RNSB

Bandekar Brothers Private Limited

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BBPL/PUR/844/2009-10 16.02.2010

To,
The Chief Conservator of Forests,
Government of India,
Ministry of Environment & Forests,
Regional Office (Southern Zone),
Kendriya Sadan, 4th Floor E & F Wings,
17th Main Road,
2nd Block, Koranmangala,
Bangalore - 560 034.

Kind Attn.: Dr. S. K. Susarla - Director

Dear Madam,

Sub.: Six Monthly Compliance Report for the period (Monsoon and Post-Monsoon Period) ending November '2009.

Ref.: Environmental Clearance from MOEF, New-Delhi vide their Letter No. J-11015/351/2005-IA-II(M) dated 18th April 2007.

Ref: Consent to operate from the Goa State Pollution Control Board dated 16.04.2009 vide their letter No. 6/1878/09-PCB/386, Consent Order No. AIR/1661/2009, under Section 21 of AIR Act 1981 and vide letter No. 5/2758/05-PCB/387, Consent Order No. WATER/2870/2009, under Water Act 1974.

Please find enclosed herewith Six Monthly Compliance Report in respect of our Jaquela ou Jacadevicho Mollo Iron Ore Mines, held under T.C. No. 84/52, situated in Pale Village, Bicholim Taluka, North-Goa District, Goa State, alongwith Environmental Monitoring Datas for Air, Water, Noise and Soil monitored by Environmental Laboratory of M/s. Mineral Engineering Services, Bellary, Karnataka, recognized by the Government of India, MOEF, New-Delhi, for the period from June 2009 to November 2009.

Thanking you,

Yours faithfully,
For BANDEKAR BROTHERS PRIVATE LIMITED

MOHAN GAJALEKAR
G.M.-PURCHASE & COORDINATION

Encl: as above.

Date: 16.02.2010

JAQUELA-OU-JACADEVICHO MOLLO IRON ORE MINES OF
M/s BANDEKAR BROTHERS PRIVATE LIMITED

No.J-11015/351/2005.IA.II (M) dated April 18, 2007 for clearance for expansion of production and renewal of mining lease from MoEF

Six Monthly Compliance Report: Period ending 30th November 2009

A. Specific conditions

i **Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority.**

As per forest department letter ref. no. dated 26.02.1998,it is confirmed that forest (conservation) Act 1980 is not applicable in our case. However as a abundant caution, management plan for conservation has been submitted to the chief Conservator of forest, Government of Goa.

ii **Environment Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ petition (Civil) No. 460 of 2004 as may be applicable to this project.**

Shall go by the verdict of the Hon'ble Court.

iii **The Environmental Clearance is subject to approval of the state Land use Department, Government of Goa for diversion of agricultural land for non-agricultural use.**

It is an ongoing old project which is working for the last 50 years and there is no agricultural land. However, all state government laws in this connection will be followed.

iv **Top soil, if any shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.**

No top soil being encountered. As and when if the same is encountered necessary action for stacking with proper slope with adequate measures will be taken as per your guidelines.

v **Over burden should be stacked at earmarked dump site(s) only and should not be kept active for long period. The maximum height of the dump should not exceed 30 m, each stage should preferably be of 10 m and overall slope of the dump shall not exceed 28^0. In critical areas, use of geo-textiles shall be undertaken for stabilization of the dump. Concurrent backfilling shall be undertaken. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on Six monthly basis.**

Contd..2/-

Overburden generated at mine is utilized for the backfilling of the exhausted pit within mining lease area, as approved by Indian Bureau of Mines. The size of the overburden dump is maintained 12 to 15 m height, stage dumping is done and the slope is maintained at its natural angle of repose. If necessary Geo textiles shall be undertaken for stabalisation of the dump. Monitoring and management of rehabilitated areas is being done and compliance report will be submitted as per your guidelines.

vi **Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediments flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine areas, roads, green belt development etc. The drains should be regularly desilted particularly after mansoon and maintained properly, Garland drains (size, gradient and length) shall be constructed for both mine pit and for waste dump and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pit should be constructed at the corners of garland drains and desilted at regular intervals.**

Catch drains and siltation ponds of appropriate size are been constructed and will be constructed from time to time to arrest silt and sediments flow from soil,OB and mineral dumps. The water so collected is being utilized for watering mining areas, roads, plantations etc. The drains are being regularly desilted before and after the monsoon and maintained properly with garland drains for both mine pit and waste dump. Sump capacity is designed keeping 50% safety margin over and above peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity has been provided for adequate retention period to allow proper settling of silt material. Sedimentation pit is being constructed and desilted regularly.

vii **Dimension of retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.**

Retaining wall of sufficient width and height are constructed at the toe of the dump to arrest the waste material and silt based on rainfall data and this will be continued as per the requirements in future.

viii **Drilling and blasting shall not be undertaken.**

No drilling blasting is being undertaken and shall not be undertaken in future.

ix **Plantation shall be raised in the area of 57.55 ha including a green belt of adequate width by planting the native species around the ML area, roads, OB dump sites etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 2000 plants per ha,**

Contd..3/-

Continues Plantation is being done with native species before the onset of the monsoon season to achieve the density of the trees to be around 2000 plants per ha. The next set of Plantations will start from June onwards on the onset of the monsoon as guided by you in consultation with local DFO/Agriculture Dept.

x **The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.**

The rain water is collected in the pits which have adequate capacity and allowed to drain on its own which also recharges the ground water. Whenever necessary suitable guidelines will be sought from the Regional Director, Central Ground Water Board.

xi **Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring should be carried out four times in a years – Pre-mansoon (April-May), mansoon (August), post-mansoon (November) and winter (January) and the data thus collected may be sent regularly to MoEF, Central Ground Water Authority and Regional Director Central Ground Water Board.**

Regular monitoring of ground water and quality is done four times in a year. We are going to install new Piezometers to study ground water fluctuation. The monitoring is regularly carried out by the Mineral Engineering Services, Bellary, Karnataka, and analyzed at their MoEF approved Laboratory. The results of such Monitoring are enclosed for reference. The necessary reports are being sent to MoEF, Central Ground Water Authority and Regional Director Central Ground Water Board.

xii **Prior permissions from the competent authority should be obtained for drawal of ground water if any.**

The necessary permission along with payment of water cess is being done.

xiii **Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicle should be covered with a tarpaulin and shall not be overloaded.**

Vehicular emissions are kept under control and regularly monitored. Measures are taken for maintenance of vehicles used in mining operations and in transportation of minerals. The Vehicles are covered with proper tarpaulin and are not overloaded.

Contd..4/-

xiv Consent to operate should be obtained form SPCB for the enhanced production from the mine.

Consent for mining is obtained from SPCB in respect of Air and Water, vide letter No.6/1878/09-PCB/386 dated 16-04-09, under AirAct. And Vide letter No.5/2758/05-PCB/387 dated 16-04-09, under water Act.

xv Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.

Not applicable as there is no colony/workshop is existing.

xvi The higher benches of the excavated void/mine pit to be covered into a water reservoir shall be terraced and plantation done to stabilize the slopes. Peripheral fencing shall be done along the excavated area.

Not applicable as no such pit is available in the mines.

xvii The project proponent should take all precautionary measures during mining operations for conservation and protection of endangered fauna such as leopard etc. spotted in the study area in consultation with the concerned forest officials. Action plan for conservation of endangered fauna should be prepared and submitted to the Ministry and its Regional Office within 3 months.

Not applicable as no forest is covered under the mining lease.

xviii A final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

Will be submitted.

B. General conditions

(i) No changes in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.

No changes in mining technology and scope of working will be made without prior approval of the Ministry of Environment & Forests.

(ii) No changes in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.

There will be no changes.

(iii) Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest department and experts.

Not applicable as no forest is covered in mining lease area.

Contd..5/-

(iv) **Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO_2, 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.**

Monitoring stations are fixed in consultation with GSPCB. Monitoring is carried out by M/s Mineral Engineering Services, an agency recognized by MoEF.

(v) **Data on ambient air quality (RPM, SPM, SO_2, NOx) should be regularly submitted to the Ministry including its Regional Office located at Bangalore and the State Pollution Control Board / Central Pollution Control Board once in six months.**

Monitoring data is being submitted to the concerned authority regularly.

(vi) **Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on the haul roads, loading and unloading and at transfer points should be provided and properly maintained.**

All haul roads, loading and unloading and at transfer points are properly watered and maintained and dust emissions are kept at minimum.

(vii) **Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plugs / muffs.**

Ear plugs/muffs are provided wherever it is necessary. Noise levels at the machines engaged in our mine are below 85 dBA.

(viii) **Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and Grease trap should be installed before discharge of workshop effluents.**

There is no industrial waste water. The machines engaged in this mine are hired and they are carrying repairs outside the mining lease. The results of water collected from the mine pit conforms the standards prescribed under GSR 422 (E). and results are enclosed for ready reference

(ix) **Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information 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 measure, if needed.

Contd..6/-

Personnel working in the mines are provided with protective equipments as prescribed under Mines Act & Rules.

Occupational health surveillance is undertaken as per ILO specifications and as per the direction of the Directorate General of Mines Safety from time to time.

(x) **A separate environmental management cell with suitable qualified personnel should be se-up under the control of a Senior Executive, who will report directly to the Head of the Organization.**

Environment Management Cell is constituted under the Mines Manager with Qualified persons and directly reporting to the Head of the organisation.

(xi) **The Project authorities should inform to the regional Office located at Bangalore regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.**

Is being intimated and will be intimated as and when such approval is obtained.

(xii) **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 Bangalore.**

The necessary funds are being kept separately and expenditure shall be reported to the concerned Authorities.

(xiii) **The Project authorities should inform to the regional Office located at Bangalore regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.**

Is being intimated and will be intimated as and when such approval is obtained.

(xiv) **The Regional Office of this Ministry located at Bangalore 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.**

All such data / information / monitoring reports are being submitted and shall be provided to the various inspecting authorities and full cooperation will be extended.

(xv) **A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom and suggestion / representation has been received while processing the proposal.**

A copy of the clearance is submitted to the various authorities including the Panchayat and the same is advertised in local newspapers including vernacular language.

Contd..7/-

(xvi) State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.

Not applicable.

(xvii) The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter information that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at website of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bangalore.

Already complied with.

4. The Ministry or any other competent authority may alter / modify the above conditions or stipulate any further condition in the interest of environment protection.

All such modifications / alterations shall be accepted and implemented as the case may be.

ENVIRONMENTAL LABORATORY

A Unit of Mineral Engineering Services

(Recognised by Govt. of India, MOEF, New Delhi vide Gazette Notification No. S.O. 773 (E) dated 17-05-2007 recognition valid upto 16-05-2012)

Table.No. 2

STATISTICAL AIR QUALITY DATA

Project : Jaquela Ou Jacadevicho Molio Iron Ore Mine Season : Post Monsoon - 2009.

Station Code	: A III - Core Zone				Station Code : A IV -Ambesh village				Station Code : A V - Nanuz village			
	SO2	NOx	SPM	RPM	SO2	NOx	SPM	RPM	SO2	NOx	SPM	RPM
Min.	6	7	39	17	5	7	30	14	6	7	30	13
10%	7	8	43	18	5	7	34	15	6	8	36	15
25%	7	9	46	20	6	7	37	16	7	8	39	17
50%	7	10	58	23	6	8	43	19	7	9	43	19
75%	8	11	63	26	7	8	51	21	7	9	54	20
98%	9	11	76	30	8	9	60	25	8	10	63	23
Max.	9	11	77	30	8	9	61	25	8	10	64	23
Avg.	7	10	57	23	6	8	44	19	7	9	46	18
SD	1	1	13	4	1	1	10	4	1	1	11	3
No.of abs	8				8				8			

GOVT. ANALYST

HEAD OF LABORATORY

25/XXV, Club Road, BELLARY - 583 103. Karnataka, Tel / Fax : 08392- 267421
E-mail : mes_msraju@yahoo.co.uk, Website : www.envtest.com

TABLE NO. 3 b

WATER ANALYSIS REPORT

Project : Jaquela Ou Jacadevicho Mollo Iron Ore Mine
Season : Post-Monsoon,2009
Date of sampling : 20.10.2009

Sl.No.	Parameters	Sample code SW12	GSR - 422E Norms (EDS)
1	Colour & Odour	5	--
2	Suspended Solids (mg/l)	2	100
3	Particle size of suspended solids	Pass through 850 micron	Shall pass through 850 micron
4	Dissolved Solids (Inorganic)	20	--
5	pH	7.15	5.5 to 9.0
6	Temperature ^{0} C	28	5^{0} C above water temp.
7	Oil & Grease (mg/l)	<0.01	10
8	Total Residual Chlorine (mg/l)	<0.05	1
9	Ammonical Nitrogen (mg/l)	<0.1	50
10	Total Kjeldahl Nitrogen (mg/l)	<0.1	100
11	Free Ammonia as NH_3 (mg/l)	<0.1	5
12	BOD [3 days at 27^{0}C] (mg/l)	<0.5	30
13	COD (mg/l)	3	250
14	Arsenic as As (mg/l)	<0.001	0.2
15	Mercury as Hg (mg/l)	<0.001	0.01
16	Lead as Pb (mg/l)	<0.01	0.01
17	Cadmium as Cd (mg/l)	<0.01	2
18	Hexavalent Chromium as Cr^{+6} (mg/l)	<0.001	0.10
19	Total Chromium as Cr(mg/l)	<0.01	2
20	Copper as Cu (mg/l)	<0.05	3
21	Zinc as Zn (mg/l)	0.02	5
22	Selenium as Se (mg/l)	<0.001	0.05
23	Nickel as Ni (mg/l)	<0.01	3
24	Boron as B (mg/l)	<0.01	--
25	Sodium %	39	--
26	Residual Sodium Carbonate (mg/l)	NA	--
27	Cyanide as CN (mg/l)	<0.05	0.2
28	Chloride as Cl (mg/l)	4	--
29	Fluoride as F (mg/l)	0.06	2
30	Dissolved Phosphates as PO_4 (mg/l)	<0.05	5
31	Sulphates as SO_4 (mg/l)	0.2	--
32	Sulphide as S (mg/l)	<0.01	2
33	Phenolic Compounds as C_6H_5OH (mg/l)	<0.05	1
34	Bio-assay test (90% survival of fish after 96 hrs in 100% effluent)	NA	--
35	Manganese as Mn (mg/l)	<0.05	2
36	Iron as Fe (mg/l)	0.02	3
37	Vanadium as V (mg/l)	<0.001	0.2
38	Nitrate Nitrogen (mg/l)	<0.1	10

Note : NA - Not Analysed EDS - Effluent Discharge Standards
SW12 - Pit No. 3 (South)
Samples Analysed at : Environmental Laboratory, Mineral Engineering Services, Bellary

TABLE NO. 1 c

WATER ANALYSIS REPORT

Project : Jaquela Ou Jacadevicho Mollo Iron Ore Mine
Season : Monsoon,2009
Date of sampling : 30.06.2009

Sl.No.	Parameters	Sample code SW12	GSR - 422E Norms (EDS)
1	Colour & Odour	5	--
2	Suspended Solids (mg/l)	1	100
3	Particle size of suspended solids	Pass through 850 micron	Shall pass through 850 micron
4	Dissolved Solids (Inorganic)	14	--
5	pH	6.86	5.5 to 9.0
6	Temperature ° C	26	5^0 C above water temp.
7	Oil & Grease (mg/l)	<0.01	10
8	Total Residual Chlorine (mg/l)	<0.05	1
9	Ammonical Nitrogen (mg/l)	<0.1	50
10	Total Kjeldahl Nitrogen (mg/l)	<0.1	100
11	Free Ammonia as NH_3 (mg/l)	<0.1	5
12	BOD [3 days at 27^0C] (mg/l)	<0.5	30
13	COD (mg/l)	5	250
14	Arsenic as As (mg/l)	<0.001	0.2
15	Mercury as Hg (mg/l)	<0.001	0.01
16	Lead as Pb (mg/l)	<0.01	0.01
17	Cadmium as Cd (mg/l)	<0.01	2
18	Hexavalent Chromium as Cr^{+6} (mg/l)	<0.001	0.10
19	Total Chromium as Cr(mg/l)	<0.01	2
20	Copper as Cu (mg/l)	<0.05	3
21	Zinc as Zn (mg/l)	0.01	5
22	Selenium as Se (mg/l)	<0.001	0.05
23	Nickel as Ni (mg/l)	<0.01	3
24	Boron as B (mg/l)	<0.01	--
25	Sodium %	35	--
26	Residual Sodium Carbonate (mg/l)	NA	--
27	Cyanide as CN (mg/l)	<0.05	0.2
28	Chloride as Cl (mg/l)	4	--
29	Fluoride as F (mg/l)	0.01	2
30	Dissolved Phosphates as PO_4 (mg/l)	<0.05	5
31	Sulphates as SO_4 (mg/l)	0.5	--
32	Sulphide as S (mg/l)	<0.01	2
33	Phenolic Compounds as C_6H_5OH (mg/l)	<0.05	1
34	Bio-assay test (90% survival of fish after 96 hrs in 100% effluent)	NA	--
35	Manganese as Mn (mg/l)	<0.05	2
36	Iron as Fe (mg/l)	0.02	3
37	Vanadium as V (mg/l)	<0.001	0.2
38	Nitrate Nitrogen (mg/l)	0.1	10

Note : NA - Not Analysed *EDS - Effluent Discharge Standards*
SW12 - Pit No. 3 (South)
Samples Analysed at : Environmental Laboratory, Mineral Engineering Services, Bellary

TABLE NO. 4 b

WATER ANALYSIS REPORT

roject : Jaquela Ou Jacadevicho Mollo Iron Ore Mine
eason : Post-Monsoon,2009
Date of sampling : 20.10.2009

Sl.No.	Parameters	Sample code				IS : 2296, 1982 Class C Norms(SWS)
		SW4	SW7	SW10	SW11	
1	pH	7.50	7.62	7.12	7.35	6.5 to 8.5
2	Colour (Hazen Units)	5	10	5	10	300
3	Conductivity at 25° C	16	15	17	18	--
4	Dissolved Oxygen (mg/l)	6.8	6.5	6.6	6.3	4
5	BOD (mg/l)	0.3	0.3	0.4	0.5	3
6	Total Dissolved Solids (mg/l)	38	32	45	52	1500
7	Chloride as Cl (mg/l)	3	5	5	7	600
8	Boron as B (mg/l)	<0.01	<0.01	<0.01	<0.01	--
9	Sulphates as SO_4 (mg/l)	0.3	0.4	0.4	0.6	400
10	Nitrates as NO_3 (mg/l)	0.1	0.2	0.1	0.3	50
11	Free Ammonia as N (mg/l)	<0.01	<0.01	<0.01	<0.01	--
12	Arsenic as As (mg/l)	<0.001	<0.001	<0.001	<0.001	0.2
13	Iron as Fe (mg/l)	0.03	0.04	0.03	0.05	50
14	Fluoride as F (mg/l)	<0.01	<0.01	<0.01	<0.01	1.5
15	Lead as Pb (mg/l)	<0.01	<0.01	<0.01	<0.01	0.1
16	Copper as Cu (mg/l)	<0.05	<0.05	<0.05	<0.05	1.5
17	Zinc as Zn (mg/l)	0.02	0.02	0.03	0.05	15
18	Sodium Absorption Ratio (mg/l)	NA	NA	NA	NA	--
19	Total Coliform (mpn/100ml)	2	5	3	5	5000

SAMPLE CODE :
SW4 - Ambesh stream water-Dry
SW7 - Paroda nallah water-Dry

Note : SWS - Stream Water Standards NA - Not Analysed
SW10 - Madai river upstream
SW11 - Madai river downstream

SAMPLES ANALYSED AT : Environmental Laboratory, Mineral Engineering Services, Bellary

WATER ANALYSIS REPOI

Project : Jaquela Ou Jacadevicho Mollo Iron Ore Mine
Season : Monsoon,2009
Date of sampling : 30.06.2009

Sl.No.	Parameters	Sample code				IS : 2296, 1982
		SW4	SW7	SW10	SW11	Class C Norms(SWS)
1	pH	7.10	7.39	7.50	7.48	6.5 to 8.5
2	Colour (Hazen Units)	5	5	5	5	300
3	Conductivity at 25^0 C	59	72	80	70	–
4	Dissolved Oxygen (mg/l)	6.5	6.8	6.7	6.2	4
5	BOD (mg/l)	0.3	0.5	0.5	0.5	3
6	Total Dissolved Solids (mg/l)	24	28	31	26	1500
7	Chloride as Cl (mg/l)	4	6	6	5	600
8	Boron as B (mg/l)	<0.01	<0.01	<0.01	<0.01	–
9	Sulphates as SO_4 (mg/l)	0.5	0.8	0.7	0.9	400
10	Nitrates as NO_3 (mg/l)	0.5	0.8	0.4	1.0	50
11	Free Ammonia as N (mg/l)	<0.01	<0.01	<0.01	<0.01	–
12	Arsenic as As (mg/l)	<0.001	<0.001	<0.001	<0.001	0.2
13	Iron as Fe (mg/l)	0.03	0.04	0.05	0.07	50
14	Fluoride as F (mg/l)	<0.01	<0.01	<0.01	<0.01	1.5
15	Lead as Pb (mg/l)	<0.01	<0.01	<0.01	<0.01	0.1
16	Copper as Cu (mg/l)	<0.05	<0.05	<0.05	<0.05	1.5
17	Zinc as Zn (mg/l)	0.02	0.03	0.02	0.03	15
18	Sodium Absorption Ratio (mg/l)	NA	NA	NA	NA	–
19	Total Coliform (mpn/100ml)	5	7	9	11	5000

SAMPLE CODE :

SW4 - Ambesh stream water
SW7 - Paroda nallah water
SW10 - Madai river upstream
SW11 - Madai river downstream

Note : SWS -Stream Water Standards NA - Not Analysed

SAMPLES ANALYSED AT : Environmental Laboratory, Mineral Engineering Services, Bellary

WATER ANALYSIS REPORT

Project : Jaquela Ou Jacadevicho Mollo Iron Ore Mine
Season : Post-Monsoon,2009
Date of sampling : 20.10.2009

Sl.No.	Parameters	Sample code		Permissible Limit IS: 10500-1991 Norms (DWS)
		GW2	GW6	
1	Colour (Hazen Units)	5	5	25
2	Odour	Unobjec-tionable	Unobjec-tionable	Unobjec-tionable
3	Taste	Agreeable	Agreeable	Agreeable
4	Turbidity (NTU)	1.0	1.5	10
5	pH	7.20	7.35	6.5 - 8.5
6	Total Hardness as $CaCO_3$ (mg/l)	20	25	600
7	Calcium as Ca (mg/l)	4	6	200
8	Magnesium as Mg (mg/l)	2.4	2.4	100
9	Copper as Cu (mg/l)	<0.05	<0.05	1.5
10	Iron as Fe (mg/l)	0.05	0.06	1.0
11	Manganese as Mn (mg/l)	<0.01	<0.01	0.3
12	Chloride as Cl (mg/l)	3	5	1000
13	Sulphates as SO_4 (mg/l)	0.3	0.4	400
14	Nitrates as NO_3 (mg/l)	0.1	0.1	100
15	Fluoride as F (mg/l)	0.2	0.03	1.5
16	Phenolics as C_6H_5OH (mg/l)	<0.001	<0.001	0.001
17	Mercury as Hg (mg/l)	<0.001	<0.001	0.001
18	Cadmium as Cd (mg/l)	<0.001	<0.001	0.01
19	Selenium as Se (mg/l)	<0.001	<0.001	0.01
20	Arsenic as As (mg/l)	<0.001	<0.001	0.05
21	Cyanide as CN (mg/l)	<0.01	<0.01	0.05
22	Lead as Pb (mg/l)	<0.01	<0.01	0.05
23	Zinc as Zn (mg/l)	0.03	0.04	15
24	Chromium as Cr^{+6} (mg/l)	<0.01	<0.01	--
25	Mineral Oil (mg/l)	<0.01	<0.01	0.03
26	Residual Free Chlorine (mg/l)	<0.05	<0.05	--
27	Total Coliform (mpn/100ml)	2	3	10
28	E-Coli (Nos/100ml)	Absent	Absent	Absent
29	Water levels in well from surface (m)	4.1	4.7	--

SAMPLE CODE :

GW2 - Devalwada village open well

GW6 - Ambegal village Open well

Note : DWS - Drinking Water Standards

SAMPLES ANALYSED AT : Environmental Laboratory, Mineral Engineering Services, Bellary

WATER ANALYSIS REPORT

Project : Jaquela Ou Jacadevicho Mollo Iron Ore Mine
Season : Monsoon,2009
Date of sampling : 30.06.2009

Sl.No.	Parameters	Sample code		Permissible Limit IS: 10500-1991 Norms (DWS)
		GW2	GW6	
1	Colour (Hazen Units)	5	<5	25
2	Odour	Unobjec-tionable	Unobjec-tionable	Unobjec-tionable
3	Taste	Agreeable	Agreeable	Agreeable
4	Turbidity (NTU)	1.0	1.0	10
5	pH	6.58	6.50	6.5 - 8.5
6	Total Hardness as $CaCO_3$ (mg/l)	30	20	600
7	Calcium as Ca (mg/l)	8	4	200
8	Magnesium as Mg (mg/l)	2.4	2.4	100
9	Copper as Cu (mg/l)	<0.05	<0.05	1.5
10	Iron as Fe (mg/l)	0.03	0.02	1.0
11	Manganese as Mn (mg/l)	<0.01	<0.01	0.3
12	Chloride as Cl (mg/l)	4	3	1000
13	Sulphates as SO_4 (mg/l)	0.5	0.5	400
14	Nitrates as NO_3 (mg/l)	0.3	0.2	100
15	Fluoride as F (mg/l)	0.02	0.01	1.5
16	Phenolics as C_6H_5OH (mg/l)	<0.001	<0.001	0.001
17	Mercury as Hg (mg/l)	<0.001	<0.001	0.001
18	Cadmium as Cd (mg/l)	<0.001	<0.001	0.01
19	Selenium as Se (mg/l)	<0.001	<0.001	0.01
20	Arsenic as As (mg/l)	<0.001	<0.001	0.05
21	Cyanide as CN (mg/l)	<0.01	<0.01	0.05
22	Lead as Pb (mg/l)	<0.01	<0.01	0.05
23	Zinc as Zn (mg/l)	0.02	0.02	15
24	Chromium as Cr^{+6} (mg/l)	<0.01	<0.01	--
25	Mineral Oil (mg/l)	<0.01	<0.01	0.03
26	Residual Free Chlorine (mg/l)	<0.05	<0.05	--
27	Total Coliform (mpn/100ml)	4	3	10
28	E-Coli (Nos/100ml)	Absent	Absent	Absent
29	Water levels in well from surface (m)	6.1	6.8	--

SAMPLE CODE :
GW2 - Devalwada village open well
GW6 - Ambegal village Open well

Note : DWS - Drinking Water Standards

SAMPLES ANALYSED AT : Environmental Laboratory, Mineral Engineering Services, Bellary

TABLE NO. 6 b

MINE EFFLUENT STANDARDS FOR IRON ORE MINE
(AS Per IBM)

Project : Jaquela Ou Jacadevicho Mollo Iron Ore Mine
Season : Post-Monsoon,2009
Date of sampling : 20.10.2009

SL. No.	PARAMETER	SW12- Pit No.3 south	Concentration Not to Exceed in mg/l Except pH
1	pH	7.15	5.5 - 9.8
2	Total Suspended Solids (mg/l)	2	200
3	Oil & Grease (mg/l)	<0.01	10
4	Iron as Fe (mg/l)	0.02	5
5	Mercury as Hg (mg/l)	<0.001	0.01
6	Nickel as Ni (mg/l)	< 0.01	0.5
7	Dissolved phosphates as PO_4 (mg/l)	<0.05	5
8	Manganese as Mn (mg/l)	<0.05	2
9	Sulphide as S_2(mg/l)	<0.01	2

Samples Analysed at : Environmental Laboratory, MES, Bellary

TABLE NO. 4 c

MINE EFFLUENT STANDARDS FOR IRON ORE MINE
(AS Per IBM)

Project : Jaquela Ou Jacadevicho Mollo Iron Ore Mine
Season : Monsoon,2009
Date of sampling : 30.06.2009

SL. No.	PARAMETER	SW12- Pit No.3 south	Concentration Not to Exceed in mg/l Except pH
1	pH	6.86	5.5 - 9.8
2	Total Suspended Solids (mg/l)	1	200
3	Oil & Grease (mg/l)	<0.01	10
4	Iron as Fe (mg/l)	0.02	5
5	Mercury as Hg (mg/l)	<0.001	0.01
6	Nickel as Ni (mg/l)	< 0.01	0.5
7	Dissolved phosphates as PO_4 (mg/l)	<0.05	5
8	Manganese as Mn (mg/l)	<0.05	2
9	Sulphide as S_2(mg/l)	<0.01	2

Samples Analysed at : Environmental Laboratory, MES, Bellary

Table No. 7

NOISE LEVEL DATA

(Kindly refer to the Expansion Clearance accoded to Jaquela Ou Jacadevicho Mollo Iron Ore Mines vide letter No. J-11015/351/2005.I.A.II (M) dated April 18, 2007)

Project	: Jaquela Ou Jacadevicho Mollo Iron Ore Mine
Season	: Winter,2008-09
Date of monitoring	: 19.01.2009

Code No.	Monitoring stations	Day			Night		
		L_{min}	L_{eq}	L_{max}	L_{min}	L_{eq}	L_{max}
	Bufferzone						
N1	Ambesh village	42.3	48.3	51.3	36.4	38.6	41.6
N2	Nanuz village	36.7	39.5	43.2	33.6	37.8	40.3
N3	Pale village	41.3	46.8	49.3	38.6	40.3	44.3
	Corezone	L_{min}	L_{eq}	L_{max}	Remarks		
N4	Near mines office	51.3	53.4	59.3	Vehicle movement		

Permissible limits as per ILO Code of Practice

For Unprotected ear - 8 hrs working shift
Warning limit - 85 dB(A)
Danger limit - 90 dB(A)
Worker not to be exposed for more than 115 dB(A)
With ear protection -
130 dB(A) 'Impulse' or 120 dB(A) 'Fast'
No entry when noise level exceeds 140 dB(A)

Ambient Noise Levels

	Leq. Limit dB(A)	
	Day	Night
Industrial areas	75	70
Residential area	55	45

Table No.7

SOIL ANALYSIS REPORT

(Kindly refer to the Expansion Clearance accorded to Jaquela Ou Jacadevicho Moilo Iron Ore Mines vide lettter No. J-11015/351/2005.I.A.II (M) dated April 18, 2007)

Project : Jaquela Ou Jacadevicho Moilo Iron Ore Mine
Season : Summer, 2009
Date of sampling : 01.05.2009

SL.	PARAMETERS	S1	S2	S3	S4	QUALITY	
						Normal	High
1	pH	7.64	7.16	7.98	7.58	6.3	>8.3
2	EC (m. mohs/cm)	0.72	0.62	0.55	0.92	1.0 to 2.0	>2
3	Organic Carbon (%)	0.55	0.35	0.76	0.42	0.5 to 0.75	>0.75
4	Nitrogen as N (Kg/Ha)	55	36	76	62	--	--
5	Phosphorous as P (Kg/Ha)	20	16	11	28	9 to 22	>22
6	Potassium as K_2O (Kg/Ha)	90	66	87	111	50 to 120	>120
7	Water holding capacity (%)	48	55	36	68	--	--
8	Textural class	Silty sand	Silty clay	Silty clay	Silty clay	--	--
9	Sodium (meq/100 gm)	0.016	0.022	0.011	0.010	--	--
10	Chloride (%)	0.009	0.005	0.010	0.009	--	--
11	Sulphate (%)	0.06	0.11	0.09	0.08	--	--
12	Iron as Fe (%)	23	16	22	18	--	--

Sample Code :

S1- Ambeshi village ag. Soil

S2- Dump afforestation soil

S3- Pale ag. Soil

S4 - Nanuz ag. Soil