

Summary of Baseline Environment

Air Environment

A. Particulate Matters (PM₁₀& PM_{2.5})

PM₁₀ and PM_{2.5} were monitored using a Respirable Dust sampler (RDS) and PM_{2.5} Sampler. A pre-conditioned and weighted glass fibre filter paper is used for PM₁₀ and PTFE filter paper is used for RDS/PM_{2.5} samplers. A known quantity of the air was sucked through the filter paper in a prescribed sampling time. The flow was noted from the manometer. The multiplication of time with rate gave the total quantity of air passed through the filter paper. After sampling, the filter paper was removed, conditioned and weighed finally for getting the concentrations in ambient air.

The minimum and maximum level of PM_{2.5} recorded within the study area was in the range of 30 µg/m³ (at AAQ5- Tatarahar -114+000) to 45 µg/m³ (at AAQ1- Chenari -76+000). The minimum and maximum level of PM₁₀ recorded within the study area in the range of 57 µg/m³ (at AAQ4- Tilouthu East -107+100) to 76 µg/m³ (at AAQ1- Chenari -76+000). The 24 hourly average values of PM_{2.5} & PM₁₀ were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 60 µg/m³ for PM_{2.5} and 100 µg/m³ PM₁₀.

B. Sulphur Di-Oxides (SO₂)

A known quantity of the air was bubbled through impingers containing tetrachloromercurate. SO₂ formed a disulfotomercurate complex, which gave a pinkish blue color with p-rosaniline and formaldehyde solution. The intensity of color produced was proportional to concentration of Sulphur dioxide. The measurement was made by using spectrophotometer at the wavelength of 560 nm.

The minimum and maximum concentration of SO₂ recorded within the study area was 7 µg/m³ (AAQ3- Darigawn -91+100) to 17 µg/m³ (AAQ3- Darigawn -91+100).

The 24 hourly average values of SO₂ were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m³ for rural areas.

C. Nitrogen Di-Oxides (NO_x)

A known quantity of air was passed through impingers containing sodium hydroxide-sodium arsenite solution. The estimation of NO_x was done calorimetrically using hydrogen peroxide, sulphanilamide, NEDA, etc. The intensity of the color was measured at 540 nm using a spectrophotometer.

The minimum and maximum level of NO₂ recorded within the study area was in the range of was 13 µg/m³ (AAQ3- Darigawn -91+100) to 32 µg/m³. (AAQ4- Tilouthu East -107+100). The 24 hourly average values of NO₂ were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m³ for rural areas.

D. Carbon Monoxide (CO)

NDIR based samplers are used to monitor the carbon monoxide levels. The minimum and maximum level of CO recorded within the study area was in the range of was 0.26 mg/m³ (AAQ3- Darigawn -91+100) to 0.85 mg/m³. (AAQ4- Tilouthu East -107+100).

NOISE QUALITY ANALYSIS ALONG THE PROPOSED PROJECT

The measured value for Leq-day Min- 50.5 (dB (A)) and Max- 54.2 (dB (A)) & Leq-night Min- 38.4 (dB (A)) and Max- 42.2 (dB (A)) has been found well within the prescribed limit

Summarized Project site Meteorological Data for Post-Monsoon

Month	Wind Speed (km/h)		Temperature (°C)			Rainfall (mm)	
	Max	Avg	Max	Min	Avg	Avg.	No. of Days
March 2022	1.9	1.3	38.2	9.1	42.75	8.6	0.9
April 2022	1.8	1.7	43	14.1	28.55	11.7	1
May 2022	1.9	1.8	44.6	15.8	30.2	39.3	2.4

Soil result analysis

Physical characteristics of soil were characterized through specific parameters viz bulk density, porosity, water holding capacity, pH, electrical conductivity and texture. Soil pH plays an important role in the availability of nutrients. Soil microbial activity as well as solubility of metal ions is also dependent on pH. In the study area, variations in the pH of the soil were found to be slightly neutral to alkaline (7.29 to 7.63). Electrical conductivity (EC) is a measure of the soluble salts and ionic activity in the soil. In the collected soil samples the conductivity ranged from 263-351 $\mu\text{mhos/cm}$. Moisture Content from 6.2 to 7.2 (percentage) by mass. The soils with low bulk density have favourable physical condition where as those with high bulk density exhibit poor physical conditions for agriculture crops.

Ground water & Surface water result analysis

PH value of ground water ranges from 7.23 to 7.52 and for surface water 7.46 to 7.65. Total Dissolved Solids in Ground water ranges from 362 to 410 mg/l and for Surface water 428 to 451 mg/l. All other parameters were analyzed and found within permissible limit.