ENVIRONMENTAL FACTORS MONITORING REPORT

"Rehabilitation and extension of the national public road M3 Chișinău-Giurgiulești-Border with Romania"

BENEFICIARY:
MM CONSULTING & ENGINEERING SRL

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ENVIRONMENTAL FACTORS MONITORING REPORT FOR "REHABILITATION AND EXTENSION OF THE NATIONAL PUBLIC ROAD M3 CHISINAU-GIURGIULESTI-BORDER WITH ROMANIA" CONTRACT no. 5P/28.01.2026

BENEFICIARY: MM CONSULTING & ENGINEERING SRL

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1. INTRODUCTION

1.1. Purpose of the study

This report documents and interprets the results of a monitoring campaign of abiotic environmental factors (air – emissions, soil, noise), carried out in order to characterizethe baseline condition of the site related to the project for the rehabilitation and extension of the M3 national public road Chișinău–Giurgiulești–Romanian border.

The report has been prepared under Contract no. 5P/28.01.2026, covering the provision of environmental monitoring services, including: in situ measurements, sampling, physico-chemical laboratory analyses, data processing and interpretation, as well as the integration of results into technical deliverables such as reports (and, where applicable, thematic cartographic representations for components requiring spatial modeling, specifically for noise).

The purpose of the work is to (i) establish a robust and traceable initial dataset regarding the quality of environmental factors prior to the commencement of works, (ii) provide a comparative basis for assessing the evolution of parameters throughout the project phases (pre-construction, construction, operation/defects notification period), (iii) identifying any specific vulnerabilities or exceedances, and (iv) substantiating measures for the prevention, reduction, and control of impacts, as well as the phased monitoring program, including biodiversity in sensitive areas.

1.2. Methodological approach to monitoring during the pre-construction, construction, and operation phases

Pre-construction phase – reconfirmation and dynamic validation of the baseline

The pre-construction phase represents a critical element of epistemic validation of the baseline previously established through monitoring campaigns.

The baseline, defined through the integrated analysis of abiotic environmental factors (air, soil, noise) and biotic components (habitats and fauna), serves as the basis for comparison in assessing all subsequent impacts generated by the project. However, the dynamic nature of the components that can generate environmental impacts requires treating the environment as an evolving system, susceptible to changes over time.

If construction work begins within a maximum of 2 years after the initial monitoring campaign, and no significant changes (anthropogenic or natural) have been identified at the site or in the area of influence, the baseline condition will be considered valid and representative, without the need for an additional monitoring campaign.

Regardless of the time frame, a spot check (screening) of the relevant parameters will be conducted prior to mobilization at the site, with the aim of confirming that the initial conditions

have been maintained, ensuring data comparability, and validating the assumptions used in the impact assessment.

If, during the pre-construction phase, changes in environmental parameters are observed compared to the baseline, the following measures shall be applied:

- updating the database regarding the initial state;
- reassessing the potential impact in accordance with specific legislation (including relevant European directives);
- implementation of additional measures to prevent or reduce the impact, adapted to the newly identified conditions.

Construction phase – compliance monitoring and adaptive impact control

During the construction phase, monitoring assesses not only the parameters corresponding to the baseline condition but also any impacts resulting from the construction activity itself.

Monitoring at this stage is structured around three main areas:

a) Verification of compliance with regulatory limits

The aim is to ensure, through periodic measurements, that environmental indicator values remain within permissible limits.

b) Verification of the implementation of environmental protection measures

The implementation of the measures outlined in the environmental documentation, adherence to best construction practices, and the effective functionality of impact-reduction solutions (e.g., sound-absorbing panels, dust emission control, etc.) are systematically analyzed.

c) Evaluation of the effectiveness of the measures adopted

A key element of this stage is the evaluation of the performance of impact mitigation measures by comparing monitoring results with the initially established objectives.

Where implemented measures are not sufficient to meet target levels and exceedances of regulatory limits are observed, additional mitigation measures will be proposed to address the identified impacts.

Operational phase/ defects notification period – verifying the effectiveness of implemented measures and justifying future interventions

The operational phase, corresponding to the defects notification period, begins with the commissioning of the road infrastructure and is essential for the post-implementation verification of the effectiveness of the adopted environmental protection measures. At this stage, the focus is no longer on characterizing the potential impact generated by construction work, but on evaluating the actual performance of the infrastructure in operation, in relation to the environmental protection objectives established by the project.

From this perspective, monitoring during the operation phase aims to assess the effectiveness of solutions implemented during construction in achieving their intended performance under actual operating conditions.

For biodiversity components, this phase is particularly important for assessing how the infrastructure interacts with fauna and habitats within the project's area of influence. Monitoring should address not only the maintenance of ecological parameters within established limits, but also the functional effectiveness of impact mitigation measures for species. This includes observing specific indicators such as ecological permeability, the preservation of habitat quality in adjacent areas, and the occurrence of phenomena such as roadkill, bottlenecks, founder effects, and habitat loss.

Similarly, for abiotic environmental factors, the operation phase serves to confirm whether the measures adopted in the project and implemented on-site are sufficient to ensure the infrastructure operates in compliance with environmental policies. The environmental monitoring plan explicitly provides, for the operation phase /defects notification period, for the verification of the integrity and effectiveness of protective measures, with monthly monitoring and reporting at the required frequency.

Therefore, if monitoring reveals that certain solutions do not meet the initially estimated performance level, specific recommendations can be formulated regarding their optimization, supplementation, or adaptation. Conversely, if certain measures prove effective, they can be validated as robust solutions and serve as benchmarks for similar future projects.

1.3. Methods and equipment

The design and implementation of the monitoring campaign aimed to obtain data that is comparable, verifiable, and suitable for interpretation in relation to relevant regulatory standards, through the coherent integration of: (a) in situ measurements, (b) sampling for laboratory analysis, and (c) subsequent processing/interpretation, including the georeferencing of monitoring points and the spatial representation of information where methodologically justified.

The activities were carried out by specialized personnel through internal structures dedicated to environmental studies and the environmental laboratory, using operational procedures designed to ensure compliance with best practices and applicable standards for measurement and testing. The guiding principle was to ensure data traceability (unique identification of samples, contextual recording of measurements, metrological control of equipment, preservation and transport of samples), so that the results can be audited and reused in subsequent time series

In-situ measurement activities, sampling, laboratory analyses, studies, and fieldwork are carried out in accordance with the internal procedures of GEOSTUD S.R.L.'s Management System, which comply with the specific national and international methodologies and standards in force.

Sampling and monitoring plans ensure the accuracy and quality of the collected data, and the preparation of the monitoring report involves correlating the data obtained from field activities, laboratory analyses, and specialized studies, as presented in the following chapters.

Field Activities

Prior to field trips for sampling and measuring environmental factors, the following measures are ensured:

- informing and training the members of the field team;
- identifying and understanding environmental parameters/factors;
- identifying the objectives/measurement and sampling points;
- calibration of field equipment (where necessary);
- selection of appropriate sampling containers, depending on the sample matrix and the type(s) of laboratory analyses to be performed;
- verifying the operational status of the field equipment used to perform measurements;
- verification of transport means to ensure proper conditions for transporting samples from the sampling/measurement location to the laboratory.

Field activities consist of the following:

- calibrating equipment before and after each measurement (where applicable);
- sampling of soil as an environmental factor in special containers appropriate for the type of analysis;
- measuring noise and air quality using Class I sound level meters and portable automatic analyzers;
- mandatory measurement of environmental conditions (temperature, wind speed and direction, humidity, atmospheric cloud cover, etc.) using weather stations, as well as positioning data using GPS stations;
- recording of sampling/measurement data in field sheets, sampling records, measurement logs, etc.;
- unique labeling/coding of samples;
- ensuring proper conditions for transporting samples from the field to the laboratory;
- preparing transport and travel documents.

Sampling and in situ measurement activities are carried out in accordance with established sampling protocols (standardized methods), equipment operating instructions (ILE), in situ measurement procedures defined in the internal technical procedures (based on national and international standards), as well as occupational health and safety requirements.

Laboratory analyses

Measurements of fugitive emissions into the ambient air (**atmospheric imissions**) are performed automatically using a portable analyzer based on the principle of chemiluminescence.

Sampling and measurement of sulfur dioxide (SO_2), nitrogen dioxide (NO, NO_2), carbon monoxide (CO), and methane (CH_4) were performed automatically, in-situ, using the MultiRae Lite portable multi-gas analyzer. The equipment operates on the principle of diffusion measurement, with 5 positions for mounting a variety of electrochemical sensors to determine the concentrations of NH_3, CO+H_2S, NO, NO_2, and SO_2, and non-dispersive infrared (NDIR) sensors to determine the concentration of CH_4 in the ambient air.

The determination of the level of particulate matter in suspension ($PM_{2.5}$, $PM_{(10),}$ and PM_{total}) was performed by direct measurement using the Casella-CEL 712 Microdust Pro airborne particulate matter analyzer. The equipment is equipped with a probe consisting of four elements, namely:

- a laser source;
- sampling inlet;
- optical detector;
- light stop.

The airborne particulate matter analyzer operates on the principle of light scattering, using a modulated laser source that emits a beam which, under clean air conditions, is blocked at the "stop point" and cannot reach the optical detector directly. When dust particles enter through the sampling port, the laser beam is scattered at a narrow angle, and part of it can reach the optical detector via an indirect path, displaying concentrations in real time, with a measurement range between 0.001 mg/m³ and 250 g/m^3 .

The analyzer offers the capability to perform both automatic optical measurements and gravimetric measurements in real time. The equipment allows for the measurement of particles using specific filters. The filters can select the size of the suspended particles detected as 2.5 µm and 10 µm.

To determine pollutant concentrations in **soil**, the gravimetric method, infrared spectroscopy (FT-IR), and inductively coupled plasma optical emission spectrometry (ICP-OES) are used. Each analytical technique applied in soil analysis is associated with dedicated laboratory equipment.

Noise measurements are performed automatically, in situ, using Class 1 portable sound level meters to determine the sound pressure level expressed in dB.

The measurement procedure consisted of the following steps:

- assessment of meteorological conditions at the time of measurement;
- identification of primary and secondary noise sources;
- describing the terrain conditions;
- establishing the on-site measurement points and their GPS coordinates;
- calibrating the sound level meter;

- the actual measurement of the sound pressure level (noise);
- recording measurement-specific data in the field log, measurement log, etc.

Subsequently, upon returning to the laboratory, the data obtained from the in-situ measurements for the environmental factors of air and noise are downloaded from the equipment's software, then processed and interpreted for the preparation of Test Reports. The raw data recorded using the sound level meter are processed using standardized techniques and methods.

Office activities

Office work includes the following activities:

- preparation of the sampling plan and, where applicable, the emission measurement plan; analysis of the documentation required for establishing noise monitoring points (cadastral plans or other documents describing the area from a geographical, topographical, administrative, and legal perspective, site layout plans, etc.), as well as other related activities;
- preparation and drafting of the monitoring report;
- editing and submission.

The preparation of the monitoring report is based on the following:

- technical documentation for the execution of the project (social and environmental impact assessment, specifications, site records, etc.);
- documentation indicating the volume of on-site work (field data sheets, sample collection reports, emission and noise measurement sheets);
- documentation and analysis of field data, photographs;
- results of laboratory analyses and field measurements;
- reviewing the relevant literature;
- instructions from the beneficiary.

Monitoring reports include references and recommendations regarding environmental protection, depending on the status of environmental factors, as well as in situations where the activities carried out influence components of the environment.

1.4. General information about the project

The M3 Corridor is the main north-south axis of the national road network, connecting the capital Chișinău with the southern regions and the international port of Giurgiulești. Given its length, the corridor has been divided into several road segments subject to modernization, with this project targeting interventions on Section 2. It covers 70.9 km of the M3 highway (Chișinău – Comrat – Giurgiulești – Romanian border), traversing the central and southern regions of the Republic of Moldova, namely the municipality of Chișinău and the localities of Ialoveni, Cimișlia, and Cahul.

Project Objectives

The project aims to rehabilitate and modernize the M3 road corridor (Chișinău - Cimișlia - Comrat - Giurgiulești), as well as certain connecting sections that provide access to the border crossings with Romania and Ukraine.

The M3 corridor is the main north-south axis of the national road network, linking the capital of the Republic of Moldova with key industrial and agricultural regions, as well as with the international port of Giurgiulești. This infrastructure serves both domestic transport flows and international freight transport to Romania and Ukraine, thus constituting a strategic element of the Republic of Moldova's transport network.

Section 2 of the project has a total length of 70.9 km (Category A) and includes four lots (Figure 1 .1), as follows:

- Lot 1 (I/C Airport - Porumbrei, L=34.4 km) - aims to rehabilitate the existing M3 road between km 10+000 and 44+350 and is configured for 4 lanes of traffic;
- Lot 2 (Porumbrei - Cimișlia, L=19.0 km) - involves complex works to widen and extend the existing road from 2 to 4 lanes (Category A), between km 44+420 and 63+430;
- Lot 3 (Cimișlia - Comrat, L=12.0 km) - involves the rehabilitation of the existing section of the M3 road, between km 70+350 and 82+430, maintaining the 2-lane configuration;
- Lot 4 (Giurgiulești Bypass, L=6.2 km) - involves the rehabilitation of the M3 road (between km 211.98 and 213.69) and the M3.1 road (between km 0.0 and 0.65), including the construction of a new 3.86 km bypass road around the village of Giurgiulești.

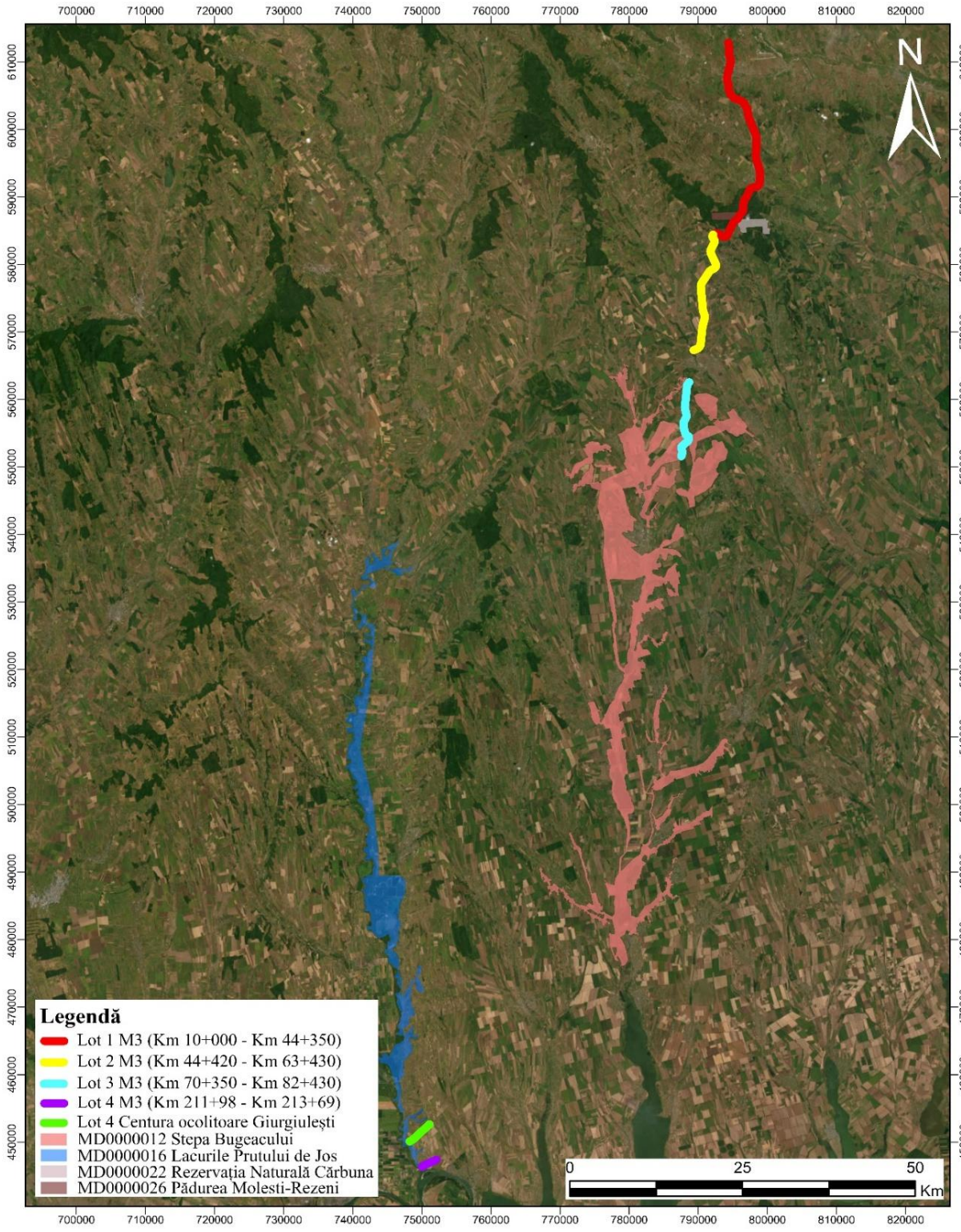

Figure 1 .1 . M3 Road Corridor (Chișinău - Cimișlia - Comrat - Giurgiulești) - Section 2

The project includes the following road improvement measures to ensure road safety and the comfort of drivers and passengers:

- design of plan and profile elements in accordance with technical construction standards;
- development of roadside areas;
- development of access roads to interior areas;

- development and reconstruction of bus stops, construction of sidewalks;
- reinforcement of road shoulders and slopes;
- repairing bridges and other structures with high wear and tear and restoring drainage systems;
- installation of new traffic signs;
- applying new road markings;
- installation of guide posts and guardrails;
- installing metal pedestrian barriers;
- installation of kilometer markers.

Reconstruction activities, such as the construction of new roads, the widening of roads from two to four lanes, or the rehabilitation of existing roads, involve the permanent or temporary use of land areas that are publicly or privately owned.

A network of alternative routes will be implemented, which will be communicated in advance to road users, including details regarding the estimated duration of the restrictions.

2. MONITORING POINTS

In order to establish the baseline conditions of abiotic environmental factors, a monitoring campaign was carried out to obtain a clear overview of the existing conditions within the monitoring area. This stage is essential for assessing the potential impact of infrastructure works, for developing measures to protect abiotic factors, and for monitoring their implementation. The monitoring of environmental factors was carried out at several locations identified by GPS coordinates (Table2 .1), which are mentioned below in the report and represented on the map as monitoring points (Figure 2 .1).

Table2 .1 . Coordinates of monitoring points for abiotic environmental factors

No.	Monitoring points	GPS coordinates
1	P0	45°28'31.91"N; 28°12'19.89"E
2	P1	45°28'40.42"N; 28°12'49.34"E
3	P2	45°28'41.19"N; 28°12'45.70"E
4	P3	45°29'04.40"N; 28°11'26.67"E
5	P4	45°30'24.86"N; 28°10'38.39"E
6	P5	46°25'59.38"N; 28°44'57.47"E
7	P6	46°28'15.97"N; 28°45'04.92"E
8	P7	46°32'31.40"N; 28°46'31.28"E
9	P8	46°35'35.76"N; 28°47'42.38"E
10	P9	46°40'40.46"N; 28°48'56.85"E
11	P10	46°41'25.40"N; 28°49'12.13"E
12	P11	46°41'37.69"N; 28°50'50.34"E
13	P12	46°42'55.51"N; 28°51'59.27"E
14	P13	46°43'18.23"N; 28°52'26.77"E
15	P14	46°44'51.18"N; 28°53'22.12"E
16	P15	46°45'40.34"N; 28°54'42.59"E
17	P16	46°55'18.64"N; 28°52'06.51"E

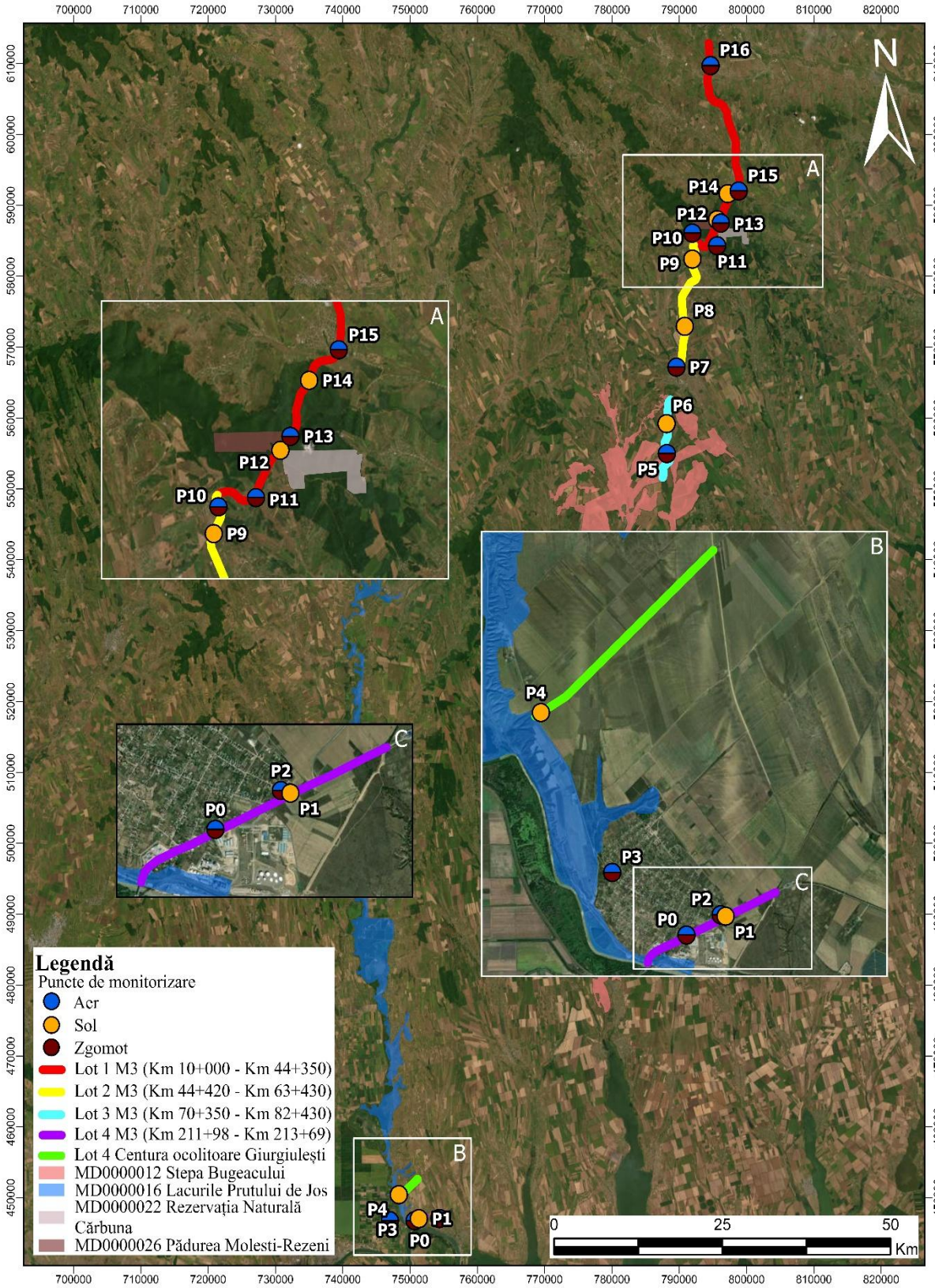

Figure 2 .1 . Location of environmental monitoring points for the M3 Road Corridor Project (Chișinău - Cimișlia - Comrat - Giurgiulești) - Section 2

- **P0 (45°28'31.91''N 28°12'19.89''E)** (Photo 2.1)

Monitoring:

- air - imissions: pollutants - NO, NO_2, SO_2, CO and CH_4, particulate matter $PM_{2.5}$, PM_{10}, and PM $_{total}$, and volatile organic compounds (VOCs) (Photo 2.2);
- noise level (Photo 2.3).

Photo 2.1. Site view - monitoring point P0

Photo 2.2. Air sampling and measurement – imissions: pollutants—NO, NO_2 , SO_2 , CO, and CH_4 , particulate matter $PM_{2.5}$, PM_{10} and PM_{total} , volatile organic compounds (VOCs) and measurement of meteorological conditions - monitoring point P_0

Photo 2.3. Noise level measurement at a sensitive receptor - monitoring point P0

- **P1 (45°28'40.42''N 28°12'49.34''E)** (Photo 2.4)

Monitoring:

- soil (Photo 2.5 andPhoto 2.6).

Photo 2.4. Site view – monitoring point P1

Photo 2.5. Soil sampling at a depth of 5 cm - monitoring point P1

Photo 2.6 . Soil sampling at a depth of 30 cm - monitoring point P1

- **P2 (45°28'41.19''N 28°12'45.70''E)** (Photo 2.7)

Monitoring:

- air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4, particulate matter $PM_{2.5}$, PM_{10}, and PM (total),and volatile organic compounds (VOCs) (Photo 2.8);
- noise level (Photo 2.9 andPhoto 2.10).

Photo 2.7. Site view - monitoring point P2

Photo 2.8. Air sampling and measurement - imissions: pollutants - NO, NO_2 , SO_2 , CO, and CH_4, particulate matter $PM_{2.5}$, $PM_{(10)}$ and PM_{total}, volatile organic compounds (VOCs) and measurement of meteorological conditions - monitoring point P2

Photo 2.9. Noise level measurement at a sensitive receiver - P2 monitoring point

Photo 2.10. Measurement of weather conditions – P2 monitoring point

- **P3 (45°29'04.40''N 28°11'26.67''E)** (Photo 2.11)

Monitoring:

- air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4, particulate matter $PM_{2.5}$, PM_{10}, and PM total, volatile organic compounds (VOCs), and meteorological measurements (Photo 2.12);
- noise level (Photo 2.13).

Photo 2.11. Site view - monitoring point P3

Photo 2.12. Air sampling and measurement - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4, particulate matter $PM_{2.5}$, PM_{10} and PM_{total}, volatile organic compounds (VOCs), and measurement of meteorological conditions - monitoring point P3

Photo 2.13. Noise level measurement at a sensitive receptor - monitoring point P3

- **P4 (45°30'24.86''N 28°10'38.39''E)** (Photo 2 .14)

Monitoring:

- soil (Photo 2 .15 andPhoto 2 .16).

Photo 2 .14 . Site view – monitoring point P4

Photo 2 .15 . Soil sampling at a depth of 5 cm - monitoring point P4

Photo 2 .16 . Soil sampling at a depth of 30 cm - monitoring point P4

- **P5 (46°25'59.38''N 28°44'57.47''E)** (Photo 2 .17)

Monitoring:

- air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4, particulate matter $PM_{2.5}$, PM_{10}, and PM total, volatile organic compounds (VOCs), and measurement of meteorological conditions (Photo 2.18);
- noise level (Photo 2.19).

Photo 2 .17 . Site view - monitoring point P5

Photo 2.18. Air sampling and measurement – imissions: pollutants – NO, NO_2, SO_2, CO, and CH_4; particulate matter $PM_{2.5}$, PM_{10}, nd PM total; volatile organic compounds (VOCs) and measurement of meteorological conditions - monitoring point P5

Photo 2.19. Noise level measurement at a sensitive receptor - monitoring point P6

- **P6 (46°28'15.97''N 28°45'04.92''E)** (Photo 2.20)

Monitoring:

- soil (Photo 2.21 andPhoto 2.22).

Photo 2.20. Site view - monitoring point P6

Photo 2.21. Soil sampling at a depth of 5 cm - monitoring point P6

Photo 2.22. Soil sampling at a depth of 30 cm - monitoring point P6

- **P7 (46°32'31.40''N 28°46'31.28''E)** (Photo 2.23)

Monitoring:

- air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4, particulate matter $PM_{2.5}$, PM_{10}, and PM total, volatile organic compounds (VOCs), and meteorological conditions (Photo 2.24);
- noise level (Photo 2.25).

Photo 2.23. Site view - monitoring point P7

Photo 2.24. Air sampling and measurement - imissions: pollutants - NO, NO_2 , SO_2 , CO, and CH_4 , particulate matter $PM_{2.5}$, PM_{10} and PM_{total} , volatile organic compounds (VOCs) and measurement of meteorological conditions - monitoring point P7

Photo 2.25. Noise level measurement at a sensitive receiver - monitoring point P7

- **P8 (46°35'35.76''N 28°47'42.38''E)** (Photo 2.26)

Monitoring:

- soil (Photo 2.27 andPhoto 2.28).

Photo 2.26. Site view – monitoring point P8

Photo 2.27. Soil sampling at a depth of 5 cm - monitoring point P8

Photo 2.28. Soil sampling at a depth of 30 cm - monitoring point P8

- **P9 (46°40'40.46''N 28°48'56.85''E)** (Photo 2.29)

Monitoring:

- soil (Photo 2.30 andPhoto 2.31).

Photo 2.29. Site view - monitoring point P9

Photo 2.30. Soil sampling at a depth of 5 cm - monitoring point P9

Photo 2.31. Soil sampling at a depth of 30 cm - monitoring point P9

- **P10 (46°41'25.40''N 28°49'12.13''E)** (Photo 2.32)

Monitoring:

- Air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4; particulate matter ($PM_{2.5}$, PM_{10}, and PM_{10}); volatile organic compounds (VOCs) and meteorological measurements (Photo 2.33);
- noise level (Photo 2 .34).

Photo 2.32. Site view - monitoring point P10

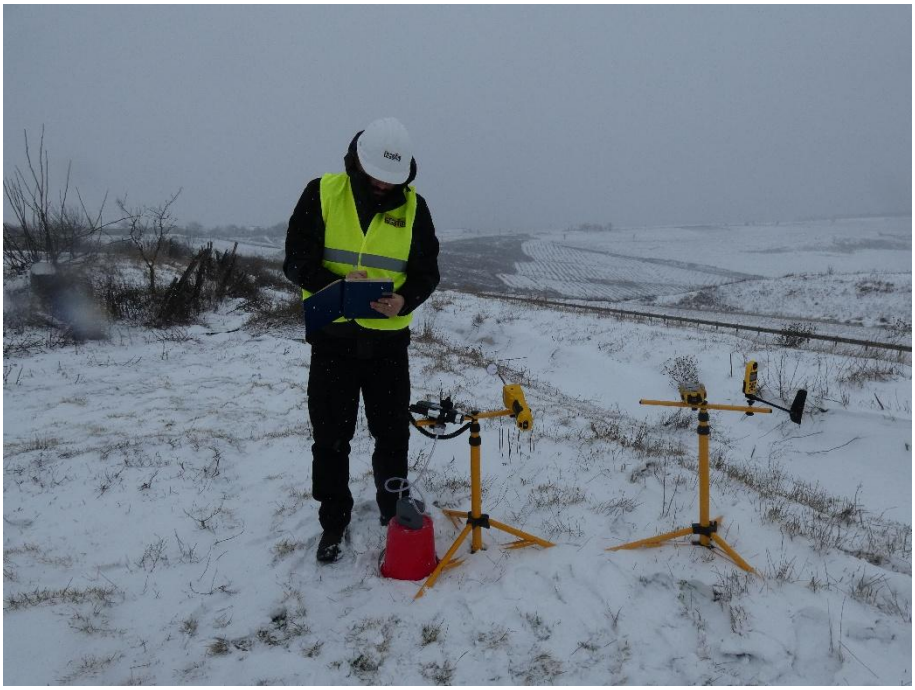

Photo 2.33. Air sampling and measurement - imissions: pollutants - NO, NO_2 , SO_2 , CO and CH_4 , particulate matter $PM_{2.5}$, PM_{10} and PM_{total} , volatile organic compounds (VOCs) and measurement of meteorological conditions - monitoring point P10

Photo 2 .34 . Noise level measurement at a sensitive receptor - monitoring point P10

- **P11 (46°41'37.69''N 28°50'50.34''E)** (Photo 2.35)

Monitoring:

- air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4, particulate matter $PM_{2.5}$, PM_{10}, and PM total, volatile organic compounds (VOCs), and meteorological conditions (Photo 2.36);
- noise level (Photo 2.37).

Photo 2.35. Site view - monitoring point P11

Photo 2.36. Air sampling and measurement – imissions: pollutants – NO, NO_2, SO_2, CO, and CH_4; particulate matter $PM_{2.5}$, PM_{10} and PM total; volatile organic compounds (VOCs) and measurement of meteorological conditions - monitoring point P11

Photo 2.37. Noise level measurement at a sensitive receptor - monitoring point P11

- **P12 (46°42'55.51''N 28°51'59.27''E)** (Photo 2.38)

Monitoring:

- soil (Photo 2.39 andPhoto 2.40).

Photo 2.38. Site view - monitoring point P12

Photo 2.39. Soil sampling at a depth of 5 cm - monitoring point P12

Photo 2.40. Soil sampling at a depth of 30 cm - monitoring point P12

- **P13 (46°43'18.23''N 28°52'26.77''E)** (Photo 2.41)

Monitoring:

- air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4, particulate matter $PM_{2.5}$, PM_{10} and PM_{total}, volatile organic compounds (VOCs), and meteorological measurements (Photo 2.42);
- noise level (Photo 2.43).

Photo 2.41. Site view - monitoring point P13

Photo 2.42. Air sampling and measurement - imissions: NO_2 and SO_2, particulate matter PM_{10}, volatile organic compounds (VOCs), and meteorological conditions - P13 monitoring point

Photo 2.43. Noise level measurement - monitoring point P13

- **P14 (46°44'51.18''N 28°53'22.12''E)** (Photo 2.44)

Monitoring:

- soil (Photo 2.45 andPhoto 2.46).

Photo 2.44. Site view - monitoring point P14

Photo 2.45. Soil sampling at a depth of 5 cm - monitoring point P14

Photo 2.46. Soil sampling at a depth of 30 cm - monitoring point P14

- **P15 (46°45'40.34''N 28°54'42.59''E)** (Photo 2.47)

Monitoring:

- Air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4; particulate matter ($PM_{2.5}$, PM_{10}, and PM_{10}); volatile organic compounds (VOCs); and meteorological measurements (Photo 2 .48);
- noise level (Photo 2.49).

Photo 2.47. Site view - monitoring point P15

Photo 2 .48 . Air sampling and measurement - imissions: pollutants - NO, NO_2 , SO_2 , CO, and CH_4 , particulate matter $PM_{2.5}$, PM_{10} and PM_{total}, volatile organic compounds (VOCs) and measurement of meteorological conditions - monitoring point P15

Photo 2.49. Noise level measurement at a sensitive receptor - monitoring point P15

- **P16 (46°55'18.64''N 28°52'06.51''E)** (Photo 2.50)

Monitoring:

- air - imissions: pollutants - NO, NO_2, SO_2, CO, and CH_4, particulate matter $PM_{2.5}$, PM_{10}, and PM_{total}, volatile organic compounds (VOCs), and meteorological conditions (Photo 2.51);
- noise level (Photo 2.52).

Photo 2.50. Site view - monitoring point P16

Photo 2.51. Air sampling and measurement – imissions: pollutants – NO, NO_2, SO_2, CO, and CH_4; particulate matter $PM_{2.5}$, PM_{10},and PM total; volatile organic compounds (VOCs) and measurement of meteorological conditions - monitoring point P16

Photo 2.52. Noise level measurement at a sensitive receptor - monitoring point P16

3. STATUS OF ENVIRONMENTAL FACTORS

3.1. Air

To determine ambient air quality, air samples were collected and analyzed as fugitive emissions from the ambient air (immissions).

Due to their specific nature, public road rehabilitation and expansion activities generate pollutants that affect air quality by producing dust and emitting pollutants such as SO_2, NO_2, NO, CO, CH_4, particulate matter of various sizes ($PM_{2.5}$, PM_{10}, and PM_{total}), as well as volatile organic compounds (VOCs). For this reason, it is important to analyze the air quality at the project's initial stage to determine the impact of the works on abiotic environmental factors.

Emissions into the ambient air (immissions)

The results of laboratory analyses for emissions of pollutants (SO_2, NO_2, NO, CO, CH_4) and particulate matter ($PM_{2.5}$, PM_{10} and PM_{total}) are presented in Test Reports No. 1037–1039, No. 1056–1058, and No. 1109–1112 dates 25.02.2026, attached to this monitoring report.

The results of the laboratory analyses for emissions of volatile organic compounds (VOCs) are presented in Test Reports No. 1040–1042, No. 1059–1061, and No. 1113–1116 dated 25.02.2026, attached to this monitoring report.

The concentrations of pollutants in ambient air, the locations where samples were collected, and the permissible limit values under Law No. LP98/2022 on ambient air quality are presented inTable 3.1 .

Table 3.1. Comparison of pollutant concentrations in ambient air with the permissible limit values under Law No. LP98/2022

Monitoring points	Analyzed indicators	Units of measur ement	Measured Measured	Permissible limit values according to Law No. LP98/2022	Reference documents
P0	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003 SR EN 13528-3:2004
	Nitrogen dioxide (NO_2)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	**-**	
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	<1	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	<1	**50**	
	Particulate matter PM_{total}	µg/m³	<1	**-**	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P2	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003
	Nitrogen dioxide (NO_2)	µg/m³	<100	**200**	

Monitoring points	Analyzed indicators	Units of measur ement	Measured Measured	Permissible limit values according to Law No. LP98/2022	Reference documents
	Nitrogen monoxide (NO)	µg/m³	<500	-	SR EN 13528-3:2004
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	<1	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	<1	**50**	
	Particulate matter PM_{total}	µg/m³	<1	-	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P3	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003 SR EN 13528-3:2004
	Nitrogen dioxide (NO_2)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	-	
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	<1	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	<1	**50**	
	Particulate matter PM_{total}	µg/m³	<1	-	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P5	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003 SR EN 13528-3:2004
	Nitrogen dioxide (NO_2)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	-	
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	2	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	2	**50**	
	Particulate matter PM_{total}	µg/m³	4	-	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P7	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003
	Nitrogen dioxide (NO_2)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	-	SR EN 13528-3:2004
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	<1	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	<1	**50**	
	Particulate matter PM_{total}	µg/m³	<1	-	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P10	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003 SR EN 13528-3:2004
	Nitrogen dioxide (NO_2)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	-	
	Carbon monoxide (CO)	µg/m³	<1	**10**	

Monitoring points	Analyzed indicators	Units of measur ement	Measured Measured	Permissible limit values according to Law No. LP98/2022	Reference documents
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	<1	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	<1	**50**	
	Particulate matter PM_{total}	µg/m³	<1	**-**	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P11	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003 SR EN 13528-3:2004
	Nitrogen dioxide ($_{NO_2}$)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	**-**	
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	<1	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	<1	**50**	
	Particulate matter PM_{total}	µg/m³	<1	**-**	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P13	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003 SR EN 13528-3:2004
	Nitrogen dioxide ($_{NO_2}$)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	**-**	
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	7	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	7	**50**	
	Particulate matter PM_{total}	µg/m³	14	**-**	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P15	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003 SR EN 13528-3:2004
	Nitrogen dioxide ($_{NO_2}$)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	**-**	
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	5	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	5	**50**	
	Particulate matter PM_{total}	µg/m³	10	**-**	
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008
P16	Sulfur dioxide (SO_2)	µg/m³	<100	**350**	SR EN 13528-1:2003 SR EN 13528-2:2003 SR EN 13528-3:2004
	Nitrogen dioxide ($_{NO_2}$)	µg/m³	<100	**200**	
	Nitrogen monoxide (NO)	µg/m³	<500	**-**	
	Carbon monoxide (CO)	µg/m³	<1	**10**	
	Methane (CH_4)	%(vol)	<0.10	**5%**	
	Particulate matter $PM_{2.5}$	µg/m³	4	**25**	SR EN 16450:2017
	Particulate matter PM_{10}	µg/m³	6	**50**	
	Particulate matter PM_{total}	µg/m³	10	**-**	

Monitoring points	Analyzed indicators	Units of measur ement	Measured Measured	Permissible limit values according to Law No. LP98/2022	Reference documents
	Volatile organic compounds (VOCs)	mg/m³	<0.100	-	EPA Method 21:2017 SR EN 15446:2008

Results marked with the symbol "<" represent values below the method's detection limit.

Upon examining the data presented in the table above for the measurements taken, it is found that the analyzed air pollutants are below the permissible limit values, in accordance with the relevant reference, Law No. LP98/2022.

3.2. Soil

3.2.1. Soil Quality

To assess soil quality in the analyzed areas, 7 soil samples were collected from the analyzed area. Sampling was carried out in accordance with the laboratory's specific procedures regarding sampling, storage, identification, labeling, preservation, and transport of samples from the site to the Environmental Laboratory.

The results of the laboratory analyses are presented in Test Reports Nos. 1043, 1044, 1046, 1047, 1062, 1063, 1117, 1118, 1120, 1121, 1123, 1124, 1126, and 1127 dated 05.03.2026, attached to this monitoring report.

Separate documents were issued to determine the total nitrogen content; these bear the same report numbers, representing the sample's numerical code, and are also attached to this monitoring report.

The analyzed parameters were compared with the reference values established in the regulatory document "Maximum Permissible Concentrations (MPC) in Soil and Adverse Effects on the Environment and Public Health." The results obtained are presented inTable 3.2 .

For soil parameters (pH, humus, total nitrogen, phosphorus and potassium), the interpretation was based on the agrochemical classifications used in soil fertility assessment

The analysis results indicate that, for most of the investigated sites, pollutant concentrations are below the permissible limit values. Isolated exceedances were identified for mercury in sample PG4 (point P8, depth 30 cm) and for petroleum product content in sample PG6 (point P1, depth 30 cm). Given the isolated nature of these exceedances, soil remediation is not currently required; however, further investigations and periodic monitoring of soil quality in the respective areas are recommended.

In addition to pollution parameters, soil indicators characterizing the physical-chemical properties of the soil were also analyzed, namely pH, humus content, total nitrogen, phosphorus, potassium, and humidity. These indicators were interpreted based on the agrochemical classifications used in soil fertility assessment.

The pH values determined in the analyzed samples range from 6.7 to 8.3, indicating slightly acidic to slightly alkaline soils, which corresponds to a reaction close to neutrality and is favorable for most biological processes in the soil.

The humus content ranges from approximately 2.2% to 7.06%, indicating soils with a moderate to high level of organic matter, characteristic of fertile soils with good nutrient retention capacity.

Total nitrogen values range from 0.14% to 0.28%, indicating a normal level of nitrogen supply, typical of agricultural soils in the region.

Phosphorus and potassium content show relatively high values in most of the analyzed samples, indicating a good supply of nutrients necessary for vegetation growth.

Soil humidity values, ranging from approximately 20% to 38%, reflect normal humidity conditions for the investigated soils and do not indicate abnormal saturation or excessive dryness.

Overall, the analysis of soil parameters indicates that the soils in the investigated area exhibit favorable physical-chemical conditions and good fertility, without showing significant degradation processes.

Table 3.2. Classification of soil sample concentrations within permissible limit values (MPC)

Soil sample collection site	Sample code	Sampling depth (cm)	Coordinates GPS	Physical and chemical analyzed parameters												
				pH	Cadmium	Copper	Nickel	Lead	Zinc	Mercury	Phosphorus	Potassium	Hydrocarbon/ petroleum product content	Humus	Total nitrogen	Humidity
				unit. pH	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	mg/kg d.w.	%	%	%
Monitoring point P14	PG 1	5	N-46°44'51.18" E-28°53'22.12"	7.1	0.34	12.75	15.45	6.81	32.16	<0.1	3,995.17	409.36	29	4.61	0.27	22.85
		30		7.8	0.39	13.00	15.31	6.67	29.59	<0.1	3,847.38	305.80	<25	4.61	0.14	21.29
Monitoring point P12	PG 2	5	N-46°42'55.51" E-28°51'59.27"	7.5	0.47	16.61	19.48	8.80	40.88	<0.1	4,976.75	377.68	30	4.67	0.27	22.43
		30		6.7	0.44	15.75	19.83	8.25	37.26	<0.1	4,310.33	318.91	<25	4.00	0.21	20.95
Monitoring point P9	PG 3	5	N-46° 40'40.46" E-28° 48'56.85	7.6	0.48	16.69	22.53	8.10	48.51	<0.10	5,476.40	242.12	26	5.95	0.19	30.13
		30		7.8	0.52	17.77	22.65	8.16	42.05	<0.10	5,755.13	236.08	28	5.63	0.19	28.78
Monitoring point P8	PG 4	5	N-46° 35'35.76" E-28° 47'42.38	7.4	0.42	14.44	20.20	8.11	35.59	<0.1	3,724.09	285.91	26	4.96	0.16	29.74
		30		7.6	0.47	14.87	21.28	8.75	38.14	2.88	4,471.91	313.90	<25	5.10	0.15	21.17
Monitoring point P6	PG 5	5	N-46° 28'15.97" E-28° 45'04.92	7.1	0.38	19.51	18.47	7.72	40.57	<0.1	4,930.13	339.20	44	7.06	0.26	38.47
		30		7.3	0.46	24.31	22.22	9.33	48.14	<0.10	5,564.35	404.42	47	4.99	0.28	25.27
Monitoring point P1	PG 6	5	N-45° 28'40.42" E-28° 12'49.34	8.1	0.32	15.63	15.74	7.19	31.94	<0.10	2,474.90	450.74	99	3.62	0.20	23.34
		30		8.3	0.32	12.72	15.80	5.89	36.84	<0.10	2,650.03	418.81	190	2.74	0.15	26.50
Monitoring point P4	PG 7	5	N-45° 30'24.86" E-28° 10'38.39"	8.0	0.44	34.54	19.77	8.29	38.01	<0.10	4,237.19	525.07	32	4.77	0.15	23.66
		30		8.1	0.41	36.36	19.74	8.34	37.66	<0.10	3,961.30	514.13	<25	2.20	0.14	22.87
SHS[1] - Maximum permissible concentrations (MPC) in soil and negative impact on the environment and public health				**6.5–9.5**	**1.0**	**132.0**	**80.0**	**32.0**	**220.0**	**1.0**	**-**	**-**	**100**	**-**	**-**	-
Reference documents				**SR ISO 10390:2015**		**SR EN 16170:2017 ISO 2203:2008 (R2017)**							**EPA 8440:1996**	**STAS 7184/ 21-82**	**SR ISO 10694:1998**	**SR ISO 11465:1998**

Results marked with the symbol "<" represent values below the method's detection limit.

[1] SHS – State Hydrometeorological Service

3.2.2. Soil particle size distribution

The particle size distribution of the soil samples collected during the monitoring campaign of the initial state of abiotic environmental factors is presented in Test Reports No. 1686, 1687, and 1688 dated 06.03.2026.

The test reports are issued by the Construction Analysis and Testing Laboratory of GEOSTUD S.R.L. and are attached to this monitoring report.

The soil sample codes and their correlation with the grain size diagrams, the tables of results, and the test report numbers are presented inTable 3.3 :

Table 3.3. Soil sample codes and their correlation with grain size diagrams

Sample code	Test report	Grain size diagram	Material description
PG1	RÎ No. 1045	Figure 3 .1	Table 3 .4
PG2	RÎ No. 1048	Figure3 .2	Table 3 .5
PG3	RÎ No. 1122	Figure 3.5	Table 3.8
PG4	RÎ No. 1119	Figure 3.4	Table 3.7
PG5	RÎ No. 1064	Figure 3.3	Table 3.6
PG6	RÎ No. 1128	Figure 3.7	Table 3.10
PG7	RÎ No. 1125	Figure 3.6	Table 3.9

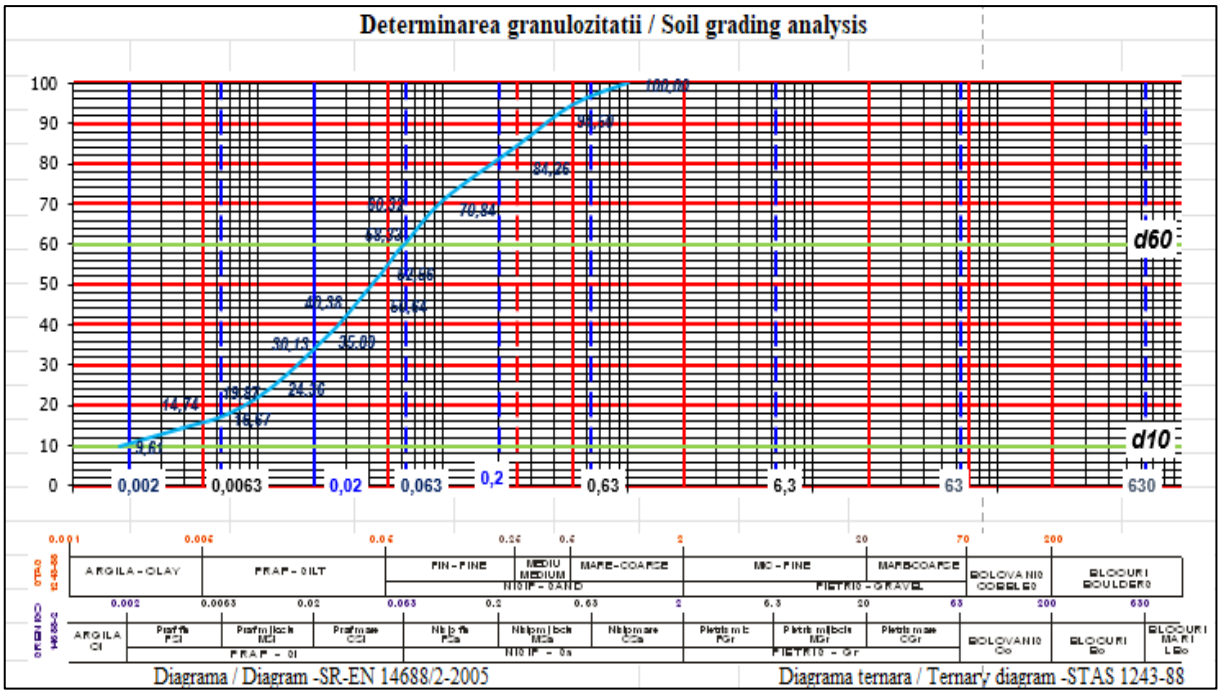

Figure 3 .1 . Particle size distribution of sample PG1

Table 3 .4 . Material description according to SR-EN 14688/2-2018

STAS 1243-88		SR-EN 14688/2-2018	
Fraction type	**Content (%)**	**Fraction type**	**Content (%)**
Gravel:	0	Gravel:	0
Gravel:	0	Gravel:	0
Sand:	45	Sand:	39
Dust:	39	Fine particles	61
Clay:	16	Clay:	10
	100	Dust:	51
			100

Cu (Un)= 25.86

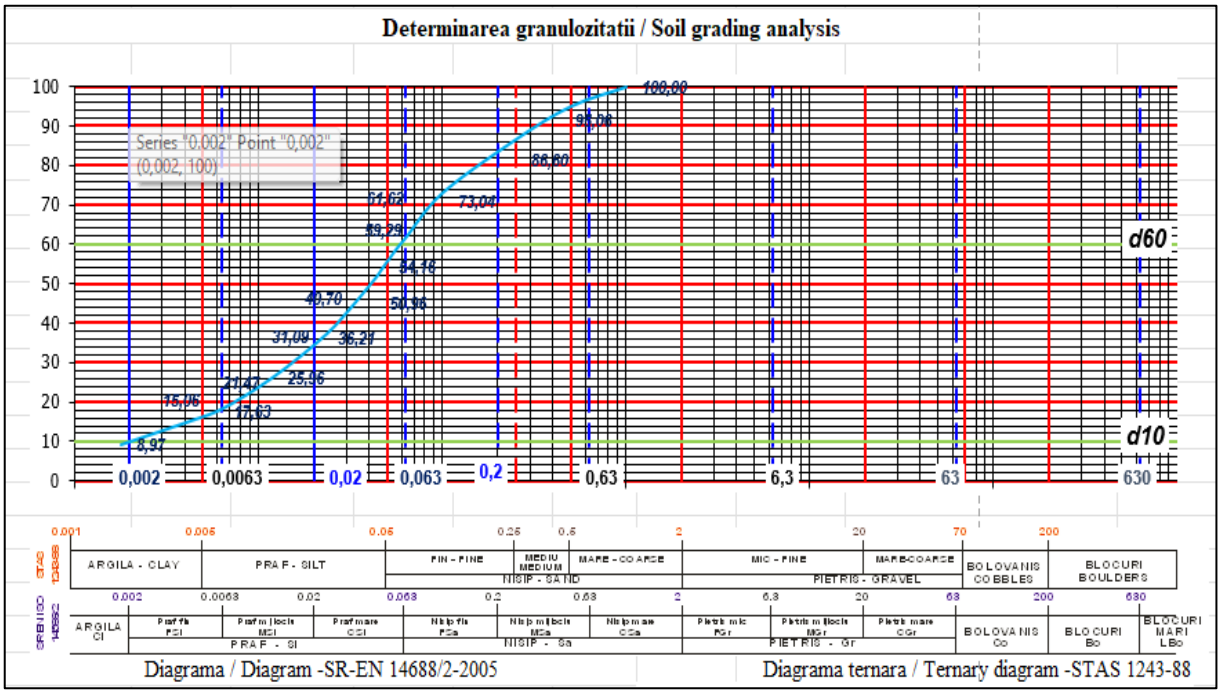

Figure3 .2 . Particle size distribution of sample PG2

Table 3 .5 . Material description in accordance with SR-EN 14688/2-2018

STAS 1243-88		SR-EN 14688/2-2018	
Fraction type	**Content (%)**	**Fraction type**	**Content (%)**
Gravel:	0	Gravel:	0
Gravel:	0	Gravel:	0
Sand:	51	Sand:	46
Dust:	33	Fine particles	54
Clay:	16	Clay:	10
	100	Dust:	44
			100

Cu (Un)= 40.97

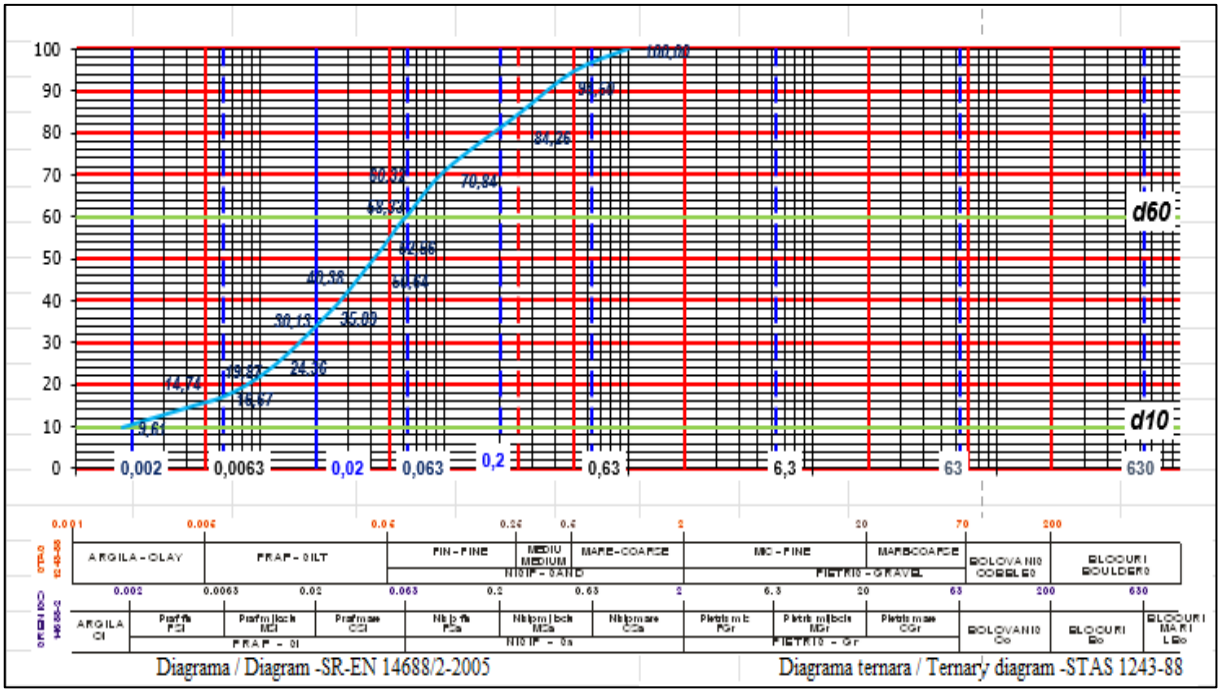

Figure 3.3. Particle size distribution of sample PG5

Table 3.6. Material description according to SR-EN 14688/2-2018

STAS 1243-88		**SR-EN 14688/2-2018**	
Fraction type	**Content (%)**	**Fraction type**	**Content (%)**
Gravel:	0	Gravel:	0
Gravel:	0	Gravel:	0
Sand:	45	Sand:	40
Dust:	39	Fine particles	60
Clay:	16	Clay:	10
	100	Dust:	50
			100

Cu (Un) = 30.94

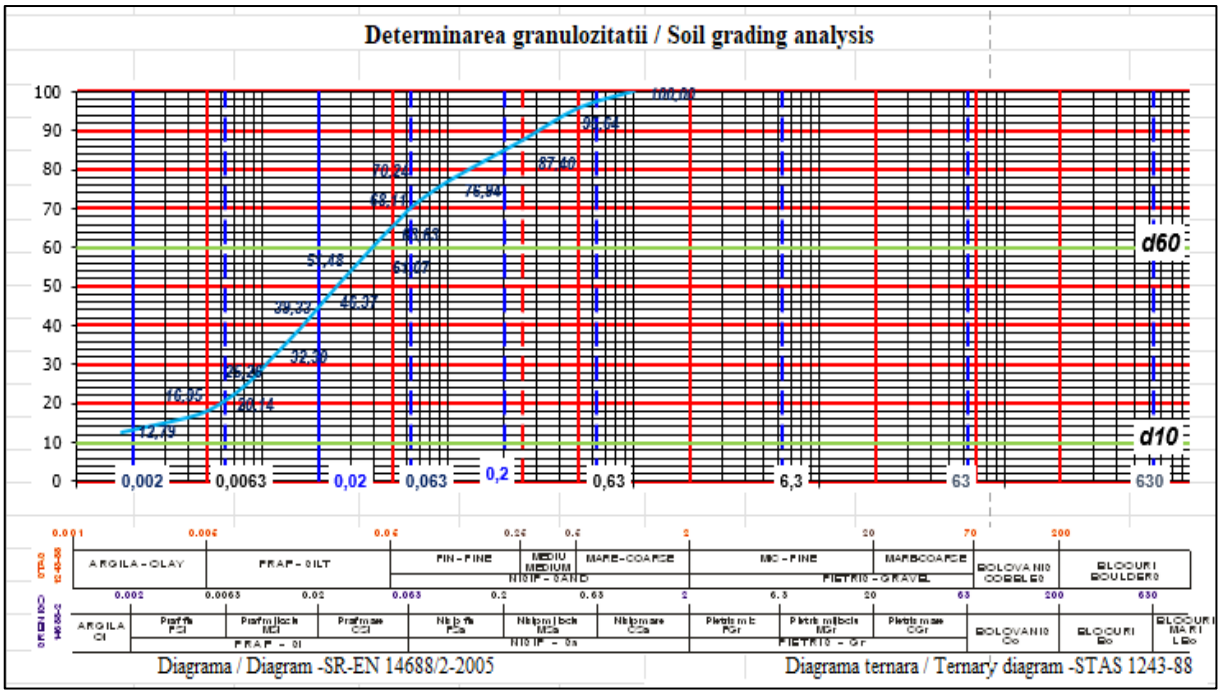

Figure 3.4. Particle size distribution of sample PG4

Table 3.7. Material description in accordance with SR-EN 14688/2-2018

STAS 1243-88		**SR-EN 14688/2-2018**	
Fraction type	**Content (%)**	**Fraction type**	**Content (%)**
Gravel:	0	Gravel:	0
Gravel:	0	Gravel:	0
Sand:	35	Sand:	31
Dust:	47	Fine particles	69
Clay:	18	Clay:	13
	100	Dust:	56
			100

Cu (Un)= -

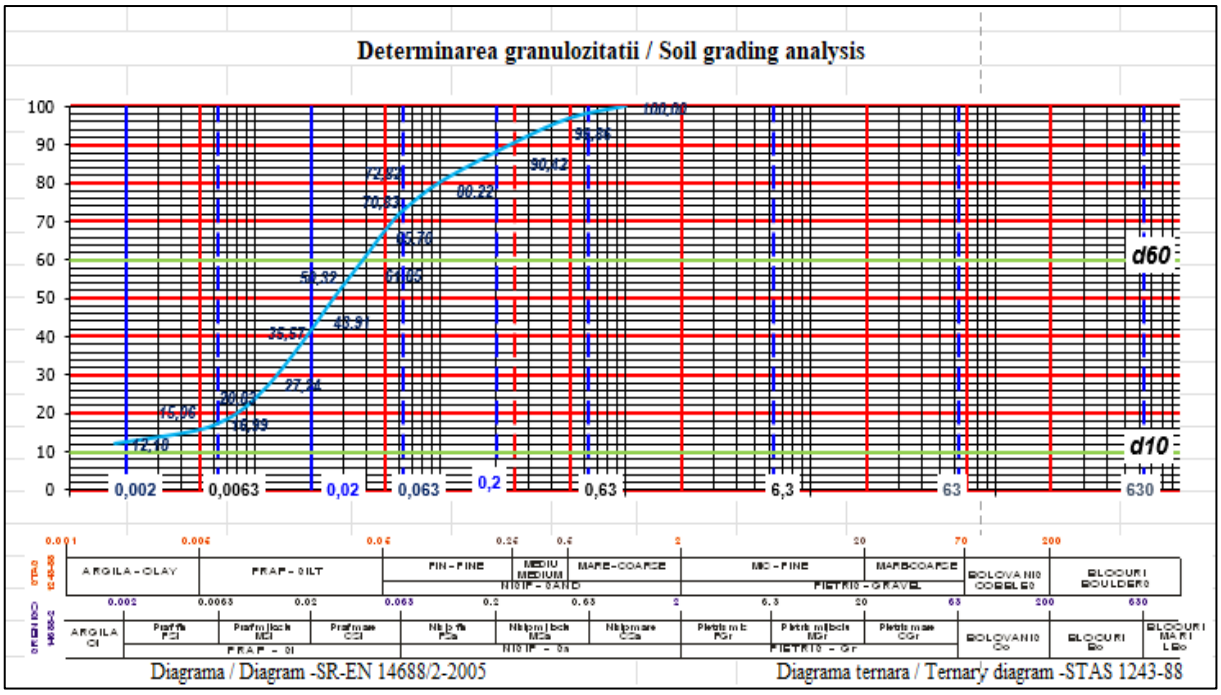

Figure 3.5. Particle size distribution of sample PG3

Table 3.8. Material description according to SR-EN 14688/2-2018

STAS 1243-88		**SR-EN 14688/2-2018**	
Fraction type	**Content (%)**	**Fraction type**	**Content (%)**
Gravel:	0	Gravel:	0
Gravel:	0	Gravel:	0
Sand:	33	Sand:	28
Dust:	51	Fine particles	72
Clay:	16	Clay:	12
	100	Dust:	60
			100

Cu (Un)= -

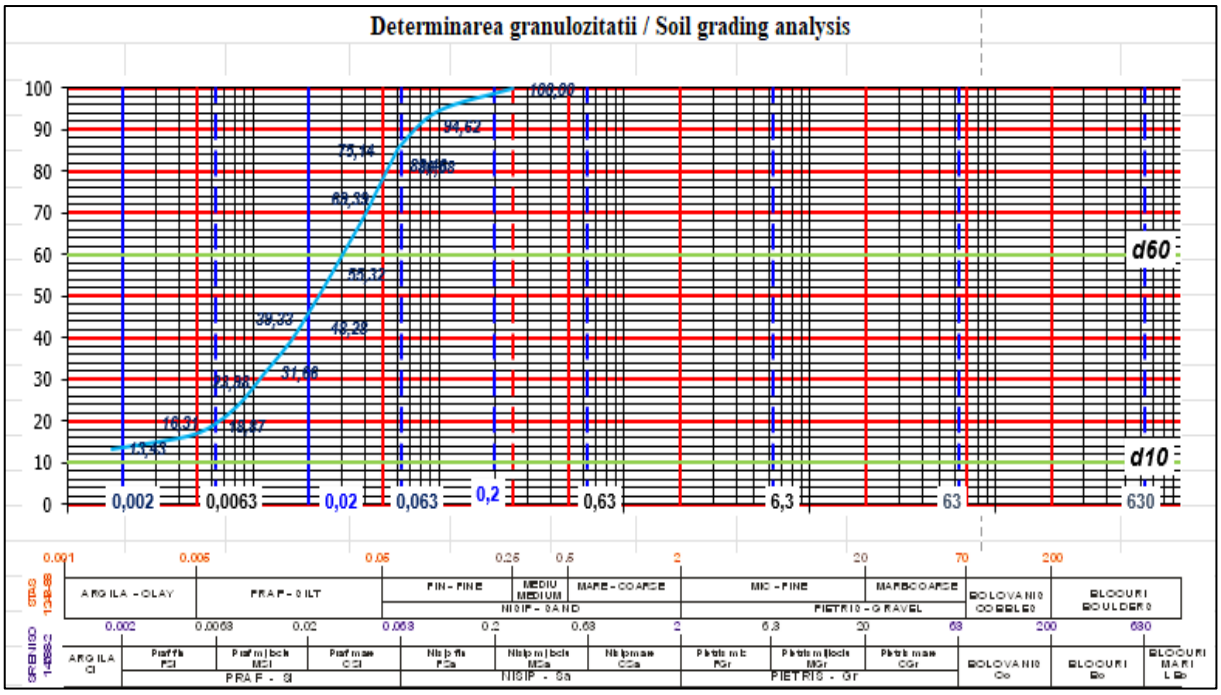

Figure 3.6. Particle size distribution of sample PG7

Table 3.9. Material description according to SR-EN 14688/2-2018

STAS 1243-88		**SR-EN 14688/2-2018**	
Fraction type	**Content (%)**	**Fraction type**	**Contents (%)**
Gravel:	0	Gravel:	0
Gravel:	0	Gravel:	0
Sand:	22	Sand:	15
Dust:	61	Fine particles	85
Clay:	17	Clay:	14
	100	Dust:	71
			100

Cu (Un)= -

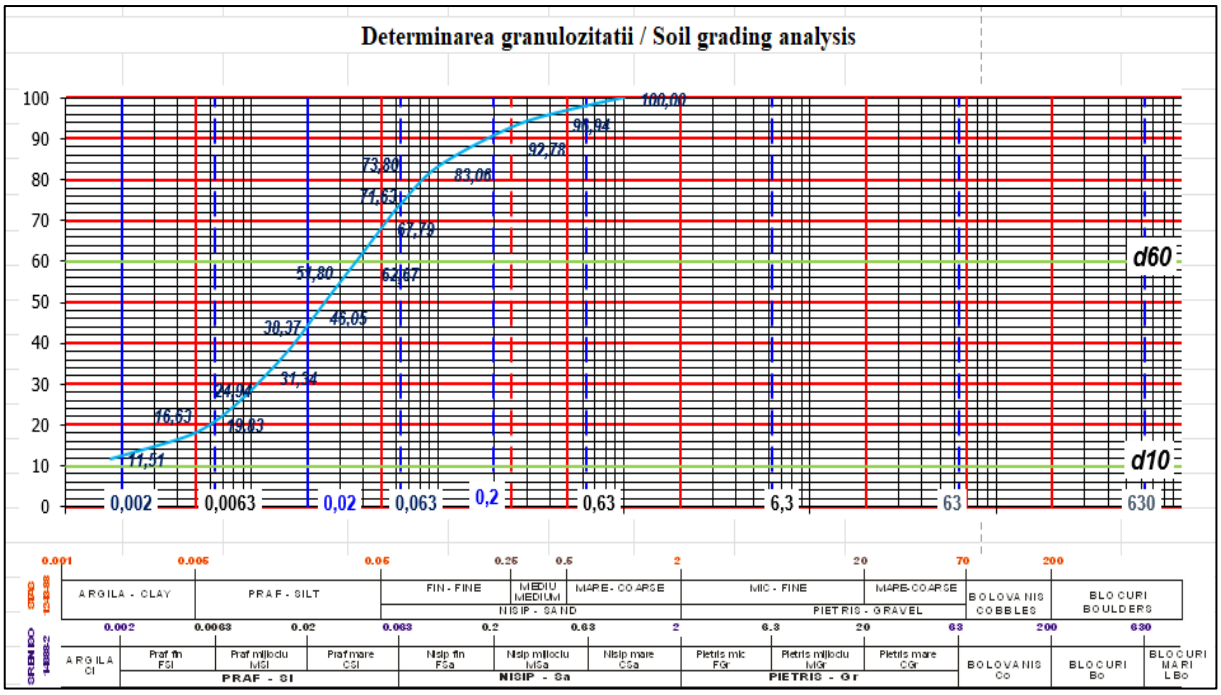

Figure 3.7. Particle size distribution of sample PG6

Table 3.10. Material description according to SR-EN 14688/2-2018

STAS 1243-88		SR-EN 14688/2-2018	
Fraction type	**Content (%)**	**Fraction type**	**Content (%)**
Gravel:	0	Gravel:	0
Gravel:	0	Gravel:	0
Sand:	32	Sand:	27
Dust:	50	Fine particles	73
Clay:	18	Clay:	12
	100	Dust:	61
			100

Cu (Un)= -

The characterization of the analyzed soils, based on specialized references, can be found inTable 3.11 .

Table 3.11. Characterization of soils/lands in the layer according to current legislation

Monitoring point	**Code Sample**	**Test report**	**Characterization of the soil layer in accordance with SR EN ISO 14688/2-2005**	**Characterization of soil in layers according to STAS 1243-88**	**Characterization of soil in layers according to SR EN ISO 14688/2-2018**
P6	PG5	1064	Fine soil saclSi[2]	Clayey sand, poorly graded	Fine sand
P1	PG6	1128	Fine soil saclSi	Sandy clayey silt	Fine soil saclSi
P4	PG7	1125	Fine sandy loam	Sandy clayey silt	Fine soil saclSi
P9	PG3	1122	Fine sandy loam	Sandy clayey silt	Fine soil saclSi
P8	PG4	1119	Fine sandy loam	Sandy clayey silt	Fine soil saclSi
P12	PG2	1048	Fine loamy soil	Clayey sand, poorly graded	Fine soil saclSi
P14	PG1	1045	Fine soil saclSi	Clayey sand, poorly graded	Fine soil saclSi

[2] saclSi – sandy clayey silt

3.3. Noise

3.3.1. Noise level

Noise level measurements were carried out using a Class 1 integrating sound level meter equipped with an integrating function and microphone, as well as a Class 1 acoustic calibrator.

The measurement results are presented in Test Reports No. 1049–1051, No. 1065–1068, and No. 1129–1031 dated 24.02.2026, attached to this monitoring report.

Weather conditions were measured using a portable weather station. Noise level measurements were taken at sensitive receptors located in the areas corresponding to the project's specific works. At each monitoring point, five measurements were taken, each lasting between 12 and 15 minutes, resulting in the values presented inTable3 .12 .

Table3 .12 . Classification of noise level values within the permissible limit value according to NCM E.04.02:2014

No. No.	Measurement/monitoring points	Noise (sound pressure level) - Leq	GPS coordinates	Noise level limit	Reference document
		[dB]	-	[dB]	
1.	Near a private residence, Sportivă Street, Giurgiulești village, Cahul district, Republic of Moldova - at monitoring point P0	52.45	45°28'31.91"N 28°12'19.89"E	55 / 70 dB(A)	SR 6161-1:2022 SR ISO 1996-1:2016 SR ISO 1996-2:2018
2.	Near a private residence, Ion Creangă Street, Giurgiulești village, Cahul district, Republic of Moldova – at monitoring point P2	52.78	45°28'41.19"N 28°12'45.70"E		
3.	Near a private residence, Giurgiulești village, Cahul district, Republic of Moldova – at monitoring point P3	52.19	45°29'04.40"N 28°11'26.67"E		
4.	Near the Ciucur Mingir Gymnasium, Ciucur Mingir village, Cimișlia district, Republic of Moldova – at monitoring point P5	66.26	46°25'59.38"N 28°44'57.47"E		
5.	Near a private residence, Cimislia town, Cimislia district, Republic of Moldova – at monitoring point P7	67.03	46°32'31.40"N 28°46'31.28"E		
6.	Near a private residence, Doina and Ion Aldea Teodorovici Street, Porumbrei village, Porumbrei commune, Cimislia district, Republic of Moldova – at monitoring point P10	67.78	46°41'25.40"N 28°49'12.13"E		

7.	Near a private residence, Sagaidacul Nou village, Porumbrei commune, Cimișlia district, Republic of Moldova – at monitoring point P11	52.10	46°41'37.69"N 28°50'50.34"E		
8.	Cărbuna-Molești Forest Area, Zloți village, Codreni commune, Cimișlia district, Republic of Moldova – near monitoring point P13	62.31	46°43'18.23"N 28°52'26.77"E		
9.	Near a private residence, Răzeni village, Răzeni commune, Ialoveni district, Republic of Moldova – at monitoring point P15	70.98	46°45'40.34"N 28°54'42.59"E		
10.	Near a private residence, Plopilor Street, Băcioi village, Botanica district, Chișinău municipality, Republic of Moldova – at monitoring point P16	70.68	46°55'18.64"N 28°52'06.51"E		

According to Standard NCM E.04.02:2014 on noise protection, for areas adjacent to residential buildings, the permissible equivalent daytime sound level is 55 dB(A), and the maximum permissible daytime sound level is 70 dB(A). Analysis of the measurement results obtained at the monitoring points indicates that the in-situ noise level values range from approximately 52 dB(A) to 70.98 dB(A).

At several monitoring points located near sensitive residential receptors (P5, P7, P10, P15, and P16), values exceeding the permissible daytime equivalent sound level of 55 dB(A) were recorded, and at points P15 and P16, the determined values even exceed the 70 dB(A) threshold.

For monitoring point P13, located in the Cărbuna-Molești Forest area, the results are presented for informational purposes only, as Standard NCM E.04.02:2014 does not establish specific limit values for natural areas. However, according to the study summarized in Biological Reviews (Shannon et al., 2016), numerous animal species can be negatively affected by noise levels similar to or even lower than those perceived by humans as disturbing. In this context, the limit values established for residential areas can be used as indicative benchmarks for assessing the potential impact on wildlife.

At monitoring point P13, an equivalent sound level of approximately 62.31 dB(A) was determined, a value that exceeds the reference level of 55 dB(A) used for human receptors and which could indicate a potential disturbance factor for local wildlife.

Overall, the measurement results indicate that the noise level in the investigated area is influenced by existing road traffic and human activities in the vicinity of the localities. It is recommended to periodically monitor noise levels at points where high values were recorded, particularly in the vicinity of sensitive receptors and natural areas, as well as to implement noise

reduction measures (e.g., sound-absorbing panels, traffic flow optimization, or speed limits), in the event that noise levels increase during the construction or operation phase of the project.

3.3.2. Acoustic modeling

Acoustic modeling was performed using the common European method CNOSSOS-EU. This is established by Directive 2002/49/EC and harmonized in national legislation. The predictive assessment of noise propagation, for both the construction and operational phases, was performed using the specialized software SoundPLAN Noise, version 9.0. This platform allows for the integration of spatial data and sound sources to obtain models compliant with internationally recognized methodologies.

The construction of the three-dimensional model of the study areas involved the integration and calibration of several datasets:

- topographic data were used to create the digital elevation model (DEM).
- relevant elements such as buildings, technical structures, acoustic barriers, and surfaces characterized by noise absorption, reflection, or diffraction properties were defined.
- For the construction period, specific noise sources (equipment, vehicles) were introduced. Due to the dynamic nature and mobility of the equipment on the construction site, the work area was modeled as an area-type (unitary) source, which cumulatively reflects the activities carried out simultaneously.
- For the operation period, the modeled parameters included traffic volume, travel speed, and vehicle category. For the arterial road sections, a maximum travel speed of 110 km/h was considered, with spatially adapted values for each vehicle category.

In configuring the simulations, scenarios corresponding to different time intervals were tested: day, evening and night. The simulations were performed using a conservative "worst-case" scenario, which assumes the most unfavorable plausible hypothesis of simultaneous operation of noise sources under reasonably foreseeable conditions. For the Giurgiulești border crossing area, a congested traffic scenario was additionally analyzed, taking into account speed reductions and congestion in the customs control area.

The final results of the simulations were illustrated using thematic noise maps using contour lines (isophones). Analysis of these maps indicated potential exceedances of the maximum permissible values set by law at the boundaries of certain functional (residential) areas or sensitive natural areas, both during construction and operation.

To ensure the protection of sensitive receptors and compliance with legal limits, specific mitigation measures were proposed and simulated, tailored to each phase of the project:

Measures for the construction phase:

- construction site management and technologies: Compliance with good practice is required, such as avoiding the simultaneous operation of multiple heavy machinery units. The use of modern technologies, machinery, and transport equipment fitted with

noise reduction features (high-performance silencers, low-noise tires) is recommended, along with the provision of appropriate protective equipment for workers.

- Mobile sound-absorbing panels: It is recommended to use mobile sound-absorbing panels with a minimum height of 4 meters.
- Biodiversity protection: These mobile screens are essential not only for residential areas but also for protecting species of conservation interest in the EMERALD sites adjacent to the projects (e.g., MD0000022 Cărbuna, MD0000026 Molești-Rezeni Forest, MD0000016 Bugeac Steppe, MD0000012 Lower Prut Lakes). For example, for the Giurgiulești bypass option, it was recommended to place the screens on the western side of the road, specifically to protect the Lower Prut Lakes.

Measures for the operation period:

- Fixed sound-absorbing panels: For the operational period of the M3 road, it is recommended to install permanent sound-absorbing panels 4 meters high, located in areas with sensitive receptors.
- Technical characteristics of the panels: Acoustic simulations were used to validate the effectiveness of Forster 20 panels, made of treated wood. This type of panel was selected because it exhibits predominantly absorptive behavior, with absorption coefficients specific to road noise barriers.
- Additional local measures: The installation of the panels leads, in most cases, to a significant reduction in noise below the maximum limits. However, for isolated situations where receptors are located at very short distances from the road right-of-way and are topographically positioned above the screening angle (above the panels' maximum efficiency level), additional local analyses are recommended. In these specific cases, measures such as installing sound-absorbing screens directly at the boundary of the receiver's property may be implemented.

4. CONCLUSIONS

This monitoring report was prepared to present the monitoring campaign of the initial state of the environmental factors - air, soil, and noise - as well as the results obtained for the project "Rehabilitation and Extension of the M3 National Public Road Chișinău–Giurgiulești–Romanian Border."

Based on the analysis of in situ measurements and laboratory results for the collected samples, as detailed in the previous chapters, the following is noted:

- the monitored areas do not exhibit significant atmospheric pollution, with no exceedances of the permissible limit values for the analyzed air quality indicators, in accordance with Law No. 98/2022 on atmospheric air quality;
- the degree of soil contamination with heavy metals and petroleum products is low, with most of the values of the analyzed indicators falling below the maximum permissible concentrations (MPC) set forth in the regulatory document "Maximum Permissible Concentrations (MPC) in Soil and the Negative Impact on the Environment and Public Health," with isolated exceedances of the MPC values identified for mercury in sample PG4 (monitoring point P8, depth 30 cm) and for petroleum product content in sample PG6 (monitoring point P1, depth 30 cm);
- regarding noise levels, a comparison of the measured values of the equivalent daytime sound level with the 55 dB threshold(A) established by Standard NCM E.04.02:2014 on noise protection indicates that, at most monitoring points located near sensitive receptors, the noise level is below or close to the reference value. However, exceedances of this threshold were recorded at monitoring points P5, P7, P10, P13, P15, and P16, with the highest values determined at points P15 and P16.

Monitoring of abiotic environmental factors will continue throughout the project's implementation, tracking changes in environmental parameters and identifying any potential environmental impacts associated with the rehabilitation and expansion of the M3 national highway between Chișinău, Giurgiulești, and the Romanian border.

Furthermore, throughout the project phases, the implementation and compliance with the measures to prevent and reduce environmental impact, as set forth in Chapter 5 of this report, will be monitored.

5. GENERAL MEASURES TO PREVENT AND MITIGATE SIGNIFICANT NEGATIVE ENVIRONMENTAL IMPACTS

For the monitored national public road M3 Chișinău-Giurgiulești-Romanian Border, it is recommended to consider a set of general measures regarding the protection of environmental factors, applicable during the execution of rehabilitation works, as presented below:

- **Continued monitoring and assessment:** during the execution of the works, it is recommended to continue monitoring air quality, soil quality, and noise levels in accordance with the methods and procedures established in the baseline study. The data collected periodically will contribute to the assessment of the project's impact during the construction phase, as well as during the subsequent operational period.
- **Implementation of necessary measures**: if monitoring identifies exceedances of quality standards or potential environmental issues, **it is recommended that measures be implemented immediately** to minimize the impact and bring abiotic environmental factors within acceptable limits;
- **Staff training and awareness:** It is essential to train and raise awareness among the site team regarding the importance of protecting abiotic environmental factors and the correct application of protective measures;
- **Reporting and compliance**: it is recommended to document all monitoring data and measures taken for environmental protection, as well as to ensure their reporting in accordance with applicable regulations and standards;
- **Communication with the specialized firm**: establishing an efficient information flow with the operator conducting the monitoring is a key element in obtaining and managing relevant data;
- **Updating and improving protective measures**: Environmental protection measures should be periodically reviewed and updated based on monitoring results. In addition, opportunities for improving performance and reducing impacts on abiotic environmental factors should be identified and implemented.

In addition to general measures to prevent and reduce significant negative environmental impacts, it is considered appropriate to adopt a series of specific measures during the execution of the works to limit the impact on abiotic environmental factors, taking into account data regarding their initial state (the period prior to project implementation). These measures should aim, among other things, at the continuous monitoring of relevant parameters, the use of modern equipment to reduce emissions and pollution, as well as targeted interventions where reference values are exceeded, to ensure that the analyzed parameters remain within limits compliant with current legislation.

6. MONITORING PLAN

In the context of implementing the project for the rehabilitation and modernization of the M3 national public road Chișinău – Comrat – Giurgiulești – Romanian border, it is recommended to establish a program for monitoring environmental components, with a view to assessing the evolution of biotic and abiotic factors within the project's area of influence. Environmental monitoring is an essential tool for tracking the effects generated by road infrastructure development and for verifying the effectiveness of measures to prevent and reduce environmental impact.

The proposed monitoring program is designed to ensure the systematic collection of data on the state of the environment before, during, and after project implementation, so that any changes in environmental parameters or biodiversity components can be identified. The information obtained through monitoring will contribute to assessing how project-related activities may affect the natural environment and will allow for the adoption of corrective measures should significant negative effects be identified.

The monitoring program takes into account both the abiotic components of the environment - namely air quality, water quality, soil quality, and noise levels - and the biotic components, represented by the natural habitats, flora, and fauna in the project area. Monitoring these factors is necessary to identify any changes in environmental conditions caused by construction activities or the subsequent operation of the road infrastructure, as well as to assess potential effects on local ecosystems.

Given the specific nature of the project and the size of the road corridor under analysis, the monitoring program is designed to track changes in environmental indicators at representative points along the road route. Implementing this program will facilitate the comparison of results obtained at different stages of the project's development and will allow for the assessment of trends in the state of the environment in the analyzed area.

Regarding the biodiversity component, although the current stage of the project does not explicitly require the development of a detailed monitoring program, it is considered appropriate and recommended to include it within the general monitoring program. Implementing such a program is important for assessing the evolution of natural habitats and flora and fauna species within the project's area of influence, particularly in light of the potential impacts of road infrastructure on local ecosystems.

The need for biodiversity monitoring is all the more relevant given the existence of natural areas of importance for biodiversity conservation in the project region, including sites included in the EMERALD network. This network is the primary tool for biodiversity conservation in the member states of the Bern Convention that are not part of the European Union and plays a role similar to that of the Natura 2000 network in EU member states. EMERALD sites are designated to protect natural habitats and species of Community interest, and monitoring biodiversity

components in their vicinity contributes to the assessment of any indirect effects the project may have on the conservation status of protected ecosystems and species.

The introduction of biodiversity monitoring within the project thus contributes to aligning it with international best practices and European standards applicable to infrastructure projects funded by European and international institutions. Monitoring habitats and species allows for the identification of any changes in their distribution or abundance and provides relevant information for adapting environmental management measures throughout the project's implementation.

Implementation of the monitoring program will help ensure the project's compliance with applicable environmental legislation and international environmental protection standards. Monitoring results will be incorporated into periodic reports and used for the ongoing assessment of the project's environmental impact and to inform any additional environmental management measures.

Detailed monitoring plans for environmental factors and biodiversity components, which include the parameters analyzed and the frequency of measurements, are presented below.

6.1. Abiotic Components Monitoring Plan

Table 6.1. Monitoring plan for environmental factors during the pre-construction phase

No. No.	Analyzed components	Monitoring point locations	Monitored parameters	Monitoring frequency
1.	**Air**	In the area of future: - Construction sites; - Production facilities; - Work fronts. Within (intersection areas) of protected natural areas.	• SO_2; • NO_2; • NO; • NOx; • particulate matter (PM_{10}).	Unic
2.	**Soil**	In the area of future: - Construction sites; - Production facilities; - Work fronts. Within (intersection areas) of protected natural areas.	• pH; • Cadmium; • Copper; • Chromium; • Manganese; • Nickel; • Lead; • Zinc; • Total hydrocarbon content (THP); • Humidity.	
3.	**Noise**	Sensitive receptors closest to the future site: - Construction site facilities; - Production facilities; - Work fronts. Within (intersection areas) of protected natural areas.	• Sound pressure level.	
4.	**Impact mitigation measures***	- Along the entire length of the site.	• Identification and proposal of measures to protect environmental factors.	

*To prevent potential impacts on environmental factors caused by the infrastructure project works, the environmental consultant will propose a series of measures to avoid or reduce such impacts.

Table 6.2. Environmental Monitoring Plan for the Construction Phase

No. No.	Analyzed components	Monitoring point locations	Monitored parameters	Monitoring frequency
1.	**Wastewater**	- Construction sites; - Production facilities.	• pH; • Suspended solids; • OD; • COD-Cr; • CBO_5; • hydrocarbon content; • heavy metals (Cd, Cu, Cr, Ni, Pb, Zn).	Monthly
2.	**Air imissions**	- Construction site organizations; - Production facilities; - Work sites. - Within (intersection areas) of protected natural areas.	• SO_2; • NO_2; • NO; • NOx; • particulate matter (PM10).	Monthly
3.	**Air emissions**	- Concrete plants.	• O_2 ; • CO; • CO_2 ; • NO; • NO_x ; • SO_2 ; • Temperature; • Speed; • Flow rate.	Monthly
4.	**Soil**	- Site organization; - Production bases; - Work fronts. - Within (intersection areas) protected natural areas.	• pH; • Cadmium; • Copper; • Chromium; • Manganese; • Nickel; • Lead; • Zinc;	Monthly

No. No.	Analyzed components	Monitoring point locations	Monitored parameters	Monitoring frequency
			• Total hydrocarbon content (THP); • Humidity.	
5.	**Noise**	Sensitive receptors closest to: - Construction sites; - Production facilities; - Work fronts. Inside (intersection areas) of protected natural areas.	• Sound pressure level.	Monthly
6.	**Impact mitigation measures**	- Along the entire length of the site.	• Implementation and effectiveness of environmental protection measures.	Monthly

Note: In the event of unforeseen incidents with a high impact on environmental factors occurring prior to the established reporting period, these shall be reported immediately to the responsible party (beneficiary) for prompt resolution.

Table 6.3. Environmental Factors Monitoring Plan during the Operation/Defects notification period Phase*

No. No.	Analyzed components	Monitoring point locations	Monitored parameters	Monitoring frequency
1.	**Wastewater**	- Oil separators; - Retention basins; - Parking areas, service areas, support points.	• pH; • Suspended solids; • COD-Cr; • BOD_5; • hydrocarbon content; • heavy metals (Cd, Cu, Cr, Ni, Pb, Zn).	Monthly
2.	**Air**	- Parking areas, service areas, rest stops; - Road junctions; - Near towns and villages; - Inside (intersection areas) of protected natural areas.	• SO_2; • NO_2; • NO; • NOx; • particulate matter (PM_{10}).	Monthly
3.	**Soil**	- Area near parking lots, service areas, and road junctions - Areas near support points; - Inside (intersection areas) of protected natural areas.	• pH; • Cadmium; • Copper; • Chromium; • Manganese; • Nickel; • Lead; • Zinc; • Total hydrocarbon content (THP); • Humidity.	Monthly
4.	**Noise**	- Sensitive receptors closest to the study area; - Within (intersection areas) of protected natural areas.	• Sound pressure level.	Monthly
5.	**Impact mitigation measures**	- Along the entire length of the site.	• Verification of the integrity and effectiveness of environmental protection measures ( ) during the	Monthly

No. No.	Analyzed components	Monitoring point locations	Monitored parameters	Monitoring frequency
			operation/defects notification period phase.	

*Monitoring of environmental factors during the operation/defects notification period phase will be conducted for a minimum of 3 years following the completion of all construction work;

Note: In the event of unforeseen incidents with a significant impact on environmental factors occurring prior to the established reporting period, these shall be reported immediately to the responsible party (beneficiary) for prompt resolution.

6.2. Biotic Components Monitoring Plan

Table 6.4. Monitoring plan for biodiversity components during the pre-construction phase

No. No.	Components analyzed	Monitoring point locations	Monitored parameters	Monitoring frequency (depending on favorable periods for monitoring fauna and flora)*
5.	**Terrestrial habitats / plants**	Monitoring campaigns will be conducted along the entire length of the site, within a 500-meter strip on both sides. In areas intersecting with protected natural areas, the strip will be extended to 1 km.	• Inventory of plant species; • Mapping of habitats in the vicinity of the site (a strip of at least 100 m – left and right); • Inventory and mapping of invasive plant species; • Identification and analysis of the pathways of invasive plant species.	Monthly
6.	**Terrestrial invertebrates**		• Inventory of invertebrate species; • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m – left-right); • Creating distribution maps of invertebrate species (a strip of at least 500 m – left and right); • Inventory and mapping of invasive invertebrate species.	Monthly
7.	**Amphibians**		• Inventory of amphibian species; • Creating distribution maps of amphibian species (a strip of at least 500 m – left-right); • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m – left-right).	Monthly
8.	**Reptiles**		• Inventory of reptile species; • Preparation of distribution maps for reptile species (a strip of at least 500 m – left-right); • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left and right).	Monthly
9.	**Avifauna**		• Inventory of bird species; • Preparation of distribution maps for bird species (a strip of at least 500 m – left-right); • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left and right).	Monthly

No. No.	Components analyzed	Monitoring point locations	Monitored parameters	Monitoring frequency (depending on favorable periods for monitoring fauna and flora)*
10.	**Terrestrial mammals**		• Inventory of mammal species; • Preparation of distribution maps for mammal species (a strip of at least 500 m – left-right); • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left-right).	Monthly
11.	**Chiroptera (bats)**		• Inventory of Chiroptera species; • Preparation of distribution maps for chiroptera species (a strip of at least 500 m – left-right); • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m on either side).	Monthly
12.	**Impact mitigation measures****		• Identification and proposal of measures to protect biodiversity components.	Monthly

*At least 12 months prior to the start of construction work, to cover all species' active seasons;

**To prevent potential impacts on biodiversity components caused by the infrastructure project works, the environmental consultant will propose a series of measures to avoid or reduce such impacts;

Table 6.5. Monitoring plan for biodiversity components during the construction phase

No. No.	Components analyzed	Monitoring point locations	Monitored parameters	Monitoring frequency (depending on favorable periods for monitoring fauna and flora)
1.	**Terrestrial habitats / plants**	Monitoring campaigns will be conducted along the entire length of the site, within a 500-meter strip on both sides. In areas intersecting with protected natural areas, the strip will be extended to 1 km.	• Inventory of plant species; • Mapping of habitats in the vicinity of the site (a strip of at least 100 m – left and right); • Inventory and mapping of invasive plant species; • Identification and analysis of the spread of invasive plant species.	Monthly
2.	**Terrestrial invertebrates**		• Inventory of invertebrate species; • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left-right); • Creating distribution maps of invertebrate species (a strip of at least 500 m – left and right); • Inventory and mapping of invasive invertebrate species.	Monthly
3.	**Amphibians**		• Inventory of amphibian species; • Creating distribution maps of amphibian species (a strip of at least 500 m – left-right); • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m – left-right).	Monthly
4.	**Reptiles**		• Inventory of reptile species; • Preparation of distribution maps for reptile species (a strip of at least 500 m – left-right); • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m on either side).	Monthly
5.	**Avifauna**		• Inventory of bird species; • Preparation of distribution maps for bird species (a strip of at least 500 m – left and right); • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left and right).	Monthly

No. No.	Components analyzed	Monitoring point locations	Monitored parameters	Monitoring frequency (depending on favorable periods for monitoring fauna and flora)
6.	**Terrestrial mammals**		• Inventory of mammal species; • Preparation of distribution maps for mammal species (a strip of at least 500 m – left-right); • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left-right).	Monthly
7.	**Chiroptera (bats)**		• Inventory of Chiroptera species; • Preparation of distribution maps for chiroptera species (a strip of at least 500 m – left-right); • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m on either side).	Monthly
8.	**Impact mitigation measures**		• Implementation and effectiveness of measures to protect biodiversity components during the construction phase.	Monthly

Note: In the event of unforeseen incidents with a high impact on biodiversity components occurring prior to the established reporting period, these shall be reported immediately to the responsible party (beneficiary) for prompt resolution.

Table 6.5. Monitoring Plan for Biodiversity Components During the Operation/Defects notification period Phase*

No. No.	Components analyzed	Monitoring point locations	Monitored parameters	Monitoring frequency (depending on the optimal periods for monitoring flora and fauna)
1.	**Terrestrial habitats / plants**	Monitoring campaigns will be conducted along the entire length of the site, within a 500-meter strip on either side. In areas where the site intersects with protected natural areas, the strip will be extended to 1 km.	• Inventory of plant species; • Mapping of habitats in the vicinity of the site (a strip of at least 100 m – left and right); • Inventory and mapping of invasive plant species; • Identification and analysis of the pathways of invasive plant species.	Monthly
2.	**Terrestrial invertebrates**		• Inventory of invertebrate species; • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m – left-right); • Creating distribution maps of invertebrate species (a strip of at least 500 m – left and right); • Inventory and mapping of invasive invertebrate species.	Monthly
3.	**Amphibians**		• Inventory of amphibian species; • Creating distribution maps of amphibian species (a strip of at least 500 m – left-right); • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m – left-right).	Monthly
4.	**Reptiles**		• Inventory of reptile species; • Preparation of distribution maps for reptile species (a strip of at least 500 m – left-right); • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left-right).	Monthly
5.	**Avifauna**		• Inventory of bird species; • Preparation of distribution maps for bird species (a strip of at least 500 m – left-right); • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left and right).	Monthly
6.	**Terrestrial mammals**		• Inventory of mammal species;	Monthly

No. No.	Components analyzed	Monitoring point locations	Monitored parameters	Monitoring frequency (depending on the optimal periods for monitoring flora and fauna)
			• Preparation of distribution maps for mammal species (a strip of at least 500 m – left-right); • Mapping of habitats (suitable and potential) in the vicinity of the site (a strip of at least 500 m – left-right).	
7.	**Chiroptera (bats)**		• Inventory of Chiroptera species; • Mapping the distribution of Chiroptera species (a strip of at least 500 m – left-right); • Mapping of habitats (favorable and potential) in the vicinity of the site (a strip of at least 500 m – left and right).	Monthly
8.	**Impact mitigation measures***		• Verification of the integrity and effectiveness of biodiversity protection measures during the operation/defects notification period phase	Monthly

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