLM

Event Report

Event Title: Vibration Monitoring August 25, 2020
Project: 2020-01-01
Range: 2020-01-01
Normal Date: 5/3/2020 09:00:00
Operator Name: Operator Name
Notes: 100' Diameter Blast Hole (100')
Location: 100' Diameter Blast Hole (100')
Client: USGS, USGS, USGS
Data Source: USGS, USGS, USGS

Serial Number: 00000000000000000000
Station Name: 00000000000000000000
File Name: 00000000000000000000

Expenditure Note:
Scientific Data or Data: Vibration Data (Vibration and Noise)
Frequency: 100 Hz (100 Hz)
Microphone: 100 Hz (100 Hz)
PDA: 100 Hz (100 Hz)
20' Free: 100 Hz (100 Hz)
Ground Time: 100 Hz (100 Hz)
Time: 100 Hz (100 Hz)
Date: 100 Hz (100 Hz)
Time: 100 Hz (100 Hz)
Date: 100 Hz (100 Hz)
Time: 100 Hz (100 Hz)
Date: 100 Hz (100 Hz)



These graphs are for informational purposes only and do not represent the actual length of the event. The data shown is for informational purposes only. The data shown is for informational purposes only.



Installation

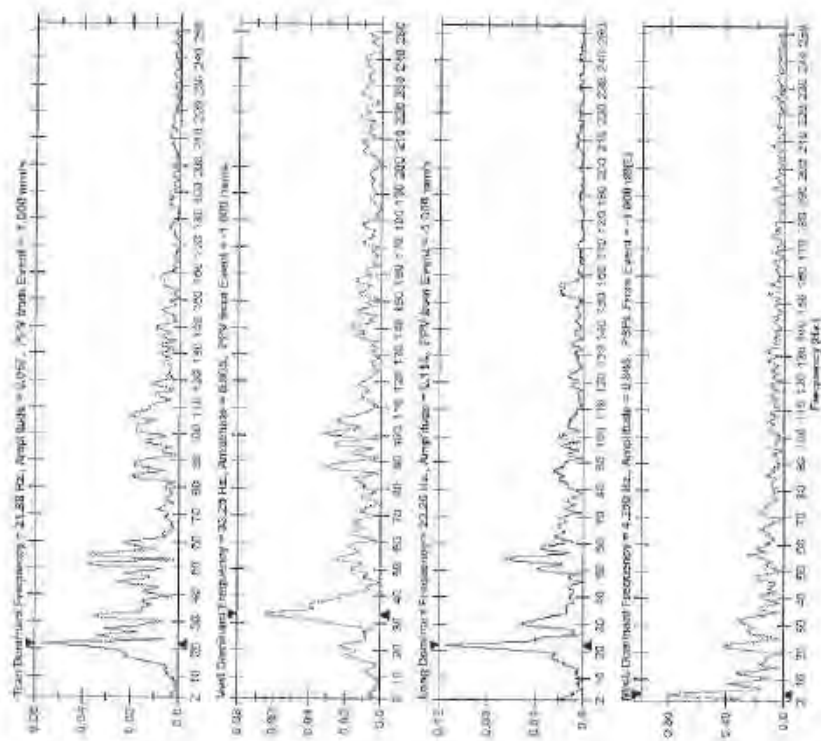
Date: 10/10/2017
Time: 10:00 AM
Location: 1000
Operator: J. J. J.
Project: 1000

Notes:
1. The data was collected at 1000 Hz.
2. The data was collected at 1000 Hz.
3. The data was collected at 1000 Hz.

FFT Report

Serial Number: 10000000000000000000
Data File: 10000000000000000000
File Name: 10000000000000000000

Estimated Noise:
Power Spectral Density: 10000000000000000000
Power Spectral Density: 10000000000000000000





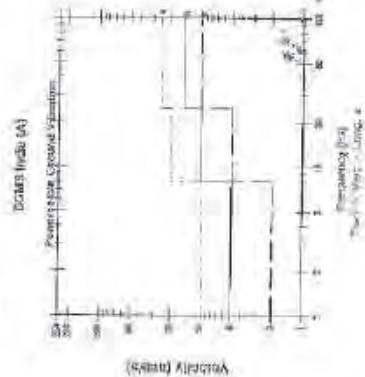
Event Report

Event Report

Device: V10-1000
Model: V10-1000
Serial: 1000
Firmware: 1.0.0
Revision: 1.0.0
Date: 10/10/2020
Time: 10:10:10
Location: 1000

Device: V10-1000
Model: V10-1000
Serial: 1000
Firmware: 1.0.0
Revision: 1.0.0
Date: 10/10/2020
Time: 10:10:10
Location: 1000

Device: V10-1000
Model: V10-1000
Serial: 1000
Firmware: 1.0.0
Revision: 1.0.0
Date: 10/10/2020
Time: 10:10:10
Location: 1000



Device: V10-1000
Model: V10-1000
Serial: 1000
Firmware: 1.0.0
Revision: 1.0.0
Date: 10/10/2020
Time: 10:10:10
Location: 1000

Device: V10-1000
Model: V10-1000
Serial: 1000
Firmware: 1.0.0
Revision: 1.0.0
Date: 10/10/2020
Time: 10:10:10
Location: 1000



Time: 10/10/2020 10:10:10
Location: 1000
Serial: 1000
Firmware: 1.0.0
Revision: 1.0.0



Instantiated

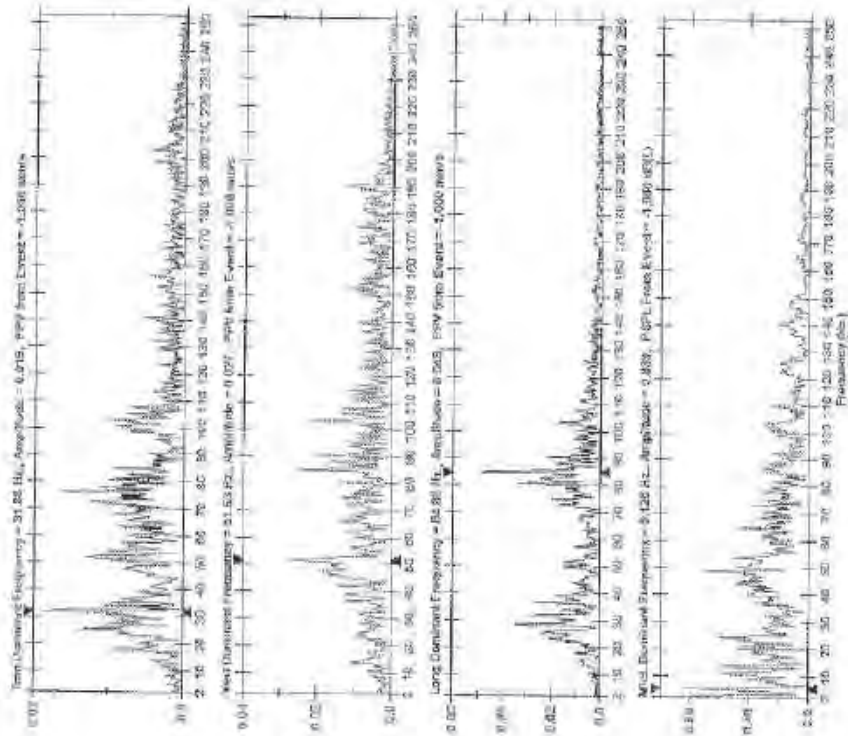
FFT Report

Date/Time: Tue 10/27/11 10:00:00 AM
Trigger Source: Bas 8250 mHz
Range: 200 mHz
Sweep Time: 100 ms
Operator/Engine: C:\Program Files\Biosonics\Biosonics.exe

Model: 100 mHz
Location: 100 mHz
Date: 10/27/11 10:00:00 AM
User Name: C:\Program Files\Biosonics\Biosonics.exe
Serial: 100 mHz

Serial Number: 10012711 V 10012711
Serial Label: 10012711
Unit Call Sign: 10012711
File Name: 10012711_10012711_10012711

Standard Model:
Standard Model: 10012711
Standard Model: 10012711
Standard Model: 10012711

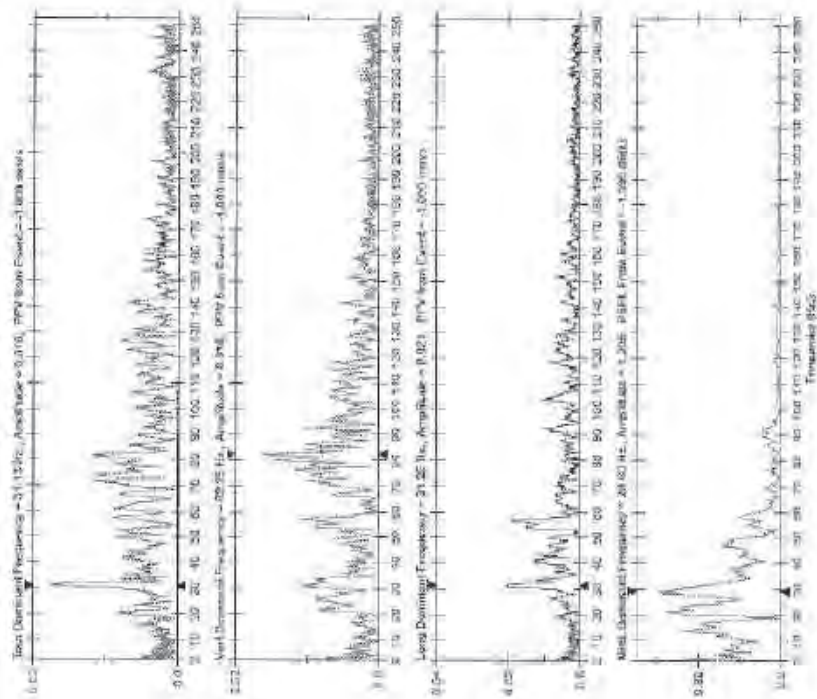




EFT Report

Spatial Resampler
Gabriel Laviel
Unit Categories
30 January 2016, 2017 by constant mapaged
Evo. Name
FEEDBACK.L.001p

Confession of Muslims





Installed

Event Report

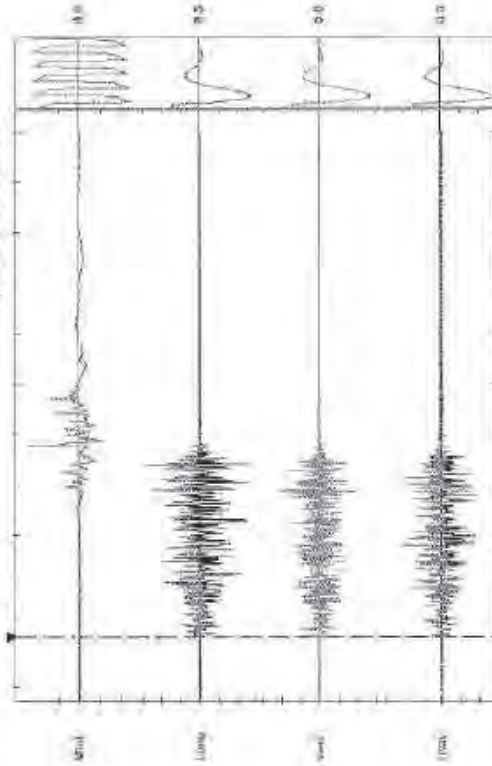
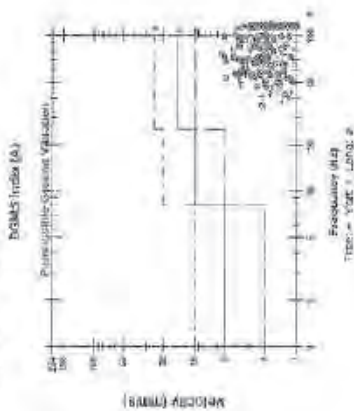
Client: USBL-1414 March 17, 2021
Trigger System: 0.125 m/s
Name: 0.125 m/s
Hardware: 16-bit 4000 Hz

Serial Number: 872510 10.20.18 11.10.18.18
Battery Level: 8.0 Vdc
Last Configuration: January 28, 2021 by CSM:11.10.18.18
File Name: 88211414.D21

Model: On ground surface
Location: 14.1414, 10.20.18, 11.10.18.18
Notes: 0.125 m/s, 16-bit, 4000 Hz, 16-bit, 4000 Hz

Expanded Notes

Microphone: Linear Microphone
P/N: 130.0 0.1 1.750.250
AC Input: 1.5 Vdc
Channel Gain: Fixed Gain = 20.1 Hz, Amp = 440 mV
Type: 16-bit 4000 Hz
Time (s): 0.000 0.000 0.000 0.000
Time (s): 0.000 0.000 0.000 0.000
Peak Amplitude: 0.000 0.000 0.000 0.000
Peak Amplitude: 0.000 0.000 0.000 0.000
Signal Chain: Preamplifier, Filter, Amplifier
Frequency: 1.0 1.0 1.0 1.0
Overriding Gain: 0.0 0.0 0.0 0.0
Peak Voltage: 0.000 0.000 0.000 0.000



Time Scale: This chart is a plot of the signal amplitude (in Volts) versus time (in seconds). The time scale is 1.0 second per division. The amplitude scale is 1.0 Volt per division. The signal is a 1.0 Volt peak-to-peak sine wave. The signal is a 1.0 Volt peak-to-peak sine wave. The signal is a 1.0 Volt peak-to-peak sine wave. The signal is a 1.0 Volt peak-to-peak sine wave.



Instant

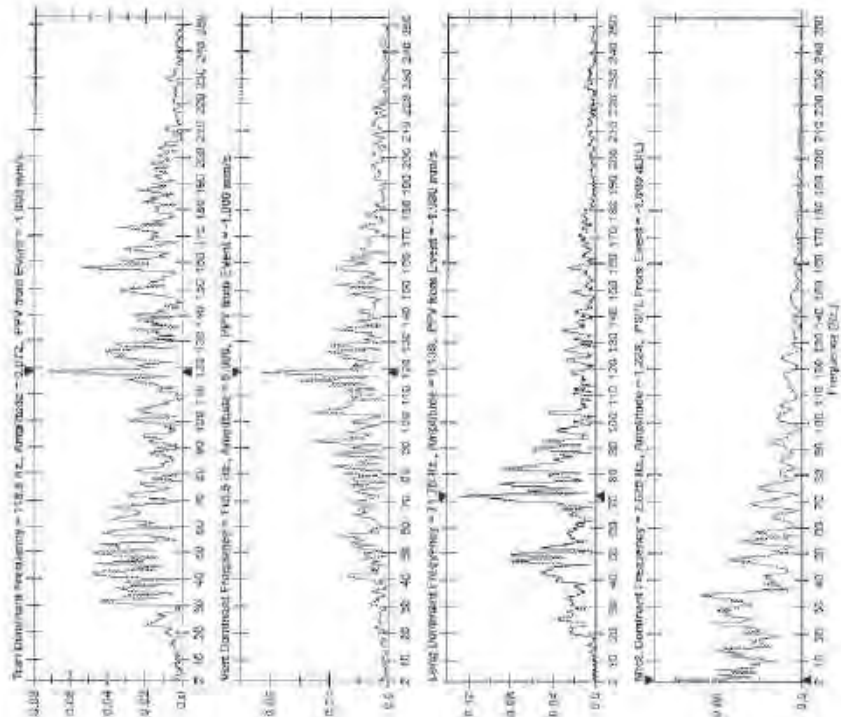
FFT Report

Date: 16/01/14
Project: 16/01/14
Sample: 16/01/14
Time: 16/01/14

Unit: 16/01/14
File Name: 16/01/14
File Path: 16/01/14

Notes: 16/01/14
Location: 16/01/14
User Name: 16/01/14

Estimated Price:





Event Report

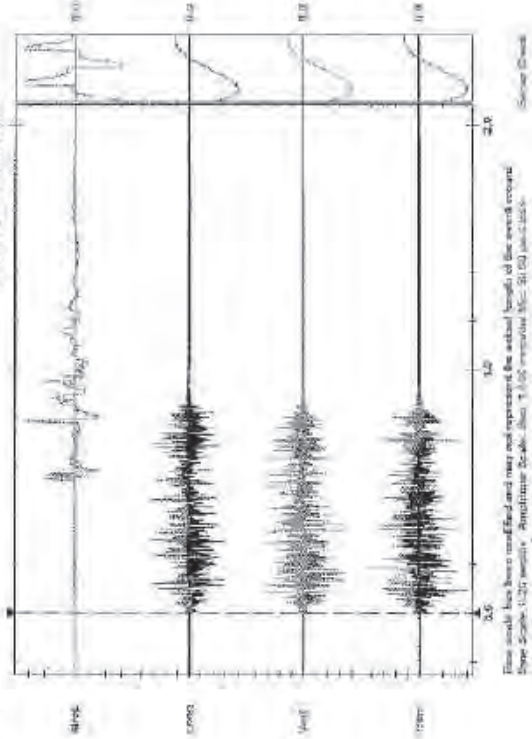
Serial Number: 4710 V.01 12/1/2004
 Bottom Level: 6.0 V1435
 Unit Calibration: September 26, 2004 by COLLETT CHAMBERS
 File Name: 4710V01_01.D

Figure 10.10: A graph of the function $f(x) = \frac{1}{x}$ for $x > 0$. The x-axis is labeled x and the y-axis is labeled $f(x)$. The curve approaches the x-axis as x increases and the y-axis as x approaches 0.

10

T_{Freezing} [K]
 T_{Freeze} = Start ± Latent Δ
 n = number of samples

was selected based on his knowledge of the procedures and the procedures of the procedures.



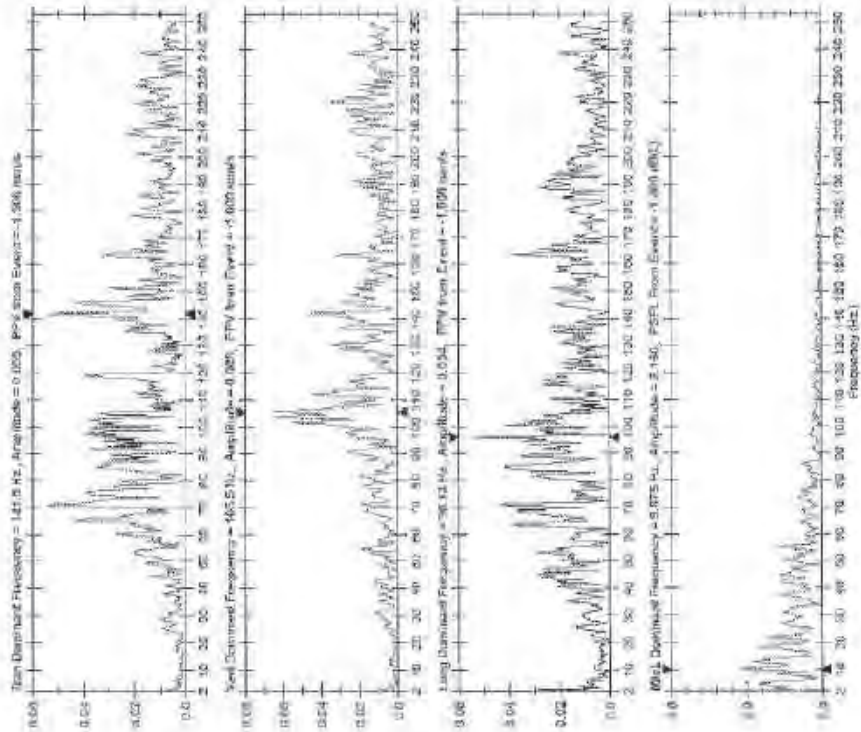


Incident

FFT Report

Event Info: N0120101020-Minor 201-2017
Trigger Source: Onset 0.020 m/s/s
Range: Near 437.5 m/s/s
Record Time: 5.0 sec at 12.5 Hz
Notes: On ground station
Location: 31.5 N, 34.5 E, 1250 m (12.5)
User Name: GSR-CMPL, Seismotectonics Center
Covered: March 22, 2017, 07:35:35 (UTC+2)

Station Metadata: 0110 V2010101020
Station Label: 0110 V2010101020
Station Location: Seismotectonics Center
File Name: 1210101020.CSV
Station Name:





Event Report

[illegible]

Dietary intake (g)

Fluoropolymer (FEP)
Teflon® FEP is a fluoropolymer with a high melting point and excellent chemical resistance.



This code has been used to find and report the actual length of the record.
Time Stamp: 0.00 seconds. Amplitude Scale: 0.0001. Overall Size: 20.00 MB. File Size: 20.00 MB.



Event Report

Station: 14-50-45 Station 30, 2021
Topic: Seismicity
Date: 10/10/2021
Author: 10/10/2021
Project: 10/10/2021

Station: 14-50-45 Station 30, 2021
Topic: Seismicity
Date: 10/10/2021
Author: 10/10/2021
Project: 10/10/2021

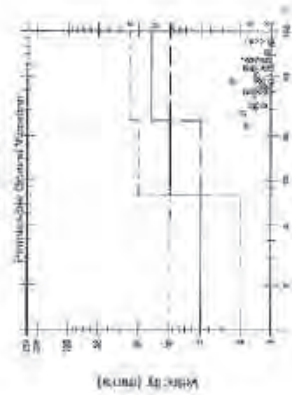
Event Report

Station: 14-50-45 Station 30, 2021
Topic: Seismicity
Date: 10/10/2021
Author: 10/10/2021
Project: 10/10/2021

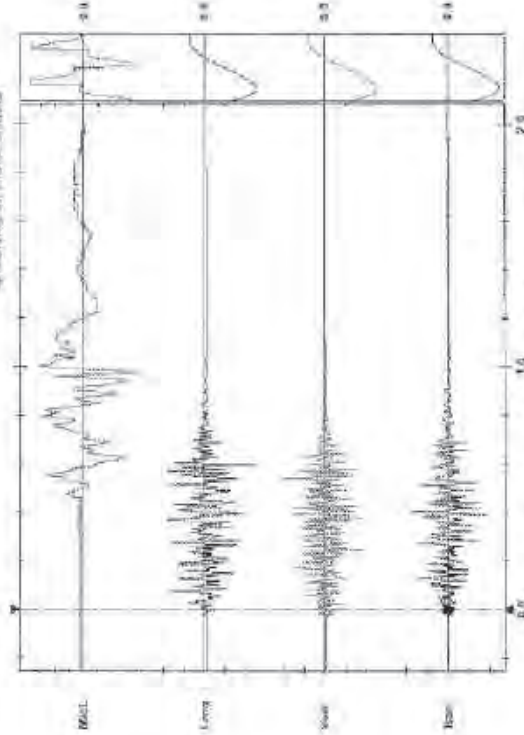
Event Report

Station: 14-50-45 Station 30, 2021
Topic: Seismicity
Date: 10/10/2021
Author: 10/10/2021
Project: 10/10/2021

Station: 14-50-45 Station 30, 2021



Station: 14-50-45 Station 30, 2021
Topic: Seismicity
Date: 10/10/2021
Author: 10/10/2021
Project: 10/10/2021



Station: 14-50-45 Station 30, 2021
Topic: Seismicity
Date: 10/10/2021
Author: 10/10/2021
Project: 10/10/2021

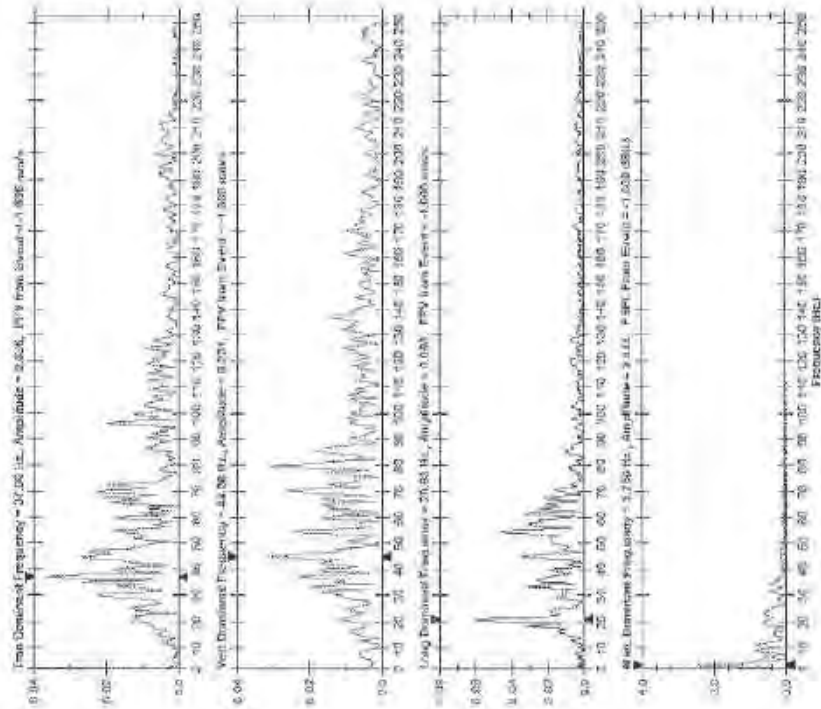


Instantiated

FFT Report

Water/Seiz: Vot 11.15.03, March 10, 2021
Trigger Status: On 2.028 m/s
Range: 127.8 m/s
Record Time: 5.5 2021-03-10 14:14:14
Status: On ground surface
Location: 127.8 m/s
Observer: 127.8 m/s
Note: 127.8 m/s
Comments: March 10, 2021 14:14:14 14:14:14

Dense Number: 4728 2.151 10.101
Scaling Level: 0.0700
Unit Calibration: 2000 0.0 10.101
File Name: 11.15.03.001
Instantiated: 14:14:14



ANNEXURE-5

ANNEXURE-5







May 10, 2021

To,

The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Naya Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of April 2021.

Sir

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for
the month of April 2021 in respect of Godadih Mahal No. 2 Limestone Mine (Mine Code-
38CGH02003), Block - Masturi, District - Bilaspur (CG) over an area of 120.313 Ha.
granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for Jindal Steel & Power Limited,

(N. K. Mishra)
Mines Manager
Godadih Mahal No. 2 Limestone Mine.

cc: The Regional Officer, Regional Office, C.E.C.B.
Vyapar Vihar, Near Deendayal Upadhyay garden, Bilaspur (CG)
for kind information pl.

Encl. Ambient air quality & noise level monitoring data.



Jindal Steel & Power Limited

Work Office Jindal Steel & Power Limited, U.S. & S.P. Mine Road, Bagmati 492001 (CG)
T-431 7552 227001-10 (10 lines) E-431 7552 227001-22 W-431 7552 227001-22

Registered Office: Jindal Steel & Power, 225 005, Bilaspur

May 10, 2021

To,

The Member Secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of April 2021.

Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the month of April 2021 in respect of Godadhi Mahal No. 2 Limestone Mine (Mine Code-38CGH02003), Block - Masturi, District - Bilaspur (CG) over an area of 120.313 Ha granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for Jindal Steel & Power Limited.

(N. K. Mishra)
Mines Manager
Godadhi Mahal No. 2 Limestone Mine.



cc: The Regional Officer, Regional Office, C.E.C.B.,
Vyapar Vihar, Near Deendayal Upadhyay garden, Bilaspur (CG)
for kind information pl.

Encl. Ambient air quality & noise level monitoring data



Sukhdeo Salam [Dantewada] <sukhdeo.salam@jspi.com>

Submission of monthly monitoring report of Ambient Air quality & Noise level for April 2021

1 message

Sukhdeo Salam [Dantewada] <sukhdeo.salam@jspi.com> Mon, May 10, 2021 at 11:27 AM
 To: 'hoca-b@gmail.com, Cech FO Bilaspur' <cech.fo@bilaspur@gmail.com>
 Cc: 'UP Singh (CACC)' <uday.singh@jindalsteel.com>, 'Hillesh Raghuvanshi' <hillesh.raghuvanshi@jindalsteel.com>, 'Narendra Kumar Mishra' <narendrakumar.mishra@jindalsteel.com>, 'Saurav Shrivastava (Chilhati)' <saurav.shrivastava@jspi.com>, 'Ramsagar Mishra (CACC)' <r.mishra@rpijspl.com>

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the month of April 2021 in respect of Godadin Manal No. 2 Limestone Mine (Mine Code-382CH02003), Block-Mastui, District-Bilaspur (C.G) over an area of 120.313 Ha. In favour of M/s Jindal Steel & Power Limited.

Submitted for kind information and record please.

Thanks,

Best Regards,

Sukhdeo Salam
Manager (Geology & EMD)
Jindal Steel & Power Limited
 Godadin Manal No. 2 Limestone Mines, Chilhati,
 Bilaspur, Chhattisgarh, India, Pin - 495551.
 M – 81747069823
 E – sukhdeo.salam@jspi.com



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Ambient air quality & noise level monitoring report for April 2021.pdf



547 BK

HDD-272, Phase III, Near JP Chowk,
Ring Road No. 2, Kabir Nagar, Raipur (C.G.) - 492009
Ph: 0771-4927777 | Email: ultimateviro@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under E² act 1989

U.S. G. 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

TO,
JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.G.)

UES/TR/21-22/0025

UES/Z1-22/JAQM/021

01/02/2021 10:29:03/2021

02/02/2021 to 27/01/2021

03/05/2021

START	07/01/2011	17:02/15:01/10:00
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SAMPLE DETAILS

VERBAL COMMUNICATION WITH NCL D.P. HOTEL
AVAILABLE AIR CARRIER INFORMATION

LEVIN AND JENICH ASSTG

28. HOURS

LAND ATTORNEY CHEMIST
16 NEW BRITAIN BLVD.

CONFERENCIALI E SEMINARI

50cc BOMBU NO. PVC BOTTLE, HIGH SPEED NO. BNC BOTTLE

KUBOTA ENGINE CO., LTD.

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 5132 (Part 2): 2006 & CPEB Guidelines Vol.-I	100
Particulate Matter size less than 2.5 microns (PM _{2.5})	CPEB Guidelines Vol.-I	50
Sulphur Dioxide (SO ₂)	IS 5132 (Part 2): 2006, RA 2006 & CPEB Guidelines Vol.-I	80
Nitrogen Dioxide (NO ₂)	IS 5282 (Part 6): 2006 & CPEB Guidelines Vol.-I	80
Ozone Monoxide (O ₃)	IS 5182 (Part 1): 1993, RA 2006	40

TEST REPORT

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO ⁺ mg/m ³
01.04.2021	72	34	12	26	1.2
05.04.2021	58	34	14	24	1.0
09.04.2021	52	42	10	28	1.1
13.04.2021	64	30	16	20	0.8
16.04.2021	50	36	10	24	0.5
19.04.2021	66	30	22	20	1.0
23.04.2021	62	38	14	25	1.2
26.04.2021	68	32	12	28	1.6

Legend/ks: * Duration of sampling for CO = 1 Hour

Towers & conditions

The impact for public welfare, environmental conservation and sustainable development that can be obtained from the 20 different scenarios of the proposed system on the various indicators is shown in Table 10. The indicators used in the study have selected the above scenario.



FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

AUTHORIZED SIGNATURE

End of the test report

HDD-272 Phase III - Near J.P. Chowk
Ring Road No. 2, Kairi Nagar, Raipur (C.G.) - 492009.
Ph : 0771 - 4027777 | Email: ultimateviro@gmail.com

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

Report No		UES/72/21-22/00726
IAS Ref No		UES/21-22/IAQ/M/002
UNIT OF SAMPLING		02/04/2021 to 26/04/2021
DATE OF RECEIPT		02/04/2021 to 27/04/2021
DATE OF REPORT		02/05/2021
DATE OF ANALYSIS		START: 02/04/2021 END: 02/05/2021
SAMPLE & RESULTS VEHICLE COMMUNICATION WITH MR. D.P.ATEE AMBIENT AIR QUALITY MONITORING SUB STATION MINES SITE 24 HOURS 24 HOURS AS PER METHOD REFERENCE FILTER PAPER (PM₁₀), EXI NO. 18718 PAPER (PM_{2.5}) EXI NO 80S SINKAS NO. PVC BOTTLE, NO. 50X4X1 NO. PVC BOTTLE THUNDER BLANDER- 1X5 NO.		
CUSTOMER REF. NO. & DATE		
COLLECTING LOCATION		
DURATION OF SAMPLES		
SAMPLE COLLECTED BY		
SAMPLING PROCEDURE		
SAMPLE QUANTITY/PACINGS		

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter $\leq 2.5 \mu\text{m}$ less than $10 \mu\text{m}$ (PM ₁₀)	IS 5182 (Part 23): 2006 & CEN Guidelines Vol.-I	100
Particulate Matter size less than $2.5 \mu\text{m}$ (PM _{2.5})	CEN Guidelines Vol.-I	80
Sulphur Dioxide (SO ₂)	IS 5182 (Part 21): 2001, BA 2008 & CEN Guidelines Vol.-I	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 6): 2005 & CEN Guidelines Vol.-I	80
Ozone (O ₃)	IS 5182 (Part 10): 1995, BA 2003	4.0

TEST REPORT

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO ₂ mg/m ³
01.04.2021	48	27	10	28	1.2
05.04.2021	54	22	12	23	1.0
09.04.2021	52	26	08	25	1.8
12.04.2021	46	38	10	22	1.6
16.04.2021	42	30	16	24	1.1
19.04.2021	54	24	12	18	0.8
23.04.2021	48	20	10	22	1.2
26.04.2021	42	20	14	22	1.1

Remarks: ± Duration of sampling for CO = 1 Hour

Terms & conditions

1. The second form of the line, which is not used in the text, is the following:

that the results will be interpreted as the effect of the intervention on the outcome of interest.

Table 1. The coefficients in the gravity bias model for different levels of gravity.



CONSTITUTIONAL COURT



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ANSI Z39.48-1968 (Z39.48-1968) Z39.48-1968 (Z39.48-1968)

1234567891011121314151617181920212223242526272829303132333435363738394041424344454647484950515253545556575859606162636465666768697071727374757677787980818283848586878889909192939495969798991001011021031041051061071081091101111121131141151161171181191201211221231241251261271281291301311321331341351361371381391401411421431441451461471481491501511521531541551561571581591601611621631641651661671681691701711721731741751761771781791801811821831841851861871881891901911921931941951961971981992002012022032042052062072082092102112122132142152162172182192202212222232242252262272282292302312322332342352362372382392402412422432442452462472482492502512522532542552562572582592602612622632642652662672682692702712722732742752762772782792802812822832842852862872882892902912922932942952962972982993003013023033043053063073083093103113123133143153163173183193203213223233243253263273283293303313323333343353363373383393403413423433443453463473483493503513523533543553563573583593603613623633643653663673683693703713723733743753763773783793803813823833843853863873883893903913923933943953963973983994004014024034044054064074084094104114124134144154164174184194204214224234244254264274284294304314324334344354364374384394404414424434444454464474484494504514524534544554564574584594604614624634644654664674684694704714724734744754764774784794804814824834844854864874884894904914924934944954964974984995005015025035045055065075085095105115125135145155165175185195205215225235245255265275285295305315325335345355365375385395405415425435445455465475485495505515525535545555565575585595605615625635645655665675685695705715725735745755765775785795805815825835845855865875885895905915925935945955965975985996006016026036046056066076086096106116126136146156166176186196206216226236246256266276286296306316326336346356366376386396406416426436446456466476486496506516526536546556566576586596606616626636646656666676686696706716726736746756766776786796806816826836846856866876886896906916926936946956966976986997007017027037047057067077087097107117127137147157167177187197207217227237247257267277287297307317327337347357367377387397407417427437447457467477487497507517527537547557567577587597607617627637647657667677687697707717727737747757767777787797807817827837847857867877887897907917927937947957967977987998008018028038048058068078088098108118128138148158168178188198208218228238248258268278288298308318328338348358368378388398408418428438448458468478488498508518528538548558568578588598608618628638648658668678688698708718728738748758768778788798808818828838848858868878888898908918928938948958968978988999009019029039049059069079089099109119129139149159169179189199209219229239249259269279289299309319329339349359369379389399409419429439449459469479489499509519529539549559569579589599609619629639649659669679689699709719729739749759769779789799809819829839849859869879889899909919929939949959969979989991000100110021003100410051006100710081009101010111012101310141015101610171018101910201021102210231024102510261027102810291030103110321033103410351036103710381039104010411042104310441045104610471048104910501051105210531054105510561057105810591060106110621063106410651066106710681069107010711072107310741075107610771078107910801081108210831084108510861087108810891090109110921093109410951096109710981099110011011102110311041105110611071108110911101111111211131114111511161117111811191120112111221123112411251126112711281129113011311132113311341135113611371138113911401141114211431144114511461147114811491150115111521153115411551156115711581159116011611162116311641165116611671168116911701171117211731174117511761177117811791180118111821183118411851186118711881189119011911192119311941195119611971198119912001201120212031204120512061207120812091210121112121213121412151216121712181219122012211222122312241225122612271228122912301231123212331234123512361237123812391240124112421243124412451246124712481249125012511252125312541255125612571258125912601261126212631264126512661267126812691270127112721273127412751276127712781279128012811282128312841285128612871288128912901291129212931294129512961297129812991300130

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HDD-272, Phase III - Near J.P. Chowk
Ring Road No.-2, Kabi Nagar, Raipur (C.G.) - 492099
Ph: 0771 - 4027771 Email: ubinmatenviro@gmail.com

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TO:
JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.G.)

NAME OF PERSONS IN CHARGE	REPORT NO.
TO,	LAB. REF. NO.
JINDAL STEEL & POWER LIMITED	DATE OF SAMPLING
GODADIH LIMESTONE MINES,	DATE OF RECEIPT
BILASPUR (C.G.)	DATE OF REPORT
	DATE OF ANALYSIS
	START: 02/04/2021
	END: 01/05/2021

SAMPLE DESIGN

CUSTOMER REF. NO. & DATE	
PURCHASING FOR	
SAMPLING LOCATION	
DURATION OF TAMP USE	
SAMPLE COLLECTED BY	
SAMPLING INSTRUMENT	
SAMPLE QUANTITY/PARTICLE#	
	VERSAL CORPORATION WITH NAL EQUIPMENT AMBIENT AIR QUALITY MONITORING BIRMINGHAM VILLAGE 24 HOURS LABORATORY CHEMIST AS PER METHOD REFERENCE FILTER PAPER (900) #21 HQ, 900 BOTTLE NO. INC BOTTLES, RITE-TRONICS CO. INC BOTTLE RUBBER BANDS-3X4 NOS.

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 5182 Part 23: 2006 & CPCB Guidelines Vol. I	100
Particulate Matter size less than 2.5 microns (PM _{2.5})	CPCB Guidelines Vol.-I	60
Sulphur Dioxide (SO ₂)	IS 5182 Part 9: 2001, SA 2006 & CPCB Guidelines Vol.-I	80
Nitrogen Dioxide (NO ₂)	IS 5182 Part 63: 2006 & CPCB Guidelines Vol.-I	80
Carbon Monoxide (CO)*	IS 5182 Part 10: 1999, SA 2006	4.0

TEST REPORT

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO ^a mg/m ³
01.04.2021	54	26	12	26	1.0
05.04.2021	56	22	10	22	1.6
09.04.2021	46	29	18	24	0.8
12.04.2021	44	24	16	22	1.4
16.04.2021	52	28	12	28	1.2
19.04.2021	56	20	14	22	1.0
23.04.2021	50	26	10	26	1.2
26.04.2021	49	26	16	28	1.6

Remarks: ^a Duration of sampling for CO = 1 hour.

Remarks: * Duration of sampling for CO = 1 hour

Terms & conditions

- the report for each country, is followed by an analysis of the legal, regulatory and institutional environment for the country, and a list of references. The report for each country is followed by an analysis of the legal, regulatory and institutional environment for the country, and a list of references.

FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

PREPARED BY

End of the test report-

AN ISO 9001:2015 / ISO 14001:2015 ISO 45001:2018 CERTIFIED LABORATORY

HDD-272, Phase II - Near J.P. Chowk
Ring Road No.-2, Katur Nagar, Rapur (C.G.)-492039
Ph. 0771-4027771 Email: ultramatrix@gmail.com

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

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TO,
JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.G.)

INVOICE NO. 1000123456789		REPORT NO.	1005/18/75-22/0028
TO,		LAST REF NO.	855/22-23/00031/024
JINDAL STEEL & POWER LIMITED		DATE OF SAMPLING	07/04/2021 to 25/04/2021
GODADIH LIMESTONE MINES,		DATE OF RECEIPT	02/04/2021 to 27/04/2021
BILASPUR (C.G.)		DATE OF REPORT	03/04/2021
		DATE OF ANALYSIS	START: 05/04/2021
			END: 05/04/2021
SAMPLE DETAILS			
CUSTOMER REF. NO. & DATE	VERBAL COMMUNICATION WITH MR. D. PATIL		
MONITORING FOR	AMBIENT AIR QUALITY MONITORING		
SAMPLING LOCATION	LOHAKSI VILLAGE		
DURATION OF SAMPLING	24 HOURS		
SAMPLE COLLECTED BY	LABORATORY CHEMIST		
SAMPLING INSTRUMENT	AS PER METHOD REFERENCE		
SAMPLE QUANTITY/PACKING	FILTER PAPER (P.M.D.): 200 ML 1000 BULKY NO. PVC BOTTLE, NO. 20000 NO. PVC BOTTLE CUBBER GLOVES: 100 NO.		

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM_{10})	IS 5182 (Part 23): 2006 & CECB Guidelines Vol.-I	100
Particulate Matter size less than 2.5 microns ($PM_{2.5}$)	CPCB Guidelines Vol.-I	60
Smelter Smoke (SO_2)	IS 5182 (Part 21): 2004 & 2006 & CECB Guidelines Vol.-I	80
Nitrogen Dioxide (NO_2)	IS 5182 (Part 6): 2006 & CECB Guidelines Vol.-I	90
Carbon Monoxide (CO)	IS 5182 (Part 18): 1999, 24 2003	1.0

TEST REPORT

TEST REPORT					
Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO [*] mg/m ³
01.04.2021	50	24	12	22	1.0
05.04.2021	58	20	10	26	1.2
09.04.2021	44	24	14	20	1.2
12.04.2021	50	20	10	24	1.0
16.04.2021	46	22	19	22	0.8
19.04.2021	42	20	16	18	1.2
23.04.2021	48	26	12	20	1.1
26.04.2021	42	24	10	22	1.0

Remarks: * Duration of sampling for CO = 1 Hour.

Kennedy & Company

- This report for publications, as a tribute to the 100th birthday of the author, was accepted and published by the *Journal of Interpersonal Violence* 10 days after the author's death. This is the information in the report, not advice for others. See the *Journal of Interpersonal Violence* 10 days after the author's death.

Prepared by: [Signature] 05/02/11

FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

AUTHORIZED SIGNATORY

END of the 125th report

**ultimate**
ANALYTICAL SOLUTIONS

HPD-272, Phase III - Near JP Chowk,
Ring Road No. 2, Kalar Nagar, Raipur (C.G.) - 492099
PH: (0771) 4027777 | Email: ultimateinfo@gmail.com

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

Name & Address of the Customer:		REPORT NO.	UES/TR/21-22/0029
TO,		LABOR NO.	UES/21-22/N/025
JINDAL STEEL & POWER LIMITED		DATE OF REPORT	03/05/2021
GODADIN Limestone MINES,		DATE OF SAMPLING	01/04/2021 to 26/04/2021
BILASPUR (C.G.)			
SAMPLE DETAILS			
Media Being Test	Noise level Monitoring		
Customer Ref. No. & Date	VERBAL COMMUNICATION WITH MR. DIPKESH		
Sampling Location	Near Jindal Chilled		
Sample Collected By	Laboratory Chemist		
Sampling Procedure	Manufacturer's Instruction		

TEST REPORT				
DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)
		DAY TIME	NIGHT TIME	
01.04.2021	dB(A)	55.0	45.6	75
05.04.2021	dB(A)	52.2	41.4	
09.04.2021	dB(A)	50.8	42.8	
12.04.2021	dB(A)	58.6	35.2	
16.04.2021	dB(A)	57.0	48.5	
19.04.2021	dB(A)	48.5	42.0	
23.04.2021	dB(A)	58.2	38.8	70
26.04.2021	dB(A)	52.4	46.2	

REMARKS: RESULTS ARE AS ABOVE

Tested @ conditions
The report for publication, certification on Angel (Report to Institution)
The sample will be retained for 15 days after issue of test report unless otherwise intimated with customer.
This is for information for the party has asked for above quality analysis


PREPARED BY: 23/05/2021


AUTHENTICATED SIGNATORY

End of the Test report



HDD-272, Phase III - Near J.P. Chowk
Ring Road No. 2, Kabe Nagar, Raipur (C.G.) - 492089
Ph: 0771-4927777 Email: ultimate@rediffmail.com

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

Name & Address of the Client

TO,
JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO.

UES/TRY/22-22/0030

LAB REF NO.

UES/21-22/N/016

DATE OF REPORT

03/05/2021

DATE OF SAMPLING

01/04/2021 to 26/04/2021

SAMPLE DETAILS

Monitored For

Noise level Monitoring

Customer Ref. No. & Date

VSUAL COMMUNICATION VNTIME, O.P. DATE

Sampling Location

San station site

Sample Collected By

Laboratory Chemist

Sampling Procedure

Manufacturer's Instruction

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.04.2021	dB(A)	48.0	42.2		
05.04.2021	dB(A)	52.6	46.8		
09.04.2021	dB(A)	40.2	36.6		
12.04.2021	dB(A)	56.4	36.4		
16.04.2021	dB(A)	58.8	42.2		
19.04.2021	dB(A)	43.2	30.6		
23.04.2021	dB(A)	46.6	36.8		
26.04.2021	dB(A)	50.8	38.8		

REMARKS: RESULTS ARE AS ABOVE

Terms & Conditions

- > The report for publication, certification or as legal document is final.
- > Test samples will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- > This is the information on the party that asked for the test only.



By Ultimate Analytical Solutions

03/05/2021

AUTHORIZED SIGNATORY

Prepared by
03/05/2021

End of the test report



Ultimate
ENVIRONMENTAL SOLUTIONS

HDD-272, Phase II - Near JP Chowk
Ring Road No-2, Kadir Nagar, Raipur (C.G.) - 492099
Ph: 0771-4027777 | Email: ultimateenviro@gmail.com

Recognized by Ministry of Environment, Forest and Climate Change under EP and 1866

TO,		REPORT NO.	UES/TH/21-22/0031
JINDAL STEEL & POWER LIMITED		LAD REF NO.	UES/21-22/N/017
GODADIH LIMESTONE MINES,		DATE OF REPORT	03/05/2021
BILASPUR (C.G.)		DATE OF SAMPLING	01/04/2021 to 25/04/2021

SAMPLE DETAILS	
Monitoring For	Solid Total Sulfurating
Customer Ref. No. & Date	VERVAL CUM INSTRUCTIONS WITH W.E. D.P. DATE
Sampling Location	GODADIH VILLAGE
Sample Collected By	Ultimate's Client
Sampling Procedure	Manufacturer's Instruction

TEST REPORT				
DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)
		DAY TIME	NIGHT TIME	
01.04.2021	dB(A)	48.5	38.8	75 70
05.04.2021	dB(A)	46.0	32.4	
09.04.2021	dB(A)	38.5	36.0	
12.04.2021	dB(A)	46.7	32.6	
16.04.2021	dB(A)	42.2	36.2	
19.04.2021	dB(A)	48.5	30.8	
23.04.2021	dB(A)	52.0	44.2	
25.04.2021	dB(A)	56.8	46.5	

REMARKS: RESULTS ARE AS ABOVE To this 2 conditions * The report for publication, certification or as legal document is final. * Test sample will be retained for 15 days after issue of test report unless otherwise agreed with customer. * This is for information as the party has order of test sample only.		 AUTHORIZED SIGNATORY 03/05/2021
PREPARED BY 03/05/2021		End of the test report



HDD-272, Phase II - Near JP Chowk
Ring Road No. 2, Kaur Nagar, Raipur (C.S.) - 492089
Ph: 92771 482777 + 92771 482777 + 92771 482777
Email: ultimatewro@gmail.com

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

TO, JINDAL STEEL & POWER LIMITED GODADIH LIMESTONE MINES, BILASPUK (C.G.)		REPORT NO. UES/TR/21-22/0032
REPORT NO. UES/21-22/14/028		DATE OF REPORT 03/05/2021
DATE OF SAMPLING 01/04/2021 to 25/04/2021		DATE OF SAMPLING 01/04/2021 to 25/04/2021
SAMPLE DETAILS		
Monitoring for Noise and Vibration	Method used Monitoring VIRTUAL COMMUNICATION WITH MFL OVERITE	
Customer Ref. No. & Date JINDAL VILLAGE	Location JINDAL VILLAGE	
Sample Collected By Laboratory Charge	Method used Noise and Vibration	

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT			LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	DAY TIME	NIGHT TIME
01.04.2021	dB(A)	44.8	35.1			
05.04.2021	dB(A)	46.2	34.8			
09.04.2021	dB(A)	40.8	33.2			
12.04.2021	dB(A)	38.4	32.5			
16.04.2021	dB(A)	45.0	22.8			
19.04.2021	dB(A)	42.8	30.6			
23.04.2021	dB(A)	43.2	36.2			
26.04.2021	dB(A)	43.5	34.8			

REMARKS: RESULTS ARE AS ABOVE

Testing conditions

- > The report for publication, circulation or as legal dispute is forbidden.
- > Test results will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- > This is for information on this early test and for reference only.

PREPARED BY 03/05/2021	 AUTHORIZED SIGNATORY 03/05/2021
-------------------------------	--

End of the test report

June'08, 2021



To,

The Member Secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub : Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of May 2021.

Ref : Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for
the month of May 2021 in respect of Godadhi Mahal No. 2 Limestone Mine (Mine Code-
36CGH02003), Block - Maslun, District - Bilaspur (CG) over an area of 120.343 Ha.
granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,

For M/s Jindal Steel & Power Limited,

(N. K. Mishra)
Mines Manager
Godadhi Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report.

Cc : The Regional Officer, Regional Office, C.E.C.B.,
Vyapar Vihar, Near Deendayal Upadhyay garden, Bilaspur (CG).

Jindal Steel & Power Limited

Work. Office: Jindal Steel & Power Limited, Plot 15, Naras Road, Raipur-492001 (CG)
T: +91 7762 222001 to 10 lines F: +91 7762 22702 to 12 W: www.jindalsteelpower.com
The office is open 9 a.m. to 6 p.m. daily, 125/005, Raipur



June '08, 2021

To,

The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub : Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of May 2021.

Ref : Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for
the month of May 2021 in respect of Godadih Mahal No. 2 Limestone Mine (Mine Code-
38CGH02003), Block - Masturi, District - Bilaspur (CG) over an area of 120.313 Ha.
granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited.



(N. K. Mishra)
Mines Manager
Godadih Mahal No. 2 Limestone Mine.



Encl. Ambient air quality & noise level monitoring report

Cc : The Regional Officer, Regional Office, C.E.C.B.,
Vyapar Vihar, Near Deendayal Upadhyay garden, Bilaspur (CG).



Submission of monthly monitoring report of Ambient Air quality & Noise level for the month of May 2021

1 message

Sukhdoo Salara (Dantewada) <sukhdoo.salara@jindal.co>
To: "Ramesh Kumar" <R.Kumar@jindal.co>
Cc: "LP Singh (DCC)" <lp.singh@jindal.co>, "Neha" <neha@jindal.co>, "Ramesh Kumar" <R.Kumar@jindal.co>, "Ramesh Kumar" <R.Kumar@jindal.co>

Tue, Jun 8, 2021 at 02:55

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the month of May 2021 in respect of Goddeth Mahal No. 2, Limestone Min. (Village Code-30C3A122003), Block-Nasirum, District-Hazrat Nizamat, Jharkhand.

Submitted for kind information and record please.

Thanks

Best Regards,

Sukhdoo Salara
Manager (Geology & EMD)
Jindal Steel & Power Limited
Goddeth Mahal No. 2, Limestone Mines, Chhillik, Bilaspur, Chhattisgarh, India, Pin - 495551.
M +91 747003825
E: sukhdoo.salara@jindal.co



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Ambient Air Quality & Noise level Monitoring Reports May-2021.pdf

5/54K



100/774 Phase II: Nandip Chowk
Ring Road No. 2, Kattinagar, Rajahmundry (A.P.) - 522009
Ph: 0771-4027773 Email: ultimate@ultimate.com

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

TO:
JINDAL STEEL & POWER LIMITED
GODADRI LIMESTONE MINES,
BILASPUR (C.B.)

REPORTING: UES/774/21-22/06/22
LAB NO: UES/21-22/NAQM/0672
DATE OF SAMPLES: 03/05/2021 to 29/05/2021
DATE OF RECEIPT: 04/05/2021 to 20/05/2021
DATE OF REPORT: 03/06/2021
DATE OF ANALYSIS: 04/05/2021 to 20/05/2021

SAMPLES: AMBIENT
VENIAL CONTAMINATION WITH IN. D. PATH
AMBIENT AIR QUALITY MONITORING
GUEST HOUSE CHURCH
24 HOURS
LABORATORY CHEMIST
AS PER METHOD REFERENCE
BUTTA PAPER (MIL-J-1311) NO. 10000 NO. 20000
SCALE: 0.001% NO. 10000 NO. 20000 NO. 40000 NO. 80000
20000 NO. 40000 NO. 80000

CLIENT REF. NO. & DATE:
MONITORING FOR:
SAMPLING LOCATION:
DURATION OF SAMPLING:
SAMPLER COLLECTED BY:
SAMPLING PROCEDURE:
SAMPLER QUANTITY/LOCATION:

Parameter	Method Reference	NAQM Standard
Particulate Matter (PM ₁₀) less than 10 microns (99%)	IS 5182 (Part 6): 2006 & IS 5182 Guidelines Vol.-I	100
Particulate Matter (PM _{2.5}) less than 2.5 microns (95%)	IS 5182 (Part 6): 2006 & IS 5182 Guidelines Vol.-I	50
Sulphur Dioxide (SO ₂)	IS 5182 (Part 6): 2006 & IS 5182 Guidelines Vol.-I	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 6): 2006 & IS 5182 Guidelines Vol.-I	80
Carbon Monoxide (CO)	IS 5182 (Part 6): 2006 & IS 5182 Guidelines Vol.-I	5.0

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
03.05.2021	35	34	12	22	1.1
08.05.2021	72	32	12	20	1.0
10.05.2021	68	38	05	22	1.3
15.05.2021	72	25	12	28	0.9
17.05.2021	66	32	10	26	0.8
23.05.2021	70	24	12	22	1.1
24.05.2021	68	36	16	26	1.0
29.05.2021	66	32	10	22	1.6

Remarks: * Duration of sampling for CO - 1 Hour.

Form UES/FORM/202

- The results of analysis, measurements are as per the report.
- The sample will be retained for 15 days after issue of the report unless otherwise agreed with customer.
- This is for information of the customer and not for any other purpose.

APPROVED BY: *[Signature]* 03/06/2021
PREPARED BY: *[Signature]* 03/06/2021

ROHIT KUMAR ENVIRONMENTAL SOLUTIONS
AUTHORIZED SIGNATORY



1000-272, Phase II, Near J.P. Chowk
Ring Road No. 2, Kairi Nagar, Patpur (C.G.) - 492009
Po: 0771-4357771 Email: ultimateenviro@gmail.com

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

(Head Office) 0771-4357771

TO,
JINDAL STEEL & POWER LIMITED
GODADIN LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO. JES/IR/21-22/0576
LABOR NO. JES/21-22/N/0576
DATE OF REPORT 03/06/2021
DATE OF SAMPLING 03/05/2021 to 29/05/2021

SAMPLE DETAILS

Monitoring Site: Kailashpur Monitoring
Customer Ref. No. & Date: MYSAL (CONSTRUCTION WITH AIR, D.P. WATER)
Sampling Location: Kailashpur Chhatra
Sample Collected by: Laboratory Chemist
Sampling Procedure: Manufacturer's Instruction

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
03.05.2021	dB(A)	60.2	48.0		
08.05.2021	dB(A)	62.5	56.4		
10.05.2021	dB(A)	60.2	49.6		
15.05.2021	dB(A)	55.8	32.2	75	70
17.05.2021	dB(A)	50.0	45.4		
22.05.2021	dB(A)	46.6	40.0		
24.05.2021	dB(A)	48.1	36.2		
29.05.2021	dB(A)	50.8	44.4		

REMARKS: RESULTS ARE AS ABOVE

Terms & Conditions

- The report for publication, circulation or as legal document is valid.
- Fast sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- This is for information as this entry has asked for above test entry.



PREPARED BY
03/06/2021

End of the test report

For Ultimate Environmental Solutions
AUTHORIZED SIGNATORY



HEB-32, Phase III - Near IP Road,
Ring Road No. 2, Kalyan Nagar, Rajpur (G.G.) - 492099
Pin - 471 007. E-mail: info@ultimateenv.com

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

Name of Address of Test Location

TO:

**JINDAL STEEL & POWER LIMITED
BOBADIN LIMESTONE MINES,
BILASPUR (C.B.)**

REPORT NO. : UES/18/21-22/0477

LAB REF NO. : UES/21-22/N/0517

DATE OF REPORT : 03/06/2021

DATE OF SAMPLING : 03/05/2021 to 29/05/2021

SERVICE : NOISE

Monitoring For

Noise Level Assessment

Customer Ref. No. & Date

VERBAL COMMUNICATION WITH MR. A.P. RAJ

Sampling Location

Sub station mine site

Sample Collected By

Lithamary Chohan

Sampling Procedure

Manufacturer's Instruction

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
03.05.2021	dB(A)	58.2	46.9		
05.05.2021	dB(A)	56.5	42.5		
10.05.2021	dB(A)	62.4	35.4		
15.05.2021	dB(A)	54.4	36.2		
17.05.2021	dB(A)	56.2	46.8	75	70
22.05.2021	dB(A)	44.8	32.8		
24.05.2021	dB(A)	48.0	38.2		
29.05.2021	dB(A)	52.6	36.0		

REMARKS: RESULTS ARE AS ABOVE

TERMS & CONDITIONS

- The report for publication, circulation or as legal document is forbidden.
- This sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- Take up for information in the form has taken place for the purpose of the test.



03/06/2021
PAGE 2 OF 2

FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

AUTORIZED SIGNATORY

End of the test report



1153-273, Phase II, Near P.P. Chowk,
B-10, Sector No. 2, Kirti Nagar, Delhi-110016
Tel: 011-26102777 Email: info@ultimateenv.com

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

TO,
JINDAL STEEL & POWER LIMITED
GODADRI Limestone Mines,
BILASPUR (C.O.)

REPORT NO. UES/18/21-22/0-78
LAB. REF. NO. UES/21-22/14/0578
DATE OF REPORT 03/05/2021
DATE OF SAMPLE 03/05/2021 to 25/05/2021

SAMPLE DETAILS

Monitoring Zon Noise Level Identification
Customer Ref. No. & Date VERVAL COMMUNICATION WITH SMC CLP WARD
Sampling Location GODADRI WILDER
Sample Collected By Laboratory Chemist
Sampling Procedure Manufacturer's Instruction

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT			LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	DAY TIME	NIGHT TIME
03.05.2021	dB(A)	50.5	40.8			
08.05.2021	dB(A)	46.8	38.5			
10.05.2021	dB(A)	52.0	36.0			
15.05.2021	dB(A)	48.0	34.9	75		70
17.05.2021	dB(A)	46.2	30.2			
22.05.2021	dB(A)	46.8	38.8			
24.05.2021	dB(A)	50.2	42.0			
25.05.2021	dB(A)	58.5	46.5			

REMARKS: RESULTS ARE AS ABOVE

Terms & Conditions

- 1. Test report for publication, distribution or its legal dispute is forbidden.
- 2. Test sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- 3. This is for information as the data has not been signed by the client.

PREPARED BY *[Signature]* 03/06/2021

APPROVED BY *[Signature]* 03/06/2021

APPROVED SIGNATORY

APPROVED SIGNATORY



HUB 377, Phase II, Keshi Park,
Rajgurunagar, Nashik, Maharashtra - 422009
Ph: 02577 202977 Email: ultimateinfo@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EPC Act 1986

TO:

**JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.B.)**

REPORT NO.	UES/IR/21-22/0479
LAB. REF. NO.	UES/21-22/R/0579
DATE OF REPORT	03/06/2021
DATE OF SAMPLING	03/05/2021 to 23/05/2021

SAMPLER DETAILS

Monitoring For	Acid Rain Monitoring
Customer Ref. No. & Date	VERBAL COMMUNICATION WITH MR. D.P. PATEL
Sampling Location	LAKHOLI VILLAGE
Sample Collected by	Ultimate Chemist
Sampling Procedure	Manufacturer's Instruction

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
03.05.2021	dB(A)	43.2	38.4		
08.05.2021	dB(A)	50.0	35.8		
10.05.2021	dB(A)	45.2	40.2		
15.05.2021	dB(A)	40.5	35.5	75	70
17.05.2021	dB(A)	43.2	43.8		
22.05.2021	dB(A)	41.8	32.8		
24.05.2021	dB(A)	48.2	35.2		
25.05.2021	dB(A)	42.0	38.8		

RESIDUAL RESULTS ARE AS ABOVE

Terms & conditions

- > This report is for information, notification or as legal document is formation.
- > This sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- > This is for information as per test, has not been subjected for any further test.

PREPARED BY

Chaitanya 03/06/2021

FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

Chaitanya 03/06/2021

AUTHORIZED SIGNATORY

End of the test report

July'09, 2021



To,
The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District Raipur, Chhattisgarh - 492002.

Sub : Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of June'2021.

Ref : Consent to Operate permission vide letter No. 575/IT/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.06.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of June'2021 in respect of Godadhi Mahal No. 2 Limestone Mine (Mine Code-38CGH02G03),
Block - Masturi, District - Bilaspur (CG) over an area of 120.313 Ha, granted in favour of M/s Jindal
Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You.

Yours faithfully,
For M/s Jindal Steel & Power Limited.


(N. K. Mishra)
Mine Manager
Godadhi Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report.

Cc : The Regional Officer, Regional Office, C.E. C.B.,
Vyapar Vihar, Near Deendayal Upadhyay garden, Bilaspur (CG)



July 09, 2021



To,
The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub : Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of June '2021.

Ref : Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of June '2021 in respect of Godadahi Mahal No. 2 Limestone Mine (Mine Code-38CGH02003),
Block - Masturi District - Bilaspur (CG) over an area of 120.313 Ha. granted in favour of M/s Jindal
Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You.

Yours Faithfully,

for M/s Jindal Steel & Power Limited.

(N. K. Mishra)

Mine Manager

Godadahi Mahal No. 2 Limestone Mine.



Encl. Ambient air quality & noise level monitoring report.

Cc : The Regional Officer, Regional Office, C.E.C.B.,
Vyapar Vihar, Near Deendayal Upadhyay garden, Bilaspur (CG).

Saorav Shrivastava (Chillhar) <saorav.shrivastava@indalsteel.com>

business

Fri, Jul 9, 2021 at 5:17 PM

Sukhdeo Salam [Dantowada] <sukhdeo.salam@indiaisrael.com>

To: hooberb@gmail.com, Dedi RO Bilaspur scsb@bilaspur@gmail.com>
Cc: Nilesh Raghuvanshi <nilesh.raghuvanshi@jindalsteel.com>, Narendra Kumar Mishra
<narendra.mishra1@jindalsteel.com>, "Sachin Shrivastava (Chillathi)" <sachin.shrivastava@
Mishra (CACC) > srs.mishra@pujol.com>, "Millesh Kumar Singh (Limestone Mines (Chil-
lathi))" <millesh.kumar.singh@pujol.com>, "Pranod Kumar (Limestone Mines (Chillathi))"
<pranod.kumar@pujol.com>

Dear Sir

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the month of June 2021 in respect of Goddadih Mahal No. 2 Limestone Mine (Mine Code-38CGH02003), Block - Masturi, District - Bilaspur (CG) over an area of 120.313 Ha. granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You.

With regards

Sukhdeo Salant
Manager (EMD)
Godadhi Matial No. 2 Limestone Mines
Jindal Steel & Power Limited

24 Ambient Air Quality & Noise Level Monitoring Report.pdf

8307K

HDB 272, Phase III - Near P. Chowk
Ping Road No. 2, Kabin Nagar, Rajpur (C.G.) - 492009
Ph: 0371-402777. Email: ulmaternw@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EP act 1985

TO, JINDAL STEEL & POWER LIMITED GODAHI Limestone MINES, BILASPUR (C.G.)		REPORT NO UES/17/21-22/0094
		LABRET NO UES/21-22/0000/1145
		DATE OF SAMPLING 05/06/2021 to 24/06/2021
		DATE OF REPORT 04/06/2021 to 30/06/2021
		DATE OF ANALYSIS 03/07/2021
CUSTOMER REF. NO. & DATE MONITORING FOR SAMPLING LOCATION BUREAU OF SAMPLING SAMPLE COLLECTED BY SAMPLING PROCEDURE SAMPLE QUANTITY/STOCKING		ANALYST'S SIGNATURE VISUAL COMPARISON TEST WITH MR. C.P. DATT SAMPLE AND QUANTITY ANALYSING SUBST. ANALYST'S SIGNATURE Tm ANALYST LABORATORY CHEMIST AS PER METHODS REFERENCE FILTER PAPER GSM/LIT NO. 1 50% SO ₂ MCLING PVC BOTTLE NO. 200041 NO. PVC BOTTLE 00045458 200018 100 NO.
		START: 04/06/2021 END: 03/07/2021

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	INAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 5182 (Part 2): 2006 & CEN Guidelines Vol. - I	100
Particulate Matter size less than 2.5 microns (PM _{2.5})	CEN Guidelines Vol. - I	60
Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2001, EA 2308 & CEN Guidelines Vol. - I	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 2): 2006 & CEN Guidelines Vol. - I	80
Carbon Monoxide (CO)	IS 5182 (Part 1): 1999, EA 2003	50

TEST REPORT

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO _x µg/m ³	CO mg/m ³
03.06.2021	70	26	10	24	1.2
05.06.2021	83	28	12	20	1.0
10.06.2021	65	32	10	22	1.4
14.06.2021	70	25	12	26	0.8
15.06.2021	64	28	10	26	1.0
23.06.2021	64	20	12	22	1.2
26.06.2021	62	34	16	28	1.4
28.06.2021	60	30	10	22	1.0

Terms & conditions

- * The *kernel* for multiplication transformation is all linear mappings ϕ such that $\phi(x) = 0$.

PREPARED BY 		AUTHORIZED SIGNATORY 	#ULTIMATE ENVIRONMENTAL SOLUTIONS
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HDO-272, Phase III - Near JP Chowk,
Ring Road No. 2, Kabil Nagar, Raipur (C.G.) - 492009
Ph: 0771-4027771 Email: ultimatevire@gmail.com

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

Name & Address of the Customer		REPORT NO	UES/10/21-22/0082
TO:		LAB. REF. NO	065/21-22/ANQ/1142
JINDAL STEEL & POWER LIMITED		DATE OF SAMPLING	03/05/2021 to 29/05/2021
GODADIH LIMESTONE MINES,		DATE OF RECEIPT	04/06/2021 to 30/06/2021
BILASPUR (C.G.)		DATE OF REPORT	03/07/2021
		DATE OF ANALYSIS	STAGE: 04/06/2021
		END: 03/07/2021	
CUSTOMER REF. NO. & DATE			
VERVAL COMMUNICATION WITH MR. P.D. JHIL			
AMBIENT AIR QUALITY MONITORING			
SAMPLING LOCATION			
SMP. STATION MINES SITE			
DURATION OF SAMPLING			
24 HOURS			
SAMPLING COLLECTED BY			
LABORATORY CHEMIST			
SAMPLING FREQUENCY			
AS PER METHOD REFERENCE			
FILTER PAPER (PM ₁₀): 501 NO. FILTER PAPER (PM _{2.5}): 501 NO.			
SOP: JINDAL STEEL & POWER LIMITED. INSTRUMENT NO. POC-BOTLE			
RUBBER BUBBLER: INT. NO.			

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 5182 (Part 21): 2006 & CIRC 42	100
Particulate Matter size less than 2.5 microns (PM _{2.5})	IS 5182 (Part 21): 2006 & CIRC 42	60
Sulphur Dioxide (SO ₂)	IS 5182 (Part 21): 2006 & CIRC 42	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 21): 2006 & CIRC 42	80
Carbon Monoxide (CO)	IS 5182 (Part 16): 1999, RA 2003	4.0

TEST REPORT

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO* mg/m ³
03.06.2021	54	28	10	26	1.2
05.06.2021	52	22	14	22	1.0
10.06.2021	50	24	12	20	1.4
14.06.2021	46	20	10	22	1.2
19.06.2021	42	24	16	20	1.8
23.06.2021	54	22	12	26	1.2
28.06.2021	52	26	20	22	1.6
29.06.2021	40	20	14	28	1.0

Remarks: * Duration of sampling for CO - 1 Hour.

Terms & conditions

- The laboratory shall not be responsible for any loss or damage to the samples.
- The samples will be retained for 14 days after receipt of the report unless otherwise agreed with customer.
- The laboratory is not liable for any loss or damage to the samples unless otherwise agreed with customer.

 ANALYST	 AUTHORIZED SIGNATORY	03/07/2021	03/07/2021

HDD-272, Phase II - Near JP Chowk
Ring Road No. 2, Kakin Nagar, Rajahmundry (G.O.) - 492209
Ph: 9771 - 402777 | Email: ultratensio@gmail.com

Organized by Ministry of Environment Forest and Climate Change under E2 act 1986

[illegible]

Test Method and NAAOM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	MAJOR Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 5182 (part 23) : 2005 & IS 5182 (part 23) : 2005 & IS 5182 (part 23) : 2005	100
Particulate Matter size less than 2.5 microns (PM _{2.5})	IS 5182 (part 23) : 2005 & IS 5182 (part 23) : 2005	50
Sulphur Dioxide (SO ₂)	IS 5182 (part 23) : 2005 & IS 5182 (part 23) : 2005	90
Nitrogen Dioxide (NO ₂)	IS 5182 (part 23) : 2005 & IS 5182 (part 23) : 2005	80
Carbon Monoxide (CO)	IS 5182 (part 23) : 2005 & IS 5182 (part 23) : 2005	4.0

TEST REPORT

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO* mg/m ³
03.06.2021	36	24	12	28	1.2
05.06.2021	50	32	10	20	1.1
10.06.2021	49	26	34	26	0.8
14.06.2021	42	20	10	22	0.6
19.06.2021	58	26	16	20	1.0
23.06.2021	52	20	08	24	1.6
25.06.2021	50	22	14	20	1.4
28.06.2021	46	20	10	26	1.0

Remarks: = Duration of sampling for 0.1 Hour.

Terms & conditions

2. The reason for performing a literature search is to help identify a solution.

PREPARED BY

REPPAARD BY



SUSTAINABLE ENVIRONMENTAL SOLUTIONS

100

End of the test report.



H99-272 Phase II - Near JP Chowk
Ring Road No. 2, Kashi Nagar, Raipur (C.G.) - 492009
Ph: 9771 - 4327777 Email: ultimateenv@gmail.com

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

TO,
JINDAL STEEL & POWER LIMITED
GODADIH Limestone Mines,
BILASPUR (C.G.)

REPORT NO UES/IR/21-22/005A
LAB REF NO UES/21-22/AAQM/1340
DATE OF SAMPLING 05/06/2021 to 23/06/2021
DATE OF REPORT 04/07/2021 to 30/06/2021
DATE OF RECEIPT 04/07/2021
DATE OF ANALYSIS 04/07/2021
START 04/06/2021
END 31/07/2021

CLIENT NAME, NO. & DATE JINDAL STEEL & POWER LIMITED, Bilaspur, 04/06/2021
SAMPLE NO. 1340
SAMPLING LOCATION GODADIH VILLAGE
DURATION OF SAMPLING 24 HOURS
SAMPLES COLLECTED BY LABORATORY CHEMIST
SAMPLING PROCEDURE AS PER METHOD REFERENCE
ANALYSIS QUANTITY / PACKAGING FILTER PAPER (MILITARY NO.), FILTER PAPER (MILITARY NO.), SUBSAMPLING PUC BOTTLE, NO. 100ML NO. 100 BOTTLE, NUMBER BOTTLE, 1340

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol. - I	100
Particulate Matter size less than 2.5 microns (PM _{2.5})	CPCB Guidelines Vol. - I	40
Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2006 & IS 5182 (Part 6): 2006 & CPCB Guidelines Vol. - I	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 6): 2006 & CPCB Guidelines Vol. - I	80
Carbon Monoxide (CO)	IS 5182 (Part 10): 1999 & IS 5182 (Part 10): 2003	4.0

TEST REPORT				
Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	CO mg/m ³
03.06.2021	50	22	12	26
05.06.2021	54	24	08	24
10.06.2021	46	22	10	22
14.06.2021	50	26	16	20
19.06.2021	42	20	10	26
23.06.2021	46	28	16	22
26.06.2021	42	24	10	20
28.06.2021	40	22	08	24

Terms & conditions

- The report for publication, submission to an third party is not allowed.
- The sample will be retained for 15 days after the date of test. Beyond which, customer agreed with us to return.
- It is the responsibility of the client to ensure that the sample is properly labeled and sealed.

PREPARED BY *[Signature]*

APPROVED BY *[Signature]*

DATE 04/07/2021

TEST REPORT

FOR JINDAL STEEL & POWER LIMITED

FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

AUTHORIZED SIGNATORY



HDD-272 Phase II - Near JP Chowk
Ring Road No. 2, Sahibnagar, Rajauri (G.C.) - 492090
Ph: 0771 - 462777 | Email: ultimateenviro@gmail.com

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

Name & Address of the Customer		REPORT NO.	UES/FR/21/22/0195
TO, JINDAL STEEL & POWER LIMITED, GODADIH Limestone MINES, BILASPUR (C.G.)		LABORATORY NO.	UES/21-22/N/1150
		DATE OF REPORT	03/07/2021
		DATE OF SAMPLE	03/06/2021 to 25/06/2021
ANALYSIS DETAILS			
Monitoring for	Noise Level Monitoring		
Customer Ref. No. & Date	VERBAL COMMUNICATION WITH MLD P.P. ATE		
Sampling Location	Guest house chimney		
Sample Collected By	Field working Chemist		
Sampling Procedure	After customer's instruction		

TEST REPORT				
DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)
		DAY TIME	NIGHT TIME	
03.06.2021	dB(A)	64.1	46.6	75
05.06.2021	dB(A)	66.6	40.2	
10.06.2021	dB(A)	62.2	44.8	
14.06.2021	dB(A)	54.8	30.3	
19.06.2021	dB(A)	50.0	44.4	
23.06.2021	dB(A)	48.6	38.6	
26.06.2021	dB(A)	42.1	36.0	70
28.06.2021	dB(A)	53.4	42.5	

REMARKS: RESULTS ARE AS ABOVE

Terms & Conditions

- The report for publication, information or as legal document is forbidden.
- Test sample will be retained for 1 month after issue of test report unless otherwise agreed with customer.
- This is for information as the party has asked for data's test only.

 PREPARED BY	 UES/DFR/400	FOR ULTIMATE ENVIRONMENTAL SOLUTIONS AUTHORIZED SIGNATORY
		End of the test report



HDD-272, Phase II - Near J.P. Chowk
Ring Road No-2, Kadir Naga, Rajpur (C.G.) - 492088
Ph: 0771 - 402777 | Email: ultimateenviro@gmail.com

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

Name & Address of the Client		REPORT NO.	UES/TR/21-22/0995
TO, JINDAL STEEL & POWER LIMITED GODADRI LIMESTONE MINES, BILASPUR (C.G.)		LAB REF NO.	UES/21-22/1151
		DATE OF REPORT	03/07/2021
		DATE OF SAMPLES	03/05/2021 to 29/06/2021
ANALYST: PRASHANT			
Monitoring for: Noise Level Monitoring			
Customer Ref No. & Use: VERBAL COMMUNICATION WITH MR. D.P. SATEL			
Sampling Location: Self Station entire site			
Sample Collected by: Laboratory Chemist			
Sampling Frequency: Manufacturer's Instruction			

TEST REPORT					
DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
03.05.2021	dB(A)	55.2	42.2		
05.05.2021	dB(A)	52.5	49.5		
10.06.2021	dB(A)	40.4	35.2		
14.06.2021	dB(A)	52.5	38.6	75	70
19.06.2021	dB(A)	56.2	42.0		
23.06.2021	dB(A)	44.8	34.0		
26.06.2021	dB(A)	42.3	36.5		
28.06.2021	dB(A)	58.6	38.2		

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- > The report for publication, utilization or its legal dispute is forbidden.
- > Test sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- > This is for information as the party has accepted the test of noise.

 PREPARED BY	 THE ULTIMATE ENVIRONMENTAL SOLUTIONS	 AUTHORIZED SIGNATORY
		03/07/2021

End of this test report



HDD-272, Phase II - Near JP Chowk
Ring Road No. 2, Kabil Nagar, Raipur (C.G.) - 492009
Ph: 0771 - 4027777 Email: ultimatewsg@gmail.com

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

Name & Address of the Customer		REPORT NO.	UES/TR/21-22/0997
TO,		LAB REF NO.	UES/21-22/NV/1152
JINDAL STEEL & POWER LIMITED		DATE OF REPORT	03/07/2021
GODADIH LIMESTONE MINES,		DATE OF SAMPLE	03/06/2021 to 29/06/2021
BILASPUR (C.G.)			
Name & Address of the Laboratory			
Monitoring For		Noise Measurement	
Customer Ref. No. & Use		VERBAL COMMUNICATION WITH MR. D. P. JAIN	
Sampling Location		GODADIH VILLAGE	
Sample Collected By		Laboratory Chemist	
Sampling Procedure		Manufacturer's Certification	

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
03.06.2021	dB(A)	48.0	43.5		
05.06.2021	dB(A)	52.5	36.0		
10.06.2021	dB(A)	50.2	30.2		
14.06.2021	dB(A)	44.0	32.5		
19.06.2021	dB(A)	46.3	36.2		
23.06.2021	dB(A)	42.0	32.8		
26.06.2021	dB(A)	38.5	40.2		
28.06.2021	dB(A)	52.5	41.6		
				75	70

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- The report for publication, arbitration or as legal evidence is forbidden.
- Test sample will be retained for 15 days after receipt of report unless otherwise agreed with customer.
- This is for information of the party this subject to change without notice.

 PREPARED BY	 AUTHORIZED SIGNATORY
-----------------	--------------------------

End of the test report



HDD-272, Phase II, Near J.P. Chowk,
Ring Road No. 2, Khar Nagar, Rajpur (C.G.) - 482089,
Ph: 0771 - 4021977 | Email: ultimateenviro@gmail.com

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

TO,
**JINDAL STEEL & POWER LIMITED,
GODAHIL LIMESTONE MINES,
BILASPUR (C.G.)**

REPORT NO. UES/TR/21-22/0985
LAB REF NO. UES/21-22/M/1153
DATE OF REPORT 03/07/2021
DATE OF SAMPLING 03/06/2021 to 28/06/2021

NAME OF THE CLIENT: JINDAL STEEL & POWER LIMITED
ADDRESS: NEAR J.P. CHOWK, RING ROAD NO. 2, KHAR NAGAR, RAJPUR (C.G.) - 482089
SAMPLING LOCATION: GODAHIL VILLAGE
SAMPLER COLLECTED BY: Laboratory Chemist
SAMPLING PROCEDURE: Manufacturer's Instruction

TEST REPORT					
DATE OF SAMPLING	UNIT	RESULT		LIGHT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
03.06.2021	dB(A)	44.0	36.6		
05.06.2021	dB(A)	52.6	33.0		
10.06.2021	dB(A)	44.2	36.2		
14.06.2021	dB(A)	40.4	34.6	75	70
19.06.2021	dB(A)	46.8	42.4		
23.06.2021	dB(A)	44.0	36.0		
26.06.2021	dB(A)	42.6	32.8		
28.06.2021	dB(A)	43.5	34.6		

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- > The report for publication, circulation or at least to quote is invalid.
- > Test sample will be returned for 15 days after issue of test report unless otherwise agreed with customer.
- > This is for information as the user has asked for testing service only.

PREPARED BY: *[Signature]*

FOR: ULTIMATE ENVIRONMENTAL SOLUTIONS

AUTHORIZED SIGNATORY: *[Signature]* 03/07/2021

End of the test report



1 message

Mukesh Kumar Singh [Limestone Mines (Chhillath)] <mukeshk.singh@lspl.com>
 To: hccarb@ignati.com, cesh,rollipallu@jrnelli.com
 Bhal Nishan Raghuvanshi <niteesh.raghuvanshi@indasteel.com> Subhash Singh <subhash.singh@indasteel.com>
 Shrivastava (Chhillath) <ssarav.srivastava@indasteel.com>

We are submitting herewith the Ambient Air Quality & Ambient Noise level monitoring report for the month of July 2021 in respect of Godardih Mahal No. 2 Limestone Mine (Mine Code-38CG-102003), Block-Masuri, District-Bilsaipur (CG) over an area of 120.313 Ha. granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please

With kind regards



Mukesh Kumar Singh

AGM(Survey)

Jindal steel & Power Limited

Limestone Mines

mob.: 9109137682

Email:- mukesh.singh@jsspl.com

Submission July.pdf
5412K

August 07, 2021

To,

The Member Secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Alai Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of August 2021.

Ref: Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of August 2021 in respect of Goddadi Mahal No. 2 Limestone Mine (Mine Code-
38CGH02003) Block-Masturi, District-Bilaspur (CG) over an area of 120.313 Ha. granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited.

(Subhash Singh)
Mine Manager
Goddadi Mahal No. 2 Limestone Mine

Encl. Ambient air quality & noise level monitoring report

Cc: The Regional Officer, Regional Office, C.E.C.B.

WaperVihar, Near Deendayal Upadhyay garden, Bilaspur (CG)

Jindal Steel & Power Limited

Work Office Jindal Steel & Power Limited, P8 E 16, Kharsia Road, Raigarh - 496001 (CG)
T 491 7762 227003-10 (10 Encl) F 491 7762 217021-22. W www.jindalsteelpower.com

Registered Office D. P. Jindal Marg, Huzar, 215 005, Raigarh



August 07, 2021

To,
The Member Secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-13,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of August 2021.

Ref: Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of August 2021 in respect of Godadahi Mahal No. 2 Limestone Mine (Mine Code-
38CGHC2003), Block-Masturi, District-Bilaspur (CG) over an area of 120.313 Ha. granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited.

Subhash Singh
07/08/21
(Subhash singh)
Mine Manager
Godadahi Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report.

✓ Cc: The Regional Officer, Regional Office, C.E.C.B.,
Vyapar/Vihar, Near Deendayal Upadhyay garden, Bilaspur (CG).





August 07, 2021

To,
The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of August'2021.

Ref :Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

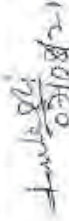
Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of August'2021 in respect of Godadith Mahal No. 2 Limestone Mine (Mine Code-
38CGH02003), Block-Masturi, District-Bilaspur (CG) over an area of 120.313 Ha granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited,



(Subhash singh)
Mine Manager
Godadith Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report.

Cc: The Regional Officer, Regional Office, C.E.C.B.,
Vyaparvihar, Near Daandayal Upadhyay garden, Bilaspur (CG).

Report No. UES/18/21-22/1447
LAS REF NO. UES/21-22/AA/314/256-2093
DATE OF ANALYSIS 01/07/2021 to 30/07/2021
DATE OF REPORT 02/07/2021 to 30/07/2021
DATE OF ANALYSIS 03/08/2021
DATE OF REPORT 02/07/2021

CLIENT'S NAME JINDAL STEEL & POWER LIMITED
MONITORING FOR AMBIENT AIR QUALITY MONITORING
SAMPLING LOCATION GUESTHOUSE ON ROAD
DURATION OF SAMPLING 24 HOURS
SAMPLE COLLECTED UP LABORATORY OF ENVIRONMENT
SAMPLING PROCEDURE AS PER METHOD REFERENCE
SAMPLE QUANTITY/PACKING FILTER PAPER (26.41 x 13.14 CM), FILTER PAPER (26.41 x 13.14 CM), 50% SIMULTANEOUS, 10% 50% ROUTE
RUBBER STOPPER, LSI NO.

Parameter	Method Reference	NAAQM Standard
Particulate Matter (PM ₁₀)	IS 5182 (Part 3): 2008 & CPCB Guidelines Vol. 2	100
Particulate Matter (PM _{2.5})	CPCB Guidelines Vol. 2	60
Sulphur Dioxide (SO ₂)	IS 5182 (Part 3): 2008, IS 2006 & CPCB Guidelines Vol. 2	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 3): 2008 & CPCB Guidelines Vol. 2	80
Ozone (O ₃)	IS 5182 (Part 3): 2008 & CPCB Guidelines Vol. 2	4.0

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (ppb)	NO ₂ (ppb)	O ₃ (ppb)
01.07.2021	64	28	12	26	1.1
05.07.2021	62	24	10	26	0.9
09.07.2021	60	30	14	20	0.9
12.07.2021	58	24	10	22	1.0
15.07.2021	60	22	16	24	1.4
19.07.2021	56	28	18	20	1.2
26.07.2021	52	20	14	28	1.0
28.07.2021	66	28	10	26	1.1

Remarks: * Duration of sampling for CO - 1 Hour.

Terms & conditions

- The report is prepared based on the data collected during the sampling period.
- The report is valid for the period of 12 months from the date of issue.
- The report is valid for the period of 12 months from the date of issue.

Signature 03/08/2021
Print Name 03/08/2021
Signature 03/08/2021
Print Name 03/08/2021



For ULTIMATE ENGINEERING SOLUTIONS
AUTHORIZED SIGNATORY

End of Report



HDB-272, Phase II, Near JP Chowk
Ring Road No. 2, Kabi Nagar, Rajput C.G. 492009
Ph: 0771-4027777 | Email: ultimateenviro@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EF act 1980

TO,

**JINDAL STEEL & POWER LIMITED
GODABDIH Limestone Mines,
BILASPUR (C.G.)**

REPORT NO	UES/TS/21-22/1648
LAB REF NO	UES/21-22/AAQM/2004-2021
DATE OF SAMPLING	01/07/2021 to 23/07/2021
DATE OF REPORT	02/07/2021 to 30/07/2021
DATE OF REPORT	03/08/2021
DATE OF ANALYSIS	04/08/2021 to 07/08/2021
CUSTOMER NO. & DATE	
MONITORING POINT	VERVAL COMPARISON WITH MR. DP DAIL
SAMPLING LOCATION	AMBIENT AIR QUALITY MONITORING
DURATION OF SAMPLING	24 HOURS
SAMPLES COLLECTED BY	LABORATORY CHEMIST
SAMPLING PROCEDURE	AS PER METHOD REFERENCE
SAMPLE QUANTITY/TACONS	500 ml (PAPER) 100 ml (NO. 100) 100 ml (NO. 100) 100 ml (NO. 100)

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter Size Less Than 10 microns (PM ₁₀)	IS 5182 Part 231: 2006 & CPOE Guidelines Vol. I	100
Particulate Matter Size Less Than 2.5 microns (PM _{2.5})	IS 5182 Part 231: 2006 & CPOE Guidelines Vol. I	50
Sulphur Dioxide (SO ₂)	IS 5182 Part 231: 2006 & CPOE Guidelines Vol. I	80
Nitrogen Dioxide (NO ₂)	IS 5182 Part 231: 2006 & CPOE Guidelines Vol. I	80
Carbon Monoxide (CO)	IS 5182 Part 231: 2006 & CPOE Guidelines Vol. I	4.0

TEST REPORT

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)
01.07.2021	94	20	10	20	1.0
05.07.2021	43	25	14	26	1.2
08.07.2021	40	23	12	20	1.6
12.07.2021	42	26	10	28	1.1
15.07.2021	45	20	16	22	1.4
19.07.2021	50	26	12	24	1.0
26.07.2021	54	20	10	20	1.2
28.07.2021	68	22	14	22	1.1

Remarks: * Duration of sampling for CO - 1 Hour.

Terms & conditions

- This report is valid only for the purpose of ambient air quality monitoring.
- This report will be valid for 12 months from the date of issue.
- This report is not valid for any other purpose.

 PREPARED BY	 AUTHORISED SIGNATORY
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FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

End of report

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

TO,
JINDAL STEEL & POWER LIMITED
GODAWARI LIMESTONE MINES,
BILASPUR (C.G.)

Report No: 155/17/21-22/1445
Lab Ref No: 155/21-22/1445/2021
Date of Sampling: 01/07/2021 to 29/07/2021
Date of Report: 02/08/2021 to 30/07/2021
Date of Receipt: 03/08/2021
Date of Analysis: START: 02/07/2021 END: 31/07/2021

Customer Name: JINDAL STEEL & POWER LIMITED
Address: BILASPUR (C.G.)
Sample Location: BILASPUR (C.G.)
Sample Type: AIR
Sample Quantity: 10 LITERS
Sample Container: 10 LITERS
Sample Label: 10 LITERS
Sample Date: 01/07/2021 to 29/07/2021
Sample Time: 02/07/2021 to 30/07/2021
Sample Method: 03/08/2021 to 30/07/2021
Sample Result: 03/08/2021 to 30/07/2021

Parameter	Method Reference	NAAQM Standard
Particulate Matter (PM ₁₀)	IS 5182 (Part 2): 2006 & CICA Guidelines Vol. I	100
Particulate Matter (PM _{2.5})	IS 5182 (Part 2): 2006 & CICA Guidelines Vol. I	60
Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2006 & CICA Guidelines Vol. I	30
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 2): 2006 & CICA Guidelines Vol. I	30
Carbon Monoxide (CO)	IS 5182 (Part 2): 2006 & CICA Guidelines Vol. I	5.0

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)
01.07.2021	52	28	18	20	1.0
02.07.2021	48	22	10	24	1.2
03.07.2021	45	29	18	22	0.6
04.07.2021	41	24	12	23	0.8
05.07.2021	52	22	10	26	1.2
06.07.2021	55	25	12	24	1.4
07.07.2021	40	22	16	22	1.0
08.07.2021	40	22	12	28	1.2

Terms & conditions

- The customer shall provide all necessary information and data for the analysis.
- The customer shall provide all necessary information and data for the analysis.
- The customer shall provide all necessary information and data for the analysis.

Ultimate Chemical Solutions
BILASPUR (C.G.)
03/08/2021
03/08/2021
03/08/2021

End of the report

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

Form: E-Reference: 20-15-2018/2019

TO,

**JINDAL STEEL & POWER LIMITED
CODADRI Limestone MINES,
BILASPUR (C.G.)**

REPORT NO.	UES/IN/21-22/1450
LAB REF NO.	DES/21-22/AAQW/2110-2117
DATE OF SAMPLING	01/07/2021 to 29/07/2021
DATE OF RECEIPT	02/07/2021 to 29/07/2021
DATE OF REPORT	31/08/2021
DATE OF ANALYSIS	START: 01/07/2021 END: 31/07/2021

SAMPLE DETAILS

CUSTOMER REF. NO. & DATE	VERNAL COAST UNDERSTATION WITH AIR DISPENSE
MONITORING FOR	NATURAL AIR QUALITY MONITORING
SAMPLING LOCATION	INDUSTRIAL WASTE
DURATION OF SAMPLING	24 HOURS
SAMPLE COLLECTED BY	LABORATORY CHEMIST
SAMPLING FREQUENCY	AS PER METHOD REFERENCE
SAMPLE QUANTITY/CONTAINER	FILTER PAPER (MIL), 100 NO. IN THE PAPER (MIL), 100 NO. SOLID BOTTLE, 100 NO. SOLID BOTTLE, 100 NO. SOLID BOTTLE

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter (PM ₁₀)	IS 5182 (Part 25): 2006 & CPCB Guidelines Vol.-I	100
Particulate Matter (PM _{2.5})	CPCB Guidelines Vol.-I	60
Particulate Matter (PM ₁₀)	IS 5182 (Part 25): 2006 & CPCB Guidelines Vol.-I	60
Particulate Matter (PM _{2.5})	IS 5182 (Part 25): 2006 & CPCB Guidelines Vol.-I	60
Particulate Matter (PM ₁₀)	IS 5182 (Part 25): 2006 & CPCB Guidelines Vol.-I	60
Particulate Matter (PM _{2.5})	IS 5182 (Part 25): 2006 & CPCB Guidelines Vol.-I	60

TEST REPORT

Date of Sampling	PM ₁₀ $\mu\text{g}/\text{m}^3$	PM _{2.5} $\mu\text{g}/\text{m}^3$	SO ₂ $\mu\text{g}/\text{m}^3$	NO _x $\mu\text{g}/\text{m}^3$	CO $\mu\text{g}/\text{m}^3$
01.07.2021	48	20	08	22	1.2
06.07.2021	45	28	08	26	1.0
09.07.2021	40	25	12	28	1.5
12.07.2021	46	23	15	22	1.1
15.07.2021	43	25	12	24	0.6
19.07.2021	46	20	10	20	0.8
26.07.2021	40	28	06	28	1.2
29.07.2021	45	24	06	22	1.0

Remarks: Duration of sampling for CO - 1 Hour

Terms & conditions

- The report is prepared and issued on the basis of the data received from the client.
- The report is valid for 12 months from the date of issue of the report.
- The report is not to be used for any other purpose without the written consent of the client.

Prepared by: *[Signature]*

Checked by: *[Signature]*

Ultimate Environmental Solutions

100, Ring Road No-2, Kalyan Nagar, Rajkot (G.G.)-362099

Ph: 0771-4022477 | Email: ultimateenv@gmail.com

End of the test report



HDP-272 Phase II - Near J.P. Chowk
Ring Road No. 2, Kairi Nagar, Raipur (C.G.) - 492099
Ph: 9771-0274771 Email: ultimateenv@gmail.com

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

TO,		RECEIVED	U/S/18/21-22/1451
JINDAL STEEL & POWER LIMITED		LAB REC NO.	U/S/31-22/H/2218-2225
GODADIH LIMESTONE MINES,		DATE OF REPORT	03/04/2021
BILASPUR (C.G.)		DATE OF SAMPLING	01/07/2021 to 23/07/2021
SAMPLER DETAILS			
Monitoring for	Road Level Monitoring		
Contracted by Mr. & Mrs.	VERMA TO MINERALIZATION WITH MR. D.P. SHETI		
Sampling Location	Gusehousa Chikad		
Sample Collected by	Laboratory Chemist		
Sampling Procedure	Manufacturer's Instruction		

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.07.2021	dB(A)	68.5	48.4		
06.07.2021	dB(A)	66.5	46.6		
08.07.2021	dB(A)	60.0	42.2		
12.07.2021	dB(A)	58.1	38.5		
16.07.2021	dB(A)	56.2	44.8		
19.07.2021	dB(A)	42.5	38.0		
26.07.2021	dB(A)	64.9	32.6		
28.07.2021	dB(A)	58.3	41.3		

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- 1) This report for evaluation, authentication or as legal document is void.
- 2) This sample will be retained for 15 days after receipt of test report unless otherwise agreed with customer.
- 3) This is for information as the party has asked for above test (s) only.

Prepared By: [Signature] 03/04/2021	Ultimate Environmental Solutions RAIPUR	For: ULTIMATE ENVIRONMENTAL SOLUTIONS [Signature] AUTHORIZED SIGNATURE
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170 of 170 test report

TO,
JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO. UES/IR/21-22/1952
LAB. REF. NO. UES/21-22/N/2226-7253
DATE OF REPORT 03/08/2021
DATE OF SAMPLING 01/07/2021 to 28/07/2021

NAME OF CUSTOMER: JINDAL STEEL & POWER LIMITED
ADDRESS: GODADIH LIMESTONE MINES, BILASPUR (C.G.)
SAMPLING LOCATION: 300m from mine site
SAMPLING METHOD: Laboratory Method
SAMPLING FREQUENCY: As per Manufacturer's Instruction

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.07.2021	dB(A)	58.8	48.6		
06.07.2021	dB(A)	55.4	46.8		
09.07.2021	dB(A)	56.2	42.4		
12.07.2021	dB(A)	54.6	48.2		
16.07.2021	dB(A)	58.8	46.8	75	70
19.07.2021	dB(A)	46.2	40.2		
26.07.2021	dB(A)	48.8	42.4		
28.07.2021	dB(A)	52.6	46.5		

REMARKS: RESULTS ARE AS ABOVE

TERMS & CONDITIONS

- * The report for publication, circulation or as legal dispute is forbidden.
- * Test samples will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- * This is for information in the survey and subject to the company's policy.

Prepared by: *[Signature]* 03/08/2021
AUTHORIZED SIGNATORY
FOR: ULTIMATE ENVIRONMENTAL SOLUTIONS

End of the test report



H/O D-272, Phase III - Near JP Chowk
Ring Road No-2, Kabil Nagar, Raipur (C.G.) - 492009
Ph: 0771-4122777 Email: ultimateenviro@gmail.com

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

TO,		REPORT NO.	UES/TR/21-22/1453
JINDAL STEEL & POWER LIMITED		LAB REF NO.	UES/21-22/N/2234-2241
GODADIH Limestone MINES,		DATE OF REPORT	03/08/2021
BILASPUR (C.G.)		DATE OF SAMPLING	01/07/2021 to 28/07/2021
ADDRESS: RAIPUR			
Monitoring For: Noise Level Monitoring			
Machines and No. of Gears: VERBAL COMMUNICATION WITH MR. D.P. PATEL			
Sampling Location: GODADIH VILLAGE			
Sensitized by: Laboratory Chemist			
Sampling Procedure: Manufacturer's Instruction			

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.07.2021	dB(A)	58.3	52.5		
05.07.2021	dB(A)	52.8	50.0		
09.07.2021	dB(A)	50.0	48.8		
12.07.2021	dB(A)	55.5	42.2		
15.07.2021	dB(A)	56.5	45.8	75	70
15.07.2021	dB(A)	52.3	40.2		
26.07.2021	dB(A)	58.5	39.5		
26.07.2021	dB(A)	52.5	52.4		

REMARKS: RESULTS ARE AS ABOVE

Terms & Conditions

- The report for publication, circulation or as legal evidence is forbidden.
- Test sample will be returned for 15 days after issue of test report unless otherwise agreed with customer.
- This is for information as the early test result for reference only.

Signature 03/08/2021	PREPARED BY
For ULTIMATE ENVIRONMENTAL SOLUTIONS	
AUTHORIZED SIGNATURE	

End of the test report



HDD-272, Phase III - Near J.R. Choudhary
Ring Road No. 2, Kabil Nagar, Rajpur (C.G.) - 492009
Ph: 0771-4027777 Email: ultimatevis@gmail.com

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

Report to Authority of the Customer

TO,
JINDAL STEEL & POWER LIMITED
GODADIN LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO. UES/IN/21-22/1454
LAB NO. UES/21-22/N/2243-2249
DATE OF REPORT 03/08/2021
DATE OF SAMPLING 01/07/2021 to 28/07/2021

SAMPLE DETAILS

Monitoring for Noise Level Monitoring
Customer Ref. No. & Date VISUAL COMMUNICATION WITH MR. D.P. PATI
Sampling Location LOHAR VILLAGE
Sample Collected by Laboratory Chemist
Sampling Procedure Manufacturer's Instruction

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.07.2021	dB(A)	51.2	45.5		
02.07.2021	dB(A)	52.6	42.2		
09.07.2021	dB(A)	50.0	48.6		
13.07.2021	dB(A)	50.4	44.0	75	70
16.07.2021	dB(A)	56.8	42.8		
19.07.2021	dB(A)	54.2	46.2		
26.07.2021	dB(A)	52.5	42.4		
28.07.2021	dB(A)	50.4	46.0		

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- * This report for publication, archiving or as legal dispute is forbidden.
- * These samples will be returned for 15 days after issues unless request unless otherwise agreed with customer.
- * This is for information only and not for any legal action.

Prepared by: 03/08/2021
Ultimate Environmental Solutions
For ULTIMATE ENVIRONMENTAL SOLUTIONS
AUTHORIZED SIGNATORY

End of the test report



JSPL/GLSM/Geni/2021/07

Date: 08.09.2021

To,

The Member Secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Alai Nagar,
District-Raipur, Chhattisgarh - 492002.

Subj: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of August'2021.

Ref.: Consent to Operate permission vide letter No. 575/JS/CECB/2021 Nava Raipur,
Alai Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of August'2021 in respect of Godadhi Mahal No. 2 Limestone Mine (Mine Code-
38CGH02003), Block-Masturi, District-Bilaspur (CG) over an area of 120.313 Ha. granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited.


(Subhash Singh)
Mine Manager
Godadhi Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report

Cc: The Regional Officer, Regional Office, C.E.C.B.,
VyaparVihar, Near Daendayal Upadhyay garden, Bilaspur (CG).



Jindal Steel & Power Limited

Works Office Jindal Steel & Power Limited, 75 F-10, Kharola Road, Raipur-491001 (CG)

Tel: 7762 22000-10 (10 lines) Fax: 7762 22702/22 Website: jindalsteelpower.com

Registered Office: C-2, Indira Nagar, Near 135 D/S, Railway



JSP/JGLSM/Gen/2021/07

Date:08.09.2021

To,

The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of August'2021.

Ref: Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of August'2021 in respect of Godadahi Mahal No. 2 Limestone Mine (Mine Code-
38CGH02003). Block-Masturi, District-Bilaspur (CG) over an area of 120.313 Ha. granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited.

Subhash Singh
(Subhash Singh)
08/09/2021
Mine Manager

Godadahi Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report.

Cc: The Regional Officer, Regional Office, C.E.C.B.,
Vyaparvihar, Near Deendayal Upadhyay garden, Bilaspur (CG).



Jindal Steel & Power Limited

Work Office Jindal Steel & Power Limited, PB #15, Khargda Road, Rajnagar 495001 (CG)

T: +91 7762 227001-13 (10 lines) F: +91 7762 227024-37. W: www.jindalsteelpower.com

Registered Office: C-3, Jindal Marg, Hosh, 125 005, Haryana



JSPL/GLSM/Gen/2021/07

Date: 08.09.2021

To,

The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of August 2021.

Ref: Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of August 2021 in respect of Godadih Mahal No. 2 Limestone Mine (Mine Code-
38CG-H02003) Block-Masuri District-Bilaspur (CG) over an area of 120.313 Ha. granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited.

Subhash Singh
(Subhash Singh)
Mine Manager

Godadih Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report.

()
Regional Officer, Regional Office, C.E.C.B.,
Nava Raipur, Near Deshdayal Upadhyay garden, Bilaspur (CG).

Jindal Steel & Power Limited

Work Office Jindal Steel & Power Limited, Plot 415, Chanda Road, Raigarh (Bhilai) (CG)

Tel: +91 7762 227001-10 (10 lines) Fax: +91 7762 227001-02. Website: www.jindalsteelpower.com

Registered Office: C/o. Jindal Mang. Plant, T.S. 905, Mayapah



Ultimate
ENVIRONMENTAL SOLUTIONS

HD-0-272 Phase III - Near J.P. Chowk
Ring Road No-2, Kabi Nagar, Raipur (C.G.) - 492089
Ph - 0771 - 4027771 Email: ultimateenvs@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EP act 1985

REPORT NO		UES/RM/11-27/2019	
LIS REF NO		UES/EL-23/AAQM/5560-3837	
DATE OF SAMPLING		07/08/2021 to 27/08/2021	
DATE OF RECEIPT		03/08/2021 to 28/08/2021	
DATE OF REPORT		03/09/2021	
DATE OF ANALYSIS		03/09/2021	
DATE OF SIGNATURE		03/09/2021	
SAMPLE DETAILS			
CUSTOMER REF. NO. & DATE	4224 BUDN, DATED 01/07/2021		
MONITORING FOR	AMBIENT AIR QUALITY MONITORING		
SAMPLING LOCATION	GUEST HOUSE CHURAT		
DURATION OF SAMPLING	24 HOURS		
SAMPLE COLLECTED BY	LABORATORY CHEMIST		
SAMPLING FREQUENCY	AS PER METHOD REFERENCE		
SAMPLE QUANTITY/PACKAGE	PETER PAPER (MILK) 100 ML, PAPER VIALER (HCL) 100 ML, SGL 100ML, NO. 290 BOTTLE, NO. 300ML, NO. 310 BOTTLE, RUBBER STOPPER, NO. 10.		

Parameter	Method Reference	NAQM Standard
Particulate Matter (PM ₁₀ and PM _{2.5})	IS 5182 Part 231: 2006 & CEN	100
Particulate Matter (PM ₁₀)	Guidelines Vol. -1	
Particulate Matter (PM _{2.5})	Guidelines Vol. -1	
Particulate Matter (PM ₁₀)	IS 5182 Part 231: 2006 & CEN	100
Particulate Matter (PM _{2.5})	IS 5182 Part 231: 2006 & CEN	100
Sulphur Dioxide (SO ₂)	IS 5182 Part 61: 2006 & CEN	80
Nitrogen Dioxide (NO ₂)	IS 5182 Part 61: 2006 & CEN	80
Ozone (O ₃)	IS 5182 Part 101: 1995 & CEN	4.0

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
02.08.2021	63	24	14	26	0.5
06.08.2021	63	26	10	22	0.6
08.08.2021	64	30	16	23	0.2
13.08.2021	50	28	12	24	0.6
16.08.2021	66	32	14	29	0.8
20.08.2021	55	28	08	26	0.4
23.08.2021	50	24	16	22	0.6
27.08.2021	68	29	18	28	0.5

Remarks: - Duration of sampling for CO - 1 Hour.

Terms & conditions

- The client is responsible for providing the necessary information and data for the analysis.
- The sample will be analyzed for 15 days after the date of receipt unless otherwise specified in writing.
- The client is responsible for the collection and storage of the sample.

Prepared by <i>[Signature]</i> 03/09/2021	For Ultimate Environmental Solutions <i>[Signature]</i> 03/09/2021 AUTHORIZED SIGNATORY
--	---

End of the Report

HDD-772, Phase III - Near JP Chowk
Ring Road No. 2, Kabir Nagar, Raipur (C.G.) - 492099
Ph: 071 - 4027777 | Email: ulimatenwro@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EP act 1985

Name & Address of the Contractor

TO,

**JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.G.)**

Report Addressed To: TO,		REPORT NO	UES/18/21-22/2150
JINDAL STEEL & POWER LIMITED		LAR REF NO	UES/21-22/2407/2588-3085
GODADIN Limestone MINES,		DATE OF SAMPLING	02/06/2021 to 22/08/2021
SILASPUR (C.G.)		DATE OF RECEIPT	09/09/2021 to 23/08/2021
		DATE OF REPORT	08/09/2021
		DATE OF ANALYSIS	STARTED: 02/06/2021 ENDED: 03/09/2021
ANALYSIS CERTIFICATE			
CUSTOMER REF. NO. & DATE	323700084, DATED 31.07.2021		
MONITORING FOR	AMBIENT AIR QUALITY MONITORING		
SAMPLING LOCATION	SUB STATION MINES SITE		
DURATION OF SAMPLING	24 HOURS		
SAMPLE COLLECTED BY	LABORATORY CHEMIST		
SAMPLING PROCEDURE	AS PER METHOD DESCRIPTION		
SAMPLE QUANTITY/PACKING	FILTER PAPER (PVC)-300 ML., FILTER PAPER (PVC)-1 ML. NO. 500, 300ML. NO. PVC BOTTLE, NO. 50MLIT. NO. PVC BOTTLE		
	INJESTION ANALYSIS: 300 ML.		

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 4102 (Part 2): 2005 & 2002 Guidelines Vol.-I	100
Particulate Matter size less than 2.5 microns (PM _{2.5})	CPCB Guidelines Vol.-I USEPA/SAF/A/10/1997 5-201-3	80
Sulphur Dioxide (SO ₂)	IS 3152 (Part 2): 2001, 83-1006 & CPCB Guidelines Vol.-I	80
Nitrogen Dioxide (NO ₂)	IS 3152 (Part 2): 2005 & CPCB Guidelines Vol.-I	80
Carbon Monoxide (CO)	IS 3182 (Part 10): 1999, 80-2503	5.0

TEST REPORT

TEST REPORT					
Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO ₂ mg/m ³
02.08.2021	40	26	08	28	0.0
06.08.2021	46	33	12	22	0.2
09.08.2021	48	20	10	28	0.5
13.08.2021	44	32	16	20	0.6
16.08.2021	40	26	14	26	0.8
20.08.2021	58	39	08	20	0.6
23.08.2021	56	20	10	28	0.8
27.08.2021	40	28	12	30	0.5

Remarks: * Duration of sampling for CO₂ - 1 Hour.

Remarks: ? Duration of sampling for CD - 1 Hour.

Terms & conditions

- The request for publication will conform with the following requirements:
- Text length will be maximum 1000 words after full text and references.
- There is no submission charge at the moment. The author will receive 10 copies of the journal free of charge.

13/09/2024

PHOTOGRAPH BY



FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

ADULTS IN THE WILDERNESS

End of the test report.

End of the test report.


Ultimate
ENVIRONMENTAL SOLUTIONS

HDB-2/2, Phase III - Near P. Chowk
Ring Road No. 2, Kabi Nagar, Raipur (C.G.) - 492099
Ph: 0771-492777 | Email: ultimateenviro@gmail.com

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

TO:		REPORT NO	
JINDAL STEEL & POWER LIMITED		UFS/IR/21-22/2221	
GODADH LIMESTONE MINES,		LABORATORY	
BILASPUR (C.G.)		02/08/2021 to 27/08/2021	
		DATE OF REPORT	
		03/09/2021 to 28/08/2021	
		DATE OF ANALYSIS	
		START: 04/08/2021 END: 04/09/2021	
SAMPLES DETAILS			
CUSTOMER REF. NO. & DATE	41270006 DATED 27.07.2021		
MONITORING FOR	AMBIENT AIR CURRENT MONITORING		
SAMPLING LOCATION	GODADH VILLAGE		
DURATION OF SAMPLING	24 HOURS		
SAMPLE COLLECTED BY	LABORATORY CHEMIST		
SAMPLING PROCEDURE	AS PER METHOD NO. 100		
SAMPLE QUANTITY/ANALYSIS	ENTER PAPER (PML) IN NO. FILTER PAPER (PML) IN NO. SO ₂ BOTTLE NO. PWC BOTTLE NO. PWC BOTTLE BURNER BLANKING IN NO.		

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 5182 (Part 23): 2006 & CPCB Guidelines Vol. - I	120
Resuspended Matter size less than 2.5 microns (PM _{2.5})	CPCB Guidelines Vol. - I	60
Sulphur Dioxide (SO ₂)	IS 5182 (Part 21): 2001, IS 5182 (Part 21): 2001, IS 5182 (Part 21): 2001	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 21): 2001 & CPCB Guidelines Vol. - I	80
Carbon Monoxide (CO)	IS 5182 (Part 10): 1999, IS 5182 (Part 10): 1999	± 0

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
02.08.2021	62	32	14	24	0.8
05.08.2021	69	32	16	24	0.8
09.08.2021	66	32	12	28	0.8
13.08.2021	50	32	10	24	0.8
16.08.2021	62	32	18	26	0.9
20.08.2021	58	36	16	24	0.8
23.08.2021	66	38	12	22	0.6
27.08.2021	60	32	10	26	0.5

Remarks: * Duration of sampling for CO - 1 Hour.

Terms & conditions

- The customer shall provide all necessary information and data for the analysis.
- The results will be provided within 15 days after the date of the report unless otherwise specified.
- This is a confidential document and should be kept confidential.

 Dr. P. S. Choudhary PREPARED BY	 UFS ENVIRONMENTAL SOLUTIONS RAIPUR (C.G.)	AUTHORIZED SIGNATORY 03/09/2021
		AUTHORIZED SIGNATORY

End of the Test Report



HDD-2/2 Phase II - Near P. Chowk
Ring Road No. 2, Kabi Nagar, Raipur (C.G.) - 492009
Ph: 0671-4027777 Email: ultimateenv@gmail.com

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

Report No. UES/FORM/09

REPORT NO. UES/FORM/09/2021

LABOR NO. UES/71-22/ADM/2704-3711

DATE OF SAMPLING 03/08/2021 to 27/08/2021

DATE OF REPORT 03/08/2021 to 28/08/2021

DATE OF ANALYSIS 03/08/2021

END: 02/09/2021

CLIENT'S REF. NO. & DATE 432200054, DATED: 27.07.2021

MONITORING FOR AMBIENT AIR QUALITY MONITORING

SAMPLING LOCATION UDHAN VILLAGE

DURATION OF SAMPLING 72 HOURS

SAMPLE COLLECTED BY LABORATORY CHEMIST

SAMPLING PROCEDURE AS PER METHOD REFERENCE

SAMPLE QUANTITY/ANALYSIS FILTER PAPER (PM₁₀), FILTER PAPER (PM_{2.5}), EXTRACTOR, BOTTLE, NO. 100 BOTTLE, NO. 100 BOTTLE, NO. 100 BOTTLE, NO. 100 BOTTLE

Parameter	Method Reference	NAAQM Standard
Particulate matter (PM ₁₀)	IS 5182 (Part 2) 2006 & CPCB Guidelines Vol. - I	100
Particulate matter (PM _{2.5})	CPCB Guidelines Vol. - I	60
Sulphur Dioxide (SO ₂)	IS 5182 (Part 2) 2006 & CPCB Guidelines Vol. - I	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 2) 2006 & CPCB Guidelines Vol. - I	80
Carbon Monoxide (CO)	IS 5182 (Part 2) 2006 & CPCB Guidelines Vol. - I	1.0

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO µg/m ³
02.08.2021	58	22	18	28	0.9
06.08.2021	46	26	08	28	0.9
09.08.2021	50	24	14	26	0.7
13.08.2021	46	22	12	22	0.5
16.08.2021	50	28	14	24	0.6
20.08.2021	50	26	16	20	0.8
23.08.2021	50	24	06	26	0.5
27.08.2021	66	28	10	28	0.2

Remarks: * Duration of sampling for SO₂ - 1 Hour.

Terms & conditions

- The report is valid for 12 months from the date of issue.
- The report is valid for 12 months from the date of issue.
- The report is valid for 12 months from the date of issue.

Prepared by: *[Signature]* 03/08/2021

Authorized Signature: *[Signature]* 03/08/2021

Ultimate Environmental Solutions

End of the Report



Ultimate
ENVIRONMENTAL SOLUTIONS

HBIS-272, Phase II - Near JP Chowk
Ring Road No-2, Kabi Nagar, Raipur (C.G.) - 492099
Ph: 0771 - 4027771 Email: ultimateenviro@gmail.com

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

TO, JINDAL STEEL & POWER LIMITED GODADIN LIMESTONE MINES, BILASPUR (C.G.)		REPORT NO. UES/TR/21-22/2223
		LABOUR NO. UES/21-22/N/3712-3719
		DATE OF REPORT 03/09/2021
		DATE OF SAMPLING 02/08/2021 to 27/08/2021
SAMPLE DETAILS		
Monitoring for	Noise Level Monitoring	
Customer Ref. No. & Date	02337000504, DATED: 31.07.2021.	
Sampling Location	Basil forae Culture	
Sample Collected By	Laboratory Chemist	
Sampling Procedure	Manufacturer's Instruction	

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
02.08.2021	dB(A)	50.5	45.2		
06.08.2021	dB(A)	54.8	42.6		
09.08.2021	dB(A)	56.0	48.8		
13.08.2021	dB(A)	54.6	32.6	75	70
16.08.2021	dB(A)	52.8	36.8		
20.08.2021	dB(A)	48.3	35.0		
23.08.2021	dB(A)	46.2	34.2		
27.08.2021	dB(A)	52.8	45.5		

REMARKS, RESULTS ARE AS ABOVE

Terms & Conditions

- This report is for reference, arbitration or as legal evidence is forbidden.
- Test samples will be available for 15 days after issue of test report unless otherwise specified with customer.
- This is for information at the place has asked for assessment (if any).

Prepared By  03/09/2021		For Ultimate Environmental Solutions  03/09/2021 AUTHORIZED SIGNATORY
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End of the test report



HSD-272, Phase II - Near JP Chowk
Ring Road No-2, Kabi Nagar, Raipur (C.G.) - 492009
Ph: 0771 - 4027777 | Email: ultimateenv@gmail.com

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

Name of Laboratory for the Client		REPORT NO.	UES/TR/21-22/2224
TO,		LAB REF NO.	UES/21-22/11/3720-3727
JINDAL STEEL & POWER LIMITED		DATE OF REPORT	03/09/2021
GODADIA LIMESTONE MINES,		DATE OF SAMPLING	03/08/2021 to 27/08/2021
BILASPUR (C.G.)		SAMPLE DRIVING	
Modifying Per			
Customer Ref. No. & Date			
Sampling Location			
Sample Collected by			
Sampling Procedure			

TEST REPORT					
DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
02.08.2021	dB(A)	50.6	42.4		
06.08.2021	dB(A)	54.0	46.5		
09.08.2021	dB(A)	42.4	44.7		
13.08.2021	dB(A)	58.8	46.4	75	70
16.08.2021	dB(A)	55.6	42.5		
20.08.2021	dB(A)	41.2	48.8		
23.08.2021	dB(A)	49.8	44.2		
27.08.2021	dB(A)	55.5	42.5		

REMARKS: RESULTS ARE AS ABOVE

TERMS & CONDITIONS

- The report is published, circulation on any legal dispute is forbidden.
- Test sample will be returned for 15 days after issue of test report unless otherwise agreed with the client.
- This is an information to the party for which the report is issued for reference only.

Prepared by 03/09/2021	For ULTIMATE ENVIRONMENTAL SOLUTIONS 03/09/2021 AUTHORIZED SIGNATORY
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End of the test report

HDB-272, Phase III - Near JP Chowk
Ring Road, No. 2, Kalai Nagar, Rajpur (C.G.) - 492099
Ph: 0771-4027777 | Email: alternativiro@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under E² act 1986

TO,		REPORT NO.	UES/TR/21-22/2025
JINDAL STEEL & POWER LIMITED		LABOR NO.	UES/21-22/N/3728-3735
GODADRIH LIMESTONE MINES,		DATE OF REPORT	08/09/2021
BILASPUR (C.G.)		DATE OF SAMPLING	02/08/2021 to 27/08/2021
SAMPLE DETAILS			
Monitoring for	Roade Level Monitoring		
Customer Ref. No. & Date	4527730204, DATED:04.07.2021		
Sampling Location	GOCHADRIH VILLAGE		
Sample Collected by	Laboratory Chemist		
Sampling Procedure	Manufacturer's Instruction		

TEST REPORT

TEST REPORT					
DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
02.08.2021	dB(A)	64.2	58.5		
06.08.2021	dB(A)	60.0	45.2		
09.08.2021	dB(A)	58.6	47.4		
13.08.2021	dB(A)	66.8	48.9		
16.08.2021	dB(A)	62.0	42.1	75	70
20.08.2021	dB(A)	54.7	44.9		
23.08.2021	dB(A)	58.6	39.8		
27.08.2021	dB(A)	52.2	56.5		

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- * The report for reconstruction, evaluation or an interim response is the study.

DATE: 03/09/2021 PREPARED BY: <i>Dokus</i>		FOR: ULTIMATE ENVISOLUTION SOLUTIONS <i>[Signature]</i> 03/09/2021 AUTHORIZED SIGNATORY
--	--	--

End of the test report



HDB-272 Phase II - Near JP Chowk
Ring Road No. 2, Kanti Nagar, Raipur (C.G.) - 492039
Ph: 0771-2627777 Email: ultimateenvo@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under E.P act 1986

TO,
JINDAL STEEL & POWER LIMITED
GODADIH LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO. UES/TR/2L-22/2226
LAB REF NO. UES/21-22/N/3738-3743
DATE OF REPORT 03/09/2021
DATE OF SAMPLING 03/08/2021 to 27/08/2021

SAMPLE TESTS

Monitoring For Noise Level Measurement

Customer Ref. No. & Date 453270604, DATED: 06.03.2021

Sampling Location GODADIH HILL AREA

Sample Collected By Laboratory Chemist

Sampling Procedure Overcast day with no wind

TEST REPORT				
DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)
		DAY TIME	NIGHT TIME	
02.08.2021	dB(A)	50.8	44.2	75
02.08.2021	dB(A)	48.2	40.2	
09.08.2021	dB(A)	55.4	46.8	
13.08.2021	dB(A)	48.9	42.6	
16.08.2021	dB(A)	52.2	48.8	
20.08.2021	dB(A)	53.8	44.2	
23.08.2021	dB(A)	54.4	42.7	70
27.08.2021	dB(A)	52.7	45.5	

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- The report for information, circulation or as legal document is forbidden.
- The sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- The is for information as the party has asked for project details only.

For ULTIMATE ENVIRONMENTAL SOLUTIONS

PREPARED BY [Signature] **03/09/2021**

AUTHORIZED SIGNATORY [Signature] **03/09/2021**

End of the test report



Mukesh Kumar Singh (Chifhabhi) <mukesh.singh@sl.com>
 The: h0b0b0@gmail.com, c0d0r0b0l0sp0r0@gmail.com
 C0d0 N0r0sh R0gtr0v0n0sh1 <n0r0sh.r0gtr0v0n0sh1@j0nd0l0d0s.r0m0>
 Fri, Sep 10, 2021 at 5:14 PM

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the month of August 2021 in respect of Godadali Mahal No. 2 Limestone Mine (Mins Code-38CGH02003), Block-Masuri, District-Bilaspur (CG) over an area of 120.313 Ha, granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind references and record please.

With kind regards



Mukesh Kumar Singh

AGM(Survey)

Jindal steel & Power Limited

Limestone Mines

mob:- 9109137682

Email:- mukesh.singh@jspl.com

Submission.pdf
5093K



JSPL/GLSM/Gen/2021/03

Date: 08.10.2021

To,
The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-18,
Nava Raipur, Atai Nagar,
District-Raipur, Chhattisgarh - 492002.

Subj. Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of September 2021.

Re: Consent to Operate permission vide letter No. 575/TS/CECB/2021 Nava Raipur,
Atai Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of September 2021 in respect of Godadith Mahal No. 2 Limestone Mine (Mins Code-
380G/H02003), Block-Masturi, District-Bilaspur (CG) over an area of 120.513 Ha, granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited.

Subhash Singh
08/10/2021

(Subhash Singh)
Mine Manager
Godadith Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report.

Cc: The Regional Officer, Regional Office, C.E.C.B.,
Vyaparvihar, Near Deendayal Upadhyay garden, Bilaspur (CG).



JSPL/GLSM/Gen/2021/eg

Date: 08.10.2021

To,

The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Naya Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of September 2021.

Ref: Consent to Operate permission vide letter No. 575/TS/CECB/2021 Naya Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of September 2021 in respect of Godadih Mahal No. 2 Limestone Mine (Mine Code-
39CGH(2003) Block-Maslu, District-Bilaspur (CG) over an area of 420.813 Ha. granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You,

Yours faithfully,
for M/s Jindal Steel & Power Limited,

(Subhash singh)
Mine Manager
Godadih Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report.

Cc: The Regional Officer, Regional Office, C.E.C.B.,
Vyaparvihar, Near Deendayal Upadhyay garden, Bilaspur (CG).





Palkesh Kumar Singh (Limestone Mines (Chillhar)) cmukesh.singh@ispil.com

Submission of monthly monitoring report of Ambient air Quality & Noise Level for the month of September 2021.

003361

Mukesh Kumar Singh [Limestone Mines (Chhattal)] <mukesh.singh@iscl.com>
 For: horech@gmil.com; cecid.robbasur@gmail.com
 Dr. Nilesh Raghuvanshi <nilesh.raghuvanshi@indalsteel.com>; "Sagariv Shrivastava (Chhattal)"
 <sagariv.shrivastava@indalsteel.com>; Sushesh Singh <sushesh.singh@indalsteel.com>; "Mukesh Kumar Singh [Limestone
 Mines (Chhattal)]" <mukesh.singh@iscl.com>

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the month of September 2021 in respect of Goddath Nalal No. 2 Limestone Mine (Mine Code-38CGH2003), Block-Masturi, District-Bilaspur (CG) over an area of 120.313 Ha. granted in favour of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please

With kind regards



Mukesh Kumar Singh

AGM (Survey)

Jindal steel & Power Limited

Limestone Mines

mob:- 9709137682

Email:- mukesh.singh@iscl.com

Submission-Sap.pdf

157416



JSPL/GLSM/Gen/2021/09

Date:08.10.2021

To,
The Member secretary,
Chhattisgarh Environment Conservation Board,
Paryawas Bhawan, North Block, Sector-19,
Nava Raipur, Atal Nagar,
District-Raipur, Chhattisgarh - 492002.

Sub: Submission of monthly Ambient Air Quality & Noise level monitoring report
for the month of September*2021.

Ref: Consent to Operate permission vide letter No. 575/TSICECB/2021 Nava Raipur,
Atal Nagar, dated 24.05.2021.

Dear Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the
month of September*2021 in respect of Godadhi Mahal No. 2 Limestone Mine (Mine Code:
38CGH02003), Bock-Masturi, District-Bilaspur (CG) over an area of 120.313 Ha. granted in favour
of M/s Jindal Steel & Power Limited.

Submitted for kind reference and record please.

Thanking You

Yours faithfully,
for M/s Jindal Steel & Power Limited



(Subhash singh)
Mine Manager
Godadhi Mahal No. 2 Limestone Mine.

Encl. Ambient air quality & noise level monitoring report

Cc: The Regional Officer, Regional Office, C.E.C.B.,
VyaparVihar, Near Deendayal Upadhyay garden, Bilaspur (CG).



HDD-272, Phase III - Near J.P. Chowk
Ring Road No-2, Kabil Nagar, Raipur (C.G.) - 492089
Ph: 0771 - 4027777 | Email: ultimateanviro@gmail.com

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

Report No: UAS/2021-22/2364

Lab Ref No: UAS/21-22/ANAL/4252-4259

Date of Sampling: 04/09/2021 to 27/09/2021

Date of Receipt: 05/09/2021 to 28/09/2021

Date of Analysis: 01/10/2021

Sample Details: STATION: 05/09/2021, END: 28/09/2021

Parameter: AMBIENT AIR QUALITY MONITORING

Location: LARGEST VILLAGE

Sampling Method: IN ROOM

Sampling Frequency: 4X PER MONTH MONITORING

Sample Quantity/Package: FILTER PAPER (PM₁₀) 2X1 M², FILTER PAPER (PM_{2.5}) 1X1 M², SO₂: MONI NO. 200 BOTTLES, NO₂: MONI NO. 200 BOTTLES, MERCURY MONITORING: 1X1 M²

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 3182 (Part 2): 2001, IS 3006 & CVCB Guidelines Vol. - I	500
Particulate Matter size less than 2.5 microns (PM _{2.5})	CPCB Guidelines Vol. - I	80
Sulphur Dioxide (SO ₂)	IS 3182 (Part 2): 2001, IS 3006 & CPCB Guidelines Vol. - I	80
Nitrogen Dioxide (NO ₂)	IS 5192 (Part 6): 2016 & CPCB Guidelines Vol. - I	80
Ozone Monoxide (O ₃)	IS 5192 (Part 10): 1993, IS 3003	4.0
Mercury (Hg)	IS 3182 (Part 10): 1993	-

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
04.09.2021	58	26	05	22	0.4
06.09.2021	50	26	16	26	0.8
11.09.2021	56	20	14	18	0.5
13.09.2021	52	24	10	28	0.2
18.09.2021	78	36	12	22	0.5
20.09.2021	65	20	08	24	0.8
25.09.2021	52	34	10	28	0.4
27.09.2021	60	26	18	22	0.8

Remarks: * Duration of sampling for CO - 1 Hour, N.D. - Not Detected

Terms & conditions

- The customer must provide all necessary information to the laboratory in writing.
- The laboratory will not be responsible for any delay in the report if the customer does not provide the necessary information.
- The laboratory will not be responsible for any delay in the report if the customer does not provide the necessary information.

Ultimate Analytical Solutions

Authorized Signatory

Reviewed By

End of the test report



HDD-272, Phase III - Near UP Chowk
Ring Road No-2, Kadir Nagar, Raipur (C.G.) - 492093
Ph: 0771 - 402777 | Email: ultimateenv@gmail.com

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

To,
JINDAL STEEL & POWER LIMITED
GODADRI LIMESTONE MINES,
BILASPUR

RECORD NO USR/TH/21-22/2345
LAB NO USR/21-22/ANM/4260-4267
DATE OF SAMPLING 04/05/2021 to 24/05/2021
DATE OF REPORT 05/06/2021 to 28/06/2021
DATE OF ISSUE 01/10/2021
DATE OF ANALYSIS 04/05/2021 to 28/06/2021
END 30/06/2021

SAMPLE DETAILS

MONITORING NO **ANALYSIS NO** **ANALYSIS DATE** **ANALYSIS METHOD**

SAMPLING LOCATION **ANALYSIS LOCATION** **ANALYSIS DATE** **ANALYSIS METHOD**

ANALYSIS OF SAMPLES **ANALYSIS DATE** **ANALYSIS METHOD**

SAMPLING FREQUENCY **ANALYSIS DATE** **ANALYSIS METHOD**

SAMPLE QUANTITY/ANALYSIS **ANALYSIS DATE** **ANALYSIS METHOD**

Parameter	Method Reference	NAAQM Standard
Particulate Matter (PM ₁₀)	IS 5182 (Part 2): 2006 & CPCB Guidelines Vol.-I	300
Particulate Matter (PM _{2.5})	CPCB Guidelines Vol.-I	60
Sulphur Dioxide (SO ₂)	IS 5182 (Part 2): 2006 & CPCB Guidelines Vol.-I	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 2): 2006 & CPCB Guidelines Vol.-I	80
Carbon Monoxide (CO)	IS 5182 (Part 2): 2006 & CPCB Guidelines Vol.-I	4.0

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO mg/m ³
04.05.2021	56	20	10	20	0.4
06.05.2021	54	20	10	20	0.4
11.05.2021	42	22	10	18	0.5
13.05.2021	50	20	10	20	0.9
18.05.2021	56	20	10	24	0.3
23.05.2021	44	20	10	22	0.8
25.05.2021	42	20	10	24	0.6
27.05.2021	56	20	10	20	0.4

Remarks: * Duration of sampling for CO - 1 Hour, M.D. - Not Detected

Terms & conditions

- The monitor certificate is valid for 12 months from the date of issue.
- The sample will be analyzed in 10 days after receipt of the sample.
- The report is valid for 12 months from the date of issue.

REVIEWED BY **DATE** 01/10/21

For ULTIMATE ENVIRONMENTAL SOLUTIONS
AUTHORIZED SIGNATORY

1100-272, Phase III - Near JP Chowk
Ring Road No.-2, Kabir Nagar, Raipur (C.G.) - 492099
Ph : 0771-4027771 Email: ulimaterw@gmail.com

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

To, JINDAL STEEL & POWER LIMITED GODADAH LIMESTONE MINES, BILASPUR		REPORT NO 1283/MS/21-23/2347
		LIP REF NO 1283/21-22/MS/4116-4283
		DATE OF SAMPLING 04/05/2021 to 27/05/2021
		NAME OF RECEIVING 04/05/2021 to 28/05/2021
		DATE OF PURCH 01/10/2021
		DATE OF ANALYZE 28/05/09/2021
		END:30/06/2021
SAMPLE DETAILS		
NUMBER WITH QUALITY CERTIFICATE	DISCREPANT REF. NO. & TYPE	ANALYZED DATED:15/07/2021
SAMPLING LOCATION 20th SECTION MAIN SITE		
QUANTITY OF SAMPLED 24 BAGS	SAMPLE DURING TEST IN	LABORATORY CHARGE
ANALYZING PROCEDURE AS PER METHOD NORMATIVE		
NAME OF ENTER BALKH (K.A.) L.LI NO. 171V PAPER (K.A.) L.LI NO.		
QUALITY/MAKING 504-1000T NO. SVC SYSTEM, NO. 1000T NO. SVC BOTTLES		

Test Method and NAAQM Standard for Ambient Air Quality Monitoring

Parameter	Method Reference	NAAQM Standard
Particulate Matter size less than 10 microns (PM ₁₀)	IS 5982 (Part 23) : 2006 & CPCR Guidelines Vol.-I	100
Particulate Matter size less than 2.5 microns (PM _{2.5})	CPCR Guidelines Vol.-I	60
Sulphur Dioxide (SO ₂)	IS 5182 (Part 2) : 2001, DA 2006 & CPCR Guidelines Vol.-I	80
Nitrogen Dioxide (NO ₂)	IS 5182 (Part 6) : 2006 & CPCR Guidelines Vol.-I	80
Carbon Monoxide (CO) *	IS 5182 (Part 10) : 1993, DA 2003 & CPCR Guidelines Vol.-I	1.0
Residue (H ₂)	IS 5182 (Part 10) : 1993, DA 2003 & CPCR Guidelines Vol.-I	

TEST REPORT

Date of Sampling	PM ₁₀ µg/m ³	PM _{2.5} µg/m ³	SO ₂ µg/m ³	NO ₂ µg/m ³	CO ⁺ mg/m ³
04.08.2021	58	26	12	22	0.8
06.09.2021	52	22	16	28	0.6
11.08.2021	60	20	14	20	0.8
13.09.2021	58	23	16	20	0.9
18.09.2021	52	23	18	26	0.5
20.09.2021	56	26	12	22	0.8
25.09.2021	48	20	16	20	0.7
27.09.2021	62	28	12	35	0.7

Remarks: * Duration of sampling for CO – 1 Hour. N.D. – Not Detected

Terms & conditions

- The report also highlights the importance of ensuring that the data is accurate and that the results are reliable. It also notes that the data is subject to change and that the results are only a snapshot of the current situation.



FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

2/10/12

REVIEWED BY

11/10/2011

-End of the first report-

ANALYSIS OF THE DATA FROM THE IDENTIFICATION LABORATORY



Ultimate
ENVIRONMENTAL SOLUTIONS

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

HDD-272, Phase III - Near JP Chowk
Ring Road No-2, Kabir Nagar, Raipur (C.G.) - 492099
Ph: 0771-4027777 | Email: ultimateenviro@gmail.com

Name of Client/Institution		Project No.	
To, JINDAL STEEL & POWER LIMITED		UES/IR/21-22/2943	
GODADIH LIMESTONE MINES,		UES/21-22/S/4284-4291	
BILASPUR, 495001		01/10/2021	
Name of Project		Date of Report	
04/09/2021 to 27/09/2021		04/09/2021 to 27/09/2021	
SAMPLING DETAILS			
MONITORING ZONE	NOISE LEVEL MONITORING	CUSTOMER REF. NO. & DATE	493700094, 04/09/25/07/2021
SAMPLING LOCATION	FORECAST WITHIN	SAMPLE COLLECTED AT 1 LABORATORY CHEMIST	
SAMPLE REMITTING ON	MONITORING AS		
SAMPLING FREQUENCY	MANUFACTURING'S INSURANCE		
SAMPLE	MANUFACTURING'S INSURANCE		
QUANTITY/STORAGE	MANUFACTURING'S INSURANCE		

TEST REPORT				
DATE OF SAMPLING	LIMIT	RESULT		LIMIT (INDUSTRIAL ZONE)
		DAY TIME	NIGHT TIME	
04.09.2021	dB(A)	46.6	40.9	75 dB(A) 70dB(A)
06.09.2021	dB(A)	52.2	38.3	
11.09.2021	dB(A)	44.4	42.2	
13.09.2021	dB(A)	42.5	38.3	
18.09.2021	dB(A)	46.3	40.9	
20.09.2021	dB(A)	40.0	35.6	
25.09.2021	dB(A)	46.6	32.3	
27.09.2021	dB(A)	44.5	38.2	

Terms & conditions

- The report for publication, submission of all legal documents is required.
- The report will be returned for 15 days after receipt of test report unless otherwise specified with customer.
- This is for information and not a guarantee that without the test of sample etc.

REVIEWED BY

[Signature]
21/10/21

FOR ULTIMATE ENVIRONMENTAL SOLUTIONS

[Signature]
21/10/2021

AUTHORIZED SIGNATORY

HOD-272 Phase III - Near JP Chowk
Ring Road No. 2, Kabir Nagar, Raipur (C.G.) - 492098
Ph: 0771 - 4027777 | Email: ultimaterwiro@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under E.P. Act 1986

[illegible]

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
04.09.2021	GB(A)	58.5	42.5	75 dB(A)	70dB(A)
05.09.2021	GB(A)	62.3	44.6		
11.09.2021	GB(A)	56.0	46.2		
13.09.2021	GB(A)	52.6	38.8		
18.09.2021	GB(A)	54.2	45.2		
20.09.2021	GB(A)	65.8	42.5		
25.09.2021	GB(A)	62.2	44.6		
27.09.2021	GB(A)	56.6	35.2		

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- The report for publication, advertisement or all other purposes is for information only. The information is not intended to be used for any other purpose. The information is not intended to be used for any other purpose. The information is not intended to be used for any other purpose.

<i>[Signature]</i> REVIEWED BY		<i>[Signature]</i> AUTHORIZED SIGNATORY	ENVIRONMENTAL PROTECTION AGENCY OFFICE OF RESEARCH AND DEVELOPMENT WASHINGTON, D.C.
--	--	---	--

End of the best report.



HDD-272, Phase III - Near JP Chowk
Ring Road No-2, Kabir Nagar, Raipur (C.G.) - 492059
Ph: 0771-4027177 | Email: ultimateenv@gmail.com

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

Client & Address Details

To,
JINDAL STEEL & POWER LIMITED
GODAHIL Limestones Mines,
BILASPUR, 495001

Report No. UES/21-22/2350
Lab Ref No. UES/21-22/N/A300-4307
And on Sample 01/10/2021
Date of Sampling 04/09/2021 to 27/09/2021

SAMPLE DETAILS

Monitoring For NOISE LEVELS MONITORING
Sampling Location NORTH WEST CHIMNEY
Sampling Method MONITORING AT
Sampling Frequency MONITORING AT
Sample MONITORING AT
Sampling/Analysis MONITORING AT

Customer Ref. No. 4325700000
Sample Collected By LABORATORY CHIEF

TEST REPORT				
DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)
		DAY TIME	NIGHT TIME	
04.09.2021	dB (A)	68.6	52.0	75 dB(A) 70 dB(A)
06.09.2021	dB (A)	66.8	50.8	
31.08.2021	dB (A)	58.5	46.2	
13.09.2021	dB (A)	56.7	42.5	
18.09.2021	dB (A)	52.8	48.8	
20.09.2021	dB (A)	48.2	46.0	
25.09.2021	dB (A)	42.6	38.6	
27.09.2021	dB (A)	56.5	42.6	

Notes:
1. This report is valid only for the purpose of monitoring.
2. This report is not to be used for any other purpose.
3. This report is not to be used for any other purpose.

Signature *[Signature]* **11/10/21**

REVIEWED BY

Signature *[Signature]* **01/10/2021**

AUTHORIZED SIGNATORY

Ultimate Environmental Solutions

End of the test report



HDD-272, Phase II, Near Jp Chowk
Ring Road No-2, Kabir Nagar Rajpur (C.G.) - 492089.
Ph: 0771 - 402777 | Email : ultimateenviro@gmail.com

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

TO:		REPORT NO.	USEB/TR/21-22/2951
JINDAL STEEL & POWER LIMITED		CAR NO. NO.	USEB/21-22/8/4308-4318
GODADRI Limestone MINES,		DATE OF REPORT	01/10/2021
BLASPUR-495001		DATE OF SAMPLING	04/09/2021 to 27/09/2021
SAMPLE DETAILS			
MONITORING FOR	NOISE LEVEL MEASUREMENTS	CUSTOMER REF. NO.	133790094 dated: 23/07/2021
SAMPLING LOCATION	SEE ROUTING MAP SITE	SAMPLER CALIBRATION BY LABORATORY CHENNAI	
SAMPLE RECEIVED BY	RECEIVING AT		
SAMPLING PROCEDURE	MANUFACTURER'S INSTRUMENT		
SAMPLE	TYPE AVAILABLE		
OPERATING/HOURS			

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
04.09.2021	dB(A)	65.2	38.5		
08.09.2021	dB(A)	58.5	46.2		
11.09.2021	dB(A)	68.2	38.5		
13.09.2021	dB(A)	56.8	36.4		
16.09.2021	dB(A)	52.0	40.8		
20.09.2021	dB(A)	48.2	38.2		
25.09.2021	dB(A)	42.8	36.5		
27.09.2021	dB(A)	56.5	38.8	75 dB(A)	70dB(A)

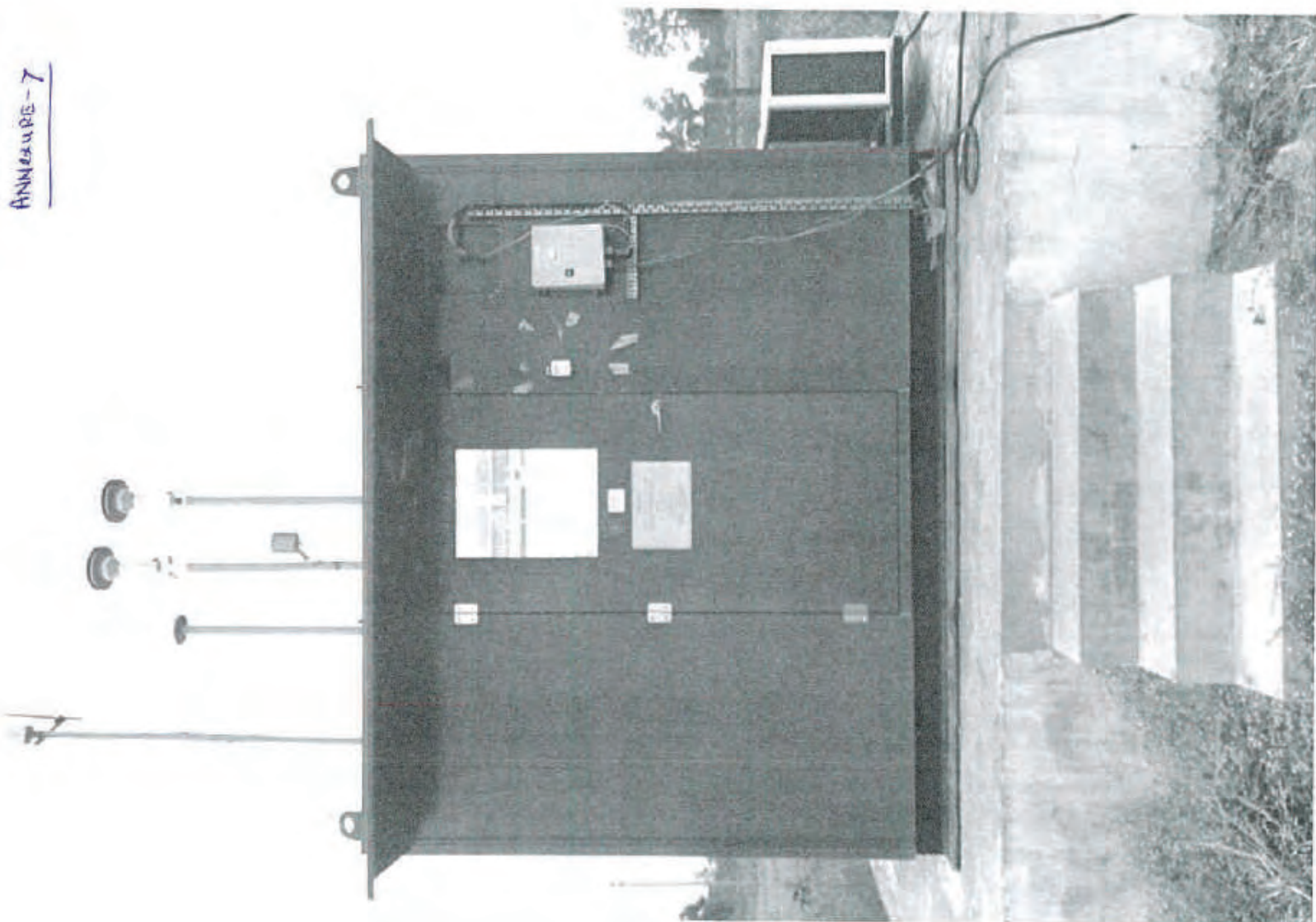
Terms & conditions

- The report is valid only for the purpose for which it is issued.
- The sample will be analyzed for 12 days after the date of test report.
- This is for information only and not for any other purpose.

 Sandeep 21/10/21	 AUTHORIZED SIGNATORY
--	--

REVIEWED BY

End of the test report





Godadih Mahal No.2 Limestone Mines
M/s Jindal Steel & Power Limited
Expenditures of EMD Cell (April 2021-September 2021)

Sl.No.	Particulars	Expenditure (in Rs.)
1	Payment for Offline Ambient air quality & Noise level monitoring report to M/s Ultimate Envirolytical Solutions.	221652.00
2	Procurement of Flow meter	134520.00
3	Plantation	302470.00
4	Plant care	145580.00
5	Hiring water tanker for plantation	113280.00
6	Salary Payment of officer in charge of EMD cell	504000.00
7	Water quality test charge	20296.00
8	Renewal charge paid to CGWA for processing of NOC	4500.00
9	Misc. Expense	25000.00
	Total(Rs.)	1471298.00

Total Rupees Fourteen lakh seventy one thousand two hundred ninety eight only.

For, Jindal Steel & Power Limited

(Mukesh Kumar Singh)
AGM-Survey and EMD Cell

CORPORATE ENVIRONMENT RESPONSIBILITY (CER) – FY 2021-22
(April to September 2021)

GODADIH MAHAL NO. 2 LIMESTONE MINE,
VILLAGE-GODADIH MAHAL No. 2, BLOCK-MASTURI, DISTRICT-BILASPUR, CG

1. Amount to be incurred -Rs. 6.30 Lakhs
2. Expenditure incurred - Rs.3.55 Lakhs

Sl. No	Activity	Details	Amount (In Rs.)
1	Socio -religious Events	Financial contribution for Hareli Festival	20000.00
		Contribution for Durgotsava	20000.00
		Contribution for Dushara Celebration	19200.00
		Financial contribution for corona warriors appreciation programme	10000.00
2	Education	Sweets Distribution on 15th August	36570.00
3	Health	Financial Contribution for establishment of Covid Hospital, Tahsil Masturi	50000.00
4	Water & sanitation	Deepening of Pond at Daharj Pond, Godadih	107800.00
5	Infrastructure	providing Hume pipes in the village Godadih & Sodadli	41700.00
6	Livelihood	Buying of Cow Dung from nearby Villages of our Limestone Mines under CSR	50000.00
Total			355270.00

For, Jindal Steel & Power Limited



(Mukesh Kumar Singh)
AGM-Survey and EMD Cell

SUMMARY

M/s Jindal Steel and Power Limited (JSPL) had been granted a mining lease (ML) for limestone over an area of 120.313 hectares at village: Godadhi Mahal No.2, Tehsil: Masturi, District: Bilaspur, Chhattisgarh vide letter no F-3-86/2007/12(B) under the Mines and Minerals (Development and Regulation) Act 1957 as amended up to date for mining to feed limestone for captive use at its JSPL Raigarh Plant. The ML deed has been executed and registered on 07.01.2017 & 11.01.2017 respectively.

LIST OF APPROVALS FOR GODADHI MAHAL NO.2 LIMESTONE MINE :

SL NO.	Permission/Approval/Consent	Date of Grant
1	Determination of ML by the State Revenue Department done	09.03.2017.
2	Working permission and Bhu Prayesh Anumati from the Collector, Bilaspur	25.04.2018.
3	Intimation for Opening of Mine (in FORM-C) to the Regional Controller of Mines, IBM, Raipur	26.09.2018.
4	Application for Forest Clearance of 24.414 hectare Revenue Forest land	Grant of Stage-I 13.06.13 Grant of Stage-II 11.09.15 Final Permission 30.12.16
5	NOC for abstraction of 110 KLD ground water and permission for mine seepage dewatering, 396 KLD from Central Ground Water Authority.	23.07.18.
6	Explosive Magazine: Explosive license from Arms Final Permission from Raipur	01.10.19 30.10.19
7	Revised order of End Use addition, use of high grade limestone in steel manufacturing	25.05.18
8	Amendment in Environment Clearance with addition of end use for steel manufacturing	23.08.19
9	Consent To Establish(CTE) with addition of end use for steel manufacturing	22.02.18
10	Amendment of CTE with addition of end use for steel manufacturing	30.10.19
11	Consent To Operate(CTO)	22.01.20
12	Amended CTO	06.02.20
13	Mine Opening Notice to DGMS	Mine Code allotted on 29.11.19. LIN No (Labour Identification Number) allotted from Ministry of Labour and Employment on 12.12.19.
14	DGMS Permission under reg.106 (2)(b) of MMR 1961	03.03.20
15	Intimation of mine working to Collector etc	04.03.20
16	DGMS (Electricity) Permission for installation of Switchyard	16.03.20
17	Renewal of Consent To Operate	25.05.21



September 30, 2021

To,
The Member Secretary
Citizens Environment Conservation Board,
Prayas Bhawan, North Block, Sector-15
New Replir, New Nagar,
District Rajahmundry-160002, Chhattisgarh

Subject: Submission of Environmental Statement Form-V (FY 2020-2021).

Ref: Environment Clearance vide letter No. J-11015/29/2016(A-II) (M), Ministry of Environment & Forests,
Govt. of India dated 02.09.2013

Sir,

We are submitting herewith Environmental Statement Form-V (FY 2020-2021) under Environment (Protection) Rules 1986 in respect of Godduti Nalla No. 2 Limestone Mine (Mine Code-9809H02003), Block-Masuli, District-Bisaul (CG) over an area of 120.373 Ha.

Submitted for kind information and records, please

Thanking You,

Yours Truly,
For, Jindal Steel & Power Limited,

(Nilesh Raghuvanshi)
A.V.P & Agent of Mine
Godduti Nalla No. 2 Limestone Mine

Copy to

1. The Regional Officer,
Regional Office, C.E.C.B., Bhopal,
Vijayar Vihar, Near Doodhghati Udaipur Road, Bilaspur (CG)

2. The Regional Office,
Ministry of Environment, Forest and Climate Change, Regional Office (W), E-5, Narodya Park, Narodya (Bhopal),
E-5 Area Colony, Link Road-3, Raddhansar Nagar, Bhopal — 462016

Jindal Steel & Power Limited
CIN No.-127105MH1929PLCO0913
Office of Corporate Affairs, Minerva House, 402-101
T-92, 771 5054 800 F-93, 771 2472 120 W www.jindalsteelpower.com
Registered Office: C-7, Jindal Marg, Near, 125-055, Haridwar

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March or on before 30th of September every year.

PART-A

1. Name and address of the concern : M/s Hindal Steel & Power Limited
Post Box No. 19, Kharina Road, Bilgaon
496001 (C.G.)

2. Industry category
a) Primary (SIC Code)
b) Secondary (SIC Code)
Limestone Mines
NA

3. Production category : 1547800 Tonnes ROM per year.

4. Year of establishment : 2019

5. Date of the last environmental statement submitted : 30.09.2020 (copy enclosed)

PART-B

Water and Raw Material Consumption (m³/day):

1. Water consumption in m³/d

Process : 0.00

Cooling : 0.00

Domestic (including drinking, flushing & crematorium requirements) : 2.18 m³/per day

Name of Product	Process water consumption per unit of products	
	During the previous financial year	During the current financial year
1. Water- Domestic use (Drinking & Plumbing)	1.01 m ³ per day	2.18 m ³ per day
Remark: The total consumption during the FY 2020-21 is 798.08 m ³ and the monthly returns are being submitted to the Irrigation department, Bilaspur Division, CG.		

2. Raw material consumption:

Name of raw materials*	Name of Product	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year
Nil	Nil	Nil	Nil

* Industry may now verify if declaring details of raw material would violate contractual obligations otherwise all industries have to name the raw materials used.

PART - C

Pollution discharged to environment/limit of output. Not applicable
(For answer as specified in the contents issued)

(A) Water Pollution London: NA

S. No.	Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage variation from prescribed standards with reasons
Remark: The annual report for 2011 had been already submitted to COWB and the quarterly reports are being submitted to Govt. Authorities. The correspondence report of crpy submitted to COWB & the last report submitted for analysis carried out (winner) enclosed as Annexure 1				

(B) Air Pollution Load:

S. No.	Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage variation from prescribed Standards with reasons
Remark: 04 effluent monitoring stations established show a discharge of pollutants in the prescribed limits. The monthly reports are being submitted to the Govt. authorities. Reserving copy of March 21 is enclosed as Annexure 2.				

PART - D

HAZARDOUS WASTES: NA

(as specified under Hazardous Wastes (Management & Handling) Rules, 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
1. From Process	NA	NA
2. From Pollution Control Facilities	NA	NA

PART - E

SOLID WASTES:

Solid Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
a. From process	NA	NA

6. From Pollution Control Facility	Control	NA	NA
a. Quantity recycled or re-utilized within Plant.		NA	NA

PART - F

Please specify the characteristics, the terms of construction and quantity of hazardous as well as solid wastes and indicate disposal practices adopted for both these categories of wastes.

Waste operation started on 03.03.2020 by way of removal of overburden after permission from DGMS on 03.03.2020 under Rule 104(7)(b) of MMR, 1961. Applied online for authorization under Hazardous and other waste (Management) Rule 2016 dated 02.09.2020 (application no. 30876/17) to CECB and had been rejected. As per requirement now online application will be submitted shortly after receiving the approval of "Emergency Plan" submitted to DGMS, Bikaner region on 14.05.2021 (Receiving copy enclosed in Annexure 3).

PART - G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

1. Use of optimized blast design parameters.
2. Top soil is directly used for plantation purposes.
3. Dust control by continuous water sprinkling.
4. Crusher and screen plants running with dry fog water sprinkling system.

PART - H

All listed measures/controls proposed for environmental protection ensuring abatement of pollution

1. Development of 15 m wide green belt near Sodadilla village.
2. Barbed fence of 04' outline Air tunnel maintaining station at mile etc.
3. Planning for establishment of EIP & STP.
4. Installation of extra flow meters.

Note: The total expenses incurred during FY 2020-21 in Environmental services - Rs 6653991.36 (Enclosed as Annexure 4)

PART - I

MISCELLANEOUS:

Any other particulars in respect of environmental protection and abatement of pollution

Regular monitoring of:

1. Air and Water Quality index to be maintained as per standards.
2. Maintain green belt (15m wide) near Sodadilla village & safety zone.
3. Submission of 04' outline air ambient, flow meter, Telemetry piezometer, ground water monitoring reports etc data to the concerned authorities.



Nitesh Raghuvanshi
Associate Vice President & Head,
Corrosion Limestone Mules (Civil)
Jindal Steel & Power Limited



Sachin Shivastava (Chillhadi) <sachin.shivastava@jindalsteel.com>

Fwd: Environmental Statement Form-V (FY 2019-2020) for JSPL Godadhi Mahal No. 2 Limestone Mine, Tehsil-Masturi, Dist. Bilaspur (CG)

Sukhdeo Salam (Dantewada) <sukhdeo.salam@jspl.com> Wed, Sep 30, 2020 at 7:47 PM
To: Up Singh <up.singh@jspl.com>, Debdeep Prasad Singh (EMD) <dpd.singh@jspl.com>, Ramnagar Mishra <ramnagar.mishra@jspl.com>, Bhawanil Shankar Guni <bhawanil.guni@jspl.com>, "Sachin Shivastava (Chillhadi)" <sachin.shivastava@jspl.com>, Rajesh Kumar Limestone Mines (Chillhadi) <rajesh.kumar@jspl.com>, Sundeeep Mahna <sundeeep.mahna@jspl.com>, "Sukhdeo Salam (Dantewada)" <sukhdeo.salam@jspl.com>

Dear Sir,

For kind information, please,

----- Forwarded message -----

From: Sukhdeo Salam (Dantewada) <sukhdeo.salam@jspl.com>

Date: Wed, Sep 30, 2020 at 7:45 PM

Subject: Environmental Statement Form-V (FY 2019-2020) for JSPL Godadhi Mahal No. 2 Limestone Mine, Tehsil-

Masturi, Dist. Bilaspur (CG)

To: <up.singh@jspl.com>

Cc: Deb RG Bilaspur <deb.rg@bilaspur.com>, <ramnagar.mishra@jspl.com>, Sukhdeo Salam (Dantewada) <sukhdeo.salam@jspl.com>

Dear Sir,

Submitting herewith the Environmental Statement Form-V (FY 2019-2020) for JSPL Godadhi Mahal No. 2 Limestone Mine, Tehsil-Masturi, Dist. Bilaspur (CG) for compliance of EC conditions (B-G) several conditions xxvii).

For kind information & records please,

Thanks

Best Regards,

Sukhdeo Salam

Manager (Geology & EMD)

Jindal Steel & Power Limited

Godadhi Mahal No. 2 Limestone Mines, Chillhadi,

Bilaspur, Chhattisgarh, India. Pin - 495551.

M - 91 747060925

E - sukhdeo.salam@jspl.com



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Before printing, think about your ENVIRONMENTAL responsibility.

Thanks

Best Regards,

Sukhdeo Salam

Manager (Geology & EMD)

Jindal Steel & Power Limited

Godwin Mahal No. 2, Urmastore Mines, Chhattisgarh,

Bilaspur, Chhattisgarh, India, Pin - 495551.

M +91 747060925

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Environmental Statement Form-V (FY 2019-20)

89 JK



September 26, 2021

To:
The Member Secretary
Chhattisgarh Environment Conservation Board,
Prayas Bhawan, North Block, Sector-16,
Naya Raipur, Chhattisgarh,
Bilaspur-492002, Chhattisgarh.

Subject: Submission of Environmental Statement Form-V (FY 2019-2020).

Re: Environment Clearance vide letter No. J-1101/J-20/2010-40/J (M), Ministry of Environment & Forests, Govt. of India dated 02.04.2021.

On
We are submitting herewith Environmental Statement Form-V (FY 2019-2020) under Environment (Protection) Rule 1986 in respect of Coalfield Block No. 2, Limestone Mine, Mine Order-5834/H20029, Block-Nasrull District-Bilaspur (CG) over an area of 125.313 Ha.

Submitted for best information and records, please.

Thanking You,

Yours Truly,
For, Jindal Steel & Power Limited

(Gaurav Sarvagataval)
Legal Counsellor
Coalfield Block No. 2, Limestone Mine

Cc: To

1. The Regional Officer,
Regional Office, D.E. (E), Bilaspur,
Vijayar Vihar, Near Damskaya Lipadway garden, Bilaspur (CG)

2. The Regional Officer,
Ministry of Environment, Forest and Climate Change, Regional Office (V), E-6, Kirti Vihar, Connaught Place,
New Delhi-110048

Jindal Steel & Power Limited
CIN No. 4271054419794COP09913
Office of Corporate Affairs, Mendir Hasud, Raipur-492 304
T-403, 775, 8924 660 2 403, 771 3625 820 W www.jindalsteelpower.com
Registered Office: B. Jindal Bldg, House 122-085, Raipur

ENVIRONMENTAL STATEMENT FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March or or before 30th of September every year.

PART-A

- i. Name and address of the owner/ occupier of the industry operation or process : M/s Jindal Steel & Power Limited
Post Box No. 16, Kharsia Road, Raigarh
495001 (CG)
- ii. Industry category :
a) Primary- (STC Code) : Limestone, Mills
b) Secondary- (STC Code) : NA
- iii. Production category : 1540000 Tones ROM per year.
- iv. Year of establishment : 2019
- v. Date of the last environmental statement submitted : NA

PART-B

Water and Raw Material Consumption (m³/day):-

1. Water consumption in m³/d

Process Nil

Cooling Nil

Domestic (Including drinking, Flushing & Greenbelt requirement) : 1.01 m³/day

Name of Products	Process water consumption per unit of products	
	During the previous financial year	During the current financial year
Water-Domestic use (for Drinking & Plantation purpose)	NA	1.01 m ³ /day

ii. Raw material consumption:

Name of raw material/s*	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year	During the current financial year
Limestone	BF grade	NA	500 Tonnes (Mine operation started on 04.03.2020 by way of removal of overburden after permission from DGMS on 03.03.2020 under Rule 106(2)(b) of MMR, 1961.)

* Industry may use codes if disclosing details of raw material would violate contractual obligations otherwise all industries have to name the raw materials used.

PART-C

Pollution discharged in environment/unit of output: Not applicable (Purchaser as specified in the consent issued)

(4) Water Pollution Load: NA

S. No.	Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed standards with reasons.
.....				

Remark: (Mine operation started on 04.03.2020 by way of removal of overburden after permission from DGMS on 03.03.2020 under Rule 106(2)(b) of MMR, 1961.)

(B) Air Pollution Load: N4

S. No.	Pollutants	Quantity of Pollutants discharged (gross/day)	Concentration of Pollutants discharged (mass/volume)	Percentage variation prescribed standards with reasons,
Remark: (Mare operation started on 04/03/2020 by way of removal of overburden after permission from DGMS on 03/03/2020 under Rule 106(2)(b) of MMR, 1961.)				

PART-D

HAZARDOUS WASTES: NA

(as specified under Hazardous Waste Management & Handling Rules, 1989).

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
1. From Process	NA	NA
2. From Pollution Control Facilities	NA	NA

Remark: (Mare operation started on 04/03/2020 by way of removal of overburden after permission from DGMS on 03/03/2020 under Rule 106(2)(b) of MMR, 1961.)

PART-E

SOLID WASTES: NA

Solid Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
a. From process	NA	NA
b. From Pollution Control Facility	NA	NA
c. Quantity recycled or re-utilized within the unit.	NA	NA

Remark: (Mare operation started on 04/03/2020 by way of removal of overburden after permission from DGMS on 03/03/2020 under Rule 106(2)(b) of MMR, 1961.)

PART - F

Please specify the characteristics (in terms of concentration and quantity) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes

Minu operation started on 04.03.2020 by way of removal of overburden after permission from DGMS on 03.03.2020 under Rule 106(2)(b) of MMR, 1961 and will apply for authorization under Hazardous and other waste (Management) Rule 2016 as per requirement.

PART-G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

Remark: Minu operation started on 04.03.2020 by way of removal of overburden after permission from DGMS on 03.03.2020 under Rule 106(2)(b) of MMR, 1961.

PART - H

Additional measures/undertaken/proposed for environmental protection including abatement of pollution.

A total lot. of 2529 saplings has been planted as environmental protection in FY 2019-2020

Regular monitoring of:

1. Air ambient quality
2. Ground water quality
3. Surface soil Quality
4. Noise Level.

PART -I

MISCELLANEOUS:

Any other particulars in respect of environmental protection and abatement of pollution

1. Air and Water Quality index to be maintained as per standards.

(Saurav Shrivastava)
DSM (Ecology)

USPL- Gadsin Mine) No. 2, Limestone Mine.

Date: 20th May, 2021

Ref: ISPL / RIG / M/NP/ M2020/CEN5 / 2021

The Regional Director,
 Central Ground Water Board,
 North Central Chhattisgarh Region,
 LK Corporate and Logistic Park,
 Near Sardar Vallabhbhai Wharfare Market,
 National Highway 30, Dhamra Road,
 Durgam - Raipur (C.G.)

Sub: Submission of ground water monitoring report (for the Year 2020) in and around Godadhi Mahal
 No.2 Limestone Mines located at Village Godadhi, Block - Kanturi District - Bilaspur, Chhattisgarh
 of M/s Jindal Steel & Power Limited Reg.

Ref: NOC Reg. & Date: CWA/MOC/M20/CEN5/2018/2883 and File Nos: 21 - 4 (RCS) / CT / M/N / 2018-
 1098 Dated: 25th July, 2018.

Dear Sir,

In response to the above cited subject and reference, we are submitting herewith the ground water
 monitoring report for the Year 2020 (from January 2020 to the December 2020) in respect of Godadhi Mahal
 No.2 Limestone mines located at Village Godadhi, Block & Tarnil Mattari District Bilaspur (Chhattisgarh) of
 M/s Jindal Steel Power Limited. The report is inclusive of the water level monitoring data four times during
 the year 2020 i.e. January, May, August & November as well as the maps showing the depth to water level for
 pre-monsoon & post-monsoon period and hydro-geological scenario in and around limestone mine area
 within 10 kms of radius with changes in ground water level & quality, analyzed for both periods along with
 comparison of ground water level of the year 2020 from previous years with other details as per mentioned

NOT

We hope that the documents are in the line with the requirement and kindly acknowledge the receipt.

Thanking You,
 Yours truly,

For M/s Jindal Steel & Power Limited

(s/ K. Mishra)
 MINING MANAGER
 Godadhi Mahal Limestone Mines
 CWA/MOC

M/s Jindal Steel & Power Ltd.
 Sub: Copy of Ground Water Monitoring Report Year 2020.

CC: Hon'ble Member Secretary - CWA - New Delhi; For kind information & record Please.

Jindal Steel & Power Limited

Main Office: B-10, 5th & 6th Floors, Park Road, Sector-43, Gurgaon
 Haryana-122002 India. Phone: 012-616-220000 Fax: 012-616-220001

Registered Office: B-1, 4th & 5th Floors, Plot-122, DDA, Gurgaon

5. Spinning

© Central Ground Water Authority, Government of India

The Zedler Division

North Central University, DeKalb, IL

[illegible]

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[illegible][illegible][illegible]

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Robert M. Anderson, Editor

1. N. Corporation and U. Corporation are
Major-Shareholders of B. Corporation.

Chemical - Polysiloxane

[illegible]

DOI: 10.1002/anie.201305292

They are enhanced in the following table, which is mainly based on the annual water monitoring report for Great Lake Power Limited, prepared by the National Water Research Institute, and the annual water monitoring report for Great Lake Power Limited, prepared by the National Water Research Institute, and the annual water monitoring report for Great Lake Power Limited, prepared by the National Water Research Institute.

And when the time comes, we'll be in the line with the regular men and women, and we'll be doing our part.

consulting firm.

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www.industriestandard.com

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U.S. Patent 4,711,411

Researcher, Food and Nutrition Division, U.S. Department of Agriculture, Agricultural Research Service, Beltsville, Maryland 20715

1994-1995, 1996-1997, 1998-1999, 2000-2001, 2002-2003, 2004-2005, 2006-2007, 2008-2009, 2010-2011, 2012-2013, 2014-2015, 2016-2017, 2018-2019, 2020-2021, 2022-2023, 2024-2025, 2026-2027, 2028-2029, 2030-2031, 2032-2033, 2034-2035, 2036-2037, 2038-2039, 2040-2041, 2042-2043, 2044-2045, 2046-2047, 2048-2049, 2050-2051, 2052-2053, 2054-2055, 2056-2057, 2058-2059, 2060-2061, 2062-2063, 2064-2065, 2066-2067, 2068-2069, 2070-2071, 2072-2073, 2074-2075, 2076-2077, 2078-2079, 2080-2081, 2082-2083, 2084-2085, 2086-2087, 2088-2089, 2090-2091, 2092-2093, 2094-2095, 2096-2097, 2098-2099, 2100-2101, 2102-2103, 2104-2105, 2106-2107, 2108-2109, 2110-2111, 2112-2113, 2114-2115, 2116-2117, 2118-2119, 2120-2121, 2122-2123, 2124-2125, 2126-2127, 2128-2129, 2130-2131, 2132-2133, 2134-2135, 2136-2137, 2138-2139, 2140-2141, 2142-2143, 2144-2145, 2146-2147, 2148-2149, 2150-2151, 2152-2153, 2154-2155, 2156-2157, 2158-2159, 2160-2161, 2162-2163, 2164-2165, 2166-2167, 2168-2169, 2170-2171, 2172-2173, 2174-2175, 2176-2177, 2178-2179, 2180-2181, 2182-2183, 2184-2185, 2186-2187, 2188-2189, 2190-2191, 2192-2193, 2194-2195, 2196-2197, 2198-2199, 2200-2201, 2202-2203, 2204-2205, 2206-2207, 2208-2209, 2210-2211, 2212-2213, 2214-2215, 2216-2217, 2218-2219, 2220-2221, 2222-2223, 2224-2225, 2226-2227, 2228-2229, 2230-2231, 2232-2233, 2234-2235, 2236-2237, 2238-2239, 2240-2241, 2242-2243, 2244-2245, 2246-2247, 2248-2249, 2250-2251, 2252-2253, 2254-2255, 2256-2257, 2258-2259, 2260-2261, 2262-2263, 2264-2265, 2266-2267, 2268-2269, 2270-2271, 2272-2273, 2274-2275, 2276-2277, 2278-2279, 2280-2281, 2282-2283, 2284-2285, 2286-2287, 2288-2289, 2290-2291, 2292-2293, 2294-2295, 2296-2297, 2298-2299, 2300-2301, 2302-2303, 2304-2305, 2306-2307, 2308-2309, 2310-2311, 2312-2313, 2314-2315, 2316-2317, 2318-2319, 2320-2321, 2322-2323, 2324-2325, 2326-2327, 2328-2329, 2330-2331, 2332-2333, 2334-2335, 2336-2337, 2338-2339, 2340-2341, 2342-2343, 2344-2345, 2346-2347, 2348-2349, 2350-2351, 2352-2353, 2354-2355, 2356-2357, 2358-2359, 2360-2361, 2362-2363, 2364-2365, 2366-2367, 2368-2369, 2370-2371, 2372-2373, 2374-2375, 2376-2377, 2378-2379, 2380-2381, 2382-2383, 2384-2385, 2386-2387, 2388-2389, 2390-2391, 2392-2393, 2394-2395, 2396-2397, 2398-2399, 2400-2401, 2402-2403, 2404-2405, 2406-2407, 2408-2409, 2410-2411, 2412-2413, 2414-2415, 2416-2417, 2418-2419, 2420-2421, 2422-2423, 2424-2425, 2426-2427, 2428-2429, 2430-2431, 2432-2433, 2434-2435, 2436-2437, 2438-2439, 2440-2441, 2442-2443, 2444-2445, 2446-2447, 2448-2449, 2450-2451, 2452-2453, 2454-2455, 2456-2457, 2458-2459, 2460-2461, 2462-2463, 2464-2465, 2466-2467, 2468-2469, 2470-2471, 2472-2473, 2474-2475, 2476-2477, 2478-2479, 2480-2481, 2482-2483, 2484-2485, 2486-2487, 2488-2489, 2490-2491, 2492-2493, 2494-2495, 2496-2497, 2498-2499, 2500-2501, 2502-2503, 2504-2505, 2506-2507, 2508-2509, 2510-2511, 2512-2513, 2514-2515, 2516-2517, 2518-2519, 2520-2521, 2522-2523, 2524-2525, 2526-2527, 2528-2529, 2530-2531, 2532-2533, 2534-2535, 2536-2537, 2538-2539, 2540-2541, 2542-2543, 2544-2545, 2546-2547, 2548-2549, 2550-2551, 2552-2553, 2554-2555, 2556-2557, 2558-2559, 2560-2561, 2562-2563, 2564-2565, 2566-2567, 2568-2569, 2570-2571, 2572-2573, 2574-2575, 2576-2577, 2578-2579, 2580-2581, 2582-2583, 2584-2585, 2586-2587, 2588-2589, 2590-2591, 2592-2593, 2594-2595, 2596-2597, 2598-2599, 2600-2601, 2602-2603, 2604-2605, 2606-2607, 2608-2609, 2610-2611, 2612-2613, 2614-2615, 2616-2617, 2618-2619, 2620-2621, 2622-2623, 2624-2625, 2626-2627, 2628-2629, 2630-2631, 2632-2633, 2634-2635, 2636-2637, 2638-2639, 2640-2641, 2642-2643, 2644-2645, 2646-2647, 2648-2649, 2650-2651, 2652-2653, 2654-2655, 2656-2657, 2658-2659, 2660-2661, 2662-2663, 2664-2665, 2666-2667, 2668-2669, 2670-2671, 2672-2673, 2674-2675, 2676-2677, 2678-2679, 2680-2681, 2682-2683, 2684-2685, 2686-2687, 2688-2689, 2690-2691, 2692-2693, 2694-2695, 2696-2697, 2698-2699, 2700-2701, 2702-2703, 2704-2705, 2706-2707, 2708-2709, 2710-2711, 2712-2713, 2714-2715, 2716-2717, 2718-2719, 2720-2721, 2722-2723, 2724-2725, 2726-2727, 2728-2729, 2730-2731, 2732-2733, 2734-2735, 2736-2737, 27

[illegible]

On Tue Aug 22 at 12:22
I said: Andrew Sacramento

Life Insurance
and General Water Authority

Department of Chemistry

500) and Application for Renewal of NDC for withdrawal of 1.0×10^3 g/day ground water and permission for mine seepage de-watering $3305 \text{ m}^3/\text{day}$ (inferred the water table) for Goddulla Main No.2 structure mine located at Village : Goddulla, Block : Tetel : Marud. Under a Bilateral Chhattisgarh (for supply use to Central Plant of Sarda Steel) and Power : Orissa, for 2 years up-to 01/07/2022.

Ref: NDC Letter to: COVID/MC/Orig/2018 - 3931 & File: N2314523/CT/M/2018 - 1239, Dated: 23 July 2019. And
Crisma guideline 24/NE/2019 & your direction sent by email dated 23/07/2021 to apply for Renewal.

品

With reference to the above subject, we would like to inform you that we have submitted the online application on date 27/03/2021 for renewal of NCCATs per direction of COVID dated 25/02/2021. The Copy of auto generated NCCAT application and Covering Letter is attached herewith for direct reference.

This is for kind information and a heads up before to issue the Request of NOC.

[illegible]

25

The first two new editions will include new chapters on

References

SGM

From: Regional Director, NJDEP njdew@dep.state.nj.us
To: "Central Ground Water Authority" cga@cmgwa.com
Sent: Wednesday, December 14, 2022 4:05:43 PM

could have been avoided by the use of a more appropriate sampling strategy. The authors also note that the study was limited by the use of a single data source, which may have led to common method bias. The authors conclude that the study provides valuable insights into the factors that influence the use of social media for business purposes, and that the findings have implications for both researchers and practitioners.

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[illegible]

The summaries are in pdf printable format as well as projection report and Emulation format are available for download.

This is for your kind personal and necessary action please

With Realism

Regional Director

2004, 2005, 2006

Zima Fiber, LLC Corporate & Corporate Policy,
Cincinnati, Ohio 45202. E-mail: zima@zima.com

Canham CD, 1989, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 267

Tel: 01753 606000 Fax: 01753 606001
E-mail: info@hilton.com

"I can't do it, I'm just not strong enough."

[illegible]Regulation
Activity

For, Emission: Vaporized Condensate

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Journal of Management Education 32(1)

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Researcher's Name: _____

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432K

**COMPREHENSIVE GROUND WATER
MONITORING REPORT**

IN AND AROUND

GODADIH MAHAL No.2 LIMESTONE MINE AREA

BLOCK & TEHSIL: MASTURI

DISTRICT: BILASPUR (CHHATTISGARH)

FOR

RENEWAL OF NOC

(FOR RENEWAL OF NOC TO ABSTRACT GROUND WATER & MINE SURFACE DRAINAGE)

YEAR - 2020



BY

M/s JINDAL STEEL AND POWER LIMITED

PREPARED BY

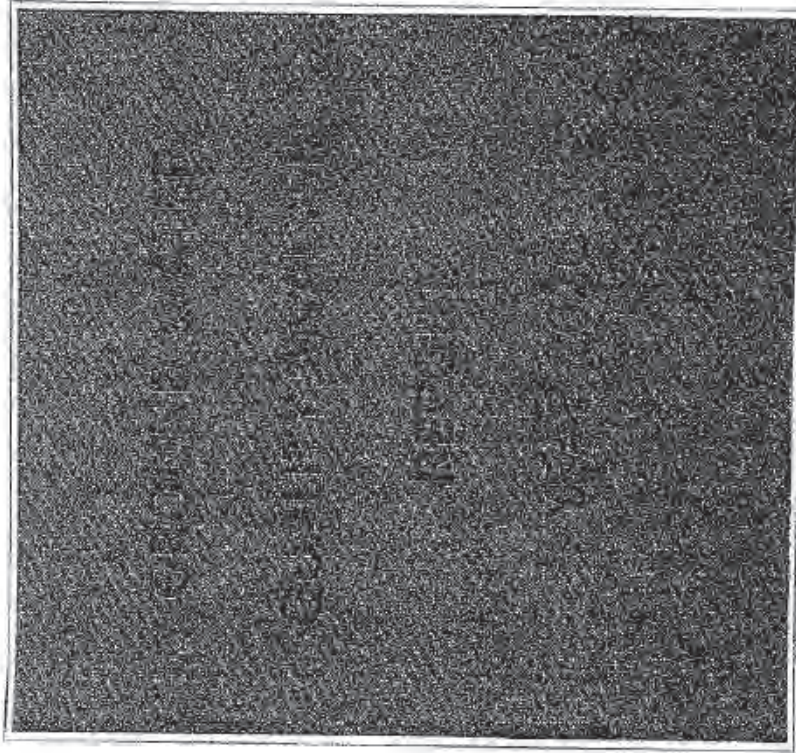


ENVIRON TECHNO CONSULTANTS

(Accredited Consultant in CGWB - REGISTRATION)

email: envirotechnoconsultants@gmail.com

(Mobile: 991 980011320)





Envirotech East Pvt. Limited

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

• Laboratory Recognized by NABL & O.C. Govt. of India

• Laboratory Recognized by WPCB

• Accredited T.A. Certificate by DCL/MAR/ET

100, Sullipatti, Madurai-625 001, Tamil Nadu

Ph: +91 85 4045021/2/3/4/5 01774443 8118 Fax: +91 85 2448 8133 Email: enquiry@envirotech.com

CIN No: U74300TN1999119912

Sr. No.	Parameter	Unit	GW 1	GW 2	GW 3	GW 4	GW 5	Permissible Limit of IS:15020:2007	Permissible Limit of IS:15020:2007
15	Sulphate (as SO ₄)	mg/L	38	42	55	55	27	200	400
16	Silicate (as SiO ₂)	mg/L	34.3	35.5	14.5	21.5	16.5	45	350
17	Fluoride (as F)	mg/L	0.01	0.07	<0.05	<0.05	<0.05	1	1.5
18	Chloride (as Cl)	mg/L	79	62	49	162	65	75	250
19	Phosphate (as Mg)	mg/L	27	21	14	24	8	30	100
20	Sodium (as Na)	mg/L	20	50	50	20	15	-	-
21	Potassium (as K)	mg/L	1.1	1.1	1.1	1.6	1.3	-	-
22	Ammonia (as Total Nitrogen)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.5	No relaxation
23	Boron (as B)	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	1.8
24	Chromium (as Cr)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	No relaxation
25	Copper (as Cu)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	1.5
26	Manganese (as Mn)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.5
27	Zinc (as Zn)	mg/L	0.12	0.1	0.05	<0.05	0.29	3	15
28	Cadmium (as Cd)	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	0.03	No relaxation
29	Iron (as Fe)	mg/L	6.23	6.21	0.16	0.24	0.27	1	No relaxation
30	Lead (as Pb)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No relaxation
31	Silver (as Ag)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	No relaxation
32	Aluminium (as Al)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.2
33	Nickel (as Ni)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	No relaxation
34	Arsenic (as As)	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05	10	No relaxation

Page 2 of 4



Envirotech East Pvt. Limited

ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 Certified Company

- * Laboratory recognized by Ministry of Health, Govt. of India

Accredited FFA Chapters are CCA-MANET

136. Zaidman, Alexander, New York, West Virginia, in 1911.

2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 26

St. No.	Parameter	Unit	GW 1	GW 2	GW 3	GW 4	GW 5	Desirable Limit or Standard	Feasibility in short or long term
33	Total Chloride	MPP/100 ml	N.D.	N.D.	N.D.	N.D.	N.D.	Should be less than 100 mg/l	Should be desirable in long term
36	S. Con	MPP/100 ml	N.D.	N.D.	N.D.	N.D.	N.D.	Should not be desirable	Should not be desirable in long term

M.B. Usubti : Unidirectional, N.D. : Not Determined

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A. Product is a national brand.

February 12, 2024

To,

The Managing Secretary,
Chhattisgarh Environment Conservation Board,
Paragadeh Chowk, North Block, Sector-19,
Rajnagar, Raipur, Chhattisgarh,
India-491001-491002, Chhattisgarh

Subject: Submission of Water Quality (Domestic) water analysis report.

Ref: Consent to Operate permit issued vide letter No. 005/ST/CE/2019 dated 18.01.2020.

Sir,
We are submitting herewith (Water Quality (Domestic) water analysis report) in response to request of (Consent to Operate) dated No. 2/Environmental Area (Water Quality) dated 08.01.2020, No. 005/ST/CE/2019 dated 18.01.2020, granted to JSP, over an area of 120.312 Ha.

Submitted for the information and record, please.

Thanking you,

Yours Truly,
For Jindal Steel & Power Limited,

(Signature)
Regional Superintendent
CEEA (Chhattisgarh)
Consent to Operate No. 2/Environmental Area

Encl: 01

Copy to:

The Regional Officer,
Regional Office, C.E.C.B., Bhubaneswar,
Kapur Road, Near Bhubaneswar University, Bhubaneswar (751005)



Jindal Steel & Power Limited
CIN No. L27004CH1997PLC000911
Office of Corporate Secretary, Jindal Steel & Power Ltd.
T-92, 7th Floor, 600 S. 1st St, 751005 Bhubaneswar, Odisha
Website: www.jindalsteel.com





Sukhdeo Salim (Jindal Steel & Power) Pvt. Ltd.

Submission of post-monsoon analysis report 2020.

1 message

Wed, Dec 24, 2020 at 9:21 PM

Sukhdeo Salim (Jindal Steel & Power) Pvt. Ltd.
For: hosh@jindal.com, Cere RO B (Jindal Steel & Power) Pvt. Ltd., "Sakshi"
Cere RO B (Jindal Steel & Power) Pvt. Ltd., "Sakshi"
Shivadas (Chilldar) - sakshi@jindal.com, "Sakshi"
Sukhdeo Salim (Jindal Steel & Power) Pvt. Ltd.
Sukhdeo Salim (Jindal Steel & Power) Pvt. Ltd.

Dear Sir,

We are submitting herewith a post-monsoon water analysis report in respect of Gadadih Mahal No. 2, limestone mine (Mine code-380G-02003), Block-Maharaj, District-Bilaspur (CG).

Submitted for kind information and record, please.

Thanks

Best Regards,

Sukhdeo Salim
Manager (Geology & EMD)
Jindal Steel & Power Limited
Gadadih Mahal No. 2 Limestone Mines, Chhattisgarh,
Bilaspur, Chhattisgarh, India, Pin - 495051.
M +91 746606525
E: sukhdeo.salim@jpl.com



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www.jindalsteel.com



Jindal Steel & Power Limited, think about your ENVIRONMENTAL responsibility

Post Monsoon water analysis report 2020.pdf
5048K



HDD-272, Phase III - Near JP Chowk
Ring Road No.2, Kobar Nagar, Raipur (C.G.) - 492039.
Ph : 0771 - 4027777 Email : ultimateenv@gmail.com

Recognized by Ministry of Environment, Forest and Climate Change under SP 24 1989

TO,		Report No.	
JINDAL STEEL & POWER LIMITED		005/18/2021/4320390	
GODABH LIMESTONE MINES,		Date of report	
BILASPUR (C.G.)		28/01/2021	
		Date of Sample	
		29/01/2021	
		Date of Report	
		02/02/2021	
		Date of Sample	
		28/01/2021	
SAMPLE DETAILS			
Customer Name		JINDAL STEEL & POWER LIMITED	
Customer Address		VISHVA CONSTRUCTION WITH BILASPUR PHASE III, NEAR JP CHOWK	
Sample Type		Drinking Water	
Volume of Sample		100 ml	
Sample Collected By		Customer	
Sample Collected At		ON	

TEST REPORT				
SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	RESULT
A. Organoleptic & Physical Parameters				
1	Colour	Eisen	IS: 3025: (Part-1)	15
2	Odour	-	IS: 3025: (Part-5)	Agreeable
3	PH value at 25.2°C	-	IS: 3025: (Part-11)	No
4	Taste	-	IS: 3025: (Part-8)	Agreeable
5	Turbidity	NTU	IS: 3025: (Part-10)	2
6	Total Dissolved Solids	mg/L	IS: 3025: (Part-18)	2000
B. General Parameters Concerning Substances undesirable in excessive amounts				
7	Aluminium (as Al)	mg/L	IS: 3025: (Part-23)	0.2
8	Ammonia (as total ammonia-N)	mg/L	IS: 3025: (Part-24)	No
9	Anticorrosive (as MEAS)	mg/L	Anticorrosive IS: 15400	10
10	Barium (as Ba)	mg/L	Anticorrosive IS: 15400	No
11	Boron (as B)	mg/L	IS: 3025: (Part-27)	Relaxation
12	Calcium (as Ca)	mg/L	IS: 3025: (Part-40)	1.0
13	Chlorides (as Cl ₂)	mg/L	IS: 3025: (Part-26)	30
14	Chlorides (as Cl ₂)	mg/L	IS: 3025: (Part-32)	Relaxation
15	Copper (as Cu)	mg/L	IS: 3025: (Part-42)	1.0
16	Iron (as Fe)	mg/L	IS: 3025: (Part-43)	1.0
17	Lead (as Pb)	mg/L	IS: 3025: (Part-44)	0.05
18	Magnesium (as Mg)	mg/L	IS: 3025: (Part-45)	1.0
19	Manganese (as Mn)	mg/L	IS: 3025: (Part-46)	0.1
20	Nickel (as Ni)	mg/L	IS: 3025: (Part-47)	0.05
21	Selenium (as Se)	mg/L	IS: 3025: (Part-48)	0.05
22	Silver (as Ag)	mg/L	IS: 3025: (Part-49)	0.05
23	Sodium (as Na)	mg/L	IS: 3025: (Part-50)	1.0
24	Zinc (as Zn)	mg/L	IS: 3025: (Part-51)	1.0

AN ISO: 9001:2015 / ISO: 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY

Recognized by Government



HDD-272, Phase-III - Near JP Chowk
Raj Road No-2, Kairi Nagar, Raipur (C.G.) - 492009
Ph: 0771-4027777 (Email: ultimate@icloud.com)

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

REPORT No.0336

TEST REPORT

SR NO	PARAMETER	UNIT	METHOD OF TEST, REF. TO	45 PER US 10300:2012 Residue (Acetone Extraction)	45 PER US 10300:2012 Residue (Acetone Extraction)	RESULT
14	Manganese (as Mn)	mg/L	IS 3025 (part-53)	0.1	0.3	N.D.
15	Silver, Ag	mg/L	CLARK & ST J 3025 (part-35) Integrated partition method	0.5	No precipitation	N.D.
16	Nitrate (as NO ₃)	mg/L	IS 3025 (part-34)	48	No precipitation	1.8
17	Phenolic Compound (as C ₆ H ₅ OH)	mg/L	IS 3025 (part-43)	0.001	0.02	N.D.
18	Selenium (as Se)	mg/L	IS 3025 (part-56)	0.01	No precipitation	N.D.
19	Silica (as SiO ₂)	mg/L	APHA 8245	0.1	No precipitation	N.D.
20	Sulfate (as SO ₄)	mg/L	IS 3025 (part-21)	200	No precipitation	15.5
21	Sulfide (as S)	mg/L	IS 3025 (part-79)	0.05	No precipitation	N.D.
22	Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (part-23)	200	No precipitation	150.0
23	Total Hardness (as CaCO ₃)	mg/L	IS 3025 (part-21)	200	No precipitation	191.0
24	Fluoride (as F)	mg/L	IS 3025 (part-48)	5	15	0.15
C. Parameters concerning toxic substances:-						
1	Cadmium (as Cd)	mg/L	IS 3025 (part-11)	0.002	No precipitation	N.D.
2	Cyanide (as CN)	mg/L	IS 3025 (part-27)	0.05	No precipitation	N.D.
3	Lead (as Pb)	mg/L	IS 3025 (part-47)	0.01	No precipitation	N.D.
4	Mercury (as Hg)	mg/L	IS 3025 (part-44)	0.001	No precipitation	N.D.
5	Nickel (as Ni)	mg/L	IS 3025 (part-21)	0.07	No precipitation	N.D.
6	Stibic (as Sb)	mg/L	IS 3025 (part-54)	0.02	No precipitation	N.D.
7	Polyhalogenated substance	mg/L	ASTM 6715	0.005	No precipitation	N.D.
8	Polyhalogenated aromatic hydrocarbons (as PAH)	mg/L	ASTM 6715	0.0001	No precipitation	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-54)	0.05	No precipitation	N.D.
11	Trihalomethane	mg/L	APHA 8242	0.1	No precipitation	N.D.
a)	Bromine	mg/L	APHA 8242	0.1	No precipitation	N.D.
b)	Dibromochloromethane	mg/L	APHA 8242	0.1	No precipitation	N.D.
c)	Bromodichloromethane	mg/L	APHA 8242	0.06	No precipitation	N.D.

AN ISO : 9001:2015 / ISO : 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY

Signature for Chief Executive



HDD-272, Phase III - Near JP Chowk
Ring Road No.-2, Khar Nagar, Rajpur (C.G.) - 402009
Ph : 0771 - 4027777 | Email : ultimateenv@gmail.com

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

REPORT NO:0003

TEST REPORT

SR. NO.	PARAMETER	UNIT	METHOD OF TEST, REF. TO	AS PER IS 10300:2012		RESULT
				Residue not detected (Absence of Atrazine)	Residue detected (Presence of Atrazine)	
1	Chloroform	mg/L	IS: 10300:2012	0.2	Not detected	N.D.
Pesticides :-						
1	Alpha HCH	µg/L	IS: 10300:2012	0.01	0.01	N.D.
2	Beta HCH	µg/L	IS: 10300:2012	0.04	0.04	N.D.
3	Gamma HCH	µg/L	IS: 10300:2012	0.04	0.04	N.D.
4	Alachlor	µg/L	IS: 10300:2012	30	30	N.D.
5	Aladin / Dieldrin	µg/L	IS: 10300:2012	0.05	0.05	N.D.
6	Atrazine	µg/L	IS: 10300:2012	1	1	N.D.
7	Buthachlor	µg/L	IS: 10300:2012	125	125	N.D.
8	Chlorpyrifos	µg/L	IS: 10300:2012	30	30	N.D.
9	Imidacloprid and 2, 4-D	µg/L	IS: 10300:2012	1	1	N.D.
10	Gamma HCH	µg/L	IS: 10300:2012	2	2	N.D.
11	Dichlorodimethylacetate	µg/L	IS: 10300:2012	30	30	N.D.
12	Endosulfan (alpha, beta and sulphate)	µg/L	IS: 10300:2012	0.4	0.4	N.D.
13	Endosulfan	µg/L	IS: 10300:2012	3	3	N.D.
14	Endosulfan	µg/L	IS: 10300:2012	9	9	N.D.
15	Endosulfan	µg/L	IS: 10300:2012	130	130	N.D.
16	Endosulfan	µg/L	IS: 10300:2012	0.5	0.5	N.D.
17	Endosulfan	µg/L	IS: 10300:2012	1	1	N.D.
18	Endosulfan	µg/L	IS: 10300:2012	1	1	N.D.
Microbial Parameters						
1	Total Coliform	MPN/100ml	IS: 1664:1981	19	-	Absent
2	S. Coli	MPN/100ml	IS: 1664:1981	201E	-	Absent

Note: mg/L, residue per liter, N.D. Not detected

Form 02 (Final)

- The use of this report for publication, circulation or as legal document is forbidden.
- Test sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- This is for information on the party for which the test report is issued.

Prepared by 05/10/2024	Ultimate Environmental Solutions 05/10/2024
--------------------------------------	---

End of the test report

Signature of the Analyst

April 06, 2021



To,

The Member Secretary
Chhattisgarh Environment Conservation Board,
Parvati Chowk, North Block, Sector-19
New Raipur, Arun Nagar,
District Raipur-492002, Chhattisgarh.

Subject: Submission of monthly Ambient Air Quality & Noise level monitoring report for March 2021.

Ref: Consent to Operate permission vide letter No. 9908/TS/CECB/2020 Nava Raipur, Arun Nagar, dated 22.01.2020.

Sir,

We are submitting herewith Ambient Air Quality & Ambient Noise level monitoring report for the month of March 2021 in respect of Goddard Metal Ro. 2 Limestone Mine (Mina Code-38024/K20002), Block-Kasturji, District-Bilaspur (CG) over an area of 120.513 Ha. granted to Jindal Steel & Power Limited.

Submitted for your information and records please.

Thanking You

Yours Truly,
For, Jindal Steel & Power Limited.


(Sukhdeo Sahani)
Manager-EMO
Goddard Metal Ro. 2 Limestone Mine.

Encl: a/n



Copy to:

The Regional Officer,
Regional Office, C.E.C.B.,
Vyapar Vihar, Near Chaudhary Upadhyay Garden, Bilaspur (CG)

Jindal Steel & Power Limited
CIN No. 27103103701400013
Office of Corporate Affairs, Mumbai, India, Room 621 113
T-451 771 084 800 + 91 771 301 130 W. www.jindalsteel.com
All correspondence to: Jindal Steel & Power, Bilaspur, India.

Sukhdeo Salim (Pantawada) sukhdeo.salim@jsteel.com



Submission of monthly monitoring report of Ambient Air quality & Noise level for month of March 2021

1 message Tue, Apr 6, 2021 at 12:35 PM

Sukhdeo Salim (Pantawada) sukhdeo.salim@jsteel.com
To: hr@jsteel.com, [Girdhri Mahal No. 2 Limestone Mine \(Naga Doka-384025030, Block-Magan, District-Bikaner \(OD\) over area of 121.313 Ha, granted to Jindal Steel & Power Limited](mailto:Girdhri Mahal No. 2 Limestone Mine (Naga Doka-384025030, Block-Magan, District-Bikaner (OD) over area of 121.313 Ha, granted to Jindal Steel & Power Limited)
Cc: [sukhdeo.salim@jsteel.com](mailto:Mr Singh (C&C) / <a href=), [narendra.kumar.mishra@jsteel.com](mailto:Narendra Kumar Mishra - <a href=), [suresh.sonawale@jsteel.com](mailto:Suresh Sonawale (Girdhri) - Kamlesh Mohan (C&C) - <a href=)

Dear Sir,

We are sending carwith Ambient Air Quality & Ambient Noise level monitoring report for the month of March 2021 in form of Girdhri Mahal No. 2 Limestone Mine (Naga Doka-384025030, Block-Magan, District-Bikaner (OD) over area of 121.313 Ha, granted to Jindal Steel & Power Limited.

Specialized for kind information and records please

Thanks

Best Regards,

Sukhdeo Salim
Manager (Geology & EMD)
Jindal Steel & Power Limited
Girdhri Mahal No. 2 Limestone Mine, Chittodi,
Bikaner, Rajasthan, India, Pin - 334551.
M +91 967005924
E sukhdeo.salim@jsteel.com



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Ambient Air Quality & Ambient Noise Level monitoring report March 2021.pdf
414K



HDD-272, Phase II - Near-JR Chowk
Ring Road No. 2, Khar-Nagar, Rajpur (C.O.) - 462034
Ph: 0771-4027777 Email: ultimateenv@rediffmail.com

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

TO,
JINDAL STEEL & POWER LIMITED
GORGHI LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO UES/70-21/0300
DATE/NO UES/20-21/JAN/0071
DATE OF SAMPLING 04/02/2021 to 06/02/2021
DATE OF RECEIPT 02/02/2021 to 07/02/2021
DATE OF REPORT 07/02/2021
DATE OF ANALYSIS 02/02/2021
REPORT NO UES/70-21/0300

ANALYST J. P. SINGH
MONITORING FOR AIR QUALITY MONITORING
ANALYST'S SIGNATURE
ANALYST'S NAME J. P. SINGH
SAMPLE COLLECTION BY J. P. SINGH
SAMPLING FREQUENCY AS PER CLIENT ORDER
SAMPLES RECEIVED 10 LITERS OF WATER
SAMPLES SUBMITTED 10 LITERS OF WATER
SAMPLES ANALYZED 10 LITERS OF WATER
SAMPLES RETURNED 10 LITERS OF WATER

Parameter	Method Reference	NAQM Standard
Particulate matter size less than 10 microns (PM ₁₀)	IS 5182 Part 2011:2006 & CPCB Guidelines Vol. 1	100
Particulate matter size less than 2.5 microns (PM _{2.5})	CPCB Guidelines Vol. 1	60
Sulphur Dioxide (SO ₂)	IS 5182 Part 2011:2006 & CPCB Guidelines Vol. 1	80
Nitrogen Dioxide (NO ₂)	IS 5182 Part 2011:2006 & CPCB Guidelines Vol. 1	80
Ozone Monoxide (O ₃)	IS 5182 Part 2011:2006 & CPCB Guidelines Vol. 1	1.2

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (ppb/m ³)	NO ₂ (ppb/m ³)	CO ₂ (ppb/m ³)
01.02.2021	52	34	10	20	1.0
02.02.2021	58	38	12	21	1.2
03.02.2021	60	40	16	22	1.5
04.02.2021	64	44	10	28	1.0
05.02.2021	60	38	12	20	1.1
06.02.2021	56	36	10	26	1.2
07.02.2021	52	34	12	20	1.0
08.02.2021	58	38	16	24	1.6

Remarks: * Duration of sampling for CO = 1 Hour.

- Notes & conditions**
- 1. The report is valid only for the period specified in the report.
 - 2. The report is valid only for the period specified in the report.
 - 3. The report is valid only for the period specified in the report.

PREPARED BY J. P. SINGH
DATE 01/04/2021

FOR ULTIMATE ENVIRONMENTAL SOLUTIONS
AUTHORIZED SIGNATORY

AN ISO 15001:2015 / ISO 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY

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HDD-27-2, Phase II:- Near J.P. Chowk
Rup Road No-2, Kabil Nagar, Reigar (C.G.) - 492099
Ph: 0771 - 4027777 | Email: ultimateenviro@gmail.com

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TEST REPORT

CLIENT: JINDAL STEEL & POWER LIMITED
PROJECT: GODADIH Limestone Mines, BILASPUR (C.G.)

REPORT NO: UES/20-21/AMN/784172
DATE OF REPORT: 01/04/2021
DATE OF SAMPLE: 01/03/2021 to 27/03/2021
DATE OF TEST: 01/04/2021
DATE OF ANALYSIS: 01/04/2021

ANALYST: J. K. SINGH
MONITORING NO. & DATE: 01/04/2021
MONITORING FOR: AMBIENT AIR QUALITY MONITORING
STATIONING FOR: 218 STATION (MINE SITE)
STATIONING LOCATION: 218 STATION (MINE SITE)
DURATION OF SAMPLING: 24 HOURS
SAMPLE COLLECTED BY: J. K. SINGH
SAMPLE PRESERVED: YES
SAMPLE QUANTITY/PACKING: 100 ml, 100 ml, 100 ml, 100 ml, 100 ml, 100 ml, 100 ml, 100 ml, 100 ml, 100 ml

Parameter	Method Reference	NAAQM Standard
Particulate Matter (also less than 10 microns (PM ₁₀))	IS 5131 (Part 23): 2006 & GPC	100
Particulate Matter (also less than 2.5 microns (PM _{2.5}))	IS 5132 (Part 21) 2001 & GPC	50
Sulphur Dioxide (SO ₂)	IS 5132 (Part 21) 2001 & GPC	80
Nitrogen Dioxide (NO ₂)	IS 5132 (Part 21) 2001 & GPC	80
Ozone (O ₃)	IS 5132 (Part 21) 2001 & GPC	40

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)
01.03.2021	54	20	08	26	1.0
02.03.2021	50	14	05	20	1.2
09.03.2021	34	20	10	24	1.6
12.03.2021	48	20	10	22	1.0
15.03.2021	46	22	09	20	1.2
19.03.2021	52	26	06	18	1.0
22.03.2021	44	20	10	16	1.4
25.03.2021	46	10	08	20	1.2

Remarks: * Duration of sampling for CO - 1 Hour.

Terms & conditions

- The report is valid only for the purpose of monitoring.
- The report is not valid for any other purpose.
- The report is not valid for any other purpose.

TESTED BY: J. K. SINGH
DATE: 01/04/2021

APPROVED BY: J. K. SINGH
DATE: 01/04/2021

TESTED BY: J. K. SINGH
DATE: 01/04/2021

APPROVED BY: J. K. SINGH
DATE: 01/04/2021

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HDD-272, Phase II - Near I.P. Chowk
 8/16 Road No-2, Jodhpur, Rajasthan (Raj.) - 342004
 Ph: 0721-4027777 | Email: ultimateinfo@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EPC Act 1986

TO,
JINDAL STEEL & POWER LIMITED
CODAN LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO. **US/TS/PC-21/0304**
 ANALYST **US/TS-21/04/25**
 DATE OF REPORT **04/04/2021**
 UNIT OF SAMPLING **01/03/2021 to 25/03/2021**

ANALYST **US/TS-21/04/25**

Numbering for **Water (not for drinking)**
 Customer Ref No. & Date **03274003L DATED 07-03-2019**
 Sampling Location **Water from OFFICE**
 Sample Collected by **Laboratory Client**
 Laboratory Name **Ultimate Analytical Solutions**

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.03.2021	65(A)	56.2	44.0		
05.03.2021	45(A)	58.6	46.5		
08.03.2021	45(A)	54.9	46.0		
12.03.2021	45(A)	46.2	39.4		
15.03.2021	45(A)	50.8	41.5		
19.03.2021	45(A)	50.0	45.0		
22.03.2021	45(A)	41.5	40.2		
25.03.2021	45(A)	51.5	44.8		

UNCORRECTED RESULTS ARE AS ABOVE

Terms & Conditions

- 1. The report is valid only for the purpose for which it is issued.
- 2. Test sample will be retained for 1 month after date of report unless otherwise agreed with customer.
- 3. Due to the information in the report, the party is asked to take necessary action.

01/04/2021
 PREPARED BY

PHILTRATE DIVISION, CALICUT, KERALA
 AUTHORIZED SIGNATORY
 04/04/2021

End of the test report



HDS 212: Phase III - Heat Up Gravel
Ring Road No. 2, Kandi Nagar, Baramulla (G.O.) - 492089
Ph: 0771-4027777 Email: ultimate.vco@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EP 34 1986

TO,
JINDAL STEEL & POWER LIMITED
GODDARD LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO. HES/2021/02/03
SAN NO. HES/2021/02/03
DATE OF REPORT 01/04/2021
DATE OF SAMPLING 01/03/2021 TO 25/03/2021

SAMPLE DETAILS

Monitoring For Noise level Monitoring
Customer Ref. No. & Date 492700325, DATED 27.02.2020
Sampling Location S48 Station near pit
Sample collected by Laboratory Chemist
Sampling procedure Manufacturer's procedure

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.03.2021	dB(A)	50.8	41.2		
05.03.2021	dB(A)	52.5	48.8		
08.03.2021	dB(A)	42.0	36.6		
12.03.2021	dB(A)	35.6	32.4		
15.03.2021	dB(A)	50.5	42.3		
19.03.2021	dB(A)	44.3	35.6		
22.03.2021	dB(A)	54.0	36.8		
25.03.2021	dB(A)	52.2	32.5		

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- The report for information, submission at as stated in report is for guidance.
- The samples will be retained for 15 days after issue of test report, without otherwise agreed upon customer.
- This is for information as the customer agreed upon the terms & conditions.

PREPARED BY: *[Signature]* 01/04/2021

ADDITIONAL SIGNATURES: *[Signature]* 01/04/2021

ADDITIONAL SIGNATURES: *[Signature]* 01/04/2021

AN ISO: 9001:2015 / ISO: 14001:2015 / ISO 45001:2018 CERTIFIED LABORATORY

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HDB-272, Phase III - Near JICA/MA
Ring Road No. 2, Kabil Nagar, Rajpur (G.O.) - 249089
Ph: 0771-402777 | Email: ultimateenv@gmail.com

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To,
JINDAL STEEL & POWER LIMITED
GODADIN LIMESTONE MINES,
BILASPUR (C.G.)

REPORTING NO.	URS/78/10-21/63086
LABORATORY NO.	URS/78-35/79/04177
DATE OF REPORT	01/04/2021
DATE OF SAMPLING	03/03/2021 to 26/03/2021

Monitoring For	Water Level Monitoring
Customer Ref. No. & Date	053570086, DATED: 07.05.2020
Sir/To Whom	GODADIN LIMESTONE
Sample Collected By	Labo. Staff/Client
Sampled Signature	Ministry of Environment

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIGHT (INDUSTRIAL ZONE)	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.03.2021	dB(A)	44.1	32.2		
03.03.2021	dB(A)	45.2	35.0		
08.03.2021	dB(A)	52.0	30.5		
12.03.2021	dB(A)	55.6	38.1		
15.03.2021	dB(A)	46.5	30.8	75	70
19.03.2021	dB(A)	42.0	36.0		
22.03.2021	dB(A)	50.8	42.6		
26.03.2021	dB(A)	54.5	41.5		

ANALYST: RESISTANCE LAB 42 63013

Terms & conditions

- The client is authorized to use the report for the purpose of the contract.
- The client is not responsible for the use of the report for any other purpose.
- The client is not responsible for the use of the report for any other purpose.

PREPARED BY <i>[Signature]</i> 01/04/2021	 AUTHORIZED SIGNATORY <i>[Signature]</i> 01/04/2021
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End of the test report

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HDD-2/2, Phase II, Near JP Chowk
Ring Road No.2, Kolar Nagar, Raipur (C.G.) - 492009.
Ph: 0771-4027777 | Email: ultimatevsc@gmail.com

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Name & Address of the Company		REPORT NO.	UES/TP/20-21/03887
TO,		LAB REF NO.	UES/20-21/N/04178
JINDAL STEEL & POWER LIMITED		DATE OF REPORT	02/04/2021
GORAKH LIMESTONE MINES,		DATE OF SAMPLE	01/03/2021 to 26/03/2021
BILASPUR (C.G.)		SAMPLES TO BE TESTED	
Monitoring for	NO. of Land Monitoring		
Customer Ref. No. & Date	432750022 DATED: 07.03.2020		
Sampling location	LOHA RU VILLAGE		
Sample Collected By	Laboratory Operator		
Sampling procedure	Manufacturer's Instruction		

TEST REPORT

DATE OF SAMPLING	UNIT	RESULT		LIMIT INDUSTRIAL ZONE	
		DAY TIME	NIGHT TIME	DAY TIME	NIGHT TIME
01.03.2021	dB(A)	47.6	38.6		
03.03.2021	dB(A)	49.4	39.1		
08.03.2021	dB(A)	44.2	36.3		
12.03.2021	dB(A)	50.8	38.9		
15.03.2021	dB(A)	56.0	44.2	75	70
19.03.2021	dB(A)	59.6	52.0		
22.03.2021	dB(A)	47.5	38.8		
26.03.2021	dB(A)	48.8	36.5		

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- The report is for information, verification or as legal document is forbidden.
- The samples will be retained for 15 days after receipt of payment unless otherwise agreed upon customer.
- This is confidential information as the project is confidentially handled only.

PREPARED BY 01/04/2021	 AUTHORIZED SIGNATORY 01/04/2021
-------------------------------	--

End of the test report

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HDD-272, Phase II - Nagar, JP Chowk,
Ring Road No-2, Kable Nagar, Kulpur,
P.B. 0774-402777 / Email: kullmat@

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THE JOURNAL OF ADVANCEMENT OF THE CLERGY

TO,
JINDAL STEEL & POWER LIMITED
GODABAH LIMESTONE MINES,
BILASPUR (C.G.)

REPORT NO.	1187/20-21/04/21/05/08
JOB REF NO.	1187/20-21/04/21/05/08
DATE OF SAMPLE	26/05/2021
DATE OF RECEIPT	23/06/2021
DATE OF REPORT	01/06/2021

[illegible]

TEST REPORT

[illegible]

* Frame sliders are the inside of 1 hour and 12.5. Not Defected

Reviews & Commentary

- For each of the 1000 replications, an individual in the target population is randomly selected and the response is recorded. The 1000 replications are then averaged to give the final estimate of the population mean. This is the Monte Carlo method for estimating the population mean.

10/26/2012
Office



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1-D-D-2/2, Phase II, Nank JP Chowk,
Ring Road No.2, Kapri Nagar, Rajpur (C.G.) - 492006
Ph: 0771-4027777 E-mail: ultimatevfo@gmail.com

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Wanda A. Jeffries of The Conference

INDIAL STEEL & POWER LIMITED
GODADRI LIMESTONE MINES,
BILASPUR (C.G.)

[illegible]

TEST REPORT

PARAMETER	UNIT	TEST METHOD REFERENCE	DESIGNATED STANDARD	RESULT
PERMEABILITY INDEXES (see Table 10)				
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	100	98
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	90	92
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	80	82
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	70	72
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	60	62
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	50	52
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	40	42
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	30	32
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	20	22
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	10	12
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	0	0
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	100	100
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	90	90
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	80	80
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	70	70
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	60	60
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	50	50
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	40	40
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	30	30
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	20	20
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	10	10
PERMEABILITY INDEXES (see Table 10)	per cent	ASTM D 1555-60, T 1001-60	0	0

Abstract

- THE JOURNAL OF POST KEYNESIAN ECONOMICS**

4400
51104/2021
PREPARED BY



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2000

Fixed Assets Department

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HDD-272, Phase III - Near JP Chowk
Piling Road No-2, Kabit Nagar, Rajpur (C.G.) - 492084
Ph: 0771 - 4027777 (Email: ultimatepro@gmail.com)

Recognized by Ministry of Environment Forest and Climate Change under E-act 1989

70. Institute of Resources of The City of New York

JINDAL STEEL & POWER LIMITED
GOADIN LIMESTONE MINES,
BILASPUR (C.G.)

[illegible][illegible]

TEST REPORT

[illegible]

These measurements on the same set of 4 lower samples, W.D. 84-104, collected

- the main fermentation substrates are *lactose* & *glucose*
- lactose is only in *lactobacillus* and *lactococcus* (all important)
- glucose is important as also other sugars, *fructose* & *sucrose*

PREPARED BY
1202/2021

For Ultimate Financial Solutions
Authorized Signature
12/15/2014

End of document

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Date: 14.05.2021

To,

The Director of Mines Safety,
Directorate General of Mines Safety,
Bhilai Region,
Bhilai, 430001, Chhattisgarh.

Sub: Approval of "Emergency Plan" for Godadhi Mahal No. 2 (Ironstone Mine in village
Godadhi Mahal No. 2, Tehsil - Narsari in favour of M/s Jindal Steel & Power Limited
(JSPL), Dist. Raipur, Chhattisgarh.

Ref: Our submission dated 15.01.2021 for approval of "Emergency Plan" for Godadhi Mahal No. 2
License was granted by DGP. (Resolving Copy enclosed).

Dear Sir,

This is to bring your kind notice that we had submitted the "Emergency Plan" (12 nos) as per the
Mandatory Mine Rules (1961) under regulation 190(A) for approval to your good office on
15.01.2021 in favour of Godadhi Mahal No. 2 (Ironstone Mines Mine Code-JSPLH00003), Bhilai-
Mandla District Raipur (CG), over an area of 120.515 ha. Located in favour of M/s Jindal Steel &
Power Limited.

Since it is reasonably promptly about approval for the submitted "Emergency Plan" for our Godadhi
Mahal No. 2 (Ironstone Mines of JSPL).

Thanking you,

Yours faithfully,

For Jindal Steel & Power Limited.

(S. K. Mishra)
Mines Manager



**GODADIH MAHAL NO. 2 LIMESTONE MINE
M/s JINDAL STEEL & POWER LIMITED**

Expenditures of EMD Cell FY 20-21

Sl. No.	Particulars	Expenditure (in Rs.)
1	Annual contract for Offline Ambient air quality & Noise level monitoring report to M/s Ultimate Environmental Solutions.	762223.36
2	Annual contract for Water quality analysis report to M/s Ultimate Environmental Solutions.	40592.00
3	01 Offline Ambient Air Quality monitoring system purchase from M/s Thermo Fisher Scientific India	3725000.00
4	Installation of Noise meter from M/s Broadlip Rite Electronics Pvt Ltd	99,825.00
5	Annual contract for Ground water level monitoring report to M/s Environ Techno Consultants	413,000.00
6	Consultancy fee for Extension to obtain validity of NOC from CGWA to M/s Environ Techno Consultants	476,000.00
7	CTO renewal fee	20,030.00
8	Providing and Piling of Barbed wire TO M/s Navdha Kumar	140,048.000
9	Annual contract to M/s Navdha Kumar for tree maintenance	261,264.000
10	Salary payment for officer Incharge EMD cell	633,000.000
11	Supplies purchase and its plantation	33,000.000
12	Miscellaneous expenses of EMD cell	50,000.000
	TOTAL	6,653,991.360



Jindal Steel & Power Limited
 Work Office Jindal Steel & Power Limited, Plot # 16, Kharola Road, Jharkhand 835001 (IS)
 T: 03177822220, 2222111 (Ext) F: 03177822270, 2222111
 Registered Office: C-6, Focal Nara, Plot: 223 Dns, Haridwar