

ENVIRONMENTAL MONITORING REPORT

FOR

MARCH 2017

FOR

SUCTOLIM IRON ORE MINE
(T.C.NO.143/1953)

OF

M/S. SOCIEDADE TIMBLO IRMAOS LIMITADA

REPRESENTED BY

M/S. PANDURONGA TIMBLO INDUSTRIAS,
GOA.

Prepared by



COSMO CONSCIOUS RESEARCH LABORATORY

(Environmental Laboratory, Recognized by MoEF (03.01.2014 to 02.01.2019)

and ISO 9001: 2008 & OSHAS 18001: 2007 Certified)

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APRIL 2017

CCRL – QC – 06 / R0



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CERTIFICATE

This is to certify that the sampling, testing and analysis of environmental parameters (Air & Water) of Suctolim Iron Ore Mine (T.C.No. 143/1953) of M/s. Sociedade Timblo Irmaos Limitada Represented by M/s. Panduronga Timblo Industrias is carried -out for the month of March 2017. The monitoring is done as per the requirement of our client and the methods adopted are as per the standards prescribed. The results obtained and reported are true and correct to the best of our knowledge.

For Cosmo Conscious Research Laboratory

Date: 05.04.2017


(M. Shashikala)
Chief Executive

(Moef Gazette No: 21, Valid up to 02.01.2019)



"SURVEY HOUSE", #121, 2nd Cross, Nehru Colony, Ballari-583103 (Karnataka)
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AMBIENT AIR QUALITY MONITORING DATA

Project: Suctolim Iron Ore Mine
Client: M/s. Sociedade Timblo Irmaos Limitada,
Represented by M/s. Panduronga Timblo Industrias

Report no: I A
Month: March 2017
Unit: $\mu\text{g}/\text{m}^3$

Name of the Station Date of sample collection	Particulars of sample collected							
	Gaseous concentration						Dust concentration	
	SO ₂			NO ₂			PM ₁₀	PM _{2.5}
	I shift	II shift	III shift	I shift	II shift	III shift		
SAI. Shigao Village:								
06.03.2017	16	15	10	13	12	16	57	8
07.03.2017	13	21	10	18	15	20	49	20
17.03.2017	17	21	11	9	12	14	57	12
18.03.2017	16	18	9	12	17	16	44	10
20.03.2017	10	14	15	19	19	13	68	21
21.03.2017	15	10	21	11	9	18	56	15
27.03.2017	11	17	20	14	9	18	43	13
28.03.2017	12	18	8	10	13	21	69	15
Avg	14.50			14.50			55.38	14.25
MAII. Mollem Village:								
06.03.2017	16	19	10	11	13	20	50	11
07.03.2017	12	18	12	10	11	9	40	14
17.03.2017	11	17	15	10	12	8	46	21
18.03.2017	8	21	11	16	17	9	52	11
20.03.2017	12	16	11	14	18	9	54	17
21.03.2017	20	14	12	12	16	18	48	18
27.03.2017	17	16	13	10	19	16	50	16
28.03.2017	12	13	11	8	18	13	47	12
Avg	14.04			13.21			48.38	15.00

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Name of the Station, Date of sample collection	Particulars of sample collected							
	Gaseous concentration						Dust concentration	
	SO ₂			NO ₂			PM ₁₀	PM _{2.5}
	I shift	II shift	III shift	I shift	II shift	III shift		
NAIII Nirakal Village:								
01.03.2017	9	18	14	11	21	12	53	15
02.03.2017	19	12	10	16	12	11	55	20
10.03.2017	12	19	18	19	14	14	45	22
11.03.2017	19	10	9	8	14	17	51	18
15.03.2017	10	21	14	15	18	14	54	14
16.03.2017	20	13	9	15	12	11	45	18
24.03.2017	20	16	21	14	18	17	55	10
25.03.2017	16	10	13	12	9	11	49	17
Avg	14.67			13.96			50.88	16.75
SAIV.Sancordem Village:								
01.03.2017	14	12	17	15	16	13	47	17
02.03.2017	20	14	15	12	13	16	49	22
10.03.2017	15	11	13	17	13	14	52	10
11.03.2017	16	10	13	21	13	16	58	16
15.03.2017	17	12	20	17	14	19	50	18
16.03.2017	10	14	15	12	12	19	50	23
24.03.2017	16	9	10	18	12	13	56	10
25.03.2017	14	9	12	20	15	17	55	16
Avg	13.67			15.29			52.13	16.50

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Name of the Station, Date of sample collection	Particulars of sample collected							
	Gaseous concentration						Dust concentration	
	SO ₂			NO ₂			PM ₁₀	PM _{2.5}
	I shift	II shift	III shift	I shift	II shift	III shift		
Saill.Sangod Village:								
06.03.2017	11	18	15	9	13	18	53	16
07.03.2017	8	18	17	21	14	9	41	11
17.03.2017	13	17	21	15	11	8	49	18
18.03.2017	16	14	8	13	10	15	56	8
20.03.2017	18	15	12	11	10	16	56	13
21.03.2017	12	16	10	17	12	15	60	18
27.03.2017	8	18	18	17	11	18	53	10
28.03.2017	9	18	14	12	10	20	46	19
Avg.	14.33			13.54			51.75	14.13

NAAQS Standard	80	80	100	60
24 hrly average				
Method adopted	IS 5182 (part 2) :2001 Improved West and Gaeke method	IS 5182 (part 4): 2006 Jacob & Hochheiser method	IS 5182 (Part 4) : 1999 Gravimetric method	Gravimetric method
Sample collected by	COSMO CONSCIOUS RESEARCH LABORATORY			

ANALYZED BY:

B. Maruthi Rao
(B.Maruthi Rao)
Govt. Analyst

VERIFIED BY:

P. Harika
((P.Harika))
Environmental Officer

M. Shashikala
(M. Shashikala)
HEAD OF THE LABORATORY





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SOURCE EMISSION AIR QUALITY MONITORING DATA

Project: Suctolim Iron Ore Mine
Client: M/s. Sociedade Timblo Irmaos Limitada,
Represented by M/s. Panduronga Timblo Industrias

Report no: I B
Month: March 2017
Unit: $\mu\text{g}/\text{m}^3$

Name of the Station/ Date of sample collection	Dust concentration
	PM ₁₀
SAI. Loading Point:	
06.03.2017	77
07.03.2017	47
17.03.2017	60
18.03.2017	85
20.03.2017	76
21.03.2017	71
27.03.2017	55
28.03.2017	59
SAII. Haulage Point:	
06.03.2017	52
07.03.2017	86
17.03.2017	56
18.03.2017	56
20.03.2017	71
21.03.2017	49
27.03.2017	70
28.03.2017	72

Name of the Station/ Date of sample collection	Dust concentration
	PM ₁₀
SAIII. Dumping Point:	
06.03.2017	77
07.03.2017	50
17.03.2017	89
18.03.2017	55
20.03.2017	66
21.03.2017	71
27.03.2017	80
28.03.2017	54
SAIV. Screening Point:	
06.03.2017	61
07.03.2017	55
17.03.2017	71
18.03.2017	62
20.03.2017	45
21.03.2017	51
27.03.2017	68
28.03.2017	65

MOEF Gazette notification no.G.S.R. 809(E) dated 04.10.2010	Fugitive Emission Standards : Particulate matter-1200 ($\mu\text{g}/\text{m}^3$)
Method adopted	IS 5182 (Part 4) : 1999 Gravimetric method
Sample collected by	COSMO CONSCIOUS RESEARCH LABORATORY

ANALYZED BY:


(B. Maruthi Rao)
Govt. Analyst

VERIFIED BY:


(P. Harika)
Environmental Officer


(M. Shashikala)
HEAD OF THE LABORATORY





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WATER QUALITY MONITORING DATA (SURFACE WATER)

Report no: II A

1. Name of the Project : Suctolim Iron Ore Mine (T.C.No. 143/1953)
2. Name of the Client : M/s. Sociedade Timblo Irmaos Limitada
3. Sample collected & Analysed by : Cosmo Conscious Research Laboratory
4. Name of the Location : Doodh sagar Stream upstream
5. Particulars of sample collected : River
6. Sample code : SSW1
7. Date of Sample collection : 14.03.2017.
8. Date of Sample Received : 15.03. 2017.

S. no.	Parameters	Protocol	Unit	Results		Standard
				Mar.'17		
PHYSICAL						
1.	Colour	IS: 3025 (PART 14)-1984, RA-2012 Platinum cobalt Method	Hazen units	1		-
2.	Ambient Temperature	IS:3025 (PART 9)-1984, RA-2012 Thermometer	°C	28.40		-
3.	Conductivity	IS:3025 (PART 14)-1984, RA-2013 Electrometric method	µs/cms	70.80		-
4.	Total Dissolved Solids	IS:3025 (part 16)-1984, RA-2012 Gravimetric method	mg/L	49.20		-
5.	pH	IS:3025 (part 11)-1983, RA-2012 Electrometric method	-	7.94		5.50 to 9.0
6.	Turbidity	IS:3025 (part 10)-1984, . RA-2012 Nephelometric method	NTU	2.10		-
7.	Total Suspended Solids	IS:3025 (part 17)-1984, . RA-2012 Gravimetric Method	mg/L	9		100

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S. no.	Parameters	Protocol	Unit	Results	Standard
				Mar.'17	
CHEMICAL					
8.	Dissolved Oxygen	IS:3025 (part 38)-1988, RA-2014 Winkler titrimetric azide modification	mg/L	6.80	-
9.	Biochemical Oxygen Demand for 3 days at 27 °C	IS:3025 (part 44)-1993, RA-2014 Three days BOD at 27°C	mg/L	1.70	30
10.	Chemical Oxygen Demand	APHA 5220-B (P.NO. 5-17) Open reflux method	mg/L	8	250
11.	Phosphorous as P	IS:3025 (part 31)-1988, RA-2014 Stannous chloride method	mg/L	0.013	5
12.	Sodium as Na	IS:3025 (part 45)-1993, RA-2014 Flame Emission photometric method	mg/L	2.70	-
13.	Potassium as K	IS:3025 (part 17)-1984, RA-2014 Flame Emission photometric method	mg/L	0.10	-
14.	Calcium as Ca	IS:3025 (part 40)-1991, RA-2014 EDTA Titrimetric method	mg/L	6.41	-
15.	Magnesium as Mg	APHA 22 nd Edition 350-B-Mg By calculation	mg/L	5.34	-
16.	Total Hardness as CaCO ₃	IS:3025 (part 21)-1983, RA-2014 EDTA Titrimetric method	mg/L	38	-
17.	Chloride as Cl	IS:3025 (part 32)-1988, RA-2014 Argentometric Method	mg/L	3.92	-
18.	Sulphate as SO ₄	APHA 22 nd edition 4500-SO ₄ -E (P.NO.4- 190-191) Turbidimetric method	mg/L	3.75	-
19.	Fluoride as F	APHA 22 nd edition 4500-F-D. (P.NO. 4-87 - 88)SPADNS Method	mg/L	0.90	2
20.	Nitrate Nitrogen as NO ₃	IS:3025 (part 34)-1988, RA-2014 Chromotropic acid method	mg/L	0.20	10
21.	Total Alkalinity as CaCO ₃	IS:3025 (part 23)-1986, RA-2014 Indicator method	mg/L	75	-
22.	Acidity as CaCO ₃	IS:3025 (part 22)-1986, RA-2014 Indicator method	mg/L	6.00	-
23.	Oil & Grease	IS:3025 (part 39)-1991, RA-2014 Partition Gravimetric method	mg/L	BDL	10

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S. no.	Parameters	Protocol	Unit	Results	Standard
				Mar.'17	
Trace metals					
24.	Total Iron as Fe	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.135	3
25.	Nickel as Ni	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.065	3
26.	Manganese as Mn	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.014	2
27.	Copper as Cu	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.023	3
28.	Zinc as Zn	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.006	5
29.	Lead as Pb	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	BDL	0.10
30.	Silver as Ag	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.006	-
31.	Chromium as Cr	APHA 22 nd Edition 3111 B. (p.no.3-18) Direct Air Acetylene Flame Method	mg/L	0.165	2
32.	Aluminum as Al	APHA 22 nd Edition 3111 D. (p.no.3-21) Direct Nitrous Oxide- Acetylene Flame Method	mg/L	BDL	-
33.	Mercury as Hg	APHA 22 nd Edition 3112 B. (p.no.3-23) Direct Air Acetylene e Flame Method	mg/L	BDL	0.01

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S. no.	Parameters	Protocol	Unit	Results	Standard
Microbiological					
34.	Total Coliform count	APHA 22 nd Edition 9222-B (p.no.9-66-67) Membrane filter technique	MPN/100 ml.	ND	General Standards for Inland Surface water Schedule-VI (EPA-'86)
35.	Escherichia coli count	APHA 22 nd Edition 9222-B (p.no.9-76) Membrane filter technique	MPN/100 ml.	ND	
Sample collected by					
COSMO CONSCIOUS RESEARCH LABORATORY					


Note: ND-Not detected, BDL: Below detectable limit.

INFERENCE: **As per Schedule VI Standards (for Inland surface waters) Report Status:-**
All parameters confirm to the standard for surface water.

ANALYZED BY:

1. 
(K. Somasekhar Rao)
Govt.Analyst


(P. Harika)
Environmental Officer

2. 
(G.Dhavaleshwar)
Govt.Analyst


(M. Shashikala)
HEAD OF THE LABORATORY





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WATER QUALITY MONITORING DATA (SURFACE WATER)

Report no: II B

1. Name of the Project : Suctolim Iron Ore Mine (T.C.No. 143/1953)
2. Name of the Client : M/s. Sociedade Timblo Irmaos Limitada
3. Sample collected & Analysed by : Cosmo Conscious Research Laboratory
4. Name of the Location : Doodh sagar Stream Down stream
5. Particulars of sample collected : River
6. Sample code : SSW2
7. Date of Sample collection : 14.03.2017.
8. Date of Sample Received : 15.03.2017.

S. no.	Parameters	Protocol	Unit	Results	Standard
				Mar.'17	
PHYSICAL					
1.	Colour	IS: 3025 (PART 14)-1984, RA-2012 Platinum cobalt Method	Hazen units	1	-
2.	Ambient Temperature	IS:3025 (PART 9)-1984, RA-2012 Thermometer	°C	28.10	-
3.	Conductivity	IS:3025 (PART 14)-1984, RA-2013 Electrometric method	µs/cms	87.10	-
4.	Total Dissolved Solids	IS:3025 (part 16)-1984, RA-2012 Gravimetric method	mg/L	62.20	-
5.	pH	IS:3025 (part 11)-1983, RA-2012 Electrometric method	-	7.96	5.50 to 9.0
6.	Turbidity	IS:3025 (part 10)-1984, RA-2012 Nephelometric method	NTU	1.40	-
7.	Total Suspended Solids	IS:3025 (part 17)-1984, RA-2012 Gravimetric Method	mg/L	11	100

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S. no.	Parameters	Protocol	Unit	Results	Standard
				Mar. '17	
CHEMICAL					
8.	Dissolved Oxygen	IS:3025 (part 38)-1989, RA-2014 Winkler titrimetric azide modification	mg/L	6.80	-
9.	Biochemical Oxygen Demand for 3 days at 27 °C	IS:3025 (part 44)-1993, RA-2014 Three days BOD at 27°C	mg/L	1.40	30
10.	Chemical Oxygen Demand	APHA 5220-B (P.NO. 5-17) Open reflux method	mg/L	8	250
11.	Phosphorous as P	IS:3025 (part 31)-1988, RA-2014 Stannous chloride method	mg/L	0.068	5
12.	Sodium as Na	IS:3025 (part 45)-1993, RA-2014 Flame Emission photometric method	mg/L	2.80	-
13.	Potassium as K	IS:3025 (part 17)-1984, RA-2014 Flame Emission photometric method	mg/L	0.10	-
14.	Calcium as Ca	IS:3025 (part 40)-1991, RA-2014 EDTA Titrimetric method	mg/L	20.04	-
15.	Magnesium as Mg	APHA 22 nd Edission 350-B-Mg By calculation	mg/L	0.96	-
16.	Total Hardness as CaCO ₃	IS:3025 (part 21)-1983, RA-2014 EDTA Titrimetric method	mg/L	54	-
17.	Chloride as Cl	IS:3025 (part 32)-1988, RA-2014 Argentometric Method	mg/L	3.92	-
18.	Sulphate as SO ₄	APHA 22 nd edission 4500-SO ₄ -E (P.NO.4- 190-191) Turbidimetric method	mg/L	4.75	-
19.	Fluoride as F	APHA 22 nd edission 4500-F-D. (P.NO. 4-87 - 88)SPADNS Method	mg/L	0.94	2
20.	Nitrate Nitrogen as NO ₃	IS:3025 (part 34)-1988, RA-2014 Chromotropic acid method	mg/L	0.60	10
21.	Total Alkalinity as CaCO ₃	IS:3025 (part 23)-1986, RA-2014 Indicator method	mg/L	80	-
22.	Acidity as CaCO ₃	IS:3025 (part 22)-1986, RA-2014 Indicator method	mg/L	5.00	-
23.	Oil & Grease	IS:3025 (part 39)-1991, RA-2014 Partition Gravimetric method	mg/L	BDL	10

Contd.

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S. no.	Parameters	Protocol	Unit	Results	Standard
				Mar.'17	
Trace metals					
24.	Total Iron as Fe	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.172	3
25.	Nickel as Ni	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	BDL	3
26.	Manganese as Mn	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.016	2
27.	Copper as Cu	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.026	3
28.	Zinc as Zn	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.015	5
29.	Lead as Pb	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.070	0.10
30.	Silver as Ag	APHA 22 nd Edition 3111 B. (p.no.3-19) Direct Air Acetylene Flame Method	mg/L	0.014	-
31.	Chromium as Cr	APHA 22 nd Edition 3111 B. (p.no.3-18) Direct Air Acetylene Flame Method	mg/L	0.219	2
32.	Aluminum as Al	APHA 22 nd Edition 3111 D. (p.no.3-21) Direct Nitrous Oxide- Acetylene Flame Method	mg/L	BDL	-
33.	Mercury as Hg	APHA 22 nd Edition 3112 B. (p.no.3-23) Direct Air Acetylene e Flame Method	mg/L	BDL	0.01

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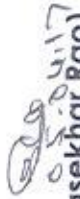
S. no.	Parameters	Protocol	Unit	Results	Standard
Microbiological					
34.	Total Coliform count	APHA 22 nd Edition 9222-B (p.no.9-66-67) Membrane filter technique	MPN/100 ml	ND	General Standards for Inland Surface water Schedule-VI (EPA-'86)
35.	Escherichia coli count	APHA 22 nd Edition 9222-B (p.no.9-76) Membrane filter technique	MPN/100 ml	ND	
Sample collected by					
COSMO CONSCIOUS RESEARCH LABORATORY					


Note: ND-Not detected, BDI: Below detectable limit.


INFERENCE:

As per Schedule VI Standards (for Inland surface waters) Report Status:-
All parameters confirm to the standard for surface water.

ANALYZED BY:

1.  (K. Somasekhar Rao)
Govt. Analyst

2.  (G. Dhavaleshwar)
Govt. Analyst

 (P. Harika)
Environmental Officer

 (M. Shashikala)
HEAD OF THE LABORATORY



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COSMO CONSCIOUS RESEARCH LABORATORY

An Environmental Laboratory Recognized by MOEF (03.01.2014 to 02.01.2019)
and an ISO 9001:2008 & OSHAS 18001:2007 Certified (Nov.-2017)

CCRI/F/02/00

WATER QUALITY MONITORING DATA

Report no: II C

(Open wells depths)

1. Name of the Project : Suctolim Iron Ore Mine (T.C.No. 143/1953)
2. Name of the Client : M/s. Sociedade Timblo Irmaos Limitada
3. Date of visit for sample collection : 14.03.2017.

Sl.no	Location Name	Open Wells depths
		(in meters) March 2017
1.	Well in Shabhanus Bhat house	5.16
2.	Well in Mangal das house	9.12
3.	Tatodi village near kajumal	6.14

Measured BY:


B. Maruthi Rao

1. (B. Maruthi Rao)
Govt. Analyst


P. Harika

VERIFIED BY: (P. Harika)
Environmental Officer



(M. Shashikala)
HEAD OF THE LABORATORY



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