

ODOR MONITORING PLAN

FOR EVALUATION OF LAGOON IMPACTS DURING CONSTRUCTION PERIOD IN KARAKOL WWTP

1. Introduction

1.1. Purpose of the Plan

- a. Sewage water entering the existing old WWTP was being discharged to the lagoons passing through the WWTP structures without any treatment while the facility was very old and had not been used since many years. During the construction stage of Karakol WWTP, the incoming waste water was decided to be diverted to lagoon No. 4 from the inlet manhole of the WWTP so that, the existing old structures may be demolished and the plant may be constructed instead. As per the Sanitary Protection Zone (SPZ) for Karakol WWTP (including the lagoons), which is approved on 11th September 2023 by the head of the Issyk-Kul Regional Department of MENRST, shows the recorded Hydrogen sulfide (H₂S) concentration (0.000631 mg/m³) near the settlement area (Geolog village) below the WHO air quality guideline for Hydrogen sulfide, which is 150 µg/m³ (0.15 mg/m³) and Kyrgyz Standard 0.008 mg/m³.

However, as per the ADB, the residents from Geolog village have shared complaints regarding the fouling smell (H₂S) arising from the WWTP and during the visit of ADB mission on February 26 2024, an idea was negotiated to measure and monitor the H₂S emission from the lagoon No.4 and level of odor in the residential area, the Geolog village.

In view of that, this Odor Monitoring plan has been prepared to monitor the level of the odor (H₂S) omitted from lagoon No.4 and the rate of odor in the nearest residential area to verify the complaints. Please note that, this monitoring activity and the results are only informative and will not be caused by the construction of new WWTP while, the conditions will be the same as the existing situation, only the sewage water passing through the existing structures will be transferred directly to the lagoon.

- b. This monitoring activity has no relation with the measurement duties for Environmental Monitoring of the Contractor indicated in the SSEMP and it will be carried on by the Community Liaison Officer (CLO) assigned by the PMO.

1.2. Method of Monitoring

- a. Monitoring Activity will be carried on by using the portable multi-gas detector (BOSEA version: BSA20180501001) provided for this purpose.

This provided instrument is capable of detecting four types of gases; EX (explosive), H₂S, CO and O₂. However, as the subject of this plan is to measure and monitor the odor, only H₂S will be monitored and recorded.

- b. Specifications of the Instrument:

Target Gas	Range	Low Alarm	High Alarm	Resolution
EX	(0-100)%LEL	20%(LEL	50%LEL	1%LEL
H ₂ S	(0-100) ppm	1ppm*	10ppm*	<u>1ppm</u>
CO	(0-100) ppm	50ppm	150ppm	1ppm
O ₂	(0-30)%	19.5%vol	23.5%vol	0.1%vol

* Alarm values are preset by the manufacturer. However, low and high alarm values for H₂S is adjusted to minimum by the user.

Gas Sampling Method	Gas pump sampling
Accuracy	≤ ±5% FS
Response Time	T ₉₀ <30s
Working Environment	-20°C ≈ 50°C, <95%RH
Charging Time	6h-8h
Working time	>10h continuously (without alarming)

The resolution of the instrument is 1 ppm, that means although the range of measurement is 0-100 ppm, any measurement results lower than 1ppm will not be indicated as it is, but will be read as “0” if less than 0.5 ppm and as 1 ppm for the values >0.5 and <1.5 ppm.

2. Odor Monitoring and Measurement

2.1. Frequency and time of measuring

- a. Normally measurement shall be carried out daily (non-working days may be omitted if required) during the warmest time of the day.
- b. Presently, since it the winter season and the weather is cold, 3 days per week will be sufficient (until April) for the beginning to get used to and measurement will be done afternoon during the expected warmest hour of the day.
- c. In spring and summer H₂S will be monitored daily at 3:00 – 4:00 PM and, in July and August, twice a day in the morning at 11:00 AM and between 3:00 - 4:00 PM in the afternoon.

2.2. Measuring

- a. Sampling point of odor measurement is the edge of the Lagoon No.4, which is indicated with pin number 1 in the enclosed map. The result of the measurement just above the water surface at this point of the lagoon must be read always as “0”. (Before this measurement, it may be better to measure the H₂S level from the top of the nearest manhole close to lagoon No.4)
- b. However, if the measured value is indicated as 1 ppm or more at the scale of the instrument, then measurement will continue on the direction to settlement area until the value reaches to “0” and the distance of this “0” measured sampling point will be measured and recorded in the record table below.
- c. The recorded measurement will be noted using the format shared in the reporting section.
- d. It is recommended that at least some of the measurements will be witnessed by person(s) from the settlement area.

2.3. Implementation arrangements

- **Community Liaison Officer.** (i) Acts as a bridge between the community and EA/PMO, addressing concerns related to odor issues, (ii) Educate the community about odour monitoring plan, (iii) Monitor odor levels (during construction of project sites) using a portable gas analyzer and maintain appropriate records. (iv) Gathers complaints and suggestions from the community to improve odour management, and (v) Addresses the disputes arising from odour-related concerns.

- **Karakol PIU.** (i) Implements odour monitoring plan and ensures their proper functioning, (ii) verify the monitored odour levels and share the collected data to DSC and PMO for analysis and inclusion in SAEMR, (iii) Provides regular update on odour monitoring activities to the PMU
- **PMO.** (i) Oversees the activities of the CLO and PIU and ensures alignment with OMP objectives/goals, (ii) Assesses the effectiveness of odour monitoring plan and recommend improvements (if required), and (iii) Inclusion of Odor monitoring data in SAEMR.

2.4. Reporting

- The results of measurements will be reported weekly to EA / PMO and monthly to DSC (to be included in the subsequent SAEMRs)
- The EA/PMO will provide the residents of the Geolog settlement with monthly updates on the results of the odor monitoring
- As a sample, the following table may be used for recording and reporting.

Date	Time	Value at the manhole	Value near Lagoon No.4	Distance of the “0” measured point from the lagoon.

Recorded by:				
Verified by (PIU)				

