

FORM - V
(See Rule -14)

ENVIRONMENT STATEMENT
FOR THE FINANCIAL YEAR ENDING THE 31st MARCH 2019

GOMARDIH DOLOMITE QUARRY, TATA STEEL LTD.

PART-A

1. Name and address of the owner/
Occupier of the industry, operation : Gomardih Dolomite Quarry
: Tata Steel Ltd., P.O-Tunmura
Dist - Sundargarh, Odisha -770070
- Agent : Mr. Rajesh Kumar
Nominated Owner : Mr. T.V Narendran,
CEO & Managing Director
Tata Steel, Jamshedpur
2. Industry Category : Opencast Mining
3. Production Capacity : Dolomite Ore -8,16,000 TPA
4. Year of establishment : 1962
5. Date of submission of previous
Environment Audit Report. 25th September 2018

PART-B

A) Water consumption in m³ / day under all the three heads for the assessment Year is as follows:

(i) Water Consumption:

Quarry water is used for processing, spraying and cooling.

Consumption Head	2017-18 (Cum/day) (Annual average)	2018-19(Cum/day) (Annual average)
Process (for washing equipment and crusher plant)	20.09	30.84
Cooling (Sprinkling on haul road)	51.5	98.84
Domestic	42.22	295.62

Name of products	Water Consumption for unit of products	
	During the previous financial year (2017-18)	During the current financial year (2018-19)
Dolomite	637111.3	744964.0

Dolomite Ore is produced by mechanized method of mining, which does not involve beneficiation and thus precludes the consumption of water. Presently about Av. 425.30 m³ of water is being pumped out from the pit per day. Part of this water is utilized every day for dust suppression on haul roads, crushing & screening plant and in equipment maintenance. The balance water is discharged to the nearby agricultural fields, where it is utilized by the villagers for irrigation.

Domestic water requirement is being met by pumping water from Nakti Jor, a perennial stream nearby. Gomardih Dolomite Quarry. It has obtained NOC vide No. CGWA/NOC/MIN/ORIG/2018/3162 dated 22/03/2018 from CGWA, Bhubaneswar. The application for drawl of surface water from the Nakti Jor is under consideration by the "Water Resources Department, Govt. of Odisha. Interim agreement for drawing water from Nakti Jor has been executed with Executive Engineer, Sundargarh Irrigation Sub-division on 14th Sept 2018. The copy of the NOC issued by CGWA and application submitted for drawl of surface water & the interim agreement for drawl of surface water are annexed as **Annexure-I, II & III** respectively.

(ii) Raw Material Consumption

The other material consumed during the process of mining like lubricants, oil & grease, brake fluid, explosives and accessories, electric power, industrial gas etc. Are given as follows:

Other Raw Materials used	During the current financial year (2017-18)	During the current financial year (2018-19)
High Speed Diesel (ltrs)	9663.45	20380.37
Gas (cum)	1297.313	2521.06
Lubricant (ltrs)	13390	21420
Grease (kg)	270	210
Electricity consumed (kwh)	1802000	1913000
Explosives of all types (Explosive, cordex, detonator)	221575 KG, 0.00mtr,11718nos.	188110 KG, 0.00mtr, 12518 nos.

PART-C

POLLUTION DISCHARGED TO ENVIROMENT/ UNIT OF OUTPUT **(Parameters as specified in the consent issued)**

Water Pollution:

The water, which gets accumulated in the pit, is regularly pumped out to continue the mining operations. The mine discharge is allowed to settle at the series of settling ponds made at the top of the quarry. Then it is allowed to go outside. The same water is used at the nearby paddy fields for irrigation purpose. Similarly, the canteen effluent is discharged to a soak pit. The domestic sewage is discharged to septic tanks and soak pits. The mine discharge and canteen effluent quality are regularly monitored. The sample of few parameters are given as Table-I and the annual average for the year 2018-19 of the effluent quality (Mine discharge water quality and canteen discharge water quality) are annexed as **Annexure-IV and V** respectively. The results show that the parameters are within the prescribed limits.

Details of Water Quality Monitoring: **(Table -1)**

Pollutants	Units	Concentration of pollutants (milligrams/litre)	Standards (milligrams/litre)	Percentage of variation from standards with reasons
Mines Discharge	Unit			
pH	-	7.55	5.5-9.0	-
BOD 3 days	mg/l	2.3	30	(-) 92.33
Fe	mg/l	0.41	3	(-) 86.33

Note: (-) deviation implies better than standard

Air:

Since this is an open cast Mine, the dust generation is mainly due to the movement of vehicles in the haul roads, drilling activities, crusher plant etc., which is fugitive in nature and cannot be quantified. The fugitive dust is controlled at source by provision of wet drilling in the drill machines and installation of dry fog system at the crusher plant. Besides, dust is suppressed by sprinkling of water using mobile water tankers. Green belt has been developed by plantation of trees at lease boundary as well as around the residential colony to prevent propagation of dust.

The annual averages of some important parameters are given below. The details of the annual average of ambient air quality data is enclosed as **Annexure-VI**. It shows that the concentrations of the pollutants are well within the permissible standards.

Details of Ambient Air Quality Monitoring:

1. Near First Gate

Parameter	Average Concentration (Apr'18 to Mar'19)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	66.53	100	(-)33.47	
PM2.5 ($\mu\text{g}/\text{m}^3$)	37.1	60	(-)38.17	
SO ₂ ($\mu\text{g}/\text{m}^3$)	6.28	80	(-)92.15	
No _x ($\mu\text{g}/\text{m}^3$)	24.85	80	(-)68.94	
CO (mg/m ³)	0.56	4 mg/m3	(-)86	

2. Near Crusher Plant

Parameter	Average Concentration (Apr'18 to Mar'19)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	72.73	100	(-)27.27	
PM2.5 ($\mu\text{g}/\text{m}^3$)	41.21	60	(-)31.32	
SO ₂ ($\mu\text{g}/\text{m}^3$)	6.57	80	(-)91.79	
No _x ($\mu\text{g}/\text{m}^3$)	24.79	80	(-)69.01	
CO (mg/m ³)	0.50	4 mg/m3	(-)87.5	

3. Near VT Centre

Parameter	Average Concentration (Apr'18 to Mar'19)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	59.55	100	(-)30.45	
PM2.5 ($\mu\text{g}/\text{m}^3$)	32.57	60	(-)45.72	
SO ₂ ($\mu\text{g}/\text{m}^3$)	6.02	80	(-)92.48	
No _x ($\mu\text{g}/\text{m}^3$)	22.75	80	(-)71.56	
CO (mg/m ³)	0.42	4 mg/m3	(-)89.5	

4. Near Hospital

Parameter	Average Concentration (Apr'18 to Mar'19)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	55.64	100	(-)44.36	
PM2.5 ($\mu\text{g}/\text{m}^3$)	29.83	60	(-)50.28	
SO ₂ ($\mu\text{g}/\text{m}^3$)	5.84	80	(-)92.7	
No _x ($\mu\text{g}/\text{m}^3$)	21.28	80	(-)73.4	
CO (mg/m ³)	0.40	4 mg/m3	(-)90	

5. Near Substation

Parameter	Average Concentration (Apr'18 to Mar'19)	CPCB Standard Annual Average $\mu\text{g}/\text{m}^3$	% of Variation from the Standards	Remarks
PM-10 ($\mu\text{g}/\text{m}^3$)	62.92	100	(-)37.08	
PM2.5 ($\mu\text{g}/\text{m}^3$)	34.79	60	(-)42.02	
SO ₂ ($\mu\text{g}/\text{m}^3$)	6.05	80	(-)92.44	
No _x ($\mu\text{g}/\text{m}^3$)	22.79	80	(-)71.51	
CO (mg/m ³)	0.53	4 mg/m3	(-)86.75	

Note: (-) deviation implies better than standard.

This is an opencast mine and does not have any single point source of air pollution. Hence, quantitative estimation of air pollutants discharged in Kg/day cannot be ascertained. The above ambient air quality data shows that the concentrations of the pollutants are well within the permissible standards.

PART-D

HAZARDOUS WASTES

As specified under the Hazardous Waste (Management, Handling and Trans-boundary) Rules, 2008 and amendment thereof

Hazardous Waste generation		Total Quantity in Kilograms	
		During the previous financial year (2017-18)	During the current financial year (2018-19)
a)	From process		
	-Used oil in liquid form	0.079 KL	0.09 KL
	-Oily wastes in solid form	0.010 mt	Nil
	-Used battery in solid form	Nil	Nil
b)	From pollution control facilities	Nil	Nil

PART-E

SOLID WASTES

Solid Waste		Total Quantity	
		During the previous financial year (2017-18)	During the current financial year (2018-19)
a)	From process		
	- Mining Overburden	29641 m ³	29108m ³
	- Rejects	Nil	Nil
	- Spoils	Nil	Nil
	- Ore washing slimes	Nil	Nil
b)	from pollution control facilities	Nil	Nil
c)	1. Quantity recycled or re-utilized	Nil	Nil
	2. Sold	Nil	Nil
	3. Disposed	Nil	Nil

PART-F

THE CHARACTERISTICS (in terms of composition and quantum) OF HAZARDOUS AS WELL AS SOLID WASTES AND INDICATE DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTES.

The oil containing sludge and materials having oil, used oil from vehicle maintenance, used automobile batteries and used up torch cells has been identified as hazardous materials generated. We have been granted authorization for disposal of hazardous materials under Hazardous Waste (Management and Handling) Rules, 2008. Kindly refer to your letter no: -Ind-IV-HW-308-1045 dated 1st June 2015 which is valid up to 31st March'2020.

DISPOSAL PRACTICE: -

a) SOLID WASTES:

Solid Waste generated as overburden mainly consists of morrum. Overburden is systematically and scientifically dumped on a non-mineralized area and the same will be reclaimed by afforestation once it becomes inactive.

b) HAZARDOUS WASTE:

The oil containing sludge and materials having oil, used oil from vehicle maintenance, used automobile batteries and used up torch cells has been identified as hazardous materials generated. We have been granted authorization for disposal of hazardous materials under Hazardous Waste (Management and Handling) Rules, 2008 vide letter no: --Ind-IV-HW-308-1045 dated 1st June 2015 issued by Odisha State Pollution Control Board which is valid up to 31st March'2020.

WASTE OIL:

The waste oil generated at various sources is collected in leak proof barrels and then is kept on an impervious floor with oil catch pit. It is also ensured that the caps of the barrels remain intact and horizontal. The storage area is properly fenced, and caution board displayed. During transfer of waste oil to barrels, a trough is placed underneath to prevent land contamination due to oil spillage. Then at a fixed interval, these barrels are supposed to be sold to the authorized vendor of OSPCB. Provision of impervious pit with oil for collection of oily waste is there at the workshop premises in addition to the existing practice of collection at specified barrels. Oil and water separation arrangements are also made at the workshop premises.

WASTE BATTERIES:

The used lead acid batteries with diluted acid and caps intact are kept under a shed having impervious floor. Then at a fixed interval, these batteries are supposed to be disposed through auction to the authorized recycler after due intimation to State Pollution Control Board.

Note:

Now we have made an agreement on 09.04.2013 with M/s West Bengal Waste Management Limited, a division of Ramky Enviro Engineers Limited located at Haldia, West Bengal to dispose the waste containing oil falling in line with the recent directive from Member Secretary, State Pollution Control Board, Orissa vide his letter no. 14315/ IND-IV-Misc, -256, dated 04.09.09. This agreement was valid up to 12th April,2018.

According to the agreement between M/S Tata Steel, Ferro Alloys and Minerals Division (FAMD) and M/S Ramky Enviro Engineers Pvt. Ltd; the hazardous waste generated at the premises of the Generator located at FAMD (Sukinda Chromite Mines, Ferro Alloys Plant, Bamnival, Manganese Group of Mines, Joda, Gomardih Dolomite Quarry) shall be disposed to the authorized party. The hazardous waste generated so far at Gomardih is very negligible in quantity. The service of the authorized vendor shall be rendered as per requirement.

PART-G
IMPACT OF POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION

DUST SUPPRESSION:

- Water spraying on mine haul roads by water tankers has reduced the dust levels in the ambient air.
- The dry fog system has been installed in the crusher plant. Besides, spraying of water in crusher hopper, screens and transfer points has improved the work zone environment in the plant.
- Tarpaulin sheets are now being used to cover the Dolomite fines stacks to avoid dust nuisance during dry seasons.
- Wet drilling is in practice to control the generation of fugitive dust at source.
- Water spraying is done on the blasted mock pile to reduce generation of dust during loading.
- The people working in the areas of potential dust generation points have been provided with dust respirators.
- Photographs of different activities of dust suppression are attached as **Annexure-VIII**.

MANAGEMENT OF SURFACE RUN-OFF & MINE DISCHARGE WATER:

- About 180 meters of garland drain and 5 nos. of settling pits were made during the year 2013-14 along the northern lease boundary of the mine. All the garland drains and settling pits are being maintained to check run-off during monsoon season.
- Garland drain around the mine is maintained regularly at the toe of dumps, periphery of the quarries and mineral storage area.
- The garland drains are made of avg. width 1.5 m and depth min. 1m and cleaned before monsoon every year.
- The garland drains are provided with intermittent settling ponds where the rain water along with surface run-off gets settled and clean water is allowed to go outside the mining lease area. This water is utilized for irrigation purpose by the neighbor villages.

TOP SOIL & SOLID WASTE MANAGEMENT:

- The top soil generated during OB excavation is stacked separately at a designated place. It is used as sweet earth while doing plantation at OB dumps and other places.
- The overburden is dumped at a place earmarked for the purpose and the approved design of the Mining Plan is being followed while developing the dump.
- The reclamation of the OB dump is done by phase-wise plantation at the dump slopes.
- Toe wall has been provided at the bottom of the OB dump to arrest the sliding material at the toe of the dump.
- Company had spent an amount of Rs. 11 Lakhs on a study on Dump Stability engaging CIMFR, Dhanbad.
- Photographs of dumps management activities are attaches as **Annexure-IX**.

WATER TREATMENT & RECYCLING:

- The mine has two filter plant units one at the mine premises and another at its colony area. The mine discharge water as well as the water drawn from the Nakti Jor is treated at these filter plants before it is supplied for domestic use. The water quality meets all the parameters as prescribe by the statutory authorities.
- The canteen effluent is discharged to a soak pit made for the purpose.
- The oil and grease separation system are there for treating workshop effluent.
- A roof top Rainwater Harvesting Structure has been installed at the Guest House on a trial basis.
- Photographs of water treatment are attached as **Annexure-X**.

ENVIRONMETNAL MONITORING:

- Regular monitoring of the Ambient Air Quality of both core and buffer zone is being done by engaging a vendor i.e. M/S Mitra S K Ltd. Barbil, authorized by OSPCB and having its environmental laboratory accredited by NABL. The monitoring consists of ambient air quality monitoring at a frequency of twice in a week with 24 hourly sampling, water quality monitoring once in a month for all the parameters and ambient noise quality.
- Meteorological station installed at project site at a height of 10m above ground level for measurement of parameters like Temperature, Humidity, Wind speed, Wind Direction, rainfall, on

hourly basis continuously for the study period by using automated "Davis" make weather monitoring station.

AFFORESTATION:

- About 2538 numbers of saplings covering an area of 0.76 ha inside mining lease hold have been planted in different places like OB dump, along the road side area leading from Mine to Sonakhan during the year FY'18-19.
- In addition to this, the 200 saplings planted outside mine lease boundary especially along the side of road connecting SH-10 and mine, and area around colony are being maintained.
- Apart from the above, TSRDS (Tata Steel Rural Development Society) has distributed 5000 saplings to different schools near Gomardih.
- Photographs of afforestation are attached as **Annexure-XI**.

NOISE REDUCTION:

- Periodic maintenance of the HEMM is in practice which has helped in reduction of noise generation at source.
- People working at HEMM and crusher plant area have been provided with earmuffs to use as a contingency measure.
- Constant monitoring of the noise level is in practice. The monitoring results are attached in **Annexure-VII** shows that it is within prescribed limits.

SANITATION & WATER SUPPLY:

- Potable water is supplied to all the camp residents after treatment in the pressure filter plant.
- Sufficient nos. of toilets with washing facility has been provided at the work place for sanitation jobs. Besides, all the residential houses inside the colony are having individual toilets and bathrooms. All these toilets are connected with a sewage network, septic tanks and soak pits.
- Construction of a new sewage treatment plant (STP) at the residential colony of Gomardih is under progress and will be commissioned shortly.

MEDICAL FACILITIES & HEALTH MONITORING:

- All the employees do undergo periodical medical examination (PME) in hospital every five years. However as per the recent notification, PME of all the employees shall be carried out once in three years for those employees who have reached 45 years of age or more.
- M/S Utkal Polyclinic has been assigned for doing the PME of all the departmental and contractual employees of Gomardih.
- As of now, no occupational diseases have been reported till date. Approx. 111 nos. of contract workers and 53 departmental workers were covered under PME and the medical facilities are also extended to the local community by organizing regular health camps. Health initiatives in the nearby villages were taken care by our TSRDS unit.

ENVIRONMENT AWARENESS:

- Mines Environment and Mineral Conservation week was observed by participation of most of the mines of Bhubaneswar region, under the aegis of Indian Bureau of Mines, Govt. of India. Our mine bagged total one numbers of prizes i.e. Top soil management.
- Biodiversity conservation program has been started with the help of IUCN. The aim of this initiative was to adopt a Comprehensive Biodiversity Conservation and Management Policy for the company. An Agreement has signed between the IUCN & TS for the study and conservation of biodiversity. It also aims to promote good practice by sharing the learning with the wider industry and conservation communities through dialogue, which will provide input into the development of Indian minerals policies and laws.

PERIPHERAL DEVELOPMENT UNDER CSR ACTIVITIES:

The TATA STEEL RURAL DEVELOPMENT SOCIETY (TSRDS) was formed way back in the early eighties of the last century to provide services in the domains of health, education, agriculture & empowerment to the people of surrounding villages for improving their standard of life. TSRDS organizes free medical treatment camps at the surrounding villages with the help of specialist doctors and paramedical staff from the Tata Main Hospital, Jamshedpur with company's expenditure. They

conduct Free Medical treatment. Immunization programs, School health programs, Health education and other national health programs like Malaria, TB and HIV/AIDS and also provides primary medical facilities to the surrounding villages with the help of well-equipped mobile medical units throughout the year.

Besides, The Tata Steel Rural Development Society, also organizes different income generation programs for the villagers. It encourages youth sponsoring different sports events in the periphery villages. The list of various CSR activities along with the cost incurred for the same are enumerated in Part-H.

PART-H

**ADDITIONAL MEASURES/ INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION
INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION**

EXPENDITURE INCURRED FOR DIFFERENT ENVIRONMENTAL ACTIVITIES DURING 2018-19

Items	2018-19(Actual) in Rupees
Afforestation	236000
Dust suppression	559656
Environment & weather, exhaust monitoring	2359533.90
Drinking water supply	1626000
Sanitation	1416000
Malaria eradication	334000
Garland drain& storm water drain	181,000
Environment awareness (EMS)	200000
Community Development through TSRDS	600000
Hazardous waste management	236000
Total (Rs.)	7748189.90

The photographs of peripheral activities done under CSR in and around Gomardih are given in **Annexure-X**.

LIST OF PERIPHERL ACTIVITIES DONE BY TATA STEEL IN THE YEAR 2018-19

Sl.No	Activity	Expenditure
Health	Mega Health Camp	150000
Drinking water	Installation & repair of Hand Tube Well	800000.00
Education & skill development	Jyoti fellowship Scholarship for SC/ST School level students & 1000 project school	5600000
Sports		950000
Livelihood	Entrepreneurship & Agriculture development	500000
Total		8000000

PART-I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

- Company is committed for prevention of pollution, continual improvement of environmental performance, committed to comply with relevant environmental and other legislation, regulation & other requirements and continual effort are made to minimize the adverse environmental impacts of our activities, products or services.
- One roof top rain water harvesting structure has already been completed at Guest House building.
- Company is now installing a STP at the residential colony of Gomardih.
- The Management conducts the awareness development programme on environmental protection for school children and camp residents.
- Company has started initiative to combat Climate Change. Energy Audit has already been conducted and time bound action plan has been made to reduce energy consumption.
- The Mine management celebrates and participates in 'Mine Environment & Mineral Conservation Week" every year under the aegis of Indian Bureau of Mines, Bhubaneswar Region.
- Company has installed electronic display board to display the important environmental parameters and messages for the knowledge of the public.
- Meteorological Data for the year 2018-19:

Maximum temperature: -	40.2 C
Minimum temperature: -	9.2 ^o C
Maximum rainfall :-	1833.0 mm

**Manager cum Agent
Gomardih Dolomite Quarry
Tata Steel Limited**

Copy to: Regional Officer, OPCB, Rourkela.



TATA STEEL

LIST OF ANNEXURES

Annexure-I	NOC issued by CGWA, Bhubaneswar for ground water
Annexure-II	Application made for drawl of Surface water from Nakti Jor
Annexure-III	Interim Agreement made with Executive Engineer, Sundargarh Irrigation Division, Sundargarh on 14 th September'2015 valid till 13 th September'2016 for drawl of Surface water from Nakti Jor.
Annexure-IV	Annual average monitoring data for Mine Discharge of Gomardih
Annexure-V	Annual average monitoring data for Canteen Effluent of Gomardih
Annexure-VI	Annual average monitoring data of Ambient Air Quality (CZ) of Gomardih
Annexure-VII	Annual average monitoring data of Ambient Noise Quality of Gomardih
Annexure-VIII	Photographs showing different activities done for dust suppression at Gomardih
Annexure-IX	Photographs showing garland drain and toe wall of Gomardih
Annexure-X	Photographs of Water Treatment Plant and roof top RWH structure of Guest House at Gomardih
Annexure-XI	Photographs of plantation at different locations of Gomardih
Annexure-XII	Photographs showing the peripheral activities done around Gomardih under CSR of Tata Steel

K. C. Naik
Member Secretary



भारत सरकार
केन्द्रीय भूमि जल प्राधिकरण
जल संसाधन, नदी विकास
और गंगा संरक्षण मंत्रालय

File No: - 21-4/1294/OR/MIN/2017 - 484

NOC No: - CGWA/NOC/MIN/ORIG/2018/3162

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

Date: 22 MAR 2018

To

✓ M/s Tata Steel Ltd.
Gomardih Dolomite Quarry,
A/PO Tammara VIA/FS Kutra,
Block Rajgangpur, District Sundargarh,
Odisha - 750070

Sub: - NOC for ground water withdrawal to M/s Tata Steel Ltd. in respect of their Limestone Mine project "Gomardih Dolomite Quarry" located at Village Sonakhanbeat, Block Rajgangpur, District Sundargarh, Odisha - reg.

Refer to your application for grant of NOC for ground water withdrawal dated 12/07/2017. Based on recommendations of Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar vide his letter dated 02/09/2017 and further deliberations on the subject, the NOC of Central Ground Water Authority for ground water withdrawal is hereby accorded to M/s Tata Steel Ltd. in respect of their Limestone Mine project "Gomardih Dolomite Quarry" located at Village Sonakhanbeat, Block Rajgangpur, District Sundargarh, Odisha. The NOC is valid from 28/02/2018 to 27/02/2020 and is subject to the following conditions:-

1. The firm may abstract 60 cu.m/day (not exceeding 21,900 cu.m/year) ground water through proposed one (1) bore well and 948 cu.m/day (not exceeding 1,28,750 cu.m/year) through dewatering the mine seepage through existing two (2) structures on account of mining intersecting the water table. The total withdrawal should not exceed 1,008 cu.m/day (not exceeding 1,51,650 cu.m/year). No additional dewatering and no additional ground water abstraction structures shall be constructed for this purpose without prior approval of the CGWA. Any unexpected variation in inflow of ground water into the mine pit should be reported to the concerned Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar.
2. The dewatering structures as well as borewells shall be fitted with digital water meters by the firm at its own cost and monitoring of monthly ground water abstraction data shall 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 Tata Steel Ltd., Gomardih Dolomite Quarry, in consultation with the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar shall implement ground water recharge measures atleast to the tune of 46,679 cu.m/year as proposed, for augmenting the ground water resources of the area within six months from the date of issue of this letter. Firm shall also undertake periodic maintenance of 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, South Eastern Region, Bhubaneswar for verification under intimation to this office.

18/11, Jammagar House, Mansingh Road, New Delhi-110011

Phone : (011) 23383861 Fax : 23382051, 23386743

Website: www.cgwa.noc.gov.in

भारत सुरक्षित जल - सुरक्षित स्वास्थ्य जल

CONSERVE WATER - SAVE LIFE



Ref: Letter No. GD/943/39
Dated: 18.9.2012

To

The Principal Secretary,
Department of Water Resources,
Govt. of Odisha,
Bhubaneswar.

Sub: Application for obtaining permission to draw water @ 800m³/day or 0.327 cusec from Naktijor, tributary of Sankh River of Brahmani Basin for our Gomardih Dolomite Quarry, Tata Steel Limited, Villages : Tunmura & Jharbera, P.O: Tunmura, Tahsil-Rajgangpur, Dist. Sundargarh, Odisha.

Dear Sir,

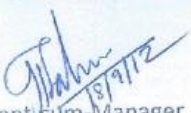
We would like to inform you that, currently we are drawing @250m³/day water from Naktijor, tributary of Sankh River of Brahmani Basin near villages Girjatoh, just adjacent to our Gomardih Colony and paying water tax regularly to the Govt. The additional water @550m³/day is required from the same source i.e. Nakti Jor for our Gomardih Quarry, Colony, nearby villages and others. So that the total water requirement is estimated @ 800m³/day or 0.327 cusec.

We are enclosing here with the filled-in application in Form-J duly signed by the applicant along with the requisite fees in shape of Demand Draft ie. (1) DD No.656661, Dated. 17/09/2012 for Rs.1,000/- (Rupees one thousand) only towards processing fees and (2) DD No.656660, dated.17/09/2012 for Rs. 49,100/- (Rupees forty nine thousand one hundred) only towards security deposit, drawn on State Bank of India, in favor of AFA Cum Under Secretary, DOWR, payable at Bhubaneswar, for your kind perusal and necessary approval for drawl of water @800m³/day from Naktijor for mines & residential purpose.

The Water Management Plan along with necessary annexure will be submitted shortly.

Thanking you.

Yours faithfully,
F: Tata Steel Limited


Agent-cum-Manager
Gomardih Dolomite Quarry

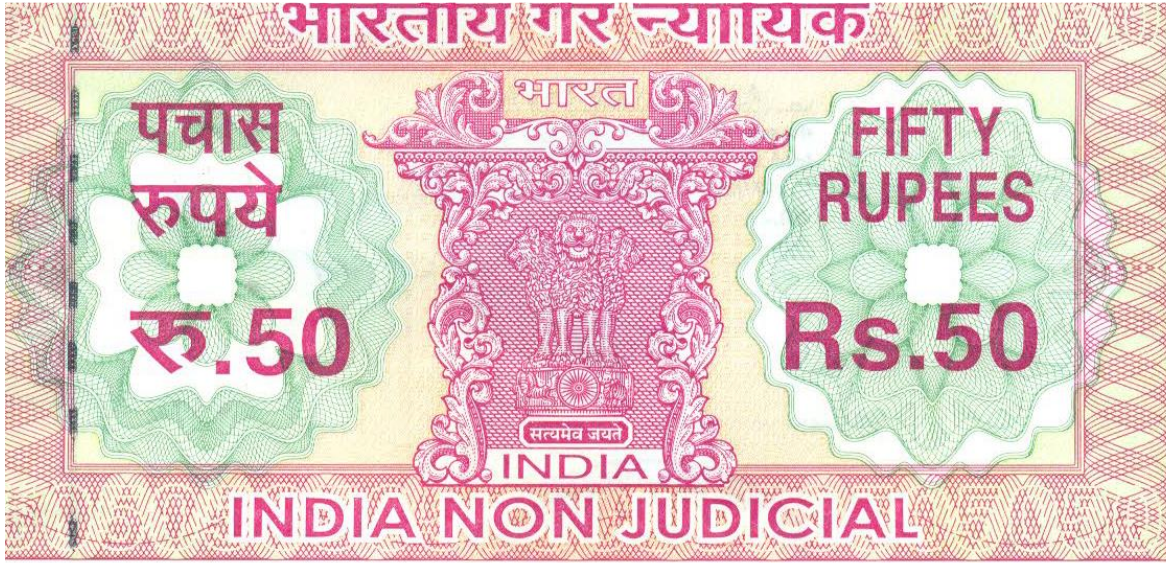
Received
DD no. 656660 for ₹ 49,100/-
& DD no. 656661 for ₹ 1000/-


21/9/12
AFA-cum-Under Secy. to Govt.
Department of Water Resources

TATA STEEL LTD.

Ferro Alloys & Minerals Division, Gomardih Dolomite Quarry, P.O. Tunmura
Dist. Sundargarh, Orissa - 770070
Tel. (06624) 249038.

Regd. Office : Bombay House, 24 Homi Modi Street, Mumbai - 400 001



डीसा ORISSA

A 017288

"FORM 'K'

[See rule 23-A (2) (e) & rule 26]

**AGREEMENT FOR SUPPLY OF WATER FOR THE PURPOSE OF
INDUSTRIAL/COMMERCIAL USE**

THIS INTERIM AGREEMENT is made on the ~~14th September~~ 14th September Two Thousand Fifteen BETWEEN Sri D.B. Sundara Ramam, S/o. Sri D.B. Gopala Krishna, Village: Vizianagaram, District. Vizianagaram, Andhra Pradesh, by profession, working as Executive-in-Charge of M/s. Tata Steel Ltd., Gomardih Dolomite Quarry, At/Po.- Tunmura, P.S-Kutra, Dist.-Sundargarh (Hereinafter called The "Applicant") of the first part.

AND

Sri Subhransu Sekhar Mishra, S/o. Sarat Chandra Mishra, At: Kashipur PO: Keonjhar, Dist. Keonjhar, Odisha, Pin-758001, by profession, working as Agent-Cum-Manager of M/s. Tata Steel Ltd., Gomardih Dolomite Quarry, At/Po.- Tunmura, P.S-Kutra, Dist.-Sundargarh (Hereinafter referred to as The "Surety") of the second part.

AND


The Governor of Odisha which expression unless repugnant to the context, shall include his successors and assigns (hereinafter called "The Government") of the third part.

WHEREAS, the applicant has made an application for supply of water from Government water source for the period as mentioned in the Schedule here to annexed;

Page-1

For Tata Steel Ltd.
By their Constituted Attorney


D. B. SUNDARA RAMAM
Executive-in-Charge
Ferro Alloys & Minerals


Executive Engineer
Sundargarh Irrigation Division
SUNDARGARH

Sheet 149.15

WATER QUALITY OF MINE DISCHARGE OF GOMARDIH DOLOMITE QUARRY

Location: Mines Discharge Water Site: Gomardih Dolomite Quarry, Sundargarh, Odisha				Yearly Average 2018-19
Sl.	Parameters	Unit	Standard	Result
1	Colour	Hazen	5	1
2	Ammonical Nitrogen (as N)	mg/l	50	0.1
3	Arsenic (as As)	mg/l	0.2	0.01
4	Bio-assay		90% survival in 100% effluent	90% survival in 100% effluent
5	BOD 3 days at 27 °C	mg/l	30	2.3
6	Cadmium (as Cd) in mg/l	°C	2	0.001
7	COD	mg/l	250	12.64
8	Copper (as Cu)	mg/l	3	0.02
9	Cyanides (as CN)	mg/l	0.2	0.01
10	Dissolved Oxygen	mg/l	---	6.1
11	Dissolved phosphates (as PO ₄)	mg/l	5	0.15
12	Fluorides (as F)	mg/l	2	0.39
13	Free Ammonia (as NH ₃)	mg/l	5	0.1
14	Hexavalent Chromium (as Cr ⁶⁺)	mg/l	0.1	0.01
15	Iron (as Fe)	mg/l	3	0.41
16	Lead (as Pb)	mg/l	0.1	0.005
17	Manganese (as Mn)	mg/l	2	0.02
18	Mercury (as Hg)	mg/l	0.01	0.001
19	Nickel (as Ni)	mg/l	3	0.02
20	Nitrates (as NO ₃)	mg/l	10	7.075
21	Odour		Unobjectionable	Unobjectionable
22	Oil & Grease	mg/l	10	1.4
23	Particulate Size of Suspended solids	mg/l	850 mm IS Sieve	Passes 850 mm IS Sieve
24	pH (at 260C)	mg/l	5.5 - 9.0	7.55
25	Phenolic Compounds	mg/l	1	0.001
26	Selenium (as Se)	mg/l	0.05	0.005
27	Sulphide (as S)	mg/l	2	0.1
28	Total Suspended solids	mg/l	100	8.7
29	Temperature °C	°C	---	25.5
30	Total Chromium (as Cr)	mg/l	2	0.01
31	Total kjeldahl nitrogen (as N)	mg/l	100	0.205
32	Total residual Chlorine	mg/l	1	0.1
33	Vanadium (as V)	mg/l	0.2	0.2
34	Zinc (as Zn)	mg/l	5	0.0101

ANNEXURE-V

QUALITY OF DOMESTIC WASTE WATER (Canteen effluent) OF GOMARDIH DOLOMITE QUARRY

TATA STEEL LIMITED Location: Canteen Effluent Site: Gomardih Dolomite Quarry, Sundargarh, Odisha				Yearly Average 2018-19
Sl.	Parameters	Unit	Standard	Result
1	Colour (Hazen Unit)	Hazen	5	1.5
2	Ammonical Nitrogen (as N)	mg/l	50	0.1
3	Arsenic (as As)	mg/l	0.2	0.0
4	Bio-assay		90% survival in 100% effluent	90% survival in 100% effluent
5	BOD 3 days at 27 °C	mg/l	30	14.9
6	Cadmium (as Cd)	mg/l	2	0.0
7	COD	mg/l	250	81.0
8	Copper (as Cu)	mg/l	3	0.0
9	Cyanides (as CN)	mg/l	0.2	0.0
10	Dissolved Oxygen	mg/l	---	5.7
11	Dissolved phosphates(as PO ₄)	mg/l	5	0.1
12	Fluorides (as F)	mg/l	2	0.3
13	Free Ammonia (as NH ₃)	mg/l	5	0.1
14	Hexavalent Chromium (as Cr ⁶⁺)	mg/l	0.1	0.0
15	Iron (as Fe)	mg/l	3	0.2
16	Lead (as Pb)	mg/l	0.1	0.0
17	Manganese (as Mn)	mg/l	2	0.0
18	Mercury (as Hg)	mg/l	0.01	0.0
19	Nickel (as Ni)	mg/l	3	0.0
20	Nitrates (as NO ₃)	mg/l	10	1.8
21	Odour		Unobjectionable	Unobjectionable
22	Oil & Grease	mg/l	10	2.1
23	Particulate Size of Suspended solids	mg/l	850 mm IS Sieve	Pass
24	pH (at 26°C)	mg/l	5.5 - 9.0	7.0
25	Phenolic Compounds	mg/l	1	0.0
26	Selenium (as Se)	mg/l	0.05	0.0
27	Sulphide (as S)	mg/l	2	0.3
28	Total Suspended solids	mg/l	100	41.6
29	Temperature °C	°C	---	25.9
30	Total Chromium (as Cr)	mg/l	2	0.0
31	Total kjeldahl nitrogen (as N)	mg/l	100	1.7
32	Total residual Chlorine	mg/l	1	0.1
33	Vanadium (as V)	mg/l	0.2	0.2
34	Zinc (as Zn)	mg/l	5	0.0

*The canteen effluent is discharged to a soak pit.

ANNEXURE-VI

AMBIENT AIR QUALITY RESULTS
Monitoring Location: Near Sub station
(April-18 to Mar-19)

Month	Location	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	CO (mg/m3)	O3 (µg/m3)	NH3 (µg/m3)	Pb (µg/m3)	Ni (ng/m3)	As (ng/m3)	Benzene (µg/m3)	Benzo (a) pyrene (ng/m ³)
18-Apr	Near Sub Station	62.3	31.5	5.8	21.5	0.35	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-May	Near Sub Station	65.1	34.9	5.3	23.8	0.40	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Jun	Near Sub Station	61.5	34.0	5.7	24.0	0.41	10.5	10.6	0.02	4.0	1.0	2.08	0.4
18-Jul	Near Sub Station	56.8	25.9	5.5	22.9	0.74	15.0	14.6	0.02	4.0	1.0	2.08	0.4
18-Aug	Near Sub Station	56.0	28.2	5.8	22.5	0.41	20.1	10.0	0.02	4.0	1.0	2.08	0.4
18-Sep	Near Sub Station	55.1	29.2	5.5	22.6	0.50	10.5	11.0	0.02	4.0	1.0	2.08	0.4
18-Oct	Near Sub Station	61.4	33.4	5.6	23.1	0.64	10.8	11.4	0.02	4.0	1.0	2.08	0.4
18-Nov	Near Sub Station	62.2	37.9	6.4	21.1	0.47	20.0	12.4	0.01	5.0	1.0	4.20	0.5
18-Dec	Near Sub Station	67.4	39.2	6.6	21.2	0.65	20.0	12.7	0.01	5.0	1.0	4.20	0.5
19-Jan	Near Sub Station	70.6	41.9	6.4	22.1	0.50	20.0	11.4	0.01	5.0	1.0	4.20	0.5
19-Feb	Near Sub Station	68.4	40.1	7.1	25.0	0.53	20.0	11.4	0.01	5.1	1.0	4.20	0.5
19-Mar	Near Sub Station	68.2	41.3	6.9	23.7	0.70	20.1	11.4	0.03	7.1	1.0	4.20	0.5
Yearly Average	Near First Gate	62.92	34.79	6.05	22.79	0.53	15.58	11.41	0.02	4.60	1.00	2.96	0.44

Monitoring Location: Near Gate No-1
(April'18-March'19)

Month	Location	PM10 (µg/m3)	PM2.5 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)	CO (mg/m3)	O3 (µg/m3)	NH3 (µg/m3)	Pb (µg/m3)	Ni (ng/m3)	As (ng/m3)	Benzene (µg/m3)	Benzo (a) pyrene (ng/m ³)
18-Apr	Near First Gate	69.1	36.3	5.9	25.2	0.57	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-May	Near First Gate	69.8	38.3	5.5	24.2	0.56	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Jun	Near First Gate	63.7	34.8	6.4	24.6	0.39	10.9	10.7	0.02	4.0	1.0	2.08	0.4
18-Jul	Near First Gate	57.0	26.4	5.7	22.6	0.64	14.8	13.1	0.02	4.0	1.0	2.08	0.4
18-Aug	Near First Gate	57.0	30.0	6.1	21.2	0.43	14.8	11.5	0.02	4.0	1.0	2.08	0.4
18-Sep	Near First Gate	58.6	31.8	5.9	24.7	0.60	11.3	12.9	0.02	4.0	1.0	2.08	0.4
18-Oct	Near First Gate	65.8	35.7	6.1	24.1	0.67	10.8	11.4	0.02	4.0	1.0	2.08	0.4
18-Nov	Near First Gate	65.8	38.9	6.4	26.3	0.48	20.0	10	0.01	5.0	1.0	4.20	0.5
18-Dec	Near First Gate	71.5	43.3	6.6	26.4	0.57	20.0	10.9	0.01	5.0	1.0	4.20	0.5
19-Jan	Near First Gate	74.9	44.5	7.2	25.5	0.6	20.0	12.8	0.01	5.0	1.0	4.20	0.5
19-Feb	Near First Gate	71.5	41.5	7.0	26.9	0.53	20.0	11.4	0.01	6.0	1.0	4.20	0.5
19-Mar	Near First Gate	73.6	43.7	6.6	26.5	0.72	20.0	12.5	0.03	7.6	1.0	4.20	0.5
Yearly Average	Near First Gate	66.53	37.10	6.28	24.85	0.56	15.22	11.43	0.02	4.72	1.00	2.96	0.44

**Monitoring Location: Near Crusher Plant
(April'18-March'19)**

Month	Location	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)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benzo (a) pyrene (ng/m ³)
18-Apr	Near Crusher Plant	73.3	41.1	6.5	23	0.46	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-May	Near Crusher Plant	77.3	42	5.7	24.9	0.33	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Jun	Near Crusher Plant	70.7	38.8	6.4	25.9	0.43	10.6	11.0	0.02	4.0	1.0	2.08	0.4
18-Jul	Near Crusher Plant	66.7	34.3	6.1	23.8	0.46	13.1	11.4	0.02	4.0	1.0	2.08	0.4
18-Aug	Near Crusher Plant	65.1	35.5	6.3	22.6	0.33	15.8	12.6	0.02	4.0	1.0	2.08	0.4
18-Sep	Near Crusher Plant	62.6	34.5	6.2	25.8	0.47	10.6	12.6	0.02	4.0	1.00	2.08	0.4
18-Oct	Near Crusher Plant	71.4	39.6	6.8	25.7	0.50	10.5	11.7	0.02	4.0	1.00	2.08	0.4
18-Nov	Near Crusher Plant	70.3	40.3	6.3	24.0	0.5	20.0	10.7	0.01	5.0	1.0	4.20	0.5
18-Dec	Near Crusher Plant	79.7	47.5	7.1	26.0	0.66	20.0	11.4	0.01	5.0	1.0	4.20	0.5
19-Jan	Near Crusher Plant	81.3	48.3	7.1	25.8	0.51	20.0	12.7	0.01	5.0	1.0	4.20	0.5
19-Feb	Near Crusher Plant	76.5	45.8	7.2	24.6	0.53	20.0	11.4	0.01	5.6	1.0	4.20	0.5
19-Mar	Near Crusher Plant	77.8	46.8	7.1	25.4	0.76	20.0	11.6	0.02	7.3	1.0	4.20	0.5
Yearly Average	Near Crusher Plant	72.73	41.21	6.57	24.79	0.50	15.05	11.43	0.02	4.66	1.00	2.96	0.44

**Monitoring Location: Near Hospital
(April'18-March'19)**

Month	Location	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)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benzo (a) pyrene (ng/m ³)
18-Apr	Near Hospital	59.7	30.2	5.3	22.6	0.50	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-May	Near Hospital	53.5	28.3	5.5	21.5	0.50	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Jun	Near Hospital	52.6	27.5	4.9	20.9	0.37	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Jul	Near Hospital	52.0	24.0	5.7	21.7	0.33	11.0	10.5	0.02	4.0	1.0	2.08	0.4
18-Aug	Near Hospital	52.9	26.9	6.2	21.7	0.27	12.9	11.1	0.02	4.0	1.0	2.08	0.4
18-Sep	Near Hospital	50.0	25.4	5.2	19.6	0.33	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Oct	Near Hospital	54.1	28.8	5.0	20.0	0.37	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Nov	Near Hospital	53.2	28.3	6.3	20.6	0.29	20.0	10.0	0.01	5.0	1.0	4.20	0.5
18-Dec	Near Hospital	58.3	33.7	6.6	22.5	0.41	20.0	10.5	0.01	5.0	1.0	4.20	0.5
19-Jan	Near Hospital	62.2	35.8	6.2	20.5	0.34	20.00	10.0	0.01	5.0	1.0	4.20	0.5
19-Feb	Near Hospital	58.0	33.1	6.6	21.5	0.60	20.0	10.5	0.01	7.4	1.0	4.20	0.5
19-Mar	Near Hospital	61.2	35.9	6.6	22.2	0.54	20.0	10.1	0.02	7.7	1.0	4.20	0.5
Yearly Average	Near Hospital	55.64	29.83	5.84	21.28	0.40	14.49	10.23	0.02	4.84	1.00	2.96	0.44

**Monitoring Location: Near VT Centre
(April'18-March'19)**

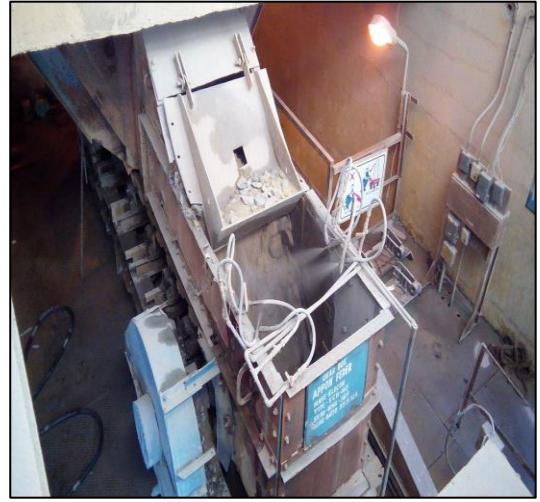
Month	Location	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	CO (mg/m ³)	O ₃ (µg/m ³)	NH ₃ (µg/m ³)	Pb (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	Benzene (µg/m ³)	Benzo (a) pyrene (ng/m ³)
18-Apr	Near V.T.Center	63.3	32.3	5.4	23.4	0.54	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-May	Near V.T.Center	58.8	31.3	5.4	25.1	0.49	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Jun	Near V.T.Center	56.5	30.0	5.5	24.6	0.36	10.0	10.0	0.02	4.0	1.0	2.08	0.4
18-Jul	Near V.T.Center	56.0	28.9	5.7	23.9	0.39	11.8	10.3	0.02	4.0	1.0	2.08	0.4
18-Aug	Near V.T.Center	53.2	27.1	6.0	22.5	0.25	11.4	12.6	0.02	4.0	1.0	2.08	0.4
18-Sep	Near V.T.Center	52.1	27.3	5.4	21.2	0.39	10.0	10.3	0.02	4.0	1.0	2.08	0.4
18-Oct	Near V.T.Center	58.2	31.2	5.4	20.7	0.36	10.3	10.4	0.02	4.0	1.0	2.08	0.4
18-Nov	Near V.T.Center	57.8	32.6	6.4	23.1	0.31	20.00	10.0	0.01	5.0	1.0	4.20	0.5
18-Dec	Near V.T.Center	63.5	35.9	6.9	21.9	0.53	20.00	11.3	0.01	5.0	1.0	4.20	0.5
19-Jan	Near V.T.Center	67.4	39.5	6.4	21.4	0.35	20.0	11.0	0.01	5.0	1.0	4.20	0.5
19-Feb	Near V.T.Center	63.5	37.0	6.8	22.0	0.50	20.0	11.4	0.09	6.9	1.0	4.20	0.5
19-Mar	Near V.T.Center	64.3	37.7	6.9	23.2	0.54	20.0	10.1	0.03	8.2	1.0	4.20	0.5
Yearly Average	Near V.T.Center	59.55	32.57	6.02	22.75	0.42	14.46	10.62	0.02	4.84	1.00	2.96	0.44

ANNEXURE-VII

Noise Monitoring Report (April'18 to March'19)

Sl. No	Category of Area/Zone	Sampling Location	(APR-18 TO March-19) Noise Level in db			
			Day time Equivalent		Night time Equivalent	
			Standard as per CPCB	Actual	Standard as per CPCB	Actual
1	Industrial Area	Mines Area	75	62.2	70	51.4
2		Crusher Plant		73.2		64.2
3	Residential Area	Colony	55	52.9	45	39.4
4		Gomardih Village		49.0		37.7
5	Silence Zone	Hospital	50	52.1	40	37.9

PHOTOGRAPHS



DRY FOG SYSTEM



**FIXED TYPE WATER SPRINKLING SYSTEM
ARRANGEMENTS**



PORTABLE SPRINKLING



MINERAL STACKYARD TOE WALL



OB DUMP TOE WALL

Annexure-IX



SETTLING POND



GARLAND DRAIN



**ROAD SIDE PLANTATION
(SH-10 TO COLONY)**



OB DUMP PLANTATION

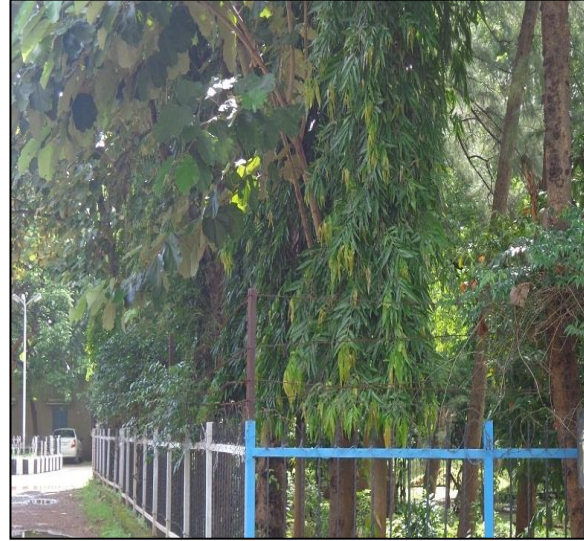
Annexure-X



RECHARGE PIT OF ROOF TOP RAIN WATER HARVESTING STRUCTURE OF GUEST HOUSE OF GOMARDIH



ARRANGEMENTS FOR PUMPING AND TREATMENT OF ACCUMULATED RAIN WATER OF THE QUARRY



COLONY PLANTATION

STP AT GOMARDIH COLONY



Intake Pump station



Screen Chamber & Collection Tank



View of the STP at Gomardih

PLANTATION IN NEARBY VILLAGES & SCHOOLS



Electronics Display Board for at Gomardih

