



GUJARAT POLLUTION CONTROL BOARD

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केन्द्रीय प्रदूषण नियंत्रण बोर्ड
परिवेश भवन, पूरबी अरुन नगर, दिल्ली-32

5961

14 SEP 2016

Central Pollution Control Board
Parivesh Bhavan, East Arjun Nagar, Delhi-32

Date: 03.09.2016

6 SEP 2016



To,

The Chairman,
Central Pollution Control Board,
'Parivesh Bhawan', East Arjun Nagar,
Delhi - 110032

KIND ATTN.: SHRI N. K. GUPTA, Incharge - EES

Sub.: Sampling and Analysis reports of Ambient Air Quality and Water Quality in
three CPAs of Gujarat State

Ref.: Your office letter no. B-29012/ESS(CPA)/2015-16/338, dated 26.04.2016

Sir,

With reference to the above subject, I am instructed to forward Sampling and Analysis
reports of Ambient Air Quality and Water Quality of Critically Polluted Areas of Gujarat,
i.e. Ankleshwar, Vapi & Vatva of Pre-Monsoon Season.

Thanking you,

For & on behalf of
Gujarat Pollution Control Board

(K. C. Mistry)

Member Secretary

Pl. review &
evaluate CEPR
@MM
21/9.

Ms. Neel, KA
Encl.: As above

Clean Gujarat Green Gujarat

ISO - 9001 - 2008 & ISO - 14001 - 2004 Certified Organisation

SAMPLING AND ANALYSIS OF AMBIENT AIR QUALITY AND WATER QUALITY IN SELECTED INDUSTRIAL/CLUSTER AREAS AT ANKLESHWAR

For
**Narmada Clean Tech Limited
Ankleshwar**

For and on behalf of M/s. Bhagavathi Ana Labs Pvt. Ltd.

Approved by : **Dr. Santosh Zargar**

Signed : 

Position : **Lab Manager**

Date : **1/8/16**

This report has been prepared by M/s. Bhagavathi Ana Labs Private Limited with all reasonable skill, care and diligence within the terms of the contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client. Name of the sampling locations /sample identity details –provided by client.

SAMPLING AND ANALYSIS OF AMBIENT AIR QUALITY AND WATER QUALITY IN SELECTED INDUSTRIAL/CLUSTER AREAS AT ANKLESHWAR
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SAMPLING AND ANALYSIS OF AMBIENT AIR QUALITY AND WATER QUALITY IN SELECTED INDUSTRIAL/CLUSTER AREAS AT ANKLESHWAR

1.0 PROJECT STUDY:

With a view to assess the environmental quality arising from the activities undertaken by **M/s. Narmada Clean Tech Ltd., Ankleshwar** retained M/s. Bhagavathi Ana Labs Private Limited for carrying out Environmental monitoring studies on Seasonal basis.

In this study report, results of Ambient Air Quality, Surface Water Quality & Ground Water Quality analysis data are presented for the month of **June 2016**.

2.0 DETAILS OF SAMPLING LOCATIONS

2.1 Ambient Air Quality

To assess the Environment monitoring around **Ankleshwar & Panoli** for baseline data on the Ambient Air, parameters like SO₂, NO₂, PM₁₀, PM_{2.5}, O₃, Lead, CO, Ammonia, Benzene, Benzo(a) pyrene, Arsenic, Nickel on seasonal basis were monitored at seven locations around the Ankleshwar & Panoli in the month of **June-2016**. Samples were collected as per CPCB guidelines based on wind direction. The details of the sampling locations are given below in **Table-1**.

2.2 Surface and Ground Water Quality:

Surface and Ground Water Quality samples are collected from different locations to know the characteristics of Surface and Ground Water Quality. Samples were collected as per CPCB guidelines. The details of the sampling locations are given below in **Table-2**.

2.3 Marine Water Quality:

Marine Water Quality samples are collected from Top & Bottom of Kantijayal locations of Hanshot to know the characteristics of Marine Water Quality. Samples were collected as per CPCB guidelines. The details of the sampling locations are given below in **Table-2**.

3.0 ANALYTICAL METHODOLOGY:

IS, APHA 22nd Edition, CPCB, USEPA methods were followed for sampling and analysis of ambient air quality; surface & ground water quality.

4.0 DATA ANALYSIS

Test reports of Fieldwork during month of **June 2016** consisted of collection and analysis of samples of ambient air quality, surface & ground water quality at different locations around the **Ankleshwar & Panoli** are presented in Annexure-I

ANNEXURE-1



Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

Table-1 AAQ MONITORING LOCATIONS

SAMPLE CODE	NAME OF THE MONITORING LOCATION	DATE OF SAMPLING	LATITUDE	LONGITUDE
AAQ - 1	Asian Paints Colony, SW direction to Industrial Area	06.06.2016 to 11.06.2016	N 21°36'29.2"	E 073°01'02.2"
AAQ - 2	BASF Unit -II	06.06.2016 to 11.06.2016	N 21°37'32.8"	E 073°02'50.8"
AAQ - 3	Meghamani Organics	06.06.2016 to 11.06.2016	N 21°36'54.9"	E 073°01'59.9"
AAQ - 4	M/s. Durga Traders	06.06.2016 to 11.06.2016	N 21°38'08.9"	E 073°01'01.2"
AAQ - 5	Solve Specialty Limited	12.06.2016 to 16.06.2016	N 21°21'50.5"	E 072°56'0.26"
AAQ - 6	Hikal Chemicals Limited	12.06.2016 to 16.06.2016	N 21°32'32.6"	E 072°59'03.3"
AAQ - 7	Panoli GIDC Association	12.06.2016 to 16.06.2016	N 21°32'50.02"	E 072°53'53.71"

Table-2 SURFACE WATER SAMPLING LOCATIONS

SAMPLE CODE	NAME OF THE SAMPLING LOCATION	DATE OF SAMPLING	LATITUDE	LONGITUDE
SW - 1	Amla Khadi	06.06.2016 to 10.06.2016	N 21°36'52.80"	E 072°59'59.09"
SW - 2	Vand Khadi	06.06.2016 to 10.06.2016	N 21°34'17.70"	E 072°58'25.70"
SW - 3	Amaravathi River	06.06.2016 to 10.06.2016	N 21°38'48.32"	E 073°04'49.24"
SW - 4	Chapra Khadi	06.06.2016 to 10.06.2016	N 21°40'38.10"	E 073°00'58.10"
SW - 5	City Pond	06.06.2016 to 10.06.2016	N 21°38'11.86"	E 072°59'14.91"
SW - 6	GNFC Pond	06.06.2016 to 10.06.2016	N 21°38'53.20"	E 073°00'42.83"
SW - 7	Narmada River at Golden Bridge Upstream	06.06.2016 to 10.06.2016	N 21°41'15.42"	E 073°00'08.64"
SW - 8	Confluence point of Amlakhadi at Narmada River	07.06.2016 to 11.06.2016	N 21°39'32.42"	E 072°49'07.10"
SW - 9	Kantiyajal Sea, Hanshot	04.06.2016	N 21°28'10.2"	E 072°33'45"

Table-2 GROUND WATER SAMPLING LOCATIONS

SAMPLE CODE	NAME OF THE SAMPLING LOCATION	DATE OF SAMPLING	LATITUDE	LONGITUDE
GW - 1	Sanjali village	06.06.2016 to 10.06.2016	N 21°33'17.9"	E 072°59'37.8"
GW - 2	Gujarat Gas Compound	06.06.2016 to 10.06.2016	N 21°37'27.7"	E 072°59'03.6"
GW - 3	Panoli Village	06.06.2016 to 10.06.2016	N 21°32'18.7"	E 072°58'11.2"
GW - 4	Jeetali Village	06.06.2016 to 10.06.2016	N 21°37'9.57"	E 073°04'56.3"
GW - 5	Old Pungam Village	06.06.2016 to 10.06.2016	N 21°38'13.6"	E 072°56'02.5"



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

AMBIENT AIR QUALITY MONITORING

Location: Asian Paint Colony

S.No.	Pollutant(s)	Units	RESULTS			Test Methods
			06.06.2016	08.06.2016	10.06.2016	
1	SO ₂	µg/m ³	10.5	12.6	11.8	IS 5182 (Part 2) – 2001, West & Gaeke Method) & CPCB Manual
2	NO ₂	µg/m ³	18.3	20.4	18.4	IS 5182 (Part 6) – 2001, Jacob & Hochheiser – Sodium Arsenite Method) & CPCB Manual
3	PM ₁₀	µg/m ³	79	83	79	IS 5182 (Part – 23), 1999, RA 2009, Cyclone Flow Technique & CPCB Manual
4	PM _{2.5}	µg/m ³	22	23	24	Internal SOP & CPCB Manual
5	O ₃	µg/m ³	15.7	17.5	9.5	IS 5182 (Part 9), 1974, RA 2009, UV Spectrophotometric Method/ISC Method No.411, 3 rd Edition 1989 & CPCB Manual
6	Lead	µg/m ³	0.07	0.09	0.07	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual
7	CO	mg/m ³	<2	<2	<2	IS 5182 (Part – 10), 1999, RA 2009, GC Method & CPCB Manual
8	Ammonia	µg/m ³	13.8	14.9	15.4	Method 401 – Air Sampling and Analysis, APHA, 3 rd Edition & CPCB Manual
9	Benzene	µg/m ³	<3	<3	<3	USEPA Method – TO-3, Absorption and Desorption followed by GC-MS & CPCB Manual
10	Benzo(a) pyrene	ng/m ³	<0.5	<0.5	<0.5	USEPA Method – TO-13A & CPCB Manual
11	Arsenic	ng/m ³	<0.9	<0.9	<0.9	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual
12	Nickel	ng/m ³	1.3	1.9	1.8	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual



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Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

AMBIENT AIR QUALITY MONITORING

Location: BASF Unit-II

S.No.	Pollutant(s)	Units	RESULTS			Test Methods
			06.06.2016	08.06.2016	10.06.2016	
1	SO ₂	µg/m ³	21.3	18.4	18.4	IS 5182 (Part 2) – 2001, West & Gaeke Method) & CPCB Manual
2	NO ₂	µg/m ³	22	24	24.8	IS 5182 (Part 6) – 2001, Jacob & Hochheiser – Sodium Arsenite Method) & CPCB Manual
3	PM ₁₀	µg/m ³	86	87	74	IS 5182 (Part – 23), 1999, RA 2009, Cyclone Flow Technique & CPCB Manual
4	PM _{2.5}	µg/m ³	36	37	35	Internal SOP & CPCB Manual
5	O ₃	µg/m ³	11.4	14.8	11.9	IS 5182 (Part 9), 1974, RA 2009, UV Spectrophotometric Method/ISC Method No.411, 3 rd Edition 1989 & CPCB Manual
6	Lead	µg/m ³	0.13	0.16	0.13	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual
7	CO	mg/m ³	<2	<2	<2	IS 5182 (Part – 10), 1999, RA 2009, GC Method & CPCB Manual
8	Ammonia	µg/m ³	12.7	14.1	13.4	Method 401 – Air Sampling and Analysis, APHA, 3 rd Edition & CPCB Manual
9	Benzene	µg/m ³	<3	<3	<3	USEPA Method – TO-3, Absorption and Desorption followed by GC-MS & CPCB Manual
10	Benzo(a) pyrene	ng/m ³	<0.5	<0.5	<0.5	USEPA Method – TO-13A & CPCB Manual
11	Arsenic	ng/m ³	<0.9	<0.9	<0.9	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual
12	Nickel	ng/m ³	1.4	1.7	1.3	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual



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Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

AMBIENT AIR QUALITY MONITORING

Location: Meghmany Organics

S.No.	Pollutant(s)	Units	RESULTS			Test Methods
			06.06.2016	08.06.2016	10.06.2016	
1	SO ₂	µg/m ³	17	18	17.5	IS 5182 (Part 2) - 2001, West & Gaeke Method) & CPCB Manual
2	NO ₂	µg/m ³	23	22	21	IS 5182 (Part 6) - 2001, Jacob & Hochheiser - Sodium Arsenite Method) & CPCB Manual
3	PM ₁₀	µg/m ³	88	85	83	IS 5182 (Part - 23), 1999, RA 2009, Cyclone Flow Technique & CPCB Manual
4	PM _{2.5}	µg/m ³	31	32	33	Internal SOP & CPCB Manual
5	O ₃	µg/m ³	15.8	15.8	21.5	IS 5182 (Part 9), 1974, RA 2009, UV Spectrophotometric Method/ISC Method No.411, 3 rd Edition 1989 & CPCB Manual
6	Lead	µg/m ³	0.14	0.12	0.11	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual
7	CO	mg/m ³	<2	<2	<2	IS 5182 (Part - 10), 1999, RA 2009, GC Method & CPCB Manual
8	Ammonia	µg/m ³	7.4	8.7	8.5	Method 401 - Air Sampling and Analysis, APHA, 3 rd Edition & CPCB Manual
9	Benzene	µg/m ³	<3	<3	<3	USEPA Method - TO-3, Absorption and Desorption followed by GC-MS & CPCB Manual
10	Benzo(a) pyrene	ng/m ³	<0.5	<0.5	<0.5	USEPA Method - TO-13A & CPCB Manual
11	Arsenic	ng/m ³	<1	<1	<1	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual
12	Nickel	ng/m ³	1.9	1.4	1.4	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual



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Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

AMBIENT AIR QUALITY MONITORING

Location: Durga Traders

S.No.	Pollutant(s)	Units	RESULTS			Test Methods
			06.06.2016	08.06.2016	10.06.2016	
1	SO ₂	µg/m ³	12.5	13.7	15.6	IS 5182 (Part 2) - 2001, West & Gaeke Method) & CPCB Manual
2	NO ₂	µg/m ³	13.4	18.7	22	IS 5182 (Part 6) - 2001, Jacob & Hochheiser - Sodium Arsenite Method) & CPCB Manual
3	PM ₁₀	µg/m ³	89	88	85	IS 5182 (Part - 23), 1999, RA 2009, Cyclone Flow Technique & CPCB Manual
4	PM _{2.5}	µg/m ³	29	30	31	Internal SOP & CPCB Manual
5	O ₃	µg/m ³	5.4	6.7	7.6	IS 5182 (Part 9), 1974, RA 2009, UV Spectrophotometric Method/ISC Method No.411, 3 rd Edition 1989 & CPCB Manual
6	Lead	µg/m ³	0.06	0.09	0.14	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual
7	CO	mg/m ³	<2	<2	<2	IS 5182 (Part - 10), 1999, RA 2009, GC Method & CPCB Manual
8	Ammonia	µg/m ³	5.8	4.7	4.7	Method 401 - Air Sampling and Analysis, APHA, 3 rd Edition & CPCB Manual
9	Benzene	µg/m ³	<3	<3	<3	USEPA Method - TO-3, Absorption and Desorption followed by GC-MS & CPCB Manual
10	Benzo(a) pyrene	ng/m ³	<0.5	<0.5	<0.5	USEPA Method - TO-13A & CPCB Manual
11	Arsenic	ng/m ³	<0.9	<0.9	<0.9	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual
12	Nickel	ng/m ³	1.3	1.9	1.7	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual



Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

AMBIENT AIR QUALITY MONITORING

Location: Solvay Specialty limited

S.No.	Pollutant(s)	Units	RESULTS			Test Methods
			12.06.2016	14.06.2016	16.06.2016	
1	SO ₂	µg/m ³	8.7	7.6	11.3	IS 5182 (Part 2) - 2001, West & Gaeke Method) & CPCB Manual
2	NO ₂	µg/m ³	13.8	16.5	18.7	IS 5182 (Part 6) - 2001, Jacob & Hochheiser - Sodium Arsenite Method) & CPCB Manual
3	PM ₁₀	µg/m ³	80	78	82	IS 5182 (Part - 23), 1999, RA 2009, Cyclone Flow Technique & CPCB Manual
4	PM _{2.5}	µg/m ³	25	24	24	Internal SOP & CPCB Manual
5	O ₃	µg/m ³	8.9	14.8	10.4	IS 5182 (Part 9), 1974, RA 2009, UV Spectrophotometric Method/ISC Method No.411, 3 rd Edition 1989 & CPCB Manual
6	Lead	µg/m ³	0.13	0.11	0.09	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual
7	CO	mg/m ³	<2	<2	<2	IS 5182 (Part - 10), 1999, RA 2009, GC Method & CPCB Manual
8	Ammonia	µg/m ³	11	12	8.8	Method 401 - Air Sampling and Analysis, APHA, 3 rd Edition & CPCB Manual
9	Benzene	µg/m ³	<3	<3	<3	USEPA Method - TO-3, Absorption and Desorption followed by GC-MS & CPCB Manual
10	Benzo(a) pyrene	ng/m ³	<0.5	<0.5	<0.5	USEPA Method - TO-13A & CPCB Manual
11	Arsenic	ng/m ³	<0.9	<0.9	<0.9	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual
12	Nickel	ng/m ³	1.9	1.7	1.6	USEPA Method - IO-3.5, (ICP - MS Method) & CPCB Manual



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

AMBIENT AIR QUALITY MONITORING

Location: Hikal limited

S.No.	Pollutant(s)	Units	RESULTS			Test Methods
			12.06.2016	14.06.2016	16.06.2016	
1	SO ₂	µg/m ³	14.5	12.9	10.4	IS 5182 (Part 2) – 2001, West & Gaeke Method) & CPCB Manual
2	NO ₂	µg/m ³	19.4	23.5	16.8	IS 5182 (Part 6) – 2001, Jacob & Hochheiser – Sodium Arsenite Method) & CPCB Manual
3	PM ₁₀	µg/m ³	79	81	75	IS 5182 (Part – 23), 1999, RA 2009, Cyclone Flow Technique & CPCB Manual
4	PM _{2.5}	µg/m ³	24	23	26	Internal SOP & CPCB Manual
5	O ₃	µg/m ³	17.5	14.3	8.1	IS 5182 (Part 9), 1974, RA 2009, UV Spectrophotometric Method/ISC Method No.411, 3 rd Edition 1989 & CPCB Manual
6	Lead	µg/m ³	0.14	0.12	0.11	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual
7	CO	mg/m ³	<2	<2	<2	IS 5182 (Part – 10), 1999, RA 2009, GC Method & CPCB Manual
8	Ammonia	µg/m ³	10	13.5	8.9	Method 401 – Air Sampling and Analysis, APHA, 3 rd Edition & CPCB Manual
9	Benzene	µg/m ³	<3	<3	<3	USEPA Method – TO-3, Absorption and Desorption followed by GC-MS & CPCB Manual
10	Benzo(a) pyrene	ng/m ³	<0.5	<0.5	<0.5	USEPA Method – TO-13A & CPCB Manual
11	Arsenic	ng/m ³	<0.9	<0.9	<0.9	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual
12	Nickel	ng/m ³	1.5	1.4	1.8	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

AMBIENT AIR QUALITY MONITORING

Location: Panoli GIDC Associatin

S.No.	Pollutant(s)	Units	RESULTS			Test Methods
			12.06.2016	14.06.2016	16.06.2016	
1	SO ₂	µg/m ³	10.8	12.8	13.2	IS 5182 (Part 2) – 2001, West & Gaeke Method) & CPCB Manual
2	NO ₂	µg/m ³	22.5	20.7	14.5	IS 5182 (Part 6) – 2001, Jacob & Hochheiser – Sodium Arsenite Method) & CPCB Manual
3	PM ₁₀	µg/m ³	86	87	85	IS 5182 (Part – 23), 1999, RA 2009, Cyclone Flow Technique & CPCB Manual
4	PM _{2.5}	µg/m ³	32	33	28	Internal SOP & CPCB Manual
5	O ₃	µg/m ³	14.8	13.7	9.5	IS 5182 (Part 9), 1974, RA 2009, UV Spectrophotometric Method/ISC Method No.411, 3 rd Edition 1989 & CPCB Manual
6	Lead	µg/m ³	0.08	0.12	0.13	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual
7	CO	mg/m ³	<2	<2	<2	IS 5182 (Part – 10), 1999, RA 2009, GC Method & CPCB Manual
8	Ammonia	µg/m ³	12	11.5	12.2	Method 401 – Air Sampling and Analysis, APHA, 3 rd Edition & CPCB Manual
9	Benzene	µg/m ³	<3	<3	<3	USEPA Method – TO-3, Absorption and Desorption followed by GC-MS & CPCB Manual
10	Benzo(a) pyrene	ng/m ³	<0.5	<0.5	<0.5	USEPA Method – TO-13A & CPCB Manual
11	Arsenic	ng/m ³	<0.9	<0.9	<0.9	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual
12	Nickel	ng/m ³	1.4	1.7	1.4	USEPA Method – IO-3.5, (ICP – MS Method) & CPCB Manual



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SURFACE WATER QUALITY

Location-Amla Khadi

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colorless	Colorless	Colorless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.75	7.71	7.71	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	<1	<1	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	18	16	15	IS 3025: Part - 17
6	Dissolved Oxygen (DO)	mg/l	5.3	5.6	4.8	IS 3025: Part - 38
7	Chemical Oxygen Demand (COD)	mg/l	80	55	65	IS 3025: Part - 58
8	Bio-chemical Oxygen Demand (BOD)	mg/l	15	12	13	IS 3025: Part - 44
9	Conductivity (EC)	µS/cm	1210	1230	1220	IS 3025: Part - 14
10	Nitrite-nitrogen as N	mg/l	0.01	0.01	0.01	APHA 4500 - NO ₂ .B
11	Nitrate-Nitrogen as N	mg/l	7.8	7.2	7.1	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	7.81	7.21	7.11	By Calculation
13	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
14	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
15	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
16	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
17	Sulphides as S ⁻²	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
18	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
19	Sodium Absorption Ratio (SAR)	-	7.5	8.1	7.8	By Calculation
20	Total Coliform	MPN/100ml	15	17	16	IS 1622
21	Faecal Coliform	MPN/100ml	3	5	5	IS 1622
22	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
23	Total Kjeldal Nitrogen (TKN)	mg/l	10.1	12.2	10.3	APHA 4500 - Norg.B
24	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	5.1	6.1	5.3	APHA 4500 - NH ₃
25	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
26	Surface Active Agent	mg/l	0.56	0.74	0.58	IS 13428
27	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
28	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
29	PCB	mg/l	N.D	N.D	N.D	EPA 508
30	PCT	mg/l	N.D	N.D	N.D	EPA 508
31	Zinc as Zn	mg/l	0.04	0.03	0.04	IS 3025: Part - 49
32	Nickel as Ni	mg/l	0.01	0.01	0.01	IS 3025: Part - 54
33	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
34	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
35	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
36	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
37	Lead as Pb	mg/l	BDL	BDL	<0.01	IS 3025: Part - 47
38	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
39	Manganese as Mn	mg/l	0.08	0.08	0.07	APHA 3111 - B
40	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
41	Iron as Fe	mg/l	0.18	0.12	0.16	IS 3025: Part - 53
42	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
43	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
44	Boron as B	mg/l	0.15	0.17	0.16	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SURFACE WATER QUALITY

Location- Vand Khadi

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colorless	Colorless	Colorless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	6.85	6.89	6.92	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	<1	<1	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	12	14	13	IS 3025: Part - 17
6	Dissolved Oxygen (DO)	mg/l	6.2	5.9	6.4	IS 3025: Part - 38
7	Chemical Oxygen Demand (COD)	mg/l	15	18	17	IS 3025: Part - 58
8	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
9	Conductivity (EC)	µS/cm	1320	1330	1340	IS 3025: Part - 14
10	Nitrite-nitrogen as N	mg/l	0.08	0.07	0.08	APHA 4500 - NO ₂ .B
11	Nitrate-Nitrogen as N	mg/l	4	4.5	4.4	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	4.08	4.57	4.48	By Calculation
13	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
14	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
15	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
16	Fluoride as F ⁻	mg/l	1.2	1.1	1.1	IS 3025: Part - 60
17	Sulphides as S ²⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
18	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
19	Sodium Absorption Ratio (SAR)	-	3.5	3.9	3.4	By Calculation
20	Total Coliform	MPN/100ml	24	28	26	IS 1622
21	Faecal Coliform	MPN/100ml	10	13	12	IS 1622
22	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
23	Total Kjeldal Nitrogen (TKN)	mg/l	6.2	6.4	6	APHA 4500 - Norg.B
24	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	3.1	3.2	3	APHA 4500 - NH ₃
25	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
26	Surface Active Agent	mg/l	0.19	0.21	0.18	IS 13428
27	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
28	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
29	PCB	mg/l	N.D	N.D	N.D	EPA 508
30	PCT	mg/l	N.D	N.D	N.D	EPA 508
31	Zinc as Zn	mg/l	0.02	0.02	0.03	IS 3025: Part - 49
32	Nickel as Ni	mg/l	0.01	0.01	0.01	IS 3025: Part - 54
33	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
34	Hexavalent Chromium as Cr6 ⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
35	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
36	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
37	Lead as Pb	mg/l	BDL	BDL	BDL	IS 3025: Part - 47
38	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
39	Manganese as Mn	mg/l	0.06	0.06	0.05	APHA 3111 - B
40	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
41	Iron as Fe	mg/l	0.25	0.24	0.25	IS 3025: Part - 53
42	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
43	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
44	Boron as B	mg/l	0.21	0.13	0.15	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SURFACE WATER QUALITY

Location- Amravati River

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colorless	Colorless	Colorless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.25	7.36	7.28	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	<1	<1	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	10	8	7	IS 3025: Part - 17
6	Dissolved Oxygen (DO)	mg/l	7.2	7.6	6.9	IS 3025: Part - 38
7	Chemical Oxygen Demand (COD)	mg/l	10	12	11	IS 3025: Part - 58
8	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
9	Conductivity (EC)	µS/cm	1120	1150	1140	IS 3025: Part - 14
10	Nitrite-nitrogen as N	mg/l	<0.01	<0.01	<0.01	APHA 4500 - NO ₂ .B
11	Nitrate-Nitrogen as N	mg/l	6.8	6.2	6.9	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	6.81	6.21	6.91	By Calculation
13	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
14	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
15	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
16	Fluoride as F ⁻	mg/l	0.3	0.4	0.3	IS 3025: Part - 60
17	Sulphides as S ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
18	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
19	Sodium Absorption Ratio, (SAR)	-	1.9	2.1	2.5	By Calculation
20	Total Coliform	MPN/100ml	59	55	61	IS 1622
21	Faecal Coliform	MPN/100ml	14	11	13	IS 1622
22	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
23	Total Kjeldal Nitrogen (TKN)	mg/l	1.8	1.4	1.4	APHA 4500 - Norg.B
24	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
25	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
26	Surface Active Agent	mg/l	0.15	0.13	0.18	IS 13428
27	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
28	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
29	PCB	mg/l	N.D	N.D	N.D	EPA 508
30	PCT	mg/l	N.D	N.D	N.D	EPA 508
31	Zinc as Zn	mg/l	0.05	0.04	0.04	IS 3025: Part - 49
32	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
33	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
34	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
35	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
36	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
37	Lead as Pb	mg/l	BDL	BDL	BDL	IS 3025: Part - 47
38	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
39	Manganese as Mn	mg/l	0.02	0.02	0.01	APHA 3111 - B
40	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
41	Iron as Fe	mg/l	0.14	0.11	0.13	IS 3025: Part - 53
42	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
43	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
44	Boron as B	mg/l	0.12	0.07	0.09	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SURFACE WATER QUALITY

Location- Chhapra Khadi

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colorless	Colorless	Colorless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.36	7.31	7.34	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	<1	<1	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	21	26	22	IS 3025: Part - 17
6	Dissolved Oxygen (DO)	mg/l	5.1	5.4	5.6	IS 3025: Part - 38
7	Chemical Oxygen Demand (COD)	mg/l	52	60	55	IS 3025: Part - 58
8	Bio-chemical Oxygen Demand (BOD)	mg/l	12	13	11	IS 3025: Part - 44
9	Conductivity (EC)	µS/cm	1100	1150	1100	IS 3025: Part - 14
10	Nitrite-nitrogen as N	mg/l	0.01	0.01	0.01	APHA 4500 - NO ₂ .B
11	Nitrate-Nitrogen as N	mg/l	5	5.2	5.2	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	5.01	5.21	5.21	By Calculation
13	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
14	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
15	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
16	Fluoride as F ⁻	mg/l	0.1	0.1	0.2	IS 3025: Part - 60
17	Sulphides as S ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
18	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
19	Sodium Absorption Ratio (SAR)	-	13.8	15.6	14.6	By Calculation
20	Total Coliform	MPN/100ml	23	24	22	IS 1622
21	Faecal Coliform	MPN/100ml	7	10	8	IS 1622
22	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
23	Total Kjeldal Nitrogen (TKN)	mg/l	10.5	10.6	10.2	APHA 4500 - Norg.B
24	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	5.1	5.2	5.3	APHA 4500 - NH ₃
25	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
26	Surface Active Agent	mg/l	0.78	0.68	0.76	IS 13428
27	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
28	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
29	PCB	mg/l	N.D	N.D	N.D	EPA 508
30	PCT	mg/l	N.D	N.D	N.D	EPA 508
31	Zinc as Zn	mg/l	0.02	0.02	0.02	IS 3025: Part - 49
32	Nickel as Ni	mg/l	0.03	0.02	0.02	IS 3025: Part - 54
33	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
34	Hexavalent Chromium as Cr6 ⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
35	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
36	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
37	Lead as Pb	mg/l	BDL	BDL	BDL	IS 3025: Part - 47
38	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
39	Manganese as Mn	mg/l	0.12	0.18	0.2	APHA 3111 - B
40	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
41	Iron as Fe	mg/l	0.56	0.51	0.5	IS 3025: Part - 53
42	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
43	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
44	Boron as B	mg/l	0.04	0.56	0.59	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SURFACE WATER QUALITY

Location- City Pond

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colorless	Colorless	Colorless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.51	7.5	7.48	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	<1	<1	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	14	12	15	IS 3025: Part - 17
6	Dissolved Oxygen (DO)	mg/l	7.3	6.8	7.1	IS 3025: Part - 38
7	Chemical Oxygen Demand (COD)	mg/l	4	6	5	IS 3025: Part - 58
8	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
9	Conductivity (EC)	µS/cm	1110	1000	980	IS 3025: Part - 14
10	Nitrite-nitrogen as N	mg/l	<0.01	<0.01	<0.01	APHA 4500 - NO ₂ .B
11	Nitrate-Nitrogen as N	mg/l	5	4	5	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	5.01	4.01	5.01	By Calculation
13	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
14	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
15	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
16	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
17	Sulphides as S ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
18	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
19	Sodium Absorption Ratio (SAR)	-	2.3	2.1	2.6	By Calculation
20	Total Coliform	MPN/100ml	16	18	15	IS 1622
21	Faecal Coliform	MPN/100ml	5	4	3	IS 1622
22	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
23	Total Kjeldal Nitrogen (TKN)	mg/l	1.4	1.4	1.8	APHA 4500 - Norg.B
24	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
25	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
26	Surface Active Agent	mg/l	0.1	0.11	0.12	IS 13428
27	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
28	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
29	PCB	mg/l	N.D	N.D	N.D	EPA 508
30	PCT	mg/l	N.D	N.D	N.D	EPA 508
31	Zinc as Zn	mg/l	0.01	0.01	0.01	IS 3025: Part - 49
32	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
33	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
34	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
35	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
36	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
37	Lead as Pb	mg/l	BDL	BDL	BDL	IS 3025: Part - 47
38	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
39	Manganese as Mn	mg/l	0.08	0.08	0.09	APHA 3111 - B
40	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
41	Iron as Fe	mg/l	0.31	0.3	0.32	IS 3025: Part - 53
42	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
43	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
44	Boron as B	mg/l	0.53	0.08	0.07	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SURFACE WATER QUALITY

Location- GNFC Pond

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colorless	Colorless	Colorless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.36	7.33	7.34	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	<1	<1	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	17	15	14	IS 3025: Part - 17
6	Dissolved Oxygen (DO)	mg/l	6.8	6.4	7.2	IS 3025: Part - 38
7	Chemical Oxygen Demand (COD)	mg/l	4	5	6	IS 3025: Part - 58
8	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
9	Conductivity (EC)	µS/cm	1100	1110	990	IS 3025: Part - 14
10	Nitrite-nitrogen as N	mg/l	<0.01	<0.01	<0.01	APHA 4500 - NO ₂ .B
11	Nitrate-Nitrogen as N	mg/l	4	5	5	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	4.01	5.01	5.01	By Calculation
13	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
14	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
15	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
16	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
17	Sulphides as S ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
18	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
19	Sodium Absorption Ratio (SAR)	-	1.2	1.8	1.5	By Calculation
20	Total Coliform	MPN/100ml	33	36	35	IS 1622
21	Faecal Coliform	MPN/100ml	14	15	13	IS 1622
22	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
23	Total Kjeldal Nitrogen (TKN)	mg/l	1.8	1.4	1.8	APHA 4500 - Norg.B
24	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
25	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
26	Surface Active Agent	mg/l	0.13	0.17	0.15	IS 13428
27	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
28	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
29	PCB	mg/l	N.D	N.D	N.D	EPA 508
30	PCT	mg/l	N.D	N.D	N.D	EPA 508
31	Zinc as Zn	mg/l	0.05	0.05	0.04	IS 3025: Part - 49
32	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
33	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
34	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
35	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
36	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
37	Lead as Pb	mg/l	BDL	BDL	BDL	IS 3025: Part - 47
38	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
39	Manganese as Mn	mg/l	0.06	0.05	0.04	APHA 3111 - B
40	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
41	Iron as Fe	mg/l	0.48	0.51	0.52	IS 3025: Part - 53
42	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
43	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
44	Boron as B	mg/l	0.06	0.11	0.09	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SURFACE WATER QUALITY

Location- Narmada River at Golden Bridge Upstream

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colourless	Colourless	Colourless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.85	7.82	7.81	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	BDL	BDL	BDL	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	26	22	24	IS 3025: Part - 17
6	Dissolved Oxygen (DO)	mg/l	6.2	6.5	6	IS 3025: Part - 38
7	Chemical Oxygen Demand (COD)	mg/l	11	14	12	IS 3025: Part - 58
8	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
9	Conductivity (EC)	µS/cm	1450	1460	1440	IS 3025: Part - 14
10	Nitrite-nitrogen as N	mg/l	<0.01	<0.01	<0.01	APHA 4500 - NO ₂ .B
11	Nitrate-Nitrogen as N	mg/l	4	4.9	5	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	4.01	4.91	5.01	By Calculation
13	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
14	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
15	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
16	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
17	Sulphides as S ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
18	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
19	Sodium Absorption Ratio (SAR)	-	1.1	1.3	0.9	By Calculation
20	Total Coliform	MPN/100ml	44	39	42	IS 1622
21	Faecal Coliform	MPN/100ml	9	13	8	IS 1622
22	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
23	Total Kjeldal Nitrogen (TKN)	mg/l	1.8	1.8	1.8	APHA 4500 - Norg.B
24	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
25	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
26	Surface Active Agent	mg/l	<10	<10	<10	IS 13428
27	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
28	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
29	PCB	mg/l	N.D	N.D	N.D	EPA 508
30	PCT	mg/l	N.D	N.D	N.D	EPA 508
31	Zinc as Zn	mg/l	0.02	0.02	0.01	IS 3025: Part - 49
32	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
33	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
34	Hexavalent Chromium as Cr6 ⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
35	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
36	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
37	Lead as Pb	mg/l	BDL	BDL	BDL	IS 3025: Part - 47
38	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
39	Manganese as Mn	mg/l	0.02	0.02	0.01	APHA 3111 - B
40	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
41	Iron as Fe	mg/l	0.12	0.15	0.14	IS 3025: Part - 53
42	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
43	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
44	Boron as B	mg/l	0.12	0.14	0.11	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SURFACE WATER QUALITY

Location- Confluence point of Amla khadi at Narmada River

Sr. No.	Test Parameters	UOM	Results			Test Method
			07.06.2016	09.06.2016	11.06.2016	
1	Colour	Hazen	Colourless	Colourless	Colourless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.69	7.62	7.61	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	<1	<1	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	18	16	15	IS 3025: Part - 17
6	Dissolved Oxygen (DO)	mg/l	6.5	6.8	6.2	IS 3025: Part - 38
7	Chemical Oxygen Demand (COD)	mg/l	17	18	15	IS 3025: Part - 58
8	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
9	Conductivity (EC)	µS/cm	1160	1140	1110	IS 3025: Part - 14
10	Nitrite-nitrogen as N	mg/l	<0.01	<0.01	<0.01	APHA 4500 - NO ₂ .B
11	Nitrate-Nitrogen as N	mg/l	5.1	4.9	5.8	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	5.11	4.91	5.81	By Calculation
13	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
14	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
15	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
16	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
17	Sulphides as S ²⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
18	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
19	Sodium Absorption Ratio (SAR)	-	6.4	6.1	6.9	By Calculation
20	Total Coliform	MPN/100ml	27	29	24	IS 1622
21	Faecal Coliform	MPN/100ml	8	9	6	IS 1622
22	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
23	Total Kjeldal Nitrogen (TKN)	mg/l	1.8	1.8	1.4	APHA 4500 - Norg.B
24	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
25	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
26	Surface Active Agent	mg/l	0.16	0.18	0.14	IS 13428
27	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
28	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
29	PCB	mg/l	N.D	N.D	N.D	EPA 508
30	PCT	mg/l	N.D	N.D	N.D	EPA 508
31	Zinc as Zn	mg/l	0.01	0.01	0.01	IS 3025: Part - 49
32	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
33	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
34	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
35	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
36	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
37	Lead as Pb	mg/l	BDL	BDL	BDL	IS 3025: Part - 47
38	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
39	Manganese as Mn	mg/l	0.01	0.01	0.01	APHA 3111 - B
40	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
41	Iron as Fe	mg/l	0.08	0.11	0.09	IS 3025: Part - 53
42	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
43	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
44	Boron as B	mg/l	0.16	0.13	0.15	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SEA WATER QUALITY

Location- Kantiyajal Sea (Top)

Sr. No.	Test Parameters	UOM	Results	Test Method
			04.06.2016	
1	Colour	Hazen	<5	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	IS 3025: Part - 5
3	pH	-	7.5	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	APHA 5520 D
5	Suspended Solids (SS)	mg/l	2098	APHA 2540-D
6	Dissolved Oxygen (DO)	mg/l	4.8	APHA 4500-O-C
7	Chemical Oxygen Demand (COD)	mg/l	13	APHA 5220-B
8	Bio-chemical Oxygen Demand (BOD)	mg/l	2.776	APHA 5210-B
9	Conductivity (EC)	µS/cm	43200	APHA 2510 B
10	Nitrite as NO ₂	mg/l	0.01	IS:3025 (P.34)
11	Nitrate as NO ₃	mg/l	3.4	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	4.02	By Calculation
13	Ammonia (as NH ₃)	mg/l	BDL	APHA 4500 NH ₃ -F
14	Free Ammonia (as N)	mg/l	BDL	S 3025 (P.34)
15	Total Residual Chlorine	mg/l	BDL	IS 3025 (P.26)
16	Cyanide as CN ⁻	mg/l	BDL	IS:3025 (P.27)
17	Fluoride as F ⁻	mg/l	0.56	APHA 4500 F-D
18	Sulphides as S ⁻	mg/l	BDL	IS 3025 (P.29)
19	Dissolved Phosphates as P	mg/l	<0.01	IS 3025 (P.31)
20	Dissolved Phosphates as PO ₄	mg/l	<0.01	IS 3025 (P.31)
21	Phosphates as PO ₄	mg/l	0.2	IS 3025 (P.31)
22	Phosphates as P	mg/l	0.7	IS 3025 (P.31)
23	Sodium Absorption Ratio (SAR)	-	40.1	IS 11624
24	Total Coliform	MPN/100ml	<2	IS 1622:1981
25	Faecal Coliform	MPN/100ml	Absent	IS 1622:1981
26	Total Phosphorous	mg/l	<0.1	APHA 4500 - P.D
27	Total Kjeldal Nitrogen (TKN)	mg/l	0.02	IS 3025 (P.34)
28	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	APHA 4500 - NH ₃
29	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	IS 3025: Part - 43
30	Anionic Detergents as MBAS	mg/l	BDL	Annex K of IS 13428-2005
31	Organo-chlorine Pesticides(OCP)	mg/l	N.D	EPA 508
32	PAH's	mg/l	N.D	EPA 525.2
33	PCB	mg/l	N.D	EPA 508
34	PCT	mg/l	N.D	EPA 508
35	Zinc as Zn	mg/l	0.02	IS 3025 (P.65)
36	Nickel as Ni	mg/l	0.01	IS 3025 (P.65)
37	Copper as Cu	mg/l	0.02	IS 3025 (P.65)
38	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	IS 3025 (P.52)
39	Total Chromium as Cr	mg/l	0.06	IS : 3025 (P.65)
40	Arsenic as As	mg/l	<0.05	IS 3025 (P.65)
41	Lead as Pb	mg/l	<0.005	IS 3025 (P.65)
42	Cadmium as Cd	mg/l	<0.001	IS 3025 (P.65)
43	Manganese as Mn	mg/l	0.01	IS 3025 (P.65)
44	Mercury as Hg	mg/l	N.D	EPA 200.8
45	Iron as Fe	mg/l	0.40	SM 3125
46	Vanadium as V	mg/l	0.01	IS : 3025 (P.65)
47	Selenium as Se	mg/l	0.01	IS 3025 (P.65)
48	Boron as B	mg/l	3.15	IS 3025 (P.65)
49	Aldrin & Dieldrin	µg/l	<0.00001	USEPA 525.2
50	o,p- DDT	µg/l	<0.00001	USEPA 508
51	p,p- DDT	µg/l	<0.00001	USEPA 508
52	o,p- DDE	µg/l	<0.00001	USEPA 508
53	p,p- DDE	µg/l	<0.00001	USEPA 508
54	o,p- DDD	µg/l	<0.00001	USEPA 508
55	p,p- DDD	µg/l	<0.00001	USEPA 508
56	Lindane	µg/l	<0.00001	USEPA 508
57	Alfa-Endosulfan	µg/l	<0.00001	USEPA 508



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

58	Beta-Endosulfan	µg/l	<0.00001	USEPA 508
59	Endosulfan sulfate	µg/l	<0.00001	USEPA 508
60	Alpha-HCH	µg/l	<0.00001	USEPA 508
61	Beta-HCH	µg/l	<0.00001	USEPA 508
62	Delta-HCH	µg/l	<0.00001	USEPA 508
63	Methyl Paraoxon	µg/l	<0.00001	USEPA 8141A
64	Alachlor	µg/l	<0.00001	USEPA 525.2
65	Atrazine	µg/l	<0.00001	USEPA 8141A
66	Butachlor	µg/l	<0.00001	USEPA 8141A
67	Chlorpyrifos	µg/l	<0.00001	USEPA 8141A
68	Ethion	µg/l	<0.00001	USEPA 1657A
69	Isoproturon	µg/l	<0.00001	USEPA 532
70	Malathion	µg/l	<0.00001	USEPA 8141A
71	Monocrotophos	µg/l	<0.00001	USEPA 8141A
72	Phorate	µg/l	<0.00001	USEPA 8141A
73	2,4-D	µg/l	<0.00001	USEPA 515.1
74	Malaoxon	µg/l	<0.00001	APHA 6440 C
75	Acenaphthylene	µg/l	<0.00001	APHA 6440 C
76	Fluorene	µg/l	<0.00001	APHA 6440 C
77	Phenanthrene	µg/l	<0.00001	APHA 6440 C
78	Anthracene	µg/l	<0.00001	APHA 6440 C
79	Pyrene	µg/l	<0.00001	APHA 6440 C
80	Benzo (alfa) Anthracene	µg/l	<0.00001	APHA 6440 C
81	Crysene	µg/l	<0.00001	APHA 6440 C
82	Benzo (b+k) fluranthene	µg/l	<0.00001	APHA 6440 C
83	Benzo (k) fluranthene	µg/l	<0.00001	APHA 6440 C
84	Benzo (alpha) pyrene	µg/l	<0.00001	APHA 6440 C
85	Indeno (1,2,3-cd)	µg/l	<0.00001	APHA 6440 C
86	Dibenzo (a,h) anthracene	µg/l	<0.00001	APHA 6440 C
87	Benzo(g,h,i) perylene	µg/l	<0.00001	APHA 6440 C
88	Phorate Sulphoxide	µg/l	<0.00001	USEPA 8141A
89	Phorate Sulphone	µg/l	<0.00001	USEPA 8141A



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

SEA WATER QUALITY
Location- Kantiyajal Sea (Bottom)

Sr. No.	Test Parameters	UOM	Results	Test Method
			04.06.2016	
1	Colour	Hazen	<5	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	IS 3025: Part - 5
3	pH	-	7.6	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	<1	APHA 5520 D
5	Suspended Solids (SS)	mg/l	3324	APHA 2540-D
6	Dissolved Oxygen (DO)	mg/l	6.3	APHA 4500-O-C
7	Chemical Oxygen Demand (COD)	mg/l	15.0	APHA 5220-B
8	Bio-chemical Oxygen Demand (BOD)	mg/l	3.147	APHA 5210-B
9	Conductivity (EC)	µS/cm	49990	APHA 2510 B
10	Nitrite as NO ₂	mg/l	0.3	IS:3025 (P.34)
11	Nitrate as NO ₃	mg/l	3.1	APHA 4500 - NO ₃ .B
12	Total Nitrogen (NO ₂ + NO ₃)	mg/l	3.5	By Calculation
13	Ammonia (as NH ₃)	mg/l	BDL	APHA 4500 NH ₃ -F
14	Free Ammonia (as N)	mg/l	BDL	S 3025 (P.34)
15	Total Residual Chlorine	mg/l	BDL	IS 3025 (P.26)
16	Cyanide as CN ⁻	mg/l	BDL	IS:3025 (P.27)
17	Fluoride as F ⁻	mg/l	0.61	APHA 4500 F-D
18	Sulphides as S ⁻	mg/l	BDL	IS 3025 (P.29)
19	Dissolved Phosphates as P	mg/l	<0.01	IS 3025 (P.31)
20	Dissolved Phosphates as PO ₄	mg/l	<0.01	IS 3025 (P.31)
21	Phosphates as PO ₄	mg/l	0.2	IS 3025 (P.31)
22	Phosphates as P	mg/l	0.7	IS 3025 (P.31)
23	Sodium Absorption Ratio (SAR)	-	42.5	IS 11624
24	Total Coliform	MPN/100ml	<2	IS 1622:1981
25	Faecal Coliform	MPN/100ml	Absent	IS 1622:1981
26	Total Phosphorous	mg/l	<0.1	APHA 4500 - P.D
27	Total Kjeldal Nitrogen (TKN)	mg/l	3.5	IS 3025 (P.34)
28	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	APHA 4500 - NH ₃
29	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	IS 3025: Part - 43
30	Anionic Detergents as MBAS	mg/l	BDL	Annex K of IS 13428-2005
31	Organo-chlorine Pesticides(OCP)	mg/l	N.D	EPA 508
32	PAH's	mg/l	N.D	EPA 525.2
33	PCB	mg/l	N.D	EPA 508
34	PCT	mg/l	N.D	EPA 508
35	Zinc as Zn	mg/l	0.02	IS 3025 (P.65)
36	Nickel as Ni	mg/l	0.01	IS 3025 (P.65)
37	Copper as Cu	mg/l	0.05	IS 3025 (P.65)
38	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	IS 3025 (P.52)
39	Total Chromium as Cr	mg/l	0.07	IS : 3025 (P.65)
40	Arsenic as As	mg/l	<0.05	IS 3025 (P.65)
41	Lead as Pb	mg/l	<0.005	IS 3025 (P.65)
42	Cadmium as Cd	mg/l	<0.001	IS 3025 (P.65)
43	Manganese as Mn	mg/l	0.08	IS 3025 (P.65)
44	Mercury as Hg	mg/l	ND	EPA 200.8
45	Iron as Fe	mg/l	0.50	SM 3125
46	Vanadium as V	mg/l	0.01	IS : 3025 (P.65)
47	Selenium as Se	mg/l	0.06	IS 3025 (P.65)
48	Boron as B	mg/l	3.25	IS 3025 (P.65)
49	Aldrin & Dieldrin	µg/l	<0.00001	USEPA 525.2
50	o,p- DDT	µg/l	<0.00001	USEPA 508
51	p,p- DDT	µg/l	<0.00001	USEPA 508
52	o,p- DDE	µg/l	<0.00001	USEPA 508
53	p,p- DDE	µg/l	<0.00001	USEPA 508
54	o,p- DDD	µg/l	<0.00001	USEPA 508
55	p,p- DDD	µg/l	<0.00001	USEPA 508
56	Lindane	µg/l	<0.00001	USEPA 508
57	Alfa-Endosulfan	µg/l	<0.00001	USEPA 508



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

58	Beta-Endosulfan	µg/l	<0.00001	USEPA 508
59	Endosulfan sulfate	µg/l	<0.00001	USEPA 508
60	Alpha-HCH	µg/l	<0.00001	USEPA 508
61	Beta-HCH	µg/l	<0.00001	USEPA 508
62	Delta-HCH	µg/l	<0.00001	USEPA 508
63	Methyl Paraoxon	µg/l	<0.00001	USEPA 8141A
64	Alachlor	µg/l	<0.00001	USEPA 525.2
65	Atrazine	µg/l	<0.00001	USEPA 8141A
66	Butachlor	µg/l	<0.00001	USEPA 8141A
67	Chlorpyrifos	µg/l	<0.00001	USEPA 8141A
68	Ethion	µg/l	<0.00001	USEPA 1657A
69	Isoproturon	µg/l	<0.00001	USEPA 532
70	Malathion	µg/l	<0.00001	USEPA 8141A
71	Monocrotophos	µg/l	<0.00001	USEPA 8141A
72	Phorate	µg/l	<0.00001	USEPA 8141A
73	2,4-D	µg/l	<0.00001	USEPA 515.1
74	Malaoxon	µg/l	<0.00001	APHA 6440 C
75	Acenaphthylene	µg/l	<0.00001	APHA 6440 C
76	Fluorene	µg/l	<0.00001	APHA 6440 C
77	Phenanthrene	µg/l	<0.00001	APHA 6440 C
78	Anthracene	µg/l	<0.00001	APHA 6440 C
79	Pyrene	µg/l	<0.00001	APHA 6440 C
80	Benzo (alfa) Anthracene	µg/l	<0.00001	APHA 6440 C
81	Crysene	µg/l	<0.00001	APHA 6440 C
82	Benzo (b+k) fluranthene	µg/l	<0.00001	APHA 6440 C
83	Benzo (k) fluranthene	µg/l	<0.00001	APHA 6440 C
84	Benzo (alpha) pyrene	µg/l	<0.00001	APHA 6440 C
85	Indeno (1,2,3-cd)	µg/l	<0.00001	APHA 6440 C
86	Dibenzo (a,h) anthracene	µg/l	<0.00001	APHA 6440 C
87	Benzo(g,h,i) perylene	µg/l	<0.00001	APHA 6440 C
88	Phorate Sulphoxide	µg/l	<0.00001	USEPA 8141A
89	Phorate Sulphone	µg/l	<0.00001	USEPA 8141A



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

GROUND WATER QUALITY

Location- Sanjali Village

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colourless	Colourless	Colourless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.56	7.52	7.53	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	BDL	BDL	BDL	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	8	6	7	IS 3025: Part - 17
6	Chemical Oxygen Demand (COD)	mg/l	8	7	6	IS 3025: Part - 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
8	Conductivity (EC)	µS/cm	890	880	890	IS 3025: Part - 14
9	Nitrite-nitrogen as N	mg/l	<0.01	<0.01	<0.01	APHA 4500 - NO ₂ .B
10	Nitrate-Nitrogen as N	mg/l	1.9	1.8	1.7	APHA 4500 - NO ₃ .B
11	Total Nitrogen (NO ₂ + NO ₃)	mg/l	1.91	1.81	1.71	By Calculation
12	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
13	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
14	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
15	Fluoride as F ⁻	mg/l	1.2	1.3	1.2	IS 3025: Part - 60
16	Sulphides as S ²⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
17	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
18	Sodium Absorption Ratio (SAR)	-	4.96	5.8	5.4	By Calculation
19	Total Coliform	MPN/100ml	<2	<2	<2	IS 1622
20	Faecal Coliform	MPN/100ml	<2	<2	<2	IS 1622
21	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
22	Total Kjeldal Nitrogen (TKN)	mg/l	<1	<1	<1	APHA 4500 - Norg.B
23	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
24	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
25	Surface Active Agent	mg/l	<0.1	<0.1	<0.1	IS 13428
26	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
27	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
28	PCB	mg/l	N.D	N.D	N.D	EPA 508
29	PCT	mg/l	N.D	N.D	N.D	EPA 508
30	Zinc as Zn	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 49
31	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
32	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
33	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
34	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
35	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
36	Lead as Pb	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 47
37	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
38	Manganese as Mn	mg/l	BDL	BDL	BDL	APHA 3111 - B
39	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
40	Iron as Fe	mg/l	0.14	0.13	0.14	IS 3025: Part - 53
41	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
42	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
43	Boron as B	mg/l	0.21	0.24	0.19	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

GROUND WATER QUALITY

Location- Gujarat Gas Compound

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colourless	Colourless	Colourless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.25	7.21	7.18	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	BDL	BDL	BDL	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	8	6	5	IS 3025: Part - 17
6	Chemical Oxygen Demand (COD)	mg/l	8	6	7	IS 3025: Part - 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
8	Conductivity (EC)	µS/cm	1250	1300	1280	IS 3025: Part - 14
9	Nitrite-nitrogen as N	mg/l	0.01	0.01	0.01	APHA 4500 - NO ₂ .B
10	Nitrate-Nitrogen as N	mg/l	2.7	2.6	1.9	APHA 4500 - NO ₃ .B
11	Total Nitrogen (NO ₂ + NO ₃)	mg/l	2.71	2.61	1.91	By Calculation
12	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
13	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
14	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
15	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
16	Sulphides as S ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
17	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
18	Sodium Absorption Ratio (SAR)	-	7.6	8.3	7.9	By Calculation
19	Total Coliform	MPN/100ml	<2	<2	<2	IS 1622
20	Faecal Coliform	MPN/100ml	<2	<2	<2	IS 1622
21	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
22	Total Kjeldal Nitrogen (TKN)	mg/l	<1	<1	<1	APHA 4500 - Norg.B
23	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
24	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
25	Surface Active Agent	mg/l	<0.1	<0.1	<0.1	IS 13428
26	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
27	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
28	PCB	mg/l	N.D	N.D	N.D	EPA 508
29	PCT	mg/l	N.D	N.D	N.D	EPA 508
30	Zinc as Zn	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 49
31	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
32	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
33	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
34	Total Chromium as Cr ³⁺	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
35	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
36	Lead as Pb	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 47
37	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
38	Manganese as Mn	mg/l	BDL	BDL	BDL	APHA 3111 - B
39	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
40	Iron as Fe	mg/l	0.08	0.06	0.08	IS 3025: Part - 53
41	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
42	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
43	Boron as B	mg/l	0.11	0.11	0.11	IS 3025: Part - 57

ANKLESHWAR - GUJARAT

GROUND WATER QUALITY

Location- Panoli Village

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colourless	Colourless	Colourless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.69	7.71	7.71	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	BDL	BDL	BDL	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	15	13	12	IS 3025: Part - 17
6	Chemical Oxygen Demand (COD)	mg/l	7	9	6	IS 3025: Part - 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
8	Conductivity (EC)	µS/cm	1200	1210	1240	IS 3025: Part - 14
9	Nitrite-nitrogen as N	mg/l	0.01	0.01	0.01	APHA 4500 - NO ₂ .B
10	Nitrate-Nitrogen as N	mg/l	1.6	1.6	1.7	APHA 4500 - NO ₃ .B
11	Total Nitrogen (NO ₂ + NO ₃)	mg/l	1.61	1.61	1.71	By Calculation
12	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
13	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
14	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
15	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
16	Sulphides as S ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
17	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
18	Sodium Absorption Ratio (SAR)	-	4.3	5.2	4.8	By Calculation
19	Total Coliform	MPN/100ml	<2	<2	<2	IS 1622
20	Faecal Coliform	MPN/100ml	<2	<2	<2	IS 1622
21	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
22	Total Kjeldal Nitrogen (TKN)	mg/l	<1	<1	<1	APHA 4500 - Norg.B
23	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
24	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
25	Surface Active Agent	mg/l	<0.1	<0.1	<0.1	IS 13428
26	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
27	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
28	PCB	mg/l	N.D	N.D	N.D	EPA 508
29	PCT	mg/l	N.D	N.D	N.D	EPA 508
30	Zinc as Zn	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 49
31	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
32	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
33	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
34	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
35	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
36	Lead as Pb	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 47
37	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
38	Manganese as Mn	mg/l	BDL	BDL	BDL	APHA 3111 - B
39	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
40	Iron as Fe	mg/l	0.21	0.2	0.22	IS 3025: Part - 53
41	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
42	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
43	Boron as B	mg/l	0.18	0.24	0.21	IS 3025: Part - 57



Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

GROUND WATER QUALITY

Location- Jitali Village

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colourless	Colourless	Colourless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.08	7.11	7.12	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	BDL	BDL	BDL	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	10	6	9	IS 3025: Part - 17
6	Chemical Oxygen Demand (COD)	mg/l	5	7	6	IS 3025: Part - 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
8	Conductivity (EC)	µS/cm	3600	3620	3580	IS 3025: Part - 14
9	Nitrite-nitrogen as N	mg/l	0.01	0.01	0.01	APHA 4500 - NO ₂ .B
10	Nitrate-Nitrogen as N	mg/l	3	3.1	3.08	APHA 4500 - NO ₃ .B
11	Total Nitrogen (NO ₂ + NO ₃)	mg/l	3.01	3.11	3.09	By Calculation
12	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
13	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
14	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
15	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
16	Sulphides as S ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
17	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
18	Sodium Absorption Ratio (SAR)	-	3.8	4.3	4.6	By Calculation
19	Total Coliform	MPN/100ml	<2	<2	<2	IS 1622
20	Faecal Coliform	MPN/100ml	<2	<2	<2	IS 1622
21	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
22	Total Kjeldal Nitrogen (TKN)	mg/l	<1	<1	<1	APHA 4500 - Norg.B
23	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
24	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
25	Surface Active Agent	mg/l	<0.1	<0.1	<0.1	IS 13428
26	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
27	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
28	PCB	mg/l	N.D	N.D	N.D	EPA 508
29	PCT	mg/l	N.D	N.D	N.D	EPA 508
30	Zinc as Zn	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 49
31	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
32	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
33	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
34	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
35	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
36	Lead as Pb	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 47
37	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
38	Manganese as Mn	mg/l	BDL	BDL	BDL	APHA 3111 - B
39	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
40	Iron as Fe	mg/l	0.11	0.08	0.08	IS 3025: Part - 53
41	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
42	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
43	Boron as B	mg/l	0.14	0.15	0.13	IS 3025: Part - 57



BHAGAVATHI ANA LABS

Sampling and Analysis of Ambient Air Quality and Water Quality in selected Industrial/Cluster Areas

ANKLESHWAR - GUJARAT

GROUND WATER QUALITY

Location- Old Pungam Village

Sr. No.	Test Parameters	UOM	Results			Test Method
			06.06.2016	08.06.2016	10.06.2016	
1	Colour	Hazen	Colourless	Colourless	Colourless	IS 3025: Part - 4
2	Odour (Smell)	-	Agreeable	Agreeable	Agreeable	IS 3025: Part - 5
3	pH	-	7.45	7.41	7.44	IS 3025: Part - 11
4	Oil & Grease (O&G)	mg/l	BDL	BDL	BDL	IS 3025: Part - 39
5	Suspended Solids (SS)	mg/l	11	10	8	IS 3025: Part - 17
6	Chemical Oxygen Demand (COD)	mg/l	7	6	6	IS 3025: Part - 58
7	Bio-chemical Oxygen Demand (BOD)	mg/l	<2	<2	<2	IS 3025: Part - 44
8	Conductivity (EC)	µS/cm	2520	2580	2560	IS 3025: Part - 14
9	Nitrite-nitrogen as N	mg/l	<0.01	<0.01	<0.01	APHA 4500 - NO ₂ .B
10	Nitrate-Nitrogen as N	mg/l	1.8	1.7	1.7	APHA 4500 - NO ₃ .B
11	Total Nitrogen (NO ₂ + NO ₃)	mg/l	1.81	1.71	1.71	By Calculation
12	Free Ammonia	mg/l	<0.02	<0.02	<0.02	APHA 4500 - NH ₃ .C
13	Total Residual Chlorine	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 26
14	Cyanide as CN ⁻	mg/l	BDL	BDL	BDL	IS 3025: Part - 27
15	Fluoride as F ⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 60
16	Sulphides as S ²⁻	mg/l	<0.1	<0.1	<0.1	IS 3025: Part - 29
17	Dissolved Phosphates as P	mg/l	<0.01	<0.01	<0.01	APHA 4500 - P.D
18	Sodium Absorption Ratio (SAR)	-	2.8	1.9	2.7	By Calculation
19	Total Coliform	MPN/100ml	<2	<2	<2	IS 1622
20	Faecal Coliform	MPN/100ml	<2	<2	<2	IS 1622
21	Total Phosphorous	mg/l	<0.1	<0.1	<0.1	APHA 4500 - P.D
22	Total Kjeldal Nitrogen (TKN)	mg/l	<1	<1	<1	APHA 4500 - Norg.B
23	Total Ammonia (NH ₄ +NH ₃)-Nitrogen	mg/l	<1	<1	<1	APHA 4500 - NH ₃
24	Phenolic Compounds as C ₆ H ₅ OH	mg/l	<0.001	<0.001	<0.001	IS 3025: Part - 43
25	Surface Active Agent	mg/l	<0.1	<0.1	<0.1	IS 13428
26	Organo-chlorine Pesticides(OCP)	mg/l	N.D	N.D	N.D	EPA 508
27	PAH's	mg/l	N.D	N.D	N.D	EPA 525.2
28	PCB	mg/l	N.D	N.D	N.D	EPA 508
29	PCT	mg/l	N.D	N.D	N.D	EPA 508
30	Zinc as Zn	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 49
31	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 54
32	Copper as Cu	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 42
33	Hexavalent Chromium as Cr ⁶⁺	mg/l	BDL	BDL	BDL	APHA 3500 - Cr. D
34	Total Chromium as Cr	mg/l	BDL	BDL	BDL	IS 3025: Part - 52
35	Arsenic as As	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 37
36	Lead as Pb	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 47
37	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 41
38	Manganese as Mn	mg/l	BDL	BDL	BDL	APHA 3111 - B
39	Mercury as Hg	mg/l	BDL	BDL	BDL	IS 3025: Part - 48
40	Iron as Fe	mg/l	0.06	0.07	0.06	IS 3025: Part - 53
41	Vanadium as V	mg/l	<0.01	<0.01	<0.01	APHA 3111 - D
42	Selenium as Se	mg/l	<0.01	<0.01	<0.01	IS 3025: Part - 56
43	Boron as B	mg/l	0.08	0.12	0.1	IS 3025: Part - 57