

ENVIRONMENTAL MONITORING REPORT

June, 2018

PROJECT: RAMANADURGA IRON ORE MINE

**ML NO. 2141
Dharmapura Village
Sandur Taluk, Ballari District,
Karnataka**

Lessee

M/S. Sri. KUMARASWAMY MINERAL EXPORTS PVT. LTD.,

**D. No. 462, SMIORE Colony,
Near Fire Station, Kudligi Road
SANDUR - 583119
BELLARY, KARNATAKA**

CONSULTANTS

MINERAL ENGINEERING SERVICES

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MINERAL ENGINEERING SERVICES



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No. S.O. 857(E) dated 26.02.2018. Recognition valid upto 25.02.2023
ISO 9001:2015 AND BS OHSAS 18001: 2007 Certification Valid upto 18.03.2021

ISO9001:2015
12-Q-1800012-TIC
BS-OHSAS-18001: 2007
12-Q-1800013-TIC

Table No. 1

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Ramanadurga Iron Ore Mine (ML No. 2141)
Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
Station at & Code : A - I, Dharmapura
Duration : 24 Hrs
Month : June, 2018
Date of Report : 05.07.2018
Reference IS 5182

Date of Sampling	Report No	Concentration					
		Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
04.06.2018	MES/A/3005	7	11	48	25	<20	<1
05.06.2018	MES/A/3020	9	11	40	20	<20	<1
15.06.2018	MES/A/3283	10	15	46	22	<20	<1
16.06.2018	MES/A/3325	6	10	39	29	<20	<1
22.06.2018	MES/A/3530	10	12	50	27	<20	<1
23.06.2018	MES/A/3548	7	9	56	28	<20	<1
25.06.2018	MES/A/3567	8	11	47	22	<20	<1
26.06.2018	MES/A/3591	12	13	39	27	<20	<1
Limits for Industrial, Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Report No	Concentration					
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
04.06.2018	MES/A/3005	0.11	<0.5	<0.5	<0.5	0.35	24
05.06.2018	MES/A/3020	0.25	<0.5	<0.5	<0.5	0.19	28
15.06.2018	MES/A/3283	0.05	<0.5	<0.5	<0.5	0.12	20
16.06.2018	MES/A/3325	0.07	<0.5	<0.5	<0.5	0.22	21
22.06.2018	MES/A/3530	0.08	<0.5	<0.5	<0.5	0.18	27
23.06.2018	MES/A/3548	0.27	<0.5	<0.5	<0.5	0.11	21
25.06.2018	MES/A/3567	0.35	<0.5	<0.5	<0.5	0.30	25
26.06.2018	MES/A/3591	0.15	<0.5	<0.5	<0.5	0.34	22
Limits for Industrial, Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

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GOVT. ANALYST

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Table No. 2

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/Form/03/00

Project : Ramanadurga Iron Ore Mine (ML No. 2141)
Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
Station at & Code : A - II, Yeshwanthanagar
Duration : 24 Hrs
Month : June, 2018
Date of Report : 05.07.2018
Reference IS 5182

Date of Sampling	Report No	Concentration					
		Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
04.06.2018	MES/A/3006	11	13	51	25	<20	<1
05.06.2018	MES/A/3021	8	10	35	20	<20	<1
15.06.2018	MES/A/3284	11	14	48	22	<20	<1
16.06.2018	MES/A/3326	7	10	40	29	<20	<1
22.06.2018	MES/A/3531	12	11	43	27	<20	<1
23.06.2018	MES/A/3549	11	14	40	24	<20	<1
25.06.2018	MES/A/3568	12	16	58	30	<20	<1
26.06.2018	MES/A/3592	11	12	43	28	<20	<1
Limits for Industrial , Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Report No	Concentration					
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
04.06.2018	MES/A/3006	0.22	<0.5	<0.5	<0.5	0.14	22
05.06.2018	MES/A/3021	0.11	<0.5	<0.5	<0.5	0.33	23
15.06.2018	MES/A/3284	0.07	<0.5	<0.5	<0.5	0.23	<20
16.06.2018	MES/A/3326	0.20	<0.5	<0.5	<0.5	0.29	<20
22.06.2018	MES/A/3531	0.06	<0.5	<0.5	<0.5	0.16	22
23.06.2018	MES/A/3549	0.25	<0.5	<0.5	<0.5	0.28	25
25.06.2018	MES/A/3568	0.22	<0.5	<0.5	<0.5	0.24	<20
26.06.2018	MES/A/3592	0.18	<0.5	<0.5	<0.5	0.17	23
Limits for Industrial , Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

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Table No. 3

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Ramanadurga Iron Ore Mine (ML No. 2141)
Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
Station at & Code : A - III, Sushila Nagar village
Duration : 24 Hrs
Month : June, 2018
Date of Report : 05.07.2018
Reference IS 5182

Date of Sampling	Report No	Concentration					
		Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
08.06.2018	MES/A/3114	12	15	35	26	<20	<1
09.06.2018	MES/A/3156	9	11	48	26	<20	<1
11.06.2018	MES/A/3193	11	14	45	19	<20	<1
12.06.2018	MES/A/3213	8	11	55	32	<20	<1
20.06.2018	MES/A/3482	10	12	36	22	<20	<1
21.06.2018	MES/A/3507	10	11	46	27	<20	<1
29.06.2018	MES/A/3712	9	11	55	25	<20	<1
30.06.2018	MES/A/3738	6	10	44	27	<20	<1
Limits for Industrial , Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Report No	Concentration					
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
08.06.2018	MES/A/3114	0.05	<0.5	<0.5	<0.5	0.07	23
09.06.2018	MES/A/3156	0.06	<0.5	<0.5	<0.5	0.15	21
11.06.2018	MES/A/3193	0.06	<0.5	<0.5	<0.5	0.16	25
12.06.2018	MES/A/3213	0.11	<0.5	<0.5	<0.5	0.16	20
20.06.2018	MES/A/3482	0.05	<0.5	<0.5	<0.5	0.06	21
21.06.2018	MES/A/3507	0.08	<0.5	<0.5	<0.5	0.16	22
29.06.2018	MES/A/3712	0.15	<0.5	<0.5	<0.5	0.21	20
30.06.2018	MES/A/3738	0.16	<0.5	<0.5	<0.5	0.13	21
Limits for Industrial , Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

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Table No. 4

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Ramanadurga Iron Ore Mine (ML No. 2141)
Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
Station at & Code : A - IV Sandur Town
Duration : 24 Hrs
Month : June, 2018
Date of Report : 05.07.2018
Reference IS 5182

Date of Sampling	Report No	Concentration					
		Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
04.06.2018	MES/A/3009	11	14	54	27	<20	<1
05.06.2018	MES/A/3024	10	12	57	32	<20	<1
15.06.2018	MES/A/3287	13	15	51	28	<20	<1
16.06.2018	MES/A/3329	12	18	61	33	<20	<1
22.06.2018	MES/A/3537	10	14	47	22	<20	<1
23.06.2018	MES/A/3554	12	15	45	27	<20	<1
25.06.2018	MES/A/3573	13	16	40	22	<20	<1
26.06.2018	MES/A/3598	11	13	51	31	<20	<1
Limits for Industrial , Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Report No	Concentration					
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
04.06.2018	MES/A/3009	0.06	<0.5	<0.5	<0.5	0.35	20
05.06.2018	MES/A/3024	0.09	<0.5	<0.5	<0.5	0.16	23
15.06.2018	MES/A/3287	0.16	<0.5	<0.5	<0.5	0.33	27
16.06.2018	MES/A/3329	0.15	<0.5	<0.5	<0.5	0.45	28
22.06.2018	MES/A/3537	0.07	<0.5	<0.5	<0.5	0.16	21
23.06.2018	MES/A/3554	0.05	<0.5	<0.5	<0.5	0.23	26
25.06.2018	MES/A/3573	0.07	<0.5	<0.5	<0.5	0.42	23
26.06.2018	MES/A/3598	0.05	<0.5	<0.5	<0.5	0.21	21
Limits for Industrial , Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

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Table No. 5

ANALYSIS REPORT OF AMBIENT AIR QUALITY

MESEL/A/FORM/03/00

Project : Ramanadurga Iron Ore Mine (ML No. 2141)
Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
Station at & Code : A - V Core zone Within ML Area
Duration : 24 Hrs
Month : June, 2018
Date of Report : 05.07.2018
Reference IS 5182

Date of Sampling	Report No	Concentration					
		Sulphur Dioxide (SO ₂), µg/m ³	Nitrogen Dioxide (NO ₂), µg/m ³	PM ₁₀ , (µg/m ³)	PM _{2.5} , (µg/m ³)	Ammonia (NH ₃), µg/m ³	Benzene (C ₆ H ₆), µg/m ³
04.06.2018	MES/A/3008	9	10	44	26	<20	<1
05.06.2018	MES/A/3023	8	11	48	21	<20	<1
15.06.2018	MES/A/3286	11	13	38	22	<20	<1
16.06.2018	MES/A/3328	9	11	52	31	<20	<1
22.06.2018	MES/A/3536	10	14	43	21	<20	<1
23.06.2018	MES/A/3553	11	16	53	32	<20	<1
25.06.2018	MES/A/3572	7	11	46	20	<20	<1
26.06.2018	MES/A/3597	10	14	55	30	<20	<1
Limits for Industrial , Residential, Rural and other Areas		80 24 Hrs	80 24 Hrs	100 24 Hrs	60 24 Hrs	400 24 Hrs	5 Annual

Date of Sampling	Report No	Concentration					
		Lead (Pb), µg/m ³	Nickel (Ni), ng/m ³	Arsenic (As), ng/m ³	Benzo(a) Pyrene (BaP), ng/m ³	Carbon Monoxide* (CO), mg/m ³	Ozone* (O ₃), µg/m ³
04.06.2018	MES/A/3008	0.13	<0.5	<0.5	<0.5	0.22	21
05.06.2018	MES/A/3023	0.17	<0.5	<0.5	<0.5	0.24	25
15.06.2018	MES/A/3286	0.05	<0.5	<0.5	<0.5	0.25	21
16.06.2018	MES/A/3328	0.11	<0.5	<0.5	<0.5	0.48	26
22.06.2018	MES/A/3536	0.05	<0.5	<0.5	<0.5	0.21	23
23.06.2018	MES/A/3553	0.16	<0.5	<0.5	<0.5	0.22	25
25.06.2018	MES/A/3572	0.11	<0.5	<0.5	<0.5	0.15	24
26.06.2018	MES/A/3597	0.06	<0.5	<0.5	<0.5	0.35	20
Limits for Industrial , Residential, Rural and other Areas		1.0 24 Hrs	20 Annual	6 Annual	1 Annual	4 1 Hr	180 1 Hr

Note : * Parameters monitored for period of 1 hr

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Table No. 6

Analysis Report of Fugitive Emission

MESEL/A/Form/03/00

Name of the Project	: Ramanadurga Iron Ore Mine (ML No. 2141)	
Name of the Client	: M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd	
Station at & Code	: A - VI, Loading point	
Duration	: 8 Hrs	
Month	: June, 2018	
Date of Report	: 05.07.2018	
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)
23.06.2018	MES/A/3555	427
25.06.2018	MES/A/3574	418

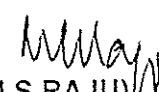
Station at & Code	: A - VII, Crushing & Screening	
Duration	: 8 Hrs	
Month	: June, 2018	
Date of Report	: 05.07.2018	
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)
26.06.2018	MES/A/3599	437
28.06.2018	MES/A/3676	475

Station at & Code	: A - VIII, Dumping point	
Duration	: 8 Hrs	
Month	: June, 2018	
Date of Report	: 05.07.2018	
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)
23.06.2018	MES/A/3556	455
25.06.2018	MES/A/3575	409

Station at & Code	: A - IX, Haulage Road	
Duration	: 8 Hrs	
Month	: June, 2018	
Date of Report	: 05.07.2018	
Date of sample	Report No	Particulate mater ($\mu\text{g}/\text{m}^3$)
26.06.2018	MES/A/3600	451
28.06.2018	MES/A/3677	518

Ref	: Environmental (Protection) Rules, 2010 (Sixth Amendment)	
	Particulate matter ($\mu\text{g}/\text{m}^3$)	
Permissible limits for Fugitive Emissions	1200 $\mu\text{g}/\text{m}^3$	


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Table No. 7

STATISTICAL AIR QUALITY DATA

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)												
Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd												
Month : June, 2018												
Station Code : A - I, Dharmapura					A - II, Yeshwanthanagar				A - III, Sushila Nagar village			
	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}
Min.	6	9	39	20	7	10	35	20	6	10	35	19
10%	7	10	39	21	8	10	39	21	8	11	36	21
25%	7	11	40	22	10	11	40	24	9	11	42	24
50%	9	11	47	26	11	13	43	26	10	11	46	26
75%	10	12	49	27	11	14	49	28	10	13	50	27
98%	12	15	55	29	12	16	57	30	12	15	55	31
Max.	12	15	56	29	12	16	58	30	12	15	55	32
Avg.	9	12	46	25	10	13	45	26	9	12	46	25
SD	2	2	6	3	2	2	7	3	2	2	7	4
No. of obs	8				8				8			
Station Code : A - IV Sandur Town					A - V Core zone Within ML Area							
	SO ₂	NO ₂	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	PM ₁₀	PM _{2.5}				
Min.	10	12	40	22	7	10	38	20				
10%	10	13	44	22	8	11	42	21				
25%	11	14	47	26	9	11	44	21				
50%	12	15	51	28	10	12	47	24				
75%	12	15	55	31	10	14	52	30				
98%	13	18	60	33	11	16	55	32				
Max.	13	18	61	33	11	16	55	32				
Avg.	12	15	51	28	9	13	47	25				
SD	1	2	7	4	1	2	6	5				
No. of obs	8				8							


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MINERAL ENGINEERING SERVICES



Recognised by GOI, MoEF&CC under E(P)A 1986 Vide Gazette Notification
No. S.O. 857(E) dated 26.02.2018. Recognition valid upto 25.02.2023
ISO 9001:2015 AND BS OHSAS 18001: 2007 Certification Valid upto 18.03.2021

ISO9001:2015
12-Q-1800012-TIC
BS-OHSAS-18001: 2007
12-0-1800013-TIC

Table No. 8

WATER ANALYSIS REPORT

MESEL/W/FORM/09/00

Name of the Project : Ramanadurga Iron Ore Mine (ML No. 2141)
Name of the Client : M/s. Sri. Kumaraswamy Mineral Exports Pvt. Ltd
Month : June, 2018
Date of sampling : 08.06.2018
Date of Report : 05.07.2018
Report No : MES/WR/620
Ref:IS : 2296, 1982 Class C Norms (Stream Water Standards)

Sl.No.	Parameters	Method of Testing	Limits For Stream Water Standards	Result	
				SW1	SW2
i	pH	IS:3025(Part-11)	6.5 to 8.5	8.08	7.75
ii	Dissolved Oxygen (as O ₂), mg/l, Min	IS:3025(Part-38)	4	5.6	5.8
iii	Biochemical Oxygen Demand (as O ₂), mg/l, Max	IS:3025(Part-44)	3	1.5	1.3
iv	Total Coliform (mpn/100ml), Max	IS:1622	5000	75	66
v	Colour (Hazen Units), Max	IS:3025(Part-4)	300	5	5
vi	Fluoride (as F),mg/l, Max	IS:3025(Part-60)	1.5	0.16	<0.1
vii	Cadmium (as Cd), mg/l, Max	IS:3025(Part-41)	0.01	<0.002	<0.002
viii	Chloride (as Cl),mg/l, Max	IS:3025(Part-32)	600	15.0	9.0
ix	Chromium (as Cr ⁺⁶), mg/l, Max	IS:3025(Part-52)	0.05	<0.03	<0.03
x	Cyanides (as CN), mg/l, Max	IS:3025(Part-27)	0.05	<0.01	<0.01
xi	Total Dissolved Solids (mg/l), Max	IS:3025(Part-16)	1500	108	84
xii	Selenium (as Se), mg/l, Max	IS:3025(Part-56)	0.05	<0.005	<0.005
xiii	Sulphates as SO ₄ (mg/l), Max	IS:3025(Part-24)	400	16.6	10.5
xiv	Lead (as Pb) mg/l, Max	IS:3025(Part-47)	0.1	<0.005	<0.005
xv	Copper (as Cu),mg/l, Max	IS:3025(Part-42)	1.5	<0.01	<0.01
xvi	Arsenic as As (mg/l), Max	IS:3025(Part-37)	0.2	<0.002	<0.002
xvii	Iron (as Fe),mg/l, MAX	IS:3025(Part-53)	50	0.09	0.07
xviii	Phenolic compounds (as C ₆ H ₅ OH),mg/l, Max	IS:3025(Part-43)	0.005	<0.001	<0.001
xix	Zinc (as Zn),mg/l, Max	IS:3025(Part-49)	15	<0.005	<0.005
xx	Insecticides, mg/l, Max	APHA 21 st	Absent	NA	NA
xxi	Anionic detergents (as MBAS),mg/l, Max	Annex K of IS 13248	1	<0.1	<0.1
xxii	Oil and grease, mg/l, Max	IS:3025(Part-39)	0.1	<0.01	<0.01
xxiii	Nitrates (as NO ₃),mg/l, Max	IS:3025(Part-34)	50	4.6	3.0
xxiv	Alpha Emitters (µcurie/ml), Max	APHA 21 st	10 ⁻⁹	NA	NA
xxv	Beta Emitters (µcurie/ml), Max	APHA 21 st	10 ⁻⁸	NA	NA

SAMPLE TYPE :

Note : NA - Not Analysed

SW1 - Nari Halla Up Stream water

SW1 - Nari Halla Down Stream water

Samples Collected & Analysed by Mineral Engineering Services, Ballari

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