

Gujarat Industries Power Company Limited



At. : Nani Naroли, Ta: Mangrol
Dist.: Surat -394112

Six Monthly Report of Vastan Lignite Mine

ENVIRONMENTAL MONITORING & ANALYSIS REPORT

For the period of January 2020 to June-2020

Prepared By

ECOSYSTEM RESOURCE MANAGEMENT PVT. LTD.



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PREFACE

Consciousness at national level in the industrial sector is increasing day by day with the focus on environment and sustainable development. A good environment management policy requires a constant effort to analyse and monitor various operations and processes, to generate and transmit this information to the inspecting authority.

As per the Air & Water Consent Orders issued by **Gujarat Pollution Control Board (GPCB)** Gandhinagar & also as per the Environment Clearance certificate issued by Ministry of Environment, Forest and Climate Change (MoEF & CC), Govt. of India, New Delhi, it is mandatory to collect the samples of Air/Gaseous emissions and effluent, to analyse the samples from a recognized laboratory and submit the analysis reports to GPCB & MoEF.

Gujarat Industries Power Company Limited (GIPCL) - Surat Lignite Power Plant is situated at Village – Nani Naroli, Tal. Mangrol, Dist. Surat. This company engaged in the generation of Electricity. The Industry has awarded the contract for bimonthly monitoring and analysis to M/s. Ecosystem Resource Management Pvt. Ltd. Surat.

Ecosystem Resource Management Pvt. Ltd. is one of the leading companies in the field of Environmental Consultancy Service Providers in India. ERM has a well-equipped and developed **NABL Accredited and MoEF & CC** recognized laboratory to carry out the analysis in air, stack emission, fugitive emission, water & waste water, noise, soil, and solid waste etc.

Scope of work for Vastan Lignite Mine

I. Ambient Air Monitoring

Sr. No.	No. of stations & Location	Duration	Frequency	Parameters	Method of Analysis
1.	8 Nos. within the Core & Buffer Zone.	24 hours	Bi-Monthly	PM ₁₀	IS 5182 Part 23 2006/Reaffirmed 2017
				PM _{2.5}	SOP No.WI/5.4/02-B/03, Issue No.1 Date:01/01/2010
				SO ₂	IS 5182 Part II 2001/Reaffirmed 2017
				NO _x	IS 5182(Part VI):2006/Reaffirmed 2017
				CO	IS 5182(Part 10):1999/Reaffirmed 2014

II. Dust Fall Measurement

Sr. No.	No. of station and locations	Duration	Frequency	Parameters	Method of analysis
1.	8 Nos. within the Core & Buffer Zone.	One Month	Bi-Monthly	Dust fall	As per IS-5182

III. Noise Monitoring:

Sr. No.	Noise of stations and locations	Duration	Frequency	Parameters	Method of analysis
1.	10 Nos. at various location within the plant premises	24 hours	Bi-Monthly	Day & night Noise level	As per IS 9989 using the Noise level meter.

Weather Monitoring Data

Sr. No.	No. of stations and locations	Duration	Frequency	Parameters	Method of analysis
1.	1 No. at Site.	24 hours	Bi-Monthly	Dry Bulb & Wet Bulb Temp., Atmospheric Pressure, Relative Humidity, Wind Speed, Wind Direction, Rain Fall and its Min. Max. & Avg. Value	As per IS 8829 on hourly basis for 24 hrs by using mechanical Instrument.

Water Quality Monitoring

Sr. No.	No. of stations and locations	Duration	Frequency	Parameters	Method of analysis
1.	7 Nos. of Bore well & 2 No. of Surface Water sample located both in Core & Buffer Zone	1	Bi-Monthly	Physical parameters, Chemical Parameters, Heavy metals	As per the standard methods for the examination of water and waste water APHA 23 rd Edition 2017 and various Indian standards IS 3025.

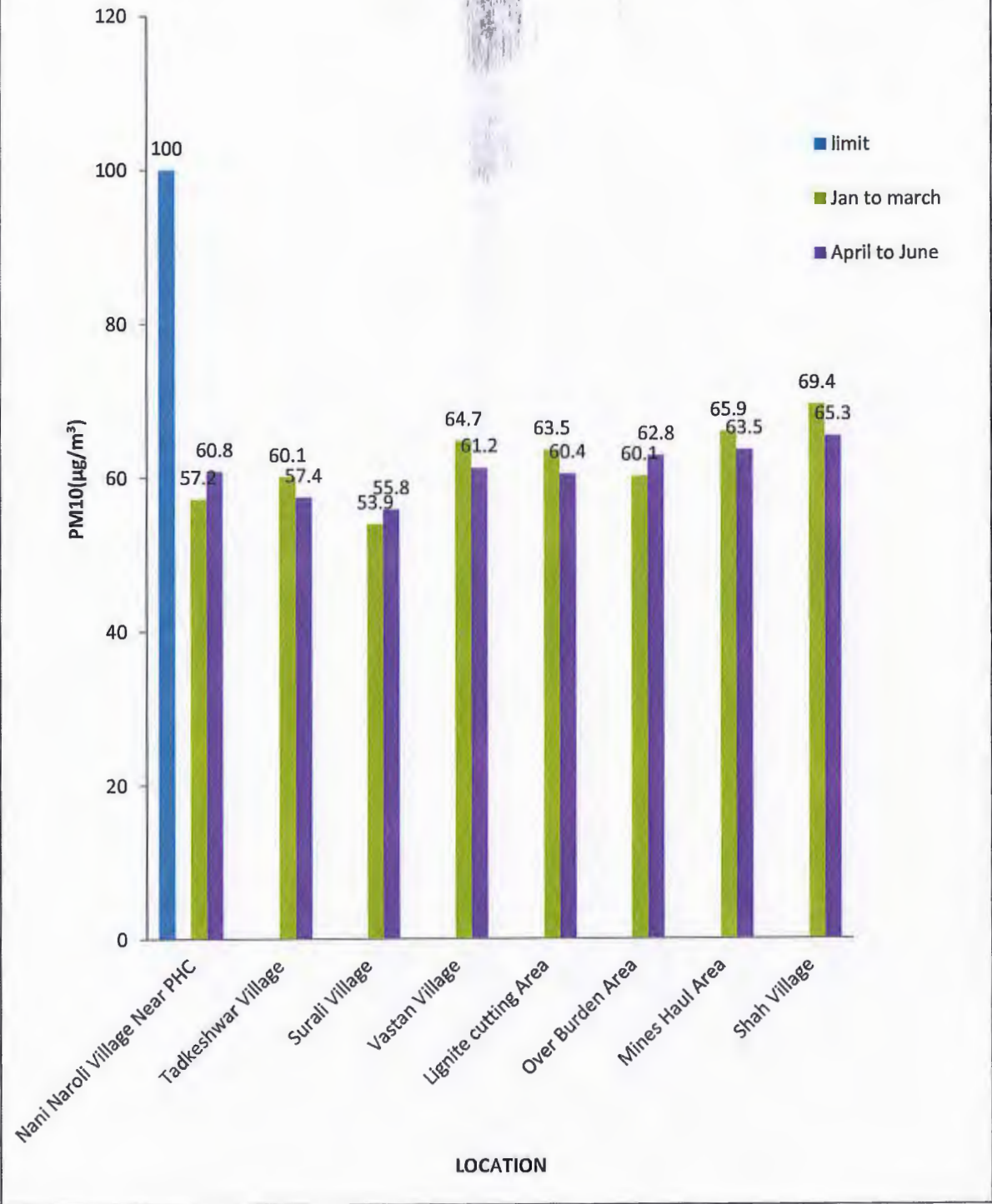
Six Monthly Variations in Ambient Air Quality

Parameter: PM₁₀ (Respirable Particulate Matter)

Period: January – 2020 to June – 2020

Sr. No.	Location	Results ($\mu\text{g}/\text{m}^3$)	
		Quarterly Jan to March - 2020	Quarterly April to June - 2020
1	Nani Naroli Village Near PHC	57.2	60.8
2	Tadkeshwar Village	60.1	57.4
3	Surali Village	53.9	55.8
4	Vastan Village	64.7	61.2
5	Lignite cutting Area	63.5	60.4
6	Over Burden Area	60.1	62.8
7	Mines Haul Area	65.9	63.5
8	Shah Village	69.4	65.3
	Limit	100	

Graphical presentation for the variation of PM10 in Ambient Air



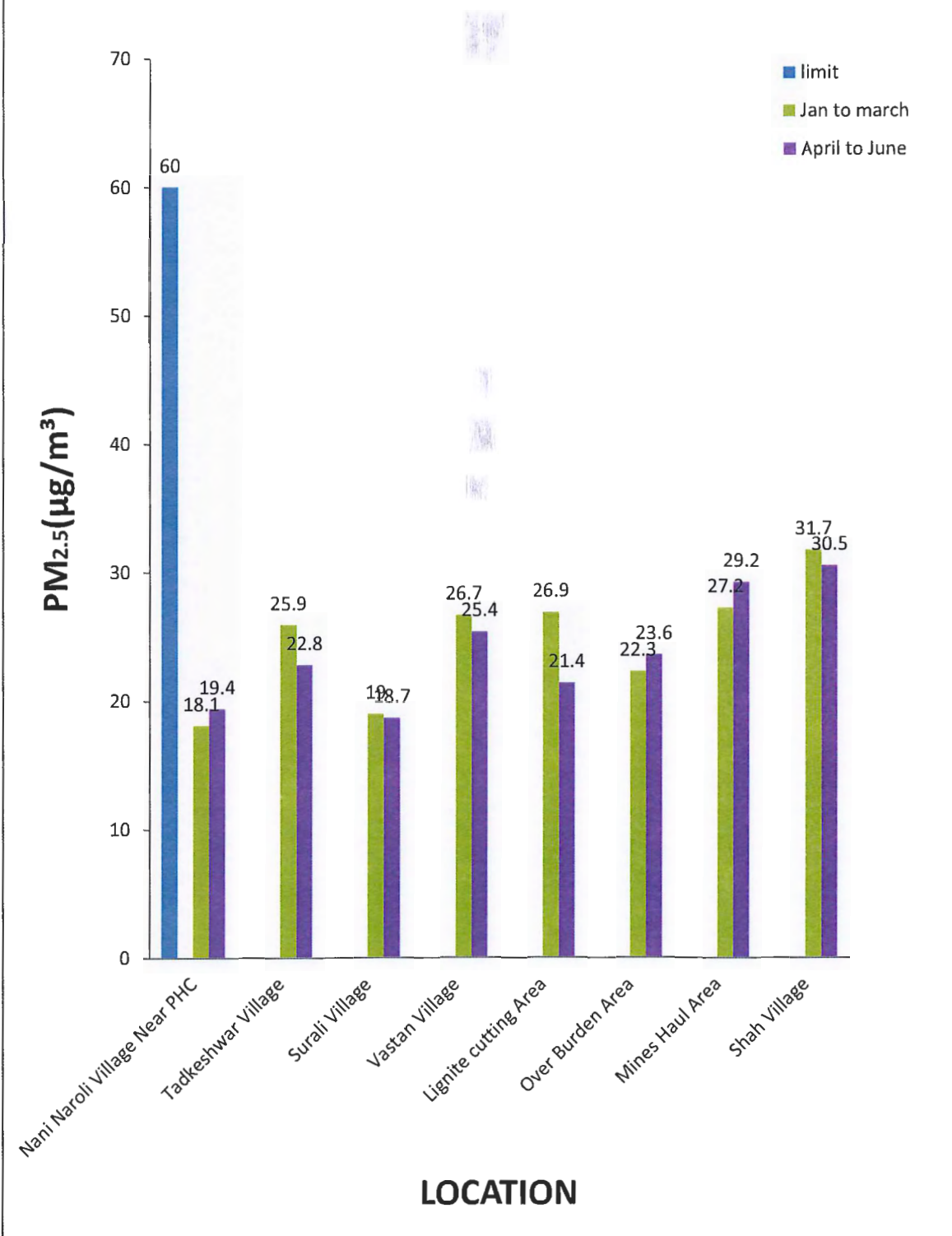
Six Monthly Variations in Ambient Air Quality

Parameter: PM_{2.5} (Respirable Particulate Matter)

Period: January – 2020 to June – 2020

Sr. No.	Location	Results ($\mu\text{g}/\text{m}^3$)	
		Quarterly Jan to March - 2020	Quarterly April to June - 2020
1	Nani Naroli Village Near PHC	18.1	19.4
2	Tadkeshwar Village	25.9	22.8
3	Surali Village	19.0	18.7
4	Vastan Village	26.7	25.4
5	Lignite cutting Area	26.9	21.4
6	Over Burden Area	22.3	23.6
7	Mines Haul Area	27.2	29.2
8	Shah Village	31.7	30.5
	Limit	60	

Graphical presentation for the variation of PM_{2.5} in Ambient Air



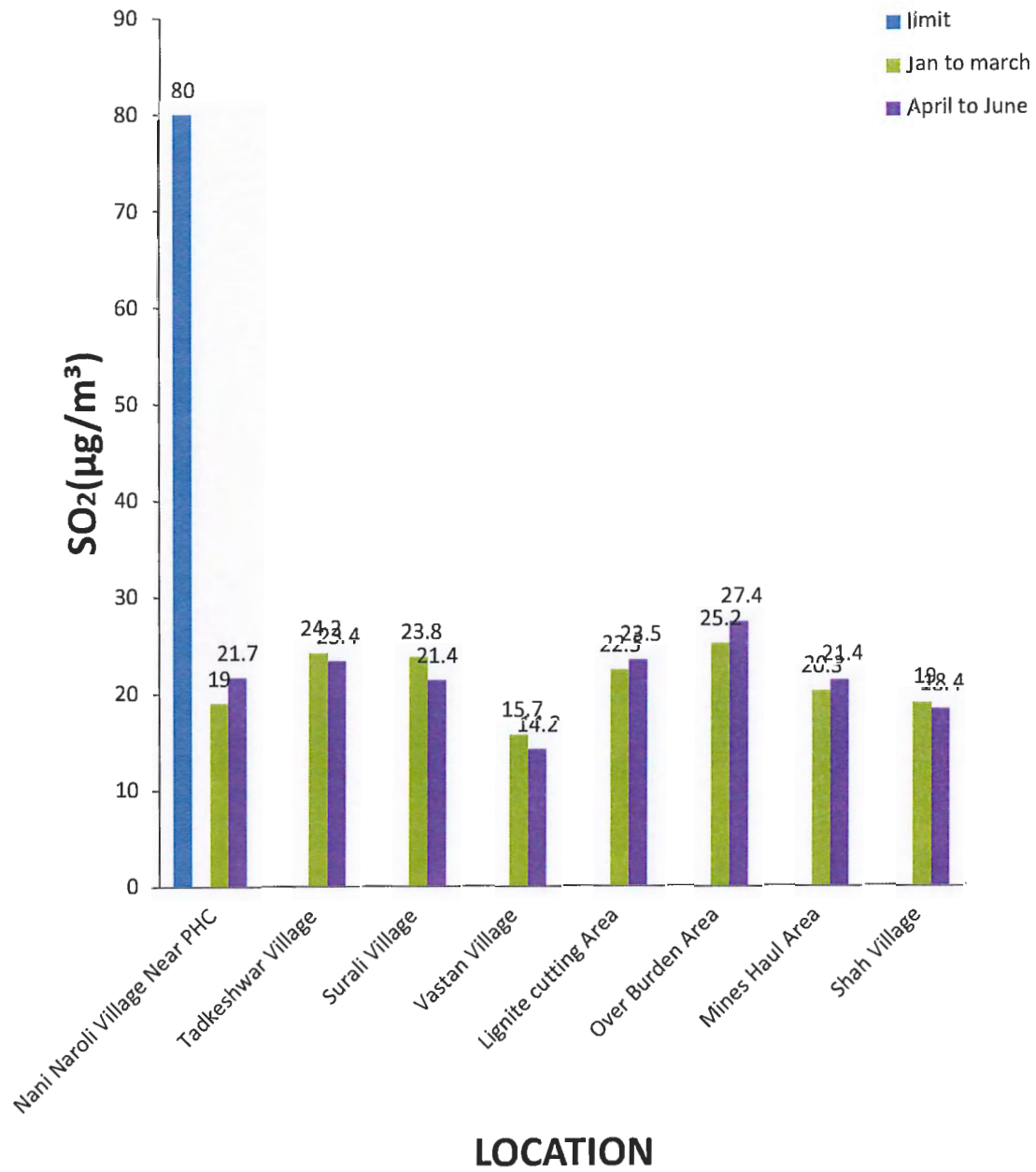
Six Monthly Variations in Ambient Air Quality

Parameter: SO₂ (Sulphur Dioxide)

Period: January – 2020 to June – 2020

Sr. No.	Location	Results ($\mu\text{g}/\text{m}^3$)	
		Quarterly Jan to March - 2020	Quarterly April to June - 2020
1	Nani Naroli Village Near PHC	19.0	21.7
2	Tadkeshwar Village	24.2	23.4
3	Surali Village	23.8	21.4
4	Vastan Village	15.7	14.2
5	Lignite cutting Area	22.5	23.5
6	Over Burden Area	25.2	27.4
7	Mines Haul Area	20.3	21.4
8	Shah Village	19.0	18.4
	Limit	80	

Graphical presentation for the variation of SO₂ in Ambient Air



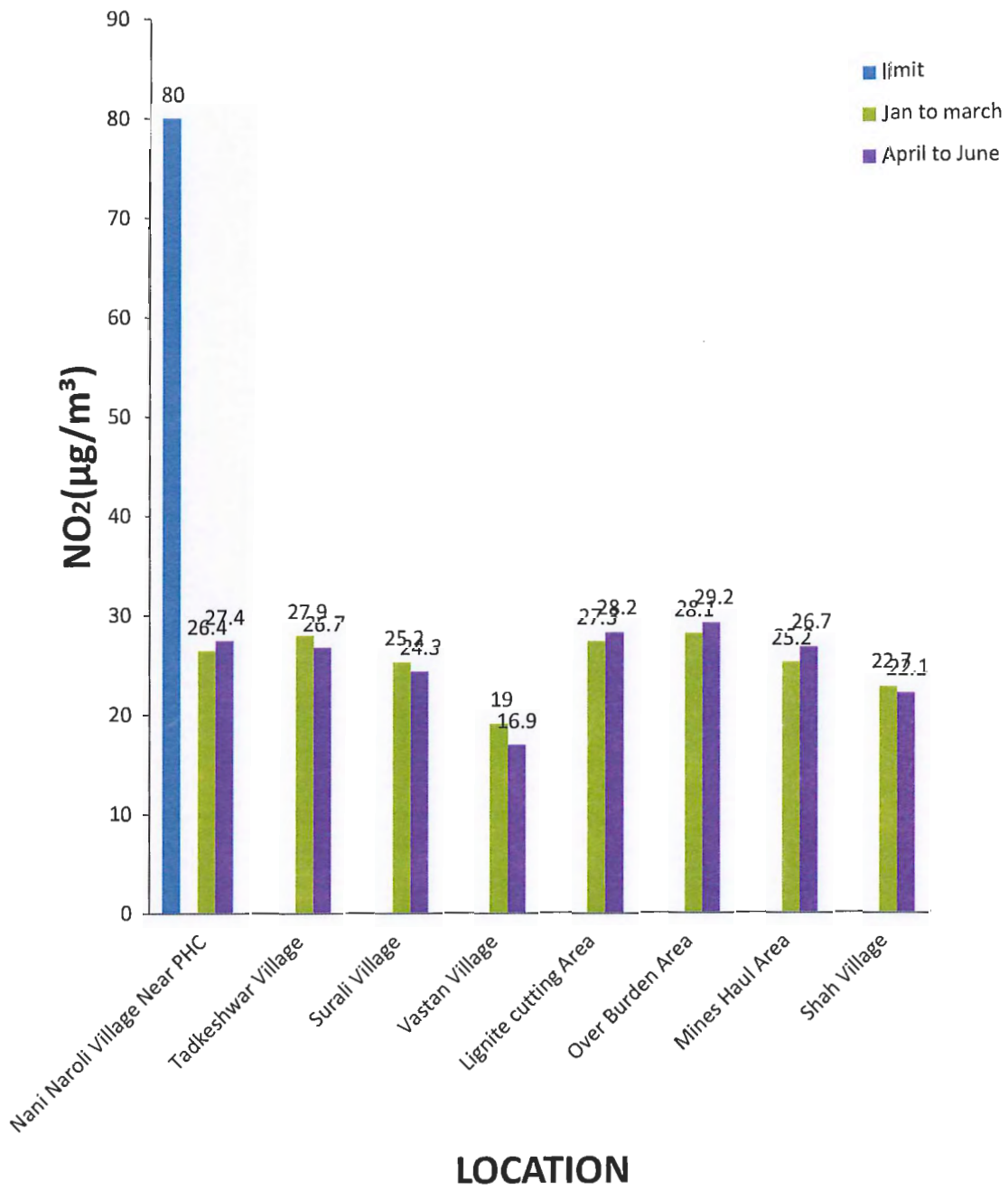
Six Monthly Variations in Ambient Air Quality

Parameter: NO₂ (Nitrogen dioxide)

Period: January – 2020 to June – 2020

Sr. No.	Location	Results (µg/m ³)	
		Quarterly Jan to March - 2020	Quarterly April to June - 2020
1	Nani Naroli Village Near PHC	26.4	27.4
2	Tadkeshwar Village	27.9	26.7
3	Surali Village	25.2	24.3
4	Vastan Village	19.0	16.9
5	Lignite cutting Area	27.3	28.2
6	Over Burden Area	28.1	29.2
7	Mines Haul Area	25.2	26.7
8	Shah Village	22.7	22.1
	Limit	80	

Graphical presentation for the variation of NO₂ in Ambient Air



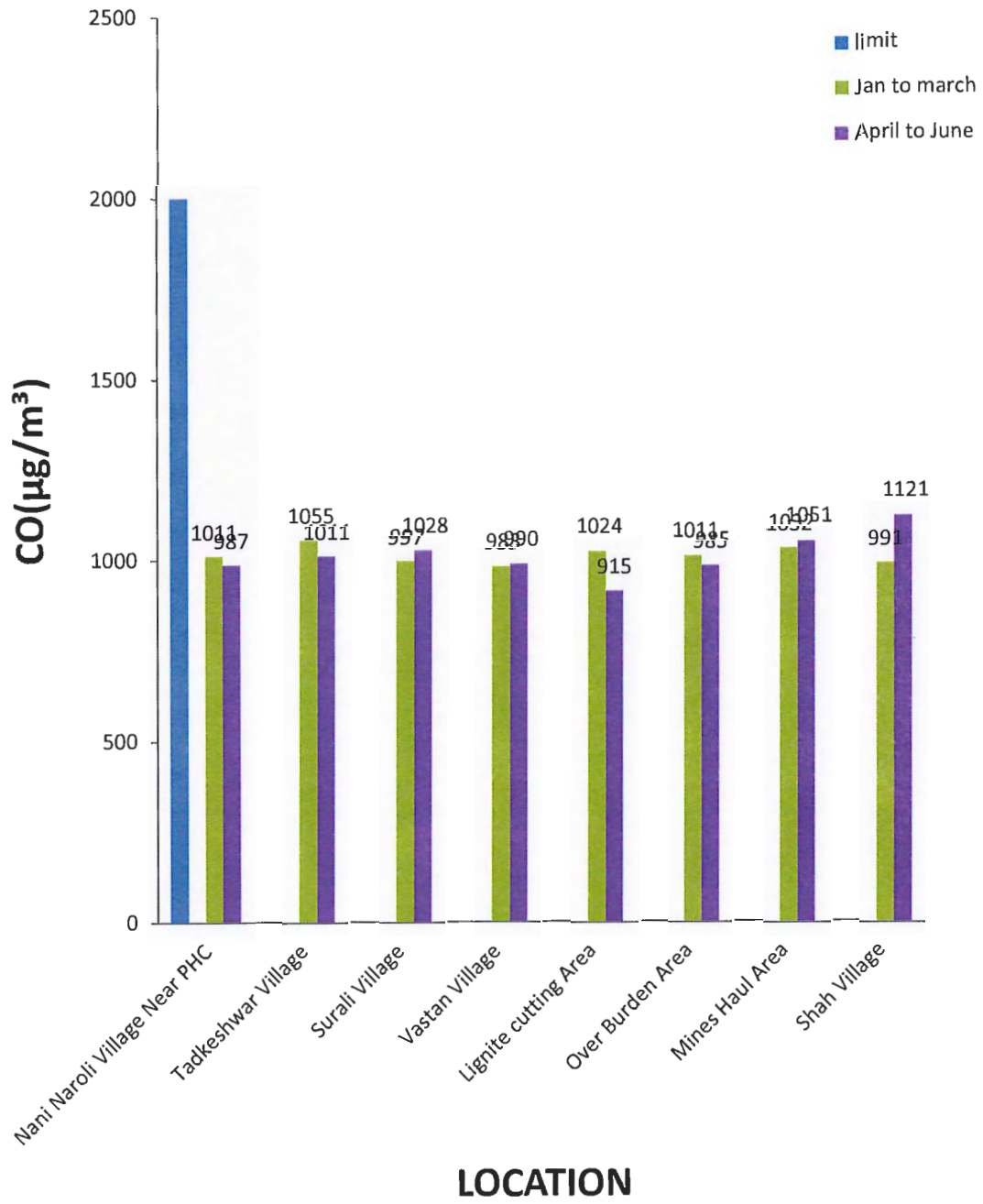
Six Monthly Variations in Ambient Air Quality

Parameter: CO (Carbon Monoxide)

Period: January – 2020 to June – 2020

Sr. No.	Location	Results ($\mu\text{g}/\text{m}^3$)	
		Quarterly Jan to March - 2020	Quarterly April to June - 2020
1	Nani Naroli Village Near PHC	1011	987
2	Tadkeshwar Village	1055	1011
3	Surali Village	997	1028
4	Vastan Village	983	990
5	Lignite cutting Area	1024	915
6	Over Burden Area	1011	985
7	Mines Haul Area	1032	1051
8	Shah Village	991	1121
	Limit	2000	

Graphical presentation for the variation of CO in Ambient Air



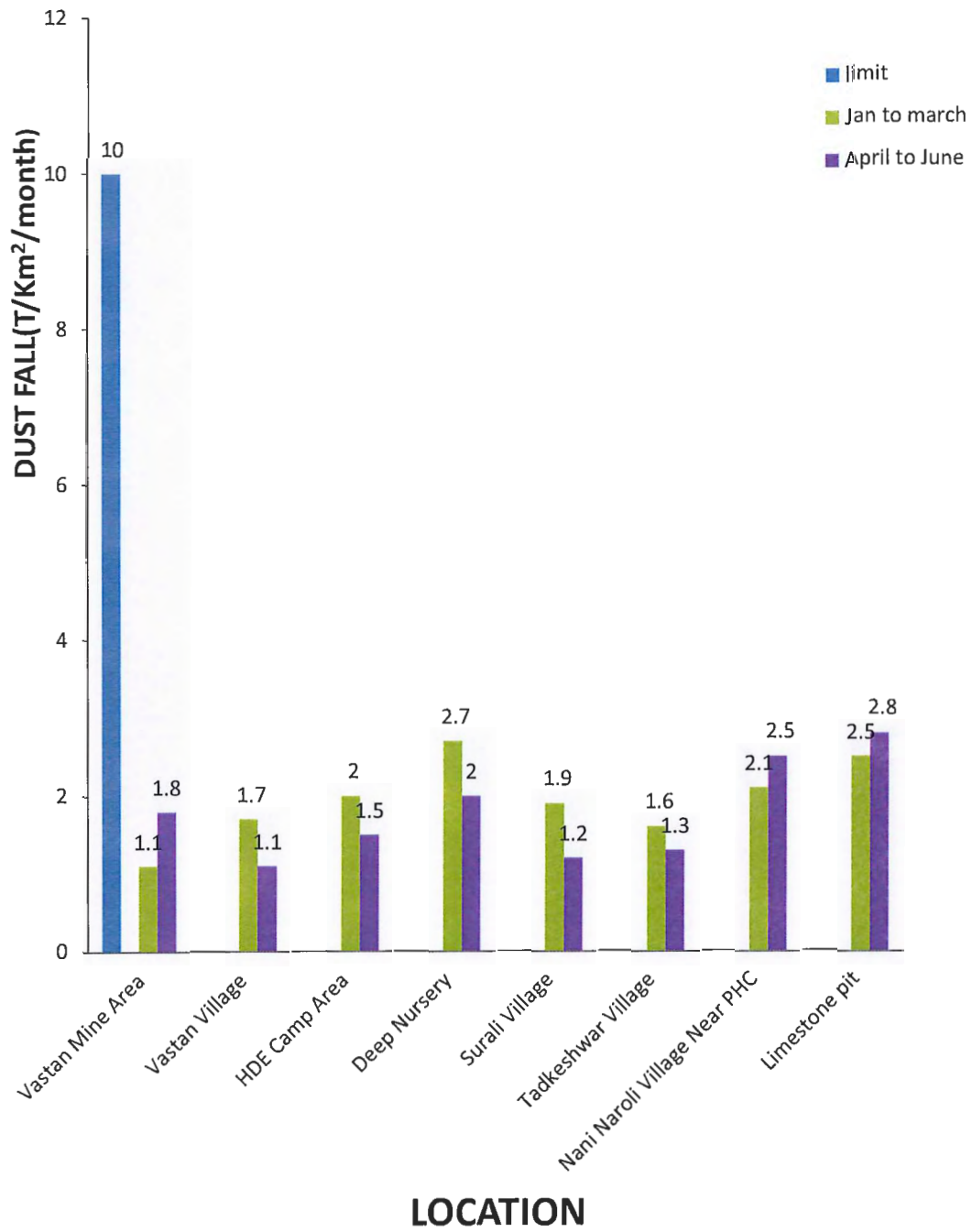
Six Monthly Variations in Ambient Air Quality

Parameter: Dust Fall

Period: January – 2020 to June – 2020

Sr. No.	Location	Results (T/Km ² /month)	
		Quarterly Jan to March - 2020	Quarterly April to June - 2020
1	Vastan Mine Area	1.1	1.8
2	Vastan Village	1.7	1.1
3	HDE Camp Area	2.0	1.5
4	Deep Nursery	2.7	2.0
5	Surali Village	1.9	1.2
6	Tadkeshwar Village	1.6	1.3
7	Nani Naroli Village Near PHC	2.1	2.5
8	Lime stone pit	2.5	2.8
	Limit	10	

Graphical presentation for the variation of Dust Fall in Ambient Air



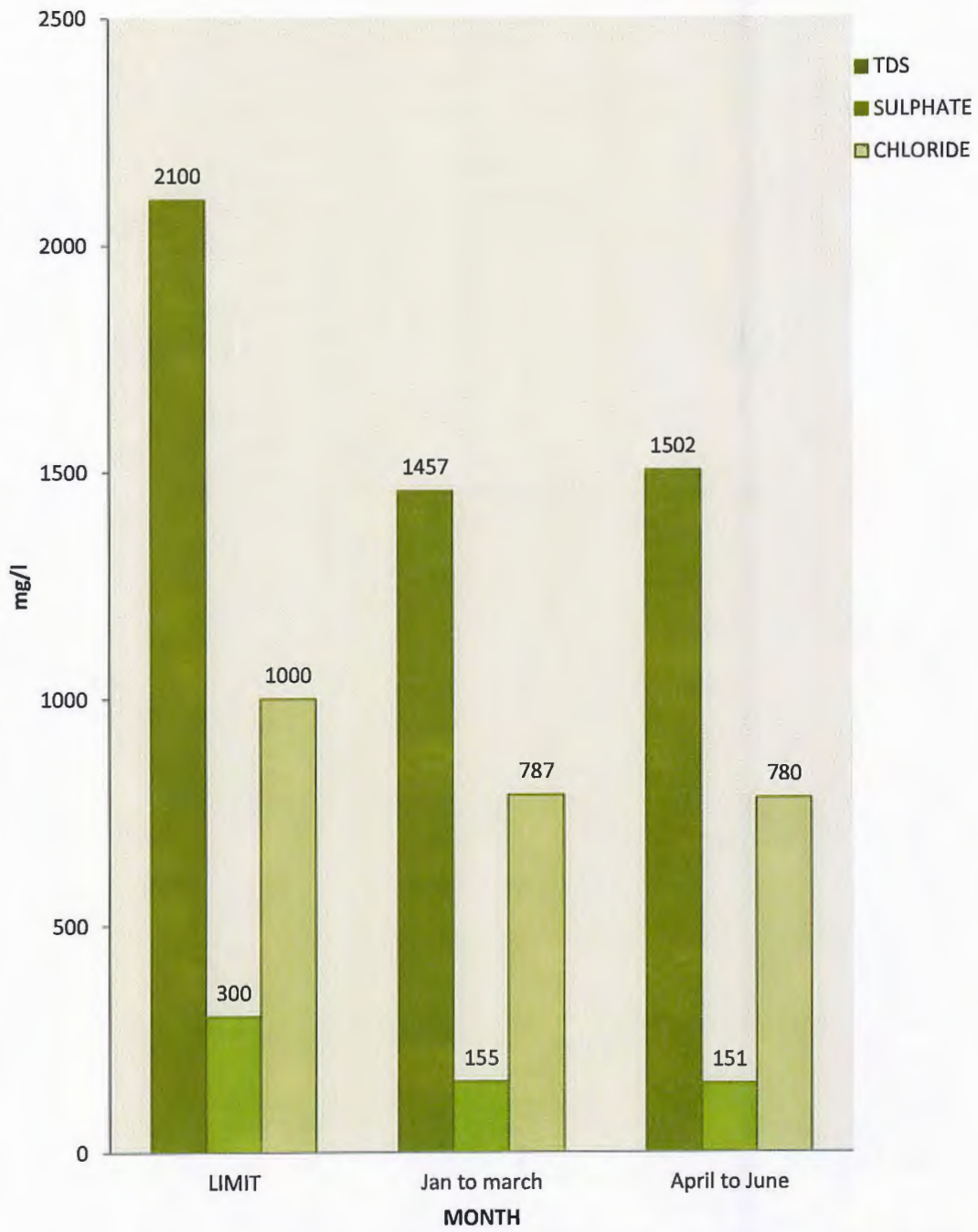
Six Monthly Variations in Bore water

Sampling point: Bore well (Ansodla Village)

Period: January – 2020 to June – 2020

Sr. No.	Parameter	Unit	Quarterly Jan. to March - 2020	Quarterly April to June - 2020	MoEF Limit
1	Temperature	°C	30	28	Shall not exceed 5°c above the receiving water temp.
2	pH@ 25°C	pH unit	7.43	7.35	5.5-9.0
3	Colour	pt. Co. Scale	< 5	< 5	--
4	Total Suspended Solids (TSS) @105 °C	mg/L	1.7	1.5	100
5	Total Dissolved Solids (TDS) @180° C	mg/L	1457	1502	2100
6	Total volatile Solids	mg/L	2.0	1.7	--
7	COD	mg/L	< 10	< 10	250
8	BOD (5 days at 20° C)	mg/L	< 4	< 4	30
9	Oil & Grease	mg/L	< 1	< 1	10
10	Chloride	mg/L	787	780	1000
11	Sulphate	mg/L	155	151	300
12	Fluoride	mg/L	0.27	0.24	2.0
13	Phosphate as PO ₄ ⁻⁻⁻	mg/L	0.8	0.6	--
14	Total Residual Chlorine	mg/L	< 0.1	< 0.1	1.0
15	Free Available Chlorine	mg/L	< 0.10	< 0.10	--
16	Phenolic Compound	mg/L	< 0.10	< 0.10	1.0
17	Lead	mg/L	< 0.02	< 0.02	0.1
18	Copper	mg/L	< 0.50	< 0.50	3.0
19	Hexavalent Chromium	mg/L	< 0.03	< 0.03	0.1
20	Total Chromium	mg/L	< 0.03	< 0.03	2.0
21	Zinc	mg/L	< 0.10	< 0.10	5.0
22	Iron	mg/L	< 0.05	< 0.05	3.0
23	Calcium	mg/L	215	208	--
24	Magnesium	mg/L	87	80	--
25	Percentage Sodium	%	33.4	32.4	--
26	Total Coliform(MPN)	Present/ Absent	Absent	Absent	--
27	Bioassay Test	% Survival of fish after 96 hrs in 100% effluent	100	100	90%Survival of fish after 96 Hours in 100% of effluent

Graphical presentation for the variation of TDS,SO4 & Cl in bore water Ansodla village



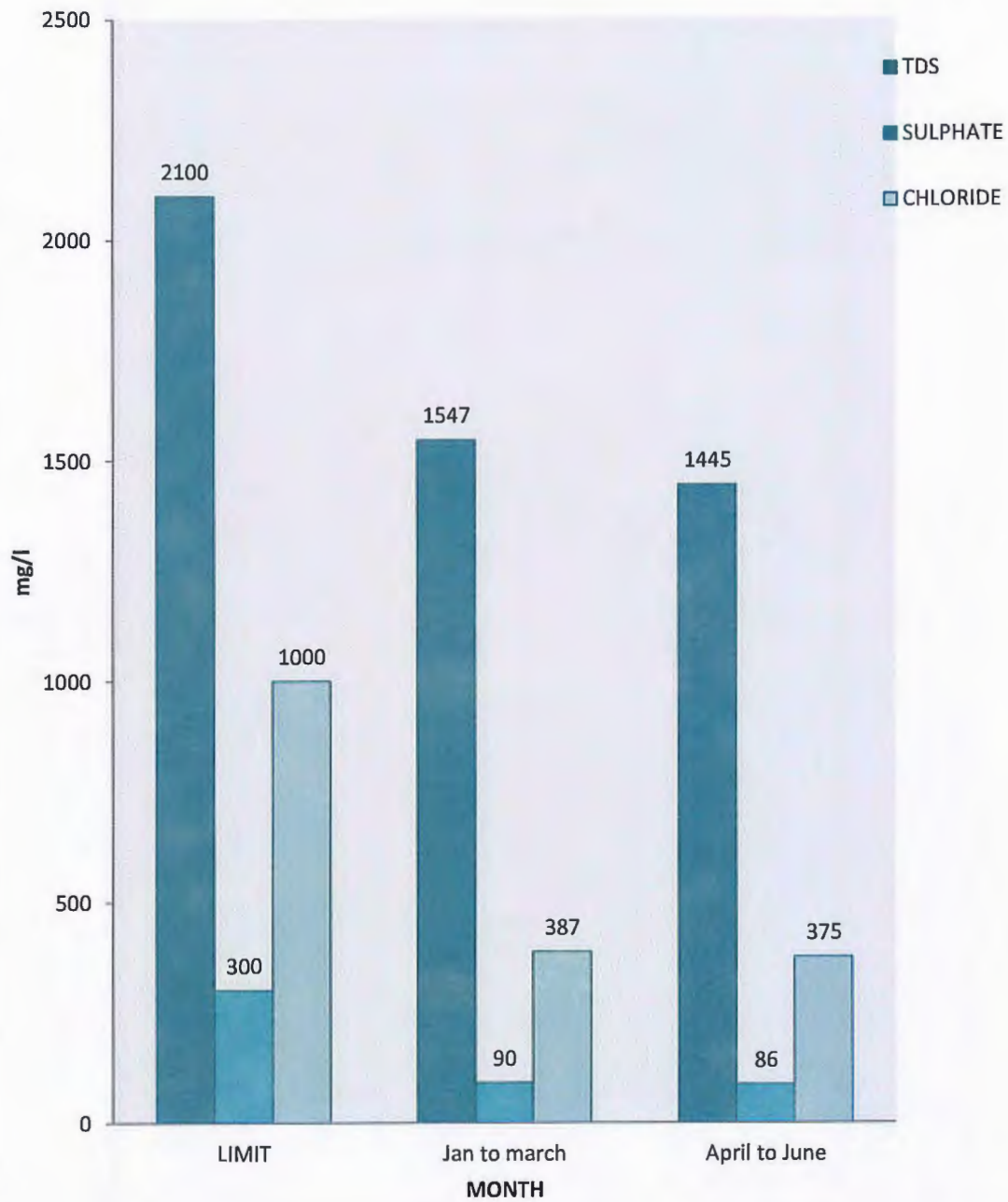
Six Monthly Variations in Bore water Data

Sampling point: Bore well (Hand pump in surali Village)

Period: January – 2020 to June – 2020

Sr. No.	Parameter	Unit	Quarterly Jan. to March - 2020	Quarterly April to June - 2020	MoEF Limit
1	Temperature	°C	30	27	Shall not exceed 5°c above the receiving water temp
2	pH@ 25 °C	pH unit	7.38	7.34	5.5-9.0
3	Colour	pt. Co. Scale	< 5	< 5	--
4	Total Suspended Solids (TSS) @105 °C	mg/L	5.0	4.1	100
5	Total Dissolved Solids (TDS) @180 °C	mg/L	1547	1445	2100
6	Total volatile Solids	mg/L	3.4	3.0	--
7	COD	mg/L	< 10	< 10	250
8	BOD (5 days at 20° C)	mg/L	< 4	< 4	30
9	Oil & Grease	mg/L	< 1	< 1	10
10	Chloride	mg/L	387	375	1000
11	Sulphate	mg/L	90	86	300
12	Fluoride	mg/L	0.9	0.7	2.0
13	Phosphate as PO ₄ ⁻	mg/L	1.1	1.0	--
14	Total Residual Chlorine	mg/L	< 0.1	< 0.1	1.0
15	Free Available Chlorine	mg/L	< 0.10	< 0.10	--
16	Phenolic Compound	mg/L	< 0.10	< 0.10	1.0
17	Lead	mg/L	< 0.02	< 0.02	0.1
18	Copper	mg/L	< 0.50	< 0.50	3.0
19	Hexavalent Chromium	mg/L	< 0.03	< 0.03	0.1
20	Total Chromium	mg/L	< 0.03	< 0.03	2.0
21	Zinc	mg/L	< 0.10	< 0.10	5.0
22	Iron	mg/L	< 0.05	< 0.05	3.0
23	Calcium	mg/L	94	91	--
24	Magnesium	mg/L	31	84	--
25	Percentage Sodium	%	38.1	35.4	--
26	Total Coliform(MPN)	Present/ Absent	Absent	Absent	--
27	Bioassay Test	% Survival of fish after 96 hrs in 100% effluent	100	100	90%Survival of fish after 96 Hours in 100% of effluent

Graphical presentation for the variation of TDS & TSS in bore water Hand pump in Surali village



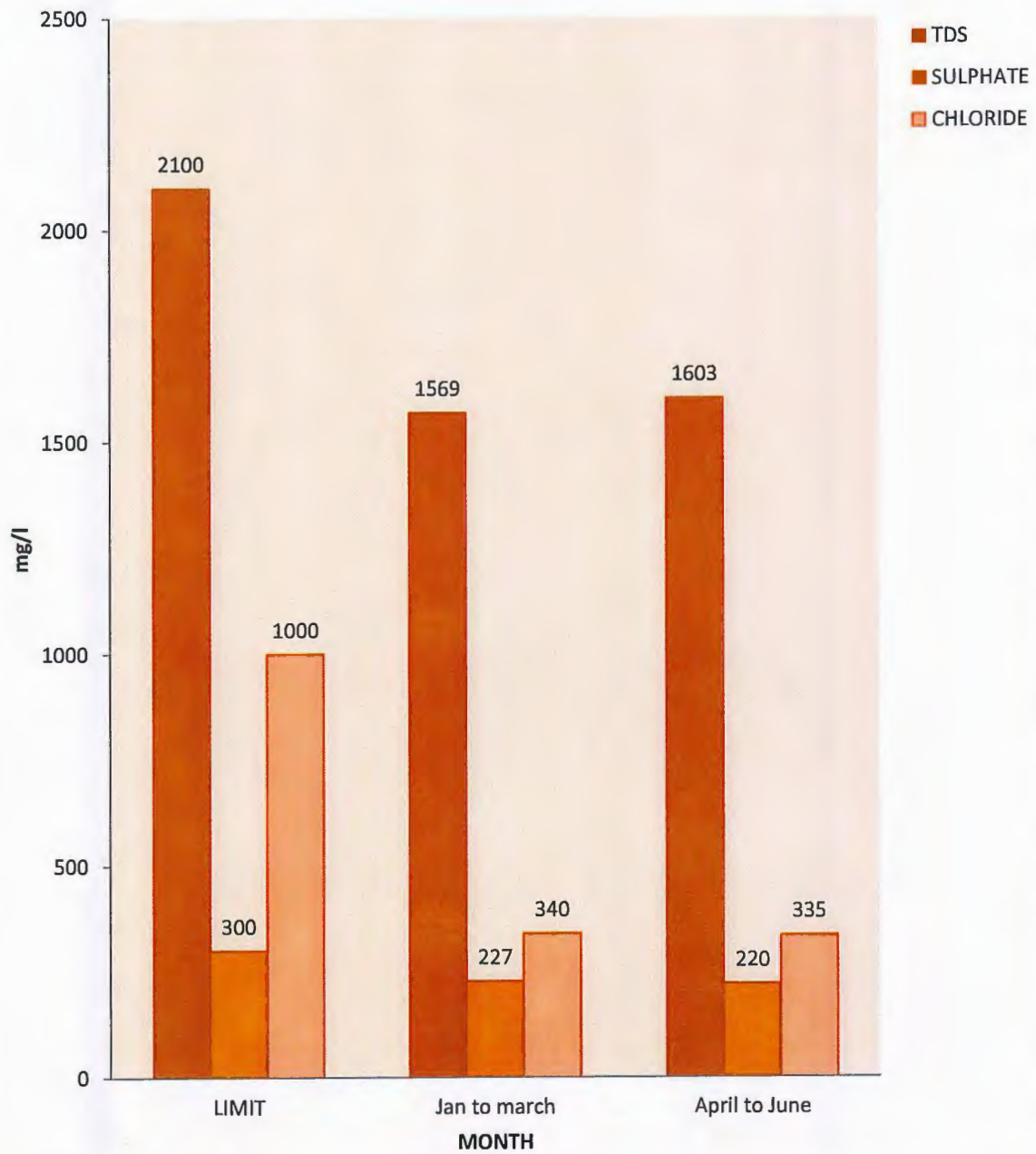
Six Monthly Variations in Bore water

Sampling point: Bore well (Mosali char rasta)

Period: January – 2020 to June – 2020

Sr. No.	Parameter	Unit	Quarterly Jan. to March - 2020	Quarterly April to June - 2020	MoEF Limit
1	Temperature	°C	30	28	Shall not exceed 5°c above the receiving water temp
2	pH@ 25°C	pH unit	7.41	7.34	5.5-9.0
3	Colour	pt. Co. Scale	< 5	< 5	--
4	Total Suspended Solids (TSS) @105 °C	mg/L	2.0	1.5	100
5	Total Dissolved Solids (TDS) @180 °C	mg/L	1569	1603	2100
6	Total volatile Solids	mg/L	2.0	1.7	--
7	COD	mg/L	< 10	< 10	250
8	BOD (5 days at 20 °C)	mg/L	< 4	< 4	30
9	Oil & Grease	mg/L	< 1	< 1	10
10	Chloride	mg/L	340	335	1000
11	Sulphate	mg/L	227	220	300
12	Fluoride	mg/L	0.5	0.6	2.0
13	Phosphate as PO ₄ ⁻⁻⁻	mg/L	0.8	1.0	--
14	Total Residual Chlorine	mg/L	< 0.1	< 0.1	1.0
15	Free Available Chlorine	mg/L	< 0.10	< 0.10	--
16	Phenolic Compound	mg/L	< 0.10	< 0.10	1.0
17	Lead	mg/L	< 0.02	< 0.02	0.1
18	Copper	mg/L	< 0.50	< 0.50	3.0
19	Hexavalent Chromium	mg/L	< 0.03	< 0.03	0.1
20	Total Chromium	mg/L	< 0.03	< 0.03	2.0
21	Zinc	mg/L	< 0.10	< 0.10	5.0
22	Iron	mg/L	< 0.05	< 0.05	3.0
23	Calcium	mg/L	67.4	65.6	--
24	Magnesium	mg/L	41.8	40.5	--
25	Percentage Sodium	%	26.9	27.1	--
26	Total Coliform(MPN)	Present/ Absent	Absent	Absent	--
27	Bioassay Test	% Survival of fish after 96 hrs in 100% effluent	100	100	90%Survival of fish after 96 Hours in 100% of effluent

Graphical presentation for the variation of TDS,SO4 & Cl in bore water Mosali char rasta



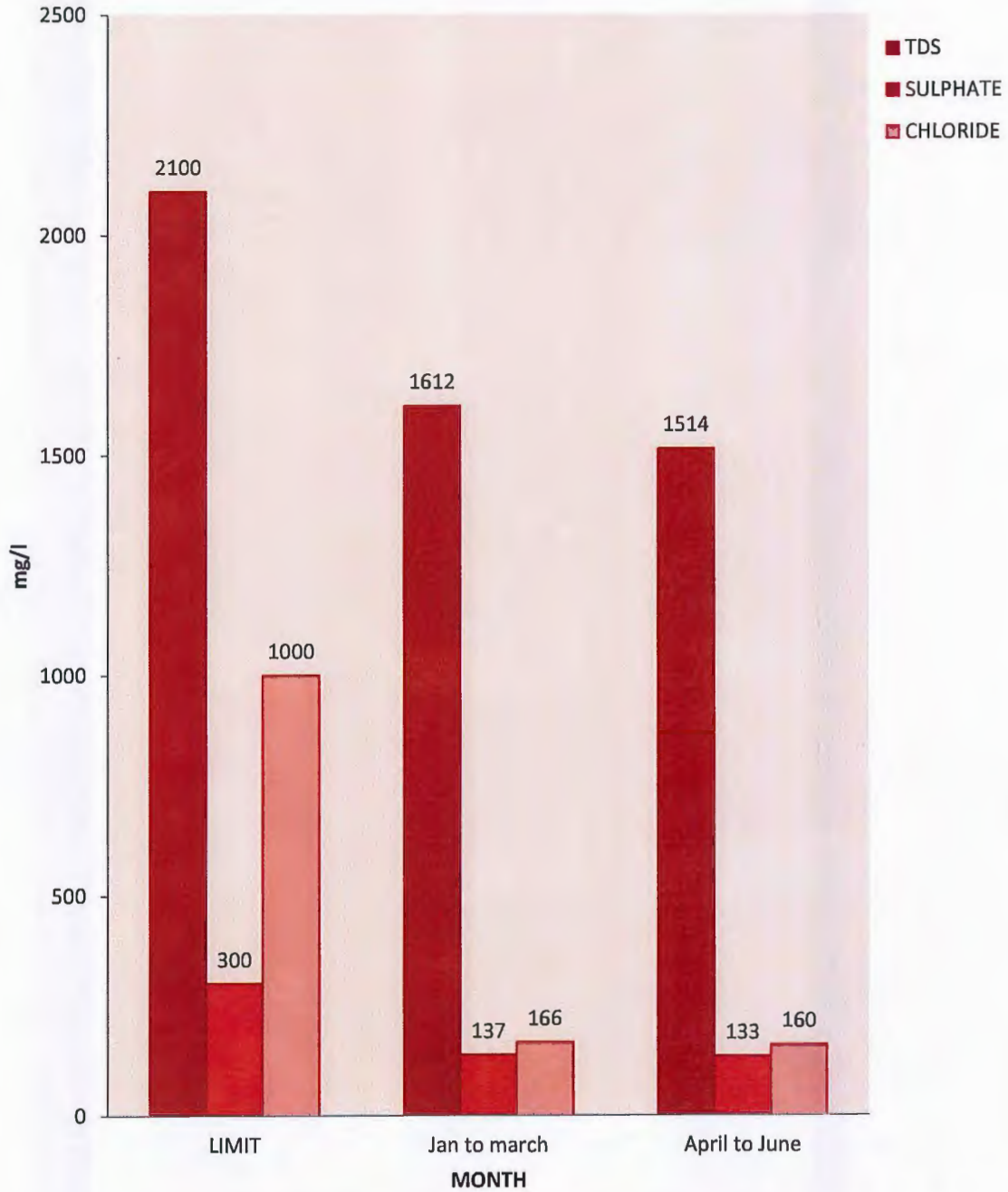
Six Monthly Variations in Bore water

Sampling point: Bore well (Near Tadkeshwar char rasta)

Period: January – 2020 to June – 2020

Sr. No.	Parameter	Unit	Quarterly Jan. to March - 2020	Quarterly April to June - 2020	MoEF Limit
1	Temperature	°C	29	28	Shall not exceed 5°c above the receiving water temp
2	pH@ 25°C	pH unit	7.31	7.42	5.5-9.0
3	Colour	pt. Co. Scale	< 5	< 5	--
4	Total Suspended Solids (TSS) @105 °C	mg/L	3.7	3.2	100
5	Total Dissolved Solids (TDS) @180° C	mg/L	1612	1514	2100
6	Total volatile Solids	mg/L	2.7	2.4	--
7	COD	mg/L	< 10	< 10	250
8	BOD (5 days at 20° C)	mg/L	< 4	< 4	30
9	Oil & Grease	mg/L	< 1	< 1	10
10	Chloride	mg/L	166	160	1000
11	Sulphate	mg/L	137	133	300
12	Fluoride	mg/L	0.9	0.5	2.0
13	Phosphate as PO ₄ ⁻	mg/L	1.2	1.0	--
14	Total Residual Chlorine	mg/L	< 0.1	< 0.1	1.0
15	Free Available Chlorine	mg/L	< 0.10	< 0.10	--
16	Phenolic Compound	mg/L	< 0.10	< 0.10	1.0
17	Lead	mg/L	< 0.02	< 0.02	0.1
18	Copper	mg/L	< 0.50	< 0.50	3.0
19	Hexavalent Chromium	mg/L	< 0.03	< 0.03	0.1
20	Total Chromium	mg/L	< 0.03	< 0.03	2.0
21	Zinc	mg/L	< 0.10	< 0.10	5.0
22	Iron	mg/L	< 0.05	< 0.05	3.0
23	Calcium	mg/L	80	78	--
24	Magnesium	mg/L	50	47	--
25	Percentage Sodium	%	33.6	31.4	--
26	Total Coliform(MPN)	Present/ Absent	Absent	Absent	--
27	Bioassay Test	% Survival of fish after 96 hrs in 100% effluent	100	100	90%Survival of fish after 96 Hours in 100% of effluent

Graphical presentation for the variation of TDS,SO4 & Cl in bore water Near Tadkeshwar village



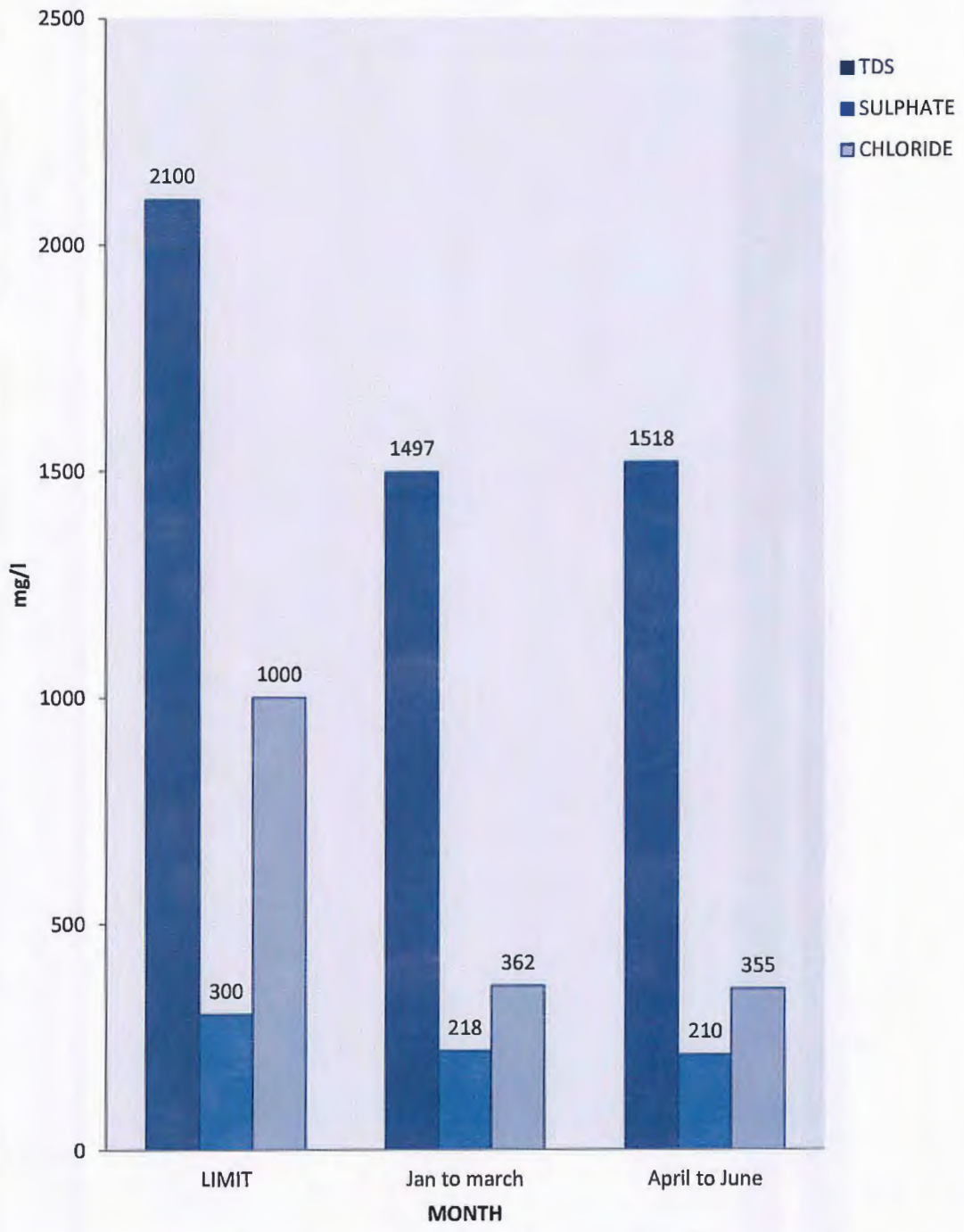
Six Monthly Variations in Bore water

Sampling point: Bore well (Vastan Village)

Period: January – 2020 to June – 2020

Sr. No.	Parameter	Unit	Quarterly Jan. to March - 2020	Quarterly April to June - 2020	MoEF Limit
1	Temperature	°C	29	28	Shall not exceed 5°c above the receiving water temp
2	pH@ 25°C	pH unit	7.24	7.32	5.5-9.0
3	Colour	pt. Co. Scale	< 5	< 5	--
4	Total Suspended Solids (TSS) @105°C	mg/L	3.1	2.5	100
5	Total Dissolved Solids (TDS) @180° C	mg/L	1497	1518	2100
6	Total volatile Solids	mg/L	1.4	1.1	--
7	COD	mg/L	< 10	< 10	250
8	BOD (5 days at 20° C)	mg/L	< 4	< 4	30
9	Oil & Grease	mg/L	< 1	< 1	10
10	Chloride	mg/L	362	355	1000
11	Sulphate	mg/L	218	210	300
12	Fluoride	mg/L	0.6	0.8	2.0
13	Phosphate as PO ₄ ⁻	mg/L	0.8	1.0	--
14	Total Residual Chlorine	mg/L	< 0.10	< 0.10	1.0
15	Free Available Chlorine	mg/L	< 0.10	< 0.10	--
16	Phenolic Compound	mg/L	< 0.10	< 0.10	1.0
17	Lead	mg/L	< 0.02	< 0.02	0.1
18	Copper	mg/L	< 0.50	< 0.50	3.0
19	Hexavalent Chromium	mg/L	< 0.03	< 0.03	0.1
20	Total Chromium	mg/L	< 0.03	< 0.03	2.0
21	Zinc	mg/L	< 0.10	< 0.10	5.0
22	Iron	mg/L	<0.05	<0.05	3.0
23	Calcium	mg/L	95	91	--
24	Magnesium	mg/L	59	51	--
25	Percentage Sodium	%	25.4	22.8	--
26	Total Coliform(MPN)	Present/ Absent	Absent	Absent	--
27	Bioassay Test	% Survival of fish after 96 hrs in 100% effluent	100	100	90%Survival of fish after 96 Hours in 100% of effluent

Graphical presentation for the variation of TDS,SO4 & Cl in bore water Vastan village



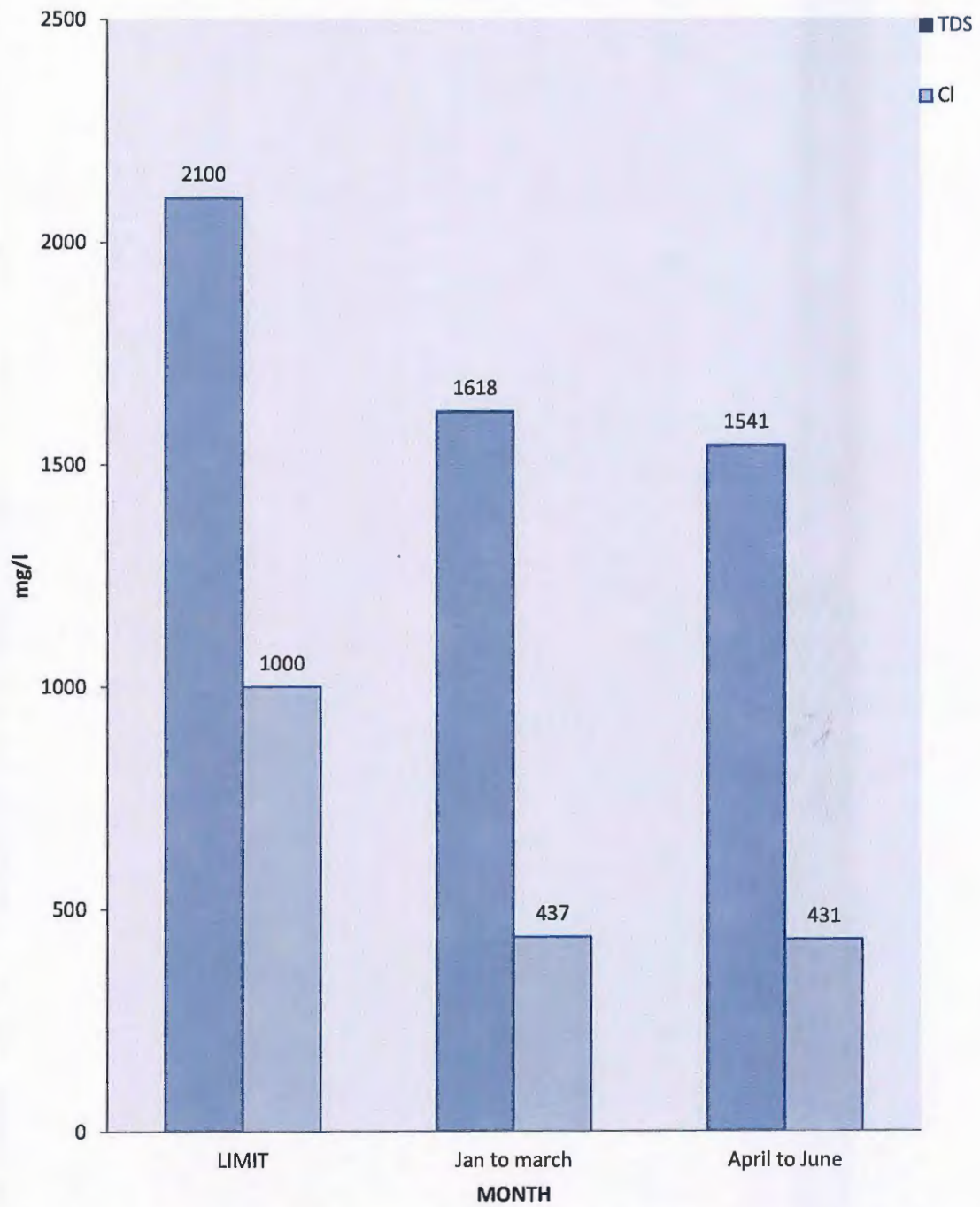
Six Monthly Variations in Bore water

Sampling point: Bore well (Hand pump in dungri Village)

Period: January – 2020 to June – 2020

Sr. No.	Parameter	Unit	Quarterly Jan. to March - 2020	Quarterly April to June - 2020	MoEF Limit
1	Temperature	°C	30	27	Shall not exceed 5°c above the receiving water temp
2	pH@ 25°C	pH unit	7.33	7.27	5.5-9.0
3	Colour	pt. Co. Scale	<5	<5	--
4	Total Suspended Solids (TSS) @105°C	mg/L	2.7	2.7	100
5	Total Dissolved Solids (TDS) @180° C	mg/L	1618	1541	2100
6	Total volatile Solids	mg/L	1.7	1.4	--
7	COD	mg/L	< 10	< 10	250
8	BOD (5 days at 20° C)	mg/L	< 4	< 4	30
9	Oil & Grease	mg/L	<1	<1	10
10	Chloride	mg/L	437	431	1000
11	Sulphate	mg/L	188	182	300
12	Fluoride	mg/L	0.7	0.4	2.0
13	Phosphate as PO ₄ ⁻	mg/L	1.0	0.8	--
14	Total Residual Chlorine	mg/L	<0.1	<0.1	1.0
15	Free Available Chlorine	mg/L	<0.1	<0.1	--
16	Phenolic Compound	mg/L	<0.01	<0.01	1.0
17	Lead	mg/L	<0.02	<0.02	0.1
18	Copper	mg/L	<0.01	<0.01	3.0
19	Hexavalent Chromium	mg/L	<0.03	<0.03	0.1
20	Total Chromium	mg/L	<0.03	<0.03	2.0
21	Zinc	mg/L	<0.1	<0.1	5.0
22	Iron	mg/L	<0.05	<0.05	3.0
23	Calcium	mg/L	98	101	--
24	Magnesium	mg/L	26	29	--
25	Percentage Sodium	%	25.2	26.2	--
26	Total Coliform(MPN)	Present/ Absent	Absent	Absent	--
27	Bioassay Test	% Survival of fish after 96 hrs in 100% effluent	100	100	90%Survival of fish after 96 Hours in 100% of effluent

Graphical presentation for the variation of TDS & Cl in bore water Hand pump in dungri village



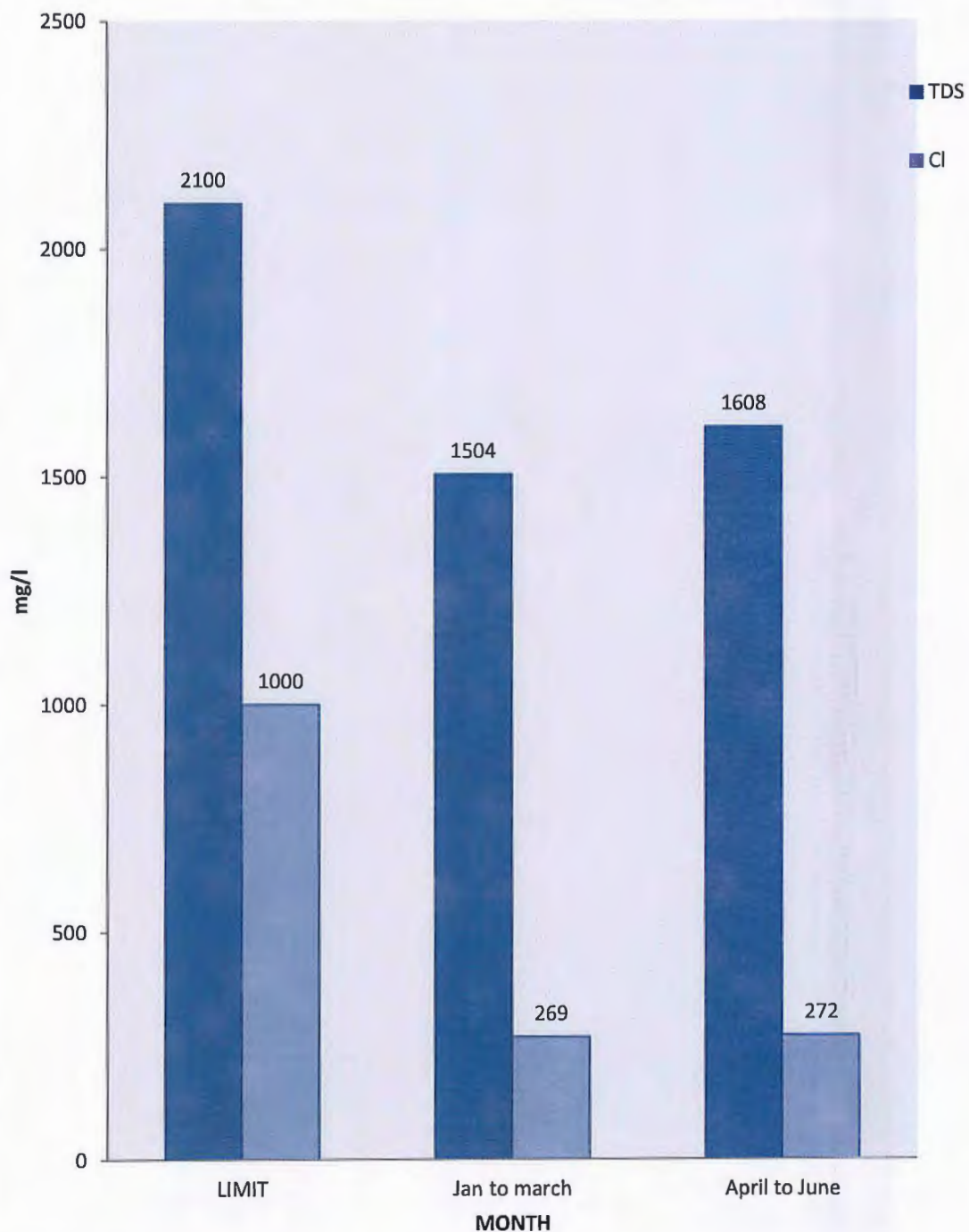
Six Monthly Variations in Bore water

Sampling point: Bore well (Nani naroli Village)

Period: January – 2020 to June – 2020

Sr. No.	Parameter	Unit	Quarterly Jan. to March - 2020	Quarterly April to June - 2020	MoEF Limit
1	Temperature	°C	29	28	Shall not exceed 5°c above the receiving water temp
2	pH@ 25°C	pH unit	7.26	7.32	5.5-9.0
3	Colour	pt. Co. Scale	<5	<5	--
4	Total Suspended Solids (TSS) @105 °C	mg/L	1.5	1.1	100
5	Total Dissolved Solids (TDS) @180° C	mg/L	1504	1608	2100
6	Total volatile Solids	mg/L	1.0	1.1	--
7	COD	mg/L	<10	<10	250
8	BOD (5 days at 20° C)	mg/L	<4	<4	30
9	Oil & Grease	mg/L	<1	<1	10
10	Chloride	mg/L	269	272	1000
11	Sulphate	mg/L	25	32	300
12	Fluoride	mg/L	0.5	1.0	2.0
13	Phosphate as PO ₄ ⁻	mg/L	0.8	1.1	--
14	Total Residual Chlorine	mg/L	<0.1	<0.1	1.0
15	Free Available Chlorine	mg/L	<0.1	<0.1	--
16	Phenolic Compound	mg/L	<0.01	<0.01	1.0
17	Lead	mg/L	<0.02	<0.02	0.1
18	Copper	mg/L	<0.01	<0.01	3.0
19	Hexavalent Chromium	mg/L	<0.03	<0.03	0.1
20	Total Chromium	mg/L	<0.03	<0.03	2.0
21	Zinc	mg/L	<0.1	<0.1	5.0
22	Iron	mg/L	<0.05	<0.05	3.0
23	Calcium	mg/L	78	72	--
24	Magnesium	mg/L	31	27	--
25	Percentage Sodium	%	24.5	23.1	--
26	Total Coliform(MPN)	Present/ Absent	Absent	Absent	--
27	Bioassay Test	% Survival of fish after 96 hrs in 100% effluent	100	100	90%Survival of fish after 96 Hours in 100% of effluent

Graphical presentation for the variation of TDS & Cl in bore water Nani naroli village



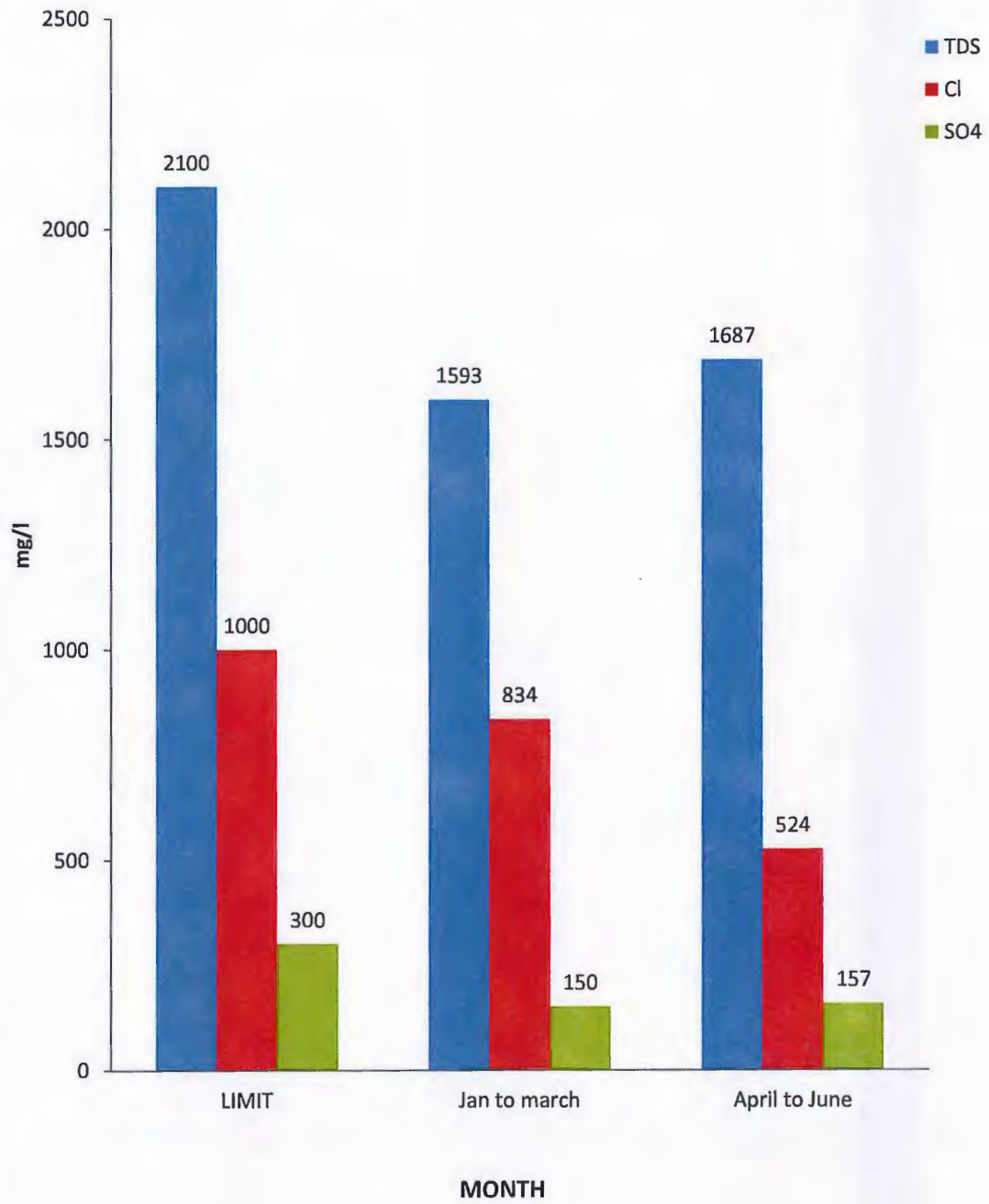
Six Monthly Variations in surface water

Sampling point: Surface water (Limestone pit)

Period: January – 2020 to June – 2020

Sr. No.	Parameter	Unit	Quarterly Jan. to March - 2020	Quarterly April to June - 2020	MoEF Limit
1	Temperature	°C	29	28	Shall not exceed 5°c above the receiving water temp
2	pH@ 25°C	pH unit	7.37	7.31	5.5-9.0
3	Colour	pt. Co. Scale	< 5	< 5	--
4	Total Suspended Solids (TSS) @105 °C	mg/L	20	17	100
5	Total Dissolved Solids (TDS) @180° C	mg/L	1593	1687	2100
6	Total volatile Solids	mg/L	10	4.8	--
7	COD	mg/L	45	41	250
8	BOD (5 days at 20° C)	mg/L	10	8	30
9	Oil & Grease	mg/L	< 1	< 1	10
10	Chloride	mg/L	834	824	1000
11	Sulphate	mg/L	150	157	300
12	Fluoride	mg/L	1.0	1.5	2.0
13	Phosphate as PO ₄ ⁻	mg/L	0.5	1.0	--
14	Total Residual Chlorine	mg/L	< 0.1	< 0.1	1.0
15	Free Available Chlorine	mg/L	< 0.10	< 0.10	--
16	Phenolic Compound	mg/L	< 0.10	< 0.10	1.0
17	Lead	mg/L	<0.1	<0.1	0.1
18	Copper	mg/L	0.55	0.51	3.0
19	Hexavalent Chromium	mg/L	< 0.03	< 0.03	0.1
20	Total Chromium	mg/L	< 0.03	< 0.03	2.0
21	Zinc	mg/L	0.10	0.17	5.0
22	Iron	mg/L	0.7	1.0	3.0
23	Calcium	mg/L	160	163	--
24	Magnesium	mg/L	80	84	--
25	Percentage Sodium	%	37.1	38.5	--
26	Total Coliform(MPN)	Present/ Absent	Absent	Absent	--
27	Bioassay Test	% Survival of fish after 96 hrs in 100% effluent	90	90	90%Survival of fish after 96 Hours in 100% of effluent

Graphical presentation for the variation of TDS & Cl in lime stone pit



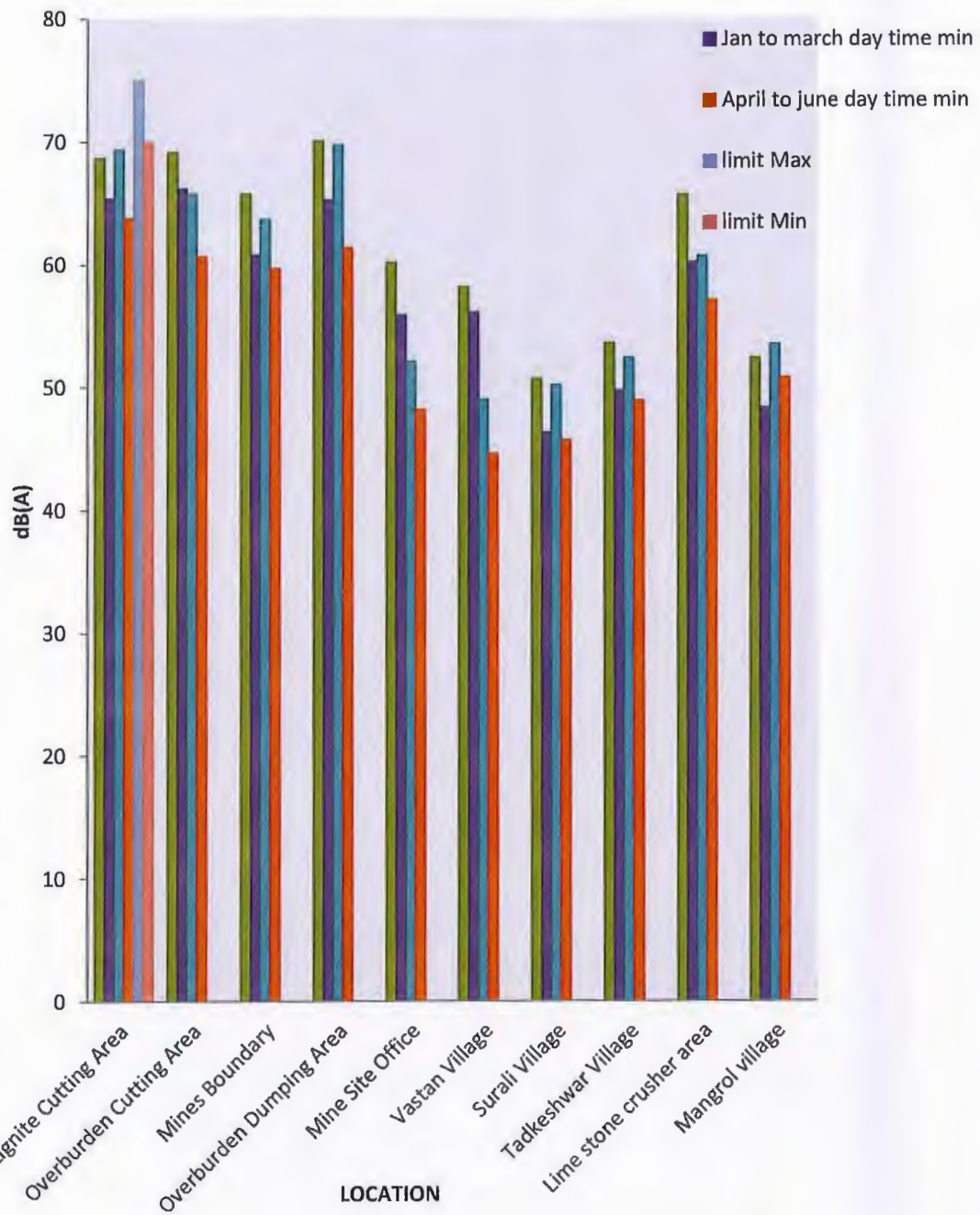
Six Monthly Variations in Noise Level

Parameter: Noise

Period: January – 2020 to June – 2020

SR. NO	LOCATION	NOISE LEVEL, dB [A]							
		Quarterly Jan. to March - 2020				Quarterly April to June - 2020			
		DAY Time		Night Time		DAY Time		Night Time	
		Max	Min	Max	Min	Max	Min	Max	Min
1	Lignite Cutting Area	68.7	65.4	67.4	64.8	69.4	63.8	66.8	63.6
2	Overburden Cutting Area	69.2	66.2	68.3	66.8	65.8	60.7	63.2	59.7
3	Mines Boundary	65.8	60.8	60.7	55.3	63.7	59.7	60.1	56.8
4	Overburden Dumping Area	70.1	65.3	68.2	64.7	69.8	61.4	67.8	64.5
5	Mine Site Office	60.2	55.9	58.3	56.2	52.1	48.2	46.8	41.3
6	Vastan Village	58.2	56.1	55.3	50.9	49.0	44.6	45.2	40.8
7	Surali Village	50.7	46.3	45.9	40.3	50.2	45.7	46.7	41.5
8	Tadkeshwar Village	53.6	49.7	50.4	45.7	52.4	48.9	49.8	45.6
9	Lime stone crusher area	65.7	60.2	60.7	55.8	60.7	57.1	56.8	51.2
10	Mangrol village	52.4	48.3	50.3	46.3	53.5	50.8	51.5	45.3
	GPCB limit	75 (dB)		70(dB)		75 (dB)		70(dB)	

Graphical presentation for the variation of in Noise level



Six Monthly Variations in Micrometeorological data

Period: January – 2020 to June – 2020

Dry Bulb Temperature (°C)		
Time in Hrs.	Quarterly Jan. to March - 2020	Quarterly April to June - 2020
10.00	30.0	30.8
11.00	33.8	31.0
12.00	36.1	31.7
13.00	35.9	32.3
14.00	34.0	33.5
15.00	34.5	34.5
16.00	33.7	34.0
17.00	32.9	33.7
18.00	31.2	33.2
19.00	30.7	32.6
20.00	29.0	31.7
21.00	29.6	30.5
22.00	28.7	30.9
23.00	28.6	30.3
00.00	28.4	30.8
01.00	27.8	30.1
02.00	27.5	30.6
03.00	26.5	30.3
04.00	26.0	30.0
05.00	25.7	30.4
06.00	25.0	30.2
07.00	27.9	31.0
08.00	28.1	31.7
09.00	29.3	32.5
Maximum	36.1	34.5
Minimum	25.0	30.0
Average	30.1	31.6

Six Monthly Variations in Micrometeorological data

Period: January – 2020 to June – 2020

Wet Bulb Temperature (°C)		
Time in Hrs.	Quarterly Jan. to March - 2020	Quarterly April to June - 2020
10.00	25.2	27.8
11.00	30.1	28.5
12.00	31.8	29.4
13.00	33.7	27.9
14.00	30.1	31.4
15.00	30.6	32.7
16.00	30.7	32.9
17.00	27.9	31.6
18.00	28.5	31.4
19.00	26.7	31.9
20.00	25.6	29.8
21.00	26.4	27.6
22.00	24.6	27.9
23.00	25.7	27.4
00.00	26.1	27.2
01.00	26.9	27.0
02.00	26.3	27.5
03.00	21.7	27.9
04.00	24.9	27.4
05.00	23.1	27.2
06.00	24.7	27.0
07.00	24.9	28.5
08.00	26.3	28.7
09.00	26.7	28.4
Maximum	33.7	32.9
Minimum	21.7	27.0
Average	27.1	29.0

Six Monthly Variations in Micrometeorological data

Period: January – 2020 to June – 2020

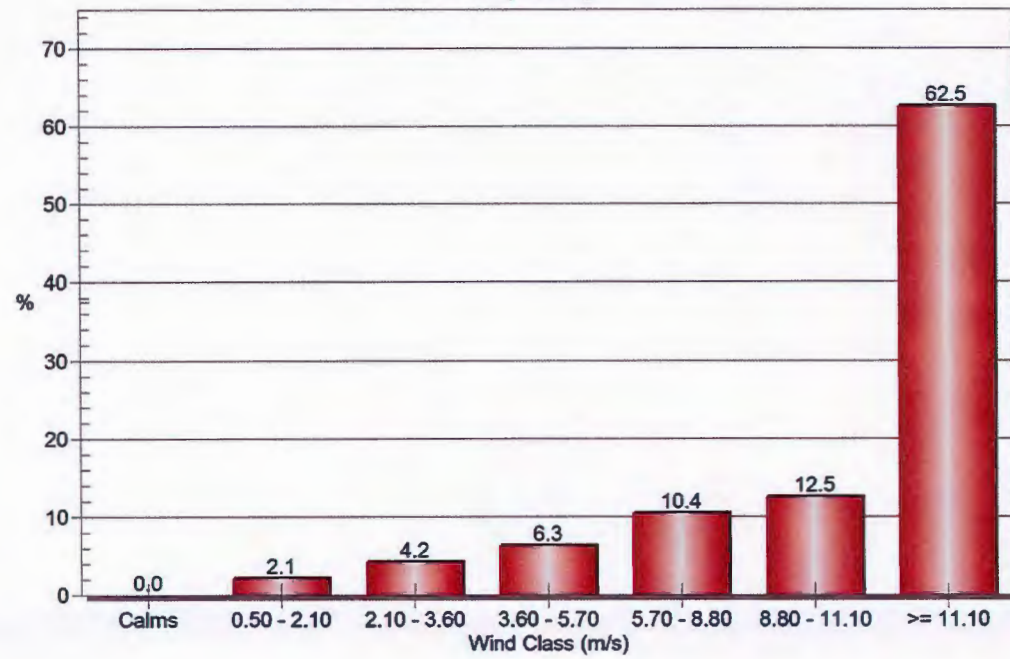
Relative Humidity %		
Time in Hrs.	Quarterly Jan. to March - 2020	Quarterly April to June - 2020
10.00	35.4	63.5
11.00	30.1	60.5
12.00	28.0	56.7
13.00	27.4	57.4
14.00	27.2	58.0
15.00	27.6	58.5
16.00	28.9	61.5
17.00	30.0	63.7
18.00	30.1	65.9
19.00	44.6	68.9
20.00	50.8	71.4
21.00	53.0	73.5
22.00	55.6	72.4
23.00	58.7	70.3
00.00	61.4	74.7
01.00	60.3	75.3
02.00	59.7	78.2
03.00	59.2	81.3
04.00	55.2	77.5
05.00	50.1	75.4
06.00	47.6	74.9
07.00	45.6	72.6
08.00	40.8	73.0
09.00	35.4	73.1
Maximum	61.4	81.3
Minimum	27.2	56.7
Average	43.5	69.1

Six Monthly Variations in Micrometeorological data

Period: January – 2020 to June – 2020

Wind Speed (km/hour)		
Time in Hrs.	Quarterly Jan. to March - 2020	Quarterly April to June - 2020
10.00	7	21
11.00	9	18
12.00	10	22
13.00	10	20
14.00	15	22
15.00	18	24
16.00	16	18
17.00	14	23
18.00	15	25
19.00	10	26
20.00	6	25
21.00	4	27
22.00	2	22
23.00	3	25
00.00	3	20
01.00	4	23
02.00	5	17
03.00	6	15
04.00	7	14
05.00	8	15
06.00	8	13
07.00	10	12
08.00	12	11
09.00	12	14
Maximum	18	27.0
Minimum	2	11.0
Average	9	20.0

Wind Class Frequency Distribution

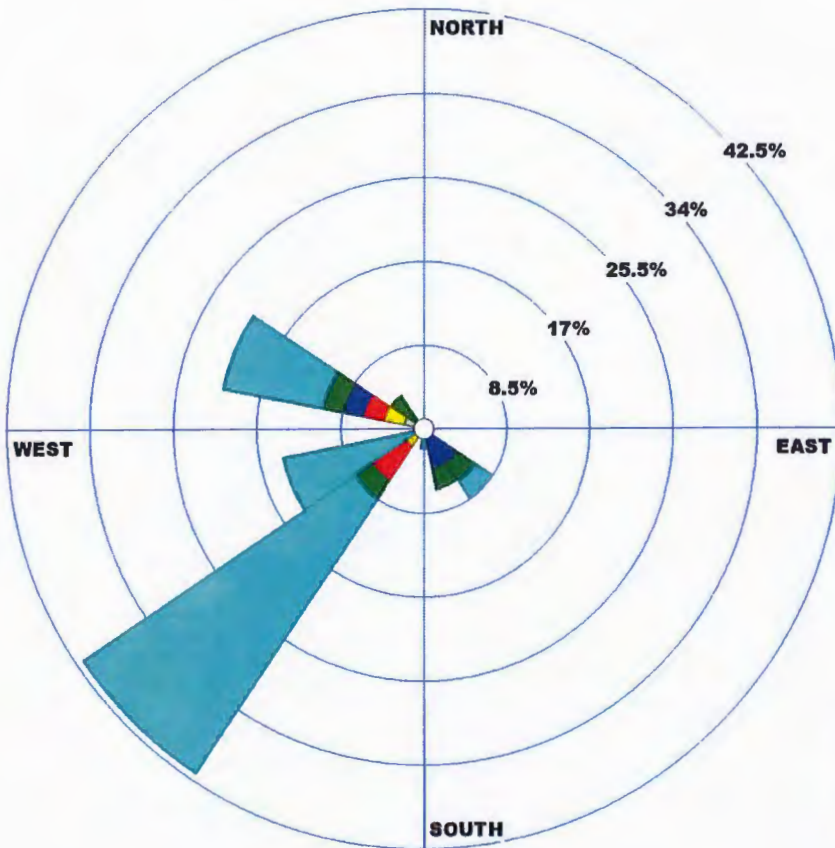


WIND ROSE PLOT:

**M/s. Gujarat Industries Power Company Limited
Vastan Lignite Mine**

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.10
 - 8.80 - 11.10
 - 5.70 - 8.80
 - 3.60 - 5.70
 - 2.10 - 3.60
 - 0.50 - 2.10
- Calms: 0.00%

COMMENTS:

DATA PERIOD:

**Start Date: 18-02-2020 - 00:00
End Date: 11-06-2020 - 10:00**

COMPANY NAME:

M/s. Gujarat Industries Power Company Limited

MODELER:

**M/s. Ecosystem Resource
Management Pvt. Ltd.**

CALM WINDS:

0.00%

TOTAL COUNT:

47 hrs.

AVG. WIND SPEED:

14.45 m/s

DATE:

25-06-2020

PROJECT NO.: