



Mangalore SEZ Limited

Sy. No 168/3A, Plot No U-1
Administrative Building
Mangalore Special Economic Zone
Bajpe Village, Mangalore taluk
Dakshina Kannada (Dist)
Karnataka-574142

10/06/2024

To,
Environmental Officer
KSPCB Mangalore,
Baikampady Industrial area
Mangalore-575011

Regional Office
Karnataka State Pollution Control Board
Plot No. 10-1, D-90/6/24
Baikampady Industrial Area
Mangaluru-575011

Dear Sir,

Sub: Submission of Six-monthly Compliance Report

With reference to the above subject, we hereby submit the six-monthly Compliance reports of Mangalore SEZ & MRPL Aromatic complex for the months Dec 2023 to May 2024.

Thanks & Regards,

Sr. General Manager

For Mangalore SEZ Limited

Encl : Compliance Report

Copy to: MoEF Director, Bangalore



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10 June 2024

MSEZL/MNG/EC/COMP/2023-24

To,

The Director,
Southern Region, Regional Office,
Ministry of Environment and Forests,
Kendriya Sadan, 4th Floor, E&F Wings,
17th Main Road, 1st Block, Koramangala,
Bangalore – 560 034

Sir,

Sub: Six monthly Compliance Report.

Ref:



1. Environmental Clearance No: 21-383/2007-IA-III, dated 3rd April 2008.
2. Amendment to Environmental Clearance for setting up of Phase-I of Special Economic Zone at Mangalore by M/s Mangalore SEZ Ltd – regarding No: 21-383/2007-IA-III dated 13th July 2012.
3. Amendment to Environmental Clearance for setting up of Phase-I of Special Economic Zone at Mangalore by M/s Mangalore SEZ Ltd date 27 Aug 2014.
4. Amendment to Environmental Clearance for development of Multi Product Units as Mangalore SEZ dated 18 June 2015.

With reference to above, we would like to submit the compliance report as on date.

S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
(i)	No Objection Certificate from the Karnataka State Pollution Control Board shall be obtained before initiating the project.	Consent For Establishment from KSPCB obtained on 30 April 2008 and Extension of validity of Consent for Establishment obtained on 27 May 2013 and the copy was submitted to MoEF.
(ii)	The MSEZ project shall be restricted to the Phase-I of the project, proposed over 1,800 acres. The	Complied. MSEZL will approach MoEF with requisite documents as

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Sy.No 168/3A, Plot No U-1, Administrative Building, Mangalore Special Economic Zone, Bajpe Village, Mangalore taluk. Website: www.mangaloresez.com



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S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	phase II of the project shall be considered by Ministry of Environment and Forests only after receipt of all requisite documents/information as laid down in the Environmental Impact Assessment Notification, 2006 and Coastal Regulation Zone Notification, 1991 as applicable.	per EIA Notification, 2006 for Phase-2 expansions if taken in future.
(iii)	All development in the Coastal Regulation Zone area shall be in accordance with the Coastal Regulation Zone Notification, 1991. No destruction of mangroves shall be undertaken except while undertaking the permissible activities in the Coastal Regulation Zone-I areas.	Complied.
(iv)	The project proponent shall not take up any activity in 875 acres of Coastal Regulation Zone land, other than those permissible under the Coastal Regulation Zone Notification 1991 such as pipeline corridors, pipelines roads on stilts.	Noted and complied.
(v)	With regard to the containing the suspected contamination of the groundwater near Athurkodi area of Kuthethoor village, MRPL have given an undertaking vide their letter dated 19.3.2008 which is as follows: - a) Implementation of recommendation of NGPRI will be started by MRPL immediately after submission of their report. b) Depending upon the nature of their recommendations, we will make efforts to complete necessary actions within 6 months from the date of receipt of their report. c) In addition to above, a daily vigil is already in place to take samples from different places and to monitor any suspected oil leakage. This will continue till the problem is resolved. d) We are also in continuous contact with the residents in the surround areas with	This condition pertains to MRPL phase III expansion project. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.



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S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	regard to any contamination. KSPCB and MRPL shall ensure that (a) to (d) above is implemented in a time bound manner and a monthly report on the progress of the activities provided to the Regional Office of this Ministry at Bangalore. For this purpose a separate budget would be allocated by MRPL.	
(vi)	The project proponent shall obtain a report from the Wildlife Department with regard to existence of wildlife in the proposed site as claimed by the public before implementing the project.	Report from the chief conservator of Forest regarding existence of wildlife in the proposed site was submitted to the MoEF dated June 5, 2008.
(vii)	The R&R package shall be strictly in accordance with the laid down norms of the State Government.	The R&R Package is being implemented strictly as per approved policy by State Government. In 1 st PDF 1248 families out of 1253, In 2 nd PDF 214 families out of 214, In 3 rd PDF 145 families out of 146 families & 16 shops has been compensated with R&R Packages. Totally 1623 families have vacated their houses from the project area and are rehabilitated in R&R Colony.
(viii)	A marine Environment Impact Assessment and Risk Assessment along with the Disaster Management Plan shall be prepared for the outfall facilities proposed in the Coastal Regulation Zone and the marine areas.	NIO has carried out EIA, Risk Assessment, DMP and Bathymetry survey along with Marine Outfall pipeline alignment. The detailed design report of the Marine Outfall facility is prepared by Master planning consultants of MSEZ under the guidance of Department of Oceanography, IIT Chennai. The design report was also vetted by NIO, Goa. The detailed project report of the facility is submitted to MoEF during November 2009. MSEZ has taken up the implementation of the above facility and



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S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
		completed the work by July 2014. MSEZ obtained consent for operation of treated wastewater discharge line from KSPCB vide dated 20 July 2022.
(ix)	Project proponent shall put up a dedicated website and a display panel to inform the public regarding the Ambient Air Quality along with SO ₂ NO _x and other parameters as prescribed as Central Pollution Control Board (CPCB).	MSEZL has dedicated website 'www.msezl.com', wherein Environment Monitoring Parameters are periodically uploaded and made available to the public. Installation and commissioning of Continuous Ambient Air Quality Monitoring station (CAAQMS) has been completed during the month of July 2017 and presently data is being transferred to CPCB server continuously. The location of the monitoring station was finalized in consultation with KSPCB.
(x)	The gaseous emissions (SO ₂ , NO _x , HC, VOC and Benzene) from various process units shall conform to the standards prescribed by the concerned State Pollution Control Board. All the measures detailed in the EMP and response to the Public Hearing shall be taken to control the point/stack and fugitive gaseous emissions from the proposed facilities, processes and storage units etc., for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration.	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(xi)	The emission levels of the other pollutants shall also remain within the permissible levels	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be



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S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
		complying conditions relevant to them as part of their existing clearance.
(xii)	The Industrial units in the SEZ and the associated facilities shall be strictly in accordance with the norms laid down by the Karnataka State Government and CPCB.	Noted and will be adhered.
(xiii)	The project proponent shall ensure that the greenery of the area is maintained. Further, 33% of the project area shall be dedicated for green belt development of which at least 5% shall be for mangrove afforestation. The local Forest Department shall be associated for this purpose and requisite budget earmarked.	Presently MSEZL has completed Green Belt development in 272 acres out of 272 acres by planting 122400 saplings. Green Belt operation & maintenance is for 2-3 years & plants are maintained as per the good practises to ensure 100% survival. Slope stabilisation in about 18 acres with vetiver grass has been completed.
(xiv)	The project proponent shall ensure that the water requirement of the Mangalore city does not get affected due to the SEZ operation. Adequate provision shall be made in the reservoirs to provide for the water requirement of the cities.	Noted.
(xv)	The project proponent shall ensure that during construction and operation of the project the traffic in the city is not affected.	Complied.
(xvi)	All precautions of the highest standards shall be incorporated in the design of the project to ensure that there is no chance of emission/leakage of hazardous chemicals including Benzene. Detailed monitoring programme shall be designed and the information provided to the public through display and dedicated website by means of online monitoring.	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.



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S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
(xvii)	Low Sulphur internal fuel oil and fuel gas shall be fired in process heaters and boilers.	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(xviii)	Quarterly monitoring of fugitive emissions shall be carried out by Fugitive Emission Detectors (GMI Leak Surveyor). Guidelines of CPCB will be followed for monitoring fugitive emissions. For control of fugitive emissions, all unsaturated hydrocarbons shall be routed to the flare system. The flare system shall be designed for smokeless burning. Flare Gas Recovery System shall be installed for reduction of Hydrocarbon loss and emission of VOCs, NO _x , N ₂ O, SO _x & CO ₂ to the environment.	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(xix)	Regular Ambient Air Quality Monitoring shall be carried out. The location and results of existing monitoring stations shall be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional Stations shall be set up, if required. It shall be ensured that at least one monitoring station is set up in up-wind & in down-wind direction along with those in other directions.	Ambient Air Quality Monitoring is being carried out regularly in three locations and the locations of monitoring are selected in consultation with KSPCB. The reports of monitored data attached as Annexure-I .
(xx)	On-line data for air emissions shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol	Installation and commissioning of Continuous Ambient Air Quality Monitoring station (CAAQMS) has been completed during the month



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S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
	shall ensure continuous monitoring of all the parameters.	July 2017 and presently data is being transferred to CPCB server continuously. The location of monitoring station is finalized in consultation with KSPCB.
(xxi)	The practice of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hr time weighted average of 90 dB (A).	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly.
(xxii)	All the pumps and other equipment's, where there is a likelihood of HC leakages, shall be provided with appropriate indicators and detectors. Provision for immediate isolation of such equipment, in case of a leakage shall also be made. The company shall adopt Leak Detection And Repair (LDAR) programme for quantification and control of fugitive emissions.	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(xxiii)	The product loading gantry shall be connected to the product sphere in closed circuit through the vapour arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records shall be maintained	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly.
(xxiv)	The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present, then the respective streams may be incinerated, if there are no technically feasible or economically viable reduction/recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator.	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.



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S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
(xxv)	The new standards/norms that are being proposed by the CPCB for Petrochemical Plants and Refineries shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e., TOCs standards and process vent standards for top priority chemicals. Regular monitoring will be carried out for VOC and HC and On-line monitors for VOC measurements may be installed.	Noted. The existing units in MSEZ are complying the conditions as per their approvals and submitting reports to KSPCB directly. MRPL phase III expansion has been detached from MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(xxvi)	Regular monitoring of relevant parameters for the underground water in the surrounding areas shall be undertaken and the results shall be submitted to the relevant States Pollution Control Board.	Regular monitoring of ground water is being carried out in 10 locations & the reports are attached as Annexure-I . The locations are finalized in consultation with KSPCB.
(xxvii)	Solid waste generated as Pretreater and Reformer Catalysts, Sulphur guard absorbent and Alumina Balls shall be disposed off as per the authorization from the State Pollution Control Board.	Noted and each Individual unit obtaining separate approval for disposal of solid waste generated from their unit.
(xxviii)	Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE lined pit for disposal after treatment. The sludge shall be incinerated in the premises only.	The individual units complying the conditions and submitting the reports to KSPCB directly.
(xxix)	The company shall strictly follow all the recommendations mentioned in the Charter on Corporate Responsibility for Environmental Protection (CREP).	Compliance details for CREP is attached as Annexure II .
(xxx)	The Company shall harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.	Noted. MRPL Aromatic complex has implemented rooftop buildings for rainwater harvesting. MSEZL has provided flow control gate to mainstream drain, there by pumping the water to reservoir for



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S. No.	A. SPECIFIC CONDITIONS	COMPLIANCE
		further use.
(xxxi)	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	Being Complied.
(xxxii)	The Company shall implement all the recommendations made in the Environmental Impact Assessment /EMP report and risk assessment report.	MSEZL has implemented most of the recommendations of EIA/EMP report.
(xxxiii)	The company will undertake all relevant measures, as indicated during the Public Hearing for improving the Socio-economic conditions of the surrounding area.	MSEZL is undertaking all relevant measures for improving the Socio-economic condition of the surrounding area as indicated during the Public Hearing.
(xxxiv)	With regard to R&R colony the project proponent shall obtain all requisite clearances as prescribed by the concerned agencies.	The R&R Colonies are developed after obtaining the requisite clearances from the concerned Departments like MoEF, KSPCB, Mangalore Urban Development Authority etc.

S. No	B. GENERAL CONDITIONS	Compliance
(i)	The project authorities shall strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government.	Noted and being complied.
(ii)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	MSEZ obtained amendment to EC 1. Dated 13 July 2012 2. 27 Aug 2014, this involves widening of existing public road towards river side adjacent to MSEZ pipeline cum road Corridor in Reach-II area. 3. 18 th June 2015 for development of Multi Product Units at Mangalore SEZ. Copies of amendments are



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S. No	B. GENERAL CONDITIONS	Compliance
		submitted.
(iii)	At no time, the emissions shall be allowed to go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved.	Noted and will be complied.
(iv)	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters for both surface and ground water.	The treated effluent parameters are measured through online measuring instruments installed at outlet line of Marine outfall pump house for the parameters like pH, DO, COD, TSS, and Conductivity. Further Ground water and surface water monitoring is carried out in the surrounding areas regularly & the reports are attached as Annexure-I . The locations are finalized in consultation with KSPCB.
(v)	Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	The industrial wastewater from units is treated at CETP and pumped to marine outfall after meeting the prescribed discharge standards. The outlet of CETP is monitored by online analysers and same is being connected to CPCB server on real time basis.
(vi)	The overall noise levels in and around the plant area shall be limited within the prescribed standards (85dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75dBA (day time) and 70dBA (night time).	Noted and noise levels are within the limit of prescribed standards.



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S. No	B. GENERAL CONDITIONS	Compliance
(vii)	The project authorities shall strictly comply with the provisions made in Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals etc. Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project. Requisite On-site and Off-site Disaster Management Plans will be prepared and implemented.	Noted and will be complied. MRPL phase III expansion has been detached From MSEZ phase I project vide EC amendment dated 13 th July 2012. MRPL shall be complying conditions relevant to them as part of their existing clearance.
(viii)	Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/ disposal of hazardous wastes.	Noted. Each Individual unit obtaining separate approval for disposal of hazardous waste generated from their unit.
(ix)	The project authorities shall provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	Noted and will be complied.
(x)	The stipulated conditions shall be monitored by the concerned Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control Board. A six-monthly compliance report and the monitored data shall be submitted to them regularly. It shall also be displayed on the Website of the Company.	Compliance report is being submitted to MoEF/KSPCB on regular basis for every six months along with Ambient Air Quality monitoring report, Noise monitoring report & Ground water monitoring report. Compliance report is also displayed in the Company website.
(xi)	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http://www.envfor.nic.in . This should be advertised within seven days from the date of issue of the clearance letter at least in two local	The information regarding the EC has been published in the newspapers and same was submitted to Ministry and KSPCB.



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S. No	B. GENERAL CONDITIONS	Compliance
	newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry.	
(xii)	The date of Financial Closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project shall be informed to the Ministry and its Regional Office.	MSEZL has taken up the land development & infrastructure works from April 2011. MSEZL Board has approved the Business Plan for Infrastructure Development during Aug. 2012. The Zone is operational since 13 January 2014.
(xiii)	Proper Housekeeping and adequate occupational health programmes shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for at least 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other Hydrocarbons etc.	Noted.
(xiv)	A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive.	Sr. General Manager (Environment & Civil) & Dy. Manager (Environment) are in place to take care of Environmental issues. Horticulture Dy. General Manager is appointed for development & maintenance of green belt and also take care of fires, safety and emergency preparedness.

S. No	EC Amendment conditions dtd. 13 th July 2012	Compliance
(i)	Only the sector Specific shall be permitted in the SEZ & those units shall obtain separate Environmental Clearance as applicable.	MSEZL obtained amendment to EC for development of Multi Product units as Mangalore SEZ dated 18 th June 2015.



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S. No	EC Amendment conditions dtd. 13 th July 2012	Compliance
(ii)	Proponent shall enhance the allocation for the CSR activities from 2.5 to 5 % of the total cost & item-wise details along with time bound action plan shall be prepared & submitted to the Ministry's Regional office at Bangalore. Implementation of such program shall be ensured accordingly in a time bound manner.	MSEZL has already taken up CSR activities as per CSR guidelines. The details are submitted to your kind office.
(iii)	The green belt shall be 33% all along the periphery & width of the green belt shall be minimum 50 mts.	Noted and complied.

S. No	EC Amendment conditions dtd. 27 th Sep 2014	Compliance
(i)	The project proponent while carrying out the road widening works towards river side should not cause any impact to the river water flow and should be clear of river water way.	Complied.
(ii)	The project proponent to take up the bank protection works like stone pitching etc to avoid soil erosion of the banks.	Riverbank protection works as directed by WRDO are carried out.
(iii)	The project proponent to take up all adequate measures to mitigate the dust pollution during the road widening works.	Complied.
(iv)	The proponent shall not dump any construction wastes etc in the river portion.	Complied.



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S. No	EC Amendment conditions dtd. 18 th June 2015	Compliance
(i)	The individual industries shall obtain prior Environmental Clearance as required under EIA Notification, 2006. The Project Proponent shall only allow the projects that have obtained the requisite Environmental Clearance.	Noted. All the existing industries inside MSEZ obtained necessary approvals from the concerned department.

Thanking You,

Yours faithfully,

Sr. General Manager

For Mangalore SEZ Ltd

Encl.:

1. MSEZL Monitoring reports for Air, Water & Noise Environment.
2. Environmental compliance report & Environmental Monitoring Reports from OMPL.

Copy to: Environmental Officer, Karnataka State Pollution Control Board,
Mangalore.



o/c

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10 June 2024

MSEZL/MNG/R&R/COMP/2023-24

To,

The Director,
Southern Region, Regional Office,
Ministry of Environment and Forests,
Kendriya Sadan, 4th Floor, E&F Wings,
17th Main Road, 1st Block, Koramangala,
Bangalore – 560 034



Sir,

Sub: Development of Residential Colony for Rehabilitation and Resettlement for SEZ Complex at Kulai & Thokur village, Mangalore Taluk & District by M/s Mangalore SEZ Limited, Mangalore.

Ref: 1) Environmental Clearance No: SEIAA: 140: CON: 2008, dated 25th June 2008.

With reference to above, we would like to submit the compliance report as on date:

A. SPECIFIC CONDITIONS		
I. CONSTRUCTION PHASE		
(i)	Setup an Environment Management cell and ensure that the cell manages/maintains all the environmental aspects such as sewage treatment, solid waste disposal, maintenance of green belt areas etc, and in case the commercial space is sold/leased, then enter into agreement as per the draft agreement copy submitted, with the prospective buyers to ensure that they maintain the cell and take care of all environment concerns during the operation phase of the project. In addition sufficient fees should be levied so as to raise a corpus fund to maintain the Environment Cell.	MSEZL Environment Management cell is established to look after the environmental aspects like sewage treatment, Solid waste disposal & Development and maintenance of Green belt etc. The conditions specified regarding selling or leasing of Commercial space in R&R colony will be complied in case of selling /leasing of land is taken up.
(ii)	Appoint an Environment and Safety Engineer during the construction phase to take care of environment and safety aspects as committed.	Yes. Dy. Manager (Environment) and Sr. General Manager (Environment & Civil) are in place to take care of



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		Environmental issues and Safety aspects. Horticulture Dy. General Manager has appointed for development and maintenance of Green belt.
(iii)	All required sanitary and hygienic measures should be in place before starting construction activities and to be maintained throughout the construction phase. Sufficient number of toilets/bathrooms should be provided with required septic tanks and soak pits for construction work force.	Works are Completed.
(iv)	A First Aid Room should be provided in the project both during construction and operation of the project.	MSEZL has established clinic and medical shop at 48 acres R&R colony to look after the Project Rehabilitated People. Currently, Clinic is hand overed to Primary Health centre Kuali.
(v)	Adequate drinking water and sanitary facilities should be provided for construction workers at the site. The safe disposal of wastewater and solid wastes generated during the construction phase should be ensured.	Works are completed.
(vi)	Provision should be made for the supply of fuel (kerosene or cooking gas) utensils such as pressure cookers etc, to the labourers during the construction phase.	Works are completed.
(vii)	All the labourers to be engaged for construction should be screened for health and adequately treated before engaging them to work at the site and detailed report submitted to SEIAA. Safety standards as per National Building Code (NBC) should be ensured.	Works are completed.
(viii)	For disinfection of waste water meant for uses other than toilet flushing, use ultra violet radiation and not chlorination. For recirculation of treated waste water for toilet flushing, use chlorination.	Works are completed.
(ix)	All the top soil excavated during construction activities should be stored for use in horticulture/Landscape development within	Works are completed.



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	the Project site.	
(x)	Disposal of construction waste during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority.	Works are completed.
(xi)	Soil and ground water samples should be tested at the project site during the construction phase to ascertain that there is no threat to ground water quality by leaching of heavy metals and or other toxic contaminants and report submitted to SEIAA.	The project is for development of R&R Colony and the scope of works is to develop the graded sites to Project displaced families with water and sanitation facilities. There are no chances of heavy metals or toxic contaminants produced from the activity. However, MSEZL has carried out the portability test for water & report has been forwarded.
(xii)	Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate water courses and the dumpsites for such material must be secured, so that they should not leach into the ground water.	Noted. The project is development of R&R Colony and the scope of works is to develop the graded sites to Project displaced families with water and sanitation facilities. There are no chances of construction spoils or Hazardous materials produced from the activity.
(xiii)	The diesel generator sets to be used during construction phase should be of low sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.	Noted. No Diesel generators were used during the construction works.
(xiv)	Vehicles hired for bringing construction material to the site should be in good condition and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.	Complied.
(xv)	Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely	Complied.



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	monitored during construction phase. Adequate measures to reduce air and noise pollution during construction keeping in mind CPCB norms on noise limits.	
(xvi)	Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September 1999 and amended as on August 2003	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement of building construction and hence usage of Fly ash does not arise. However, in future if MSEZL takes up any building the same will be complied.
(xvii)	Ready mixed concrete must be used in building construction.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement of building construction and hence usage of Ready mixed concrete does not arise. However, in future if MSEZL takes up any building the same will be complied.
(xviii)	Storm water control and its re-use as per CGWB and BIS standards for various applications.	Complied by developing proper roadside drains and storm water drains.
(xix)	Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices.	Complied.
(xx)	The Project Authorities shall not undertake either drawls of Ground water or drilling of bore wells.	Complied.
(xxi)	Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.	Project is development of R&R colonies and there is no scope for MSEZ in plumbing work.
(xxii)	Treatment of 100% grey water by decentralized treatment should be done.	100 cum/day Skid mounted STP is erected already in 48 Acres & 35 Acres colony to treat the grey water. Currently, 3MLD is STP is under construction by MCC near Angagundi and in future the R&R



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		colony sewage will be pumped to 3MLD STP.
(xxiii)	Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor based control.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for usage of Showers, toilet flushing etc and the condition is not relevant to project implementation.
(xxiv)	Use of glass may be reduced by up to 40% of exposed area to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special reflective coating in windows.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for usage of glass etc and the condition is not relevant to project implementation.
(xxv)	Roof should meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for construction of Building roof etc and the condition is not relevant to project implementation.
(xxvi)	Opaque wall should meet prescriptive requirement as per Energy Conservation Building Code which is proposed to be mandatory for all air-conditioned spaces while it is optional for non-air conditioned spaces by use of appropriate thermal insulation material to fulfil the requirement.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for construction of Building wall or air-conditioned spaces etc and the condition is not relevant to project implementation.

II. OPERATION PHASE

(i)	The installation of the Sewage Treatment Plant (STP) of 16.5 MLD capacity should be carried out before the construction of the second floor of the main structures is commenced and the plant shall be got certified by an independent expert and a report in this regard should be submitted to the SEIAA immediately. Discharge of treated sewage shall conform to the norms & standards of the Karnataka State	It was informed to the Assessment Authority by vide our letter dated 22 nd July 2008, that MSEZL has not proposed installation of 16.5 MLD STP, but however the sewage generated in the proposed Colonies will be taken to the existing 16.5 MLD STP developed by Mangalore City Corporation. But however as per
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	Pollution Control Board. Treated sewage should be used for flushing, gardening, etc. as proposed.	discussions with MCC, the colony sewage will be pumped to upcoming 3MLD STP at Angaragundi.
(ii)	Rainwater harvesting for roof run-off with sufficient capacity artificial pond at ground level for rainwater collection and also surface run-off harvesting should be implemented. Before recharging the surface runoff, pre-treatment must be done to remove suspended matter, oil and grease. Detailed rainwater harvesting plan should be submitted immediately.	The project is development of R&R colonies. The scope of MSEZL is development of plots and hand over to PDF's. The building construction is in the scope of PDF's.
(iii)	Ensure that the excess runoff rainwater from the green belt area, which is irrigated by treated water, does not get into infiltration pits and contaminate the ground water. Such excess flow should be safely let in to the storm water drains.	Complied.
(iv)	The solid waste generated should be properly collected and segregated before disposal to the City Municipality Facility.	Noted. Being complied.
(v)	Any hazardous waste including biomedical waste should be disposed of as per applicable Rules and norms with necessary approvals of the Karnataka State Pollution Control Board.	Noted and will be complied.
(vi)	As agreed to by the project proponent, develop minimum 13% of the project area i.e., minimum 50 acres area for green belt and plant with tree species at an espacement of 3mts x 3mts i.e. 1,111 plants/hectare. The balance 20% shall be made up by taking up tree planting on the roadsides in the project and if required outside the project so as to ensure that 33% of the project area covered under green belt. The green belt design along the Periphery of the plot shall achieve attenuation factor conforming to the day and night noise standards prescribed for residential land use. The open spaces inside the plot should be suitably landscaped and covered with	The final developed area of MSEZL R&R colony is 111.24 Acres. The total green belt development area as per clearance is 36.71 Acres. Presently MSEZL has developed 12.41 acres of green belt inside project area and 24.30 acres of green belt outside the project area (Nearby surrounding area of R&R colony). The total green belt developed area by MSEZ is 36.71 Acres.



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	vegetation of indigenous variety.	
(vii)	Incremental pollution loads on the ambient air quality; noise and water quality should be periodically monitored after commissioning of the project.	Noted.
(viii)	Application of Solar energy should be incorporated for illumination of common areas, lighting for gardens and street lighting in addition to provision for solar water heating. A hybrid system or fully solar system for the complex should be provided. Details in this regard should be submitted to the SEIAA.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for solar water heating or lighting for gardens and the condition is not relevant to project implementation. The colony will be handed over to Mangalore City Corporation after development & O&M tenure. Hence the street lighting with MESCOM connections are provided.
(ix)	Traffic congestion near the entry and exit points from the roads adjoining the proposed project site must be avoided. Parking must be fully internalized and no public space should be utilized.	Complied.
(x)	A Report on the energy conservation measures confirming to energy conservation norms finalized by Bureau of Energy Efficiency should be prepared incorporating details about building materials & technology, R&U Factors etc and submit to the SEIAA in three months' time.	The Project is for development of R&R Colonies with Infrastructure like roads, water & Drainage facilities. There is no requirement for energy consumption equipment's or Building appliances and the condition is not relevant to project implementation.
B. GENERAL CONDITIONS		
(i)	The Environmental safeguards contained in the EIA Report should be implemented in letter and spirit.	Complied.
(ii)	All commitments made by the proponents in their application, and subsequent letters addressed to the SEAC/SEIAA should be accomplished before the construction work of the project is completed.	Complied.
(iii)	Six monthly monitoring reports should be submitted to the SEIAA and the Regional Office, MoEF, Bangalore, failing which action	Noted. Being complied.



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	may be taken to cancel the Environmental Clearance certificate issued.	
(iv)	Officials from the Department of Ecology and Environment, Bangalore/Regional Office of MoEF, Bangalore/Regional Director (Environment) Dept. of Ecology and Environment, Mangalore/ Regional Officer, KSPCB Mangalore and KSPCB Bangalore who would be monitoring the implementation of Environmental safe guards should be given full cooperation, facilities and documents/data by the project proponents during their inspection. A complete set of all the documents submitted to MoEF/SEIAA should be forwarded to the CCF, Regional Office of MoEF, Bangalore/Department of Ecology and Environment, Bangalore /Regional Director, (Environment) Department of Ecology and Environment, Mangalore/Regional Officer, KSPCB Mangalore and KSPCB Bangalore.	The complete sets of documents submitted to MoEF/SEIAA were forwarded as directed in the Conditions. MSEZL will comply in providing the full cooperation to the Monitoring officers.
(v)	In the case of any change(s) in the scope of project, the project would require a fresh appraisal by this Authority.	Noted.
(vi)	The Authority reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environment (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Noted.
(vii)	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act 1980 and Wildlife (Protection) Act, 1972 etc shall be obtained, as applicable by project proponents from the competent authorities.	Noted.
(viii)	The project proponent should advertise in at least two local Newspapers widely circulated	Noted. The advertisement was made in three local Newspapers and the



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	in the region, one of which shall be in vernacular language informing that the project has been accorded environmental clearance and copies of clearance letters are available with the Karnataka State pollution Control board and may also be seen on the website of the Ecology and Environment Department at http://seiaa.kar.nic.in . The advertisement should be made within 7 days from the day of issue of the clearance letter and a copy of the same should be forwarded to the Regional Office of MoEF at Bangalore/Department of Environment and Ecology, Bangalore.	copy of the same was forwarded to all concerned as directed.
(ix)	These stipulations would be enforced among others under the provisions of water (Prevention and Control of Pollution) Act, 1974, The Air (Prevention and Control of Pollution) act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006.	Noted.
(x)	Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining environmental clearance.	Noted.

The R&R Package is being implemented strictly as per Approved policy by State Government. In 1st PDF 1248 families out of 1253, In 2nd PDF 214 families out of 214, In 3rd PDF 145 families out of 146 families & 16 shops has been compensated with R&R Packages. Totally 1623 families have vacated their houses and the process is in progress for the balance.

10 nos. R&R colonies developed - 1421 sites allotted to eligible Project Displaced Families so far and balance 27 is in the process. 358 nominees of the displaced people given training at Karnataka Polytechnic (KPT) for diploma equivalent programs in Chemical, Mechanical & Electrical disciplines and 352 nominees



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have already been employed. 1629 nominees would have been eligible for employment out of which 893 nominees have opted for "one time" compensation in lieu of job and balance 736 nominees opted for the jobs. 639 nos. PDF nominees have already got employment out of 736 nos. empaneled. The process of handing over civic communities, parks & roads to local bodies and service to utility provider is under way in different stages.

Thanking You.

Yours faithfully,

Sr. General Manager

For Mangalore SEZ Ltd

Copy to: 1) Environmental Officer, Karnataka State Pollution Control Board, Mangalore.

Compliance to Charter on Corporate Responsibility for Environmental Protection (CREP)		
Sl. No.	Conditions	Compliance
1	Adoption of state-of-art technology State of Art technology will be adopted for both process technology as well sound engineering practices required for control of emission, at the stage of design itself in case of new plants	Not Applicable (NA). MSEZL being developer of Support Infrastructure for the MSEZ industries. The Common MSEZ infrastructure facility like Boundary wall, Site Grading, Internal Roads, Corridor till New Mangalore Port, Water sourcing & internal distribution network, Fire water system, Power sourcing, Drains, Effluent Collection, Treatment & Disposal network, Housing, Central Business District & Office space has been taken up.
2	Management of storm water For the storm water generated from process area and tank farm area during initial hours of rain. An arrangement will be made for collection and oil separation including further treatment as required. Such arrangement will include provision for buffer tank (holding tank) and monitoring of effluent quality. This will be accomplished by June 2003.	MSEZL has constructed storm water drainage and collection system to collect the initial hours of rain water coming from SEZ zone. The collected water will be pumped to CETP for further treatment.
3	Effective detoxification and waste water treatment scheme In order to control high COD and persistent organic pollution including toxic constituents, the industry will select appropriate unit operations for pre-treatment of effluent within inside battery limit (ISBL) before sending to the biological treatment system(BTS) for better functioning of ETPs. Action plan for the same will be submitted within 6 months and implemented within one year (March,2004)	MSEZL has constructed 3.5MLD CETP for treatment industrial effluents. Presently CETP is receiving effluent from fish processing industries and each unit has developed pretreatment technologies inside their premises and thereby reducing COD load on CETP.
4	Control of emission from combustion The industry will submit an action plan within six months for improving thermal efficiency and control of Nox	NA
5	Proper functioning of point source emission control systems The industry will make efforts for proper operation of pollution control system (mostly scrubbers) and attainment of desired efficiency within six months. The will include backup of power supply to the control equipment and arrangement for frequent sampling and analysis of all critical pollution in the tail gases	NA
6	Leak detection and repair (LDAR) programme As a good operating, the industry will adopt periodically leak detection and repair (LDAR) programme to check fugitive emissions within six months. The frequency of the programme will be proportionate to the risk potential of carrying fluid. Based on leak detection as per LDAR programme, action will be taken to eliminate fugitive emissions, this will be a continuous activity.	NA
7	Handling of halogenated organics The industry will submit an action plan within 6 months to ensure that no halogenated organics is sent to the flares in order to avoid formation of persistent organic pollutants. All HAPs had halogenated organics will be routed to the incineration system having end-on pollution control facility.	NA
8	Control of fugitive emissions of carcinogenic compounds Fugitive emission of carcinogenic compounds (e.g Benzene) will be controlled by closed vapor collection and recovery system. Measures will be taken to monitor health of the workers	NA

9	Management of solid waste Proper facilities will be provided for handling and storage of hazardous waste with manifest system in case transported to other places. For incinerable waste, properly designed incinerator will be installed within the premises or as a common facility. The non-incinerable hazardous waste should be disposed of in a secure-land fill.	MSEZL has allotted 9.5 acres of land for Solid & Hazardous Waste Management System. Presently each industry is having their own hazardous waste management system. MSEZL will develop Hazardous waste management system based on the users
10	Proper operation of incinerator Industry will check the design and will adopt sound engineering practices for proper operation of incinerators. Continuous monitoring will be done for operational parameters and specific parameters in tail gas to ensure the efficient functioning. This will be implemented within 3 months.	NA
11	Optimising the inventory of hazardous chemicals Efforts will be made to optimize the inventory, particularly of hazardous chemicals. Such information will be made available to the Regulatory Agencies (SBCBs) Inspector of Factory & District Collector	MSEZL has allotted 9.5 acres of land for Hazardous Waste Management System. Presently each industry is having their own hazardous waste management system. MSEZL will develop Hazardous waste management system based on the users available in future.
12	Self-regulation by industry through monitoring and environmental auditing Industry will go for self-assessment and regulation by conducting environmental auditing regularly, besides having regular monitoring of pollutants in air emission, liquid effluent and receiving environment.	Noted
13	Organizational restructuring and accreditation of environmental manager of industry. For self-evaluation, organizational restructuring will be done and the environmental manager of the industry will be accredited to bring professionalism in environmental management.	Noted

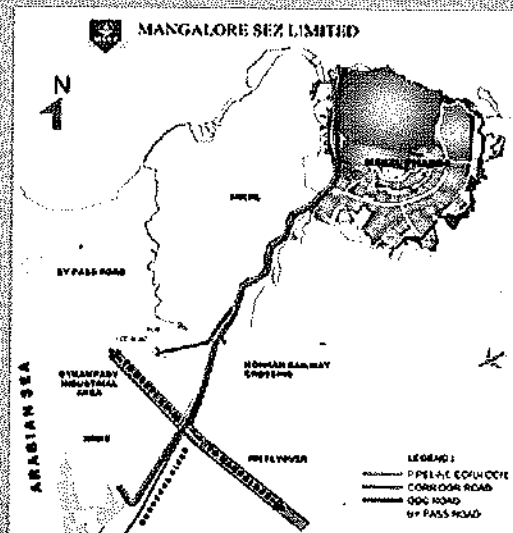


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

REPORT ON AMBIENT AIR MONITORING
FOR DECEMBER 2023

SUBMITTED BY



Submitted By



M/s Hubert Enviro Care Systems Private Limited

(NABL Accredited & MOEFCC Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

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REPORT ON AMBIENT AIR MONITORING FOR DECEMBER 2023

1. INTRODUCTION

Mangalore Special Economic Zone, known as MSEZ, is spread across 1638 acres and is located 15 km from Mangalore city, off Cochin-Mumbai NH 66, 5 km from Mangalore International Airport, and 8 km from the all-weather deep draft sea port, New Mangalore Port Authority (NMPA) in Mangalore, Karnataka, India. MSEZ Limited is jointly promoted by Oil and Natural Gas Corporation (ONGC), a Fortune 500 company, infrastructure leasing and finance services, one of India's leading infrastructure development and finance companies, the Karnataka Industrial Area Development Board (KIADB), and the Kanara Chamber of Commerce and Industry (KCCI). A unique combination of government entities, a large financial institution, and an apex chamber brings in the expertise to develop MSEZL with world-class industrial infrastructure.

2. ENVIRONMENT MONITORING

Environmental monitoring is being carried out at Mangalore SEZ, following the guidelines and regulations of the MoEFCC/CPCB and KSPCB statutory norms. In this regard, MSEZL has awarded the work to M/s. Hubert Enviro Care Systems Private Limited to monitor air quality, water quality, and noise level for the next three years. As per the work order, during **December 2023**, we conducted ambient air quality monitoring at 3 locations.

3. SCOPE AND METHODOLOGY

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

3.1. AMBIENT AIR QUALITY

Ambient air quality monitoring was carried out at each location on 24 hour basis on two consecutive days per month. The identified monitoring stations are: **A₁-CETP, A₂-WTP Area & A₃-Permude village**. To assess the ambient air quality status, monitoring stations are identified on the basis of meteorology in the upwind and downwind direction as well as to represent the cross sectional scenario of the MSEZ. Based on the activities the parameters chosen for assessment of air quality are PM_{2.5}-Particulate matter size less than 2.5 Micron, PM₁₀-Particulate matter size less than 10 Micron; SO₂-Sulphur dioxide; NO₂-Nitrogen-di-oxide; CO-Carbon Mono Oxide (LOQ 0.1 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 0.1 ng/m³); Ni- Nickel (LOQ 0.5 ng/m³); Benzene-(LOQ 1 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.1 ng/m³) as per CPCB stipulation.

3.1.1. Sampling and analysis of PM_{2.5} and PM₁₀ in ambient air (Gravimetric Method)

- Check the filter for any physical damage.
- Mark the identification number on the filter.
- Condition the filter in the conditioning room or desiccator for 24 hours.
- Record the initial weight.
- Place the filter on the sampler.
- Run the sampler for eight or twenty-four hours.
- Record the flow rate on an hourly basis.
- Remove the filter from the sampler.
- Keep the exposed filter in a proper container.
- Record the total time of sampling and the average flow rate.
- Again, condition the filter in the conditioning room or desiccator for 24 hours.
- Record the final weight.

LABORATORY ANALYSIS:

Weighing of exposed samples:

Calculate the concentration of PM₁₀ or PM_{2.5} in $\mu\text{g}/\text{m}^3$ (w_f , mg)

Calculations:

- Average flow rate (initial and final flow rates) in L/ min
= (Initial flow rate + final flow rate)/ 2
- Total vol. of air sampled (TVA) in m^3
= Avg. flow rate (L/min) * 10^{-3} (m^3/L) * sampling time (hr) * 60 (min/hr)
- Concentration of PM in $\mu\text{g}/\text{m}^3$
= ($w_f - w_i$) (mg)/ TVA (m^3) * $10^6 \mu\text{g}/\text{m}^3$

3.1.2. Sampling and analysis of Sulphur dioxide

- Place 30 mL of absorbing media in an Impinger
- Connect it to the gas-sampling manifold of the gas sampling device (RDS or HVS).
- Draw air at a sampling rate of 1 LPM for four hours.
- Check the volume of the sample at the end of sampling and record it.
- Transfer the exposed samples to a storage bottle and preserve.
- Prepare the calibration graph as recommended in the method.
- Take a 10/20 mL. aliquot of the sample in 25 ml. Vol. Flask
- Take 10/20 mL. of the unexposed sample in 25 ml. Vol. Flask (blank)
- Add 1 mL of sulphamic acid. Keep it for 10 minutes.
- Add 2 mL of formaldehyde.
- Add 2 mL of working PRA.
- Make up to mark (25 mL.) with distilled water.

- Keep it for 30 minutes for reaction.
- Set the spectrophotometer to zero with distilled water.
- Measure absorbance at 560 nm.
- Calculate concentration using a calibration graph.
- Calculate the concentration of sulphur dioxide in $\mu\text{g}/\text{m}^3$

3.1.3. Sampling and analysis of Nitrogen-di-oxide

- Place 30 mL of absorbing media in an impinger.
- Connect it to the gas sampling manifold of the gas sampling device (RDS/HVS).
- Draw air at a sampling rate of 1 LPM for four hours.
- Check the volume of the sample at the end of sampling and record it.
- Transfer the exposed samples to a storage bottle and preserve.
- Prepare the calibration graph as recommended in the method.
- Take a 10 mL aliquot of the sample in 50 ml. Vol. Flask
- Take 10 mL of the unexposed sample in 50 ml. Vol. Flask (blank)
- Add 1 ml of hydrogen peroxide.
- Add 10 mL of sulphanilamide.
- Add 1.4 mL of NEDA.
- Make up to 50 mL with distilled water.
- Keep it for 10 minutes for reaction.
- Set the spectrophotometer to zero with distilled water.
- Measure absorbance at 540 nm.
- Calculate concentration using a calibration graph.
- Calculate the concentration of nitrogen dioxide in $\mu\text{g}/\text{m}^3$

3.1.4. Sampling and analysis of Carbon Mono Oxide

Preparation of sample train:

- Sampling begins with conditioning a sampling train and then a gas analyzer.
- A pressure system is preferred to condition the sampling train by installing a pump before the analyzer. A reducing valve needs to be fitted between the analyzer and pump to eliminate the pulsing effect of the pump on the analyzer.
- A flow metre is to be installed just before the analyzer.
- A fibre filter is used to capture the particulate matter prior to the optical cell to prevent its interference. It often accumulates on the optical cell, reducing the efficiency.
- To eliminate the interference of water vapour, refrigeration or desiccant with magnesium perchlorate could be used.

Mode of operation:

- Continuous analysis is carried out at a flow rate of about 100 mL/min to 1000 mL/min (depending upon the level of pollution near the location) for the desired sampling period.
- Discrete sampling could also be possible with an infrared analyzer. However, it requires proper cleaning of the sampling train.

Steps:

- Calibration of the analyzer can be carried out if required using standard gases.
- The sampler is allowed to warm up for some time before actual readings are taken until it gives a steady response and temperature stability.

3.1.5. Sampling and analysis of Ozone

- Place 10 mL of absorbing media in an Impinger
- Connect it to the gas sampling manifold of the gas sampling device (RDS/HVS).
- Draw air at a sampling rate of 1 LPM for 60 minutes.
- Do not expose the absorbing reagent to direct sunlight.
- Add deionized water to make up the evaporation loss during sampling and bring the volume to 10 mL.
- Prepare the calibration graph as recommended in the method.
- Within 30 to 60 minutes after sample collection, read the absorbance in a cuvette at 352 nm against a reference cuvette containing deionized water.
- Calculate concentration using a calibration graph.
- Calculate the concentration of ozone in $\mu\text{g}/\text{m}^3$.

3.1.6. Sampling and analysis of Ammonia:

- Dilute 10 mL of concentrated HCl (12 M) to 100 mL with distilled water. Wash the glassware with water, and finally rinse it three times with distilled water.
- Adjust the flow rate at 1L/min of the rotameter and the manifolds of the attached APM 411/APM 460Dx.
- Place 10 mL of absorbing media in each midget Impinger for samples and field blanks. Assemble (in order) the prefilter and holder, flow metre, impinger, and pump. Sample at a rate of 1 litre per minute for an hour.
- Record the sampling time, average flow rate, and final volume of the solution. After the sample collection, transfer the solution from the Impinger to a polyethylene bottle and recap tightly for transport to the laboratory for analysis.
- Prepare the absorbing media, various reagents, and working solutions as per the method described in the protocol. Standardise the sodium thiosulfate solution by titrating it against potassium iodate and sodium hypochlorite by titrating it against the standardised sodium thiosulfate solution.

- Take 25-mL measuring flasks and rinse with distilled water. Transfer the contents from polyethylene bottles to 25-mL measuring flasks (maintain all the solutions at 25°C). Add 2 mL of buffer (to maintain pH). Add 5 mL of working phenol solution, mix, fill to about 22 mL with distilled water, and then add 2.5 mL of working hypochlorite solution and mix rapidly. Store it in the dark for 30 minutes to develop colour. Measure the absorbance of the solution at 630 nm using a UV-VIS Spectrophotometer.
- Pipette 0.5, 1.0, and 1.5 mL of working standard solution (working ammonia solution) into 25-mL measuring flasks. Fill to 10 mL mark with absorbing solution (0.1 M H_2SO_4). Add the reagents to each flask as per the procedure for analysis. Read the absorbance of each standard against the reagent blank.
- Plot the calibration curve.
- Calculate the concentration of NH_3 in $\mu\text{g}/\text{m}^3$.

3.1.7. Sampling and analysis of Lead, Nickel, Arsenic:

1. Sampling procedure:

Tilt back the inlet and secure it according to the manufacturer's instructions. Loosen the face plate wing nuts and remove the face plate. Remove the filter from its jacket and centre it on the support screen with the rough side of the filter facing upwards. Replace the face plate and tighten the wing nuts to secure the rubber gasket against the filter edge. Gently lower the inlet. For automatically flow-controlled units, record the designated flow rate on the data sheet. Record the reading of the elapsed time meter. The specified length of sampling is commonly 8 hours or 24 hours. During this period, several readings (hourly) of flow rate should be taken. After the required time of sampling, record the flow metre reading, take out the filter media from the sampler, and put it in a container or envelope.

2. Analysis:

i. Hot plate procedure:

Cut a 1" x 8" strip or half the filter from the 8" x 10" filter using a stainless steel pizza cutter. Place the filter in a beaker using vinyl gloves or plastic forceps. Cover the filter with the extraction solution (3% HNO_3 and 8% HCl). Place the beaker on the hotplate, contained in a fume hood, and reflux gently while covered with a watch glass for 30 minutes. Do not allow the sample to dry. Remove the beakers from the hot plate and allow them to cool. Rinse the beaker walls and wash them with distilled water. Add approximately 10 mL of reagent water to the remaining filter material in the beaker and allow it to stand for at least 30 minutes. Transfer the extraction fluid from the beaker to a 100-mL volumetric flask or other graduated vessel. Rinse the beaker and any remaining solid material with distilled water, and add the rinses to the flask. Dilute to the mark with distilled water (Type I) and shake. The final extraction solution concentration is 3% HNO_3 and 8% HCl . The filtered sample is now ready for analysis.

2.1. Analysis of samples:

i. Instrument / Equipment:

A light beam containing the corresponding wavelength of the energy required to raise the atoms of the analyte from the ground state to the excited state is directed through the flame or furnace. This wavelength is observed by a monochromator and a detector that measure the amount of light absorbed by the element, hence the number of atoms in the ground state in the flame or furnace. A hollow cathode lamp for the element being determined provides a source of that metal's particular absorption wavelength. The method describes both flame atomic absorption (FAA) spectroscopy and graphite furnace atomic absorption (GFAA) spectroscopy. Atomic Absorption Spectrophotometer - analyze the metals by Flame; if results are below detection limit then go for GTA. Arsenic is analyzed by Flame - VGA.

ii. Flame Procedure:

Set the atomic absorption spectrophotometer for the standard condition as follows: choose the correct hollow cathode lamp, align the instrument, position the monochromator at the value recommended by the manufacturer, select the proper monochromator slit width, set the light source current, ignite the flame, regulate the flow of fuel and oxidant, adjust the burner for maximum absorption and stability and balance the meter. Run a series of standards of the metal of interest and construct a calibration curve. Aspirate the blanks and samples. Dilute samples that exceed the calibration range. For Lead (Pb) and Nickel (Ni), the wavelength required for analysis is 217 nm and 232 nm respectively. Where as in case of Arsenic (As), the VGA should attach with Flame and the wavelength required for analysis is 193.7nm.

3. Calibration:

Prepare standard solutions from the stock solutions. Select at least three standards to cover linear range as recommended by method. Aspirate the standards into the flame or inject the standards into the furnace and record the absorbance. Prepare the calibration graph by plotting absorbance and concentration in $\mu\text{g/mL}$.

I. Preparation of Standards:

For each metal that is to be determined, standards of known concentration must be acquired commercially certified standards.

ii. Standard Curve:

Standard curve is prepared by using standard solutions of known concentration.

4. Calculations:

i. Sample Air Volume:

Sample air volume can be calculated by using the following equation:

$$V = (Q) (t)$$

Where,

V = volume of air, m³

Q = average sampling rate, m³/min.

t = time in minutes.

ii. Metal Concentration:

$$C = (M_s - M_b) \times V_s \times F_a / V \times F_t$$

Where,

C = concentration, µg metal/m³

M_s = metal concentration µg/mL

M_b = blank concentration µg/mL

V_s = total volume of extraction in mL

F_a = total area of exposed filter in cm²

V = Volume of air sampled in m³

F_t = Area of filter taken for digestion in cm²

3.1.8. Sampling and analysis of Benzo-α-pyrene:

Benzo (a) Pyrene (BaP) is one of the most important constituent of PAH compounds and also one of the most potent carcinogens. This can be measured in both particulate phase and vapour phase. In the vapour phase the concentration of B(a)P is significantly less than the particulate phase. Therefore, more care to be taken for the measurement of Benzo (a) Pyrene in the particulate phase. The molecular formula of B(a)P is C₂₀H₁₂ having molecular weight of 252.

It is based on BIS method IS 5182 (Part 12):2004 and USEPA method (TO-13). This method is designed to collect particulate phase PAHs in ambient air and fugitive emissions and to determine individual PAH compounds using capillary gas chromatograph equipped with flame ionization detector. It is a high volume (1.2m³/min) sampling method capable of detecting sub.ng/m³ concentration of PAH in 24 hours sample (i.e. collected in 3 shifts of 8 hour each with 480 m³ sampling volume of air).

i. Sampling:

a. Instrument/Filter Selection:

24 hr. sampling using PM₁₀ high volume sampler with 8 hourly samples using EPM-2000 glass fibre or equivalent filter.

ii. Sample Processing

a. Extraction:

Filter papers (half of all the filters papers collected in a day) are cut into strips using scissors and transfer to 250 ml beaker. Add ~50 ml. of Toluene (GC/HPLC grade). These samples are extracted with

toluene using ultra sonic sample can be extracted using Soxhlet bath for about 30 minutes. Repeat the procedure twice (50 mL x 2 times) for complete extraction. Alternatively, extraction apparatus for about 8 hr. with Toluene and repeat it twice.

b. Filtration:

Filter the extracted samples with Whatman filter paper No. 41 containing 2 gm of Anhydrous Sodium Sulphate (to remove moisture).

c. Concentration:

After filtration, the filtrate is concentrated using Rotary vacuum evaporator to 2ml final volume.

d. Clean-up with silica Gel:

To clean up the impurities, pass 2 mL of concentrated sample through silica gel column (pre conditioned, 60-80 mesh, and 200-250 mm x 10 mm with Teflon stopcock). After cleaning add 5ml cyclohexane and collect the elute in 25 mL beaker. Repeat the process for at least 3 times and collect it in the same beaker. Alternatively Solid Phase Extraction (SPE) could be used for clean up the impurities of sample.

e. Re-concentration with rotary vacuum evaporator:

The Cleaned up extract/ filtrate (approximately 17 ml) is further concentrated using rotary evaporator and it is evaporated to nearly dryness with Nitrogen.

f. Final Sample volume:

The dried sample is re-dissolved in 1 mL of toluene and transfer into 4 or 5 mL amber vials final analysis.

ii. Calculations:

Calculate the concentration in ng/ μ L of each identified analyte or B(a)P in the sample extract (Cs) as follows:

Calculate the air volume from the periodic flow reading taken during sampling using the following equation:

$$V = Q \times T$$

Where,

Q = Average flow rate of sampling m^3/min

T = sampling time, in min.

V = total sample volume at ambient conditions in m^3

Concentration of analyte i.e B(a)P:

The concentration of PAH compound or Benzo(a)pyrene in ng / m^3 in the air sampled is given by:

$$C (ng /m^3) = C_s * V_e / V_i * V_s$$

Where,

Cs : Concentration of Benzo (a) pyrene in ng / μ L in the sample extract recorded by GC.

Ve : Final volume of extract in μ L (i.e 1000)

Vi : Injection Volume (i.e 1 μ L)

Vs : Volume of air sample in m^3

4.0 RESULTS

4.1 AMBIENT AIR QUALITY

MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: DECEMBER 2023

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 1: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	13-14.12.2023
Received Date	14.12.2023
Analysis Commenced On	14.12.2023
Completion Date	21.12.2023
Report Date	22.12.2023
Report No	HECS/AA/001/141223
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	49.8	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	18.7	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	8.8	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	11.5	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 10)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 1)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 1)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric); PM_{2.5}: IS 5182 (Pt 24): 2019; SO₂: IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method); NO₂: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method); O₃: IS 5182 (Pt 9): 1974; NH₃: IS 5182 (Pt 25): 2019; CO: IS 5182 (Pt 10): 1999 (RA 2013); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below Detection Limit; LOQ - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 10 µg/m³), PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂-Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 6 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2 ng/m³); Ni-Nickel (LOQ 10 ng/m³); Benzene-(LOQ 1 µg/m³); B(α)P- Benzo -α pyrene (LOQ 1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

Authorized Signatory
(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: DECEMBER 2023

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 2: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	14-15.12.2023
Received Date	15.12.2023
Analysis Commenced On	15.12.2023
Completion Date	22.12.2023
Report Date	23.12.2023
Report No	HECS/AA/001/151223
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	50.3	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	19.1	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg / m ³	9.1	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	11.7	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 10)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 1)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 1)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀ : IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric); PM_{2.5}: IS 5182 (Pt 24): 2019; SO₂: IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method); NO₂: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method); O₃: IS 5182 (Pt 9): 1974; NH₃: IS 5182 (Pt 25): 2019; CO: IS 5182 (Pt 10): 1999 (RA 2013); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below Detection Limit; LOQ - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 10 µg/m³), PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 6 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2 ng/m³); Ni-Nickel (LOQ 10 ng/m³); Benzene-(LOQ 1 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: DECEMBER 2023

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 3: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	11-12.12.2023
Received Date	12.12.2023
Analysis Commenced On	12.12.2023
Completion Date	19.12.2023
Report Date	20.12.2023
Report No	HECS/AA/001/121223
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	53.4	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	24.9	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	9.8	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	13.9	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 10)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 1)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 1)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric); PM_{2.5}: IS 5182 (Pt 24): 2019; SO₂: IS 5182 (Pt 2): 2001 (RA 2017) (Improved west and Geake method); NO₂: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method); O₃: IS 5182 (Pt 9): 1974; NH₃: IS 5182 (Pt 25): 2019; CO: IS 5182 (Pt 10): 1999 (RA 2013); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below Detection Limit; LOQ - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 10 µg/m³), PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 6 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2 ng/m³); Ni-Nickel (LOQ 10 ng/m³); Benzene-(LOQ 1 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: DECEMBER 2023

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 4: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	12-13.12.2023
Received Date	13.12.2023
Analysis Commenced On	13.12.2023
Completion Date	20.12.2023
Report Date	21.12.2023
Report No	HECS/AA/001/131223
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	53.9	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	24.1	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	10.1	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.5	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 10)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 1)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 1)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric); PM_{2.5}: IS 5182 (Pt 24): 2019; SO₂: IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method); NO₂: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method); O₃: IS 5182 (Pt 9): 1974; NH₃: IS 5182 (Pt 25): 2019; CO: IS 5182 (Pt 10): 1999 (RA 2013); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below Detection Limit; LOQ - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 10 µg/m³), PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 6 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2 ng/m³); Ni-Nickel (LOQ 10 ng/m³); Benzene-(LOQ 1 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: DECEMBER 2023

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 5: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	18-19.12.2023
Received Date	19.12.2023
Analysis Commenced On	19.12.2023
Completion Date	26.12.2023
Report Date	27.12.2023
Report No	HECS/AA/001/191223
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	49.9	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	25.2	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	11.1	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.2	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 10)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 1)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 1)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric); PM_{2.5}: IS 5182 (Pt 24): 2019; SO₂: IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method); NO₂: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method); O₃: IS 5182 (Pt 9): 1974; NH₃: IS 5182 (Pt 25): 2019; CO: IS 5182 (Pt 10): 1999 (RA 2013); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below Detection Limit; LOQ - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 10 µg/m³), PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 6 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2 ng/m³); Ni-Nickel (LOQ 10 ng/m³); Benzene-(LOQ 1 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan - Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: DECEMBER 2023

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 6: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	19-20.12.2023
Received Date	20.12.2023
Analysis Commenced On	20.12.2023
Completion Date	27.12.2023
Report Date	28.12.2023
Report No	HECS/AA/001/201223
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	51.2	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	26.3	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	12.2	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.9	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 10)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 1)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 1)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Pt 23): 2006 (RA 2017) (Gravimetric); PM_{2.5}: IS 5182 (Pt 24): 2019; SO₂: IS 5182 (Pt 2): 2001 (RA 2017) (Improved wet and Geake method); NO₂: IS 5182 (Pt 6): 2006 (RA 2017) (Jacob and Hochheiser modified method); O₃: IS 5182 (Pt 9): 1974; NH₃: IS 5182 (Pt 25): 2019; CO: IS 5182 (Pt 10): 1999 (RA 2013); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ =Below detection limit; LOQ - Detection Limit; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 10 µg/m³), PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 6 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2 ng/m³); Ni-Nickel (LOQ 10 ng/m³); Benzene-(LOQ 1 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 1 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter.

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan – Laboratory and Quality Manager)



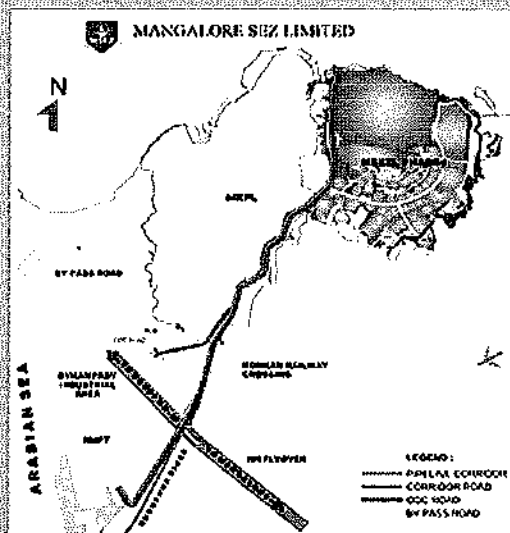


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

REPORT ON AMBIENT AIR MONITORING
FOR JANUARY 2024

Submitted to



Submitted By



M/s Hubert Enviro Care Systems Private Limited

(NABL Accredited & MOEFCC Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

4.0 RESULTS

4.1 AMBIENT AIR QUALITY

MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: JANUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 1: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	18-19.01.2024
Received Date	19.01.2024
Analysis Commenced On	19.01.2024
Completion Date	27.01.2024
Report Date	29.01.2024
Report No.	HECSM/AA/001/190124
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV V/S Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	51.3	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	20.5	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	9.2	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	12.6	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.1	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11); 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: JANUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 2: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	19-20.01.2024
Received Date	20.01.2024
Analysis Commenced On	20.01.2024
Completion Date	29.01.2024
Report Date	30.01.2024
Report No	HECSM/AA/001/200124
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	Kling Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	51.2	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	20.3	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	9.4	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	12.1	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.1	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: in-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11); 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12); 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: JANUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 4: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	17-18.01.2024
Received Date	18.01.2024
Analysis Commenced On	18.01.2024
Completion Date	25.01.2024
Report Date	27.01.2024
Report No	HECSM/AA/001/180124
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	54.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	24.9	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	10.5	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.8	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.1	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11); 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: JANUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 5: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	22-23.01.2024
Received Date	23.01.2024
Analysis Commenced On	23.01.2024
Completion Date	30.01.2024
Report Date	31.01.2024
Report No	HECSM/AA/001/230124
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	51.2	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	26.1	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	11.6	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.7	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11); 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12); 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂-Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: JANUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 6: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	23-24.01.2024
Received Date	24.01.2024
Analysis Commenced On	24.01.2024
Completion Date	31.01.2024
Report Date	01.02.2024
Report No	HECSM/AA/001/240124
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	52.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	27.3	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.5	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.1	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan – Laboratory and Quality Manager)



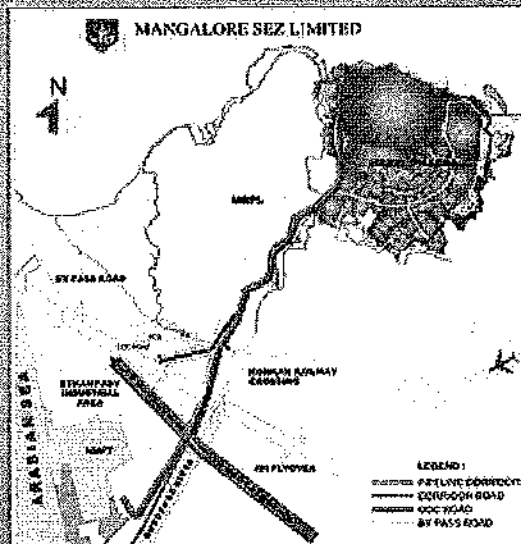


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

**REPORT ON AMBIENT AIR MONITORING
FOR FEBRUARY 2024**

Submitted to



Submitted By



M/s Hubert Enviro Care Systems Private Limited

(NABL Accredited & MOEFCC Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

4.0 RESULTS

4.1 AMBIENT AIR QUALITY

MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: FEBRUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 1: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	13-14.02.2024
Received Date	14.02.2024
Analysis Commenced On	14.02.2024
Completion Date	21.02.2024
Report Date	22.02.2024
Report No.	HECSM/AA/001/140224
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	47.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	26.5	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	11.9	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.2	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(a)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(a)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan – Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: FEBRUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 2: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	14-15.02.2024
Received Date	15.02.2024
Analysis Commenced On	15.02.2024
Completion Date	23.02.2024
Report Date	24.02.2024
Report No	HECSM/AA/001/150224
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	48.2	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	27.1	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	12.2	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.4	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.3	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(a)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(a)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: FEBRUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 3: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	13-14.02.2024
Received Date	14.02.2024
Analysis Commenced On	14.02.2024
Completion Date	21.02.2024
Report Date	22.02.2024
Report No	HECSM/AA/002/140224
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	49.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	27.6	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	11.5	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.1	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.1	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(a)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(a)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³: microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: FEBRUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 4: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	14-15.02.2024
Received Date	15.02.2024
Analysis Commenced On	15.02.2024
Completion Date	23.02.2024
Report Date	24.02.2024
Report No	HECSM/AA/002/150224
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220, R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	50.3	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	27.8	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	11.8	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.5	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11); 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12); 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: FEBRUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 5: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	13-14.02.2024
Received Date	14.02.2024
Analysis Commenced On	14.02.2024
Completion Date	21.02.2024
Report Date	22.02.2024
Report No	HECSM/AA/003/140224
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	52.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	28.4	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.6	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.1	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan - Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: FEBRUARY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 6: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	14-15.02.2024
Received Date	15.02.2024
Analysis Commenced On	15.02.2024
Completion Date	23.02.2024
Report Date	24.02.2024
Report No	HECSM/AA/003/150224
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	51.7	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	29.1	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.9	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.4	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(a)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(a)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



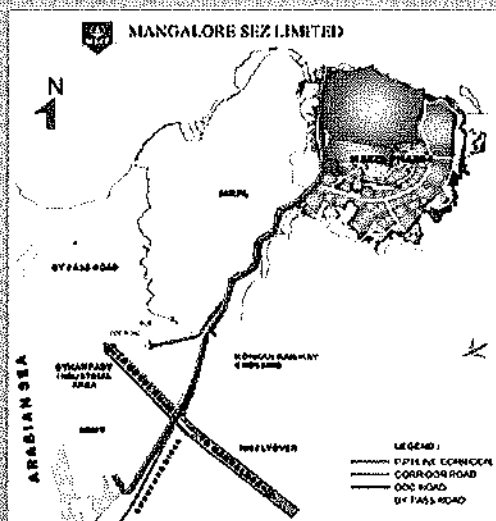


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

REPORT ON AMBIENT AIR MONITORING,
WATER QUALITY AND NOISE LEVEL
FOR MARCH 2016

SUBMITTED TO



Submitted By



M/s Hubert Enviro Care Systems Private Limited

(NABL Accredited & MOEFCC Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

4.0 RESULTS

4.1 AMBIENT AIR QUALITY

MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: MARCH 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 1: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	13-14.03.2024
Received Date	14.03.2024
Analysis Commenced On	14.03.2024
Completion Date	21.03.2024
Report Date	22.03.2024
Report No.	HECSM/AA/001/140324
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	Shimadzu	AUW220D	22.08.2023	22.08.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	49.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	27.4	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.2	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.5	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.3	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11); 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12); 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: MARCH 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 2: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	14-15.03.2024
Received Date	15.03.2024
Analysis Commenced On	15.03.2024
Completion Date	22.03.2024
Report Date	23.03.2024
Report No	HECSM/AA/001/150324
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	Shimadzu	AUW220D	22.08.2023	22.08.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	50.3	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	28.5	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.6	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	14.8	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: MARCH 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 3: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	15-16.03.2024
Received Date	16.03.2024
Analysis Commenced On	16.03.2024
Completion Date	23.03.2024
Report Date	25.03.2024
Report No	HECSM/AA/001/160324
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	Shimadzu	AUW220D	22.08.2023	22.08.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	51.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	29.1	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	11.9	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.5	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

Authorized Signatory
(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: MARCH 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 4: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	16-18.03.2024
Received Date	18.03.2024
Analysis Commenced On	18.03.2024
Completion Date	25.03.2024
Report Date	26.03.2024
Report No	HECSM/AA/001/180324
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	Shimadzu	AUW220D	22.08.2023	22.08.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	52.4	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	29.2	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.1	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.8	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.3	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: MARCH 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 5: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	15-16.03.2024
Received Date	16.03.2024
Analysis Commenced On	16.03.2024
Completion Date	23.03.2024
Report Date	25.03.2024
Report No	HECSM/AA/002/160324
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	Shimadzu	AUW220D	22.08.2023	22.08.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	54.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	30.2	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.9	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.5	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: MARCH 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 6: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	16-18.03.2024
Received Date	18.03.2024
Analysis Commenced On	18.03.2024
Completion Date	25.03.2024
Report Date	26.03.2024
Report No	HECSM/AA/002/180324
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	Shimadzu	AUW220D	22.08.2023	22.08.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	52.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	30.4	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	13.3	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.8	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



4.2 Noise level:

TEST REPORT: NOISE MONITORING: MARCH 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Monitoring Description	N1 & N2 : Ambient Noise Level
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	13.03.2024 and 14.03.2024
Report Date	18.03.2024
Report No	HECSM/NM/001-002/180324

Time (Hrs)	CETP AREA	WTP AREA
06.00	57.5	55.6
07.00	58.9	57.8
08.00	59.5	58.4
09.00	60.4	59.5
10.00	61.6	60.2
11.00	62.4	60.7
12.00	63.5	61.4
13.00	64.7	62.5
14.00	65.6	63.6
15.00	66.3	64.7
16.00	67.4	65.5
17.00	68.2	66.3
18.00	69.5	65.4
19.00	67.3	64.6
20.00	66.2	63.2
21.00	65.8	62.4
22.00	64.6	61.5
23.00	63.4	60.3
00.00	62.1	59.2
01.00	61.3	58.4
02.00	60.6	57.6
03.00	59.2	56.2
04.00	58.6	55.1
05.00	57.8	54.4
MIN	57.5	54.4
MAX	69.5	66.3
Day dB(A)	64.1	62.0
Night dB(A)	60.4	57.3

Limits: 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).

Note: Monitoring Date represents 24 hours from 6:00 am to 6:00 am next day, Legend: Leq- Equivalent Noise Level (hourly); Ld-Day Time Equivalent Noise Level (06:00-22:00 hrs); Ln-Night Time Equivalent Noise Level (22:00-06:00 hrs); and Ldn-24 hourly Equivalent Noise Level. Reference: The Noise Pollution (Regulation and Control) Rules, 2000, CPCB, New Delhi.

INFERENCE: AS PER NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 UNDER THE ENVIRONMENT (PROTECTION) ACT 1986; THE OBSERVED NOISE LEVELS ARE WITHIN THE PRESCRIBED LIMIT.

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT: NOISE MONITORING: MARCH 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Monitoring Description	N3 & N4 : Ambient Noise Level
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	15.03.2024 and 16.03.2024
Report Date	19.03.2024
Report No	HECSM/NM/001-002/190324

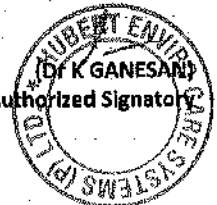
Time (Hrs)	CETP AREA	WTP AREA
06.00	56.5	55.6
07.00	57.6	56.4
08.00	58.3	57.3
09.00	59.2	58.6
10.00	60.5	59.2
11.00	61.6	60.4
12.00	62.8	61.3
13.00	63.5	62.5
14.00	64.2	63.4
15.00	65.4	64.2
16.00	66.3	65.1
17.00	67.6	66.3
18.00	69.7	65.2
19.00	66.8	64.7
20.00	68.4	63.4
21.00	67.2	62.5
22.00	66.1	61.6
23.00	65.4	59.7
00.00	64.5	58.2
01.00	63.3	57.6
02.00	62.2	56.7
03.00	60.4	55.3
04.00	58.6	54.2
05.00	54.7	53.7
MIN	54.7	53.7
MAX	69.7	66.3
Day dB(A)	63.6	61.6
Night dB(A)	61.3	56.5

Limits: 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).

Note: Monitoring Date represents 24 hours from 6:00 am to 6:00 am next day. Legend: Leq- Equivalent Noise Level (hourly); Ld-Day Time Equivalent Noise Level (06:00-22:00 hrs); Ln-Night Time Equivalent Noise Level (22:00-06:00 hrs); and Ldn-24 hourly Equivalent Noise Level. Reference: The Noise Pollution (Regulation and Control) Rules, 2000, CPCB, New Delhi.

INFERENCE: AS PER NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 UNDER THE ENVIRONMENT (PROTECTION) ACT 1986; THE OBSERVED NOISE LEVELS ARE WITHIN THE PRESCRIBED LIMIT.

Laboratory and Quality Manager - Authorized Signatory



4.3 Water Analysis Results

TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sample Description	Oddidakal (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No.	HECSM/W/001/300324

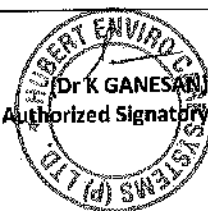
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	7.99	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	260	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	100	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	87.65	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	88.88	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	17.81	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	10.8	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.20	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	5.87	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	15.85	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 : 1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminum as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	Escherichia coli	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Shantigudde (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/002/300324

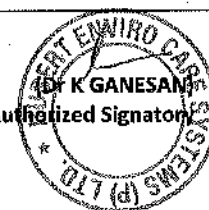
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	7.89	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	230	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	100	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	79.68	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	80.8	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	14.57	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	10.8	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.24	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	6.67	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	17.84	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 : 1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	Escherichia coli	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE	AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS
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*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Chandrabas Nagar (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/003/300324

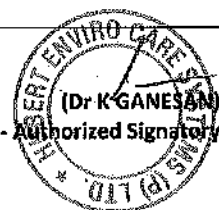
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	8.05	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	230	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	100	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	83.6	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	80.8	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	12.95	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	11.78	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.21	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	6.94	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	15.85	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 : 1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	<i>Escherichia coli</i>	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Permude (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/004/300324

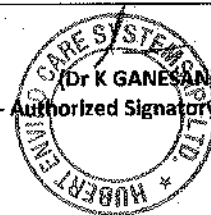
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	6.94	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	156	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	67.2	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	43.82	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	48.48	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	12.95	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	3.93	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.19	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	5.93	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	17.84	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 :1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	<i>Escherichia coli</i>	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager -



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	CETP (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/005/300324

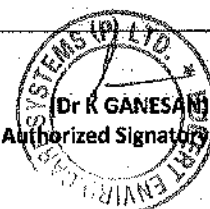
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	7.82	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	92	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	50.4	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	31.87	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	44.44	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	8.09	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	5.89	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.18	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	2.71	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	7.93	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 : 1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	Escherichia coli	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Non Processing Area (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/006/300324

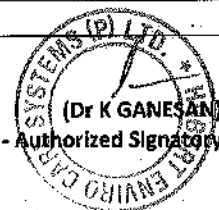
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	6.60	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	157	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	66.8	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	39.84	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	48.48	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	11.3	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	4.9	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.22	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	4.5	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	17.84	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 : 1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	Escherichia coli	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Permude Bajpe Village Boundary (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/007/300324

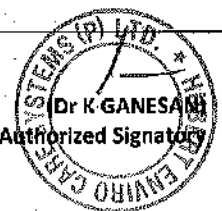
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	7.03	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	156	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	66	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	43.82	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	60.6	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	12.95	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	6.87	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.21	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	4.99	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	17.84	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 :1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	Escherichia coli	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Kalavar (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/008/300324

S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	7.19	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	187.0	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	80.8	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	55.77	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	60.6	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	17.81	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	3.92	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.19	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	8.42	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	17.84	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 : 1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	Escherichia coli	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	10mL Water Reservoir (GW)
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/009/300324

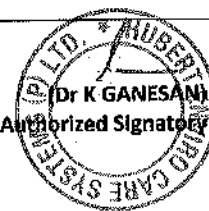
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	6.95	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	155	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	66.0	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	43.8	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	48.48	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	14.57	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	2.94	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.18	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	5.63	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	17.84	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 : 1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	Escherichia coli	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



TEST REPORT

Customer Name	M/s. Mangalore SEZ Limited
Project Site/Address	3 rd Floor, MUDA Building, Ashok Nagar, Urwa Stores, Mangalore- 575006
Sample Description	Permade Surface Water
Sampling Date	30.03.2024
Sample Drawn by	Hubert Enviro Care Systems Private Limited
Report Date	15.04.2024
Report No	HECSM/W/010/300324

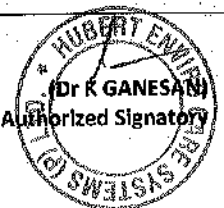
S.No	Parameters	Units	Results	IS: 10500: 2012 Standard		Test Method
				Acceptable	Permissible	
1.	Colour	Hazen	BLQ (LOQ 1.0)	5	15	IS 3025 : Part 4
2.	pH at 25 °C	-	7.48	6.5 - 8.5	No Relaxation	IS 3025 : Part 11 (Electrometric)
3.	Electrical Conductivity at 25 °C	µS/cm	155	Not Specified		IS 3025 : Part 14
4.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 5
5.	Taste	-	Agreeable	Agreeable	Agreeable	IS 3025 : Part 8
6.	Turbidity	NTU	BLQ (LOQ 0.1)	1	5	IS 3025 : Part 10
7.	Total Dissolved Solids	mg/L	66.8	500	2000	IS 3025 : Part 16
8.	Alkalinity as CaCO ₃	mg/L	39.84	200	600	IS 3025 : Part 23
9.	Total Hardness as CaCO ₃	mg/L	44.44	200	600	IS 3025 : Part 21
10.	Calcium as Ca	mg/L	12.95	75	200	IS 3025 : Part 40 (EDTA Titrimetric)
11.	Magnesium as Mg	mg/L	2.94	30	100	IS 3025 : Part 46 (Volumetric using EDTA)
12.	Iron as Fe	mg/L	0.19	1.0	No Relaxation	IS 3025 : Part 53
13.	Sulphate as SO ₄	mg/L	6.15	200	400	IS 3025 : Part 24 : Sec 1 (Turbidity)
14.	Chloride as Cl	mg/L	15.85	250	1000	IS 3025 : Part 32 (Argentometric)
15.	Residual free chlorine	mg/L	BLQ (LOQ 0.1)	0.2	1	IS 3025 : Part 26 (DPD b, c)
16.	Fluoride	mg/L	BLQ (LOQ 0.2)	1.0	1.5	IS 3025 : Part 60 (Zirconium Alizarin)
17.	Phenolic Compounds	mg/L	BLQ (LOQ 0.001)	0.0001	No Relaxation	APHA 24 th Edition (5530 B, C)
18.	Manganese as Mn	mg/L	BLQ (LOQ 0.05)	0.1	0.3	HECSM/W/SOP/001 : 2009
19.	Zinc as Zn	mg/L	BLQ (LOQ 0.1)	5	15	HECSM/ENV/W/SOP/005 Issued Dt. 02: 07:2020
20.	Arsenic as As	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	USEPA Method 200.8 : 1994
21.	Cyanide as CN	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 27 : Sec 1
22.	Cadmium as Cd	mg/L	BLQ (LOQ 0.01)	0.003	No Relaxation	US EPA Method 200.8 : 1994
23.	Chromium as Cr	mg/L	BLQ (LOQ 0.01)	0.05	No Relaxation	IS 3025 : Part 52 (Diphenyl Carbazide)
24.	Aluminium as Al	mg/L	BLQ (LOQ 0.03)	0.03	0.2	IS 3025 : Part 55 : 2003
25.	Selenium as Se	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	US EPA Method 200.8 : 1994
26.	Lead as Pb	mg/L	BLQ (LOQ 0.005)	0.01	No Relaxation	HECSM/ENV/W/SOP/002 Issued No.1 Dt. 02: 07:2020
27.	Mercury as Hg	mg/L	BLQ (LOQ 0.0005)	0.001	No Relaxation	HECSM/ENV/W/SOP/003 Issued Dt. 02: 07:2020
28.	Boron as B	mg/L	BLQ (LOQ 0.1)	0.5	2.4	IS 3025 : Part 57 (Curcumin)
29.	Nitrate Nitrogen as NO ₃	mg/L	BLQ (LOQ 1.0)	45	No Relaxation	IS 3025 : Part 34
30.	Escherichia coli	Per/100 mL	Absent	Absent/ 100 mL		IS 1622

Note: mg/L - milligram per liter; NTU - Nephelometric Turbidity Unit; BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; IS 10500: 2012 Indian Standard Specifications for Drinking Water

INFERENCE AS PER IS 10500:2012, THE ANALYZED PARAMETERS ARE WITHIN THE PRESCRIBED LIMITS

*****End of Report*****

Laboratory and Quality Manager - Authorized Signatory



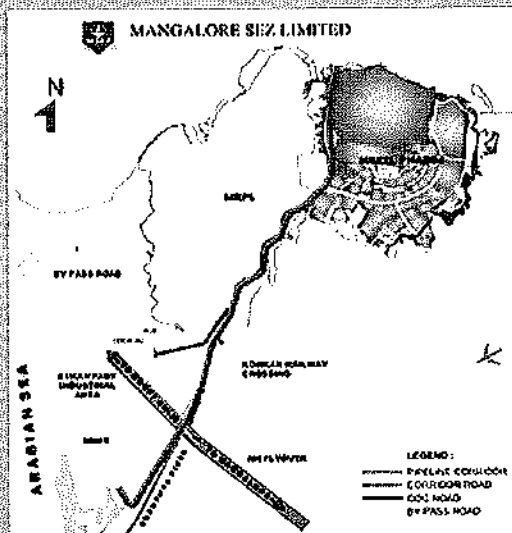


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

REPORT ON AMBIENT AIR MONITORING
FOR APRIL 2024

Submitted By



Submitted By



M/s Hubert Enviro Care Systems Private Limited
(NABL Accredited & MOEFCC Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

4.0 RESULTS

4.1 AMBIENT AIR QUALITY

MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: APRIL 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 1: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	15-16.04.2024
Received Date	16.04.2024
Analysis Commenced On	16.04.2024
Completion Date	23.04.2024
Report Date	24.04.2024
Report No.	HECSM/AA/001/160424
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV V/S Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	49.8	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	28.4	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	12.6	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.9	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.3	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: APRIL 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 2: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	16-17.04.2024
Received Date	17.04.2024
Analysis Commenced On	17.04.2024
Completion Date	24.04.2024
Report Date	25.04.2024
Report No	HECSM/AA/001/170424
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S.No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV V/S Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	50.4	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	29.6	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	13.5	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.1	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved wet and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS
 *****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: APRIL 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 3: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	17-18.04.2024
Received Date	18.04.2024
Analysis Commenced On	18.04.2024
Completion Date	25.04.2024
Report Date	27.04.2024
Report No	HECSM/AA/001/180424
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	51.3	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	29.6	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.4	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.9	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: APRIL 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 4: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	18-19.04.2024
Received Date	19.04.2024
Analysis Commenced On	19.04.2024
Completion Date	27.04.2024
Report Date	29.04.2024
Report No	HECSM/AA/001/190424
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	52.7	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	29.4	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	12.2	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.8	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.1	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	5 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2005 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: APRIL 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 5: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	19-20.04.2024
Received Date	20.04.2024
Analysis Commenced On	20.04.2024
Completion Date	29.04.2024
Report Date	30.04.2024
Report No	HECSM/AA/001/200424
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	54.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	30.3	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	13.2	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.7	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(a)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(a)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

Authorized Signatory
(Dr K Ganesan - Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: APRIL 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 6: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	20-22.04.2024
Received Date	22.04.2024
Analysis Commenced On	22.04.2024
Completion Date	30.04.2024
Report Date	30.04.2024
Report No	HECSM/AA/001/220424
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220, R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	52.9	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	31.4	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	13.5	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.8	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report*****

(Dr K Ganesan – Laboratory and Quality Manager)



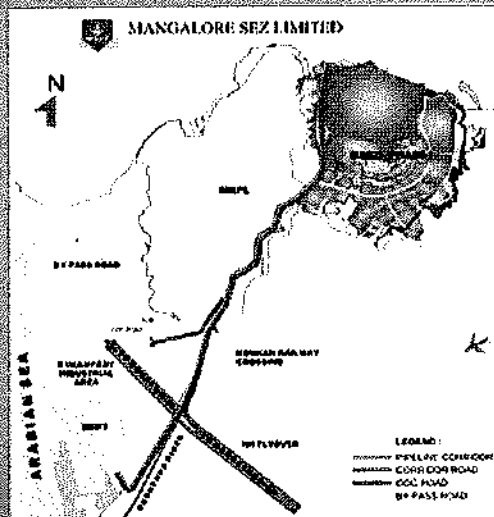


Mangalore SEZ Limited

ENVIRONMENTAL MONITORING REPORT

**REPORT ON AMBIENT AIR MONITORING
FOR MAY 2024**

Submitted to



Submitted By



M/s Hubert Enviro Care Systems Private Limited

(NABL Accredited & MOEFCC Recognized Laboratory)

7/C-45, Baikampady Industrial Estate, Mangaluru, Karnataka - 575011

Email: krom@hecs.in; kro@hecs.in

4.0 RESULTS

4.1 AMBIENT AIR QUALITY

MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: MAY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 1: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	13-14.05.2024
Received Date	14.05.2024
Analysis Commenced On	14.05.2024
Completion Date	20.05.2024
Report Date	21.05.2024
Report No.	HECSM/AA/001/140524
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	50.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	30.5	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	12.9	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	16.2	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory and Quality Manager)



MONITORING OF AMBIENT AIR QUALITY (AAQ) TEST REPORT: MAY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	WTP
Sample Description	AAQ 2: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	14-15.05.2024
Received Date	15.05.2024
Analysis Commenced On	15.05.2024
Completion Date	21.05.2024
Report Date	22.05.2024
Report No	HECSM/AA/001/150524
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S.No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 μm	$\mu\text{g}/\text{m}^3$	52.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 μm	$\mu\text{g}/\text{m}^3$	31.7	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	$\mu\text{g}/\text{m}^3$	13.8	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	$\mu\text{g}/\text{m}^3$	15.4	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m^3	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	$\mu\text{g}/\text{m}^3$	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	$\mu\text{g}/\text{m}^3$	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	$\mu\text{g}/\text{m}^3$	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m^3	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	$\mu\text{g}/\text{m}^3$	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m^3	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m^3	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11); 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12); 2004:

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 $\mu\text{g}/\text{m}^3$); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 $\mu\text{g}/\text{m}^3$); SO₂ Sulphur dioxide (LOQ 5 $\mu\text{g}/\text{m}^3$); NO₂ - Nitrogen-di-oxide (LOQ 5 $\mu\text{g}/\text{m}^3$); CO - Carbon Mono Oxide (LOQ 0.05 mg/m^3); O₃-Ozone (LOQ 10 $\mu\text{g}/\text{m}^3$); NH₃-Ammonia (LOQ 5 $\mu\text{g}/\text{m}^3$); Pb-Lead (LOQ 0.05 $\mu\text{g}/\text{m}^3$); As-Arsenic (LOQ 2.5 ng/m^3); Ni-Nickel (LOQ 5 ng/m^3); Benzene-(LOQ 2 $\mu\text{g}/\text{m}^3$); B(α)P- Benzo- α -pyrene (LOQ 0.2 ng/m^3); ng/m^3 : nanogram per cubic meter; $\mu\text{g}/\text{m}^3$ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Or K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: MAY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 3: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	15-16.05.2024
Received Date	16.05.2024
Analysis Commenced On	16.05.2024
Completion Date	22.05.2024
Report Date	23.05.2024
Report No	HECSM/AA/001/160524
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m³	52.9	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m³	30.7	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m³	12.6	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m³	16.1	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: MAY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	CETP
Sample Description	AAQ 4: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	16-17.05.2024
Received Date	17.05.2024
Analysis Commenced On	17.05.2024
Completion Date	23.05.2024
Report Date	24.05.2024
Report No	HECSM/AA/001/170524
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	50.4	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	28.2	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	11.9	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.5	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	0.2	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11); 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12); 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan - Laboratory



TEST REPORT: AMBIENT AIR QUALITY: MAY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 5: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	17-18.05.2024
Received Date	18.05.2024
Analysis Commenced On	18.05.2024
Completion Date	24.05.2024
Report Date	25.05.2024
Report No	HECSM/AA/001/180524
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	51.9	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	27.5	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg/m ³	13.0	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.4	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(a)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(a)P- Benzo-α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)



TEST REPORT: AMBIENT AIR QUALITY: MAY 2024

Customer Name	M/s. Mangalore SEZ Limited
Project Site/ Address	Sy. No. 168/3A, Plot No. U-1, Administrative Building, Bajpe Village, Mangalore, Karnataka - 574142
Sampling Location	Permude Village
Sample Description	AAQ 6: Ambient Air Quality Monitoring - (8 hrs/3 samples = 24 hrs/1 day)
Sample Drawn by	M/s. Hubert Enviro Care Systems Private Limited
Sampling Date	18-20.05.2024
Received Date	20.05.2024
Analysis Commenced On	20.05.2024
Completion Date	25.05.2024
Report Date	27.05.2024
Report No	HECSM/AA/001/200524
Instruments Used	Envirotech APM 460 brushless RDS & Envirotech APM 550 mini

CALIBRATION STATUS OF EQUIPMENT USED FOR SAMPLING AND TESTING

S. No.	Equipment	Make	Model No	Calibrated On	Due Date
1.	Respirable Dust Sampler	Envirotech Instruments	APM/460/2703-DTK-2019	15.07.2023	15.07.2024
2.	Fine Particulate Sampler	Envirotech Instruments	APM/550EL/159-DTB-2015	03.10.2023	03.10.2024
3.	MS Glass Micro Fiber Filter	Micro Separations	MGF/2000-203254	NA	NA
4.	Desiccator	Best lab	NA	NA	NA
5.	Electronic Weighing Balance	LC-GC Radwag	AS 82/ 220. R2 Plus	07.12.2023	07.12.2024
6.	UV VIS Spectrophotometer	King Lab	KLUV-1110	Internal Calibration	
7.	Gas Chromatograph	Agilent Technologies	7890B	Internal Calibration	
8.	AAS	Varian	AA240	Internal Calibration	

RESULTS

S.No.	PARAMETERS	UNITS	RESULTS	NAAQ STANDARDS : 2009	
				Industrial, Residential, Rural and Other Areas	Ecologically Sensitive Area (Notified by Govt of India)
1.	Particulate Matter < 10 µm	µg/m ³	48.6	100 (24 hours)	60 (Annual)
2.	Particulate Matter < 2.5 µm	µg/m ³	28.5	60 (24 hours)	40 (Annual)
3.	Sulphur Dioxide	µg /m ³	13.1	80 (24 hours)	50 (Annual)
4.	Nitrogen Dioxide	µg/m ³	15.4	80 (24 hours)	40 (Annual)
5.	Carbon Monoxide	mg/m ³	BLQ (LOQ 0.05)	4 (1 hours)	2 (8 hours)
6.	Lead	µg/m ³	BLQ (LOQ 0.05)	1 (24 hours)	0.5 (Annual)
7.	Ozone	µg/m ³	BLQ (LOQ 10)	180 (1 hours)	100 (8 hours)
8.	Ammonia	µg/m ³	BLQ (LOQ 5)	400 (24 hours)	100 (Annual)
9.	Nickel	ng/m ³	BLQ (LOQ 5)	20 (Annual)	20 (Annual)
10.	Benzene	µg/m ³	BLQ (LOQ 2)	5 (Annual)	5 (Annual)
11.	Benzo (α) pyrene	ng/m ³	BLQ (LOQ 0.2)	1 (Annual)	1 (Annual)
12.	Arsenic	ng/m ³	BLQ (LOQ 2.5)	6 (Annual)	6 (Annual)

Test Methods Followed:

PM₁₀: IS 5182 (Part 23) (Gravimetric); PM_{2.5}: IS 5182 (Part 24) (Gravimetric); SO₂: IS 5182 (Part 2) (Improved west and Geake method); NO₂: IS 5182 (Part 6) (Jacob and Hochheiser modified method); O₃: IS 5182 (Part 9); NH₃: IS 5182 (Part 25); CO: IS 5182 (Part 10 Clause 4); Pb, As, Ni: In-house method based on CPCB guidelines vol. I (2011); C₆H₆: GC FID/ GC MS based on IS: 5182 (Pt 11): 2006 based on CPCB guidelines vol. I (2011); B(α)P: In-house validated method based on CPCB guidelines vol. I (2011) & IS: 5182 (Pt 12): 2004.

BLQ - Below the Limit of Quantification; LOQ - Limit of Quantification; PM_{2.5}-Particulate matter size less than 2.5 Micron (LOQ 1 µg/m³); PM₁₀-Particulate matter size less than 10 Micron (LOQ 5 µg/m³); SO₂ Sulphur dioxide (LOQ 5 µg/m³); NO₂ - Nitrogen-di-oxide (LOQ 5 µg/m³); CO - Carbon Mono Oxide (LOQ 0.05 mg/m³); O₃-Ozone (LOQ 10 µg/m³); NH₃-Ammonia (LOQ 5 µg/m³); Pb-Lead (LOQ 0.05 µg/m³); As-Arsenic (LOQ 2.5 ng/m³); Ni-Nickel (LOQ 5 ng/m³); Benzene-(LOQ 2 µg/m³); B(α)P- Benzo -α-pyrene (LOQ 0.2 ng/m³); ng/m³: nanogram per cubic meter; µg/m³ - microgram per cubic meter

CONCLUSION: ALL THE PARAMETERS MEET THE NAAQ STANDARDS

*****End of Report *****

(Dr K Ganesan – Laboratory and Quality Manager)





मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड
MANGALORE REFINERY AND PETROCHEMICALS LIMITED

अनुसूची 'अ' के अंतर्गत भारत सरकार का उद्यम, SCHEDULE 'A' GOVT. OF INDIA ENTERPRISE.
(ऑयल एण्ड नेचुरल गैस कॉर्पोरेशन लिमिटेड की सहायक कंपनी, A SUBSIDIARY OF OIL AND NATURAL GAS CORPORATION LIMITED)
आई.एस.ओ. 9001, 14001 एवं 50001 प्रमाणित कंपनी, AN ISO 9001, 14001 AND 50001 CERTIFIED COMPANY.
सीआईएन/CIN : L23209KA1988GOI008959 / वेबसाइट Website : www.mrpl.co.in

L/MS/ARC/MSEZ/7528

31st May, 2024.

To,

The Head - Technical
MSEZ, Mangalore

Dear Sir,

Mangalore SEZ Ltd. - 974 -
Documents & Contents subject to verification
Received date: 01.06.2024
Received by: [Signature]

विषय Sub: Submission of Half Yearly Compliance Reports of Aromatic Complex of MRPL under Environmental Clearance for Phase-I, MSEZ project, (Including Aromatic Complex) for the period from October, 2023 to March, 2024.

With reference to the above, please find enclosed herewith, Half Yearly Compliance Reports of Aromatic Complex, for compilation at your end and submission to the concerned Authority under intimation to our office.

धन्यवाद Thanking You,

M. S. Sudarsan 31/5/24
for Chief General Manager (Health, Safety & Environment)

Encl : as above

Compliance to Environmental Clearance

Issued by MoEF vide letter No. 21-383/2007-IA-III dated 3rd April, 2008

Sl. No.	Consent Condition	Compliance
I	The Mangalore Special Economic Zone (MSEZ) Phase-I involves a) MRPL Phase -III Refinery b) Aromatic Complex and c) Olefin Complex are proposed to be developed by the anchor promoter of MSEZ i.e M/s ONGC-MRPL in the already acquired land of about 1800 acres. The proposed MSEZ is planned adjacent to the existing MRPL refinery complex on north & eastern sides and proposed to connect NMPT with a dedicated 70/100 meter wide road-cum-pipeline (total approx. 15 km long) corridor for movement of cargo, crude and products between New Mangalore Port and MSEZ. The proposed layout has one main entry from the proposed Mangalore MSEZ corridor connected to the existing New Mangalore Port & National Highway (NH-17). The primary, Secondary and Tertiary roads are planned to give access to the industries falling in the MSEZ Phase -I. Industrial Zones for locating the olefin complex, aromatic complex, D/S Petrochemicals, ISPRCL underground crude oil storage and land for MRPL Phase-III Refinery are effectively placed in the central and southwest part of the proposed MSEZ premises. Further, the SEZ will have necessary road alignment between NMPT, SEZ and network of roads within, including service roads for inspection of pipelines on elevated corridors. The pipelines shall be built at elevated corridor locations. Pipelines will be laid on sleepers and pipe racks with sufficient ground clearance. The preferred corridor alignment avoids Coastal Regulation Zone -I & II portion along the Gurupur River and it will have elevated roadway over structures (railways / minor bridges) and reinforced earth walls.	Noted
II	To meet the objective of producing paraxylene, aromatic complex has been considered. To maximize paraxylene, broad cut heavy naptha streams are selected as feedstock to NHT/ CCR. Aromatics precursors to new reformer include constituents that produce toluene, C8-aromatics mix & C9+ aromatics. Whereas a xylene isomerization unit has been considered to convert other C8 - aromatics into paraxylene, a transalkylation & disproportionation (TADP) unit has also been included to convert toluene & C9+ aromatics into C8-aromatics mix. simulated moving bed adsorption for paraxylene recovery (PAREX) has been incorporated.	Noted
1	NHT/ CCR : 0.95 MMTPA	Complied. The main Product slate, Paraxylene is within Regulatory Body approved capacity of 0.9 MMTPA
2	Isomerization Unit (ISOMER) : 3.16 MMTPA	
3	Transalkylation & Disproportionation Unit (TADP) :1.71 MMTPA	
4	Paraxylene Recovery (PXREC) :4.07 MMTPA	
5	Xylene Fractionation Unit : 4.64 MMTPA	
6	Aromatics Extraction Unit : 0.79 MMTPA	
7	Benzene Toluene Fractionation Unit : 2.2 MMTPA	
8		Please note that normal power requirement will be in the range of 40- 50 MW during normal operation, but Gas Turbine is more prone to Maintenance requirements & hence to ensure continuous supply of power to Process Plant, installed capacity is 72 MW . During the period from April, 2023 to September, 2023, Average Power production was 22.84 MW and Peak Power production was 25.96 MW.
3. A Specific Conditions:-		
1	No objection Certificate from the Karnataka State Pollution Control Board shall be obtained before initiating the project	MZEZ obtained Consent for Establishment (CFE) from the Karnataka State Pollution Control Board (KSPCB) letter No. CFE-CELL/MSEZ/EIA-574/08/20 dated 30th April, 2008. Aromatics Complex of MRPL on its part obtained CFE from the KSPCB, vide letter No. PCB/559/CFE/08/252 dated 12th August, 2008 & Extension of validity of CFE obtained vide letter No. PCB/HPI/245/2013-14/1002 dated 5th October, 2013 upto 10.8.2014 from KSPCB, Bangalore
2	The MSEZ project shall be restricted to the Phase -I of the project, proposed over 1,800 acres. The phase-II of the project shall be considered by Ministry of Environment & Forests only after receipt of all requisite documents\ information as laid down in the Environment Impact Assessment Notification, 2006 and Coastal Regulation Zone Notification, 1991 as applicable	NA
3	All development in the Coastal Regulation Zone area shall be in accordance with coastal regulation zone notification, 1991. No destruction of mangroves shall be undertaken except while undertaking the permissible activities in the coastal regulation zone-I areas	NA

4	The project proponent shall not take up any activity in 875 acres of coastal regulation zone land, other than those permissible under the coastal regulation zone notification 1991 such as pipeline corridors, pipelines roads on stilts	NA
5	With regard to the containing the suspected contamination of the groundwater near Athurkodi area of Kuthethoor village, MRPL has given an undertaking vide letter dated 19.3.2008 which is as follows:-	NA
6	The project proponent shall obtain a report from the wildlife department with regard to existence of wildlife in the proposed site as claimed by the public before implementing the project	Please note report from Wildlife Department was submitted to the MoEF by MSEZ
7	The R & R package shall be strictly in accordance with the laid down norms of the state Government	NA. However, Aromatic Complex of MRPL has recruited around 302 displaced people and provided employment, till date (30.09.2024).
8	A marine Environment Impact Assessment and Risk Assessment along with the Disaster Management Plan shall be prepared for the outfall facilities proposed in the Coastal Regulation Zone and the marine areas	NA
9	Project proponent shall put up a dedicated website and a display panel to inform the public regarding the Ambient Air Quality along with SO ₂ , Nox and other parameters as prescribed by central Pollution Control Board (CPCB)	Aromatic Complex has installed a display panel at the entrance of Main Gate for public information
10	The gaseous emissions (SO ₂ , Nox, HC, VOC and Benzene) from various process units shall conform to the standards prescribed by the concerned State Pollution Control Board. All the measures detailed in the EMP and response to the Public Hearing shall be taken to control the point / stack and fugitive gaseous emissions from the proposed facilities, processes and storage units etc, for ensuring that the ambient air quality around the Refinery due to the expansion is maintained at the predicted 24 hourly average maximum concentration	Please note online Monitoring Instruments of relevant parameters are installed for stacks and the readings are made available at DCS, for continuous monitoring, further uplinked to CPCB server. Corrective action will be taken for any deviation. Plant is run as per Standard Operating Process (SOP), considering, Standards prescribed by the Regulatory Body. Online detectors are installed for HC, benzene, and to take up 'Containment work' and 'Repair work' on detection of leak, on priority basis.
11	The emission levels of the other pollutants shall also remain within the permissible levels	Please note apart from the relevant parameters as from Sl. No. '10', online instruments such as for CO & PM are also installed to stacks, so as to ensure pollutants are within the permissible limits
12	The industrial units in the SEZ and the associated facilities shall be strictly in accordance with the norms laid down by the Karnataka State Government and CPCB	Noted and being complied
13	The project proponent shall ensure that the greenery of the area is maintained. Further, 33 % of the project area shall be dedicated for green belt development of which atleast 5 % shall be for mangrove afforestation. The local Forest Department shall be associated for this purpose and requisite budget earmarked	Complied. Karnataka Forest Dept., GOK executed Green Belt Development (GBD) program at Aromatic Complex, with WO value of RS 1.2 Crore. Development & Maintenance phase of GBD for 4 years upto 2020, completed. Around 13,050 plants were planted by Karnataka Forest Department to make upto 33% . Watering mechanism was through Drip Irrigation. The species selected for Green Belt are having good amount of 'Crown Width' as recommended in EIA report by NEERI, that was subsequently approved by MoEF while giving Environment Clearance
14	The project proponent shall ensure that the water requirement of the Mangalore city does not get affected due to the SEZ operation. Adequate provision shall be made in the reservoirs to provide for the water requirement of the cities	Please note, Aromatic Complex, on its part has taken up following measures to conserve water. 1. Ultra Filter-Reverse Osmosis plant is specifically incorporated to recycle maximum treated water. 2. Cooling Tower system is designed to use STP water, as make up from MSEZ, apart from the river water. 3. Chemical Treatment Program with Modern Technology has been institutionalised to save water in Cooling Tower Plant 4. Condensate Recovery unit is installed to conserve water. 5. Aromatic Complex has installed rain water harvesting measures for its buildings . Water Audit is being conducted through External Agency at Aromatic Complex
15	The project proponent shall ensure that during construction and operation of the project the traffic in the city is not affected	Please note Aromatic Complex site is at a distance of approximately 15 KM from the Highway. Hence inconvenience to traffic movement in the city doesn't arise

16	All precautions of the highest standards shall be incorporated in the design of the project to ensure that there is no chance of emission/ leakage of hazardous chemicals including Benzene. Detailed monitoring programme shall be designed and the information provided to the public through display and dedicated website by means of online monitoring	Please note following measures are taken to have a check on Emission/ leakage as, * All heaters are installed with LOW NOx Burners *Heaters stacks are fitted with following Online analyzers Carbon monoxide. Sulphur Dioxide Nitrogen Oxides Suspended Particulate matters (SPM) *Benzene Tanks – Internal Floating Roof Tank with Nitrogen Blanket *Paraffinic Raffinate (Volatile material) designed with Vapor recovery unit to recover vapor *Dispersion Model Analysis was done by Bell Energy India and following Online detectors are installed Benzene Detectors 27 H2S Detector 21 Hydrocarbon Detectors 193 Hydrogen Detectors 68 Fire Detectors 26
17	Low sulphur internal fuel oil and fuel gas shall be fired in process heaters and boilers	Aromatic Complex is utilizing Low Sulphur content fuels such as LSHS, HSD & FG fuels. Please note SO2 emission from EIA report for the project is estimated as 13.68 MTPD. However avg Sox emission is 1.68 MTPD.
18	Quarterly monitoring of fugitive emissions shall be carried out by Fugitive Emission Detectors (GMI) leak Surveyor. Guidelines of CPCB will be followed for monitoring fugitive emissions. For control of fugitive emissions, all unsaturated hydrocarbons shall be routed to the flare system. The flare system shall be designed for smokeless burning. Flare gas recovery system shall be installed for reduction of Hydrocarbon loss and emission of VOCs, NOx, N2O, SOx & CO2 to the environment	Please note Quarterly monitoring of fugitive emissions is carried out through NABL MoEFCC accredited External Agency. Based on, Dispersion Model Analysis by Bell Energy India, following Online detectors are installed Benzene Detectors 27 Hydrocarbon Detectors 193
19	Regular Ambient Air Quality Monitoring shall be carried out. The Location and results of existing monitoring stations shall be reviewed in consultation with the concerned State Pollution Control Board based on the occurrence of maximum ground level concentration and downwind direction of wind. Additional stations shall be set up, if required. It shall be ensured that at least one monitoring station is set up in up-wind & in Down - wind direction along with those in other directions	AAQM monitoring is carried out as per NAAQM rules, 2009 at 5 locations (since Jan, 2015), at a frequency of weekly twice per location, Monitoring is done for all parameters as per the rules, as suggested by KSPCB & Monthly Reports are submitted to KSPCB. The values are found to be within the NAAQM Norms.
20	on-line data for air emissions shall be transferred to the CPCB and SPCB regularly. The instruments used for ambient air quality monitoring shall be calibrated regularly. The monitoring protocol shall ensure continuous monitoring of all the parameters	Online monitoring devices have been installed to measure Heater Stack emissions to all 10 number of stacks & are uplinked to CPCB server since April, 2016
21	The practise of acoustic plant design shall be adopted to limit noise exposure for personnel to an 8 hour time weighted average of 90 db(A)	Please note at the design stage itself, identified the sources of possible noise & Attenuation measures had been taken up. <u>Attenuation measures:</u> It is ensured at design stage that Noise level at a distance of 1 mt from the equipment such as turbines, compressors are < 90 db (A) & at plant boundary, it is less than 75 dB in daytime & 70 dB in night time
22	All the pumps and other equipments, where there is a likelihood of HC leakages, shall be provided with appropriate indicators and detectors. Provision for immediate isolation of such equipment, in case of a leakage shall also be made. The company shall adopt leak detection and repair (LDAR) programme for quantification and control of fugitive emissions	Please note Aromatic Complex, as a first step in leak prevention, hired Bell Energy India, who carried out Dispersion Model Analysis and recommended following Online detectors which are installed at site such as, Benzene Detectors - 27 nos Hydrocarbon Detectors - 193 nos . In case of leak, the first step is to contain and then arrest the leak. Please note Quarterly monitoring of fugitive emissions are being carried out by External Agency
23	The product loading gantry shall be connected to the product sphere in closed circuit through the vapor arm connected to the tanker. Data on fugitive emissions shall be regularly monitored and records shall be maintained	NA

24	The company shall ensure that no halogenated organic is sent to the flares. If any of the halogenated organic are present, then the respective streams may be incinerated, if there are no technically feasible or economically viable reduction / recovery options. Any stream containing organic carbon, other than halogenated shall be connected to proper flaring system, if not to a recovery device or an incinerator	Halogenated organic is used only for chloride dispersion on platinum catalyst and consumed. Halogenated compound is not sent to Flare Stack Chimney. Used catalyst will be disposed to KSPCB authorised recyclers
25	The new standards/ norms that are being proposed by the CPCB for Petrochemical Plants and Refineries shall be applicable for the proposed expansion unit. The company shall conform to the process vent standards for organic chemicals including non-VOCs and all possible VOCs i.e TOCs standards and process vent standards for top priority chemicals. Regular monitoring will be carried out for VOC and HC and on line monitors for VOC measurements may be installed	The new standards/ norms proposed by the CPCB for Petrochemical Plants are complied. 1. Online Monitoring system is provided to heater stacks for continuous monitoring 2. Online Detectors of HC, Benzene are installed, to check any fugitive emissions. 3. The process vents are connected to flares through safety pop-up valves. 4. HC sampling points are closed loop systems. 5. Storage of HC is in Floating roof tanks (as applicable) with double mechanical seals and Nitrogen blanketing
26	Regular monitoring of relevant parameters for the under ground water in the surrounding areas shall be undertaken and the results shall be submitted to the relevant States Pollution Control Board	Please note Regular monitoring of groundwater is carried out at four locations surrounding the plant as advised by KSPCB & the reports are submitted to KSPCB. The frequency of sampling is once in a month. The values are found to be within the Standards.
27	Solid Waste generated as pretreater and Reformer catalysts, Sulphur guard absorbent and alumina Balls shall be disposed off as per the authorization from the State Pollution Control Board	Please note Waste handling system with Hazardous Waste Storage facility of about 2000 m2 area with impervious surface, closed shed and spillage collection (for any washings) & transfer (to ETP) system has been constructed. Recyclable Wastes generated from the process units are disposed to Recyclers authorized by SPCB. Non recyclable wastes are disposed to Co-processing cement Industries authorized by KSPCB
28	Oily sludge shall be sent to melting pit treatment for recovery of oil. The recovered oil shall be recycled into the refinery system. The residual sludge will be stored in HDPE lined pit for disposal after treatment. The sludge shall be incinerated in the premises only	Noted and being complied
29	The company shall strictly follow all the recommendations mentioned in the charter on Corporate Responsibility for Environmental Protection (CREP)	Please refer compliance details for CREP enclosed herewith (ref.: Annexure- 1)
30	The company shall harvest surface as well as rainwater from the rooftops of the buildings proposed in the expansion project and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water	Rain water harvesting system is implemented for rooftop buildings. During initial project stage, all surface rain water was collected into open wells and the same was utilised for construction purpose
31	Occupational Health Surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act	Complied and is ongoing process
32	The company shall implement all the recommendations made in the Environmental Impact Assessment / EMP report and risk assessment report	Complied
33	The company will undertake all relevant measures, as indicated during the Public Hearing for improving the socio-economic conditions of the surrounding area	Complied
34	With regard to R & R colony the project proponent shall obtain all requisite clearances as prescribed by the concerned agencies	NA
B General Conditions :		
1	The project authorities shall strictly adhere to the stipulations made by the concerned State Pollution Control Board (SPCB) and the State Government	KSPCB stipulations were adhered while executing the project
2	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests	Noted
3	At no time, the emissions shall be allowed to go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the units, the respective unit should be immediately put out of operation and should not be restarted until the desired efficiency has been achieved	Noted and being complied
4	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the SPCB. Regular monitoring shall be carried out for relevant parameters for both surface and ground water	Influent parameters & Effluent parameters are monitored through online instruments installed at inlet & outlet of ETP. At the outlet, Flow Rate, pH, TSS, COD & BOD measuring instruments are installed. Surface & Ground water are being monitored once in a month, as advised by KSPCB.

5	Industrial Waste water shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose	Industrial Waste Water is collected in Slop Tank and then initially treated in EPTP plant to bring down Aromatics to < 20 ppm & Benzene to < 10 ppm, through Steam Stripping & Adsorption methodology. It is then treated in ETP comprising of Physical, Chemical, Biological & Tertiary Treatment Section. Treated water is recycled to cooling tower to the max. extent & the remaining, after ensuring Conformance to MINAS standards, disposed to sea through MSEZ CETP collection & Disposal system
6	The overall noise levels in and around the plant area shall be limited within the prescribed standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA rules, 1989 viz. 75 dBA (Day time) and 70 dBA (night time)	<u>Sources:</u> Pumps, Compressors & Turbines. <u>Attenuation measures:</u> It is ensured at design stage that Noise level at a distance of 1 mt from the equipment is < 90 db (A) by providing acoustic hoods, silencers, enclosures etc. as appropriate & at plant boundary Noise Level is less than 75 dB in daytime & 70 dB in night time as per the Legal requirement
7	The project authorities shall strictly comply with the provisions made in manufacture, storage and import of Hazardous chemicals rules 1989 as amended in 2000 for handling of hazardous chemicals etc..Necessary approvals from Chief Controller of Explosives must be obtained before commission of the expansion project. Requisite On-site and Off - site Disaster Management Plans will be prepared and implemented	Please note that necessary license/ clearance from statutory agencies have been taken such as Approval from Petroleum and Explosives Safety Organization, dated 16th June 2011, Clearance from Department of Factories of Karnataka, dated 19th June 2010. Requisite On-site and Off - site Disaster Management Plans are adhered to as per Factories Act
8	Authorization from the State Pollution Control Board must be obtained for collections/ treatment/ storage/ disposal of Hazardous wastes	Please note Aromatic Complex 'Authorization under Handling Hazardous & other wastes' is renewed for 5 years upto 30th June, 2026.
9	The project authorities shall provide adequate funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes	Noted and being complied
10	The stipulated conditions shall be monitored by the concerned Regional office of this Ministry / Central Pollution Control Board / State Pollution Control Board. A six monthly compliance report and the monitored data shall be submitted to them regularly. It shall also be displayed on the website of the company	Biannually compliance report is submitted on regular basis through MSEZ
11	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at website of the MoEF at http://www.envfor.nic.in . This should be advertised within seven days from the date of issue of clearance letter at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the concerned Regional office of this Ministry	Please note, the same was ensured by MSEZ
12	The date of Financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work as well as the commissioning of the project shall be informed to the Ministry and its Regional Office	NA
13	Proper House keeping and adequate occupational health programmes shall be taken up. Regular Occupational Health Surveillance Programme for the relevant diseases shall be carried out and the records shall be maintained properly for atleast 30-40 years. Sufficient preventive measures shall be adopted to avoid direct exposure to emission and other hydrocarbons etc..	Noted and being complied
14	A separate environment management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a Senior Executive	Complied
15	The Ministry may revoke or suspend the clearance, if implementation of any of the above condition is not satisfactory	Noted
16	The Ministry reserves the right to stipulate additional conditions if found necessary. The company shall implement these conditions in a time bound manner	Noted
17	The above conditions will be enforced, inter - alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air Act, 1981, The Environment Act, 1986, The Public Liability Insurance Act, 1991, Hazardous Waste Rules 1989 and Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 along with their Amendments and Rules	Noted

Compliance to Charter on Corporate Responsibility for Environmental Protection (CREP)

Sl. No.	Conditions	Compliance
1	Adoption of state-of- art technology State of Art technology will be adopted for both process technology as well sound engineering practices required for control of emission, at the stage of design itself in case of new plants	Please note Process technology is licensed from renowned expert in the field: UOP, America for NHT platforming units, High severity Cyclemax CCR unit for catalyst regeneration, Energy efficient column design for Xylene & BTF units, ISOMER & TADP units for getting high yield of paraxylene per unit of Naptha processed & an efficient, selective PAREX process for paraxylene recovery to get high purity product are considered in the design stage. Also Low NOx burner design for heaters, Low sulphur fuel including provision for usage of Natural Gas are considered.
2	Management of storm water For the storm water generated from process area and tank farm area during initial hours of rain. An arrangement will be made for collection and oil separation including further treatment as required. Such arrangement will include provision for buffer tank (holding tank) and monitoring of effluent quality. This will be accomplished by June 2003.	Please note Aromatic Complex has commissioned 2 numbers of collection tanks: one at ISBL area with capacity of 12,000 m3 & the other at OSBL area with 6000 m3 capacity for collection of initial hours of rain from process area & tank farm area respectively. This is then treated in ETP with an treatment capacity of 150 m3/hr. The treatment section includes Physical treatment, chemical, Biological & Tertiary treatment sections
3	Effective detoxification and waste water treatment scheme In order to control high COD and persistent organic pollution including toxic constituents, the industry will select appropriate unit operations for pre-treatment of effluent within inside battery limit (ISBL) before sending to the biological treatment system(BTS) for better functioning of ETPs. Action plan for the same will be submitted within 6 months and implemented within one year (March,2004)	Aromatic Complex has installed Effluent Pre-Treatment Plant at a cost of RS 11.39 crores. The units consists of Distillation column & carbon adsorption beds to remove CODs, so that effluent entering BTS will be having Max. upto 20 ppm of aromatics
4	Control of emission from combustion The industry will submit an action plan within six months for improving thermal efficiency and control of Nox	Aromatic Complex has installed Low Nox burners for its heaters & flue gas just above dew point after heating the incoming fuel, air or Steam production in HRSG as the case may be, for improving thermal efficiency
5	Proper functioning of point source emission control systems The industry will make efforts for proper operation of pollution control system (mostly scrubbers) and attainment of desired efficiency within six months. The will include backup of power supply to the control equipment and arrangement for frequent sampling and analysis of all critical pollution in the tail gases	NA

6	Leak detection and repair (LDAR) programme As a good operating, the industry will adopt periodically leak detection and repair (LDAR) programme to check fugitive emissions within six months. The frequency of the programme will be proportionate to the risk potential of carrying fluid. Based on leak detection as per LDAR programme, action will be taken to eliminate fugitive emissions, this will be a continuous activity.	LDAR program is ongoing process since July, 2016. Please note Aromatic Complex as first step in leak prevention, hired Bell Energy India, who carried out Dispersion Model Analysis and recommended following Online detectors which are already installed at site such as, Benzene Detectors 27 nos, Hydrocarbon Detectors 193 nos
7	Handling of halogenated organics The industry will submit an action plan within 6 months to ensure that no halogenated organics is sent to the flares in order to avoid formation of persistent organic pollutants. All HAPs had halogenated organics will be routed to the incineration system having end-on pollution control facility.	Halogenated organic is used only for chloride dispersion on platinum catalyst and consumed. Used catalyst will be disposed to KSPCB authorised recyclers
8	Control of fugitive emissions of carcinogenic compounds Fugitive emission of carcinogenic compounds (e.g Benzene) will be controlled by closed vapor collection and recovery system. Measures will be taken to monitor health of the workers	Please note double mechanical seal is provided for the purpose & periodical health check up is being carried out as per the legal requirement through Occupational Health Centre, stagewise
9	Management of solid waste Proper facilities will be provided for handling and storage of hazardous waste with manifest system in case transported to other places. For incinerable waste, properly designed incinerator will be installed within the premises or as a common facility. The non-incinerable hazardous waste should be disposed of in a secure-land fill.	Aromatic Complex has installed Waste Management storage facility at an estimated cost of RS 3.73 crore for handling and storage of hazardous waste until disposal & manifest system will be followed during disposal of Hazardous Wastes. Temporary Waste Storage facility is constructed of about 2000 m2 area with impervious surface, closed shed and spillage collection (for any washings) & transfer (to ETP) system
10	Proper operation of incinerator Industry will check the design and will adopt sound engineering practices for proper operation of incinerators. Continuous monitoring will be done for operational parameters and specific parameters in tail gas to ensure the efficient functioning. This will be implemented within 3 months.	NA
11	Optimising the inventory of hazardous chemicals Efforts will be made to optimize the inventory, particularly of hazardous chemicals. Such information will be made available to the Regulatory Agencies (SBCBs) Inspector of Factory & District Collector	Petroleum & Explosives Safety Organization (PESO) approvals are being taken for bulk storage of Hazardous chemicals (Petroleum) wherein requirements of the MSIHC Rules, 1989 are considered
12	Self-regulation by industry through monitoring and environmental auditing Industry will go for self-assessment and regulation by conducting environmental auditing regularly, besides having regular monitoring of pollutants in air emission, liquid effluent and receiving environment.	Noted and being complied
13	Organizational restructuring and accreditation of environmental manager of industry. For self-evaluation, organizational restructuring will be done and the environmental manager of the industry will be accredited to bring professionalism in environmental management.	ISO 14001 system in place for monitoring Environment Management System



मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड
MANGALORE REFINERY AND PETROCHEMICALS LIMITED

अनुसूची 'अ' के अंतर्गत भारत सरकार का उद्यम, SCHEDULE 'A' GOVT. OF INDIA ENTERPRISE.
(ऑयल एण्ड नेचुरल गैस कॉर्पोरेशन लिमिटेड की सहायक कंपनी, A SUBSIDIARY OF OIL AND NATURAL GAS CORPORATION LIMITED)
आई.एस.ओ. 9001, 14001 एवं 50001 प्रमाणित कंपनी, AN ISO 9001, 14001 AND 50001 CERTIFIED COMPANY.
सीआईएन/CIN : L23209KA1988GOI008959 / वेबसाइट Website : www.mrpl.co.in

L/MS/ARC/KSPCB/7455
14th March, 2024

The Environmental Officer
Regional Office
KSPCB
Baikampady, Mangalore-11

Dear Sir,

विषय Sub: Submission of Environmental Monitoring Report for the Month of December, 2023, for Aromatic Complex of MRPL

Ref: KSPCB Combined Consent Order No. AW-330681 dated 1st April, 2022

With respect to the above subject; we are herewith submitting the following Environmental Monitoring Reports and Production Report for Aromatic Complex of MRPL for the Month of December, 2023 respectively, enclosed herewith.

- 1) Ambient Air Quality Monitoring at 5 different locations in and around Aromatic Complex, enclosed as Annexure- A
- 2) Water Analysis Reports at 9 different locations in and around Aromatic Complex, as Annexure-B
- 3) Noise Level Monitoring Report at Aromatic Complex, as Annexure-C
- 4) Treated Effluent Analysis Report, Annexure-D
- 5) Returns Regarding Water Consumed for the Month of December, 2023, as Annexure-E
- 6) Production Report as Annexure-F

धन्यवाद Thanking You,


M S Sudarsan
Chief General Manager (Health, Safety & Environment)

CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC636623000006475F, 6584F, 6666F, 6707F, 6794F

6869F, 6980F, 7120F

Test Report Date:

08/01/2024

Sample Particulars

Nature of the Sample

Sampling Location

Method of Sampling

Monitoring Conducted By

Sampling Duration (Hrs.)

Ambient Air Quality Monitoring

MRPLAC East Side

IS 5182 (Part 14)

M/s Nitya Laboratories

24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As) ng/m ³	Benzo (a) pyrene (as BAP) ng/m ³	Benzen e (C ₆ H ₆) µg/m ³
04/12/2023	38.40	58.20	30.40	35.70	ND	ND	ND	ND	ND	ND	ND	ND
07/12/2023	35.10	59.40	29.80	32.50	ND	ND	ND	ND	ND	ND	ND	ND
11/12/2023	39.20	56.10	24.60	33.70	ND	ND	ND	ND	ND	ND	ND	ND
14/12/2023	36.40	60.10	26.50	30.80	ND	ND	ND	ND	ND	ND	ND	ND
18/12/2023	39.40	55.20	24.40	36.20	ND	ND	ND	ND	ND	ND	ND	ND
21/12/2023	38.80	55.80	31.20	29.90	ND	ND	ND	ND	ND	ND	ND	ND
26/12/2023	37.40	54.40	25.40	36.40	ND	ND	ND	ND	ND	ND	ND	ND
29/12/2023	40.20	56.90	24.90	27.80	ND	ND	ND	ND	ND	ND	ND	ND
Average	37.87	56.88	27.15	32.63	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 53 CFCB Guideline	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-4)	IS:5182 (P-8)	NL/SO P/AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ-13	NL/SOP/AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

Remark:

*NAAQS: National Ambient Air Quality Standards; Schedule-VII, (Rule 3 (3B), (P4)-II-sec. 3(i)) 26.11.2009

ND-Not Detected, *Arsenic-ND [DL- 0.5], *BAP-ND[DL- 0.5], *Benzen-ND[DL- 0.5], *Lead-ND[DL- 0.5], *Nickel-ND[DL- 1.0], Sample Analyzed within Seven days from the date of sampling.



TC-6366



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2/42

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC838623000006476F, 6585F,6667F,6708F,6785F

6870F,6891F,7121F

Test Report Date:

08/01/2024

Sample Particulars

Nature of the Sample : **Ambient Air Quality Monitoring**
Sampling Location : **MRPLAC West Side**
Method of Sampling : **IS 5182 (Part 14)**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Duration (Hrs.) : **24 Hrs.**

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As) ng/m ³	Benzo (a) pyrene (as BAP) ng/m ³	Benzen e (C ₆ H ₆) µg/m ³
04/12/2023	37.60	60.20	26.80	28.40	ND	ND	ND	ND	ND	ND	ND	ND
07/12/2023	40.50	59.40	32.80	31.50	ND	ND	ND	ND	ND	ND	ND	ND
11/12/2023	41.20	58.20	36.80	28.50	ND	ND	ND	ND	ND	ND	ND	ND
14/12/2023	40.40	58.90	37.20	31.10	ND	ND	ND	ND	ND	ND	ND	ND
18/12/2023	42.80	57.40	29.60	32.30	ND	ND	ND	ND	ND	ND	ND	ND
21/12/2023	38.80	59.00	27.10	35.90	ND	ND	ND	ND	ND	ND	ND	ND
26/12/2023	35.60	55.40	25.40	39.40	ND	ND	ND	ND	ND	ND	ND	ND
29/12/2023	38.90	54.40	38.10	30.20	ND	ND	ND	ND	ND	ND	ND	ND
Average	39.47	57.81	31.73	34.91	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 53 CPCS Guideline	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NL/SO P/AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ-13	NL/SOP /AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

Remarks:

*NAAQS: National Ambient Air Quality Standards; Schedule-VI, (Rule 3 (3B)), [Part-II-sec.-30]] 10.11.2009

ND-Not Detected, *Arsenic-ND [DL- 0.5], *BAP-ND[DL- 0.5], *Benzen-ND[DL- 0.5], *Lead-ND[DL- 0.5], *Nickel-ND[DL- 1.0], Sample Analyzed within Seven days from the date of sampling.



TC-6366



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3/42

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernuda Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC63662300006477F, 6586F, 6688F, 6709F, 6796F

6871F, 6992F, 7122F

Test Report Date:

08/01/2024

Sample Particulars

Nature of the Sample

: Ambient Air Quality Monitoring

Sampling Location

: Shantigudde

Method of Sampling

: IS 5182 (Part 14)

Monitoring Conducted By

: M/s Nitya Laboratories

Sampling Duration (Hrs.)

: 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (as SO_2) $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (as NO_2) $\mu\text{g}/\text{m}^3$	Ozone (as O_3) $\mu\text{g}/\text{m}^3$	Lead (as Pb^{+2}) $\mu\text{g}/\text{m}^3$	Carbon Monoxide (as CO) mg/m^3	Ammonia (as NH_3) $\mu\text{g}/\text{m}^3$	Nickel (as Ni^{+2}) ng/m^3	Arsenic (as As^{+3}) ng/m^3	Benzo (a) pyrene (as BAP) ng/m^3	Benzen e (C6H6) $\mu\text{g}/\text{m}^3$
04/12/2023	41.20	59.40	34.50	38.20	ND	ND	ND	ND	ND	ND	ND	ND
07/12/2023	38.40	60.20	26.80	34.40	ND	ND	ND	ND	ND	ND	ND	ND
11/12/2023	39.60	62.40	24.60	33.60	ND	ND	ND	ND	ND	ND	ND	ND
14/12/2023	42.40	63.80	35.20	29.90	ND	ND	ND	ND	ND	ND	ND	ND
18/12/2023	40.10	61.20	35.40	30.50	ND	ND	ND	ND	ND	ND	ND	ND
21/12/2023	39.00	62.40	29.90	36.20	ND	ND	ND	ND	ND	ND	ND	ND
26/12/2023	36.80	58.20	32.40	29.20	ND	ND	ND	ND	ND	ND	ND	ND
29/12/2023	37.50	57.90	36.60	34.80	ND	ND	ND	ND	ND	ND	ND	ND
Average	39.37	60.66	32.11	33.36	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40 CFR Appendix L Part 53 CPCS Guideline s	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NL/SOP /AAQ- 11	IS:5182 (P-10)	Method of Air Sampling g & Analysis	NL/90 P/AAQ- 13	NL/SOP/ AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

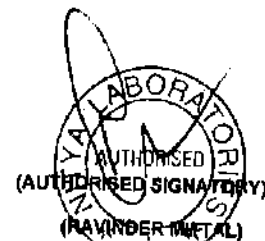
Remark:

*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec-3(i)] 18.11.2009

ND-Not Detected, *Arsenic-ND [DL- 0.5], *BAP-ND[DL- 0.5], *Benzene-ND[DL- 0.5], *Lead-ND[DL- 0.5], *Nickel-ND[DL- 1.0], Sample Analyzed within Seven days from the date of sampling.



TC-6366



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4/42

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pennude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC63682300006478F, 6587F,6689F,6710F,6797F

Test Report Date:

6872F,6993F,7123F
08/01/2024

Sample Particulars

Nature of the Sample

Sampling Location

Method of Sampling

Monitoring Conducted By

Sampling Duration (Hrs.)

Ambient Air Quality Monitoring

Tenka Ekkar

IS 5182 (Part 14)

M/s Nitya Laboratories

24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As ³) ng/m ³	Benzo (a) pyrene (as BAP ^a) ng/m ³	Benzen e (C ₆ H ₆) µg/m ³
04/12/2023	40.50	62.40	27.80	28.20	ND	ND	ND	ND	ND	ND	ND	ND
07/12/2023	41.90	61.20	29.40	30.40	ND	ND	ND	ND	ND	ND	ND	ND
11/12/2023	36.20	65.70	30.20	25.80	ND	ND	ND	ND	ND	ND	ND	ND
14/12/2023	46.20	59.20	28.40	27.40	ND	ND	ND	ND	ND	ND	ND	ND
18/12/2023	45.50	60.20	31.30	28.50	ND	ND	ND	ND	ND	ND	ND	ND
21/12/2023	41.80	65.20	28.00	26.60	ND	ND	ND	ND	ND	ND	ND	ND
26/12/2023	42.20	63.00	26.80	29.40	ND	ND	ND	ND	ND	ND	ND	ND
29/12/2023	43.70	66.80	30.90	31.60	ND	ND	ND	ND	ND	ND	ND	ND
Average	42.12	60.71	28.86	28.50	-	-	-	-	-	-	-	-
NAAQM Standards	80	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 63 CPEC Guidelines	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-8)	NLSOP /AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NLSOP /AAQ-13	NLSOP /AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

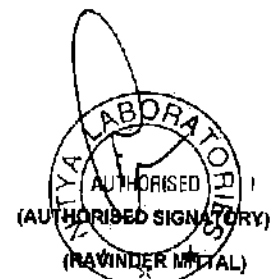
Remark:

*NAAQS: National Ambient Air Quality Standards, Schedule-VII, (Rule 3 (3B), (Part-II sec. 3(i)) 16.11.2009

ND-Not Detected, ^aArsenic-ND [DL- 0.5], ^bBAP-ND[DL- 0.5], ^cBenzen-ND[DL-0.5], ^dLead-ND[DL- 0.5], ^eNickel-ND[DL- 1.0], Sample Analyzed within Seven days from the date of sampling.



TC-6368



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5/42

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC636623000006479F, 6588F,6670F,6711F,6798F

6873F,6994F,7124F

Test Report Date:

08/01/2024

Sample Particulars

Nature of the Sample

Sampling Location

Method of Sampling

Monitoring Conducted By

Sampling Duration (Hrs.)

: Ambient Air Quality Monitoring

: Permude Village

: IS 5182 (Part 14)

: M/s Nitya Laboratories

: 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb ¹) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni ²) ng/m ³	Arsenic (as As ³) ng/m ³	Benzo (a) pyrene (as BAP ⁴) ng/m ³	Benzo (e) (C ₆ H ₆ ⁵) µg/m ³
04/12/2023	37.80	58.60	27.60	28.40	ND	ND	ND	ND	ND	ND	ND	ND
07/12/2023	39.20	60.00	26.80	28.90	ND	ND	ND	ND	ND	ND	ND	ND
11/12/2023	40.50	62.20	27.00	29.60	ND	ND	ND	ND	ND	ND	ND	ND
14/12/2023	39.90	64.40	28.40	30.60	ND	ND	ND	ND	ND	ND	ND	ND
16/12/2023	41.20	67.90	26.20	28.40	ND	ND	ND	ND	ND	ND	ND	ND
21/12/2023	42.20	66.60	29.40	28.60	ND	ND	ND	ND	ND	ND	ND	ND
28/12/2023	39.30	59.20	30.20	29.00	ND	ND	ND	ND	ND	ND	ND	ND
29/12/2023	40.40	60.80	31.20	31.80	ND	ND	ND	ND	ND	ND	ND	ND
Average	40.07	68.71	28.35	29.43	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 53 CFCB Guideline	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-5)	IS:5182 (P-9)	NL/SOP /AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ-13	NL/SOP/ AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

Remark:

*NAAQS: National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B), Part-II sec-3(9)] 18.11.2009

ND-Not Detected, *Arsenic-ND [DL- 0.5], *BAP-ND [DL- 0.5], *Benzene-ND [DL- 0.5], *Lead-ND [DL- 0.5], *Nickel-ND [DL- 1.0], Sample Analyzed within Seven days from the date of sampling.



TC-8366



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6/42

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 609, Karnataka, India

ULR No. : TC636623000006939F
Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : Ground Water
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : GW1-Narayana Guru Community Hall, Permude

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.65	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	450	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	180	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	130	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	100	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	59.80	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	ND	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	52	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	6.07	30	100	APHA 23 rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND[DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



(AUTHORISED SIGNATORY)
AUTHORISED
RAVINDER MITTAL

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7/42

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**

ULR No. : **TC636823000006939F**

Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 500, Karnataka, India

Test Report Date: **01/01/2024**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.14	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli	MPN/100ml	Absent	Absent	Absent	IS 1622
28	Total Coliform	MPN/100ml	Absent	Absent	Absent	IS 1622



(AUTHORISED SIGNATORY)
(RHYTHM BASSON*)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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8/42

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited

Test ReportNo.: 202312220113

Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 508, Karnataka, India

Test Report Date: 07/12/2023

Sample Particulars

Nature of the Sample : Ground Water
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : GW1-Narayana Guru Community Hall, Permude

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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9/42

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000006940F

Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : Ground Water
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : GW2-Gagtel Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.82	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	470	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	170	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	160	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	98	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	82.4	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	ND	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	46	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	13.38	30	100	APHA 23 rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND[DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC638623000006940F

Test Report Date: 01/01/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptabl e	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-69)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	ND	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-58)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E. coli [†]	MPN/100ml	Absent	Absent	Absent	IS 1622
28	Total Coliform [†]	MPN/100ml	Absent	Absent	Absent	IS 1622



TC-6386

(AUTHORISED SIGNATORY)
(RHYTHM BASSON*)

(AUTHORISED SIGNATORY)
(RAVINDER MITAL)

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Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 608, Karnataka, India

Test Report No.: 202312220114

Test Report Date: 07/12/2023

Sample Particulars

Nature of the Sample : Ground Water
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : GW2-Gagtel Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND (DL- 0.01)	0.003	No Relaxation	IS:3025 (P-27)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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12/42

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000006941F

Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : **Ground Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **25/12/2023**
Test Started On : **25/12/2023**
Test Completed On : **30/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **22/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **GW3-L&T New Labour Colony**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.89	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3026 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	440	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	130	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	120	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	70	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	42.60	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	0.42	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	40	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	7.29	30	100	APHA 23 rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND[DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



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(RAVINDER MITTAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC838823000006941F

Test Report Date: 01/01/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptabl e	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.39	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	Absent	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	Absent	Absent	Absent	IS 1622



TC-8388

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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14/42

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202312220115

Test Report Date: 07/12/2023

Sample Particulars

Nature of the Sample : Ground Water
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : GW3-L&T New Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)

(AUTHORISED SIGNATORY)
(RANINDER MITTAL)

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15/12/23

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000006942F

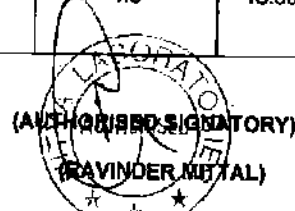
Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : **Ground Water**
Sample Quantity & Packaging : **2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **25/12/2023**
Test Started On : **25/12/2023**
Test Completed On : **30/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **22/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **GW4-Near MRPLAC ETP**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.22	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	490	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	170	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	140	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	76	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	44.60	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	0.20	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	38	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	18.22	30	100	APHA 23 rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-28)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**

ULR No. :

TC836623000006942F

Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report Date: 01/01/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.92	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E. coli*	MPN/100ml	Absent	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	Absent	Absent	Absent	IS 1622



TC-8366

(AUTHORISED SIGNATORY)
(RHYTHM BASSON*)

(AUTHORISED SIGNATORY)
(RAJINDER MITTAL)

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17/42

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202312220117

Test Report Date: 07/12/2023

Sample Particulars

Nature of the Sample : **Ground Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **25/12/2023**
Test Started On : **25/12/2023**
Test Completed On : **30/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **22/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **GW4-Near MRPLAC ETP**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)



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18/12/23

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000008943F

Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW1-Tenka Ekkar

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.78	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	480	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	150	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	130	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	72	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	55.40	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	0.33	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	35	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	15.18	30	100	APHA 23 rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-80)



(AUTHORISED SIGNATORY)
AUTHORISED
(RAVINDER MITTAL)

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19/12

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC836823000006943F

Test Report Date: 01/01/2024

Analysis Report

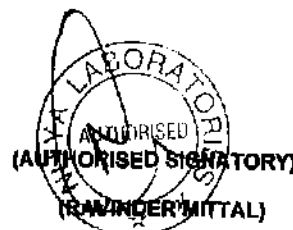
Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
18	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.59	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	221	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	345	Absent	Absent	IS 1622



TC-8368

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)



(RAVINDER MITTAL)

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20/42

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**

Test Report No.: **202312220118**

Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report Date: **07/12/2023**

Sample Particulars

Nature of the Sample : **Open Well**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **25/12/2023**
Test Started On : **25/12/2023**
Test Completed On : **30/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **22/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **OW1-Tenka Ekkar**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)

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(RAVINDER MITTAL)

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21/12/23

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000008944F

Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW2-Shantigudde Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.51	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23rd Ed.
5	Total Dissolved Solids	mg/l	430	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	180	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	170	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	74	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	68.90	200	400	APHA 23rd Ed.
10	Nitrates as NO ₃	mg/l	ND	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	58	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	8.50	30	100	APHA 23rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-28)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



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22/42

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC838623000006944F

Test Report Date: 01/01/2024

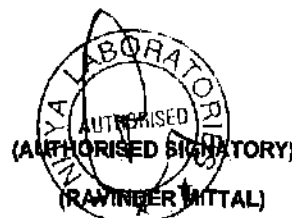
Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.84	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	109	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	212	Absent	Absent	IS 1622



TC-6386

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(RHYTHM BASSON*)



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23/42

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202312220119

Test Report Date: 07/12/2023

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW/2-Shantigudde Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND (DL- 0.01)	0.003	No Relaxation	IS:3025 (P-27)



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24/12

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Kamalaka, India

ULR No. : TC836623000006945F

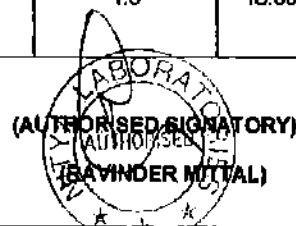
Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW3-Permude Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.27	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23rd Ed.
5	Total Dissolved Solids	mg/l	350	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	110	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	90	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	50	260	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	30.80	200	400	APHA 23rd Ed.
10	Nitrates as NO ₃	mg/l	0.14	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	28	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	9.72	30	100	APHA 23rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



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25/42

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000006945F

Test Report Date: 01/01/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.22	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	221	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	382	Absent	Absent	IS 1622



TC-6366

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(RHYTHM BASSON*)



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26/12

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202312220120

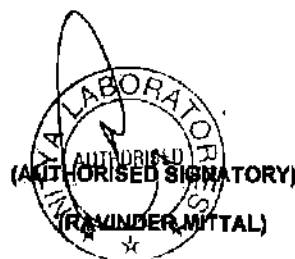
Test Report Date: 07/12/2023

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW3-Permude Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)



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27/12

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000006946F

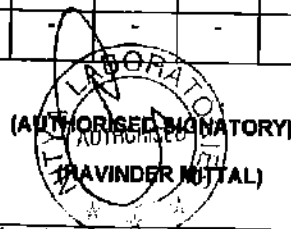
Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : **Surface Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **25/12/2023**
Test Started On : **25/12/2023**
Test Completed On : **30/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **22/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **SW1-Near MRPLAC Flare Area**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	pH	-	7.66	IS:3025 (P-11)	6.5-8.5				
2	Color	Hazen	<5	IS:3025 (P-4)	-	max 10	max 300	max 300	-
3	Specific Conductance	uS/cm	690	IS:3025 (P-14)	-	-	-	max 1000	max 2500
4	Temperature	°C	25.2	IS:3025 (P-9)	-	-	-	-	-
5	Turbidity	NTU	26.4	APHA 23 rd Ed.	-	-	-	-	-
6	Total Suspended Solids	mg/l	ND [DL- 5]	IS:3025 (P-17)	-	-	-	-	-
7	Oil & Grease	mg/l	ND [DL- 2]	IS:3025 (P-39)	-	-	-	-	-
8	Dissolved Oxygen as DO	mg/l	5.8	IS:3025 (P-38)	min. 6	min. 6	min. 4	min. 4	min. 3
9	BOD, 3 days at 27°C	mg/l	ND [DL- 2]	IS:3025 (P-44)	min. 2	min. 3	min. 3	-	-
10	COD	mg/l	ND [DL- 10]	IS:3025 (P-58)	-	-	-	-	-
11	Total Alkalinity as CaCO ₃	mg/l	60	IS:3025 (P-23)	-	-	-	-	-
12	Sodium as Na	mg/l	46	APHA 23 rd Ed.	-	-	-	-	-
13	Potassium as K	mg/l	4.70	APHA 23 rd Ed.	-	-	-	-	-
14	Arsenic as As	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.06	max 0.2	max 0.2	-	-
15	Boron as B	mg/l	0.10	IS:3025 (P-57)	-	-	-	-	-
16	Total Hardness	mg/l	140	IS:3025 (P-21)	-	-	-	-	-



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29/42

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**

ULR No. :

TC636623000006946F

Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report Date: 01/01/2024

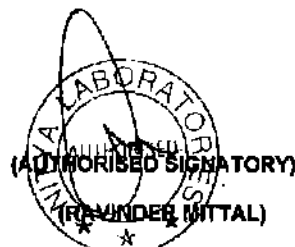
Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
17	Chlorides as Cl	mg/l	56	IS:3025(P-32)	max 250	-	max 800	-	max 600
18	Total Dissolved Solids	mg/l	370	IS:3025 (P-16)	max 500	-	max 1500	-	max 2100
19	Sulphate as SO ₄	mg/l	37.70	IS:3025 (P-24)	max 400	-	max 400	-	max 1000
20	Fluoride as F	mg/l	ND [DL- 0.1]	IS:3025 (P-60)	max 1.5	max 1.5	max 1.5	-	-
21	Nitrates as NO ₃	mg/l	ND [DL- 0.1]	IS:3025 (P-34)	max 20	-	max 50	-	-
22	Iron (as Fe)	mg/l	0.19	APHA 23 rd Ed.	max 0.3	-	-	max 0.5	-
23	Chromium as Cr	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
24	Cadmium as Cd	mg/l	ND [DL- 0.001]	APHA 23 rd Ed.	-	-	-	-	-
25	Copper	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
26	Lead as Pb	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.1	-	max 0.1	-	-
27	Zinc as Zn	mg/l	0.20	APHA 23 rd Ed.	-	-	-	-	-
28	Calcium as Ca	mg/l	40	APHA 23 rd Ed.	-	-	-	-	-
29	Magnesium as Mg	mg/l	9.72	APHA 23 rd Ed.	-	-	-	-	-
30	E.coli [†]	MPN/100ml	106	IS 1622	max 50	max 500	max 500	-	-
31	Total Coliform [†]	MPN/100ml	172	IS 1622	max 50	max 500	max 500	-	-

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TC-6366



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202312220121

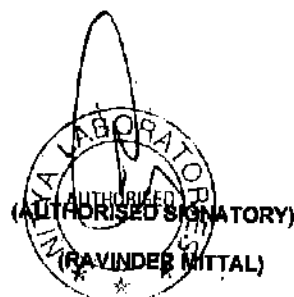
Test Report Date: 07/12/2023

Sample Particulars

Nature of the Sample : **Surface Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **25/12/2023**
Test Started On : **25/12/2023**
Test Completed On : **30/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **22/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **SW1-Near MRPLAC Flare Area**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	Salinity	ppt	18	APHA 23 rd Ed.	-	-	-	-	-
2	Total Nitrogen	mg/l	0.88	IS:3025 (P-34)	-	-	-	-	-
3	Phosphate	mg/l	0.68	IS:3025 (P-31)	-	-	-	-	-


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(RAVINDEE MITTAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000006947F

Test Report Date: 01/01/2024

Sample Particulars

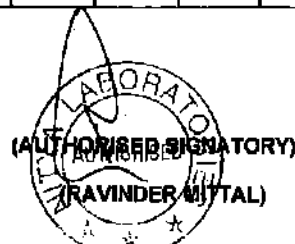
Nature of the Sample : **Surface Water**
Sample Quantity & Packaging : 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : SW2-Near MRPLAC Near Central Warehouse

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	pH	-	7.47	IS:3026 (P-11)	6.5-8.5				
2	Color	Hazen	<5	IS:3025 (P-4)	-	max 10	max 300	max 300	-
3	Specific Conductance	uS/cm	550	IS:3025 (P-14)	-	-	-	max 1000	max 2500
4	Temperature	°C	24.9	IS:3025 (P-8)	-	-	-	-	-
5	Turbidity	NTU	31	APHA 23 rd Ed.	-	-	-	-	-
6	Total Suspended Solids	mg/l	ND [DL- 5]	IS:3025 (P-17)	-	-	-	-	-
7	Oil & Grease	mg/l	ND [DL- 2]	IS:3025 (P-39)	-	-	-	-	-
8	Dissolved Oxygen as DO	mg/l	5.4	IS:3025 (P-38)	min. 6	min. 5	min. 4	min. 4	min. 3
9	BOD, 3 days at 27°C	mg/l	ND [DL- 2]	IS:3025 (P-44)	min. 2	min. 3	min. 3	-	-
10	COD	mg/l	ND [DL- 10]	IS:3025 (P-58)	-	-	-	-	-
11	Total Alkalinity as CaCO ₃	mg/l	140	IS:3025 (P-23)	-	-	-	-	-
12	Sodium as Na	mg/l	50	APHA 23 rd Ed.	-	-	-	-	-
13	Potassium as K	mg/l	5.2	APHA 23 rd Ed.	-	-	-	-	-
14	Arsenic as As	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.05	max 0.2	max 0.2	-	-
15	Boron as B	mg/l	ND [DL- 0.1]	IS:3025 (P-57)	-	-	-	-	-
16	Total Hardness	mg/l	130	IS:3025 (P-21)	-	-	-	-	-



TC-6366



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636623000006947F

Test Report Date: 01/01/2024

Analysis Report

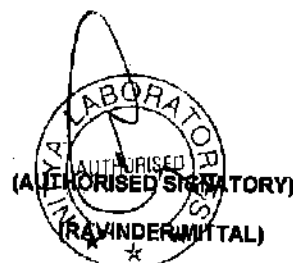
Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
17	Chlorides as Cl	mg/l	28	IS:3025(P-32)	max 250	-	max 600	-	max 600
18	Total Dissolved Solids	mg/l	340	IS:3025 (P-16)	max 500	-	max 1500	-	max 2100
19	Sulphate as SO ₄	mg/l	42.10	IS:3025 (P-24)	max 400	-	max 400	-	max 1000
20	Fluoride as F	mg/l	ND [DL- 0.1]	IS:3025 (P-60)	max 1.5	max 1.5	max 1.5	-	-
21	Nitrates as NO ₃	mg/l	ND [DL- 0.1]	IS:3025 (P-34)	max 20	-	max 50	-	-
22	Iron (as Fe)	mg/l	0.29	APHA 23 rd Ed.	max 0.3	-	-	max 0.5	-
23	Chromium as Cr	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
24	Cadmium as Cd	mg/l	ND [DL- 0.001]	APHA 23 rd Ed.	-	-	-	-	-
25	Copper	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
26	Lead as Pb	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.1	-	max 0.1	-	-
27	Zinc as Zn	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
28	Calcium as Ca	mg/l	36	APHA 23 rd Ed.	-	-	-	-	-
29	Magnesium as Mg	mg/l	9.72	APHA 23 rd Ed.	-	-	-	-	-
30	E.coli*	MPN/100ml	343	IS 1622	max 50	max 500	max 500	-	-
31	Total Coliform*	MPN/100ml	426	IS 1622	max 50	max 500	max 500	-	-

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Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202312220121

Test Report Date: 07/12/2023

Sample Particulars

Nature of the Sample : Surface Water
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 25/12/2023
Test Started On : 25/12/2023
Test Completed On : 30/12/2023
Method of Sampling : SOP/BD-3
Date of Sampling : 22/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : SW2-Near MRPLAC Near Central Warehouse

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	Salinity	ppt	22	APHA 23 rd Ed.	-	-	-	-	-
2	Total Nitrogen	mg/l	1.06	IS:3025 (P-34)	-	-	-	-	-
3	Phosphate	mg/l	0.80	IS:3025 (P-31)	-	-	-	-	-



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Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

ULR No. : TC838623000006626F-6627F

6641F-6642F

Test Report Date: 12/12/2023

Sample Particulars

Nature of the Sample : Ambient Noise
Method of Sampling : IS 9989
Instrument Used : Sound Level Meter
Place of Monitoring : MRPLAC -North, South, East, West

Analysis Report

Sr. No.	Date of Sampling	Location	Test Result dB(A) Day Time	Test Result dB(A) Night Time	Test Method
Permissible Limit in *dB(A) Leq for Industrial Area			75 dB(A)	70 dB(A)	
1	07/12/2023	MRPLAC -North	62.5	54.3	IS 9989
2	08/12/2023	MRPLAC -South	58.9	55.4	IS 9989
3	09/12/2023	MRPLAC -East	61.2	51.9	IS 9989
4	09/12/2023	MRPLAC -West	57.8	50.7	IS 9989

Remark:

*dB (A) Leq denotes the time weighted average of the level of sound in decibel on scale 'A' which is relative to human hearing.
CPCB = Central Pollution Control Board

Note: The Noise Ambient Air Quality Standards are given for reference

Area Code	Category of Area	Limits dB (A) Leq	
		Day Time (6AM - 10PM)	Night Time (10PM - 06AM)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40



TC-6368



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Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC836823000008642F

Test Report Date: 15/12/2023

Sample Particulars

Nature of the Sample : Treated Effluent
Sample Quantity & Packaging : 2 L HDPE Can+150 ml Sterile Container
Sample Received at Lab : 08/12/2023
Test Started On : 08/12/2023
Test Completed On : 14/12/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 05/12/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : Guard Pond Pump Discharge (ETP Treated Effluent)

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Colour	Hazen	ND [DL-1]	All efforts should be made to remove colour and unpleasant odour as far as practicable	IS:3025 (P-4)
2	Odour	-	Agreeable		IS:3025 (P-6)
3	pH	...	7.52	6.0-8.5	IS:3025 (P-11)
4	Total Suspended Solids (TSS)	mg/L	46	100	IS:3025 (P-17)
5	Temperature	°C	24.6	Shall not exceed 5 degree above the receiving water temp.	IS:3025 (P-9)
6	Oil & Grease (O&G)	mg/L	3	5	IS:3025 (P-38)
7	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	18	30	IS:3025 (P-44)
8	COD	mg/L	90	125	IS:3025 (P-58)
9	Ammonical Nitrogen	mg/L	ND [DL-0.1]	15	IS:3025 (P-34)
10	Total Kjeldhal Nitrogen	mg/L	ND [DL-0.1]	40	IS:3025 (P-34)
11	Lead as Pb	mg/L	ND [DL-0.01]	2	APHA 23 rd Ed.
12	Chromium Hexavalent as Cr ⁺⁶	mg/L	ND [DL-0.1]	0.1	APHA 23 rd Ed.

Remark:
ND-Not Detected



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB**Test Report**Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.: TC638823000006542F

Test Report Date: 15/12/2023

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
13	Chromium as Cr	mg/L	ND [DL-0.05]	2.0	APHA 23 rd Ed.
14	Copper as Cu	mg/L	ND [DL-0.25]	1.0	APHA 23 rd Ed.
15	Zinc as Zn	mg/L	ND [DL-0.5]	5.0	APHA 23 rd Ed.
16	Nickel as Ni	mg/L	ND [DL-0.1]	1.0	APHA 23 rd Ed.
17	Fluoride as F	mg/L	ND [DL-0.02]	1.0	IS:3025 (P-80)
18	Sulphide as S ²⁻	mg/L	ND [DL-0.05]	2.0	IS:3025 (P-29)
19	Arsenic as As	mg/L	ND [DL-0.01]	0.2	APHA 23 rd Ed.
20	Mercury as Hg	mg/L	ND [DL-0.05]	0.01	APHA 23 rd Ed.
21	Cadmium as Cd	mg/L	ND [DL-0.02]	0.1	APHA 23 rd Ed.
22	Selenium as Se	mg/L	ND [DL-0.1]	0.05	APHA 23 rd Ed.
23	Phenolic Compounds(C ₆ H ₅ OH)	mg/L	ND [DL-1]	0.35	IS:3025 (P-43)
24	Iron as Fe	mg/L	0.16	3	APHA 23 rd Ed.
25	Manganese as Mn	mg/L	ND [DL-0.1]	2	APHA 23 rd Ed.
26	Residual Free Chlorine	mg/L	ND [DL-0.2]	1	IS:3025 (P-26)
27	Bio Assay Test	-	9:1	90% survival of fish after 96 hours in 100% effluent	IS:8582 (P-1)

Remark:

ND-Not Detected



TC-6388



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No. : 202311150113

Test Report Date: 15/12/2023

Sample Particulars

Nature of the Sample : **Treated Effluent**
Sample Quantity & Packaging : **2 L HDPE Can+150 ml Sterile Container**
Sample Received at Lab : **08/12/2023**
Test Started On : **08/12/2023**
Test Completed On : **14/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **05/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **Guard Pond Pump Discharge (ETP Treated Effluent)**

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Cyanide as CN	mg/L	ND [DL-0.01]	0.2	IS:3025 (P-27)
2	Total Phosphorous as P	mg/L	1.04	3	IS:3025 (P-31)
3	Nitrate	mg/L	1.18	20	IS:3025 (P-34)
4	Particle Size of Suspended Solids	mg/L	Passed	Passed through 850 micron	APHA 23rd Ed.
5	Vanadium as V	mg/L	ND [DL-0.01]	0.1	IS:3025 (P-56)
6	Benzene	mg/L	ND [DL-0.0001]	0.1	USEPA-8270C
7	Benzo (a) pyrene	mg/L	ND [DL-0.0001]	0.2	USEPA-8270C

Remark:
ND-Not Detected

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Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.:

TC836823000006951F

Test Report Date:

01/01/2024

Sample Particulars

Nature of the Sample : **Treated Effluent**
Sample Quantity & Packaging : **2 L HDPE Can +150 ml Sterile Container**
Sample Received at Lab : **25/12/2023**
Test Started On : **25/12/2023**
Test Completed On : **30/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **22/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **Guard Pond Pump Discharge (ETP Treated Effluent)**

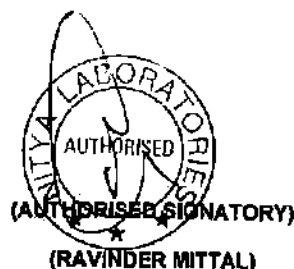
Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Colour	Hazen	ND [DL-1]	All efforts should be made to remove colour and unpleasant odour as far as practicable	IS:3025 (P-4)
2	Odour	-	Agreeable		IS:3025 (P-6)
3	pH	...	7.75	6.0-8.5	IS:3025 (P-11)
4	Total Suspended Solids (TSS)	mg/L	26	100	IS:3025 (P-17)
5	Temperature	°C	25.4	Shall not exceed 5 degrees above the receiving water temp.	IS:3025 (P-9)
6	Oil & Grease (O&G)	mg/L	ND	5	IS:3025 (P-39)
7	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	21	30	IS:3025 (P-44)
8	COD	mg/L	100	125	IS:3025 (P-58)
9	Ammonical Nitrogen	mg/L	ND [DL-0.1]	15	IS:3025 (P-34)
10	Total Kjeldhal Nitrogen	mg/L	ND [DL-0.1]	40	IS:3025 (P-34)
11	Lead as Pb	mg/L	ND [DL-0.01]	2	APHA 23 rd Ed.
12	Chromium Hexavalent as Cr ⁶⁺	mg/L	ND [DL-0.1]	0.1	APHA 23 rd Ed.

Remark:
ND-Not Detected



TC-8368



(RAVINDER MITTAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.: TC638623000006951F

Test Report Date: 01/01/2024

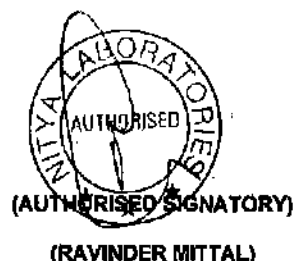
Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
13	Chromium as Cr	mg/L	ND [DL-0.05]	2.0	APHA 23 rd Ed.
14	Copper as Cu	mg/L	ND [DL-0.25]	1.0	APHA 23 rd Ed.
15	Zinc as Zn	mg/L	ND [DL-0.5]	6.0	APHA 23 rd Ed.
16	Nickel as Ni	mg/L	ND [DL-0.1]	1.0	APHA 23 rd Ed.
17	Fluoride as F	mg/L	ND [DL-0.02]	1.0	IS:3025 (P-60)
18	Sulphide as S ²⁻	mg/L	ND [DL-0.05]	2.0	IS:3025 (P-29)
19	Arsenic as As	mg/L	ND [DL-0.01]	0.2	APHA 23 rd Ed.
20	Mercury as Hg	mg/L	ND [DL-0.05]	0.01	APHA 23 rd Ed.
21	Cadmium as Cd	mg/L	ND [DL-0.02]	0.1	APHA 23 rd Ed.
22	Selenium as Se	mg/L	ND [DL-0.1]	0.05	APHA 23 rd Ed.
23	Phenolic Compounds(C ₆ H ₅ OH)	mg/L	ND [DL-1]	0.35	IS:3025 (P-43)
24	Iron as Fe	mg/L	0.46	3	APHA 23 rd Ed.
25	Manganese as Mn	mg/L	ND [DL-0.1]	2	APHA 23 rd Ed.
26	Residual Free Chlorine	mg/L	ND [DL-0.2]	1	IS:3025 (P-26)
27	Bio Assay Test	-	9:1	90% survival of fish after 96 hours in 100% effluent	IS:6582 (P-1)

Remark:
ND-Not Detected



TC-6386



(RAVINDER MITTAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No. : 202312220112

Test Report Date: 01/01/2024

Sample Particulars

Nature of the Sample : **Treated Effluent**
Sample Quantity & Packaging : **2 L HDPE Can +150 ml Sterile Container**
Sample Received at Lab : **25/12/2023**
Test Started On : **25/12/2023**
Test Completed On : **30/12/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **22/12/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **Guard Pond Pump Discharge (ETP Treated Effluent)**

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Cyanide as CN	mg/L	ND [DL-0.01]	0.2	IS:3025 (P-27)
2	Total Phosphorous as P	mg/L	ND [DL-0.02]	3	IS:3025 (P-31)
3	Nitrate	mg/L	0.85	20	IS:3025 (P-34)
4	Particle Size of Suspended Solids	mg/L	Passed	Passed through 850 microns	APHA 23 rd Ed.
5	Vanadium as V	mg/L	ND [DL-0.01]	0.1	IS:3025 (P-56)
6	Benzene	mg/L	ND [DL-0.0001]	0.1	USEPA-8270C
7	Benzo (a) pyrene	mg/L	ND [DL-0.0001]	0.2	USEPA-8270C

Remark:
ND-Not Detected

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ANNEXURE - E

Returns Regarding Water Consumed during the Month of December, 2023

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning of the first day of the calendar month under report	Reading at the end of the last day of the calendar month under report	Quantity of Water Consumed in Kilo Liters	If the meter was out of order, the monthly average consumption of water for the previous 3 months of the working period	Quantity of water qualifying for rebate according to the assessee	Remarks
M/s Mangalore Refinery and Petrochemicals Limited, Mangalore Special Economic Zone, Perumde, Mangalore - 574 509	Industrial cooling, spraying in mine pits or boiler feed						
	Cooling Water	0	21422	21422			
	Boiler Feed Water	0	67016	67016			
	Fire Water						
	Domestic purpose	0	60008	60008			
	Drinking Water & Sanitation	0	8089	8089			
	Processing whereby water gets polluted and the pollutants are easily bio-degradable						
Service Water		0	3756	3756			
Total Consumption				1,60,291			

12/1/22

Annexure-F

Mangalore Refinery and Petrochemicals Limited

Production Details of Aromatic Complex for December, 2023

Feed Processed – 1,09,325 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	-
2	Benzene (Co product)	12959
3	Reformate (Intermediate)	104106



मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड
MANGALORE REFINERY AND PETROCHEMICALS LIMITED

अनुसूची 'अ' के अंतर्गत भारत सरकार का उद्यम, SCHEDULE 'A' GOVT. OF INDIA ENTERPRISE.
(ऑयल एण्ड नेचुरल गैस कॉर्पोरेशन लिमिटेड की सहायक कंपनी, A SUBSIDIARY OF OIL AND NATURAL GAS CORPORATION LIMITED)
आई.एस.ओ. 9001, 14001 एवं 50001 प्रमाणित कंपनी, AN ISO 9001, 14001 AND 50001 CERTIFIED COMPANY.
सीआईएन/CIN : L23209KA1988GOJ008959 / वेबसाइट Website : www.mrpl.co.in

L/MS/ARC/KSPCB/7456
14th March, 2024

The Environmental Officer
Regional Office
KSPCB
Baikampady, Mangalore-11

Dear Sir,

विषय Sub: Submission of Environmental Monitoring Report for the Month of January, 2024, for Aromatic Complex of MRPL

Ref: KSPCB Combined Consent Order No. AW-330681 dated 1st April, 2022

With respect to the above subject; we are herewith submitting the following Environmental Monitoring Reports and Production Report for Aromatic Complex of MRPL for the Month of January, 2024 respectively, enclosed herewith.

- 1) Ambient Air Quality Monitoring at 5 different locations in and around Aromatic Complex, enclosed as Annexure- A
- 2) Water Analysis Reports at 9 different locations in and around Aromatic Complex, as Annexure-B
- 3) Noise Level Monitoring Report at Aromatic Complex, as Annexure-C
- 4) Treated Effluent Analysis Report, Annexure-D
- 5) Returns Regarding Water Consumed for the Month of January, 2024, as Annexure-E
- 6) Production Report as Annexure-F

धन्यवाद Thanking You,

M S Sudarsan
Chief General Manager (Health, Safety & Environment)

CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC83862400000007F, 125F, 161F, 286F, 374F

439F, 614F, 729F, 865F

Test Report Date:

09/02/2024

Sample Particulars

Nature of the Sample

: Ambient Air Quality Monitoring

Sampling Location

: MRPLAC East Side

Method of Sampling

: IS 5182 (Part 14)

Monitoring Conducted By

: M/s Nitya Laboratories

Sampling Duration (Hrs.)

: 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As) ng/m ³	Benzo (a) pyrene (as BAP) ng/m ³	Benzene (C ₆ H ₆) µg/m ³
01/01/2024	33.28	63.30	27.50	32.60	ND	ND	ND	ND	ND	ND	ND	ND
05/01/2024	31.28	54.50	26.60	29.90	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	34.60	60.90	21.30	30.40	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	32.60	55.70	22.60	27.70	ND	ND	ND	ND	ND	ND	ND	ND
15/01/2024	34.10	61.20	21.10	32.30	ND	ND	ND	ND	ND	ND	ND	ND
18/01/2024	31.60	50.10	28.90	27.50	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	32.90	49.90	22.30	33.30	ND	ND	ND	ND	ND	ND	ND	ND
25/01/2024	35.40	61.40	21.80	25.40	ND	ND	ND	ND	ND	ND	ND	ND
Average	33.22	62.13	23.98	29.69	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	8
Test Method	40 CFR Appendix L Part 53 CPCB Guidelines	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-5)	IS:5182 (P-9)	NLSD PAAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NLSD PAAQ-13	NLSD PAAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

Remark:

*NAAQS National Ambient Air Quality Standards; Schedule-VI, Rule 3 (38), Part-II-sec-3(i) 18.11.2008

ND=Not Detected, *Arsenic-ND [DL- 0.6], *BAP-ND[DL- 0.6], *Benzene-ND[DL- 0.6], *Lead-ND[DL- 0.6], *Nickel-ND[DL- 1.0], Sample Analyzed within Seven days from the date of sampling



TC-8386



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC63662400000008F, 126F, 162F, 287F, 376F

440F, 615F, 730F, 886F

Test Report Date: 09/02/2024

Sample Particulars

Nature of the Sample : Ambient Air Quality Monitoring
Sampling Location : MRPLAC West Side
Method of Sampling : IS 5182 (Part 14)
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Duration (Hrs.) : 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As) ng/m ³	Benzo (a) pyrene (as BAP) ng/m ³	Benzo (e) (C ₆ H ₆) µg/m ³
01/01/2024	34.20	55.80	23.40	26.90	ND	ND	ND	ND	ND	ND	ND	ND
05/01/2024	37.50	64.30	28.50	29.50	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	36.50	53.60	33.10	24.80	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	38.20	52.80	34.40	29.80	ND	ND	ND	ND	ND	ND	ND	ND
16/01/2024	39.50	53.80	28.10	30.80	ND	ND	ND	ND	ND	ND	ND	ND
18/01/2024	35.30	54.40	24.50	33.30	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	32.40	51.80	22.10	37.40	ND	ND	ND	ND	ND	ND	ND	ND
28/01/2024	35.10	50.10	35.50	28.80	ND	ND	ND	ND	ND	ND	ND	ND
Average	38.09	53.39	28.58	30.11	-	-	-	-	-	-	-	-
NAAQM Standards	50	100	80	80	100	1	2	400	20	5	1	5
Test Method	40CFR Appendix L Part 53 CPCS Guidelines	IS:6182 (P-23)	IS:6182 (P-2)	IS:6182 (P-8)	IS:6182 (P-8)	NL/ISO P/AAQ-11	IS:6182 (P-10)	Method of Air Sampling & Analysis	NL/ISO P/AAQ-13	NL/ISO P/AAQ-12	IS:6182 (P-12)	IS:6182 (P-11)

Remark:

*NAAQS: National Ambient Air Quality Standards; Schedule-VII, (Rule 3 (2B)), (Part-II sec-3(i)) 19.11.2009

ND-Not Detected, *Arsenic-ND (DL- 0.5), *BAP-ND (DL- 0.5), *Benzo-ND (DL- 0.5), *Lead-ND (DL- 0.5), *Nickel-ND (DL- 1.0), Sample Analyzed within Seven days from the date of sampling



TC-6366



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3/42f

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromelic Complex, Mangalore SEZ, Pernode Village
Mangalore-574 506, Karnataka, India

ULR No. :

TC63882400000008F, 127F, 163F, 288F, 378F

Test Report Date:

441F, 816F, 731F, 867F
09/02/2024

Sample Particulars

Nature of the Sample

Sampling Location

Method of Sampling

Monitoring Conducted By

Sampling Duration (Hrs.)

: Ambient Air Quality Monitoring
: Shanigudde
: IS 5182 (Part 14)
: M/s Nitya Laboratories
: 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As) ng/m ³	Benzo (a) pyrene (as BAP) ng/m ³	Benzen e (C ₆ H ₆) µg/m ³
01/01/2024	37.50	54.10	31.40	35.80	ND	ND	ND	ND	ND	ND	ND	ND
06/01/2024	34.20	55.80	28.80	31.50	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	35.60	57.70	21.40	30.90	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	38.30	58.40	32.40	28.40	ND	ND	ND	ND	ND	ND	ND	ND
15/01/2024	38.20	56.20	31.50	27.80	ND	ND	ND	ND	ND	ND	ND	ND
18/01/2024	38.10	58.10	28.60	33.50	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	32.30	53.40	29.40	30.10	ND	ND	ND	ND	ND	ND	ND	ND
25/01/2024	33.40	62.90	32.50	33.60	ND	ND	ND	ND	ND	ND	ND	ND
Average	38.31	56.80	28.59	31.48	-	-	-	-	-	-	-	-
NAAQM Standards	80	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 83 CFCB Guidelines	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NLSOP /AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NLSO PIAAQ-13	NLSOP/AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

Remark:

*NAAQS: National Ambient Air Quality Standards; Schedule-VI, [Rule 3 (3B)], [Part-II-sec-3(a)] 18.11.2009
ND-Not Detected, *Arsenic-ND [DL-0.5], *BAP-ND[DL-0.5], *Benzen-ND[DL-0.5], *Lead-ND[DL-0.5], *Nickel-ND[DL-1.0], Sample Analyzed within Seven days from the date of sampling



NOTE: The laboratory accepts the responsibility for content of report. The results contained in this test report related only to the sample tested. Test report shall not be reproduced except in full without the written approval of this organization. Samples will be destroyed after 90 days from the date of issue of test certificate unless otherwise specified. Any certificate about this report should be communicated in writing within 7 days of issue of this report. Total liability of Nitya Laboratories is limited to the amount paid only.
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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 508, Karnataka, India

ULR No. :

TC63662400000010F, 126F, 164F, 289F, 377F

442F, 517F, 732F, 868F

Test Report Date:

09/02/2024

Sample Particulars

Nature of the Sample : Ambient Air Quality Monitoring
Sampling Location : TenkaEkkar
Method of Sampling : IS 5182 (Part 14)
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Duration (Hrs.) : 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM10) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (as SO ₂) $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (as NO ₂) $\mu\text{g}/\text{m}^3$	Ozone (as O ₃) $\mu\text{g}/\text{m}^3$	Lead (as Pb) $\mu\text{g}/\text{m}^3$	Carbon Monoxide (as CO) mg/m^3	Ammonia (as NH ₃) $\mu\text{g}/\text{m}^3$	Nickel (as Ni) ng/m^3	Arsenic (as As) ng/m^3	Benzo (a) pyrene (as BAP) ng/m^3	Benzen e (C ₆ H ₆) $\mu\text{g}/\text{m}^3$
01/01/2024	37.30	57.70	24.40	25.90	ND	ND	ND	ND	ND	ND	ND	ND
05/01/2024	38.60	56.20	26.10	27.80	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	32.40	59.80	27.50	23.20	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	43.80	54.40	23.20	25.20	ND	ND	ND	ND	ND	ND	ND	ND
15/01/2024	42.40	55.60	28.40	26.10	ND	ND	ND	ND	ND	ND	ND	ND
18/01/2024	38.30	50.40	26.50	24.90	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	39.10	58.50	23.20	26.60	ND	ND	ND	ND	ND	ND	ND	ND
25/01/2024	40.60	53.60	27.40	28.80	ND	ND	ND	ND	ND	ND	ND	ND
Average	39.84	55.78	25.71	26.08	-	-	-	-	-	-	-	-
NAAQM Standards	50	100	80	80	100	1	2	400	20	8	1	6
Test Method	400FR Appendix 1, Part 53 CFCB Guidelines	IS:5182 (P-23)	IS:5182 (P-3)	IS:5182 (P-6)	IS:5182 (P-8)	NLSOP (AAQ-11)	IS:5182 (P-10)	Method of Air Sampling & Analysis	NLSOP/AAQ-13	NLSOP/AAQ-12	IS:5182 (P-12)	IS:5182 (P-14)

Remarks:

*NAAQS: National Ambient Air Quality Standards, Schedule-VII, (Rule 3 (5B)), (Part-9 sec.-200) 15.11.2009

ND-Not Detected, *Arsenic-ND (DL-0.5), *BAP-ND (DL-0.5), *Benzenes-ND (DL-0.5), *Lead-ND (DL-0.5), *Nickel-ND (DL-1.0). Sample Analyzed within Seven days from the date of sampling.



TC-6366



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5/42

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC83862400000011F, 129F, 165F, 280F, 376F

Test Report Date:

443F, 618F, 733F, 869F
09/02/2024

Sample Particulars

Nature of the Sample

Sampling Location

Method of Sampling

Monitoring Conducted By

Sampling Duration (Hrs.)

: **Ambient Air Quality Monitoring**

Permude Village

: IS 5182 (Part 14)

M/s Nitya Laboratories

: 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As) ng/m ³	Benzo (a) pyrene (as BAP) ng/m ³	Benzen (C6H6) µg/m ³
01/01/2024	34.90	64.20	26.40	28.50	ND	ND	ND	ND	ND	ND	ND	ND
05/01/2024	36.10	66.10	23.80	27.10	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	37.50	67.80	24.60	28.90	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	36.30	59.10	26.10	28.40	ND	ND	ND	ND	ND	ND	ND	ND
15/01/2024	38.40	53.90	23.30	26.60	ND	ND	ND	ND	ND	ND	ND	ND
18/01/2024	39.70	52.50	26.80	26.70	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	38.30	55.50	27.40	28.40	ND	ND	ND	ND	ND	ND	ND	ND
25/01/2024	37.40	66.80	28.80	29.80	ND	ND	ND	ND	ND	ND	ND	ND
Average	37.00	64.58	25.83	27.33	-	-	-	ND	ND	ND	ND	ND
NAAQM Standards	60	100	80	80	100	1	2	400	20	-	-	-
Test Method	480FR Appendix L Part 33 CPCB Guidelines	IS:6182 (P-23)	IS:6182 (P-2)	IS:6182 (P-6)	IS:6182 (P-8)	NL/80P/AAQ-11	IS:6182 (P-10)	Method of Air Sampling & Analysis	NL/80P/AAQ-13	NL/80P/AAQ-12	IS:6182 (P-12)	IS:6182 (P-11)

Remarks: *NAAQS National Ambient Air Quality Standards; Schedule-VII, (Rule 3 (3B)), (Part-II-sec.-3(i)) (6.11.2000)
ND-Not Detected *Arsenic-ND IDL-5 µg/m³ (P-11) (6.11.2000)

Remarks:

*NAADS National Ambient Air Quality Standards: Schedule-VII, (Rule 3 (SB)). (Part-I)-Sec.-3(5) 18.11.2009
ND-Not Detected *Ararato ND (DL-0 6). *BAP, NDIX-0 51

ND=Not Detected ¹Arsenic-ND [DL - 0.6] ²BAP-ND [DL - 0.5] ³Benzene-ND [DL - 0.6] ⁴Lead-ND [DL - 0.5] ⁵Nickel-ND [DL - 1.0]. Sample Analyzed within Seven days from the date of sampling.



TC-6358

[illegible]

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6/42

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC836624000000672F

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample : **Ground Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **27/01/2024**
Test Started On : **27/01/2024**
Test Completed On : **03/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **20/01/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **GW1-Narayana Guru Community Hall, Permude**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.53	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	420	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	140	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	120	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	88	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	52.30	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	ND	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	48	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	4.86	30	100	APHA 23 rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND[DL- 0.2]	0.2	1	IS:3025 (P-28)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-67)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



TC-8366



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7/42

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 609, Karnataka, India

Test Report No.: 202401230113

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample	: Ground Water
Sample Quantity & Packaging	: 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab	: 27/01/2024
Test Started On	: 27/01/2024
Test Completed On	: 03/02/2024
Method of Sampling	: SOP/B/D-3
Date of Sampling	: 20/01/2024
Monitoring Conducted By	: M/s Nitya Laboratories
Sampling Location	: GW1-Narayana Guni Community Hall, Permude

Analysis Report

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)



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CORPORATE OFFICE & CENTRAL LABORATORIES :-

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9/42

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernade Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC83662400000673F

Test Report Date: 05/02/2024

Sample Particulars
Nature of the Sample
Sample Quantity & Packaging
Sample Received at Lab
Test Started On
Test Completed On
Method of Sampling
Date of Sampling
Monitoring Conducted By
Sampling Location

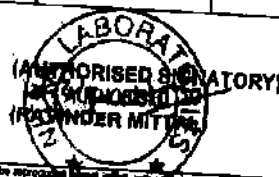
Ground Water
2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
27/01/2024
27/01/2024
09/02/2024
SOP/B/D-3
20/01/2024
M/s Nitya Laboratories
GW2-Gagtel Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH					
2	Color	Hazen	7.71	6.5-8.5	6.5-8.5	IS:3025 (P-11)
3	Odour		<5	5	15	IS:3025 (P-4)
4	Turbidity	NTU	Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
5	Total Dissolved Solids	mg/l	<1	1	5	APHA 23 rd Ed.
6	Total Hardness as (CaCO ₃)	mg/l	410	500	2000	IS:3025 (P-18)
7	Total Alkalinity as CaCO ₃	mg/l	150	200	600	IS:3025 (P-21)
8	Chlorides as Cl	mg/l	140	200	600	IS:3025 (P-23)
9	Sulphate as SO ₄	mg/l	80	250	1000	IS:3025(P-32)
10	Nitrates as NO ₃	mg/l	76.20	200	400	APHA 23 rd Ed.
11	Calcium as Ca	mg/l	ND	45	No Relaxation	IS:3025 (P-34)
12	Magnesium as Mg	mg/l	40	75	200	IS:3025 (P-40)
13	Aluminium as Al	mg/l	12.15	30	100	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
15	Boron as B	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
16	Fluoride as F	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-67)
					1.5	IS:3025 (P-60)



TC-6368



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC836824000000673F
Test Report Date: 05/02/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	ND	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E. coli*	MPN/100ml	Absent	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	Absent	Absent	Absent	IS 1622



(AUTHORISED SIGNATORY)

RHYTHM BASSON



(AUTHORISED SIGNATORY)

(RA) UNDER HETTA

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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202401230114

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample : Ground Water
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 27/01/2024
Test Started On : 27/01/2024
Test Completed On : 03/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/01/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : GW2-Gagtal Labour Colony
Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10800 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND (DL- 0.01)	0.003	No Relaxation	IS:3025 (P-27)



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Test Report

Issued To: M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.: TC638624000000674F
Test Report Date: 05/02/2024

Sample Particulars

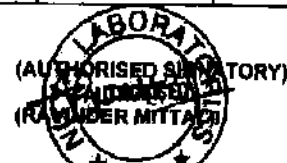
Nature of the Sample : Ground Water
Sample Quantity & Packaging : 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 27/01/2024
Test Started On : 27/01/2024
Test Completed On : 03/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/01/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : GWS-L&T New Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.83	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23rd Ed.
5	Total Dissolved Solids	mg/l	480	500	2000	IS:3025 (P-16)
6	Total Hardness as CaCO ₃	mg/l	160	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	180	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	88	250	1000	IS:3025 (P-32)
9	Sulphate as SO ₄	mg/l	54.40	200	400	APHA 23rd Ed.
10	Nitrates as NO ₃	mg/l	0.52	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	50	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	8.50	30	100	APHA 23rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



TC-6386



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

ULR No. : **TC836624000000674F**
Test Report Date: **06/02/2024**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptabl s	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.48	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-58)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	Absent	Absent	Absent	IS 1822
28	Total Coliform*	MPN/100ml	Absent	Absent	Absent	IS 1822



TC-8366

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)



(AUTHORISED SIGNATORY)

(RAVINDER MITTAL*)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernode Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202401230115

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample : Ground Water
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 27/01/2024
Test Started On : 27/01/2024
Test Completed On : 03/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/01/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : GW3-L&T New Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND (DL- 0.01)	0.003	No Relaxation	IS:3025 (P-27)



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pennada Village
Mangalore-574 509, Karnataka, India

ULR No.: **TC63662400000676F**
Test Report Date: **05/02/2024**

Sample Particulars

Nature of the Sample : **Ground Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **27/01/2024**
Test Started On : **27/01/2024**
Test Completed On : **03/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **20/01/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **GW4-Near MRPLAC ETP**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.17	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	430	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	130	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	110	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	68	250	1000	IS:3025 (P-32)
9	Sulphate as SO ₄	mg/l	35.60	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	0.16	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	32	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	12.15	30	100	APHA 23 rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.6	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.6	IS:3025 (P-60)



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB**Test Report**Issued To **M/s Mangalore Refinery and Petrochemical Limited**

ULR No. :

TC636624000000675F

Aromatic Complex, Mangalore SEZ, Permuda Village

Test Report Date: 05/02/2024

Mangalore-574 509, Karnataka, India

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-56)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.78	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.06	No Relaxation	APHA 23 rd Ed.
27	E. coli	MPN/100ml	Absent	Absent	Absent	IS 1622
28	Total Coliform	MPN/100ml	Absent	Absent	Absent	IS 1622



TC-6366

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)



(AUTHORISED SIGNATORY)

(MANINDER MITAL)

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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202401230117

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample	: Ground Water
Sample Quantity & Packaging	: 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab	: 27/01/2024
Test Started On	: 27/01/2024
Test Completed On	: 03/02/2024
Method of Sampling	: SOP/B/D-3
Date of Sampling	: 20/01/2024
Monitoring Conducted By	: M/s Nitya Laboratories
Sampling Location	: GW4-Near MRPLAC ETP

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC63662400000676F

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample : Open Wall
Sample Quantity & Packaging : 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 27/01/2024
Test Started On : 27/01/2024
Test Completed On : 03/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/01/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW1-Tenka Ekkar

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.69	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	6	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23rd Ed.
5	Total Dissolved Solids	mg/l	490	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	170	200	500	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	150	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	80	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	68.40	200	400	APHA 23rd Ed.
10	Nitrates as NO ₃	mg/l	0.41	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	46	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	13.36	30	100	APHA 23rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To: **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.:

TC836624000000676F

Test Report Date: 05/02/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.69	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-58)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	172	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	278	Absent	Absent	IS 1622



TC-8366

(AUTHORISED SIGNATORY)

(RHYAN BASSON*)



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernumde Village
Mangalore-574 609, Karnataka, India

Test Report No.: 202401230118

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 27/01/2024
Test Started On : 27/01/2024
Test Completed On : 03/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/01/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW1-Tenka Ekker

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-6)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB**Test Report**Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC638624000000677F

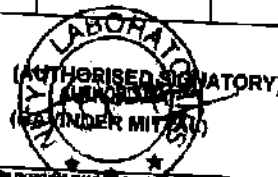
Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample : **Open Well**
 Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
 Sample Received at Lab : **27/01/2024**
 Test Started On : **27/01/2024**
 Test Completed On : **03/02/2024**
 Method of Sampling : **SOP/B/D-3**
 Date of Sampling : **20/01/2024**
 Monitoring Conducted By : **M/s Nitya Laboratories**
 Sampling Location : **OW2-Shantigudda Village**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.60	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	400	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	150	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	140	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	70	250	1000	IS:3025 (P-32)
9	Sulphate as SO ₄	mg/l	59.40	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	ND	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	50	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	8.07	30	100	APHA 23 rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-28)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 508, Karnataka, India

ULR No. : TC638824000000677F

Test Report Date: 05/02/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3026 (P-43)
20	Zinc as Zn	mg/l	0.78	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-58)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli [*]	MPN/100ml	175	Absent	Absent	IS 1622
28	Total Coliform [*]	MPN/100ml	348	Absent	Absent	IS 1622



TC-6388

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)



(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202401230119

Test Report Date: 06/02/2024

Sample Particulars

Nature of the Sample	: Open Well
Sample Quantity & Packaging	: 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab	: 27/01/2024
Test Started On	: 27/01/2024
Test Completed On	: 03/02/2024
Method of Sampling	: SOP/B/D-3
Date of Sampling	: 20/01/2024
Monitoring Conducted By	: M/s Nitya Laboratories
Sampling Location	: OW2-Shantigudde Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To: M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.: TC639824000000678F
Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 27/01/2024
Test Started On : 27/01/2024
Test Completed On : 03/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/01/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW3-Permude Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.19	6.5-8.5	8.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23rd Ed.
5	Total Dissolved Solids	mg/l	320	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	100	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	80	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	36	250	1000	IS:3025 (P-32)
9	Sulphate as SO ₄	mg/l	24.80	200	400	APHA 23rd Ed.
10	Nitrates as NO ₃	mg/l	0.18	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	22	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	10.73	30	100	APHA 23rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-80)



TC-6366



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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.: TC83662400000678F

Test Report Date: 05/02/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.36	6	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL- 0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli	MPN/100ml	278	Absent	Absent	IS 1622
28	Total Coliform	MPN/100ml	426	Absent	Absent	IS 1622



TC-6386

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 508, Karnataka, India

Test Report No.: 202401230120

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 27/01/2024
Test Started On : 27/01/2024
Test Completed On : 03/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/01/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW3-Permude Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernode Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC838824000000879F

Test Report Date:

05/02/2024

Sample Particulars

Nature of the Sample : **Surface Water**
Sample Quantity & Packaging : **2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **27/01/2024**
Test Started On : **27/01/2024**
Test Completed On : **03/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **20/01/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **SW1-Near MRPLAC Flare Area**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	pH	-	7.76	IS:3025 (P-11)	-	-	-	-	-
2	Color	Hazen	<5	IS:3025 (P-4)	-	-	-	-	-
3	Specific Conductance	uS/cm	520	IS:3025 (P-14)	-	max 10	max 300	max 300	-
4	Temperature	°C	28.8	IS:3025 (P-9)	-	-	-	max 1000	max 2500
5	Turbidity	NTU	24.8	APHA 23 rd Ed.	-	-	-	-	-
6	Total Suspended Solids	mg/l	ND [DL- 5]	IS:3025 (P-17)	-	-	-	-	-
7	Oil & Grease	mg/l	ND [DL- 2]	IS:3028 (P-39)	-	-	-	-	-
8	Dissolved Oxygen as DO	mg/l	6.3	IS:3025 (P-38)	min. 6	min. 5	min. 4	min. 4	min. 3
9	BOD, 3 days at 27°C	mg/l	ND [DL- 2]	IS:3026 (P-44)	min. 2	min. 3	min. 3	-	-
10	COD	mg/l	ND [DL- 10]	IS:3025 (P-58)	-	-	-	-	-
11	Total Alkalinity as CaCO ₃	mg/l	70	IS:3025 (P-23)	-	-	-	-	-
12	Sodium as Na	mg/l	40	APHA 23 rd Ed.	-	-	-	-	-
13	Potassium as K	mg/l	3.95	APHA 23 rd Ed.	-	-	-	-	-
14	Arsenic as As	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.05	max 0.2	max 0.2	-	-
15	Boron as B	mg/l	0.07	IS:3026 (P-57)	-	-	-	-	-
16	Total Hardness	mg/l	110	IS:3025 (P-21)	-	-	-	-	-



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernode Village
Mangalore-574 608, Karnataka, India

ULR No. : **TC63662400000679F**
Test Report Date: **05/02/2024**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
17	Chlorides as Cl	mg/l	50	IS:3025(P-32)	max 250	-	max 600	-	max 600
18	Total Dissolved Solids	mg/l	330	IS:3025 (P-16)	max 500	-	max 1500	-	max 2100
19	Sulphate as SO ₄	mg/l	27.60	IS:3025 (P-24)	max 400	-	max 400	-	max 1000
20	Fluoride as F	mg/l	ND [DL- 0.1]	IS:3025 (P-80)	max 1.5	max 1.5	max 1.6	-	-
21	Nitrates as NO ₃	mg/l	ND [DL- 0.1]	IS:3025 (P-34)	max 20	-	max 50	-	-
22	Iron (as Fe)	mg/l	0.13	APHA 23 rd Ed.	max 0.3	-	-	max 0.6	-
23	Chromium as Cr	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
24	Cadmium as Cd	mg/l	ND [DL- 0.001]	APHA 23 rd Ed.	-	-	-	-	-
25	Copper	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
26	Lead as Pb	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.1	-	max 0.1	-	-
27	Zinc as Zn	mg/l	0.31	APHA 23 rd Ed.	-	-	-	-	-
28	Calcium as Ca	mg/l	32	APHA 23 rd Ed.	-	-	-	-	-
29	Magnesium as Mg	mg/l	7.29	APHA 23 rd Ed.	-	-	-	-	-
30	E.coli	MPN/100ml	177	IS 1622	max 50	max 600	max 500	-	-
31	Total Coliform	MPN/100ml	253	IS 1622	max 50	max 600	max 500	-	-



TC-6366

(AUTHORISED SIGNATORY)

(RHYTHM BASSON)



(AUTHORISED SIGNATORY)

(RAVINDER MITAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 202401230121

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample	: Surface Water
Sample Quantity & Packaging	: 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab	: 27/01/2024
Test Started On	: 27/01/2024
Test Completed On	: 03/02/2024
Method of Sampling	: SOP/B/D-3
Date of Sampling	: 20/01/2024
Monitoring Conducted By	: M/s Nitya Laboratories
Sampling Location	: SW1-Near MRPLAC Flare Area

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	Salinity	ppt	16	APHA 23 rd Ed.	-	-	-	-	-
2	Total Nitrogen	mg/l	0.98	IS:3025 (P-34)	-	-	-	-	-
3	Phosphate	mg/l	0.58	IS:3025 (P-31)	-	-	-	-	-



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : **TC636824000000680F**
Test Report Date: **05/02/2024**

Sample Particulars

Nature of the Sample : **Surface Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **27/01/2024**
Test Started On : **27/01/2024**
Test Completed On : **03/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **20/01/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **SW2-Near MRPLAC Near Central Warehouse**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	pH	-	7.58	IS:3025 (P-11)	6.5-8.5				
2	Color	Hazen	<5	IS:3025 (P-4)	-	max 10	max 300	max 300	-
3	Specific Conductance	uS/cm	510	IS:3025 (P-14)	-	-	-	max 1000	max 2500
4	Temperature	°C	25.3	IS:3025 (P-9)	-	-	-	-	-
5	Turbidity	NTU	29	APHA 23 rd Ed.	-	-	-	-	-
6	Total Suspended Solids	mg/l	ND [DL- 5]	IS:3025 (P-17)	-	-	-	-	-
7	Oil & Grease	mg/l	ND [DL- 2]	IS:3025 (P-39)	-	-	-	-	-
8	Dissolved Oxygen as DO	mg/l	5.9	IS:3025 (P-38)	min. 6	min. 5	min. 4	min. 4	min. 3
9	BOD, 3 days at 27°C	mg/l	ND [DL- 2]	IS:3025 (P-44)	min. 2	min. 3	min. 3	-	-
10	COD	mg/l	ND [DL- 10]	IS:3025 (P-58)	-	-	-	-	-
11	Total Alkalinity as CaCO ₃	mg/l	120	IS:3025 (P-23)	-	-	-	-	-
12	Sodium as Na	mg/l	46	APHA 23 rd Ed.	-	-	-	-	-
13	Potassium as K	mg/l	4.9	APHA 23 rd Ed.	-	-	-	-	-
14	Arsenic as As	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.05	max 0.2	max 0.2	-	-
15	Boron as B	mg/l	ND [DL- 0.1]	IS:3025 (P-57)	-	-	-	-	-
16	Total Hardness	mg/l	140	IS:3025 (P-21)	-	-	-	-	-



TC-6368



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC636624000000680F

Test Report Date: 05/02/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
17	Chlorides as Cl	mg/l	20	IS:3025(P-32)	max 250	-	max 800	-	max 800
18	Total Dissolved Solids	mg/l	328	IS:3025 (P-16)	max 500	-	max 1500	-	max 2100
19	Sulphate as SO ₄	mg/l	33.40	IS:3025 (P-24)	max 400	-	max 400	-	max 1000
20	Fluoride as F	mg/l	ND [DL- 0.1]	IS:3025 (P-80)	max 1.5	max 1.5	max 1.5	-	-
21	Nitrates as NO ₃	mg/l	ND [DL- 0.1]	IS:3025 (P-34)	max 20	-	max 50	-	-
22	Iron (as Fe)	mg/l	0.21	APHA 23 rd Ed.	max 0.3	-	-	max 0.5	-
23	Chromium as Cr	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
24	Cadmium as Cd	mg/l	ND [DL- 0.001]	APHA 23 rd Ed.	-	-	-	-	-
25	Copper	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
26	Lead as Pb	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.1	-	max 0.1	-	-
27	Zinc as Zn	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
28	Calcium as Ca	mg/l	32	APHA 23 rd Ed.	-	-	-	-	-
29	Magnesium as Mg	mg/l	14.58	APHA 23 rd Ed.	-	-	-	-	-
30	E.coli	MPN/100ml	281	IS 1822	max 50	max 500	max 500	-	-
31	Total Coliform	MPN/100ml	486	IS 1822	max 50	max 500	max 500	-	-



TC-8386

(AUTHORISED SIGNATORY)

~~(RHYTHM BASSON)~~



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Test Report

Issued To: **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: **202401230121**

Test Report Date: **05/02/2024**

Sample Particulars

Nature of the Sample : **Surface Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **27/01/2024**
Test Started On : **27/01/2024**
Test Completed On : **03/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **20/01/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **SW2-Near MRPLAC Near Central Warehouse**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	Salinity	ppl	20	APHA 23 rd Ed.	-	-	-	-	-
2	Total Nitrogen	mg/l	1.16	IS:3025 (P-34)	-	-	-	-	-
3	Phosphate	mg/l	0.94	IS:3025 (P-31)	-	-	-	-	-



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC63862400000220F-223F

Test Report Date:

13/02/2024

Sample Particulars

Nature of the Sample

Method of Sampling

Instrument Used

Place of Monitoring

: Ambient Noise
: IS 9889
: Sound Level Meter
: MRPLAC -North, South, East, West

Analysis Report

Sr. No.	Date of Sampling	Location	Test Result dB(A) Day Time	Test Result dB(A) Night Time	Test Method
Permissible Limit in *dB(A) Leq for Industrial Area			75 dB(A)	70 dB(A)	
1	09/01/2024	MRPLAC -North	63.6	52.8	IS 9889
2	09/01/2024	MRPLAC -South	57.1	54.2	IS 9889
3	09/01/2024	MRPLAC -East	60.4	60.1	IS 9889
4	09/01/2024	MRPLAC -West	58.8	49.4	IS 9889

Remark:

*dB (A) Leq denotes the time weighted average of the level of sound in decibel on scale 'A' which is suitable to human hearing.
CPCB = Central Pollution Control Board

Note: The Noise Ambient Air Quality Standards are given for reference

Area Code	Category of Area	Limits dB (A) Leq	
		Day Time (6AM - 10PM)	Night Time (10PM - 06AM)
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40



TC-6368



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB**Test Report**

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

ULR No.: TC638624000000259F

Test Report Date: 22/01/2024

Sample Particulars

Nature of the Sample : **Treated Effluent**
Sample Quantity & Packaging : **2 L HDPE Can+150 ml Sterile Container**
Sample Received at Lab : **15/01/2023**
Test Started On : **15/01/2023**
Test Completed On : **20/01/2023**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **10/01/2023**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **Guard Pond Pump Discharge (ETP Treated Effluent)**

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Colour	Hazen	ND [DL-1]	All efforts should be made to remove colour and unpleasant odour as far as practicable	IS:3025 (P-4)
2	Odour	-	Agreeable		IS:3025 (P-6)
3	pH	...	7.42	6.0-8.5	IS:3025 (P-11)
4	Total Suspended Solids (TSS)	mg/L	38	100	IS:3025 (P-17)
5	Temperature	°C	22.8	Shall not exceed 5 degree above the receiving water temp.	IS:3025 (P-9)
6	Oil & Grease (O&G)	mg/L	2	5	IS:3025 (P-38)
7	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	15	30	IS:3025 (P-44)
8	COD	mg/L	80	125	IS:3025 (P-58)
9	Ammonical Nitrogen	mg/L	ND [DL-0.1]	15	IS:3025 (P-34)
10	Total Kjeldhal Nitrogen	mg/L	ND [DL-0.1]	40	IS:3025 (P-34)
11	Lead as Pb	mg/L	ND [DL-0.01]	2	APHA 23 rd Ed.
12	Chromium Hexavalent as Cr ⁶⁺	mg/L	ND [DL-0.1]	0.1	APHA 23 rd Ed.

Remark:
ND-Not Detected



TC-6368



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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC63862400000259F

Test Report Date:

22/01/2024

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
13	Chromium as Cr	mg/L	ND [DL-0.05]	2.0	APHA 23 rd Ed.
14	Copper as Cu	mg/L	ND [DL-0.25]	1.0	APHA 23 rd Ed.
15	Zinc as Zn	mg/L	ND [DL-0.5]	5.0	APHA 23 rd Ed.
16	Nickel as Ni	mg/L	ND [DL-0.1]	1.0	APHA 23 rd Ed.
17	Fluoride as F	mg/L	ND [DL-0.02]	1.0	IS:3025 (P-60)
18	Sulphide as S ²⁻	mg/L	ND [DL-0.05]	2.0	IS:3025 (P-29)
19	Arsenic as As	mg/L	ND [DL-0.01]	0.2	APHA 23 rd Ed.
20	Mercury as Hg	mg/L	ND [DL-0.05]	0.01	APHA 23 rd Ed.
21	Cadmium as Cd	mg/L	ND [DL-0.02]	0.1	APHA 23 rd Ed.
22	Selenium as Se	mg/L	ND [DL-0.1]	0.05	APHA 23 rd Ed.
23	Phenolic Compounds(C ₆ H ₅ OH)	mg/L	ND [DL-1]	0.35	IS:3025 (P-43)
24	Iron as Fe	mg/L	0.10	3	APHA 23 rd Ed.
25	Manganese as Mn	mg/L	ND [DL-0.1]	2	APHA 23 rd Ed.
26	Residual Free Chlorine	mg/L	ND [DL-0.2]	1	IS:3025 (P-28)
27	Bio Assay Test	-	9:1	90% survival of fish after 96 hours in 100% effluent	IS:8582 (P-1)

Remark:

ND-Not Detected



TC-8386



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB**Test Report**

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 609, Karnataka, India

Test Report No. : 202301100118

Test Report Date: 22/01/2023

Sample Particulars

Nature of the Sample : Treated Effluent
Sample Quantity & Packaging : 2 L HDPE Can+150 ml Sterile Container
Sample Received at Lab : 16/01/2023
Test Started On : 15/01/2023
Test Completed On : 20/01/2023
Method of Sampling : SOP/B/D-3
Date of Sampling : 10/01/2023
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : Guard Pond Pump Discharge (ETP Treated Effluent)

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Cyanide as CN	mg/L	ND [DL-0.01]	0.2	IS:3025 (P-27)
2	Total Phosphorous as P	mg/L	1.10	3	IS:3025 (P-31)
3	Nitrate	mg/L	1.05	20	IS:3025 (P-34)
4	Particle Size of Suspended Solids	mg/L	Passed	Passed through 850 micron	APHA 23 rd Ed.
5	Vanadium as V	mg/L	ND [DL-0.01]	0.1	IS:3025 (P-58)
6	Benzene	mg/L	ND [DL-0.0001]	0.1	USEPA-8270C
7	Benzo (a) pyrene	mg/L	ND [DL-0.0001]	0.2	USEPA-8270C

Remark:
ND-Not Detected



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Test ReportIssued To: M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

ULR No.:

TC636624000000684F

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample

Sample Quantity & Packaging

Sample Received at Lab

Test Started On

Test Completed On

Method of Sampling

Date of Sampling

Monitoring Conducted By

Sampling Location

Treated Effluent

2 L HDPE Can +150 ml Sterile Container

27/01/2024

27/01/2024

03/02/2024

SOP/8/D-3

20/01/2024

M/s Nitya Laboratories

Guard Pond Pump Discharge (ETP Treated Effluent)

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Colour	Hazen	ND [DL-1]	All efforts should be made to remove colour and unpleasant odour as far as practicable	IS:3025 (P-4)
2	Odour	-	Agreeable		IS:3025 (P-6)
3	pH	-	7.61	6.0-8.5	IS:3025 (P-11)
4	Total Suspended Solids (TSS)	mg/L	34	100	IS:3025 (P-17)
5	Temperature	°C	23.2	Shall not exceed 5 degrees above the receiving water temp.	IS:3025 (P-9)
6	Oil & Grease (O&G)	mg/L	ND	5	IS:3025 (P-38)
7	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	19	30	IS:3025 (P-44)
8	COD	mg/L	80	125	IS:3025 (P-58)
9	Ammonical Nitrogen	mg/L	ND [DL-0.1]	15	IS:3025 (P-34)
10	Total Kjeldhal Nitrogen	mg/L	ND [DL-0.1]	40	IS:3025 (P-34)
11	Lead as Pb	mg/L	ND [DL-0.01]	2	APHA 23 rd Ed.
12	Chromium Hexavalent as Cr ⁶⁺	mg/L	ND [DL-0.1]	0.1	APHA 23 rd Ed.

Remark:

ND-Not Detected



TC-6366



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.: **TC636624000000884F**

Test Report Date: **06/02/2024**

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
13	Chromium as Cr	mg/L	ND [DL-0.05]	2.0	APHA 23 rd Ed.
14	Copper as Cu	mg/L	ND [DL-0.26]	1.0	APHA 23 rd Ed.
15	Zinc as Zn	mg/L	ND [DL-0.5]	5.0	APHA 23 rd Ed.
16	Nickel as Ni	mg/L	ND [DL-0.1]	1.0	APHA 23 rd Ed.
17	Fluoride as F	mg/L	ND [DL-0.02]	1.0	IS:3025 (P-60)
18	Sulphide as S ²⁻	mg/L	ND [DL-0.05]	2.0	IS:3025 (P-29)
19	Arsenic as As	mg/L	ND [DL-0.01]	0.2	APHA 23 rd Ed.
20	Mercury as Hg	mg/L	ND [DL-0.05]	0.01	APHA 23 rd Ed.
21	Cadmium as Cd	mg/L	ND [DL-0.02]	0.1	APHA 23 rd Ed.
22	Selenium as Se	mg/L	ND [DL-0.1]	0.05	APHA 23 rd Ed.
23	Phenolic Compounds(C ₆ H ₅ OH)	mg/L	ND [DL-1]	0.35	IS:3025 (P-43)
24	Iron as Fe	mg/L	0.30	3	APHA 23 rd Ed.
25	Manganese as Mn	mg/L	ND [DL-0.1]	2	APHA 23 rd Ed.
26	Residual Free Chlorine	mg/L	ND [DL-0.2]	1	IS:3025 (P-26)
27	Bio Assay Test	-	9:1	90% survival of fish after 96 hours in 100% effluent	IS:8582 (P-1)

Remark:
ND-Not Detected



TC-6366



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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

Test Report No. : 202301240150

Test Report Date: 05/02/2024

Sample Particulars

Nature of the Sample	: Treated Effluent
Sample Quantity & Packaging	: 2 L HDPE Can +150 ml Sterile Container
Sample Received at Lab	: 27/01/2024
Test Started On	: 27/01/2024
Test Completed On	: 03/02/2024
Method of Sampling	: SOP/B/D-3
Date of Sampling	: 20/01/2024
Monitoring Conducted By	: M/s Nitya Laboratories
Sampling Location	: Guard Pond Pump Discharge (ETP Treated Effluent)

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Cyanide as CN	mg/L	ND [DL-0.01]	0.2	IS:3025 (P-27)
2	Total Phosphorous as P	mg/L	ND [DL-0.02]	3	IS:3025 (P-31)
3	Nitrate	mg/L	0.94	20	IS:3025 (P-34)
4	Particle Size of Suspended Solids	mg/L	Passed	Passed through 850 microns	APHA 23 rd Ed.
5	Vanadium as V	mg/L	ND [DL-0.01]	0.1	IS:3025 (P-56)
6	Benzene	mg/L	ND [DL-0.0001]	0.1	USEPA-8270C
7	Benzo (a) pyrene	mg/L	ND [DL-0.0001]	0.2	USEPA-8270C

Remark:
ND-Not Detected

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ANNEXURE - E

Returns Regarding Water Consumed during the Month of January, 2024

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning of the first day of the calendar month under report	Reading at the end of the last day of the calendar month under report	Quantity of Water Consumed in Kilo Liters	If the meter was out of order, the monthly average consumption of water for the previous 3 months of the working period	Quantity of water qualifying for rebate according to the assessee	Remarks
M/s Mangalore Refinery and Petrochemicals Limited, Mangalore Special Economic Zone, Perumde, Mangalore - 574 509	Industrial cooling, spraying in inline pits or boiler feed						
	Cooling Water	0	14309	14309			
	Boiler Feed Water	0	64146	64146			
	Fire Water	0	35218	35218			
	Domestic purpose						
	Drinking Water & Sanitation	0	8403	8403			
	Processing whereby water gets polluted and the pollutants are easily biodegradable						
Service Water		0	3340	3340			
Total Consumption				1,25,416			

Annexure-F

Mangalore Refinery and Petrochemicals Limited

Production Details of Aromatic Complex for January, 2024

Feed Processed – 1,24,965 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	-
2	Benzene (Co product)	13,342
3	Reformate (Intermediate)	1,04,228

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मंगलूर रिफाइनरी एण्ड पेट्रोकेमिकल्स लिमिटेड
MANGALORE REFINERY AND PETROCHEMICALS LIMITED

अनुसूची 'अ' के अंतर्गत भारत सरकार का उद्यम, SCHEDULE 'A' GOVT. OF INDIA ENTERPRISE.
(ऑयल एण्ड नेचुरल गैस कॉर्पोरेशन लिमिटेड की सहायक कंपनी, A SUBSIDIARY OF OIL AND NATURAL GAS CORPORATION LIMITED)
आईएसओ 9001, 14001 एवं 50001 प्रमाणित कंपनी, AN ISO 9001, 14001 AND 50001 CERTIFIED COMPANY.
सीआईएन/CIN : L23209KA1988GOI008959 / वेबसाइट Website : www.mrpl.co.in

LMS/ARC/KSPCB/7457
14th March, 2024

The Environmental Officer
Regional Office
KSPCB
Baikampady, Mangalore-11

Dear Sir,

विषय Sub: Submission of Environmental Monitoring Report for the Month of February, 2024, for Aromatic Complex of MRPL

Ref: KSPCB Combined Consent Order No. AW-330681 dated 1st April, 2022

With respect to the above subject; we are herewith submitting the following Environmental Monitoring Reports and Production Report for Aromatic Complex of MRPL for the Month of February, 2024 respectively, enclosed herewith.

- 1) Ambient Air Quality Monitoring at 5 different locations in and around Aromatic Complex, enclosed as Annexure- A
- 2) Water Analysis Reports at 9 different locations in and around Aromatic Complex, as Annexure-B
- 3) Noise Level Monitoring Report at Aromatic Complex, as Annexure-C
- 4) Treated Effluent Analysis Report, Annexure-D
- 5) Returns Regarding Water Consumed for the Month of February, 2024, as Annexure-E
- 6) SO2 Report as Annexure-F
- 7) Production Report as Annexure-G

धन्यवाद Thanking You,

M S Sudarsan
Chief General Manager (Health, Safety & Environment)

CC: Member Secretary, KSPCB, Bangalore
CC: Head (Technical), MSEZ

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Perumda Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC63662400001107F, 1182F, 1266F, 1349F, 1449F

Test Report Date:

1571F,1623F,1819F
05/03/2024

Sample Particulars

Nature of the Sample

Sampling Location

Method of Sampling

Monitoring Conducted By

Sampling Duration (Hrs.)

Ambient Air Quality Monitoring

MRPLAC East Side

IS 5182 (Part 14)

M/s Nitya Laboratories

24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m3	Particulate Matter (PM10) µg/m3	Sulphur Dioxide (as SO2) µg/m3	Nitrogen Dioxide (as NO2) µg/m3	Ozone (as O3) µg/m3	Lead (as Pb) µg/m3	Carbon Monoxide (as CO) mg/m3	Ammonia (as NH3) µg/m3	Nickel (as Ni) ng/m3	Arsenic (as As) ng/m3	Benzo (a) pyrene (as BAP) ng/m3	Benzo (a) Pyrene (C6H6) µg/m3
02/02/2024	30.40	50.70	23.40	28.90	ND	ND	ND	ND	ND	ND	ND	ND
05/02/2024	28.30	51.20	22.90	26.20	ND	ND	ND	ND	ND	ND	ND	ND
08/02/2024	31.20	47.60	19.40	27.70	ND	ND	ND	ND	ND	ND	ND	ND
12/02/2024	29.50	62.30	20.60	24.40	ND	ND	ND	ND	ND	ND	ND	ND
15/02/2024	31.40	48.30	18.90	28.10	ND	ND	ND	ND	ND	ND	ND	ND
19/02/2024	28.50	48.90	25.60	24.80	ND	ND	ND	ND	ND	ND	ND	ND
22/02/2024	28.90	45.20	15.20	30.50	ND	ND	ND	ND	ND	ND	ND	ND
27/02/2024	32.60	48.70	19.30	22.60	ND	ND	ND	ND	ND	ND	ND	ND
Average	30.13	48.86	21.03	25.83	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40 CFR Appendix L Part 53 CPM Guidelines	IS:6182 (P-23)	IS:6182 (P-2)	IS:6182 (P-8)	IS:6182 (P-8)	NL/50 P/AAQ-11	IS:6182 (P-10)	Method of Air Sampling & Analysis	NL/50 P/AAQ-13	NL/50 P/AAQ-12	IS:6182 (P-12)	IS:6182 (P-11)

Remarks: *NAAQS National Ambient Air Quality Standards, Schedule VII, Part 2, 1986.
ND: Not Detected

Remarks

*NAAQS National Ambient Air Quality Standards, Schedule-VI, (Revise 3 (3B)), [Part-II-sec-3(1)] 18.11.2009
ND-Not Detected *Arsenic-ND (DL-0.5), *BAP-ND (DL-0.1) 30.06.2009

ND-Not Detected. *Arsenic-ND (DL-0.5), *BAP-ND (DL-0.5), *Benzene-ND (DL-0.5) *Lead-ND (DL-0.5) *Nickel-ND (DL-1.0). Sample Analyzed within Seven days from the date of sampling



TC-6366



(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : **TC63662400001108F, 1183F,1287F,1350F,1448F**
1572F,1624F,1620F
Test Report Date: **06/03/2024**

Sample Particulars

Nature of the Sample : **Ambient Air Quality Monitoring**
Sampling Location : **MRPLAC West Side**
Method of Sampling : **IS 5182 (Part 14)**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Duration (Hrs.) : **24 Hrs.**

Date of Sampling	Parameter											
	Particulate Matter (PM2.5) µg/m³	Particulate Matter (PM10) µg/m³	Sulphur Dioxide (as SO2) µg/m³	Nitrogen Dioxide (as NO2) µg/m³	Ozone (as O3) µg/m³	Lead (as Pb) µg/m³	Carbon Monoxide (as CO) mg/m³	Ammonia (as NH3) µg/m³	Nickel (as Ni) ng/m³	Arsenic (as As) ng/m³	Benzo (a) pyrene (as BAP) ng/m³	Benzen e (C6H6) µg/m³
01/01/2024	31.50	52.30	20.50	23.40	ND	ND	ND	ND	ND	ND	ND	ND
05/01/2024	34.20	51.40	26.60	26.50	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	35.20	60.80	31.40	21.80	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	32.90	50.40	23.60	26.90	ND	ND	ND	ND	ND	ND	ND	ND
16/01/2024	35.40	51.40	21.70	27.40	ND	ND	ND	ND	ND	ND	ND	ND
18/01/2024	32.80	48.30	18.90	30.40	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	28.40	47.20	32.80	34.50	ND	ND	ND	ND	ND	ND	ND	ND
25/01/2024	32.80	49.50	33.10	25.90	ND	ND	ND	ND	ND	ND	ND	ND
Average	32.88	50.18	28.08	27.10	-	-	-	-	-	-	-	-
NAAQM Standards	80	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 63 CPCS Guideline	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-5)	IS:5182 (P-3)	NL/ISO P/AAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/ISO P/AAQ-13	NL/SOP /AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

Remarks:

*NAAQS: National Ambient Air Quality Standards, Schedule-VI, [Rule 3 (3B)], [Part-II-sec-30] 18.11.2006

ND-Not Detected, *Arsenic-ND (DL-0.5) *BAP-ND(DL-0.5) *Benzene-ND(DL-0.5), *Lead-ND(DL-0.5)*Nickel-ND(DL-1.0), Sample Analyzed within Seven days from the date of sampling.



TC-6366



(RAVINDER MITTAL)

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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernode Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC636824000001109F, 1164F, 1268F, 1361F, 1450F

Test Report Date:

1573F, 1625F, 1821F

05/03/2024

Sample Particulars

Nature of the Sample

Sampling Location

Method of Sampling

Monitoring Conducted By

Sampling Duration (Hrs.)

: Ambient Air Quality Monitoring

: Shantigudda

: IS 5182 (Part 14)

: M/s Nitya Laboratories

: 24 Hrs.

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As) ng/m ³	Benzo (a) pyrene (as BAP) ng/m ³	Benzen e (C ₆ H ₆) µg/m ³
01/01/2024	34.40	51.60	28.50	32.90	ND	ND	ND	ND	ND	ND	ND	ND
05/01/2024	31.60	52.20	20.60	28.40	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	32.80	54.60	19.60	27.50	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	34.90	56.70	30.50	25.60	ND	ND	ND	ND	ND	ND	ND	ND
16/01/2024	33.50	53.40	28.70	30.60	ND	ND	ND	ND	ND	ND	ND	ND
18/01/2024	32.50	56.90	23.90	27.50	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	28.60	50.20	26.60	30.90	ND	ND	ND	ND	ND	ND	ND	ND
25/01/2024	31.50	50.40	29.60	32.40	ND	ND	ND	ND	ND	ND	ND	ND
Average	32.46	53.16	26.06	29.53	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	60	100	1	2	400	20	8	1	5
Test Method	40 CFR Appendix L Part 53 CFCB Guideline s	IS:5182 (P-13)	IS:5182 (P-2)	IS:5182 (P-4)	IS:5182 (P-6)	NL/80P /AAQ-11	IS:5182 (P-10)	Method of Air Sampling g & Analysis	NL/80 P/AAQ-13	NL/80P/ AAQ-12	IS:5182 (P-12)	IS:5182 (P-11)

Remark:

*NAAQS: National Ambient Air Quality Standards, Schedule-VII, [Rule 3 (3B)], [Part-II-sec-3(p)] 16.11.2008
ND-Not Detected, *Arsenic-ND [DL-0.5], *BAP-ND[DL-0.5], *Benzene-ND[DL-0.5], *Lead-ND[DL-0.5], *Nickel-ND[DL-1.0]

Sample Analyzed within Seven days from the date of sampling



TC-610



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636624000001110F, 1185F,1289F,1352F,1451F
1574F,1626F,1822F
Test Report Date: 05/03/2024

Sample Particulars

Nature of the Sample : **Ambient Air Quality Monitoring**
Sampling Location : **TenkaEkkar**
Method of Sampling : **IS 5182 (Part 14)**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Duration (Hrs.) : **24 Hrs.**

Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) µg/m ³	Particulate Matter (PM ₁₀) µg/m ³	Sulphur Dioxide (as SO ₂) µg/m ³	Nitrogen Dioxide (as NO ₂) µg/m ³	Ozone (as O ₃) µg/m ³	Lead (as Pb) µg/m ³	Carbon Monoxide (as CO) mg/m ³	Ammonia (as NH ₃) µg/m ³	Nickel (as Ni) ng/m ³	Arsenic (as As) ng/m ³	Benzo (a) pyrene (as BAP) ng/m ³	Benzen e (C ₆ H ₆) µg/m ³
01/01/2024	33.50	54.20	21.50	22.90	ND	ND	ND	ND	ND	ND	ND	ND
05/01/2024	36.50	52.60	23.70	24.80	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	28.60	56.40	24.80	20.90	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	40.80	51.40	20.60	22.60	ND	ND	ND	ND	ND	ND	ND	ND
16/01/2024	39.50	52.70	24.90	23.70	ND	ND	ND	ND	ND	ND	ND	ND
18/01/2024	35.60	47.20	22.30	21.40	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	36.10	54.80	20.90	23.90	ND	ND	ND	ND	ND	ND	ND	ND
25/01/2024	37.10	50.90	24.60	25.90	ND	ND	ND	ND	ND	ND	ND	ND
Average	35.80	52.63	22.91	23.24	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 53 CFCB Guideline	IS:5182 (P-23)	IS:5182 (P-2)	IS:5182 (P-6)	IS:5182 (P-9)	NL/SOP IAAQ-11	IS:5182 (P-10)	Method of Air Sampling & Analysis	NL/SO P/AAQ-13	NL/SOP/ AAQ-42	IS:5182 (P-12)	IS:5182 (P-11)

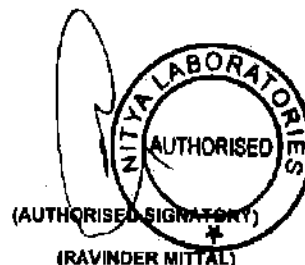
Remark:

*NAAQS National Ambient Air Quality Standards, Schedule-VII, (Rule 3 (3B)) (Part-I)sec-3(i) 10.11.2008

ND-Not Detected, *Arsenic-ND [DL- 0.5], *BAP-ND[DL- 0.5], *Benzene-ND[DL- 0.5], *Lead-ND[DL- 0.6], *Nickel-ND[DL- 1.0] Sample Analyzed within Seven days from the date of sampling



TC-6366



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernude Village
Mangalore-574 509, Karnataka, India

ULR No. :

TC536824000001111F, 1186F, 1270F, 1353F, 1452F

Test Report Date:

1575F, 1627F, 1823F
05/03/2024

Sample Particulars

Nature of the Sample

Sampling Location

Method of Sampling

Monitoring Conducted By

Sampling Duration (Hrs.)

Ambient Air Quality Monitoring

Pernude Village

IS 5182 (Part 14)

M/s Nitya Laboratories

24 Hrs.

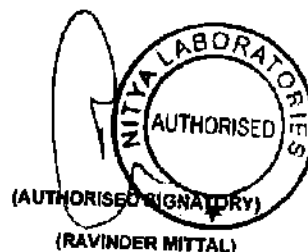
Date of Sampling	Parameter											
	Particulate Matter (PM _{2.5}) $\mu\text{g}/\text{m}^3$	Particulate Matter (PM ₁₀) $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (as SO ₂) $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (as NO ₂) $\mu\text{g}/\text{m}^3$	Ozone (as O ₃) $\mu\text{g}/\text{m}^3$	Lead (as Pb) $\mu\text{g}/\text{m}^3$	Carbon Monoxide (as CO) mg/m^3	Ammonia (as NH ₃) $\mu\text{g}/\text{m}^3$	Nickel (as Ni) ng/m^3	Arsenic (as As) ng/m^3	Benzo (a) pyrene (as BAP) ng/m^3	Benzen e (C ₆ H ₆) $\mu\text{g}/\text{m}^3$
01/01/2024	31.20	50.80	22.90	22.80	ND	ND	ND	ND	ND	ND	ND	ND
05/01/2024	32.40	52.70	20.70	24.60	ND	ND	ND	ND	ND	ND	ND	ND
08/01/2024	34.90	54.40	21.60	23.70	ND	ND	ND	ND	ND	ND	ND	ND
11/01/2024	33.60	46.20	22.40	24.90	ND	ND	ND	ND	ND	ND	ND	ND
15/01/2024	34.70	50.20	20.80	22.10	ND	ND	ND	ND	ND	ND	ND	ND
16/01/2024	36.20	49.20	23.10	23.60	ND	ND	ND	ND	ND	ND	ND	ND
22/01/2024	33.10	51.40	24.40	26.50	ND	ND	ND	ND	ND	ND	ND	ND
26/01/2024	34.90	52.60	26.50	27.60	ND	ND	ND	ND	ND	ND	ND	ND
Average	33.88	50.84	22.68	24.48	-	-	-	-	-	-	-	-
NAAQM Standards	60	100	80	80	100	1	2	400	20	6	1	5
Test Method	40CFR Appendix L Part 63 CPCS Guideline	IS:6182 (P-23)	IS:6182 (P-2)	IS:6182 (P-6)	IS:6182 (P-8)	ML/SOP /AAQ-11	IS:6182 (P-10)	Method of Air Sampling & Analysis	ML/SO P/AAQ-13	ML/SOP/ AAQ-12	IS:6182 (P-12)	IS:6182 (P-11)

Remark:

*NAAQS: National Ambient Air Quality Standards; Schedule-VII, (Rule 3 (3B)) (Part-II-sec-3(i)) 18.11.2009
ND-Not Detected, *Arsenic-ND (DL-0.5) *BAP-ND(DL-0.5) *Benzene-ND(DL-0.5) *Lead-ND(DL-0.5) *Nickel-ND(DL-1.0) Sample Analyzed within Seven days from the date of sampling



TC-6366



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 508, Karnataka, India

ULR No. **TCB36624000001591F**
Test Report Date: **29/02/2024**

Sample Particulars

Nature of the Sample
Sample Quantity & Packaging
Sample Received at Lab
Test Started On
Test Completed On
Method of Sampling
Date of Sampling
Monitoring Conducted By
Sampling Location

Ground Water

2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
23/02/2024
23/02/2024
28/02/2024
SCP/B/D-3
20/02/2024
M/s Nitya Laboratories
GW2-Gagtel Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.83	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23rd Ed.
5	Total Dissolved Solids	mg/l	430	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	160	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	130	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	80	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	69.80	200	400	APHA 23rd Ed.
10	Nitrates as NO ₃	mg/l	ND	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	48	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	10.93	30	100	APHA 23rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23rd Ed.
14	Residual Free Chlorine	mg/l	ND[DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.6	1.0	IS:3025 (P-67)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



TC-6366

(AUTHORIZED SIGNATURE)
(RAVINDER MITTAL)

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Test Report

Issued To **M/a Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernade Village
Mangalore-574 509, Karnataka, India

ULR No **TC636624000001581F**
Test Report Date: **29/02/2024**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptabl e	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS 3025 (P-43)
20	Zinc as Zn	mg/l	0.19	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E. coli*	MPN/100ml	Absent	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	Absent	Absent	Absent	IS 1622



TC-6366

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)



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Test Report

Test Report No. 2024022010114
Test Report Date: 29/02/2024

Sample Particulars

Nature of the Sample

Sample Quantity & Packaging

Sample Received at Lab

Test Started On

Test Completed On

Method of Sampling

Date of Sampling

Monitoring Conducted By

Sampling Location

Ground Water

2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SOP/B/D-3

20/02/2024

M/s Nitye Laboratories

GW2-Gagtel Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

[illegible]

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No **TC636624000001592F**
Test Report Date **28/02/2024**

Sample Particulars

Nature of the Sample

Sample Quantity & Packaging

Sample Received at Lab

Test Started On

Test Completed On

Method of Sampling

Date of Sampling

Monitoring Conducted By

Sampling Location

Ground Water

2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SOP/B/D-3

20/02/2024

M/s Nitya Laboratories

GW3-L&T New Labour Colony

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH		7.75	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	490	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	180	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	160	200	800	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	90	250	1000	IS:3025 (P-32)
9	Sulphate as SO ₄	mg/l	60.80	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	0.80	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	60	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	7.29	30	100	APHA 23 rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



TC-6366



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Test Report

ULR No

TC636624000001592F

Test Report Date: 29/02/2024

Analysis Report

TC-6366

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

[illegible]

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No. 2024022010115

Test Report Date: 28/02/2024

Sample Particulars

Nature of the Sample : **Ground Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **23/02/2024**
Test Started On : **23/02/2024**
Test Completed On : **28/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **20/02/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **GW3-L&T New Labour Colony**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No

TCB36624000001593F

Test Report Date. 29/02/2024

Sample Particulars

Nature of the Sample

Sample Quantity & Packaging

Sample Received at Lab

Test Started On

Test Completed On

Method of Sampling

Date of Sampling

Monitoring Conducted By

Sampling Location

Ground Water

2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SOP/B/D-3

20/02/2024

M/s Nitya Laboratories

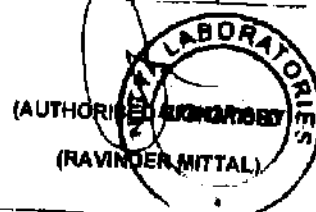
GW4-Near MRPLAC ETP

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.26	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	6	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	410	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	120	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	100	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	54	250	1000	IS:3025 (P-32)
9	Sulphate as SO ₄	mg/l	30.20	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	0.12	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	30	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	10.93	30	100	APHA 23 rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



TC-6366



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB**Test Report**Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, IndiaULR No. : TC636624000001593F
Test Report Date 29/02/2024**Analysis Report**

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.61	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E. coli	MPN/100ml	Absent	Absent	Absent	IS 1622
28	Total Coliform	MPN/100ml	Absent	Absent	Absent	IS 1622



TC-6366

(Signature)
(AUTHORISED SIGNATORY)
(RHYTHM BASSON*)

(Signature)
(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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Test Report

Issued To M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Perumde Village
Mangalore-574 508, Karnataka, India

Test Report No. 2024022010117
Test Report Date 28/02/2024

Sample Particulars

Nature of the Sample
Sample Quantity & Packaging
Sample Received at Lab
Test Started On
Test Completed On
Method of Sampling
Date of Sampling
Monitoring Conducted By
Sampling Location

Ground Water

2 L HDPE Can + 1 Lamber Bottle + 150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SOP/B/D-3

20/02/2024

M/s Nitya Laboratories

GW4-Near MRPLAC ETP

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)

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(RAVINDER MITAL)

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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To: **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No

TC636624000001594F

Test Report Date: 29/02/2024

Sample Particulars

Nature of the Sample : **Open Well**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **23/02/2024**
Test Started On : **23/02/2024**
Test Completed On : **28/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **20/02/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **OW1-Tenka Ekkar**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.56	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed.
5	Total Dissolved Solids	mg/l	470	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	150	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	130	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	72	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	61.50	200	400	APHA 23 rd Ed.
10	Nitrates as NO ₃	mg/l	0.33	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	35	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	13.36	30	100	APHA 23 rd Ed.
13	Aluminium as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



TC-6366

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(RAVINDEE MITTAL)

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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No

TC635624000001594F

Test Report Date: 29/02/2024

Analysis Report

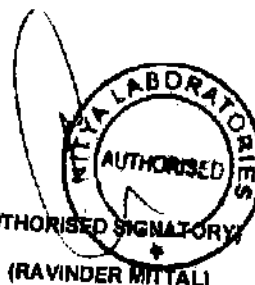
Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.50	5	15	APHA 23 rd Ed
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	184	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	354	Absent	Absent	IS 1622



TC-6366

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)



(AUTHORISED SIGNATORY)

(RAYINDER MITTAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 2024022010118

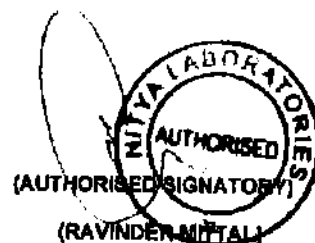
Test Report Date 29/02/2024

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 23/02/2024
Test Started On : 23/02/2024
Test Completed On : 28/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/02/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW1-Tenka Ekker

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

ULR No

TC636624000001585F

Test Report Date: 28/02/2024

Sample Particulars

Nature of the Sample : **Open Well**
 Sample Quantity & Packaging : **2 L HDPE Can+1 Lamber Bottle +150 ml Sterile Container**
 Sample Received at Lab : **23/02/2024**
 Test Started On : **23/02/2024**
 Test Completed On : **28/02/2024**
 Method of Sampling : **SOP/B/D-3**
 Date of Sampling : **20/02/2024**
 Monitoring Conducted By : **M/s Nitya Laboratories**
 Sampling Location : **OW2-Shantigudda Village**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10800 2012		Protocol
				Acceptable	Permissible	
1	pH	-	7.49	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23rd Ed
5	Total Dissolved Solids	mg/l	450	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	160	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	150	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	64	250	1000	IS:3025 (P-32)
9	Sulphate as SO ₄	mg/l	49.90	200	400	APHA 23rd Ed
10	Nitrates as NO ₃	mg/l	ND	45	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	46	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	10.93	30	100	APHA 23rd Ed
13	Aluminum as Al	mg/l	ND [DL-0.02]	0.03	0.2	APHA 23rd Ed
14	Residual Free Chlorine	mg/l	ND [DL-0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL-0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL-1.0]	1.0	1.5	IS:3025 (P-60)



AUTHORIZED SIGNATORY
(RAYINDER MITAL)

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22/43

Test Report

Issued To: M/s Mangalore Refinery and Petrochemical Limited
Aromatic Complex, Mangalore SEZ, Permuda Village
Mangalore-574 509, Karnataka, India

ULR No: TC636624000001595F
Test Report Date: 29/02/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3025 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.81	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-59)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	210	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	511	Absent	Absent	IS 1622



TC-6366


(AUTHORISED SIGNATORY)
(RHYTHM BASSON*)


(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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28/43

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No: 2024022010119

Test Report Date: 28/02/2024

Sample Particulars

Nature of the Sample

Sample Quantity & Packaging

Sample Received at Lab

Test Started On

Test Completed On

Method of Sampling

Date of Sampling

Monitoring Conducted By

Sampling Location

Open Well

2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SOP/B/D-3

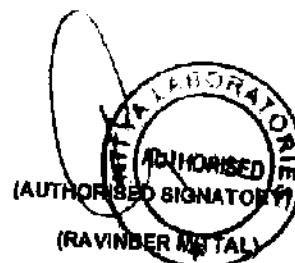
20/02/2024

M/s Nitya Laboratories

OW2-Shanligudda Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND [DL- 0.01]	0.003	No Relaxation	IS:3025 (P-27)

[illegible]

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24/43

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. , TC636624000001596F

Test Report Date: 29/02/2024

Sample Particulars

Nature of the Samples

Sample Quantity & Packaging

Sample Received at Lab

Test Started On

Test Completed On

Method of Sampling

Date of Sampling

Monitoring Conducted By

Sampling Location

Open Well

2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SQP/B/D-3

20/02/2024

M/s Nitya Laboratories

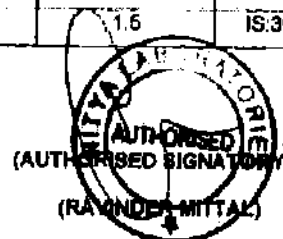
OW3-Permude Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement (S:10500 2012)		Protocol
				Acceptable	Permissible	
1	pH	-	7.29	6.5-8.5	6.5-8.5	IS:3025 (P-11)
2	Color	Hazen	<5	5	15	IS:3025 (P-4)
3	Odour		Agreeable	Agreeable	Agreeable	IS:3025 (P-5)
4	Turbidity	NTU	<1	1	5	APHA 23 rd Ed
5	Total Dissolved Solids	mg/l	370	500	2000	IS:3025 (P-16)
6	Total Hardness as (CaCO ₃)	mg/l	110	200	600	IS:3025 (P-21)
7	Total Alkalinity as CaCO ₃	mg/l	90	200	600	IS:3025 (P-23)
8	Chlorides as Cl	mg/l	30	250	1000	IS:3025(P-32)
9	Sulphate as SO ₄	mg/l	27.70	200	400	APHA 23 rd Ed
10	Nitrates as NO ₃	mg/l	0.10	46	No Relaxation	IS:3025 (P-34)
11	Calcium as Ca	mg/l	28	75	200	IS:3025 (P-40)
12	Magnesium as Mg	mg/l	9.72	30	100	APHA 23 rd Ed.
13	Aluminum as Al	mg/l	ND [DL- 0.02]	0.03	0.2	APHA 23 rd Ed.
14	Residual Free Chlorine	mg/l	ND [DL- 0.2]	0.2	1	IS:3025 (P-26)
15	Boron as B	mg/l	ND [DL- 0.5]	0.5	1.0	IS:3025 (P-57)
16	Fluoride as F	mg/l	ND [DL- 1.0]	1.0	1.5	IS:3025 (P-60)



TC-6366



(RAYNDEB-MITTA)

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25/43

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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No

TC636624000001595F

Test Report Date:

29/02/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
17	Iron (as Fe)	mg/l	ND [DL- 0.05]	0.3	No Relaxation	APHA 23 rd Ed.
18	Manganese as Mn	mg/l	ND [DL- 0.05]	0.1	0.3	IS:3026 (P-59)
19	Phenolic Compounds	mg/l	ND [DL- 0.001]	0.001	0.002	IS:3025 (P-43)
20	Zinc as Zn	mg/l	0.28	5	15	APHA 23 rd Ed.
21	Mercury as Hg	mg/l	ND [DL-0.001]	0.001	No Relaxation	APHA 23 rd Ed.
22	Cadmium as Cd	mg/l	ND [DL- 0.001]	0.003	No Relaxation	APHA 23 rd Ed.
23	Arsenic as As	mg/l	ND [DL- 0.01]	0.01	0.05	APHA 23 rd Ed.
24	Lead as Pb	mg/l	ND [DL- 0.005]	0.01	No Relaxation	APHA 23 rd Ed.
25	Selenium as Se	mg/l	ND [DL- 0.005]	0.01	No Relaxation	IS:3025 (P-56)
26	Chromium as Cr	mg/l	ND [DL- 0.01]	0.05	No Relaxation	APHA 23 rd Ed.
27	E.coli*	MPN/100ml	328	Absent	Absent	IS 1622
28	Total Coliform*	MPN/100ml	588	Absent	Absent	IS 1622



TC-5366

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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26/43



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No 2024022010120

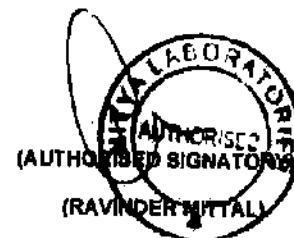
Test Report Date: 29/02/2024

Sample Particulars

Nature of the Sample : Open Well
Sample Quantity & Packaging : 2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container
Sample Received at Lab : 23/02/2024
Test Started On : 23/02/2024
Test Completed On : 28/02/2024
Method of Sampling : SOP/B/D-3
Date of Sampling : 20/02/2024
Monitoring Conducted By : M/s Nitya Laboratories
Sampling Location : OW3-Permude Village

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Requirement IS:10500 2012		Protocol
				Acceptable	Permissible	
1	Taste	-	Agreeable	Agreeable	Agreeable	IS:3025 (P-8)
2	Cyanide as CN	mg/l	ND (DL- 0.01)	0.003	No Relaxation	IS:3025 (P-27)



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27/43

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC636624000001597F

Test Report Date: 28/02/2024

Sample Particulars

Nature of the Sample

Sample Quantity & Packaging

Sample Received at Lab

Test Started On

Test Completed On

Method of Sampling

Date of Sampling

Monitoring Conducted By

Sampling Location

Surface Water

2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SOP/BI-D-3

20/02/2024

M/s Nitya Laboratories

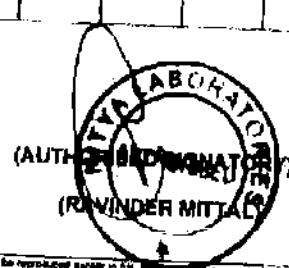
SW1-Near MRPLAC Flare Area

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	pH	-	7.81	IS:3025 (P-11)	-	-	-	-	-
2	Color	Hazen	<5	IS:3025 (P-4)	-	max 10	max 300	max 300	-
3	Specific Conductance	uS/cm	550	IS:3025 (P-14)	-	-	-	max 1000	max 2500
4	Temperature	°C	25.9	IS:3025 (P-9)	-	-	-	-	-
5	Turbidity	NTU	22.6	APHA 23rd Ed.	-	-	-	-	-
6	Total Suspended Solids	mg/l	ND [DL- 5]	IS:3025 (P-17)	-	-	-	-	-
7	Oil & Grease	mg/l	ND [DL- 2]	IS:3025 (P-38)	-	-	-	-	-
8	Dissolved Oxygen as DO	mg/l	5.9	IS:3025 (P-38)	min. 6	min. 5	min. 4	min. 4	min. 3
9	BOD, 3 days at 27°C	mg/l	ND [DL- 2]	IS:3025 (P-44)	min. 2	min. 3	min. 3	-	-
10	COD	mg/l	ND [DL- 10]	IS:3025 (P-58)	-	-	-	-	-
11	Total Alkalinity as CaCO ₃	mg/l	80	IS:3025 (P-23)	-	-	-	-	-
12	Sodium as Na	mg/l	38.40	APHA 23rd Ed.	-	-	-	-	-
13	Potassium as K	mg/l	3.81	APHA 23rd Ed.	-	-	-	-	-
14	Arsenic as As	mg/l	ND [DL- 0.01]	APHA 23rd Ed.	max 0.06	max 0.2	max 0.2	-	-
15	Boron as B	mg/l	0.03	IS:3025 (P-57)	-	-	-	-	-
16	Total Hardness	mg/l	120	IS:3025 (P-21)	-	-	-	-	-



TC-6366



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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To: **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No.: **TC636624000001597F**
Test Report Date: **29/02/2024**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
17	Chlorides as Cl	mg/l	42	IS:3025(P-32)	max 250	-	max 600	-	max 600
18	Total Dissolved Solids	mg/l	345	IS:3025 (P-16)	max 500	-	max 1500	-	max 2100
19	Sulphate as SO ₄	mg/l	28.60	IS:3025 (P-24)	max 400	-	max 400	-	max 1000
20	Fluoride as F	mg/l	ND [DL- 0.1]	IS:3025 (P-60)	max 1.5	max 1.5	max 1.5	-	-
21	Nitrates as NO ₃	mg/l	ND [DL- 0.1]	IS:3025 (P-34)	max 20	-	max 50	-	-
22	Iron (as Fe)	mg/l	0.16	APHA 23 rd Ed.	max 0.3	-	-	max 0.5	-
23	Chromium as Cr	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
24	Cadmium as Cd	mg/l	ND [DL- 0.001]	APHA 23 rd Ed.	-	-	-	-	-
25	Copper	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
26	Lead as Pb	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.1	-	max 0.1	-	-
27	Zinc as Zn	mg/l	0.29	APHA 23 rd Ed.	-	-	-	-	-
28	Calcium as Ca	mg/l	28	APHA 23 rd Ed.	-	-	-	-	-
29	Magnesium as Mg	mg/l	12.15	APHA 23 rd Ed.	-	-	-	-	-
30	E.coli	MPN/100ml	184	IS 1622	max 50	max 500	max 500	-	-
31	Total Coliform	MPN/100ml	356	IS 1622	max 50	max 500	max 500	-	-



(AUTHORISED SIGNATORY)
(RHYTHM BASSON*)

(AUTHORISED SIGNATORY)
(RAVINDER MHTAL)

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29/43



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Test Report

Issued To: **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 2024022010121

Test Report Date: 29/02/2024

Sample Particulars

Nature of the Sample
Sample Quantity & Packaging
Sample Received at Lab
Test Started On
Test Completed On
Method of Sampling
Date of Sampling
Monitoring Conducted By
Sampling Location

Surface Water

2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SOP/B/D-3

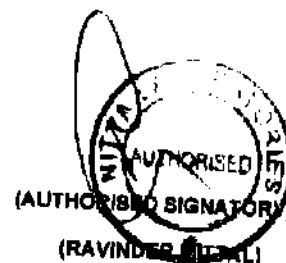
20/02/2024

M/s Nitya Laboratories

SW1-Near MRPLAC Flare Area

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	Salinity	ppt	0.35	APHA 23 rd Ed.	-	-	-	-	-
2	Total Nitrogen	mg/l	0.89	IS:3025 (P-34)	-	-	-	-	-
3	Phosphate	mg/l	0.48	IS:3025 (P-31)	-	-	-	-	-



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30/43

BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Pernuda Village
Mangalore-574 509, Karnataka, India

ULR No : TC636824000001588F

Test Report Date: 29/02/2024

Sample Particulars

Nature of the Sample
Sample Quantity & Packaging
Sample Received at Lab
Test Started On
Test Completed On
Method of Sampling
Date of Sampling
Monitoring Conducted By
Sampling Location

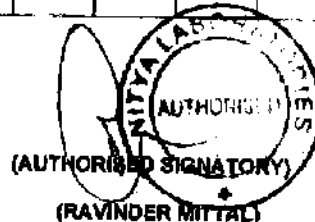
Surface Water
2 L HDPE Can+1Lamber Bottle + 150 ml Sterile Container
23/02/2024
23/02/2024
28/02/2024
SOP/B/D-3
20/02/2024
M/s Nitya Laboratories
SW2-Near MRPLAC Near Central Warehouse

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	pH	-	7.63	IS:3025 (P-11)	6.5-8.5				
2	Color	Hazen	<5	IS:3025 (P-4)	-	max	max	max	-
3	Specific Conductance	uS/cm	490	IS:3025 (P-14)	-	10	300	300	max
4	Temperature	°C	28.4	IS:3025 (P-9)	-	-	-	1000	2500
5	Turbidity	NTU	27.3	APHA 23 rd Ed	-	-	-	-	-
6	Total Suspended Solids	mg/l	ND [DL- 5]	IS:3025 (P-17)	-	-	-	-	-
7	Oil & Grease	mg/l	ND [DL- 2]	IS:3025 (P-39)	-	-	-	-	-
8	Dissolved Oxygen as DO	mg/l	6.3	IS:3025 (P-38)	min. 6	min. 5	min. 4	min. 4	min. 3
9	BOD, 3 days at 27°C	mg/l	ND [DL- 2]	IS:3025 (P-44)	min. 2	min. 3	min. 3	-	-
10	COD	mg/l	ND [DL- 10]	IS:3025 (P-58)	-	-	-	-	-
11	Total Alkalinity as CaCO ₃	mg/l	100	IS:3025 (P-23)	-	-	-	-	-
12	Sodium as Na	mg/l	40	APHA 23 rd Ed	-	-	-	-	-
13	Potassium as K	mg/l	4.1	APHA 23 rd Ed	-	-	-	-	-
14	Arsenic as As	mg/l	ND [DL- 0.01]	APHA 23 rd Ed	max	max	max	-	-
15	Boron as B	mg/l	ND [DL- 0.1]	IS:3025 (P-57)	0.05	0.2	0.2	-	-
16	Total Hardness	mg/l	110	IS:3025 (P-21)	-	-	-	-	-



TC-6366



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Test ReportIssued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No

TC836624000001598F

Test Report Date:

29/02/2024

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
17	Chlorides as Cl	mg/l	18	IS:3025(P-32)	max 250	-	max 600	-	max
18	Total Dissolved Solids	mg/l	315	IS:3025 (P-18)	max 500	-	max 1500	-	max 800
19	Sulphate as SO ₄	mg/l	20.50	IS:3025 (P-24)	max 400	-	max 400	-	max 2100
20	Fluoride as F	mg/l	ND [DL- 0.1]	IS:3026 (P-60)	max 1.5	max 1.5	max 1.5	-	max 1000
21	Nitrates as NO ₃	mg/l	ND [DL- 0.1]	IS:3025 (P-34)	max 20	-	max 50	-	-
22	Iron (as Fe)	mg/l	0.16	APHA 23 rd Ed.	max 0.3	-	-	max 0.5	-
23	Chromium as Cr	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
24	Cadmium as Cd	mg/l	ND [DL- 0.001]	APHA 23 rd Ed.	-	-	-	-	-
25	Copper	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
26	Lead as Pb	mg/l	ND [DL- 0.01]	APHA 23 rd Ed.	max 0.1	-	max 0.1	-	-
27	Zinc as Zn	mg/l	ND [DL- 0.05]	APHA 23 rd Ed.	-	-	-	-	-
28	Calcium as Ca	mg/l	30	APHA 23 rd Ed.	-	-	-	-	-
29	Magnesium as Mg	mg/l	8.50	APHA 23 rd Ed.	-	-	-	-	-
30	E.coli*	MPN/100ml	411	IS 1622	max 50	max 500	max 500	-	-
31	Total Coliform*	MPN/100ml	536	IS 1622	max 50	max 500	max 500	-	-



TC-6366

(AUTHORISED SIGNATORY)

(RHYTHM BASSON*)

(AUTHORISED SIGNATORY)

(RAVINDER MITTAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No.: 2024022010121

Test Report Date: 29/02/2024

Sample Particulars

Nature of the Sample : **Surface Water**
Sample Quantity & Packaging : **2 L HDPE Can+1Lamber Bottle +150 ml Sterile Container**
Sample Received at Lab : **23/02/2024**
Test Started On : **23/02/2024**
Test Completed On : **28/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **20/02/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **SW2-Near MRPLAC Near Central Warehouse**

Analysis Report

Sr. No.	Parameters	Unit	Test Results	Protocol	Tolerance Limit				
					A*	B*	C*	D*	E*
1	Salinity	ppt	0.32	APHA 23 rd Ed	-	-	-	-	-
2	Total Nitrogen	mg/l	1.08	IS:3025 (P-34)	-	-	-	-	-
3	Phosphate	mg/l	0.81	IS:3025 (P-31)	-	-	-	-	-

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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Perumde Village
Mangalore-574 509, Karnataka, India

ULR No.: TC636824000001292F-1295F

Test Report Date: 13/02/2024

Sample Particulars

Nature of the Sample

Method of Sampling

Instrument Used

Place of Monitoring

Ambient Noise

IS 9889

Sound Level Meter

MRPLAC -North, South, East, West

Analysis Report

Sr. No.	Date of Sampling	Location	Test Result dB(A) Day Time	Test Result dB(A) Night Time	Test Method
Permissible Limit in *dB(A) Leq for Industrial Area			75 dB(A)	70 dB(A)	
1	09/02/2024	MRPLAC -North	65.5	51.5	IS 9889
2	09/02/2024	MRPLAC -South	68.6	53.4	IS 9889
3	09/02/2024	MRPLAC -East	61.6	51.5	IS 9889
4	09/02/2024	MRPLAC -West	57.1	50.5	IS 9889

Remark:

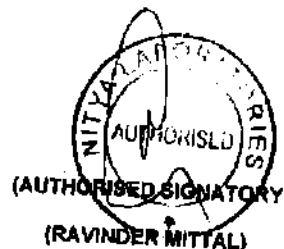
*dB (A) Leq denotes the time weighted average of the level of sound in decibal on scale 'A' which is reliable to human hearing.
CPCB = Central Pollution Control Board

Note: The Noise Ambient Air Quality Standards are given for reference

Area Code	Category of Area	Limits dB (A) Leq	
		Day Time (6AM - 10PM)	Night Time (10PM - 06AM)
A	Industrial Area	75	70
B	Commercial Area	65	65
C	Residential Area	55	45
D	Silence Zone	50	40



TC-6366



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. : TC638624000001225F

Test Report Date: 15/02/2024

Sample Particulars

Nature of the Sample : **Treated Effluent**
Sample Quantity & Packaging : **2 L HDPE Can+150 ml Sterile Container**
Sample Received at Lab : **09/02/2024**
Test Started On : **09/02/2024**
Test Completed On : **14/02/2024**
Method of Sampling : **SOP/B/D-3**
Date of Sampling : **06/02/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **Guard Pond Pump Discharge (ETP Treated Effluent)**

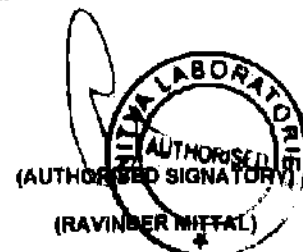
Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Colour	Hazen	ND [DL-1]	All efforts should be made to remove colour and unpleasant odour as far as practicable	IS:3025 (P-4)
2	Odour	.	Agreeable		IS:3025 (P-6)
3	pH	...	7.52	6.0-8.5	IS:3025 (P-11)
4	Total Suspended Solids (TSS)	mg/L	48	100	IS:3025 (P-17)
5	Temperature	°C	24.5	Shall not exceed 5 degree above the receiving water temp.	IS:3025 (P-9)
6	Oil & Grease (O&G)	mg/L	3	5	IS:3026 (P-39)
7	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	14	30	IS:3025 (P-44)
8	COD	mg/L	70	125	IS:3025 (P-56)
9	Ammonical Nitrogen	mg/L	ND [DL-0.1]	15	IS:3025 (P-34)
10	Total Kjeldhal Nitrogen	mg/L	ND [DL-0.1]	40	IS:3025 (P-34)
11	Lead as Pb	mg/L	ND [DL-0.01]	2	APHA 23 rd Ed
12	Chromium Hexavalent as Cr ⁶⁺	mg/L	ND [DL-0.1]	0.1	APHA 23 rd Ed

Remark
ND-Not Detected



TC-6366



(RAVINDER MITTAL)

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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No

TC636624000001225F

Test Report Date: 15/02/2024

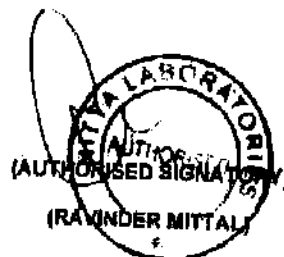
Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
13	Chromium as Cr	mg/L	ND [DL-0.05]	2.0	APHA 23 rd Ed
14	Copper as Cu	mg/L	ND [DL-0.25]	1.0	APHA 23 rd Ed
15	Zinc as Zn	mg/L	ND [DL-0.5]	5.0	APHA 23 rd Ed
16	Nickel as Ni	mg/L	ND [DL-0.1]	1.0	APHA 23 rd Ed
17	Fluoride as F	mg/L	ND [DL-0.02]	1.0	IS:3025 (P-60)
18	Sulphide as S ²⁻	mg/L	ND [DL-0.05]	2.0	IS:3025 (P-29)
19	Arsenic as As	mg/L	ND [DL-0.01]	0.2	APHA 23 rd Ed
20	Mercury as Hg	mg/L	ND [DL-0.05]	0.01	APHA 23 rd Ed
21	Cadmium as Cd	mg/L	ND [DL-0.02]	0.1	APHA 23 rd Ed
22	Selenium as Se	mg/L	ND [DL-0.1]	0.05	APHA 23 rd Ed
23	Phenolic Compounds(C ₆ H ₅ OH)	mg/L	ND [DL-1]	0.35	IS:3025 (P-43)
24	Iron as Fe	mg/L	0.08	3	APHA 23 rd Ed
25	Manganese as Mn	mg/L	ND [DL-0.1]	2	APHA 23 rd Ed
26	Residual Free Chlorine	mg/L	ND [DL-0.2]	1	IS:3025 (P-26)
27	Bio Assay Test	-	9:1	90% survival of fish after 96 hours in 100% effluent	IS:6582 (P-1)

Remark
ND-Not Detected



TC-6366



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No : 202402060167

Test Report Date: 15/02/2024

Sample Particulars

Nature of the Sample : **Treated Effluent**
Sample Quantity & Packaging : **2 L HDPE Can+150 ml Sterile Container**
Sample Received at Lab : **09/02/2024**
Test Started On : **08/02/2024**
Test Completed On : **14/02/2024**
Method of Sampling : **SOP/BI-D-3**
Date of Sampling : **06/02/2024**
Monitoring Conducted By : **M/s Nitya Laboratories**
Sampling Location : **Guard Pond Pump Discharge (ETP Treated Effluent)**

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Cyanide as CN	mg/L	ND [DL-0.01]	0.2	IS:3025 (P-27)
2	Total Phosphorous as P	mg/L	0.98	3	IS:3025 (P-31)
3	Nitrate	mg/L	0.92	20	IS:3025 (P-34)
4	Particle Size of Suspended Solids	mg/L	Passed	Passed through 850 micron	APHA 23 rd Ed.
5	Vanadium as V	mg/L	ND [DL-0.01]	0.1	IS:3025 (P-58)
6	Benzene	mg/L	ND [DL-0.0001]	0.1	USEPA-8270C
7	Benzo (a) pyrene	mg/L	ND [DL-0.0001]	0.2	USEPA-8270C

Remark
ND-Not Detected

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(RAVINDER NITIA)

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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. TC636624000001602F
Test Report Date: 28/02/2024

Sample Particulars

Nature of the Sample

Sample Quantity & Packaging

Sample Received at Lab

Test Started On

Test Completed On

Method of Sampling

Date of Sampling

Monitoring Conducted By

Sampling Location

Treated Effluent

2 L HDPE Can +150 ml Sterile Container

23/02/2024

23/02/2024

28/02/2024

SOP/B/D-3

20/02/2024

M/s Nitya Laboratories

Guard Pond Pump Discharge (ETP Treated Effluent)

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Colour	Hazen	ND [DL-1]	All efforts should be made to remove colour and unpleasant odour as far as practicable	IS:3025 (P-4)
2	Odour	-	Agreeable		
3	pH	-	7.74	6.0-8.5	IS:3025 (P-6)
4	Total Suspended Solids (TSS)	mg/L	40	100	IS:3025 (P-11)
5	Temperature	°C	24.8	Shell not exceed 5 degrees above the receiving water temp.	IS:3025 (P-17)
6	Oil & Grease (O&G)	mg/L	ND	5	IS:3025 (P-38)
7	Bio-Chemical Oxygen Demand (3 days at 27°C) (BOD)	mg/L	16	30	IS:3025 (P-44)
8	COD	mg/L	80	125	IS:3025 (P-58)
9	Ammonical Nitrogen	mg/L	ND [DL-0.1]	15	IS:3025 (P-34)
10	Total Kjeldhal Nitrogen	mg/L	ND [DL-0.1]	40	IS:3025 (P-34)
11	Lead as Pb	mg/L	ND [DL-0.01]	2	APHA 23 rd Ed.
12	Chromium Hexavalent as Cr ⁶⁺	mg/L	ND [DL-0.1]	0.1	APHA 23 rd Ed.

Remark
ND-Not Detected



TC-6366



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Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

ULR No. TC636624000001602F
Test Report Date. 29/02/2024

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
13	Chromium as Cr	mg/L	ND [DL-0.05]	2.0	APHA 23 rd Ed.
14	Copper as Cu	mg/L	ND [DL-0.25]	1.0	APHA 23 rd Ed.
15	Zinc as Zn	mg/L	ND [DL-0.6]	6.0	APHA 23 rd Ed.
16	Nickel as Ni	mg/L	ND [DL-0.1]	1.0	APHA 23 rd Ed.
17	Fluoride as F	mg/L	ND [DL-0.02]	1.0	IS:3025 (P-60)
18	Sulphide as S ²⁻	mg/L	ND [DL-0.05]	2.0	IS:3025 (P-29)
19	Arsenic as As	mg/L	ND [DL-0.01]	0.2	APHA 23 rd Ed.
20	Mercury as Hg	mg/L	ND [DL-0.05]	0.01	APHA 23 rd Ed.
21	Cadmium as Cd	mg/L	ND [DL-0.02]	0.1	APHA 23 rd Ed.
22	Selenium as Se	mg/L	ND [DL-0.1]	0.05	APHA 23 rd Ed.
23	Phenolic Compounds(C ₆ H ₅ OH)	mg/L	ND [DL-1]	0.35	IS:3025 (P-43)
24	Iron as Fe	mg/L	0.21	3	APHA 23 rd Ed.
25	Manganese as Mn	mg/L	ND [DL-0.1]	2	APHA 23 rd Ed.
26	Residual Free Chlorine	mg/l	ND [DL-0.2]	1	IS:3025 (P-28)
27	Bio Assay Test	-	9:1	90% survival of fish after 96 hours in 100% effluent	IS:8582 (P-1)

Remark:
ND-Not Detected



TC-6366

(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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BUILDING & ROAD, MATERIAL, SOIL, ENVIRONMENTAL & CALIBRATION TESTING LAB

Test Report

Issued To **M/s Mangalore Refinery and Petrochemical Limited**
Aromatic Complex, Mangalore SEZ, Permude Village
Mangalore-574 509, Karnataka, India

Test Report No. 202402080168

Test Report Date 29/02/2024

Sample Particulars

Nature of the Sample	Treated Effluent
Sample Quantity & Packaging	2 L HDPE Can +150 ml Sterile Container
Sample Received at Lab	23/02/2024
Test Started On	23/02/2024
Test Completed On	28/02/2024
Method of Sampling	SOP/8/D-3
Date of Sampling	20/02/2024
Monitoring Conducted By	M/s Nitya Laboratories
Sampling Location	Guard Pond Pump Discharge (ETP Treated Effluent)

Test Report

Sr. No.	Parameter	Unit	Result	Permissible Limit	Protocol
1	Cyanide as CN	mg/L	ND [DL-0.01]	0.2	IS:3026 (P-27)
2	Total Phosphorous as P	mg/L	ND [DL-0.02]	3	IS:3025 (P-31)
3	Nitrate	mg/L	0.81	20	IS:3025 (P-34)
4	Particle Size of Suspended Solids	mg/L	Passed	Passed through 850 microns	APHA 23 rd Ed.
5	Vanadium as V	mg/L	ND [DL-0.01]	0.1	IS:3025 (P-56)
6	Benzene	mg/L	ND [DL-0.0001]	0.1	USEPA-8270C
7	Benzo (a) pyrene	mg/L	ND [DL-0.0001]	0.2	USEPA-8270C

Remark
ND-Not Detected

NITYA LABORATORIES
AUTHORISED
(AUTHORISED SIGNATORY)
(RAVINDER MITTAL)

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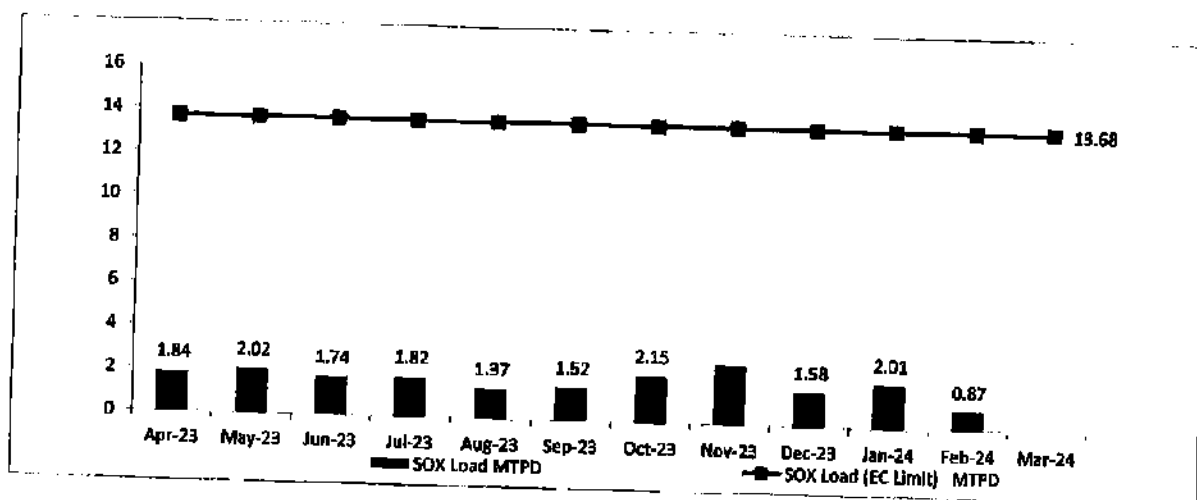
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ANNEXURE - E

Returns Regarding Water Consumed during the Month of February, 2024

Name and address of the Consumer	Purpose for which water consumed	Reading at the beginning of the first day of the calendar month under report	Reading at the end of the last day of the calendar month under report	Quantity of Water Consumed in Kilo Liters	If the meter was out of order, the monthly average consumption of water for the previous 3 months of the working period	Quantity of water qualifying for rebate according to the assessee	Remarks
M/s Mangalore Refinery and Petrochemicals Limited, Mangalore Special Economic Zone, Pannur, Mangalore -574 509	Industrial cooling, spraying in mine pits or boiler feed						
	Cooling Water	0	35963	35963			
	Boiler Feed Water	0	50238	50238			
	Fire Water	0	28883	28883			
	Domestic purpose						
	Drinking Water & Sanitation	0	7545	7545			
	Processing whereby water gets polluted and the pollutants are easily biodegradable						
Service Water		0	2441	2441			
Total Consumption				1,25,070			

ANNEXURE-F



Annexure-G

Mangalore Refinery and Petrochemicals Limited

Production Details of Aromatic Complex for February, 2024

Feed Processed – 1,25,033 MT

Sl. No.	Name of the Product	Quantity, MT
1	Paraxylene (Product)	-
2	Benzene (Co product)	15,157
3	Reformate (Intermediate)	97,155

