

COMPLIANCE REPORT

**AS PER CONDITIONS STIPULATED
IN THE ENVIRONMENTAL CLEARANCE**

**96/Parya/SEIAA/4604/2019,
dated May 29th, 2020**

**Six Monthly Compliance Report
(April-2021 to September-2021)**

FOR

**INTEGRATED PAINT PLANT AT
PLOT NO. - B4 & B5 AT
SANDILA INDUSTRIAL AREA PHASE – I,
TEHSIL: SANDILA, DISTRICT: HARDOI, (U.P.).**

SUBMITTED BY

AMAN ENVIRO ENGINEERING CONSULTANT

(Total Environmental Services, Testing, Design, Installation, Commissioning, O & M of ETP, STP, WTP, SAFETY AUDIT)

21.12.2021

TO WHOM IT MAY CONCERN

This is to certify that this six monthly Compliance report of conditions of Environmental Clearance is prepared for **“M/s Berger Paints India Limited, Plot No- B4 & B5 at Sandila Industrial area Phase-1 District- Hardoi (U.P.)”** from April-2021 to September 2021.

for AMAN ENVIRO ENGINEERING CONSULTANT



**(Vinod Kumar Tiwari)
PROPRIETOR**

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CHAPTER-1

INTRODUCTION AND PROJECT DESCRIPTION

Six monthly environmental compliance/status report is submitted for Integrated Paint manufacturing plant of **M/s Berger Paints India Limited** for April-2021 to September-2021. The Project is located at Plot No. – B4 & B5, Sandila Industrial Area Phase- I, District: Hardoi (U.P.). Prior Environment Clearance was obtained from Ministry of Environment & Forests (MoEFCC) vide letter no.: **96/Parya/SEIAA/4604/2019, dated May 29th, 2020**. Consent to establish has already been obtained for the project Vide Ref No. - **108095/UPPCB/Unnao(LAB)/CTE/HARDOI/2020, dated 01/01/2021** for validity upto 31/12/2025. Copy of CTE is attached here as **Annexure-I**

Specific and general conditions stipulated in Environment Clearance are being complied during the construction phase.

Environmental mitigation measures described in Environmental Management Plan are being implemented during construction phase. M/s Berger Paints India Limited management team is fully conscious about Environmental Management and enhancing green belt development in project surrounding area.

Six monthly compliance/status reports for April 2021 to September 2021 for conditions stipulated in the Environmental Clearance letter issued by MoEF are enclosed.

CHAPTER – 2

COMPLIANCE OF STIPULATED CONDITIONS OF ENVIRONMENTAL CLEARANCE

Name of the Project: Integrated Paint manufacturing plant at Plot No. – B4 & B5 at Sandila Industrial Area Phase- I, District: Hardoi (U.P.) by **M/s Berger Paints India Limited.**

Clearance Letter No:96/Parya/SEIAA/4604/2019, dated May 29th, 2020

Period of Compliance Report: (April 2021 to September 2021).

I. SPECIFIC CONDITIONS		
Sr. No.	Statutory	Compliances
1.	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.	Not applicable as there is no forest land involved in the project.
2.	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.	Not Applicable, there is no wild life sanctuary within 10 km radius.
3.	The project proponent shall prepare a Site-Specific Conservation Plan and approved by the Chief Wildlife Warden. The recommendation of the approved Site-Specific Conservation Plan/ Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report. (in case of the presence of schedule species in the study area).	No schedule-I species is found in study area, hence this condition is not applicable.
4.	The project proponent shall obtain Consent to Establish/Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/Committee	The CTE (Consent to Establish) application has been Obtained from UPPCB. Copy of CTE attached as Annexure-I .
5.	The project proponent shall obtain authorization under the Hazardous and other waste management rules 2016 as amended from time to time.	The point is noted. Will be complied.

6.	The company shall strictly comply with the rules and guideline under manufacture, storage and import of Hazardous Chemicals (MSIHC) Rules, 1989 as amended time to time. All transportation of Hazardous Chemicals Shall be as per the Motors Vehicle Act (MVA),1989	The point is noted. Will be complied.
II. Air quality monitoring and preservation:		
1.	The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emission with respect to standards prescribed in Environment (Protection) Rules 1986 SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.	The base work for construction has been initiated. We will comply with this condition after commissioning of the plant.
2.	The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through labs recognized under Environment (Protection) Act, 1986.	Point is noted and will be complied after commissioning of the plant.
3.	The project proponent shall install system carryout to Ambient Air Quality monitoring for common/criterion parameter relevant to the main pollutant released (e.g. PM ₁₀ and PM _{2.5} in reference to PM emission, and SO ₂ and Nox in reference to SO ₂ and Nox emission) within and outside the plant area at least at four location (one within and three outside the plant area at an angle of 120° each), covering upwind and downwind directions.	Ambient Air Monitoring quality has been done at 4 locations; Monitoring Reports are attached as Annexure-II .
4.	To control source and the fugitive emissions, suitable pollution control device shall be installed to meet the prescribed norms and/or the NAAQS.	Ambient Air Monitoring quality has been done at 4 locations; Monitoring Reports are

	Sulphur content should not exceed 0.5% in the coal for use in coal fired boiler to control particulate emissions within permissible limits (as applicable). The gaseous emissions shall be dispersed through stack of adequate height as per CPCB/SPCB guidelines.	attached as Annexure-II.
5.	Storage of raw materials, coal etc. shall be either stored in soils or in covered areas to prevent dust pollution and other fugitive emission.	Point is noted and same will be complied after commissioning of plant.
6.	National Emission Standards for Organic Chemicals manufacturing Industry issued by the Ministry vide G.S.R. No. 608(E) dated 21 th July, 2010 and amended from time to time shall be followed.	Point is noted and same will be complied after commissioning of plant
7.	The National Ambient Air Quality Emission Standard issued by the Ministry vide G.S.R. No. 826(E) dated 16 th November, 2009 shall be complied with.	Point is noted and is being complied with.
III. Water quality monitoring and preservation		
1.	The project proponent shall provide online continuous monitoring of effluent, the unit shall install web camera with night vision capability and flow meters in the channel/drain carrying effluent within the premises (applicable In case of the projects achieving ZLD).	On completion of the project and on commissioning, the unit will install OCMS for the effluent & web camera at drain carrying the effluent as per CPCB guidelines.
2.	As already committed by the project proponent, Zero Liquid Discharge shall be ensured and no waste/treated water shall be discharged outside the premises (applicable in case of the projects achieving the ZLD).	In no any case treated water will be discharged outside the premises as unit is based on Zero Liquid Discharge. ETP, RO, MEE/MVR & ATFD will be installed to take care the proposed effluent load.
3.	The effluent discharge shall conform to the	Unit is based on Zero Liquid

	standards prescribed under the Environment Protection) Rules, 1986, or as specified by the State Pollution Control Board while granting Consent under the Air/Water Act, whichever is more stringent.	Discharge strategy, no effluent is discharged outside the premises. However all standards will be complied in accordance to the need and requirement.
4.	Total fresh water requirement shall not exceed the proposed quantity or as specified by the Committee. Prior permission shall be obtained from the concerned regulatory authority/CGWA In this regard.	NOC for ground water abstraction has been obtained from CGWA. Copy of the same is attached as Annexure-III . The same is under ratification with UPGWD as per new rules for required borewell construction at site.
5.	Process effluent/any wastewater shall not be allowed to mix with storm water. The storm water from the premises shall be collected and discharged through a separate conveyance system.	Separate storm and process water drain are being provided.
6.	The company shall harvest rainwater from the roof of the buildings and storm water drains to recharge the ground water and utilize the same for Different industrial operations within the plant.	Rain water harvesting will be done at site. Captured water will be used for gardening, sanitation and other internal purposes.
7.	The DG sets shall be equipped with suitable pollution control devices and the adequate stack height so that the emissions are in conformity with the extant regulations and the guidelines in this regards.	Adequate stack height for DG set will be provided as per norms and emission will be within CPCB norms.
IV. Noise monitoring and prevention		
1.	Acoustic enclosure shall be provided to DG set for controlling the noise pollution.	Point is noted and same will be complied.
2.	The overall noise levels in and around the plant	Acoustic enclosure will be

	area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation.	provided with DG set and Noise level will be maintained within permissible limits.
3.	The ambient noise levels should conform to the standards prescribed under E(P) A Rules,1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.	Point is noted and Copy of Ambient noise level attached as Annexure-II .
V. Energy Conservation measures		
1.	The energy sources for lighting purposes shall preferably be LED based.	Point is noted and same shall be complied.
VI. Waste management		
1.	Hazardous chemicals shall be stored in tank, tank farms, drums, carboys etc. Flame arresters shall be provided on tank farm and the solvent transfer through pumps.	Point is noted and same shall be complied.
2.	Process organic residue and spent carbon, if any, shall be sent to cement industries. ETP sludge, process inorganic & evaporation salt shall be disposed off to the TSDF.	Point is noted and waste generated will be recycled in-house/ co-processed through authorised recyclers / disposal to CHWTSDF vendor after commissioning of plant.
3.	The company shall undertake waste minimization measures as below. a. Metering and control of quantities of active ingredients to minimize waste. b. Reuse of by products from the process as raw materials or as raw material substitutes in other processes. c. Use of automated filling to minimize spillage. d. Use of close feed system into batch reactors. e. Venting equipment through vapour recovery	Point is noted and same shall be complied.

	system. f. Use of high pressure hoses for equipment clearing to reduce wastewater generation	
VII. Green Belt		
1.	Green belt of 5-10 m width shall be developed in more than 33% of the total project area mainly along the plant periphery, in downward wind direction, and along road sides etc.	Unit is developing green belt as per the norms. (Approx. 33% of total area ie.4.805 ha).
VIII. Safety, Public hearing and Human health issues		
1.	Emergency preparedness plan based on the Hazard Identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.	Condition noted and complied.
2.	The unit shall make the arrangement for protection of possible fire hazard during manufacturing process in material handling. Fire fighting system shall be as per the norms.	Condition noted and will be complied.
3.	The PP shall provide Personal Protection Equipment (PPE) as per the norms of Factory Act	The employees/operators will be provided with adequate Personal Protection Equipment (PPE) as per the norms of factory Act.
4.	Training shall be imparted to all employees on safety and health aspects of chemicals handling. Pre-employment and routine periodical medical examinations for all employees shall be undertaken on regular basis. Training to all employees on handling of chemicals shall be imparted.	Condition noted and will be complied. Daily TBTs and job specific trainings would be conducted for staff/workers.
5.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc.	Condition noted and complied. Labour hutment colony are being built by the construction agency near the site with all necessary facilities.

	The housing may be in the form of temporary structures to be removed after the completion of the project.	
6.	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Point is noted and will be complied.
7.	There shall be adequate space inside the plant premises earmarked for parking of vehicles for raw materials and finished products, and no parking to be allowed outside on public places.	Unit has earmarked adequate space for parking of vehicles in the layout plan.
IX. Corporate Environment Responsibility		
1.	The project proponent shall comply with the provision contained in this Ministry OM vide F.No. 22-65/2017 – IA.III dated 1 st may 2018, as applicable, regarding Corporate Environment Responsibility.	Point is noted and same shall be complied with in due time period.
2.	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements /deviation / violation of the environment/forest/wildlife norms/conditions. The company shall have defined system of reporting infringements/deviation/violation of the environment/forest/wildlife norms I conditions and / or shareholders/stake holder. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six – monthly report.	Point is noted and company's environmental policy is well documented and made available to all stakeholders.
3.	As separate Environmental cell both at the project and company head quarter level, with	Point is noted and shall be complied.

	qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.	
4.	Action plan for implementing EMP and environment conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environment protection measures shall be kept in separate account and not to be diverted for any other purpose. Year's wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the six Monthly Compliance Report.	Point is noted and shall be complied.
5.	Self-environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.	Point is noted and shall be complied after commissioning of plant.
X. Miscellaneous		
1.	As proposed ZLD shall be achieved.	Point is noted and same will be complied after commissioning of plant.
2.	Under any circumstances no effluent of any kind be discharged outside the premises of Factory.	Point is noted
3.	The project proponent shall make public the environmental clearance granted for their project along with the environmental condition and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.	Public notice has been published in two newspaper "Indian Express" on 27 August 2020 and "JanSatta" on 27 August 2020. Copy of the same is attached as Annexure-IV (A) & (B).

4.	The copies of the environmental clearance shall be submitted by the project proponent to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.	Complied. Copy attached as Annexure-V.
5.	The project proponent shall upload the status of the compliance of the stipulated environment clearance condition, including results of monitored data and in conditions, including results of monitored data on their website and update the same on half-yearly basis.	Point is noted and same is being complied.
6.	The project proponent shall monitor the criteria pollutants level namely; PM ₁₀ , SO ₂ , Nox (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.	Monitoring Reports are attached as Annexure-II.
7.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the Ministry of Environment, Forest and Climate Change at environmental clearance portal.	Point is noted and complied.
8.	The project proponent shall submit the environmental statement for each financial year in form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.	Point is noted and same will be complied after commissioning of plant.

9.	The project proponent shall inform the Regional Office as well as the Ministry, the date of development work and start of production operation by the project.	Point is noted and intimation has been submitted to the office of UP-SEIAA with a copy to RO, MOEF, Lucknow
10.	The project authorities must strictly adhere to the stipulation made by the State Pollution Control Board and the State Government.	Point is noted and same will be complied.
11.	The project proponent shall abide by all the commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.	Point is noted.
12.	No further expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change (MoEF&CC).	Point is noted.
13.	Concealing factual data or submission of false fabricated data may result in revocation of this environmental clearance and attract action under the provision of Environment (Protection) Act, 1986.	Point is noted and same will be complied.
14.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Point is noted
15.	The Ministry reverse the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.	Point is noted
16.	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/information/monitoring reports.	Point is noted

17.	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the public Liability Insurance Act, 1991 along with their amendments and Rules and any other orders passed by the Hon'ble Supreme Court of India/High Courts and any other Court of Law relating to the subject matter.	Point is noted
18.	Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Point is noted.

CHAPTER-3

DETAILS OF ENVIRONMENTAL MONITORING

3.1 AMBIENT AIR QUALITY MONITORING

3.1.1 Ambient air Quality Monitoring Stations

Ambient air quality monitoring has been carried out near Main Gate (Plant Premises) (Station No: 1), Village – Jamsara (Station No: 2), Village – Som (Station No: 3) and near Umartali Railway Station (Station No: 4) to assess the ambient air quality. Three stations have been selected at 120° from the center. This will enable to have analytical understanding about air quality and the changes in the air environment in the study area with respect to the condition prevailing. Sampling at site was done from 15.09.2021 to 16.09.2021. The locations of the ambient air quality monitoring stations are given in Table 3.1: -

**Table 3.1,
Details of Ambient Air Quality Monitoring Stations**

Sr. No	Location Code	Location Name/Description	Environmental Setting of surrounding
1.	AAQ-1	Near Main Gate(Plant Premises) (Station No: 1)	Industrial
2.	AAQ-2	Village – Jamsara(Station No: 2)	Residential
3.	AAQ-3	Village – Som(Station No: 3)	Residential
4.	AAQ-4	Near Umartali Railway Station (Station No: 4)	Residential

AAQ-1: Near Main Gate (Plant Premises) (Station No: 1)

The sampler was placed near Main gate(Plant Premises) and was free from any obstructions. Surroundings of the sampling site represent industrial environmental setting.

AAQ- 2: Village – Jamsara (Station No: 2)

The sampler was placed in village Jamsara and was free from any obstructions. Surroundings of the sampling site represent residential environmental setting.

AAQ-3: Village – Som(Station No: 3)

The sampler was placed in Son village and it was also free from any obstructions. Surroundings of the sampling site represent residential environment setting.

AAQ-4: Near Umartali Railway Station (Station No: 4)

The sampler was placed near Umartali Railway Station and it was also free from any obstructions. Surroundings of the sampling site represent residential environment setting.

3.1.2 Ambient Air Quality Monitoring Methodology

Monitoring was conducted in respect of the following parameters:

- Particulate Matter 2.5 (PM_{2.5})
- Particulate Matter 10 (PM₁₀)
- Sulphur Dioxide (SO₂)
- Oxides of Nitrogen (Nox)

The duration of sampling of PM_{2.5}, PM₁₀, SO₂ and NO_x was 24 hourly continuous sampling per day duration monitoring. The monitoring was conducted for one day at the location. This is to allow a comparison with the National Ambient Air Quality Standards.

The air samples were analyzed as per standard methods specified by Central Pollution Control Board (CPCB) and IS: 5182. The techniques used for ambient air quality monitoring and minimum detectable levels are given in **Table 3.2**.

Fine Particulate Sampler instruments have been used for monitoring Particulate Matter 2.5 (PM_{2.5} i.e. <2.5 microns), and Respirable Dust Sampler with gaseous sampling attachment was used for sampling Respirable fraction (<10 microns), gaseous pollutants like SO₂, and Nox.

**Table 3.2
Techniques used for Ambient Air Quality Monitoring**

Sr. No	Parameter	Technique	Range of Testing
1.	Particulate Matter 2.5	Fine Particulate Sampler, Gravimetric Method	12 – 1200
2.	Particulate Matter 10	Respirable Dust Sampler, with cyclone separator, Gravimetric Method	12 – 500
3	Sulphur dioxide	Modified West and Gaeke	6 – 1000
4.	Oxides of Nitrogen	Jacob & Hochheiser	6 – 750

Ambient Air Quality Monitoring Results

Ambient Air quality monitoring results for PM_{2.5}, PM₁₀, SO₂ and NO_x at all three locations are presented in Table 3.3, 3.4 ,3.5 & 3.6 respectively.

Table 3.3

AAQ Results at Near Main Gate (Plant Premises) (Station No: 1)

Sr. No	Particulars	Protocol	Unit	Result	Standard as per NAAQS ; dated 18/11/ 2009
1	Particulate matters size less than 10 µm (PM ₁₀)	IS: 5182 (Part-23): 2006 Reaffirmed: 2017	µg/m ³	79.4	For 24 hour =100
2	Particulate matters size less than 2.5 µm (PM _{2.5})	IS: 5182 (Part-24): 2019	µg/m ³	46.7	For 24 hour =60
3	Sulphur Dioxides (SO ₂)	IS: 5182 (Part-2): 2001 Reaffirmed: 2017	µg/m ³	26.8	For 24 hour =80
4	Nitrogen Oxide (NO ₂)	IS: 5182 (Part-6): 2006 Reaffirmed: 2017	µg/m ³	35.3	For 24 hour =80

Table 3.4

AAQ Results at Village – Jamsara (Station No: 2)

Sr. No	Particulars	Protocol	Unit	Result	Standard as per NAAQS ; dated 18/11/ 2009
1	Particulate matters size less than 10 µm (PM ₁₀)	IS: 5182 (Part-23): 2006 Reaffirmed: 2017	µg/m ³	74.6	For 24 hour =100
2	Particulate matters size less than 2.5 µm (PM _{2.5})	IS: 5182 (Part-24): 2019	µg/m ³	41.2	For 24 hour =60
3	Sulphur Dioxides (SO ₂)	IS: 5182 (Part-2): 2001 Reaffirmed: 2017	µg/m ³	25.4	For 24 hour =80
4	Oxides of nitrogen	IS: 5182 (Part-6): 2006	µg/m ³	33.6	For

	(NO _x)	Reaffirmed: 2017			24 hour =80
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Table 3.5

AAQ Results at Village – Som(Station No: 3)

Sr. No	Particulars	Protocol	Unit	Result	Range of testing /limit of detection	Standard as per NAAQS ; dated 18/11/ 2009
1	Particulate matters size less than 10 µm (PM ₁₀)	IS: 5182 (Part-23): 2006 Reaffirmed: 2017	µg/m ³	72.8	12 – 1200	For 24 hour =100
2	Particulate matters size less than 2.5 µm (PM _{2.5})	IS: 5182 (Part-24): 2019	µg/m ³	43.2	12 – 500	For 24 hour =60
3	Sulphur Dioxides (SO ₂)	IS: 5182 (Part-2): 2001 Reaffirmed: 2017	µg/m ³	24.1	6 – 1050	For 24 hour =80
4	Oxides of nitrogen (NO _x)	IS: 5182 (Part-6): 2006 Reaffirmed: 2017	µg/m ³	34.6	6 – 750	For 24 hour =80

Table 3.6

AAQ Results near Umartali Railway Station(Station No: 4)

Sr. No	Particulars	Protocol	Unit	Result	Range of testing /limit of detection	Standard as per NAAQS ; dated 18/11/ 2009
1	Particulate matters size less than 10 µm (PM ₁₀)	IS: 5182 (Part-23): 2006 Reaffirmed: 2017	µg/m ³	81.5	12 – 1200	For 24 hour =100
2	Particulate matters size less than 2.5 µm (PM _{2.5})	IS: 5182 (Part-24): 2019	µg/m ³	48.6	12 – 500	For 24 hour =60
3	Sulphur Dioxides (SO ₂)	IS: 5182 (Part-2): 2001 Reaffirmed: 2017	µg/m ³	32.1	6 – 1050	For 24 hour =80
4	Oxides of nitrogen (NO _x)	IS: 5182 (Part-6): 2006 Reaffirmed: 2017	µg/m ³	40.7	6 – 750	For 24 our =80

Discussion on Ambient Air Quality in the Study Area

The value of PM₁₀ at Ambient Air Monitoring Station No: 1, 2 ,3 & 4 are 79.4 µg/m³, 74.6 µg/m³,72.8 µg/m³ & 81.5 µg/m³ respectively which were within permissible limit of 100 µg/m³ and PM_{2.5} levels are 46.7 µg/m³ at Station No: 1, 41.2 µg/m³ at Station No: 2, 43.2 µg/m³ at Station No: 3 and 48.6 µg/m³ at Station No: 4 were also observed within permissible limit of 60 µg/m³ (for residential, rural and other areas as stipulated in the National Ambient Air Quality Standards). SO₂ ranges between 24.1 µg/m³ to 32.1 µg/m³ and NO₂ ranges between 33.6 µg/m³ to 40.7 µg/m³ was also observed within the corresponding stipulated limits (Limit for SO₂ and NO₂; 80 µg/m³) at all of the 4 monitoring locations. Station wise variation of ambient air quality parameters has been graphically shown in Figure 3.1 to 3.4.

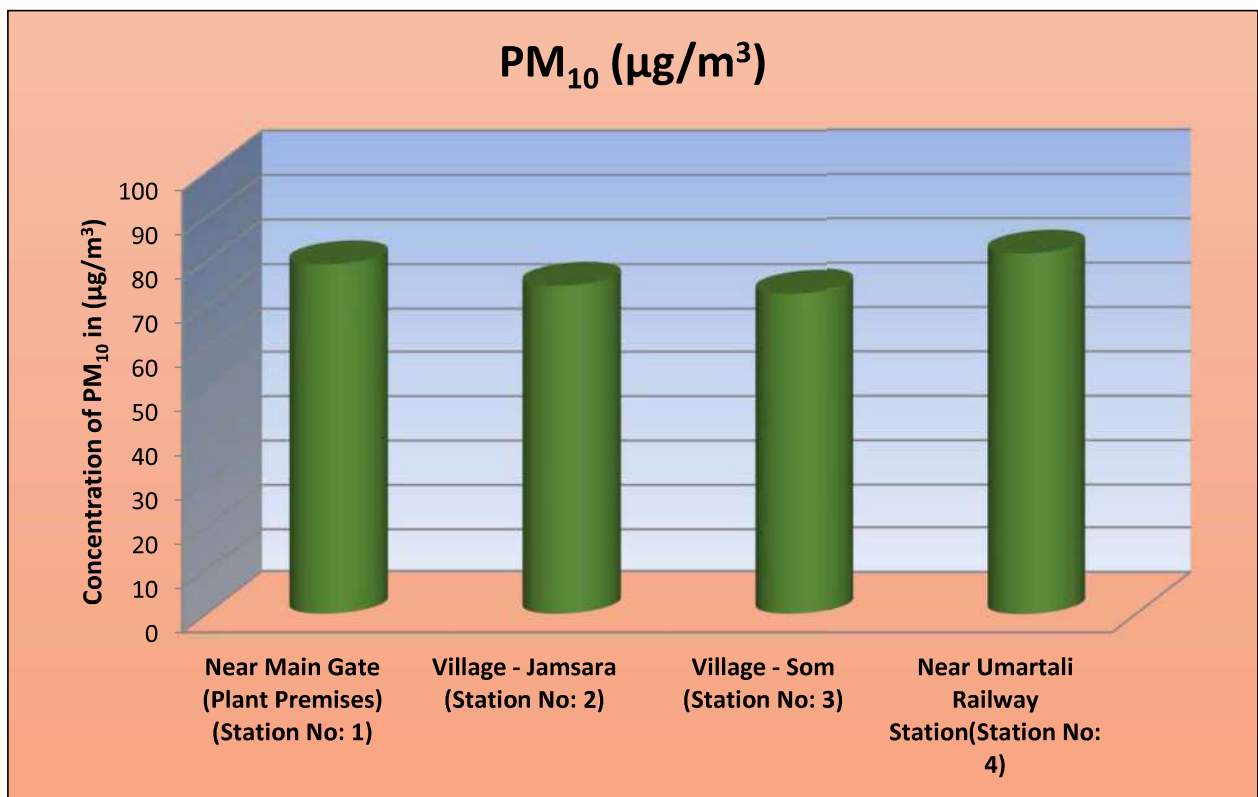


Figure 3.1: Graphs Showing PM₁₀ Concentration at all sites

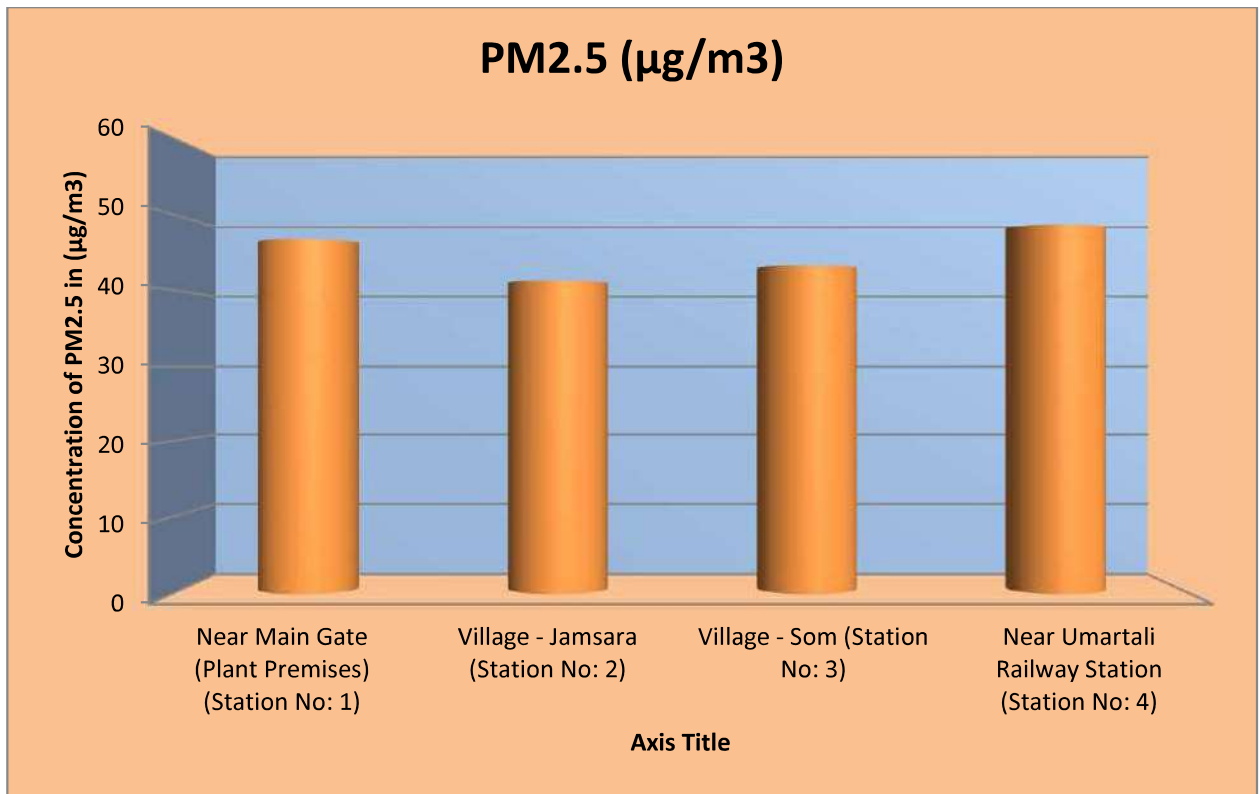


Figure 3.2: Graphs Showing PM_{2.5} Concentration at all sites

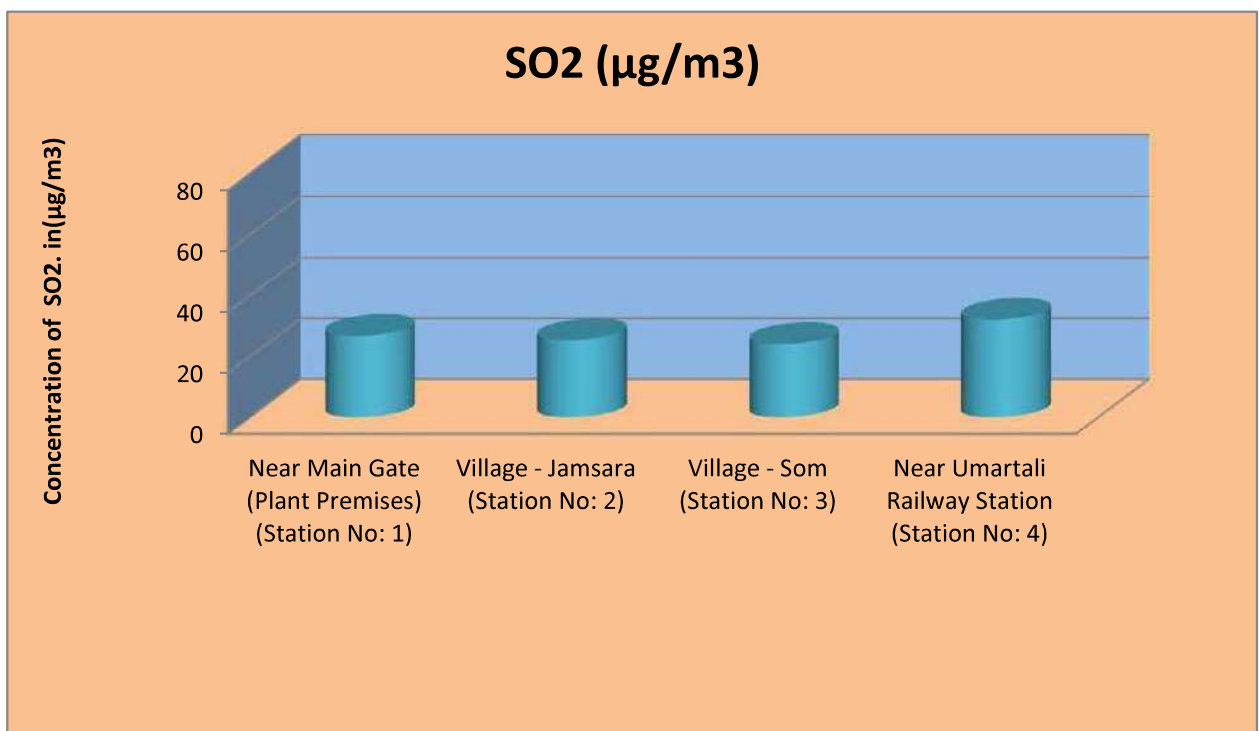


Figure 3.3: Graphs Showing SO₂ Concentration at all sites

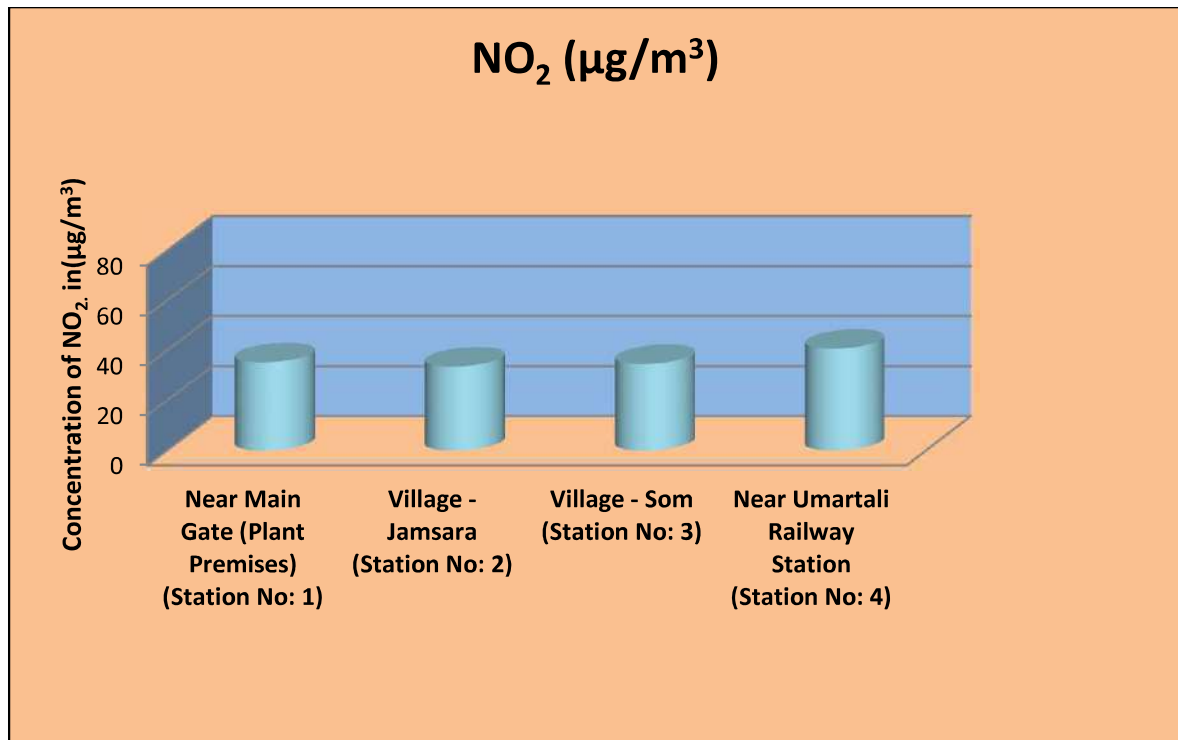


Figure 3.4: Graphs Showing NO₂ Concentration at all sites

3.2 AMBIENT NOISE MONITORING

3.2.1 Ambient Noise Monitoring Locations

The main objective of noise monitoring in the study area is to assess the present ambient noise levels near project site due to various construction activities and increased vehicular movement. A preliminary reconnaissance survey has been undertaken to identify the major noise generating sources in the area. Monitoring was done on 15.09.2021. Ambient noise monitoring was conducted at 2 location as given in Table 3.7.

Table 3.7

Details of Ambient Noise Monitoring Stations

Sr. No	Location Code	Location name and description	Present Land use
1.	NQ-1	Near Main Gate	Industrial
2.	NQ-2	Village –Som	Residential

3.2.2 Methodology of Noise Monitoring

Noise levels were measured using sound level meter. Noise level monitoring was carried out continuously for 24-hours with one-hour interval starting at 06:00 hrs to 06:00 hrs next day.

The noise levels were monitored on working days only. During each hour Leq were directly computed by the instrument based on the sound pressure levels. Monitoring was carried out at 'A' response.

3.2.3 Ambient Noise Monitoring Results

The location wise ambient noise monitoring results is summarized in **Table 3.8**. The noise levels are graphically presented in **Figure 3.5**.

Table 3.8 Ambient Noise Monitoring Results

Ambient Noise Level					
Sr. No.	Locations	Parameter	Unit	Results DAY TIME (6:00 AM – 10:00 PM)	Results NIGHT TIME (10:00 PM – 6:00 AM)
1.	Near Main Gate	Equivalent sound level	dB(A)	65.4	50.6
2.	Village –Som	Equivalent sound level	dB(A)	52.7	44.9

3.2.4 Discussion on Ambient Noise Levels in the Study Area

Day Time Noise Levels (L_{day}):

The day time noise level at monitoring station were found 52.7 – 65.4 dB (A), which is within limits prescribed for industrial area i.e. 75 db (A).

Night Time Noise Levels (L_{night}):

The night time noise level at monitoring station was found 44.9 – 50.6 dB (A), which is within limit prescribed for industrial area i.e. 70 dB (A).

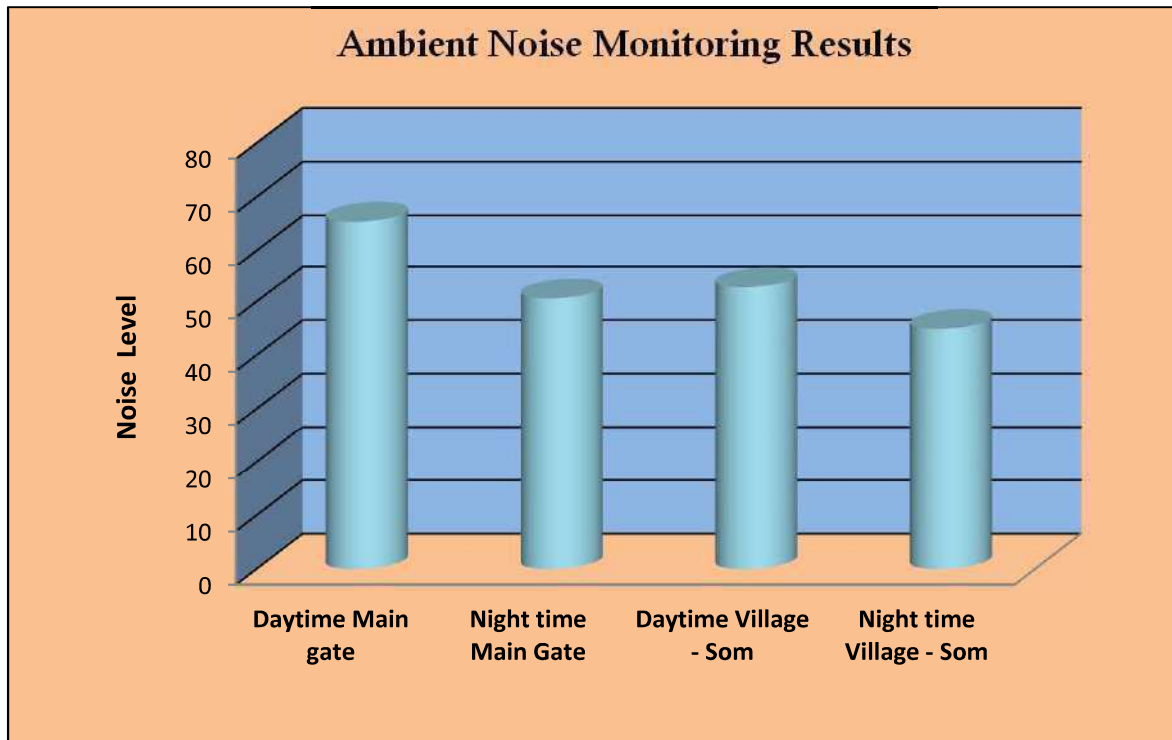


Figure 3.5: Day and Night Time noise Level

3.3 GROUND WATER QUALITY MONITORING

3.3.1 Ground water Quality Monitoring Locations

Keeping in view the importance of ground water, sample of ground water was collected from the project site for the assessment of impacts of the project on the groundwater quality.

Water sample was collected from the project site. The sample was analyzed for various parameters to compare with the standards for Ground water as per IS: 10500:2012 for Groundwater sources. The details of water sampling locations are given in **Table 3.9.**

Table3.9

Details of Water Quality Monitoring Station

Sr. No	Location Code	Location name and description	Date of Monitoring
1.	GW-1	Ground Water inside site	15 ^h September , 2021

3.3.2 Methodology of ground water Quality Monitoring

Sampling of ground water was carried out on 15.09.2021. Sample was collected as grab sample and sampling forms are filled in as per the sampling plan. The preservative sample was properly added to preserve as per standard operating procedures (SOP) and stored

immediately in ice boxes, which were ensured for appropriate temperatures. **Sample for chemical analysis was collected in polyethylene carboys. Sample collected for metal content were acidified to <2 pH with 1 ml HNO₃. A sample for bacteriological analysis was collected in sterilized glass bottles.**

Soon after the completion of sampling, chain of custody sheets for the samples are filled in and then they were transported by road to testing laboratory for further analysis. Proper care was taken during packing and transportation of samples. All the samples reached the central laboratory within the holding times for different parameters. After ensuring the same the samples was forwarded immediately for analysis.

The samples was analysed as per the standard procedures specified in 'Standard Methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA), IS and CPCB. The analytical techniques and the test methods adopted for testing of ground water is given in **Table 3.10**.

3.3.3 Ground water Quality Monitoring Results

The detailed Ground water quality monitoring results are presented in **Table 3.10**

Table 3.10: Ground water Quality Results at Hand pump (within premises)

S. No	Parameters	Method	Requirement (Acceptable Limit) IS:1050-2012	Permissible Limit in Absence of Alternate Source (IS:1050-2012)	Result
Discipline : Chemical Group : Water					
A. Organoleptic & Physical Parameter					
a.	Colour (Hazen Units)	IS:3025(Part4)	5 Max.	15 Max.	<1.0
b.	Odour	IS:3025(Part 5)	Agreeable	Agreeable	Agreeable
c.	Taste	IS:3025(Part 7 & 8)	Agreeable	Agreeable	Agreeable
d.	Turbidity(NTU)	IS:3025(Part 10)	1 Max.	5 Max.	<1
e.	pH Value	IS:3025 (Part – 11)	6.5-8.5	No relaxation	7.62
f.	Total Dissolved Solids,(mg/l)	IS:3025(Part 16)	500 Max.	2000 Max.	262
B. Parameters Concerning Undesirable Substances in excess amount					
a.	Aluminum as Al, (mg/l)	IS:3025(Part 55)	0.03 Max.	0.2 Max.	BDL(0.01)
b.	Ammonia (as total ammonia-N) (mg/l)	IS:3025(Part 34)	0.5 Max.	No Relaxation	BDL (0.1)
c.	Anionic detergent(as MBAS),(mg/l)	Annex K of IS : 13428	0.2 Max.	1.0 Max.	BDL (0.1)
d.	Barium (as Ba) (mg/l)	Annex F of IS : 13428	0.7 Max.	No relaxation	BDL(0.003)
e.	Boron (as B) (mg/l)	Cl. 29 of IS :3025	0.5 Max.	1 Max.	BDL (0.1)
f.	Calcium(as Ca), (mg/l)	IS:3025(Part 40)	75 Max.	200 Max.	14
g.	Chloramines (as Cl ₂), (mg/l)	IS:3025(Part 26)	4.0 Max.	No relaxation	BDL (0.050)
h.	Chloride(as Cl) (mg/l)	IS:3025(Part 32)	250 Max.	1000 Max.	26
i.	Copper (as Cu) (mg/l)	IS:3025(P-42)	0.05 Max.	1.5 Max.	BDL (0.1)
j.	Fluoride as F (mg/l)	IS:3025(Part 60)	1.0 Max.	1.5 Max.	BDL (0.1)
k.	Free Residual Chlorine, (mg/l)	IS:3025(P-26)	0.2 Min.	1.0 Max.	BDL (0.1)
l.	Iron (as Fe) (mg/l)	IS:3025(Part 53)	0.3 Max.	No relaxation	BDL (0.03)

m.	Magnesium as Mg (mg/l)	IS:3025(Part 46)	30 Max.	100 Max.	9
m.	Manganese as Mn, (mg/l)	IS:3025(Part 59)	0.1 Max.	0.3 Max.	BDL(0.01)
o.	Mineral Oil, (mg/l)	Clause 6 of IS:3025(Part39)	0.5 Max.	No Relaxation	BDL(0.1)
p.	Nitrate as NO3 (mg/l)	IS:3025(Part 34)	45 Max.	No Relaxation	BDL(0.1)
q.	Phenolic compounds (as C6H5OH), (mg/l)	IS:3025(P-43)	0.001 Max.	0.002 Max.	BDL(0.001)
r.	Selenium (as Se) (mg/l)	IS:3025(P-56)	0.01 Max.	No Relaxation	BDL(0.002)
s.	Silver (as Ag) (mg/l)	Annex J of IS:13428	0.1 Max.	No Relaxation	BDL(0.001)
t.	Sulphate(as SO ₄) (mg/l)	IS:3025(Part 24)	200 Max.	400 Max.	2.6
u.	Sulphide as H ₂ S, (mg/l)	IS:3025(Part 29)	0.05 Max.	No Relaxation	BDL(0.025)
v.	Total Alkalinity(as CaCO ₃)(mg/l)	IS:3025(Part 23)	200 Max.	600 Max.	78
w.	Total Hardness(as CaCO ₃), (mg/l)	IS 3025 (Part 21)	200 Max.	600 Max.	88
x.	Zinc(as Zn)(mg/l)	IS:3025(P-49)	5 Max.	15 Max.	BDL(0.025)
C.	Parameters Concerning Toxic Substances				
a.	Cadmium(as Cd)(mg/l)	IS:3025(P-41)	0.003 Max.	No Relaxation	BDL(0.002)
b.	Cyanide(asCN)(mg/l)	IS:3025(Part 27)	0.05 Max.	No Relaxation	BDL(0.01)
c.	Lead(as Pb)(mg/l)	IS:3025(P-47)	0.01 Max.	No Relaxation	BDL(0.002)
d.	Mercury(as Hg)(mg/l)	IS:3025(P-48)	0.001 Max.	No Relaxation	BDL(0.0002)
e.	Molybdenum(as Mo)(mg/l)	IS:3025(Part 2)	0.07 Max.	No Relaxation	BDL(0.001)
f.	Nickel(as Ni) (mg/l)	IS:3025(P-54)	0.02 Max.	No Relaxation	BDL(0.0002)
g.	Polychlorinated Biphenyls PCB (mg/l)	APHA 6630/ITAC/08-02	0.0005 Max.	No Relaxation	BDL(0.00001)
h.	Polynuclear Aeromatic Hydrocarbons , PAH (mg/l)	APHA 66340/ITAC/08-02	0.0001 Max.	No Relaxation	BDL(0.00001)
i.	Total Arsenic(as As)(mg/l)	IS:3025(P-37)	0.01 Max.	0.05 max	BDL(0.0001)
j.	Total Chromium(as Cr)(mg/l)	IS:3025(P-52)	0.05 Max.	No Relaxation	BDL(0.001)
	Discipline : Biological Group : Water				
D.	Microbiological Tests				
a.	<i>E.Coli/100 ml</i>	IS:1622-1981	Absent	No Relaxation	Absent
b.	Total Coliform Count/100 ml	IS:1622-1981	Absent	No Relaxation	Absent

BDL (Below Detection Limit

3.4 SOIL MONITORING

3.4.1 Soil Monitoring Locations

The objective of the soil monitoring is to identify the impacts of ongoing project activities on soil quality and also predict impacts, which have arisen due to execution of various construction activities. Accordingly, a study of assessment of the soil quality has been carried out.

To assess impacts of ongoing project activities on the soil in the area, the Physico-chemical characteristics of soils were examined by obtaining soil samples from selected points and analysis of the same. Single sample of soil was collected from the project site for studying soil characteristics, the location of which is listed in **Table 3.11**.

Table 3.11

Details of Soil Monitoring Stations

Sr. No	Location Code	Location name and description
1.	SQ-1	Within Plant Premises

3.4.2 Methodology of Soil Monitoring

The sampling has been done in line with IS: 2720 & Methods of Soil Analysis, Part-1st, 2nd Edition, 1986 of American Society for Agronomy and Soil Science Society of America. The homogenized samples were analyzed for physical and chemical characteristics (physical, chemical and heavy metal concentrations). The soil samples were collected on 15.09.2021

The samples have been analyzed as per the established scientific methods for Physico-chemical parameters. The heavy metals have been analyzed by using Atomic Absorption Spectrophotometer.

3.4.3 Soil Monitoring Results

Single sample of soil is collected from the site to check the quality of soil of the study area. The Physico-chemical characteristics of the soil, as obtained from the analysis of the soil sample, are presented in **Table 3.12**.

Table 3.12

Physico-Chemical Characteristics of Soil at Near Main Gate

Sr. No.	Test Parameter	Unit	Result
1	pH Value (1% solution)	-	7.34
2	Electrical Conductivity (1% Solution)	($\mu\text{s}/\text{cm}$)	324
3	Organic Carbon	(% by mass)	1.15
4	Chloride as Cl	(% by mass)	0.040
5	Moisture Contents	(% by mass)	1.28
6	Cadmium as Cd	mg/kg	ND (0.01)
7	Chromium as Cr	mg/kg	ND (0.01)
8	Mercury as Hg	mg/kg	ND (0.01)
9	Lead as Pb	mg/kg	2.7
10	Nickel as Ni	mg/kg	4.6
11	Copper as Cu	(mg/kg)	7.6
12	Calcium as Ca	(% by mass)	0.63
13	Magnesium as MgO	(% by mass)	0.39
14	Nitrogen as N	(% by mass)	0.73
15	Zinc as Zn	(mg/kg)	23.9
16	Iron as Fe	(mg/kg)	3.2
17	Phosphorus as P	(% by mass)	0.13
18	Potassium as K	(% by mass)	0.33

3.4.4 Discussion on Soil Characteristics in the Study Area

The soil in study area is characterized by moderate organic content. The soil quality in the project area has not been affected by the project activities

LIST OF ANNEXURES

Annexure I	Copy of CTE
Annexure II	Copy of Environmental Monitoring reports
Annexure III	Copy of NOC obtained from CGWA
Annexure IV	Published information (in newspapers) regarding grant of environmental clearance
Annexure V	Copy of Submission of Environmental Clearance copies to Government office