

**Sampling and Testing of various Environmental Parameters inside
Kamarajar Port**



KAMARAJAR PORT LIMITED

Test Report

December' 2021

HECS

Hubert Enviro Care Systems (P) Ltd

**(An ISO 9001: 2015 Company) (Accredited by NABL, Recognized by MoEF)
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1.0 Introduction

Kamarajar port is the first Corporatized Port in India and the 12th Major Port. It works on the model of 'land Lord' concept. KPL's policy is to manage the port in a pro-active manner to minimize any impacts from port operations or new developments. Kamara jar port handles coal for Tamil Nadu Electricity Board, POL products and export of automobiles. Data generation on environmental quality constitutes the basis for environmental appraisal of the project. Thus data on environmental quality has to be periodically monitored and also to comply the TNPCB / MoEF conditions.

With this back ground and need Kamarajar Port Limited has appointed **M/s. Hubert Enviro Care Systems (P) Ltd** to undertake the same. KPL has awarded the work to M/s. Hubert Enviro Care Systems (P) Ltd, Chennai vide work order **No. KPL/MS/Env/EM/04/2017 dated 20.07.2017 and extended work order No. KPL/MS/Env/EM/04/2017 dated 03.09.2020.**

Accordingly, environmental quality data on ambient air for the month of December'2021 is presented in this report.

2.0 Scope and Methodology:

The scope of work, works carried out and methodology adopted for the survey are described below:

2.1 Ambient Air Quality

As a part of the study, Ambient Air Quality Parameters were measured during the monitoring days data of PM₁₀, PM_{2.5}, SO₂, NO₂ and CO were monitored.

AMBIENT AIR QUALITY MONITORING:

Ambient Air Quality was monitored at different locations inside the port. The study area covers periphery of port and different parts of the port. A Total of 8 Ambient Air Quality Monitoring Stations covering both upwind and downwind directions were monitored during **December'2021**.

Table: Details of Ambient Air Quality Monitoring Locations

S. No	Station Code	Sampling Location
1	AAQ - 1	Near Admin
2	AAQ - 2	Near Signal
3	AAQ - 3	Near Finger Jetty
4	AAQ - 4	Near Guest House
5	AAQ - 5	Top Main Gate
6	AAQ - 6	Near Car Parking
7	AAQ - 7	Near GCB

Ambient Air Quality Monitoring was carried out with a frequency of two samples per week i.e. at 7 locations. A Total of 56 samples each of PM10 & PM 2.5, Samples of SO₂, NO₂ and CO each were monitored by using Respirable dust sampler, Fine Particulate Sampler & CO Analyzer.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Admin(AAQ-1)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020.

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	9.33	16.29	44.22	12.18
2	24	03-12-21 to 04-12-21	9.71	16.34	45.79	14.24
3	24	06-12-21 to 07-12-21	12.42	20.22	46.47	18.25
4	24	10-12-21 to 11-12-21	8.25	22.25	45.64	16.29
5	24	13-12-21 to 14-12-21	10.25	14.50	42.22	11.40
6	24	17-12-21 to 18-12-21	9.25	15.25	44.10	15.50
7	24	20-12-21 to 21-12-21	11.42	22.40	42.19	16.25
8	24	27-12-21 to 28-12-21	9.87	21.45	44.35	15.80
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ – Below Limit of Quantification LOQ- Limit of Quantification.

Engineer/Analyst

Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Signal(AAQ-2) Sample Drawn By: Hubert
Enviro Care Systems Private Limited. Workorder No:
KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	11.21	22.14	52.00	22.15
2	24	03-12-21 to 04-12-21	8.75	18.27	47.45	18.25
3	24	06-12-21 to 07-12-21	9.23	17.45	50.40	22.85
4	24	10-12-21 to 11-12-21	12.55	21.50	47.80	18.75
5	24	13-12-21 to 14-12-21	10.25	20.75	46.50	14.35
6	24	17-12-21 to 18-12-21	9.75	19.75	45.25	17.25
7	24	20-12-21 to 21-12-21	10.75	20.25	40.25	16.25
8	25	27-12-21 to 28-12-21	11.50	21.25	42.75	17.20
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification
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Engineer/Analyst

Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Finger Jetty (AAQ-3)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	9.35	21.20	51.50	17.25
2	24	03-12-21 to 04-12-21	9.20	18.50	47.35	18.45
3	24	06-12-21 to 07-12-21	8.80	17.25	48.20	17.75
4	24	10-12-21 to 11-12-21	7.50	18.65	50.40	21.50
5	24	13-12-21 to 14-12-21	10.25	21.25	42.56	14.25
6	24	17-12-21 to 18-12-21	11.45	22.36	48.45	19.25
7	24	20-12-21 to 21-12-21	10.69	20.12	41.32	15.25
8	24	27-12-21 to 28-12-21	14.25	16.56	46.45	16.52
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ - Below Limit of Quantification
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Authorized Signatory.

TEST REPORT

Name of the Client : **M/s.Kamarajar Port Ltd.,**
Sample Description : **Ambient Air Quality**
Sample Mark : **Near Guest House (AAQ-4)**
Sample Drawn : **Hubert Enviro Care Systems Private Limited.**
ByWork order No : **KPL/MS/Env/EM/04/2017 dated 03.09.2020**

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	11.38	20.21	45.11	14.39
2	24	03-12-21 to 04-12-21	9.35	18.45	51.44	21.01
3	24	06-12-21 to 07-12-21	8.69	21.77	46.23	18.46
4	24	10-12-21 to 11-12-21	7.73	16.42	51.42	18.45
5	24	13-12-21 to 14-12-21	10.25	18.25	47.50	21.25
6	24	17-12-21 to 18-12-21	11.23	19.25	46.20	16.50
7	24	20-12-21 to 21-12-21	9.75	20.52	49.86	20.85
8	24	27-12-21 to 28-12-21	10.75	19.20	4240	19.25
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.

Engineer/Analyst

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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : On Top of Main Gate(AAQ-5)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	10.49	24.28	50.49	22.77
2	24	03-12-21 to 04-12-21	12.75	22.75	50.75	19.85
3	24	06-12-21 to 07-12-21	9.75	18.66	52.53	18.49
4	24	10-12-21 to 11-12-21	10.45	21.45	48.25	18.45
5	24	13-12-21 to 14-12-21	9.25	20.25	48.42	17.56
6	24	17-12-21 to 18-12-21	8.75	21.25	42.25	12.25
7	24	20-12-21 to 21-12-21	10.25	24.25	46.52	14.25
8	24	27-12-21 to 28-12-21	9.87	21.25	47.25	15.25
NAAQ Standards (2009)			80	80	100	60

Note: SO₂–Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb – Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009 BLQ–Below Limit of Quantification; LOQ- Limit of Quantification.

Engineer/Analyst

Authorized Signatory.

TEST REPORT

Name of the Client : M/s.KamarajarPortLtd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Car Parking(AAQ-6)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	8.75	17.32	52.25	17.28
2	24	03-12-21 to 04-12-21	11.12	24.96	45.56	19.46
3	24	06-12-21 to 07-12-21	11.2	22.18	49.40	22.55
4	24	10-12-21 to 11-12-21	10.75	19.75	49.40	18.56
5	24	13-12-21 to 14-12-21	11.25	19.56	46.25	19.75
6	24	17-12-21 to 18-12-21	9.25	16.85	42.45	18.56
7	24	20-12-21 to 21-12-21	10.25	21.25	51.25	19.10
8	24	27-12-21 to 28-12-21	10.45	20.45	49.75	18.50
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification LOQ- Limit of Quantification.

Engineer/Analyst

Authorized Signatory.

TEST REPORT

Name of the Client : **M/s.Kamarajar Port Ltd.,**
Sample Description : **Ambient Air Quality**
Sample Mark : **Near GCB(AAQ-7)**
Sample Drawn By : **Hubert Enviro Care Systems Private Limited.**
Work order No : **KPL/MS/Env/EM/04/2017 dated 03.09.2020**

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	9.66	22.40	45.56	15.56
2	24	03-12-21 to 04-12-21	12.75	24.76	51.56	19.75
3	24	06-12-21 to 07-12-21	11.25	21.50	48.25	17.25
4	24	10-12-21 to 11-12-21	10.25	21.45	51.75	20.45
5	24	13-12-21 to 14-12-21	11.25	20.25	52.12	19.56
6	24	17-12-21 to 18-12-21	10.25	19.12	48.25	18.85
7	24	20-12-21 to 21-12-21	11.25	14.25	47.69	17.96
8	24	27-12-21 to 28-12-21	9.80	16.30	41.36	16.50
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Note: SO₂–Sulphur dioxide, **NO₂**- Nitrogen dioxide, **PM₁₀** - (Particulate Matter size less than 10 µm), **PM_{2.5}** - (Particulate Matter size less than 2.5 µm); **NAAQ Norms**- National Ambient Air Quality Stipulated by **CPCB/TNPCB** for Industrial Areas 2009. **BLQ**–Below Limit of Quantification **LOQ**- Limit of Quantification.

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The scope of work, works carried out and methodology adopted for the survey are described below:

2.1 Ambient Air Quality

As a part of the study, Ambient Air Quality Parameters were measured during the monitoring days data of PM₁₀, PM_{2.5}, SO₂, NO₂ and CO were monitored.

AMBIENT AIR QUALITY MONITORING:

Ambient Air Quality was monitored at different locations inside the port. The study area covers periphery of port and different parts of the port. A Total of 8 Ambient Air Quality Monitoring Stations covering both upwind and downwind directions were monitored during **December'2021**.

Table: Details of Ambient Air Quality Monitoring Locations

S. No	Station Code	Sampling Location
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6	AAQ - 6	Near Car Parking
7	AAQ - 7	Near GCB

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Laboratory Services Division
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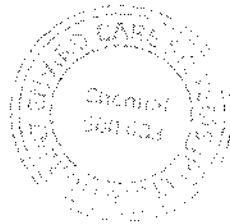
TEST REPORT

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3	24	06-12-21 to 07-12-21	12.42	20.22	46.47	18.25
4	24	10-12-21 to 11-12-21	8.25	22.25	45.64	16.29
5	24	13-12-21 to 14-12-21	10.25	14.50	42.22	11.40
6	24	17-12-21 to 18-12-21	9.25	15.25	44.10	15.50
7	24	20-12-21 to 21-12-21	11.42	22.40	42.19	16.25
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NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ - Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

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TEST REPORT

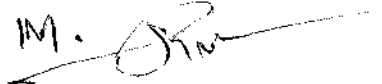
Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Signal (AAQ-2) Sample Drawn By: Hubert
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3	24	06-12-21 to 07-12-21	9.23	17.45	50.40	22.85
4	24	10-12-21 to 11-12-21	12.55	21.50	47.80	18.75
5	24	13-12-21 to 14-12-21	10.25	20.75	46.50	14.35
6	24	17-12-21 to 18-12-21	9.75	19.75	45.25	17.25
7	24	20-12-21 to 21-12-21	10.75	20.25	40.25	16.25
8	25	27-12-21 to 28-12-21	11.50	21.25	42.75	17.20
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Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification
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TEST REPORT

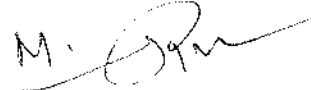
Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Finger Jetty (AAQ-3)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

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5	24	13-12-21 to 14-12-21	10.25	21.25	42.56	14.25
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Engineer/Analyst




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1. The report in full or part shall not be used for any promotional or publicity purpose without written consent by HECS organization. 2. Samples are not drawn by HECS unless or otherwise mentioned. 3. Unless specifically requested by customer the test items will not be retained more than 15 days from the date of issue of test report. 4. Under no circumstances lab accepts any liability or loss / damage caused by use or misuse of test report after invoicing or issue of test report. 5. The test results relate only to the test items.

Hubert Enviro Care Systems (P) Ltd.

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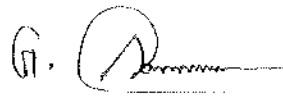
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Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Guest House (AAQ-4)
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ByWork order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

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2	24	03-12-21 to 04-12-21	9.35	18.45	51.44	21.01
3	24	06-12-21 to 07-12-21	8.69	21.77	46.23	18.46
4	24	10-12-21 to 11-12-21	7.73	16.42	51.42	18.45
5	24	13-12-21 to 14-12-21	10.25	18.25	47.50	21.25
6	24	17-12-21 to 18-12-21	11.23	19.25	46.20	16.50
7	24	20-12-21 to 21-12-21	9.75	20.52	49.86	20.85
8	24	27-12-21 to 28-12-21	10.75	19.20	4240	19.25
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.



Engineer/Analyst



Authorized Signatory.

Hubert Enviro Care Systems (P) Ltd.

18, 92nd Street, Ashok Nagar,
Chennai - 600 083.

Ph: 42985555 Fax : 42985500

E-mail : labsales@hecs.in

Laboratory Services Division

(Chemical & Biological Testing)

Recognized by MoEF, BIS

FSSAI Notified Laboratory

ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : On Top of Main Gate(AAQ-5)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	10.49	24.28	50.49	22.77
2	24	03-12-21 to 04-12-21	12.75	22.75	50.75	19.85
3	24	06-12-21 to 07-12-21	9.75	18.66	52.53	1849
4	24	10-12-21 to 11-12-21	10.45	21.45	48.25	18.45
5	24	13-12-21 to 14-12-21	9.25	20.25	48.42	17.56
6	24	17-12-21 to 18-12-21	8.75	21.25	42.25	12.25
7	24	20-12-21 to 21-12-21	10.25	24.25	46.52	14.25
8	24	27-12-21 to 28-12-21	9.87	21.25	47.25	15.25
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009 BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.


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TEST REPORT

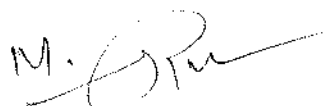
Name of the Client : M/s.KamarajarPortLtd.,
SampleDescription : Ambient AirQuality
SampleMark : Near Car Parking(AAQ-6)
SampleDrawnBy : Hubert Enviro Care Systems PrivateLimited.
WorkorderNo : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	8.75	17.32	52.25	17.28
2	24	03-12-21 to 04-12-21	11.12	24.96	45.56	19.46
3	24	06-12-21 to 07-12-21	11.2	22.18	49.40	22.55
4	24	10-12-21 to 11-12-21	10.75	19.75	49.40	18.56
5	24	13-12-21 to 14-12-21	11.25	19.56	46.25	19.75
6	24	17-12-21 to 18-12-21	9.25	16.85	42.45	18.56
7	24	20-12-21 to 21-12-21	10.25	21.25	51.25	19.10
8	24	27-12-21 to 28-12-21	10.45	20.45	49.75	18.50
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


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TEST REPORT


Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near GCB(AAQ-7)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-12-21 to 02-12-21	9.66	22.40	45.56	15.56
2	24	03-12-21 to 04-12-21	12.75	24.76	51.56	19.75
3	24	06-12-21 to 07-12-21	11.25	21.50	48.25	17.25
4	24	10-12-21 to 11-12-21	10.25	21.45	51.75	20.45
5	24	13-12-21 to 14-12-21	11.25	20.25	52.12	19.56
6	24	17-12-21 to 18-12-21	10.25	19.12	48.25	18.85
7	24	20-12-21 to 21-12-21	11.25	14.25	47.69	17.96
8	24	27-12-21 to 28-12-21	9.80	16.30	41.36	16.50
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

**Sampling and Testing of various Environmental Parameters inside
Kamarajar Port**



KAMARAJAR PORT LIMITED

Test Report

January' 2022

HECS

Hubert Enviro Care Systems (P) Ltd

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1.0 Introduction

Kamarajar port is the first Corporatized Port in India and the 12th Major Port. It works on the model of 'land Lord' concept. KPL's policy is to manage the port in a pro-active manner to minimize any impacts from port operations or new developments. Kamara jar port handles coal for Tamil Nadu Electricity Board, POL products and export of automobiles. Data generation on environmental quality constitutes the basis for environmental appraisal of the project. Thus data on environmental quality has to be periodically monitored and also to comply the TNPCB / MoEF conditions.

With this back ground and need Kamarajar Port Limited has appointed **M/s. Hubert Enviro Care Systems (P) Ltd** to undertake the same. KPL has awarded the work to M/s. Hubert Enviro Care Systems (P) Ltd, Chennai vide work order **No. KPL/MS/Env/EM/04/2017 dated 20.07.2017 and extended work order No. KPL/MS/Env/EM/04/2017 dated 03.09.2020.**

Accordingly, environmental quality data on ambient air for the month of December'2021 is presented in this report.

2.0 Scope and Methodology:

The scope of work, works carried out and methodology adopted for the survey are described below:

2.1 Ambient Air Quality

As a part of the study, Ambient Air Quality Parameters were measured during the monitoring days data of PM₁₀, PM_{2.5}, SO₂, NO₂ and CO were monitored.

AMBIENT AIR QUALITY MONITORING:

Ambient Air Quality was monitored at different locations inside the port. The study area covers periphery of port and different parts of the port. A Total of 8 Ambient Air Quality Monitoring Stations covering both upwind and downwind directions were monitored during **January'2022**.

Table: Details of Ambient Air Quality Monitoring Locations

S. No	Station Code	Sampling Location
1	AAQ - 1	Near Admin
2	AAQ - 2	Near Signal
3	AAQ - 3	Near Finger Jetty
4	AAQ - 4	Near Guest House
5	AAQ - 5	Top Main Gate
6	AAQ - 6	Near Car Parking
7	AAQ - 8	Near GCB

Ambient Air Quality Monitoring was carried out with a frequency of two samples per week i.e. at 7 locations. A Total of 63 samples each of PM10 & PM 2.5, Samples of SO₂, NO₂ and CO each were monitored by using Respirable dust sampler, Fine Particulate Sampler & CO Analyzer.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Admin(AAQ-1)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020.

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	03-01-22 to 04-01-22	11.42	20.59	45.12	22.72
2	24	07-01-22 to 08-01-22	12.78	22.85	47.13	23.84
3	24	11-01-22 to 12-01-22	11.83	24.77	45.63	21.63
4	24	13-01-22 to 14-01-22	10.27	21.16	43.86	22.87
5	24	17-01-22 to 18-01-22	12.63	23.74	46.79	23.55
6	24	21-01-22 to 22-01-22	10.93	22.59	45.54	21.83
7	24	24-01-22 to 25-01-22	11.72	20.53	22.64	23.55
8	24	28-01-22 to 29-01-22	12.51	22.15	23.15	21.67
9	24	31-01-22 to 01-02-22	12.75	23.83	24.64	22.53
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ – Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Signal(AAQ-2)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	03-01-22 to 04-01-22	12.59	22.93	48.64	23.53
2	24	07-01-22 to 08-01-22	10.73	21.64	47.11	24.16
3	24	11-01-22 to 12-01-22	11.52	24.39	45.39	25.39
4	24	13-01-22 to 14-01-22	12.76	23.92	48.11	22.73
5	24	17-01-22 to 18-01-22	13.18	22.42	46.35	24.59
6	24	21-01-22 to 22-01-22	11.33	21.37	43.18	23.84
7	24	24-01-22 to 25-01-22	12.59	23.58	49.21	24.59
8	24	28-01-22 to 29-01-22	10.84	21.61	47.62	23.11
9	24	31-01-22 to 01-02-22	11.76	23.72	44.29	22.53
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification
LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : Near Finger Jetty (AAQ-3)
 Sample Drawn By : Hubert Enviro Care Systems Private Limited.
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	03-01-22 to 04-01-22	11.36	23.57	46.33	25.74
2	24	07-01-22 to 08-01-22	10.57	20.19	47.18	24.39
3	24	11-01-22 to 12-01-22	12.61	22.54	48.66	25.17
4	24	13-01-22 to 14-01-22	11.83	23.16	45.39	22.91
5	24	17-01-22 to 18-01-22	12.62	22.83	43.18	23.64
6	24	21-01-22 to 22-01-22	10.74	23.18	50.67	20.33
7	24	24-01-22 to 25-01-22	10.95	21.86	47.83	21.54
8	24	28-01-22 to 29-01-22	12.48	22.54	46.19	22.63
9	24	31-01-22 to 01-02-22	10.84	21.77	44.23	23.18
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ - Below Limit of Quantification
 LOQ- Limit of Quantification.


 Engineer/Analyst




 Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Guest House (AAQ-4)
Sample Drawn : Hubert Enviro Care Systems Private Limited.
ByWork order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	03-01-22 to 04-01-22	10.73	22.83	48.33	24.59
2	24	07-01-22 to 08-01-22	12.33	23.57	44.18	22.16
3	24	11-01-22 to 12-01-22	11.49	24.12	45.77	45.72
4	24	13-01-22 to 14-01-22	11.62	23.81	46.15	24.59
5	24	17-01-22 to 18-01-22	10.78	21.49	49.23	23.11
6	24	21-01-22 to 22-01-22	12.42	23.71	45.17	22.72
7	24	24-01-22 to 25-01-22	11.63	22.58	48.62	23.16
8	24	28-01-22 to 29-01-22	10.58	21.92	47.55	24.58
9	24	31-01-22 to 01-02-22	11.27	22.43	45.76	23.43
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : On Top of Main Gate(AAQ-5)
 Sample Drawn By : Hubert Enviro Care Systems Private Limited.
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	03-01-22 to 04-01-22	13.24	23.59	47.21	24.18
2	24	07-01-22 to 08-01-22	12.73	22.42	49.34	25.73
3	24	11-01-22 to 12-01-22	12.56	25.37	44.68	22.19
4	24	13-01-22 to 14-01-22	10.81	23.62	46.32	24.58
5	24	17-01-22 to 18-01-22	11.77	22.51	49.84	23.47
6	24	21-01-22 to 22-01-22	12.63	23.82	43.19	22.16
7	24	24-01-22 to 25-01-22	10.51	21.95	45.67	24.19
8	24	28-01-22 to 29-01-22	11.27	22.63	48.32	23.67
9	24	31-01-22 to 01-02-22	10.63	24.19	42.51	22.53
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009 BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.KamarajarPortLtd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Car Parking(AAQ-6)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	03-01-22 to 04-01-22	10.45	21.73	44.67	23.61
2	24	07-01-22 to 08-01-22	12.96	22.58	48.21	24.57
3	24	11-01-22 to 12-01-22	10.37	24.16	43.62	23.19
4	24	13-01-22 to 14-01-22	11.59	23.74	46.13	25.74
5	24	17-01-22 to 18-01-22	11.68	22.61	48.67	24.99
6	24	21-01-22 to 22-01-22	12.74	20.49	44.39	22.63
7	24	24-01-22 to 25-01-22	10.22	21.63	47.21	21.51
8	24	28-01-22 to 29-01-22	11.37	24.57	43.68	23.74
9	24	31-01-22 to 01-02-22	11.84	22.68	46.18	22.63
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification LOQ- Limit of Quantification.


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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near GCB(AAQ-8)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	03-01-22 to 04-01-22	12.57	20.83	48.33	24.97
2	24	07-01-22 to 08-01-22	12.39	23.17	43.73	22.15
3	24	11-01-22 to 12-01-22	10.57	24.16	45.81	24.65
4	24	13-01-22 to 14-01-22	11.29	23.64	48.35	22.74
5	24	17-01-22 to 18-01-22	10.43	22.91	46.13	21.49
6	24	21-01-22 to 22-01-22	12.76	20.74	48.24	23.18
7	24	24-01-22 to 25-01-22	10.61	23.55	45.63	22.59
8	24	28-01-22 to 29-01-22	12.85	22.19	47.39	21.63
9	24	31-01-22 to 01-02-22	11.49	23.68	46.24	22.55
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

**Sampling and Testing of various Environmental Parameters inside
Kamarajar Port**



KAMARAJAR PORT LIMITED

Test Report

February' 2022

HECS

Hubert Enviro Care Systems (P) Ltd

**(An ISO 9001: 2015 Company) (Accredited by NABL, Recognized by MoEF)
#18,92ndStreet, Ashok Nagar, Chennai – 600 083.**

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1.0 Introduction

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With this back ground and need Kamarajar Port Limited has appointed **M/s. Hubert Enviro Care Systems (P) Ltd** to undertake the same. KPL has awarded the work to M/s. Hubert Enviro Care Systems (P) Ltd, Chennai vide work order **No. KPL/MS/Env/EM/04/2017 dated 20.07.2017 and extended work order No. KPL/MS/Env/EM/04/2017 dated 03.09.2020.**

Accordingly, environmental quality data on ambient air for the month of February'2021 is Presented in this report.

2.0 Scope and Methodology:

The scope of work, works carried out and methodology adopted for the survey are described below:

2.1 Ambient AirQuality

As a part of the study, Ambient Air Quality Parameters were measured during the monitoring days data of PM₁₀, PM_{2.5}, SO₂ and NO₂ monitored.

AMBIENT AIR QUALITY MONITORING:

Ambient Air Quality was monitored at different locations inside the port. The study area covers periphery of port and different parts of the port. A Total of 9 Ambient Air Quality Monitoring Stations covering both upwind and downwind directions were monitored during **February'2022**.

Table: Details of Ambient Air Quality Monitoring Locations

S. No	Station Code	Sampling Location
1	AAQ - 1	Near Admin
2	AAQ - 2	Near Signal
3	AAQ - 3	Near Finger Jetty
4	AAQ - 4	Near Guest House
5	AAQ - 5	Top Main Gate
6	AAQ - 6	At Fire station
7	AAQ - 7	Near Car Parking
8	AAQ - 8	Near GCB

Ambient Air Quality Monitoring was carried out with a frequency of two samples per week i.e. at 8 locations. A Total of 72 samples each of PM10 & PM 2.5, Samples of SO₂ and NO₂ each were monitored by using Respirable dust sampler & Fine Particulate Sampler.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : Near Admin(AAQ-1)
 Sample Drawn By : Hubert Enviro Care Systems Private Limited.
 Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020.

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-02-22 to 02-02-22	10.85	22.46	47.20	25.15
2	24	04-02-22 to 05-02-22	12.70	23.62	44.16	23.71
3	24	07-02-22 to 08-02-22	12.66	21.84	45.13	22.60
4	24	12-02-22 to 13-02-22	11.37	20.51	48.57	24.10
5	24	15-02-22 to 16-02-22	10.73	21.80	46.19	23.66
6	24	17-02-22 to 18-02-22	11.27	23.54	48.13	24.87
7	24	20-02-22 to 21-02-22	13.58	25.17	51.80	25.33
8	24	25-02-22 to 26-02-22	10.97	23.48	48.10	23.64
9	24	28-02-22 to 01-03-22	12.47	24.63	45.73	25.18
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ – Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

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Laboratory Services Division
(Chemical & Biological Testing)
Recognized by MoEF, BIS
FSSAI Notified Laboratory
ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Signal(AAQ-2)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-02-22 to 02-02-22	11.73	20.68	49.55	24.31
2	24	04-02-22 to 05-02-22	10.86	22.49	44.12	25.70
3	24	07-02-22 to 08-02-22	10.39	21.40	47.13	22.67
4	24	12-02-22 to 13-02-22	12.50	23.78	43.25	24.80
5	24	15-02-22 to 16-02-22	09.80	21.56	48.27	23.41
6	24	17-02-22 to 18-02-22	11.52	22.75	44.20	23.16
7	24	20-02-22 to 21-02-22	10.74	23.62	48.13	24.20
8	24	25-02-22 to 26-02-22	13.59	24.28	49.60	25.38
9	24	28-02-22 to 01-03-22	11.61	23.70	44.19	22.64
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm), Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




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ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Finger Jetty (AAQ-3)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-02-22 to 02-02-22	11.57	23.48	46.73	23.49
2	24	04-02-22 to 05-02-22	11.41	20.55	42.16	22.30
3	24	07-02-22 to 08-02-22	10.62	22.70	44.37	25.18
4	24	12-02-22 to 13-02-22	9.56	20.72	48.10	24.78
5	24	15-02-22 to 16-02-22	10.98	24.15	47.34	25.08
6	24	17-02-22 to 18-02-22	12.61	23.86	44.80	23.51
7	24	20-02-22 to 21-02-22	8.22	20.67	41.27	24.39
8	24	25-02-22 to 26-02-22	10.98	21.47	48.16	22.54
9	24	28-02-22 to 01-03-22	10.51	23.67	44.39	24.18
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm), Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ - Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : Near Guest House (AAQ-4)
 Sample Drawn : Hubert Enviro Care Systems Private Limited.
 ByWork order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-02-22 to 02-02-22	10.59	21.38	45.68	27.10
2	24	04-02-22 to 05-02-22	12.70	23.48	49.13	25.46
3	24	07-02-22 to 08-02-22	9.66	20.81	51.28	20.39
4	24	12-02-22 to 13-02-22	11.34	23.02	46.85	22.13
5	24	15-02-22 to 16-02-22	10.49	22.15	44.20	25.87
6	24	17-02-22 to 18-02-22	12.54	23.61	49.77	26.18
7	24	20-02-22 to 21-02-22	8.94	19.20	44.61	23.80
8	24	25-02-22 to 26-02-22	11.70	23.15	47.80	25.11
9	24	28-02-22 to 01-03-22	10.59	22.78	46.19	24.63
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst




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ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : On Top of Main Gate(AAQ-5)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-02-22 to 02-02-22	11.73	23.15	49.20	24.18
2	24	04-02-22 to 05-02-22	10.49	22.63	47.16	22.77
3	24	07-02-22 to 08-02-22	10.85	20.47	45.60	23.19
4	24	12-02-22 to 13-02-22	12.06	21.53	44.10	25.86
5	24	15-02-22 to 16-02-22	9.68	20.55	48.30	24.11
6	24	17-02-22 to 18-02-22	12.55	23.49	45.22	25.38
7	24	20-02-22 to 21-02-22	11.79	25.20	51.37	22.68
8	24	25-02-22 to 26-02-22	10.93	22.48	46.13	24.70
9	24	28-02-22 to 01-03-22	12.77	23.53	48.24	23.59
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm), Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009 BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.KamarajarPort Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : At Fire station (AAQ-6)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-02-22 to 02-02-22	13.98	23.26	50.84	21.71
2	24	04-02-22 to 05-02-22	9.17	19.38	46.64	20.38
3	24	07-02-22 to 08-02-22	10.77	21.83	46.12	21.77
4	24	12-02-22 to 13-02-22	12.74	23.65	50.84	22.93
5	24	15-02-22 to 16-02-22	10.84	21.32	48.92	22.1
6	24	17-02-22 to 18-02-22	9.31	20.25	52.34	23.96
7	24	20-02-22 to 21-02-22	8.87	19.1	44.79	21.35
8	24	25-02-22 to 26-02-22	10.58	20.47	50.29	21.36
9	24	28-02-22 to 01-03-22	10.77	10.77	10.77	10.77
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification LOQ- Limit of Quantification.


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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Near Car Parking (AAQ-7)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-02-22 to 02-02-22	10.27	20.36	49.74	26.89
2	24	04-02-22 to 05-02-22	11.52	22.63	46.92	20.35
3	24	07-02-22 to 08-02-22	12.27	23.96	51.36	22.76
4	24	12-02-22 to 13-02-22	12.63	23.64	48.16	22.61
5	24	15-02-22 to 16-02-22	9.24	20.96	51.27	24.70
6	24	17-02-22 to 18-02-22	11.84	21.28	52.36	23.84
7	24	20-02-22 to 21-02-22	10.68	22.71	48.20	21.67
8	24	25-02-22 to 26-02-22	12.81	23.59	47.17	23.49
9	24	28-02-22 to 01-03-22	10.33	21.75	44.26	22.60
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : Near GCB(AAQ-8)
 Sample Drawn By : Hubert Enviro Care Systems Private Limited.
 Workorder No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	01-02-22 to 02-02-22	10.55	22.60	45.39	22.84
2	24	04-02-22 to 05-02-22	11.78	23.47	49.20	25.71
3	24	07-02-22 to 08-02-22	10.94	24.10	46.78	24.93
4	24	12-02-22 to 13-02-22	9.26	25.33	48.14	22.64
5	24	15-02-22 to 16-02-22	12.48	23.68	45.11	23.95
6	24	17-02-22 to 18-02-22	11.40	20.79	49.20	24.51
7	24	20-02-22 to 21-02-22	13.25	24.60	44.13	25.64
8	24	25-02-22 to 26-02-22	10.63	21.94	48.20	23.80
9	24	28-02-22 to 01-03-22	12.55	23.68	43.77	24.85
NAAQ Standards (2009)			80	80	100	60

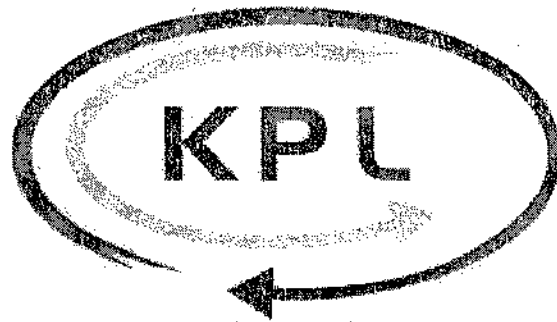
Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

**Sampling and Testing of various Environmental Parameters inside
Kamarajar Port**



KAMARAJAR PORT LIMITED

Test Report

March' 2022



Hubert Enviro Care Systems (P) Ltd

(An ISO 9001: 2015 Company) (Accredited by NABL, Recognized by MoEF)

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1.0 Introduction

Kamarajar port is the first Corporatized Port in India and the 12th Major Port. It works on the model of 'land Lord' concept. KPL's policy is to manage the port in a pro-active manner to minimize any impacts from port operations or new developments. Kamarajar port handles coal for Tamil Nadu Electricity Board, POL products and export of automobiles. Data generation on environmental quality constitutes the basis for environmental appraisal of the project. Thus data on environmental quality has to be periodically monitored and also complies the TNPCB / MoEF conditions.

With this back ground and need Kamarajar Port Limited has appointed M/s. **Hubert Enviro Care Systems (P) Ltd** to undertake the same. KPL has awarded the work to M/s. Hubert Enviro Care Systems (P) Ltd, Chennai vide work order No. **KPL/MS/Env/EM/04/2017 dated 20.07.2017 and extended work order No. KPL/MS/Env/EM/04/2017 dated 03.09.2020.**

Accordingly, environmental quality data on ambient air monitoring have been done for the month of **March'2022** and presented in this report.

2.0 Scopes and Methodology:

The scope of work, works carried out and methodology adopted for the survey are described below:

2.1 **Ambient Air Quality**

As a part of the study, Ambient Air Quality Parameters were measured during the monitoring days data of PM₁₀, PM_{2.5}, SO₂, NO₂ and CO were monitored.

AMBIENT AIR QUALITY MONITORING:

Ambient Air Quality was monitored at different locations inside the port. The study area covers periphery of port and different parts of the port. A Total of 8 Ambient Air Quality Monitoring Stations covering both upwind and downwind directions were monitored during **March'2022**.

Table :Details of Ambient Air Quality Monitoring Locations

S. No	Station Code	Sampling Location
1	AAQ - 1	Security Main Gate
2	AAQ - 2	Inside Port Administrative Building
3	AAQ - 3	Signal Station
4	AAQ - 4	Finger Jetty
5	AAQ - 5	At Car parking yard
6	AAQ - 6	At General Cargo Berth
7	AAQ - 7	At Fire Station
8	AAQ - 8	Guest House

Ambient Air Quality Monitoring was carried out with a frequency of two samples per week i.e. at 8 locations. A Total of 64 samples each of PM10 & PM 2.5, Samples of SO₂, NO₂ and CO each were monitored by using Respirable dust sampler, Fine Particulate Sampler & CO Analyzer.

2.2 Water Quality

Water samples were collected and analyzed as per procedures outlined in IS-3025/APHA/ASTM. Sterilized bottles were used for collection of water sample for bacteriological analysis, stored in icebox and transported the laboratory for the analysis. Parameters like pH, Temperature, Dissolved Oxygen were measured in the field while collecting the samples. MPN index of fecal coliforms were determined in the Laboratory as per standard methods.

MARINE WATER QUALITY MONITORING:

Marine Water Quality was assessed by collecting water samples at different locations inside the port. The study area covers periphery of port. A Total of 12 (6 Top and 6 bottom) water samples were assessed during **March' 2022**.

Table 2: Details of Marine Water Sample Collection Locations

S. No	Station Code	Sampling Location
1	A	Near GCB
2	B	Near Finger Jetty
3	C	Near MLT Berth
4	D	Near South East Break Water
5	E	Near North East Break Water
6	F	Near Channel

SURFACE WATER QUALITY MONITORING:

Surface Water Quality was assessed by collecting water samples at different locations inside the port. The study area covers periphery of port and different parts of the port. A Total of 3 water samples were assessed during **March'2022**.

Table 3: Details of Surface Water Sample Collection Locations

S. No	Station Code	Sampling Location
1	CR-I	Creek Mouth
2	CR-II	Opposite to Main Gate
3	CR-III	Opposite to West Gate

2.3 Sediment quality monitoring:

Sediment Quality was assessed by collecting sediment samples at different locations inside the port. The study area covers periphery of port and different parts of the port. A Total of 4 sediment samples were assessed during **March'2022**.

Table 4: Details of Sediment Sample Collection Locations

S. No	Station Code	Sampling Location
1	A	Near Finger Jetty
2	B	Near Marine Liquid Terminal (MLT)
3	C	Near General Cargo Berth (GCB)
4	CR1	Creek Mouth

2.4 Noise quality monitoring:

Noise Quality was assessed by recording noise levels at eight different locations inside the port.

Table 5: Details of Sediment Sample Collection Locations

S. No	Station Code	Sampling Location
1	A	Security Main Gate
2	B	Inside Port Admin Building
3	C	Signal Station
4	D	Finger Jetty
5	E	At Car Parking Yard
6	F	At General Cargo Berth
7	G	At Fire Station
8	H	Guest House

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : Security Main Gate (AAQ-1)
 Sample Drawn By : Hubert Enviro Care Systems Private Limited.
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020.

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	04-05.03.2022	10.54	23.64	55.82	24.22
2	24	08-09.03.2022	14.85	24.58	53.29	25.48
3	24	11-12.03.2022	12.78	24.16	54.32	23.36
4	24	14-15.03.2022	11.52	24.01	49.68	22.81
5	24	18-19.03.2022	12.36	21.47	50.66	24.75
6	24	21-22.03.2022	13.75	24.58	52.73	23.48
7	24	25-26.03.2022	13.19	22.63	52.84	21.96
8	24	28-29.03.2022	13.51	23.52	54.63	23.48
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ – Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst


Authorized Signatory.




TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : Inside Port Administrative Building (AAQ-2)
 Sample Drawn By : Hubert Enviro Care Systems Private Limited.
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	04-05.03.2022	10.56	23.81	53.27	22.72
2	24	08-09.03.2022	12.83	25.81	50.19	23.57
3	24	11-12.03.2022	10.63	24.59	53.18	21.78
4	24	14-15.03.2022	11.21	25.86	52.69	22.59
5	24	18-19.03.2022	14.66	22.76	45.27	18.33
6	24	21-22.03.2022	13.22	24.59	54.94	24.96
7	24	25-26.03.2022	13.59	22.91	52.63	25.07
8	24	28-29.03.2022	11.25	22.74	51.84	22.91
9	24	04-05.03.2022	10.59	25.44	48.29	23.57
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : Signal Station (AAQ-3)
 Sample Drawn By : Hubert Enviro Care Systems Private Limited.
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	04-05.03.2022	12.59	20.48	47.09	20.67
2	24	08-09.03.2022	11.43	24.76	49.67	23.19
3	24	11-12.03.2022	14.58	22.54	48.67	21.88
4	24	14-15.03.2022	13.63	25.87	54.36	22.95
5	24	18-19.03.2022	10.81	23.59	50.36	24.14
6	24	21-22.03.2022	9.28	21.38	55.29	26.24
7	24	25-26.03.2022	12.77	23.71	51.36	22.77
8	24	28-29.03.2022	12.36	25.83	52.39	24.39
9	24	04-05.03.2022	11.49	23.49	54.85	23.38
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ - Below Limit of Quantification LOQ- Limit of Quantification.



Engineer/Analyst



Authorized Signatory.



TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Finger Jetty (AAQ-4)
Sample Drawn : Hubert Enviro Care Systems Private Limited.
By Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	04-05.03.2022	12.84	22.73	52.89	21.14
2	24	08-09.03.2022	10.39	22.16	55.44	24.39
3	24	11-12.03.2022	12.06	24.45	52.63	24.11
4	24	14-15.03.2022	11.53	20.68	40.52	20.15
5	24	18-19.03.2022	12.77	21.25	47.28	22.47
6	24	21-22.03.2022	9.34	20.33	55.82	27.84
7	24	25-26.03.2022	14.54	22.94	56.71	23.15
8	24	28-29.03.2022	12.21	24.16	54.32	24.94
NAAQ Standards (2009)			80	80	100	60

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst


Authorized Signatory.



TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
 Sample Description : Ambient Air Quality
 Sample Mark : At Car Parking Yard (AAQ-5)
 Sample Drawn By : Hubert Enviro Care Systems Private Limited.
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	04-05.03.2022	11.63	20.64	55.84	23.54
2	24	08-09.03.2022	12.47	23.36	54.74	22.73
3	24	11-12.03.2022	13.98	25.77	51.05	25.19
4	24	14-15.03.2022	10.71	22.18	54.73	24.68
5	24	18-19.03.2022	14.21	23.62	52.87	23.49
6	24	21-22.03.2022	12.89	23.87	49.48	25.34
7	24	25-26.03.2022	10.42	20.59	51.33	23.66
8	24	28-29.03.2022	8.36	22.72	50.54	21.39
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) ; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009 BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst


Authorized Signatory.



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Laboratory Services Division

(Chemical & Biological Testing)
FSSAI Notified Laboratory
ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Name of the Client : M/s.Kamarajar PortLtd.,
Sample Description : Ambient Air Quality
Sample Mark : At General Cargo Berth (AAQ-6)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	04-05.03.2022	11.49	20.93	53.82	21.07
2	24	08-09.03.2022	12.54	19.47	50.19	19.88
3	24	11-12.03.2022	9.48	21.31	51.45	20.41
4	24	14-15.03.2022	14.73	24.52	47.24	23.55
5	24	18-19.03.2022	11.53	20.77	45.33	22.87
6	24	21-22.03.2022	13.87	23.83	49.16	20.16
7	24	25-26.03.2022	11.25	24.32	53.93	24.75
8	24	28-29.03.2022	10.43	23.48	50.72	22.84
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst


Authorized Signatory.



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ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : At Fire Station (AAQ-7)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	04-05.03.2022	10.45	22.75	48.63	20.45
2	24	08-09.03.2022	13.32	23.89	50.18	29.22
3	24	11-12.03.2022	10.59	23.76	47.57	26.94
4	24	14-15.03.2022	12.73	22.51	53.95	28.36
5	24	18-19.03.2022	11.85	20.45	51.32	29.48
6	24	21-22.03.2022	9.26	19.48	55.58	25.52
7	24	25-26.03.2022	12.84	23.67	49.36	20.33
8	24	28-29.03.2022	10.33	20.89	52.63	19.89
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst


Authorized Signatory.



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Laboratory Services Division

(Chemical & Biological Testing)
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ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Guest House (AAQ-8)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored			
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
1	24	04-05.03.2022	11.31	22.39	51.48	20.32
2	24	08-09.03.2022	10.73	20.45	49.31	23.19
3	24	11-12.03.2022	12.49	22.73	52.15	21.88
4	24	14-15.03.2022	10.24	20.63	51.23	19.63
5	24	18-19.03.2022	14.58	23.98	50.43	24.14
6	24	21-22.03.2022	13.63	21.15	53.78	27.47
7	24	25-26.03.2022	12.21	22.58	53.77	22.77
8	24	28-29.03.2022	9.45	21.29	49.36	25.41
9	24	04-05.03.2022	13.35	23.47	48.09	23.38
NAAQ Standards (2009)			80	80	100	60

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm); NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.



Engineer/Analyst


Authorized Signatory.



TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/WT/01-02/190322 & HECS/WT/03-04/190322

S.No	Parameters	Units	Near General Cargo Berth		Near Finger Jetty		SW- Class-IV Harbour Standards
			Surface	Bottom 1.5 m	Surface	Bottom 1.5 m	
1	Temperature	°C	28.9	28.8	28.8	28.7	
2	pH (at 25 °C)	-	7.21	8.38	7.91	8.17	6.0-9.0
3	Salinity	ppt	32.53	33.42	31.78	33.24	-
4	Electrical conductivity	µS/cm	47400	47000	47300	47000	-
5	Turbidity	NTU	0.9	1.2	0.7	0.7	-
6	Suspended Particulate Matter	mg/l	3	3	2	2	-
7	Dissolved oxygen	mg/l	6.3	6.2	6.5	6.3	3.0
8	Total Dissolved Solids	mg/l	30838	31020	31874	30551	-
9	BOD,3 days @27°C as O ₂	mg/l	2	3	1	3	5.0
10	Chemical oxygen demand as O ₂	mg/l	32	48	28	46	-
11	Nitrite as NO ₂	mg/l	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	-
12	Nitrate as NO ₃	mg/l	2.37	2.54	2.4	2.51	-
13	Total Nitrogen as N	mg/l	2.85	3.04	2.94	2.87	-
14	Ammonia as NH ₃	mg/l	BLQ(LOQ:0.02)	1.61	1.24	1.17	-
15	Inorganic Phosphate	mg/l	0.083	0.064	0.097	0.076	-
16	Total Phosphorous as P	mg/l	0.027	0.021	0.032	0.024	-
17	Sulphate as SO ₄	mg/l	1857.7	1891	31874.0	1841.7	-
18	Dissolved Iron	mg/l	0.13	0.19	0.17	0.065	-
19	Cadmium as Cd	mg/l	BLQ(LOQ 1)	BLQ(LOQ 1)	BLQ(LOQ 1)	BLQ(LOQ 1)	-
20	Lead as Pb	µg/l	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	-
21	Mercury as Hg	ng/l	BLQ(LOQ 50)	BLQ(LOQ 50)	BLQ(LOQ 50)	BLQ(LOQ 50)	-
22	Arsenic as As	µg/l	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	-
23	Zinc as Zn	µg/l	BLQ(LOQ 100)	BLQ(LOQ 100)	BLQ(LOQ 100)	BLQ(LOQ 100)	-
24	Copper as Cu	µg/l	0.036	0.025	0.028	0.036	-
25	Petroleum Hydro Carbons	mg/l	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	10
26	Chlorophyll A	mg/l	1.82	1.84	1.87	1.85	-
27	Feecal coliforms	MPN/100 ml	< 2	< 2	< 2	< 2	500/100ml

Legend: BLQ – Below the Limit of Quantification ; LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT


Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/WT/05-06/190322 & HECS/WT/07-08/190322

S.No	Parameters	Units	Near MLT Berth		Near South East Break Water		SW- Class-IV Harbour Standards
			Surface	Bottom 1.5 m	Surface	Bottom 1.5 m	
1	Temperature	°C	28.9	28.8	28.9	28.8	
2	pH (at 25 °C)	-	7.32	8.27	7.78	8.34	6.0-9.0
3	Salinity	ppt	32.71	33.61	30.6	32.89	-
4	Electrical conductivity	µS/cm	47100	47200	47500	47500	-
5	Turbidity	NTU	1.1	1.4	1.2	1.7	-
6	Suspended Particulate Matter	mg/l	3	3	3	4	-
7	Dissolved oxygen	mg/l	6.6	6.4	6.6	6.1	3.0
8	Total Dissolved Solids	mg/l	30984	30781	31675	30878	-
9	BOD ₃ days @27°C as O ₂	mg/l	1	3	2	2	5.0
10	Chemical oxygen demand as O ₂	mg/l	40	52	36	38	-
11	Nitrite as NO ₂	mg/l	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	-
12	Nitrate as NO ₃	mg/l	2.38	2.35	2.35	2.41	-
13	Total Nitrogen as N	mg/l	3.04	2.87	2.91	2.75	-
14	Ammonia as NH ₃	mg/l	1.39	0.76	1.02	1.58	-
15	Inorganic Phosphate	mg/l	0.094	0.079	0.085	0.082	-
16	Total Phosphorous as P	mg/l	0.031	0.026	0.028	0.027	-
17	Sulphate as SO ₄	mg/l	1875.8	1803.9	1744.6	1716.2	-
18	Dissolved Iron	mg/l	0.15	0.21	0.16	0.22	-
19	Cadmium as Cd	mg/l	BLQ(LOQ 1)	BLQ(LOQ 1)	BLQ(LOQ 1)	BLQ(LOQ 1)	-
20	Lead as Pb	µg/l	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	-
21	Mercury as Hg	ng/l	BLQ(LOQ 50)	BLQ(LOQ 50)	BLQ(LOQ 50)	BLQ(LOQ 50)	-
22	Arsenic as As	µg/l	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	-
23	Zinc as Zn	µg/l	BLQ(LOQ 100)	BLQ(LOQ 100)	BLQ(LOQ 100)	BLQ(LOQ 100)	-
24	Copper as Cu	µg/l	0.029	0.030	0.025	0.028	-
25	Petroleum Hydro Carbons	mg/l	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	10
26	Chlorophyll - A	mg/l	1.87	1.83	1.89	1.83	-
27	Fecal coliforms	MPN/100 ml	< 2	< 2	< 2	< 2	500/100ml

Legend : BLQ – Below the Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/WT/09-10/190322 & HECS/WT/11-12/190322

S.No	Parameters	Units	Near North East Break Water		Near East Break Water		SW- Class-IV Harbour Standards
			Surface	Bottom 1.5 m	Surface	Bottom 1.5 m	
1	Temperature	°C	28.9	28.7	28.9	28.7	
2	pH (at 25 °C)	-	7.92	8.31	7.88	8.34	6.0-9.0
3	Salinity	ppt	32.42	33.25	31.25	32.2	-
4	Electrical conductivity	µS/cm	47500	47600	47400	52400	-
5	Turbidity	NTU	2.4	5.8	4.8	5.4	-
6	Suspended Particulate Matter	mg/l	5	13	9	12	-
7	Dissolved oxygen	mg/l	6.4	6.3	6.2	6.4	3.0
8	Total Dissolved Solids	mg/l	31409	31350	31295	32492	-
9	BOD,3 days @27°C as O ₂	mg/l	3	2	2	3	5.0
10	Chemical oxygen demand as O ₂	mg/l	48	42	38	52	-
11	Nitrite as NO ₂	mg/l	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	0.13	-
12	Nitrate as NO ₃	mg/l	2.31	2.28	2.18	1.8	-
13	Total Nitrogen as N	mg/l	2.86	2.77	3.27	1.93	-
14	Ammonia as NH ₃	mg/l	1.12	BLQ(LOQ:0.02)	1.45	BLQ(LOQ:0.02)	-
15	Inorganic Phosphate	mg/l	0.076	0.094	0.062	0.079	-
16	Total Phosphorous as P	mg/l	0.025	0.031	0.021	0.026	-
17	Sulphate as SO ₄	mg/l	1668.9	1812.7	173.8	2755	-
18	Dissolved Iron	mg/l	0.19	0.36	0.24	0.2	-
19	Cadmium as Cd	mg/l	BLQ(LOQ 1)	BLQ(LOQ 1)	BLQ(LOQ 1)	BLQ(LOQ 1)	-
20	Lead as Pb	µg/l	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	-
21	Mercury as Hg	ng/l	BLQ(LOQ 50)	BLQ(LOQ 50)	BLQ(LOQ 50)	BLQ(LOQ 50)	-
22	Arsenic as As	µg/l	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)	-
23	Zinc as Zn	µg/l	BLQ(LOQ 100)	BLQ(LOQ 100)	BLQ(LOQ 100)	BLQ(LOQ 100)	-
24	Copper as Cu	µg/l	0.032	0.032	0.023	190	-
25	Petroleum Hydro Carbons	mg/l	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	10
26	Chlorophyll A	mg/l	1.8	1.79	1.85	1.87	-
27	Faecal coliforms	MPN/100 ml	< 2	< 2	< 2	< 2	500/100ml

Legend : BLQ – Below the Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory

TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Surface Water Quality
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/WT/013-014-015/190322

S.No.	Parameters	Units	Creek Mouth (CR-I)	Opposite to Main Gate (CR-II)	Opposite to West Gate (CR-III)
1	Temperature	°C	28.9	28.9	28.9
2	pH (at 25 °C)	-	8.04	7.71	7.78
3	Salinity	ppt	32.53	30.74	7.86
4	Electrical conductivity	µS/cm	47300	38600	13360
5	Turbidity	NTU	0.7	68.4	17.4
6	Suspended Particulate Matter	mg/l	2	147	38
7	Dissolved oxygen	mg/l	6.5	6.3	6.3
8	Total Dissolved Solids	mg/l	30649	25476	7835
9	BOD,3 days @27°C as O2	mg/l	3	2	3
10	Chemical oxygen demand as O2	mg/l	48	36	42
11	Nitrite as NO2	mg/l	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)	BLQ(LOQ:0.01)
12	Nitrate as NO3	mg/l	2.27	4.56	5.27
13	Total Nitrogen as N	mg/l	2.95	5.06	6.24
14	Ammonia as NH3	mg/l	1.05	0.95	1.18
15	Inorganic Phosphate	mg/l	0.098	0.17	0.26
16	Total Phosphorous as P	mg/l	0.034	0.052	0.092
17	Sulphate as SO4	mg/l	1677.4	1874.2	468.92
18	Dissolved Iron	mg/l	0.13	1.64	0.28
19	Cadmium as Cd	mg/l	BLQ(LOQ 1)	BLQ(LOQ 1)	BLQ(LOQ 1)
20	Lead as Pb	µg/l	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)
21	Mercury as Hg	ng/l	BLQ(LOQ 50)	BLQ(LOQ 50)	BLQ(LOQ 50)
22	Arsenic as As	µg/l	BLQ(LOQ 5)	BLQ(LOQ 5)	BLQ(LOQ 5)
23	Zinc as Zn	µg/l	BLQ(LOQ 100)	BLQ(LOQ 100)	BLQ(LOQ 100)
24	Copper as Cu	µg/l	0.022	BLQ(LOQ 10)	BLQ(LOQ 10)
25	Petroleum Hydro Carbons	mg/l	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)	BLQ(LOQ 0.01)
26	Chlorophyll A	mg/l	1.81	1.75	1.75
27	Faecal coliforms	MPN/100 ml	110	<2	50

Legend : BLQ – Below the Limit of Quantification; LOQ- Limit of Quantification.


Engineer/Analyst




Authorized Signatory.

TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : Near GCB (Surface)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/001/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	6500 cells/L	APHA 23 rd Edition 2017
	Total Genus	10	
	Genus	Ceratium spp, Peridinium spp, Chaetoceros spp, Triodesmium spp, Pyroystis spp, Noctiluca spp, Biddulphia spp, Odontella spp	
2	Zooplankton (200µm mesh)		
	Total Cell Count	3100 cells/L	APHA 23 rd Edition 2017
	Total Genus	7	
	Genus	Obelia spp, Ceratium spp, Thalassiosira spp, Ceratium spp	
3	MacroBenthos		
	Total Genus	09 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans, Scyphozoa, corals, sponges. Sponges	

V. Arifol
Microbiologist

[Signature]
Authorized Signatory.



TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : Near GCB (Bottom 1.5m)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/002/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		APHA 23 rd Edition 2017
	Total Cell Count	5700 cells/L	
	Total Genus	09	
	Genus	Peridinium spp, Chaetoceros spp, , Noctiluca spp, Biddulphia spp, Thalassiothrix spp, Streptothecasp, Corethron spp	
2	Zooplankton (200µm mesh)		APHA 23 rd Edition 2017
	Total Cell Count	2400 cells/L	
	Total Genus	05	
	Genus	Acartiaspp, Copepod, Globigerina Spp, Eucalanus Spp, Obelia Spp, Copepod nauplii	
3	MacroBenthos		APHA 23 rd Edition 2017
	Total Genus	6 No's	
	Genus	Mussels, Clams, Crustaceans, sponges, bivalves, Corals, Sponges, sea squirts, echinoderms	

U. Arif
Microbiologist



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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : Near Finger Jetty (Surface)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/003/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	5800 cells/L	APHA 23 rd Edition 2017
	Total Genus	07	
	Genus	, Skeletonemaspp, Cerataulinaspp, Dityliumspp, Biddulphiaspp, Bacillariaspp, Ceratium spp, Chaetoceros spp, Asterionellaspp, Coscinodiscusspp,	
2	Zooplankton (200µm mesh)		
	Total Cell Count	3500 cells/L	APHA 23 rd Edition 2017
	Total Genus	6	
	Genus	Acartiaspp, Copepod, Titinopsis, Globigerina Spp, Obelia Spp	
3	Macro Benthos		
	Total Genus	10 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans, Seaanemones, corals, sponges, Diatoms, ciliates	

U. Angel
Microbiologist

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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : Near Finger Jetty (Bottom 1.5m)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/004/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	6700 cells/L	APHA 23 rd Edition 2017
	Total Genus	7	
	Genus	Dinoflagellates,Naviculae Spp,Thalassiosira Spp,Scriepsiella Spp,Odentella Spp	
2	Zooplankton (200µm mesh)		
	Total Cell Count	3500 cells/L	APHA 23 rd Edition 2017
	Total Genus	7	
	Genus	ObeliaSpp,GlobigerinaSpp,EucalanusSpp,Copepod,Oithanarigida	
3	MacroBenthos		
	Total Genus	10 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans,bivalves,echinoderms, ,SeaSquirts,Sea anemones	


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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : MLT Berth (Surface)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/005/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	6200 cells/L	APHA 23 rd Edition 2017
	Total Genus	08	
	Genus	Naviculaespp, MelosiraSpp, Thalassiothrixspp, Streptothecaspp, Skeletonemaspp, Dityliumspp, Biddulphiaspp, Bacillariaspp,, Chaetocerospp, Dinoflagellatespp	
2	Zooplankton (200µm mesh)		
	Total Cell Count	3100 cells/L	APHA 23 rd Edition 2017
	Total Genus	04	
	Genus	Rhincalanus Spp, Tintinnidaspp, Acartiaspp, Copepod, , Larvae	
3	MacroBenthos		
	Total Genus	9 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans, bivalves, echinoderms, , SeaSquirts, Sea anemones	

U. Arul
Microbiologist

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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
 Sample Description : Marine Water Quality
 Sampling Mark : MLT Berth (Bottom 1.5m)
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
 Sampling Date : 19/03/2022
 Report No : HECS/MB/006/040322

S. No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	6400 cells/L	APHA 23 rd Edition 2017
	Total Genus	10	
	Genus	Biddulphiaspp, Bacillariaspp,, Chaetocerospp.Dinoflagellatespp,Rhizosoleniaspp,Scrippsiellas pp,Naviculaespp,	
2	Zooplankton (200µm mesh)		
	Total Cell Count	3900 cells/L	APHA 23 rd Edition 2017
	Total Genus	8	
	Genus	Tintinopsisspp, Acartiaspp, Copepod, , Larvae,CrabZoea,Oithanarigida	
3	MacroBenthos		
	Total Genus	10 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans,bivalves,echinoderms, ,SeaSquirts,Seaanemones,Corals,Sponges,Bivalves,Echiniderms	

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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : South East Break Water (Surface)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MN/007/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	6100 cells/L	APHA 23 rd Edition 2017
	Total Genus	07	
	Genus	Coscinodicusspp, Thalassiothrixspp, Biddulphiaspp, Bacillariaspp,, Chaetoceros spp, Dinoflagellatesspp, Rhizosoleniaspp,	
2	Zooplankton (200µm mesh)		
	Total Cell Count	3000 cells/L	APHA 23 rd Edition 2017
	Total Genus	8	
	Genus	Titinopsis spp, Acartiaspp, Copepod, Fish larvae, Acartia Spp	
3	MacroBenthos		
	Total Genus	11 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans, bivalves, echinoderms,, Sea Squirts, Seaanemones, Corals, Sponges, Bivalves,	

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Laboratory Services Division

(Chemical & Biological Testing)
FSSAI Notified Laboratory
ISO 9001, 14001 & 45001 Certified.

TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : South East Break Water (Bottom 1.5m)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/008/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	6900 cells/L	APHA 23 rd Edition 2017
	Total Genus	09	
	Genus	Gymodiniumspp, Coscinodicusspp, Pyroystisspp, , Thalassiothrixspp, Streptothecasp, Skeletonemaspp, , , Chaetocerossp, Dinoflagellatesspp, Rhizosoleniaspp, Scrippsiellaspp, Navicul aespp,	
2	Zooplankton (200µm mesh)		
2	Total Cell Count	.500 cells/L	APHA 23 rd Edition 2017
	Total Genus	7	
	Genus	Globigerina Spp, Acartiaspp, Obeliaspp, Eucalanusspp, Fish larvae	
3	MacroBenthos		
	Total Genus	12 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans, bivalves, echinoderms, SeaSquirts, Seaanemones, Corals, Sponges, Bivalves,	


Microbiologist





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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : North East Break Water (Surface)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/009/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		APHA 23 rd Edition 2017
	Total Cell Count	6500 cells/L	
	Total Genus	08	
	Genus	MelosiraSpp,Thalassiothrixspp, Streptothecaspp, Skeletonemaspp, , Ditylium spp, Biddulphiaspp, Bacillariaspp,, Chaetoceros spp.Dinoflagellatesspp	
2	Zooplankton (200µm mesh)		APHA 23 rd Edition 2017
	Total Cell Count	3100 cells/L	
	Total Genus	7	
	Genus	Rhincalanus Spp,Tintinnidaspp, Acartiaspp, Copepod, , Larvae,Obelia Spp	
3	MacroBenthos		APHA 23 rd Edition 2017
	Total Genus	9 No's	
	Genus	Mussels, Clams, Crustaceans,bivalves,echinoderms, ,SeaSquirts,Sea anemones	


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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : North East Break Water (Bottom 1.5m)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/010/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	7500 cells/L	APHA 23 rd Edition 2017
	Total Genus	09	
	Genus	Odontella Spp, Biddulphiaspp, Bacillariaspp., Chaetocerospp, Dinoflagellatespp, Rhizosoleniaspp, Scrippsiellaspp, Naviculaespp,	
2	Zooplankton (200µm mesh)		
	Total Cell Count	3300 cells/L	APHA 23 rd Edition 2017
	Total Genus	8	
	Genus	Tintinopsisspp, Acartiaspp, Copepod, , Larvae, CrabZoea, Oithanarigida	
3	MacroBenthos		
	Total Genus	10 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans, bivalves, echinoderms, , SeaSquirts, Seaanemones, Corals, Sponges, Bivalves, Echinoderms	

V. Angel
Microbiologist

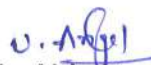
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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
 Sample Description : Marine Water Quality
 Sampling Mark : Near Channel (Surface)
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
 Sampling Date : 19/03/2022
 Report No : HECS/MB/011/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	5400 cells/L	APHA 23 rd Edition 2017
	Total Genus	07	
Genus	Dinoflagellates, Cerataulinaspp, Ditylium spp, Biddulphiaspp, Bacillariaspp, Ceratium spp, Chaetoceros spp, Asterionellaspp, Coscinodiscusspp,		
2	Zooplankton (200µm mesh)		
	Total Cell Count	2300 cells/L	APHA 23 rd Edition 2017
	Total Genus	5	
Genus	Acartiaspp, Titinopsis, Globigerina Spp, Obelia Spp		
3	Macro Benthos		
	Total Genus	7 No's	APHA 23 rd Edition 2017
Genus	Mussels, Clams, Crustaceans, Seaneomones, corals, sponges, Diatoms, ciliates		


Microbiologist



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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Marine Water Quality
Sampling Mark : Near Channel (Bottom 1.5m)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/012/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	6900 cells/L	APHA 23 rd Edition 2017
	Total Genus	8	
Genus	Dinoflagellates,Naviculae Spp,Thalassiosira Spp,Scriepsiella Spp,Odentella Spp,Ceratium fiscus,Melosira Spp		
2	Zooplankton (200µm mesh)		
	Total Cell Count	2900 cells/L	APHA 23 rd Edition 2017
	Total Genus	4	
Genus	ObeliaSpp,GlobigerinaSpp,EucalanusSpp,Copepod,Oithanarigida		
3	MacroBenthos		
	Total Genus	11 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans,bivalves,echinoderms, ,SeaSquirts,Sea anemones	


Microbiologist




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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Surface Water Quality
Sampling Mark : Creek Mouth (CR-I)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/013/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		APHA 23 rd Edition 2017
	Total Cell Count	6100 cells/L	
	Total Genus	9	
	Genus	OdontellaSpp,Phaeocystisspp,RhizosoleniaSpp, ,Thalassiosiraspp	
2	Zooplankton (200µm mesh)		APHA 23 rd Edition 2017
	Total Cell Count	2600 cells/L	
	Total Genus	7	
	Genus	TitinopsisSpp,AcartiaSpp,Oithanarigida	
3	Benthos		APHA 23 rd Edition 2017
	Total Genus	9 No's	
	Genus	Mussels, Clams , corals,sponges	

U. Anbalagan
Microbiologist



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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
Sample Description : Surface Water Quality
Sampling Mark : Opposite to West Gate (CR-III)
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/MB/014/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	5500 cells/L	APHA 23 rd Edition 2017
	Total Genus	10	
	Genus	Dinoflagellates, OdontellaSpp, Gymodiniumspp, RhizosoleniaSpp, CoscinodiscusSpp, Thalassiosiraspp	
2	Zooplankton (200µm mesh)		
	Total Cell Count	2300 cells/L	APHA 23 rd Edition 2017
	Total Genus	8	
	Genus	AcartiaSpp, ObeliaSpp, CrabZoea	
3	Benthos		
	Total Genus	9 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans, corals, sponges	

V. Arul
Microbiologist



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TEST REPORT

Name of the Client : M/s. Kamarajar Port Ltd.,
 Sample Description : Surface Water Quality
 Sampling Mark : Opposite to Main Gate (CR-II)
 Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
 Sampling Date : 19/03/2022
 Report No : HECS/MB/015/040322

S.No	Parameters	Values	Test Method
1	Phytoplankton (64µm mesh)		
	Total Cell Count	6400 cells/L	APHA 23 rd Edition 2017
	Total Genus	9	
	Genus	NaviculaeSpp.Gymodiniumspp,RhizosoleniaSpp, Thalassiosiraspp	
2	Zooplankton (200µm mesh)		
	Total Cell Count	2800 cells/L	APHA 23 rd Edition 2017
	Total Genus	7	
	Genus	Globigerina Spp,TitinopsisSpp,AcartiaSpp,ObeliaSpp	
3	Benthos		
	Total Genus	9 No's	APHA 23 rd Edition 2017
	Genus	Mussels, Clams, Crustaceans, corals,sponges	

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Laboratory Services Division

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TEST REPORT

Name of the Client : M/s.Kamarajar PortLtd.,
Sample Description : Sediment Quality
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020
Sampling Date : 19/03/2022
Report No : HECS/SI/001-004/040322

S.No.	Parameters	Units	Near Finger Jetty	Near Marine Liquid Terminal	Near General Cargo Berth	Creek Mouth
1	Particle Size	Mm	0.03	0.01	0.02	0.02
2	Total Organic Carbon	%	0.62	0.63	0.72	0.83
3	Total Inorganic Carbon	%	79.38	65.36	77.28	74.17
4	Mercury	mg/kg	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)
5	Lead	mg/kg	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)
6	Copper	mg/kg	4.56	5.41	3.69	5.55
7	Cadmium	mg/kg	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)
8	Arsenic	mg/kg	0.29	0.32	BLQ (LOQ 0.1)	BLQ (LOQ 0.1)

Note: mm- Millimeter, mg/kg- milligram per Kilogram, BLQ - Below the Limit of Quantification; LOQ- Limit of Quantification


Engineer/Analyst


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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Noise Monitoring
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020.
Sampling Date : 19/03/2022
Report No : HECS/NS/001-008/040322

S.No	Location	Time	Day Time Noise level in dB (A)	Time	Night Time Noise level in dB (A)
1	Security Main Gate	12.00	66.4	22.00	54.7
2	Inside Port Admin Building	12.30	61.5	22.15	48.2
3	Signal Station	12.50	65.9	22.30	45.3
4	Finger Jetty	13.15	57.8	22.45	54.7
5	At Car Parking Yard	13.35	67.5	23.05	58.1
6	At General Cargo Berth	13.50	68.3	23.20	55.4
7	At Fire Station	14.10	63.1	23.35	51.8
8	Guest House	14.30	60.2	23.50	48.5

Remarks: Complies as per CPCB norms.

Limits set by CPCB:

- Industrial Area : Day Time-75 dB (A); Night Time-70 dB (A).
- Commercial Area : Day Time-65 dB (A); Night Time-55 dB (A).
- Residential Area : Day Time-55 dB (A); Night Time-45 dB (A).
- Silence Zone : Day Time-50 dB (A); Night Time-40 dB (A).

Limits set by Tamilnadu Factories Rules, 1950 Permissible Limit of Exposure (8 hrs):

- Working Area : 90 dB (A)



Engineer/Analyst



Authorized Signatory.

1.0 Introduction

Kamarajar port is the first Corporatized Port in India and the 12th Major Port. It works on the model of 'land Lord' concept. KPL's policy is to manage the port in a pro-active manner to minimize any impacts from port operations or new developments. Kamarajar port handles coal for Tamil Nadu Electricity Board, POL products and export of automobiles. Data generation on environmental quality constitutes the basis for environmental appraisal of the project. Thus data on environmental quality has to be periodically monitored and also to complies the TNPCB / MoEF conditions.

With this back ground and need Kamarajar Port Limited has appointed M/s. **Hubert Enviro Care Systems (P) Ltd** to undertake the same. KPL has awarded the work to M/s. Hubert Enviro Care Systems (P) Ltd, Chennai vide work order No. **KPL/MS/Env/EM/04/2017 dated 20.07.2017 and extended work order No. KPL/MS/Env/EM/04/2017 dated 03.09.2020.**

Accordingly, environmental quality data on ambient air for the month of **April'2022** is presented in this report.

2.0 Scopes and Methodology:

The scope of work, works carried out and methodology adopted for the survey are described below:

2.1 **Ambient Air Quality**

As a part of the study, Ambient Air Quality Parameters were measured during the monitoring days data of PM₁₀, PM_{2.5}, SO₂, NO₂ and CO were monitored.

AMBIENT AIR QUALITY MONITORING:

Ambient Air Quality was monitored at different locations inside the port. The study area covers periphery of port and different parts of the port. A Total of 8 Ambient Air Quality Monitoring Stations covering both upwind and downwind directions were monitored during April'2022.

Table :Details of Ambient Air Quality Monitoring Locations

S. No	Station Code	Sampling Location
1	AAQ - 1	Security Main Gate
2	AAQ - 2	Inside Port Administrative Building
3	AAQ - 3	Signal Station
4	AAQ - 4	Finger Jetty
5	AAQ - 5	At Car parking yard
6	AAQ - 6	At General Cargo Berth
7	AAQ - 7	At Fire Station
8	AAQ - 8	Guest House

Ambient Air Quality Monitoring was carried out with a frequency of two samples per week i.e. at 8 locations. A Total of 72 samples each of PM10 & PM 2.5, Samples of SO₂, NO₂ and CO each were monitored by using Respirable dust sampler, Fine Particulate Sampler & CO Analyzer.

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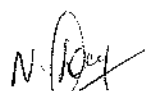
Laboratory Services Division
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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Security Main Gate (AAQ-1)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020.

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored					
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)
1	24	01-02.04.2022	12.24	25.94	57.84	23.91	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
2	24	04-05.04.2022	11.93	24.98	51.74	27.58	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
3	24	08-09.04.2022	13.71	25.21	65.84	24.08	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
4	24	11-12.04.2022	10.56	21.07	53.23	25.84	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
5	24	15-16.04.2022	11.48	23.87	60.67	25.61	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
6	24	18-19.04.2022	10.68	20.76	48.93	27.35	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
7	24	22-23.04.2022	12.55	20.83	51.54	26.92	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
8	24	26-27.04.2022	10.73	22.36	53.56	22.31	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
9	24	29-30.04.2022	13.59	25.18	50.18	24.67	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
NAAQ Standards (2009)			80	80	100	60	2	1

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ - Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Inside Port Administrative Building (AAQ-2)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored					
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)
1	24	01-02.04.2022	13.48	22.34	58.75	24.52	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
2	24	04-05.04.2022	12.97	24.72	62.43	22.69	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
3	24	08-09.04.2022	13.58	22.27	60.26	26.46	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
4	24	11-12.04.2022	12.55	25.78	58.42	23.94	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
5	24	15-16.04.2022	13.77	23.85	57.48	28.55	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
6	24	18-19.04.2022	14.15	26.45	63.25	22.47	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
7	24	22-23.04.2022	12.83	25.71	61.73	24.35	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
8	24	26-27.04.2022	12.23	22.83	55.76	21.25	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
9	24	29-30.04.2022	13.38	26.53	62.36	25.15	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
NAAQ Standards (2009)			80	80	100	60	2	1

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


Engineer/Analyst




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ISO 9001, 14001 & 45001 Certified.

TEST REPORT


Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Signal Station (AAQ-3)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored					
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)
1	24	01-02.04.2022	10.87	25.59	51.65	28.31	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
2	24	04-05.04.2022	11.23	23.63	53.53	25.58	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
3	24	08-09.04.2022	10.85	24.91	59.77	28.16	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
4	24	11-12.04.2022	13.91	23.46	53.39	24.01	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
5	24	15-16.04.2022	12.02	25.78	52.99	29.03	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
6	24	18-19.04.2022	11.54	27.58	60.26	25.41	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
7	24	22-23.04.2022	12.36	25.65	52.77	28.73	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
8	24	26-27.04.2022	11.65	27.18	51.69	23.45	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
9	24	29-30.04.2022	11.09	25.37	54.25	26.49	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
NAAQ Standards (2009)			80	80	100	60	2	1

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ - Below Limit of Quantification LOQ- Limit of Quantification.


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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Finger Jetty (AAQ-4)
Sample Drawn : Hubert Enviro Care Systems Private Limited.
ByWork order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored					
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)
1	24	01-02.04.2022	13.57	24.63	58.09	26.69	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
2	24	04-05.04.2022	11.25	20.99	65.37	27.32	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
3	24	08-09.04.2022	12.96	24.73	60.09	25.18	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
4	24	11-12.04.2022	13.46	22.23	61.69	26.37	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
5	24	15-16.04.2022	12.11	20.88	58.64	25.35	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
6	24	18-19.04.2022	10.76	23.89	67.91	28.19	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
7	24	22-23.04.2022	13.34	24.39	59.35	24.07	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
8	24	26-27.04.2022	11.28	24.46	56.12	22.46	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
9	24	29-30.04.2022	12.73	20.58	52.13	25.80	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
NAAQ Standards (2009)			80	80	100	60	2	1

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.


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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : At Car Parking Yard (AAQ-5)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored					
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)
1	24	01-02.04.2022	12.65	22.32	64.21	26.51	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
2	24	04-05.04.2022	10.55	19.08	59.74	24.83	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
3	24	08-09.04.2022	11.04	24.92	56.65	21.51	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
4	24	11-12.04.2022	13.02	21.94	63.76	26.07	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
5	24	15-16.04.2022	11.70	25.23	64.08	25.01	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
6	24	18-19.04.2022	14.98	20.13	60.58	22.68	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
7	24	22-23.04.2022	11.47	23.87	58.35	24.07	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
8	24	26-27.04.2022	13.62	22.15	53.24	21.27	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
9	24	29-30.04.2022	14.37	25.48	59.74	24.81	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
NAAQ Standards (2009)			80	80	100	60	2	1

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009 BLQ-Below Limit of Quantification; LOQ- Limit of Quantification.


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TEST REPORT

Name of the Client : M/s.Kamarajar PortLtd.,
Sample Description : Ambient Air Quality
Sample Mark : At General Cargo Berth (AAQ-6)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored					
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)
1	24	01-02.04.2022	13.09	20.32	56.85	28.49	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
2	24	04-05.04.2022	12.47	19.56	59.36	27.32	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
3	24	08-09.04.2022	10.98	25.47	62.41	30.58	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
4	24	11-12.04.2022	11.33	23.28	64.53	31.44	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
5	24	15-16.04.2022	13.89	26.13	58.98	32.75	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
6	24	18-19.04.2022	14.64	23.46	57.63	25.4	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
7	24	22-23.04.2022	12.54	25.31	60.64	31.58	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
8	24	26-27.04.2022	11.63	20.65	59.76	29.55	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
9	24	29-30.04.2022	10.44	24.76	56.31	28.42	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
NAAQ Standards (2009)			80	80	100	60	2	1

Note: SO₂-Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ-Below Limit of Quantification LOQ- Limit of Quantification.


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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : At Fire Station (AAQ-7)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored					
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)
1	24	01-02.04.2022	10.41	21.84	50.54	22.94	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
2	24	04-05.04.2022	13.84	24.36	53.96	22.36	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
3	24	08-09.04.2022	9.38	20.59	50.48	25.45	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
4	24	11-12.04.2022	11.84	22.23	49.36	27.26	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
5	24	15-16.04.2022	10.61	19.25	53.59	21.89	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
6	24	18-19.04.2022	14.56	23.52	58.84	26.96	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
7	24	22-23.04.2022	12.87	23.56	61.22	30.21	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
8	24	26-27.04.2022	11.54	22.38	63.83	31.73	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
9	24	29-30.04.2022	12.54	23.87	60.51	29.36	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
NAAQ Standards (2009)			80	80	100	60	2	1

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification LOQ- Limit of Quantification.


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TEST REPORT

Name of the Client : M/s.Kamarajar Port Ltd.,
Sample Description : Ambient Air Quality
Sample Mark : Guest House (AAQ-8)
Sample Drawn By : Hubert Enviro Care Systems Private Limited.
Work order No : KPL/MS/Env/EM/04/2017 dated 03.09.2020

S.NO	Sampling (hrs)	Sampling Date	Parameters monitored					
			SO ₂ (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	CO (mg/m ³)	Pb (µg/m ³)
1	24	01-02.04.2022	11.26	20.54	52.23	20.88	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
2	24	04-05.04.2022	13.84	24.36	50.87	23.31	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
3	24	08-09.04.2022	11.22	22.63	57.54	23.74	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
4	24	11-12.04.2022	14.88	26.15	64.87	24.32	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
5	24	15-16.04.2022	12.58	23.48	66.54	26.09	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
6	24	18-19.04.2022	10.66	24.52	67.25	22.83	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
7	24	22-23.04.2022	14.23	25.64	63.96	25.96	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
8	24	26-27.04.2022	12.31	23.63	58.27	20.27	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
9	24	29-30.04.2022	9.56	20.87	55.13	28.59	BLQ(LOQ: 0.05)	BLQ(LOQ: 0.05)
NAAQ Standards (2009)			80	80	100	60	2	1

Note: SO₂- Sulphur dioxide, NO₂- Nitrogen dioxide, PM₁₀ - (Particulate Matter size less than 10 µm), PM_{2.5} - (Particulate Matter size less than 2.5 µm) CO- Carbon monoxide, Pb - Particulate Lead; NAAQ Norms- National Ambient Air Quality Stipulated by CPCB/TNPCB for Industrial Areas 2009. BLQ- Below Limit of Quantification LOQ- Limit of Quantification.


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