

Environmental Monitoring Report Phase-1,2 and 3 (Operation Phase)



Myanmar Japan Thilawa
Development Limited.

June 2026

CONTENTS

1. Executive Summary
2. Summary of Monitoring Activities
3. Monitoring Results
4. Environmental Monitoring Form

Appendix

1. Air Quality Monitoring Report for December 2025
- 2 (a) Water and Wastewater Monitoring Report for December 2025
- 2 (b) Water and Wastewater Monitoring Report for February 2026
- 2 (c) Water and Wastewater Monitoring Report for April 2026
- 4 Noise and Vibration Monitoring Report for December 2025
- 5 General Waste Disposal Record (December 2025 to May 2026)
- 6 Traffic Volume Monitoring Report for December 2025
- 7 Sewage Treatment Monitoring Record (December 2025 to May 2026)
8. Chemical consumption at Water Sending Station at TSEZ-B, Sludge Generated at Sewage Treatment Plant at TSEZ-A and Water Supply Volume to TSEZ-B (December 2025 to May 2026)



1. Executive Summary

The environmental inspection and compliance monitoring program will be implemented under the direction of Ministry of Natural Resources and Environmental Conservation (MONREC) with oversight by Thilawa SEZ Management Committee.

The monitoring record from December 2025 to May 2026 according to the Environment Monitoring Plan is submitted in conformity with the provision of Chapter 10, 10.1 Table 10.1-3 and 10.2, Table 10.2-3 Content of the EIA Report of Thilawa SEZ Development Project (Zone B).

2. Summary of Monitoring Activities

- a) Progress made to date on the implementation of the EMP against the submitted implementation schedule;

We submitted EMP for TSEZ Zone-B as following table.

Report No.	Description	Phase	Submission
1	Environmental Monitoring Report	Phase-1 Operation Phase	September, 2019
2	Environmental Monitoring Report	Phase-1 & 2 Operation Phase	March, 2020
3	Environmental Monitoring Report	Phase-1 & 2 Operation Phase	September, 2020
4	Environmental Monitoring Report	Phase-1 & 2 Operation Phase	March, 2021
5	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	September, 2021
6	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	March, 2022
7	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	September, 2022
8	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	March, 2023
9	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	September, 2023
10	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	March, 2024
11	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	September, 2024
12	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	June, 2025
13	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	December, 2025
14	Environmental Monitoring Report	Phase-1,2 & 3 Operation Phase	June, 2026

Report (No.14 is submitted this day attached with Operation Phase implementation schedule. Subsequent Operation Phase reports will be submitted on Bi-annually.

- b) Difficulties encountered in implementing of the EMP and recommendations for remedying those difficulties and steps proposed to prevent or avoid similar future difficulties;

- As for Zone developer and due to not factory types, we have many monitoring points at initial baseline survey points. For these facts, actual current monitoring points are not same locations with baseline survey points. Therefore, it has some difficulties to compare with baseline survey data. Because most of baseline survey points locations are not same with current monitoring points.
- Sometime, when we do for countercheck, analysis results received are not difference results from difference Labs. Therefore, it's difficult to consider which labs analysis results are reliable or not.



- c) Number and type of non-compliance with the EMP and proposed remedial measures and timelines for completion of remediation;
- Depend on the exceeding parameters and situation. Please refer to the attached reports for detail explanation.
- d) Accidents or incidents relating to the occupational and community health and safety, and the environment:
- Please refer to the attached Environmental Monitoring Form.
- e) Monitoring data on environmental parameters and conditions as committed in the EMP or otherwise required.
- Please refer to the attached Environmental Monitoring Form.

3. Monitoring Result

Environmental Monitoring Plan report for operation phase implemented according to the following table, reference on Table 10.2-3, Chapter 10, EIA for Industrial Area of Zone-B.

Monitoring Plan (Operation Phase)

Category	Item	Location	Frequency	Remark
Air Quality	NO ₂ , SO ₂ , CO, PM _{2.5} , PM ₁₀	Representative point inside the project area	1 week each in the dry and rainy seasons	December 2025, Air Quality Monitoring Report
Water Quality	Water temperature, pH, SS, DO, BOD ₅ , COD, color and odor, Total Nitrogen, Total Phosphorus, Sulphide, HCN, Oil, Grease, Formaldehyde, Phenols, Free chlorine, Zinc, Chromium, Arsenic, Copper, Mercury, Cadmium, Barium, Selenium, Lead, and Nickel	Outflow of retention pond to the creek (at least 3 sampling points/mixing point: discharge water, upstream water, and downstream water)	<u>With Third Party</u> Every 2 month: Water temperature, pH, SS, DO, BOD ₅ , COD, color and odor, Every 6 month : all parameters	February 2026, April 2026, Water and Wastewater Quality Monitoring Report (Bi-monthly report) December 2025 Water and Wastewater Quality Monitoring Report (Bi-annually report)
Waste	-Amount of Non-hazardous waste management -Amount of hazardous waste management	Each Tenant	Twice/year (Submission of the environmental report by the tenants)	General waste disposal record
Soil Contamination	-Status of control of solid and liquid waste which causes soil contamination	Each Tenant	Twice/year (Submission of the environmental report by the tenants)	Monitoring will be started when the whole Zone-B is in Operation Stage
Noise and Vibration	- Noise and vibration level - Traffic Count	Tenants including Project Proponent	One time each in the dry and rainy seasons	Noise and Vibration Monitoring Report December 2025 Traffic Count Monitoring Report December 2025
Offensive Odor	- Status offensive odor control by the tenants	Each tenant	Twice/year (submission of the environmental report by tenants)	This is responsible by each tenant
Bottom Sediment	-Water quality monitoring (as indicator of the pollution of the bottom sediment)	Same as the water quality monitoring	-Additional analysis on the bottom sediment of creek, in case of finding continuous high concentration	Refer to Environmental Monitoring report



Category	Item	Location	Frequency	Remark
Hydrological Situation	·Checking the function of retention pond at heavy rain	Retention Pond	When the heavy rain	
Living and Livelihood/ Vulnerable Group/ Misdistribution of Benefit and Damage/ Children's Right	·The implementation status for CSR activities such as community support program	Around Project Site	Once/year	Refer in Environmental Monitoring report
Risks for Infections Disease such as AIDS/HIV	·Status of measure against infectious diseases	Each tenant	Twice/year (Submission of the environmental report by the tenants)	-
Occupational Health and Safety	·Record of accident and infectious diseases	Work site and office	Twice/year (Submission of the environmental report by the tenants)	-
Community Health and Safety	Record of accidents and infectious diseases related to the community	Around the project site	Twice/year	Refer in Environmental Monitoring form
	The implementation status for CSR activities such as community support program	Around project site	Once/year	Refer in Environmental Monitoring form
Usage of Chemicals	Record of the type and quantity of chemicals and implementation status of control measures through self-inspection	Each tenant (that uses chemicals)	Biannually	-

*Remark: Each locator will report their monitoring result directly to Environmental Section, One Stop Service Center, Thilawa SEZ Management Committee.



Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3 (Operation phase)

Environment Monitoring Form

Environment Monitoring Form

The latest results of the below monitoring items shall be submitted to Authorities on once at Pre -Construction Phase and on quarterly basis at Construction Phase, and on bi-annually base at Operation Phase. The items, standards to be applied, measurement points, and frequency for each monitoring parameter are established based on the EIA Report for Thilawa Special Economic Zone Development Project (Industrial Area of Zone B). Should there be any changes to the original plan, such change shall be reviewed and evaluated by environmental expert.

(1) General

1) Phase of the Project

- Please mark the current phase.

☐ Pre-Construction Phase

☐ Construction Phase

☒ Operation Phase

2) Obtainment of Environmental Permits

Name of permits	Expected issuance date	Actual issuance date	Concerned authority	Remarks (Conditions, etc.)
Approved letter for Environmental Impact Assessment (EIA) Report of Industrial Area, Thilawa Special Economic Zone (Zone-B)		29 th December 2016	Thilawa SEZ Management Committee	
Notification of the comments of Ministry of Natural Resources and Environmental Conservation regarding with the Standard Change of Wastewater Quality of Industrial Zone, Internal Regulations of Thilawa Special Economic Zone	5 th January 2018	10 th January 2018	Thilawa SEZ Management Committee	





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3) Response/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period	Duration of Report Period	Frequency
Number and contents of formal comments made by the public			Upon receipt of comments/ complaints
Number and contents of responses from Government agencies	- None received during this monitoring period.	June 2025 to November 2025	

(2) Monitoring Results

1) Ambient Air Quality (December 2025)

NO₂, SO₂, CO, PM_{2.5}, PM₁₀

Location	Item	Unit	Measured Value (Mean)	Measured Value (Max)	Country's Standard ²	Target value to be applied ^{*1}	Referred International Standard	Frequency	Method	Note (Reason of excess of the standard)
AQ-1 (Monastery Compound of Phalan Village)	NO ₂	mg/m ³	0.024	0.08	0.2 mg/m ³ (1 Hour)	0.1 mg/m ³ (24 Hour)	-	One time / 6 months	Oceanus AQM-09 air quality monitoring system	Refer to air quality report
	SO ₂	mg/m ³	0.018	0.028	0.02 mg/m ³ (24 Hours)	0.02 mg/m ³ (24 Hours)	-			
	CO	mg/m ³	0.282	0.781	-	10.26 mg/m ³ (24 Hours)	-			
	PM _{2.5}	mg/m ³	0.015	0.032	0.025 mg/m ³ (24 Hours)	0.025 mg/m ³ (24 Hours)	-			
	PM ₁₀	mg/m ³	0.021	0.056	0.05 mg/m ³ (24 Hours)	0.05 mg/m ³ (24 Hours)	-			

^{*1}Remarks: Referred to the tentative target value of ambient air quality (Thilawa SEZ-B EIA Report for industrial area, Table 2.4-1), Reference to the air quality monitoring report (December 2025)

*2Remark: Referred to the National Emission Quality Guideline (NEQG) 29th December 2015.

Complaints from Residents

- Are there any complaints from residents regarding air quality in this monitoring period? ☐ Yes ☒ No

If yes, please describe the contents of complains and its countermeasures to fill in below the table.

Contents of Complaints from Residents	Countermeasures

2) (a) Water Quality – December 2025

Measurement Point: Effluent of Wastewater (SW-2 and SW-4 are attached as reference point only and they are natural creek water which are combine all the wastewater from the Local industrial water and domestic water from existing living environment. SW-7 and SW-8 are the main discharging point. GW-2 is also as reference point for monitoring of existing tube well located in the Monastery Compound near Zone-B area)

- Are there any effluents to water body in this monitoring period? ☐ Yes, ☒ No

If yes, please attach "Analysis Record" and fill in the items not to comply with Refereed International Standard

Location	Item	Unit	Measur ed Value (Max)	Country's Standard ²	Target value to be applied ¹	Frequ-ency	Method	Note (Reason of excess of the standard)
SW-2 (Reference point) Sampling on 3 Dec 2025	Temperature	°C	24	< 3 (increase)	≤ 35	Once per 6 months	Instrument Analysis Method	Refer to water quality report
	pH	-	7	6-9	6~9		Instrument Analysis Method	
	Suspended Solids (SS)	mg/L	20	50	50		APHA 2540 D Method	
	Dissolved Oxygen (DO)	mg/L	3.38	-	-		Instrument Analysis Method	
	BOD (5)	mg/L	5.06	50	30		APHA 5210 B Method	
	COD (Cr)	mg/L	19.8	250	125		APHA 5220D Method	
	Total Coliform	MPN/100 ml	49.0	400	400		APHA 9221B Method	
	Total Nitrogen (T-N)	mg/L	3.5	-	80		HACH Method 10072 Method	
	Total Phosphorous (T-P)	mg/L	0.15	2	2		APHA 4500-P E Method	



Location	Item	Unit	Measured Value (Max)	Country's Standard ^{*2}	Target value to be applied ^{*1}	Frequency	Method	Note (Reason of excess of the standard)
SW-2 (Reference point) Sampling on 3 Dec 2025	Color	TCU	18.14	-	150		APHA 2120C Method	Refer to water quality report
	Odor	TON	1	-	-		APHA 2150 B Method	
	Oil and Grease	mg/L	<3.1	10	10		APHA 5520B Method	
	Mercury	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B Method	
	Zinc	mg/L	0.032	2	2		APHA 3120 B Method	
	Arsenic	mg/L	≤ 0.010	0.1	0.1		APHA 3120 B Method	
	Chromium	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
	Cadmium	mg/L	≤ 0.002	0.1	0.03		APHA 3120 B Method	
	Selenium	mg/L	≤ 0.010	0.1	0.02		APHA 3120 B Method	
	Lead	mg/L	≤ 0.002	0.1	0.1		APHA 3120 B Method	
	Copper	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
	Barium	mg/L	0.074	-	1		APHA 3120 B Method	
	Nickel	mg/L	≤ 0.002	0.5	0.2		APHA 3120 B Method	
	Cyanide	mg/L	< 0.002	0.1	0.1		HACH 8027 Method	
	Total Cyanide	mg/L	0.003	1	1		APHA 4500-CN-C Method	
	Free Chlorine	mg/L	< 0.1	-	1		APHA 4500-CL G Method	
	Sulphide (S ₂ -)	mg/L	0.020	1	1		HACH 8131 Method	
	Formaldehyde	mg/L	0.035	-	1		HACH 8110 Method	
	Phenols	mg/L	0.034	0.5	0.5		USEPA Method 420.1	
	Iron ^{*5}	mg/L	3.670	3.5	3.5		APHA 3120 B Method	
	Total Dissolved Solids	mg/L	240	-	2000		APHA 2540 C Method	
	Total Residual Chlorine	mg/L	< 0.1	0.2	0.2		APHA 4500-CL G Method	
	Chromium (Hexavalent)	mg/L	< 0.05	0.1	0.1		ISO 11083:1994 Method	
	Ammonia	mg/L	1.95	10	10		ISO 7150/1-1984 (E)	
	Fluoride	mg/L	0.140	20	20		APHA 4110 B Method	
	Silver	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
SW-4 (Reference point) sampling on 3 Dec 2025	Temperature	°C	24	< 3 (increase)	≤ 35	Once per 6 months	Instrument Analysis Method	Refer to water quality report
	pH	-	6.8	6-9	6~9		Instrument Analysis Method	
	Suspended Solids (SS) ^{*6}	mg/L	166	50	50		APHA 2540 D Method	
	Dissolved Oxygen (DO)	mg/L	3.96	-	-		Instrument Analysis Method	
	BOD (5)	mg/L	4.93	50	30		APHA 5210 B Method	
	COD (Cr)	mg/L	14.9	250	125		APHA 5220D Method	
	Total Coliform	MPN/100 ml	350	400	400		APHA 9221B Method	

Location	Item	Unit	Measured Value (Max)	Country's Standard ^{*2}	Target value to be applied ^{*1}	Frequency	Method	Note (Reason of excess of the standard)
SW-4 (Reference point) on 3 Dec 2025	Total Nitrogen (T-N)	mg/L	5	-	80	Once per 6 months	HACH Method 10072 Method	Refer to water quality report
	Total Phosphorous (T-P)	mg/L	0.35	2	2		APHA 4500-P E Method	
	Color	TCU	8.14	-	150		APHA 2120C Method	
	Odor	TON	1	-	-		APHA 2150 B Method	
	Oil and Grease	mg/L	< 3.1	10	10		APHA 5520B Method	
	Mercury	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B Method	
	Zinc	mg/L	0.074	2	2		APHA 3120 B Method	
	Arsenic	mg/L	≤ 0.010	0.1	0.1		APHA 3120 B Method	
	Chromium	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
	Cadmium	mg/L	≤ 0.002	0.1	0.03		APHA 3120 B Method	
	Selenium	mg/L	≤ 0.010	0.1	0.02		APHA 3120 B Method	
	Lead	mg/L	≤ 0.002	0.1	0.1		APHA 3120 B Method	
	Copper	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
	Barium	mg/L	0.096	-	1		APHA 3120 B Method	
	Nickel	mg/L	≤ 0.002	0.5	0.2		APHA 3120 B Method	
	Cyanide	mg/L	< 0.002	0.1	0.1		HACH 8027 Method	
	Total Cyanide	mg/L	0.002	1	1		APHA 4500-CN-C Method	
	Free Chlorine	mg/L	< 0.1	-	1		APHA 4500-CL G Method	
	Sulphide (S ₂ -)	mg/L	0.194	1	1		HACH 8131 Method	
	Formaldehyde	mg/L	0.025	-	1		HACH 8110 Method	
	Phenols	mg/L	< 0.002	0.5	0.5		USEPA Method 420.1	
	Iron ^{*5}	mg/L	14.66	3.5	3.5		APHA 3120 B Method	
	Total Dissolved Solids	mg/L	434	-	2000		APHA 2540 C Method	
	Total Residual Chlorine	mg/L	< 0.1	0.2	0.2		APHA 4500-CL G Method	
	Chromium (Hexavalent)	mg/L	< 0.05	0.1	0.1		ISO 11083:1994 Method	
	Ammonia	mg/L	2.42	10	10		ISO 7150/1-1984 (E)	
	Fluoride	mg/L	1.144	20	20		APHA 4110 B Method	
	Silver	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
Discharge point	Temperature	°C	27	< 3 (increase)	≤ 35	Once per 6 months	Instrument Analysis Method	Refer to water quality report
	pH	-	7.7	6-9	6-9		Instrument Analysis Method	
	Suspended Solids (SS) ^{*3}	mg/L	86	50	50		APHA 2540 D Method	
	Dissolved Oxygen (DO)	mg/L	6.24	-	-		Instrument Analysis Method	
	BOD (5)	mg/L	3.86	50	30		APHA 5210 B Method	
	COD (Cr)	mg/L	7.7	250	125		APHA 5220D Method	



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Location	Item	Unit	Measured Value (Max)	Country's Standard*2	Target value to be applied*1	Frequency	Method	Note (Reason of excess of the standard)
SW-7 (Discharge point) Sampling on 3 Dec 2025	Total Coliform	MPN/100 ml	7.8	400	400		APHA 9221B Method	Refer to water quality report
	Total Nitrogen (T-N)	mg/L	< 0.5	-	80		HACH Method 10072 Method	
	Total Phosphorous (T-P)	mg/L	< 0.05	2	2		APHA 4500-P E Method	
	Color	TCU	3.86	-	150		APHA 2120C Method	
	Odor	TON	1	-	-		APHA 2150 B Method	
	Oil and Grease	mg/L	< 3.1	10	10		APHA 5520B Method	
	Mercury	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B Method	
	Zinc	mg/L	0.080	2	2		APHA 3120 B Method	
	Arsenic	mg/L	≤ 0.010	0.1	0.1		APHA 3120 B Method	
	Chromium	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
	Cadmium	mg/L	≤ 0.002	0.1	0.03		APHA 3120 B Method	
	Selenium	mg/L	≤ 0.010	0.1	0.02		APHA 3120 B Method	
	Lead	mg/L	≤ 0.002	0.1	0.1		APHA 3120 B Method	
	Copper	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
	Barium	mg/L	0.130	-	1		APHA 3120 B Method	
	Nickel	mg/L	≤ 0.002	0.5	0.2		APHA 3120 B Method	
	Cyanide	mg/L	< 0.002	0.1	0.1		HACH 8027 Method	
	Total Cyanide	mg/L	0.002	1	1		APHA 4500-CN-C Method	
	Free Chlorine	mg/L	< 0.1	-	1		APHA 4500-CL G Method	
	Sulphide (S ₂ -)	mg/L	0.099	1	1		HACH 8131 Method	
	Formaldehyde	mg/L	0.015	-	1		HACH 8110 Method	
	Phenols	mg/L	0.028	0.5	0.5		USEPA Method 420.1	
	Iron *4	mg/L	20.980	3.5	3.5		APHA 3120 B Method	
	Total Dissolved Solids	mg/L	150	-	2000		APHA 2540 C Method	
	Total Residual Chlorine	mg/L	< 0.1	0.2	0.2		APHA 4500-CL G Method	
	Chromium (Hexavalent)	mg/L	< 0.05	0.1	0.1		ISO 11083:1994 Method	
	Ammonia	mg/L	0.05	10	10		ISO 7150/1-1984 (E)	
	Fluoride	mg/L	0.129	20	20		APHA 4110 B Method	
	Silver	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
SW-8 (Discharge point)	Temperature	°C	27	< 3 (increase)	≤ 35	Once per 6 months	Instrument Analysis Method	
	pH	-	7.7	6-9	6~9		Instrument Analysis Method	
	Suspended Solids (SS)	mg/L	28	50	50		APHA 2540 D Method	
	Dissolved Oxygen (DO)	mg/L	5.35	-	-		Instrument Analysis Method	

Location	Item	Unit	Measured Value (Max)	Country's Standard ²	Target value to be applied ¹	Frequency	Method	Note (Reason of excess of the standard)
SW-8 (Discharge point) Sampling on 3 Dec 2025	BOD (5)	mg/L	3.96	50	30		APHA 5210 B Method	Refer to water quality report
	COD (Cr)	mg/L	7.6	250	125		APHA 5220D Method	
	Total Coliform	MPN/100 ml	23	400	400		APHA 9221B Method	
	Total Nitrogen (T-N)	mg/L	< 0.5	-	80		HACH Method 10072 Method	
	Total Phosphorous (T-P)	mg/L	< 0.05	2	2		APHA 4500-P E Method	
	Color	TCU	2.43	-	150		APHA 2120C Method	
	Odor	TON	1	-	-		APHA 2150 B Method	
	Oil and Grease	mg/L	< 3.1	10	10		APHA 5520B Method	
	Mercury	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B Method	
	Zinc	mg/L	0.052	2	2		APHA 3120 B Method	
	Arsenic	mg/L	≤ 0.010	0.1	0.1		APHA 3120 B Method	
	Chromium	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
	Cadmium	mg/L	≤ 0.002	0.1	0.03		APHA 3120 B Method	
	Selenium	mg/L	≤ 0.010	0.1	0.02		APHA 3120 B Method	
	Lead	mg/L	≤ 0.002	0.1	0.1		APHA 3120 B Method	
	Copper	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
	Barium	mg/L	0.062	-	1		APHA 3120 B Method	
	Nickel	mg/L	≤ 0.002	0.5	0.2		APHA 3120 B Method	
	Cyanide	mg/L	< 0.002	0.1	0.1		HACH 8027 Method	
	Total Cyanide	mg/L	0.003	1	1		APHA 4500-CN-C Method	
	Free Chlorine	mg/L	< 0.1	-	1		APHA 4500-CL G Method	
	Sulphide (S ₂ -)	mg/L	0.077	1	1		HACH 8131 Method	
	Formaldehyde	mg/L	0.014	-	1		HACH 8110 Method	
	Phenols	mg/L	< 0.002	0.5	0.5		USEPA Method 420.1	
	Iron ⁴	mg/L	4.476	3.5	3.5		APHA 3120 B Method	
	Total Dissolved Solids	mg/L	156	-	2000		APHA 2540 C Method	
	Total Residual Chlorine	mg/L	< 0.1	0.2	0.2		APHA 4500-CL G Method	
	Chromium (Hexavalent)	mg/L	< 0.05	0.1	0.1		ISO 11083:1994 Method	
	Ammonia	mg/L	0.06	10	10		ISO 7150/1-1984 (E)	
	Fluoride	mg/L	0.130	20	20		APHA 4110 B Method	
	Silver	mg/L	≤ 0.002	0.5	0.5		APHA 3120 B Method	
GW-2	Temperature	°C	28.7		≤ 35	Once per	Instrument Analysis Method	



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Location	Item	Unit	Measured Value	Country's Standard ²	Target value to be applied ¹	Frequency	Method	Note (Reason of excess of the standard)
GW-2 (Reference point) Sampling on 3 Dec 2025	pH	-	6.7	None available For Ground water	6~9	6 months	Instrument Analysis Method	Refer to water quality report
	Suspended Solids (SS)	mg/L	4		50		APHA 2540 D Method	
	Dissolved Oxygen (DO)	mg/L	7.23		-		Instrument Analysis Method	
	BOD (5)	mg/L	2.69		30		APHA 5210 B Method	
	COD (Cr)	mg/L	< 0.7		125		APHA 5220D Method	
	Total Coliform	MPN/100 ml	<1.8		400		APHA 9221B Method	
	Total Nitrogen (T-N)	mg/L	< 0.5		80		HACH Method 10072 Method	
	Total Phosphorous (T-P)	mg/L	0.66		2		APHA 4500-P E Method	
	Color	TCU	91		150		APHA 2120C Method	
	Odor	TON	1		-		APHA 2150 B Method	
	Oil and Grease	mg/L	< 3.1		10		APHA 5520B Method	
	Mercury	mg/L	≤ 0.002		0.005		APHA 3120 B Method	
	Zinc	mg/L	0.020		2		APHA 3120 B Method	
	Arsenic	mg/L	≤ 0.010		0.1		APHA 3120 B Method	
	Chromium	mg/L	≤ 0.002		0.5		APHA 3120 B Method	
	Cadmium	mg/L	≤ 0.002		0.03		APHA 3120 B Method	
	Selenium	mg/L	≤ 0.010		0.02		APHA 3120 B Method	
	Lead	mg/L	≤ 0.002		0.1		APHA 3120 B Method	
	Copper	mg/L	≤ 0.002		0.5		APHA 3120 B Method	
	Barium	mg/L	0.040		1		APHA 3120 B Method	
	Nickel	mg/L	≤ 0.002		0.2		APHA 3120 B Method	
	Cyanide	mg/L	< 0.002		0.1		HACH 8027 Method	
	Total Cyanide	mg/L	< 0.002		1		APHA 4500-CN-C Method	
	Free Chlorine	mg/L	< 0.1		1		APHA 4500-CL G Method	
	Sulphide (S ₂ -)	mg/L	< 0.005		1		HACH 8131 Method	
	Formaldehyde	mg/L	< 0.003		1		HACH 8110 Method	
	Phenols	mg/L	< 0.002		0.5		USEPA Method 420.1	
	Iron ^{*7}	mg/L	12.740		3.5		APHA 3120 B Method	
	Total Dissolved Solids	mg/L	194		2000		APHA 2540 C Method	
	Total Residual Chlorine	mg/L	< 0.1		0.2		APHA 4500-CL G Method	
	Chromium (Hexavalent)	mg/L	< 0.05		0.1		ISO 11083:1994 Method	
	Ammonia	mg/L	0.10		10		ISO 7150/1-1984 (E)	
	Fluoride	mg/L	0.275		20		APHA 4110 B Method	

Location	Item	Unit	Measured Value (Max)	Country's Standard ^{*2}	Target value to be applied ^{*1}	Frequency	Method	Note (Reason of excess of the standard)
	Silver	mg/L	≤ 0.002		0.5		APHA 3120 B Method	

*1Remark: Reference to the Water and Wastewater Quality Monitoring Report (December 2025)

*2Remark: Referred to the National Emission Quality Guideline (NEQG) 29th December 2015

*3 Remark: For the monitoring point of SW-7 the result of SS exceeded due to expected reason the surface water run-off from bare land in Zone B.

*4 Remark: For the monitoring point of SW-7 and SW-8, the result of iron exceeded. The possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by strong wind. Moreover, iron remains in the natural environment for a long time.

*5 Remark: For the monitoring point of SW2, SW4 the result of Iron exceeded than standard may be due to the influence of natural origin (iron can reach out from the soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by run-off or strong wind.

*6 Remark: In the monitoring point of SW-4, SS exceeded than the target value due to expected i) delivered from upstream area such as natural origin and wastewater from local industrial zone which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to backflow by tidal fluctuation along Shwe Pyauk creek.

*7 Remark: In the monitoring point of GW-2, the result of Iron exceeded than standard the possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Moreover, Thilawa SEZ area is mainly composed of iron-rich soil (lateritic soil), and it can be saturated in the underlying confined aquifer.

2) (b) Water Quality - February 2026

Measurement Point: Effluent of Wastewater (SW-2 and SW-4 are attached as reference point only and they are natural creek water which are combine all the wastewater from the Local industrial water and domestic water from existing living environment. SW-7 and SW-8 are the main discharging point. GW-2 is also as reference point for monitoring of existing tube well located in the Monastery Compound near Zone-B area)



MYANMAR JAPAN THILAWA DEVELOPMENT LIMITED

Are there any effluents to water body in this monitoring period?

☐ Yes, ☒ No

If yes, please attach "Analysis Record" and fill in the items not to comply with Refereed International Standard

Location	Item	Unit	Measur ed Value (Max)	Country's Standard*2	Target value to be applied*1	Frequ- ency	Method	Note (Reason of excess of the standard)
SW-2 (Reference point) Sampling on 3 Feb 2026	Temperature	°C	25	< 3 (increase)	≤ 35	Once per 2 months	Instrument Analysis Method	Refer to water quality report
	pH	-	7.6	6-9	6.0 - 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	1.4	-	-		Instrument Analysis Method	
	Suspended Solids (SS)*3	mg/L	96	50	50		APHA 2540D (Dry at 103-105°C Method)	
	BOD ₅	mg/L	5.05	50	30		APHA 5210 B (5days BOD Test)	
	COD _{Cr}	mg/L	31.7	250	125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	15.29	-	150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	1	-	-		APHA 2150B (Threshold Odor Test)	
	Oil and Grease	mg/L	<3.1	10	10		APHA 5520 B (partition Gravimetric Method)	
	Total Nitrogen (T-N)	mg/L	7	-	80		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Phosphorous (T-P)	mg/L	0.45	2	2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform*4	MPN/100ml	>160000	400	400		APHA 9221 B	Refer to water quality report
	Total Dissolved solids (TDS)*6	mg/L	1024	-	2000		APHA 2540C (Total Dissolved Solids Dried at 180.C)	
	Iron*6, *5	mg/L	8.154	3.5	3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury*6	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
SW-4 (Reference point) Sampling on 3 Feb 2026	Temperature	°C	28	< 3 (increase)	≤ 35	Once per 2 months	Instrument Analysis Method	Refer to water quality report
	pH	-	7.7	6-9	6.0 - 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	3.34	-	-		Instrument Analysis Method	
	Suspended Solids (SS)*3	mg/L	130	50	50		APHA 2540D (Dry at 103-105°C Method)	
	BOD ₅	mg/L	4.89	50	30		APHA 5210 B (5days BOD Test)	
	COD _{Cr}	mg/L	5.8	250	125		APHA 5220 D (Close Reflux Colorimetric Method)	
							APHA 2120C (Spectrophotometric Method)	

Location	Item	Unit	Measured Value (Max)	Country's Standard ^{*2}	Target value to be applied ^{*1}	Frequency	Method	Note (Reason of excess of the standard)
SW-4 (Reference point) Sampling on 3 Feb 2026	Color	TCU	0.00	-	150		APHA 2150B (Threshold Odor Test)	
	Odor	TON	1	-	-		APHA 5520 B (partition Gravimetric Method)	
	Oil and Grease	mg/L	<3.1	10	10		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Nitrogen (T-N)	mg/L	3.5	-	80		APHA 4500-PE (Ascorbic Acid Method)	
	Total Phosphorous (T-P)	mg/L	< 0.05	2	2		APHA 9221 B (Standard Total Coliform Fermentation Technique)	
	Total Coliform ^{*4}	MPN/100ml	11000	400	400		APHA 2540C (Total Dissolved Solids Dried at 180.C)	
	Total Dissolved solids ^{*3} (TDS) ^{*6}	mg/L	3626	-	2000			
	Iron ^{*6}	mg/L	0.190	3.5	3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
SW-7 Sampling on 3 Feb 2026	Mercury ^{*6}	mg/L	≤ 0.002	0.01	0.005	Once per 2 months	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	Refer to water quality report
	Temperature	°C	28	< 3 (increase)	≤ 35		Instrument Analysis Method	
	pH	-	8.6	6-9	6.0 – 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	5.31	-	-		Instrument Analysis Method	
	Suspended Solids (SS) ^{*7}	mg/L	54	50	50		APHA 2540D (Dry at 103-105°C Method)	
	BOD ₅	mg/L	7.6	50	30		APHA 5210 B (5days BOD Test)	
	COD _{Cr}	mg/L	18	250	125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	0.00	-	150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	1	-	-		APHA 2150B (Threshold Odor Test)	
	Oil and Grease	mg/L	<3.1	10	10		APHA 5520 B (partition Gravimetric Method)	
	Total Nitrogen (T-N)	mg/L	2	-	80		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Phosphorous (T-P)	mg/L	0.08	2	2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform ^{*8}	MPN/100ml	1600	400	400		APHA 9221 B (Standard Total Coliform Fermentation Technique)	
	Total Dissolved solids (TDS) ^{*6}	mg/L	322	-	2000		APHA 2540C (Total Dissolved Solids Dried at 180.C)	
	Iron ^{*6, *9}	mg/L	3.554	3.5	3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury ^{*6}	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Temperature	°C	28	< 3 (increase)	≤ 35	Once	Instrument Analysis Method	Refer to



Location	Item	Unit	Measured Value (Max)	Country's Standard*2	Target value to be applied*1	Frequency	Method	Note (Reason of excess of the standard)
SW-8 (Discharge Point) Sampling on 3 Feb 2026	pH	-	8.7	6-9	6.0 - 9.0	per 2 months	Instrument Analysis Method	water quality report
	Dissolved Oxygen (DO)	mg/L	5.31	-	-		Instrument Analysis Method	
	Suspended Solids (SS)*7	mg/L	64	50	50		APHA 2540D (Dry at 103-105°C Method)	
	BOD ₅	mg/L	6.96	50	30		APHA 5210 B (5days BOD Test)	
	COD _{Cr}	mg/L	18.4	250	125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	0.00	-	150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	1	-	-		APHA 2150B (Threshold Odor Test)	
	Oil and Grease	mg/L	<3.1	10	10		APHA 5520 B (partition Gravimetric Method)	
	Total Nitrogen (T-N)	mg/L	3.2	-	80		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Phosphorous (T-P)	mg/L	0.13	2	2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform	MPN/100ml	220	400	400		APHA 9221 B (Standard Total Coliform Fermentation Technique)	
	Total Dissolved solids (TDS) *6	mg/L	330	-	2000		APHA 2540C (Total Dissolved Solids Dried at 180.C)	
	Iron*6, *9	mg/L	5.978	3.5	3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury*6	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
GW-2 (Reference point) Sampling on 3 Feb 2026	Temperature	°C	28	None Available for Ground water	≤ 35	Once per 2 months	Instrument Analysis Method	Refer to water quality report
	pH	-	6.9		6.0 - 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	5.56		-		Instrument Analysis Method	
	Suspended Solids (SS)	mg/L	2		50		APHA 2540D (Dry at 103-105°C Method)	
	BOD ₅	mg/L	4.65		30		APHA 5210 B (5days BOD Test)	
	COD _{Cr}	mg/L	< 0.7		125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	99.57		150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	1		-		APHA 2150B (Threshold Odor Test)	
	Oil and Grease	mg/L	<3.1		10		APHA 5520 B (partition Gravimetric Method)	
	Total Nitrogen (T-N)	mg/L	< 0.5		80		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Phosphorous (T-P)	mg/L	0.65		2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform	MPN/100ml	< 1.8		400		APHA 9221 B (Standard Total Coliform Fermentation	

Location	Item	Unit	Measured Value (Max)	Country's Standard*2	Target value to be applied*1	Frequency	Method	Note (Reason of excess of the standard)
GW-2 (Reference point)	Total Dissolved solids (TDS) *6	mg/L	204		2000		Technique) APHA 2540C (Total Dissolved Solids Dried at 180.C)	
	Iron*6, *10	mg/L	10.894		3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury*6	mg/L	≤ 0.002		0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	

*1 Remark: Reference to the Water and Wastewater Quality Monitoring Report (February 2026).

*2 Remark: Referred to the National Emission Quality Guideline (NEQG) 29th December 2015

*3 Remark: For reference monitoring points at SW-2 and SW-4, the result of SS and TDS result at SW-4 are higher than the standard due to expected reasons: reason i) delivered from upstream area such as natural origin and wastewater from local industrial zone which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to backflow by tidal fluctuation along Shwe Pyauk creek.

*4 Remark: At SW2 and SW-4, the results of T-Coli exceeded i) the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, ii) contaminants from the surroundings into the Shwe Pyauk creek may contain fecal matter and other pollutants, leading to increase coliform levels and iii) incoming tidal water can contain the fecal matter and delivered along Shwe Pyauk creek during flood tide.

*5 Remark: At SW-2, the results of Iron exceeded than the target value may be due to the influence of natural origin (iron can reach out from the soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by run-off or strong wind.

*6 Remark: Recommendation from JICA Environmental expert (TSMC), to be more emphasized on Environmental and analyzing only.

*7 Remark: For the monitoring point of SW-7 and SW-8, SS exceeded due to the surface water run-off from bare land in Zone B.

*8 Remark: For the monitoring point of SW-7, the results of T-Coli exceeded due to the expected reason that might be natural bacteria existed in all area of Zone B because the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, and the contaminants from the surroundings into the retention pond may contain fecal matter and other pollutants, leading to increase coliform levels. Total coliforms do not affect human health directly; self-monitoring was carried out to identify health impact by coliform bacteria. As for the result of E-Coli SW-7 was < 1.8 (MPN/100ml). It is considered that there is no significant impact to human health.



⁹ Remark: For the monitoring point of SW-7 and SW-8, Iron exceeded due to the possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by strong wind. Moreover, iron remains in the natural environment for a long time.

¹⁰ Remark: For the monitoring point of GW-2, Iron exceeded possible reasons may due to the influence of natural origin (iron can reach out from soil by run-off). Moreover, Thilawa SEZ area is mainly composed of iron rich soil (lateritic soil), and it can be saturated in the underlying confined aquifer.

Note: Ground water for GW-2, it was compared with Vietnam Groundwater Standard (No: QCVN 09-MT:2015/BTNMT) at the Appendix Attachment of Water Quality Monitoring Report (August 2025).

2) (b) Water Quality – April 2026

Measurement Point: Effluent of Wastewater (SW-2 and SW-4 are attached as reference point only and they are natural creek water which are combine all the wastewater from the Local industrial water and domestic water from existing living environment. SW-7 and SW-8 are the main discharging point. GW-2 is also as reference point for monitoring of existing tube well located in the Monastery Compound near Zone-B area)

- Are there any effluents to water body in this monitoring period?

☐ Yes, ☒ No

If yes, please attach "Analysis Record" and fill in the items not to comply with Refereed International Standard

Location	Item	Unit	Measur ed Value (Max)	Country's Standard ²	Target value to be applied ¹	Frequ-ency	Method	Note (Reason of excess of the standard)
SW-2 (Reference point) Sampling on 28 April 2026	Temperature	°C		< 3 (increase)	≤ 35	Once per 2 months	Instrument Analysis Method	Refer to water quality report
	pH	-		6-9	6.0 – 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	No	-	-		Instrument Analysis Method	
	Suspended Solids (SS)	mg/L	sample	50	50		APHA 2540D (Dry at 103-105°C Method)	
	BOD ₅	mg/L	water to	50	30		APHA 5210 B (5days BOD Test)	
	COD _{Cr}	mg/L	collect	250	125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	during	-	150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	monitori-	-	-		APHA 2150B (Threshold Odor Test)	
	Oil and Grease	mg/L	ng time	10	10		APHA 5520 B (partition Gravimetric Method)	

Location	Item	Unit	Measured Value (Max)	Country's Standard*2	Target value to be applied*1	Frequency	Method	Note (Reason of excess of the standard)
SW-2 (Reference point)	Total Nitrogen (T-N)	mg/L		-	80		HACH Method 10072 (TNT Persulfate Digestion Method)	Refer to water quality report
	Total Phosphorous (T-P)	mg/L		2	2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform	MPN/100ml		400	400		APHA 9221 B (Standard Total Coliform Fermentation Technique)	
	Total Dissolved solids (TDS) *6	mg/L		-	2000		APHA 2540C (Total Dissolved Solids Dried at 180.C)	
	Iron*6	mg/L		3.5	3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury*6	mg/L		0.01	0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
SW-4 (Reference point) Sampling on 28 April 2026	Temperature	°C	27	< 3 (increase)	≤ 35	Once per 2 months	Instrument Analysis Method	Refer to water quality report
	pH	-	7.3	6-9	6.0 – 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	4.54	-	-		Instrument Analysis Method	
	Suspended Solids (SS)*3	mg/L	150	50	50		APHA 2540D (Dry at 103-105°C Method)	
	BOD5	mg/L	5.68	50	30		APHA 5210 B (5days BOD Test)	
	CODCr	mg/L	26.7	250	125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	5.29	-	150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	1.4	-	-		APHA 2150B (Threshold Odor Test)	
	Oil and Grease	mg/L	< 3.1	10	10		APHA 5520 B (partition Gravimetric Method)	
	Total Nitrogen (T-N)	mg/L	0.9	-	80		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Phosphorous (T-P)	mg/L	< 0.05	2	2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform	MPN/100ml	23	400	400		APHA 9221 B (Standard Total Coliform Fermentation Technique)	
	Total Dissolved solids (TDS) *6, *3	mg/L	2814	-	2000		APHA 2540C (Total Dissolved Solids Dried at 180.C)	
	Iron*6	mg/L	2.478	3.5	3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury*6	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
SW-2 (Discharge Point)	Temperature	°C	33	< 3 (increase)	≤ 35	Once per 2 months	Instrument Analysis Method	Refer to water quality report
	pH	-	8.3	6-9	6.0 – 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	9.18	-	-		Instrument Analysis Method	



Location	Item	Unit	Measured Value (Max)	Country's Standard*2	Target value to be applied*1	Frequency	Method	Note (Reason of excess of the standard)
SW-7 Sampling on 28 April 2026	Suspended Solids (SS)*4	mg/L	158	50	50		APHA 2540D (Dry at 103-105°C Method)	
	BOD5	mg/L	7.49	50	30		APHA 5210 B (5days BOD Test)	
	CODCr	mg/L	21	250	125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	8.14	-	150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	1.4	-	-		APHA 2150B (Threshold Odor Test)	
	Oil and Grease	mg/L	< 3.1	10	10		APHA 5520 B (partition Gravimetric Method)	
	Total Nitrogen (T-N)	mg/L	1.6	-	80		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Phosphorous (T-P)	mg/L	0.10	2	2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform	MPN/100ml	1.8	400	400		APHA 9221 B (Standard Total Coliform Fermentation Technique)	
	Total Dissolved solids (TDS) *6	mg/L	1288	-	2000		APHA 2540C (Total Dissolved Solids Dried at 180.C)	
	Iron*6	mg/L	2.060	3.5	3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury*6	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
SW-8 (Discharge d Point) Sampling on 28 April 2026	Temperature	°C	32	< 3 (increase)	≤ 35	Once per 2 months	Instrument Analysis Method	Refer to water quality report
	pH	-	7.5	6-9	6.0 – 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	5.74	-	-		Instrument Analysis Method	
	Suspended Solids (SS)*4	mg/L	104	50	50		APHA 2540D (Dry at 103-105°C Method)	
	BOD5	mg/L	1.31	50	30		APHA 5210 B (5days BOD Test)	
	CODCr	mg/L	5.0	250	125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	5.29	-	150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	1.4	-	-		APHA 2150B (Threshold Odor Test)	
	Oil and Grease	mg/L	< 3.1	10	10		APHA 5520 B (partition Gravimetric Method)	
	Total Nitrogen (T-N)	mg/L	1.1	-	80		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Phosphorous (T-P)	mg/L	0.07	2	2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform*5	MPN/100ml	3300	400	400		APHA 9221 B (Standard Total Coliform Fermentation Technique)	
	Total Dissolved solids (TDS) *6	mg/L	1474	-	2000		APHA 2540C (Total Dissolved Solids Dried at 180.C)	

Location	Item	Unit	Measured Value (Max)	Country's Standard ^{*2}	Target value to be applied ^{*1}	Frequency	Method	Note (Reason of excess of the standard)
SW-8 (Discharge Point)	Iron ^{*6}	mg/L	1.528	3.5	3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury ^{*6}	mg/L	≤ 0.002	0.01	0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
GW-2 (Reference point) Sampling on 28 April 2026	Temperature	°C	28		≤ 35		Instrument Analysis Method	
	pH	-	6.2		6.0 - 9.0		Instrument Analysis Method	
	Dissolved Oxygen (DO)	mg/L	4.79		-		Instrument Analysis Method	
	Suspended Solids (SS)	mg/L	4		50		APHA 2540D (Dry at 103-105°C Method)	
	BOD5	mg/L	0.24		30		APHA 5210 B (5days BOD Test)	
	CODCr	mg/L	< 0.7		125		APHA 5220 D (Close Reflux Colorimetric Method)	
	Color	TCU	106.71	None available	150		APHA 2120C (Spectrophotometric Method)	
	Odor	TON	1	For Ground	-	Once per 2 months	APHA 2150B (Threshold Odor Test)	Refer to water quality report
	Oil and Grease	mg/L	< 3.1	water	10		APHA 5520 B (partition Gravimetric Method)	
	Total Nitrogen (T-N)	mg/L	< 0.5		80		HACH Method 10072 (TNT Persulfate Digestion Method)	
	Total Phosphorous (T-P)	mg/L	0.60		2		APHA 4500-PE (Ascorbic Acid Method)	
	Total Coliform	MPN/100ml	2		400		APHA 9221 B (Standard Total Coliform Fermentation Technique)	
	Total Dissolved solids (TDS) ^{*6}	mg/L	226		2000		APHA 2540C (Total Dissolved Solids Dried at 180.C)	Refer to water quality report
	Iron ^{*6}	mg/L	2.780		3.5		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	
	Mercury ^{*6}	mg/L	≤ 0.002		0.005		APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	

^{*1} Remark: Reference to the Water and Wastewater Quality Monitoring Report (April 2026)

^{*2} Remark: Referred to the National Emission Quality Guideline (NEQG) 29th December 2015

^{*3} Remark: SS and TDS results exceeded in the monitoring point of SW-4 than the target value be due to two expected reasons; i) delivered from upstream area such as natural origin and wastewater from local industrial zone which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to





backflow by tidal fluctuation along Shwe Pyauk creek.

⁷⁴ Remark: For the monitoring point of SW-7 and SW-8, the results of SS exceeded due to due to the surface water run-off from bare land in Zone B.

⁷⁵ Remark: For the monitoring point of SW-8, the results of T-Coli exceeded due to the expected reason that might be natural bacteria existed in all area of Zone B because the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, and the contaminants from the surroundings into the retention pond may contain fecal matter and other pollutants, leading to increase coliform levels. Total coliforms do not affect human health directly; self-monitoring was carried out to identify health impact by coliform bacteria. As for the result of E-Coli SW-8 was 2 (MPN/100ml). It is considered that there is no significant impact to human health.

⁷⁶ Remark: Recommendation from JICA Environmental expert (TSMC), to be more emphasized on Environmental and analyzing only.

3) Soil Contamination (only operation phase)

Situations environmental report from tenants

- Are there any serious issues regarding soil contamination in this monitoring period? ☐ Yes, ☒ No

If yes please describe the contents of complains and its countermeasures to fill in below the table.

Contents of Issues on Soil Contamination	Countermeasures

Remark: Soil contamination survey will be done after the whole Zone-B is operation stage.

4) Noise Level (December 2025)

Location	Item	Unit	Measured Value (Mean)	Measured Value (Max)	Country's Standard	Target value to be applied*	Referred International Standard	Frequency	Method	Note (Reason of excess of the standard)
Residential Area NV-2 (1 December 2026)	Leq (day)	dB(A)	45	48	70	60	Refer the section 2.4 in EIA main report	One time / 3 months		
	Leq (evening)	dB(A)	-	-		55				
	Leq(night)	dB(A)	-	-		50				
Along the road (NV-1) (2 December 2026)	Leq (day)	dB(A)	62	64	70	75				
	Leq(night)	dB(A)	-	-		70				

***Remarks:** Referred to the tentative target value of ambient air quality (TSEZ-B EIA Report for industrial area, Table 2.4.9), Reference to the noise and vibration monitoring report (December 2025)

Remark: Noise measurements were carried out for eight working hours (8:00 AM to 4:00 PM) at the designated locations instead of 24 hours due to safety reasons and risk avoidance.

Complaints from Residents

- Are there any complaints from residents regarding noise in this monitoring period? ☐ Yes, ☒ No
If yes, please describe the contents of complains and its countermeasures to fill in below the table.

Contents of Complaints from Residents	Countermeasures

5) Solid Waste

Measurement Point: Storage for Sludge* (Operation Phase)

Are there any wastes if sludge in this monitoring period? ☒ Yes, ☐ No

If yes, please report the amount of sludge and fill in the results of solid waste management activities.

Item	Date	Generated from	Unit	Value	Disposed to
General Waste	16 Dec 2025	Landscaping and Plantation	Kg	3000	Waste disposing to Thanlyin Development Committee, Yangon Division
	26 Feb 2026			2850	
	27 April 2026			2900	
Total			Kg	8750	
Sludge	12 Jan 2026	Sewage Treatment Plant	Kg	4100	Golden DOWA Eco-System Myanmar Co., Ltd
	29 Jan 2026			4240	
	24 March 2026			3500	
	26 May 2026			3940	
Total			Kg	15780	



Remarks: Waste amount is not only in TSEZ-B but also combine with TSEZ-A General Waste. Generate wastes are dried waste and weight value are estimated base on type of Trash collector car. Green Waste are used in Bio-fertilizer.

Note: Zone-B wastewater treated at Sewage Treatment of TSEZ-A. Above data are sludge generated from Sewage treatment plant of TSEZ-A.

6) (a) Ground Subsidence Hydrology (GPS Location 16.67 N, 96.29E)

Duration (Month)	Water Consumption		Ground Level		Frequency	Note
	Quantity	Unit	Quantity	Unit		
December 2025	-	m3/week		m	Once per month	Equipment calibration and couldn't measure in this month.

6) (b) Ground Subsidence Hydrology (GPS Location 16.67 N, 96.29E)

Duration (Month)	Water Consumption		Ground Level		Frequency	Note
	Quantity	Unit	Quantity	Unit		
30 January 2026	-	m3/week	+6.3005	m	Once per month	. There is no tube well water consumption in Zone-B.

6) (c) Ground Subsidence Hydrology (GPS Location 16.67 N, 96.29E)

Duration (Month)	Water Consumption		Ground Level		Frequency	Note
	Quantity	Unit	Quantity	Unit		
27 February 2026	-	m3/week	+6.3008	m	Once per month	There is no tube well water consumption in Zone-B.

6) (d) Ground Subsidence Hydrology (GPS Location 16.67 N, 96.29E)

Duration (Month)	Water Consumption		Ground Level		Frequency	Note
	Quantity	Unit	Quantity	Unit		
20 March 2026	-	m3/week	+6.3007	m	Once per month	There is no tube well water consumption in Zone-B.

6) (e) Ground Subsidence Hydrology (GPS Location 16.67 N, 96.29E)

Duration (Month)	Water Consumption		Ground Level		Frequency	Note
	Quantity	Unit	Quantity	Unit		

24 April 2026	-	m3/week	+6.3007	m	Once per month	There is no tube well water consumption in Zone-B.
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6) (f) Ground Subsidence Hydrology (GPS Location 16.67 N, 96.29E)

Duration (Month)	Water Consumption		Ground Level		Frequency	Note
	Quantity	Unit	Quantity	Unit		
25 May 2026	-	m3/week	+6.3426	m	Once per month	There is no tube well water consumption in Zone-B.

7) Offensive Odor (only operation phase)

Complaints from Residents

- Are there any complaints from residents regarding offensive odor in this monitoring period? ☐ Yes, ☒ No
If yes, please describe the contents of complains and its countermeasures to fill in below the table.

Contents of Complaints from Residents	Countermeasures

Situations environmental report from tenants

- Are there any serious issues regarding offensive odor in this monitoring period? ☐ Yes, ☒ No
If yes, please describe the contents of complains and its countermeasures to fill in below the table.

Contents of Complaints from Tenants	Countermeasures

8) Infectious disease, Working Environment, Accident

Information from contractor (construction phase) or tenants (operation phase)

- Are there any incidents regarding infectious disease, Working Environment, Accident in this monitoring period? ☐ Yes, ☒ No
If yes, please describe the contents of complains and its countermeasures to fill in below the table.



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MYANMAR JAPAN THILAWA DEVELOPMENT LIMITED

Contents of Incidents	Countermeasures
There is no accident and incident during monitoring period.	

Note: If emergency incidents are occurred, the information shall be reported to the relevant organizations and authorities immediately.

9) Resettlement Works for Project Affected Persons (PAPs) and Common Assets

Information from TSMC

- Please describe the progress and remarkable issues (if any) to fill in below the table.

Resettlement Works		Progress in Narrative	Remarkable Issues
Projected Affected Persons	Land Acquisition and Relocation	There were no compensated or relocated PAPs between December 2025 and May 2026 due to the lack of progress in land acquisition and relocation work during this period.	
	Income Restoration Program	There were no IRP activities for PAPs between December 2026 to May 2026 except monthly updating PAPs' household ownership status.	
Common Assets	Relocation		

- Are there any grievances submitted, solved and pending regarding resettlement works?
If yes, please describe the contents of grievances to fill in below the table.

☐ Yes, ☒ No

Contents of Grievance	Response/ Countermeasures

10) CSR activities such as Community Support Program

- Are there any CSR activities implemented in this monitoring

☒ Yes, ☐ No

If yes, please describe the outline of CSR activities implemented to fill in below the table.

Date	Activities	Description (Location, Participant etc)	Available photos
January 2026	TSEZ Junior Football Cup 2025 (2025-2026 Academic Year)	Provide a football competition for primary students from TSEZ Community schools (Aye Mya Thida, Shwe Pyi Thar Yar, Adduttaw, Kyar Kan Date Village from January 6-8. A total of 8 teams from 7 schools participated.	 
January 2026	Employee Healthcare Program: Thilawa SEZ Mental Wellbeing and Motivation Workshop 2026 (13 January 2026)	Provide a one-day workshop for TSEZ Locators "Mental Wellbeing and Motivation workshop 2026: Managing Workplace stress, Building Strength, renewing energy", designed to help participants to understand wellbeing and its benefits, to recognize personal strengths and assets, to enhance motivation in personal and professional life and also to reduce stress and make mindful decisions. A total of 75 participants representing 31 Locators attended.	 



		(provide refreshments and lunch)	
January 2026	First Aid Training for TSEZ Locators	Provide a two-day Basic First-Aid training for TSEZ Locators at Fujiwork Myanmar Thilawa on 21-22 Jan 2026. The sessions were conducted by well-trained and experienced members of the Myanmar Red Cross Society from the Yangon Region Office and the Thanlyin District Office. A total of 50 participants from 47 locators, TPD and MJTD completed the training and received the completion certificates.	 
February 2026	Rabies Vaccines donation to Kyauk Tan Township Hospital for community rabies prevention coverage	Donated 150 rabies vaccine vials to Kyauk Tan Township Hospital. These vaccines can cover approximately 70 patients.	
February 2026	Donation of Surgical Operating Lights (Halogen Bulb) 24V 25W to Kyauk Tan Township Hospital for the use of the operation theatre.	Donated 27 Surgical Operating Lights (Halogen Bulb) 24V 25W to Kyauk Tan Township Hospital for the use of the Operation Theatre.	 

Jan 2026 · Feb 2026	Academic Fund Support for Hiring Non-In-Service Teachers	Provided academic funds to hire two teachers at BEPS Tha Yat Kone, Kyauk Tan Township	
March 2026	TSEZ International Women's Day Event 2026	MJTD's Community Relations Department organized the TSEZ International Women's Day Event 2026 on 25 March 2026 at MJTD's Multipurpose Hall to recognize and empower women across the TSEZ community. A total of 65 women attended the event, which featured inspirational talks, interactive games, and knowledge-sharing sessions. The highlight was a panel discussion titled <i>"Empowering Women in the Workplace"</i> with successful women leaders from TSEZ.	 
March 2026	First Aid Training for Community School Teachers around TSEZ	Provide a One-day Basic First-Aid training for community school teachers around TSEZ on 24 Mar 2026. The sessions were conducted by well-trained and experienced members of the Myanmar Red Cross Society from	



		the Yangon Region Office and the Thanlyin District Office. A total of 32 participants completed the training and received the completion certificates.	
Dec 2025 – Feb 2026	TSEZ Scholarship/Student Grant Program for outstanding students in TSEZ (High School Students)	Provide the scholarship payment for High School Students, 12 students from G12, 6 students from G11, and 6 students from G10 (Total 24 students) from BEHS Aye Mya Thida, BEHS Myaing Thar Yar. (Dec 2025 – Feb 2026)	
April 2026	TSEZ Thingyan Festival 2026	MJTD organized the first Thilawa SEZ Thingyan Festival 2026 at the Thilawa SEZ on April 9, 2026, from 2:00 PM to 5:00 PM, in collaboration with Thilawa Property Development Limited. The event featured traditional Thingyan performances, Thingyan delicacies, and a water-splashing activity. Approximately 400 participants attended the festival and enjoyed the celebration.	  
May 2026	7 th Cash Assistance Program (Homage Paying Ceremony) of elder persons (80 years and above) around TSEZ	Provide 200,000/-MMK for each elder person 80 years and above in TSEZ neighbouring communities, Total – 125 elders (Ah Lwan Suk, Aye Mya Thida, Shwe Pyi Thar Yar, Thida Myaing and Shwe Pyauk)	

			
Dec 2025 to May 2026	Scholarship/Student Grant Program for outstanding students in TSEZ (University Medical Student)	Provide academic support (200,000/- MMK per month) for a Medical Year 4 Student from Shwe Pyauk Village (Mg Zaw Htet).	
Dec 2025 to May 2026	Electricity Utility Charges Support to Moe Kyo Swam Monastery	Provided the monthly electricity utility charges for the neighbouring monastery, Moe Kyo Swan Monastery at TSEZ, Shwe Pyi Thar Yar Ward.	
Dec 2025 to May 2026	Job assistance for a vacancy announcement	The vacancy announcement from Locators (about 79 posts) was posted on the TSEZ Facebook page.	

End of Document

Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3 (Operation phase)

Appendix- 1

Air Quality Monitoring Report

December 2025

**AIR QUALITY MONITORING
REPORT
FOR DEVELOPMENT OF INDUSTRIAL AREA
THILAWA SEZ ZONE B
(PHASE 1, 2 & 3 OPERATION STAGE)**

(BI-ANNUALLY MONITORING)

**December 2025
Myanmar Koei International Ltd.**



TABLE OF CONTENTS

CHAPTER 1: OUTLINES AND SUMMARY OF MONITORING PLAN.....	1
1.1 General.....	1
1.2 Outlines of Monitoring Plan	1
CHAPTER 2: AIR QUALITY MONITORING	2
2.1 Monitoring Item.....	2
2.2 Monitoring Location	2
2.3 Monitoring Period.....	2
2.4 Monitoring Method.....	3
2.5 Monitoring Results.....	4
CHAPTER 3: CONCLUSION AND RECOMMENDATION	7
APPENDIX-1 HOURLY AIR RESULTS.....	A1-1
APPENDIX-2 CERTIFICATE OF CALIBRATION	A2-1

LIST OF TABLES

Table 1.2-1 Outlines of Air Quality Monitoring Plan.....	1
Table 2.5-1 Air Quality Monitoring Result (Daily Average)	4

LIST OF FIGURES

Figure 2.2-1 Location of Air Quality Monitoring Point	2
Figure 2.4-1 Status of Air Quality Monitoring Point.....	3
Figure 2.5-1 Wind Status at AQ-1	5
Figure 2.5-2 Wind Rose Diagram of AQ-1	6



CHAPTER 1: OUTLINES AND SUMMARY OF MONITORING PLAN

1.1 General

Thilawa Special Economic Zone (TSEZ) is located in southern district of Yangon region and about 23 km southeast of Yangon city. As the developer of Thilawa SEZ, Myanmar Japan Thilawa Development Ltd. (MJTD) has a responsibility to carry out regular environmental monitoring in the industrial area of Zone B in accordance with the approved Environmental Impact Assessment (EIA) report with Environmental Management Plan (EMP). MJTD has implemented monitoring various environmental items with the specified time frame to know the environmental conditions in and around the area.

1.2 Outlines of Monitoring Plan

To assess the environmental condition under the operation of industrial area in and around Thilawa SEZ Zone B, air quality had been monitored from 1 December 2025 to 8 December 2025 as follows.

Table 1.2-1 Outlines of Air Quality Monitoring Plan

Monitoring Date	Monitoring Item	Parameters	Number of Point	Duration	Monitoring Methodology
From 1 December to 8 December, 2025	Air Quality	CO, NO ₂ , PM _{2.5} , PM ₁₀ and SO ₂	1	7 Days	On site measurement by Oceanus AQM-09 Air Quality Monitoring System

Source: Myanmar Koei International Ltd.



CHAPTER 2: AIR QUALITY MONITORING

2.1 Monitoring Item

The parameters for air quality monitoring were CO, NO₂, PM_{2.5}, PM₁₀ and SO₂.

2.2 Monitoring Location

The air quality measurement equipment, “Oceanus AQM-09 Air Quality Monitoring System” was set up at the south of the Thilawa SEZ Zone B, N: 16°39'24.20", E: 96°17'15.80", inside the monastery compound of Phalan village. As the monitoring point (AQ-1) is adjacent to the southern boundary of Thilawa SEZ Zone B, it is surrounded by Thilawa SEZ Zone B in the north and east. In the south and west of AQ-1, the residential houses of Phalan village and the fields are located respectively. Besides, Thilawa SEZ Zone A is distanced about 2 km north of AQ-1 as well as the local Thilawa Industrial Zone is about 1 km northeast. Due to the air quality monitoring carried out at above location which is close to the residential houses of Phalan village, the possible emission sources are exhaust gas and dust emissions from the fuel-burning equipment and other tasks of construction activities of Zone B but also from the daily human activities in Phalan village. The location of air quality monitoring point is shown in the Figure 2.2-1.



Source: Google Earth

Figure 2.2-1 Location of Air Quality Monitoring Point

2.3 Monitoring Period

Air quality monitoring was conducted seven consecutive days from 1 December to 8 December 2025.



2.4 Monitoring Method

Monitoring of CO, NO₂, PM_{2.5}, PM₁₀ and SO₂ were conducted by referring to the recommendation of the United States Environmental Protection Agency (U.S. EPA). The Oceanus AQM-09 Air Quality Monitoring System was used to collect ambient air pollutants. The system measures automatically every one minute and directly reads and records onsite for CO, NO₂, PM_{2.5}, PM₁₀ and SO₂. Wind data are analyzed by using the WRPLOT View (Ver. 8.0.2), in which calm wind is defined below 0.5 m/s in term of the classification stipulated by National Oceanic and Atmospheric Administration (USA). The status of air quality monitoring is shown in Figure 2.4-1.



Source: Myanmar Koei International Ltd.

Figure 2.4-1 Status of Air Quality Monitoring Point

2.5 Monitoring Results

The daily average value of air quality monitoring results of CO, NO₂, PM_{2.5}, PM₁₀ and SO₂ are described in Table 2.5-1. Comparing with the target value of CO, NO₂, PM_{2.5}, PM₁₀ and SO₂ prescribed in EIA report for Thilawa SEZ development project Zone B, daily average concentration but also seven days average concentration of CO, NO₂, PM_{2.5}, PM₁₀ and SO₂ were within limitations. Additionally, when current monitoring results are compared with air quality results measured in December 2015 for the mentioned EIA report, there is not much difference between the results of CO and SO₂. However, the results of NO₂, PM_{2.5} and PM₁₀ of 2015 baseline survey are generally higher than those of present monitoring.

Table 2.5-1 Air Quality Monitoring Result (Daily Average)

Monitoring Date	CO		NO ₂		PM _{2.5}		PM ₁₀		SO ₂	
	mg/m ³		mg/m ³		mg/m ³		mg/m ³		mg/m ³	
	Dec 2025	AQ-3 (Baseline Result, EIA Report)*	Dec 2025	AQ-3 (Baseline Result, EIA Report)*	Dec 2025	AQ-3 (Baseline Result, EIA Report)*	Dec 2025	AQ-3 (Baseline Result, EIA Report)*	Dec 2025	AQ-3 (Baseline Result, EIA Report)*
01~02 December, 2025 (Day 1)	0.452	0.206	0.027	0.094	0.017	0.033	0.025	0.099	0.019	0.038
02~03 December, 2025 (Day 2)	0.266	0.218	0.026	0.117	0.020	0.043	0.029	0.106	0.018	0.008
03~04 December, 2025 (Day 3)	0.225	0.275	0.030	0.124	0.015	0.057	0.023	0.161	0.018	0.010
04~05 December, 2025 (Day 4)	0.263	0.229	0.023	0.120	0.016	0.045	0.019	0.171	0.017	0.011
05~06 December, 2025 (Day 5)	0.195	0.206	0.017	0.111	0.014	0.048	0.018	0.099	0.018	0.021
06~07 December, 2025 (Day 6)	0.185	0.252	0.017	0.120	0.014	0.049	0.017	0.118	0.018	0.017
07~08 December, 2025 (Day 7)	0.384	0.275	0.027	0.107	0.012	0.057	0.016	0.097	0.019	0.019
7 Days Average Value	0.282	0.237	0.024	0.113	0.015	0.047	0.021	0.122	0.018	0.018
Target Value	10.26		0.1		0.025		0.05		0.02	
NEQG Guideline Value	-		-		0.025		0.05		0.02	

Note: The target value of CO, NO₂ and SO₂ were converted from ppm units to mg/m³. The conversion equations are as follows.

1. (CO, mg/m³) = (CO, ppm) * (Molecular Weight of CO (28)) / 24.45 at 25°C and 1 atm condition
2. (NO₂, mg/m³) = (NO₂, ppm) * (Molecular Weight of NO₂ (46)) / 24.45 at 25°C and 1 atm condition
3. (SO₂, mg/m³) = (SO₂, ppm) * (Molecular Weight of SO₂ (64)) / 24.45 at 25°C and 1 atm condition

* Baseline results monitored in December 2015 for EIA report (Industrial Area) of Zone B.

Source: Myanmar Koei International Ltd.

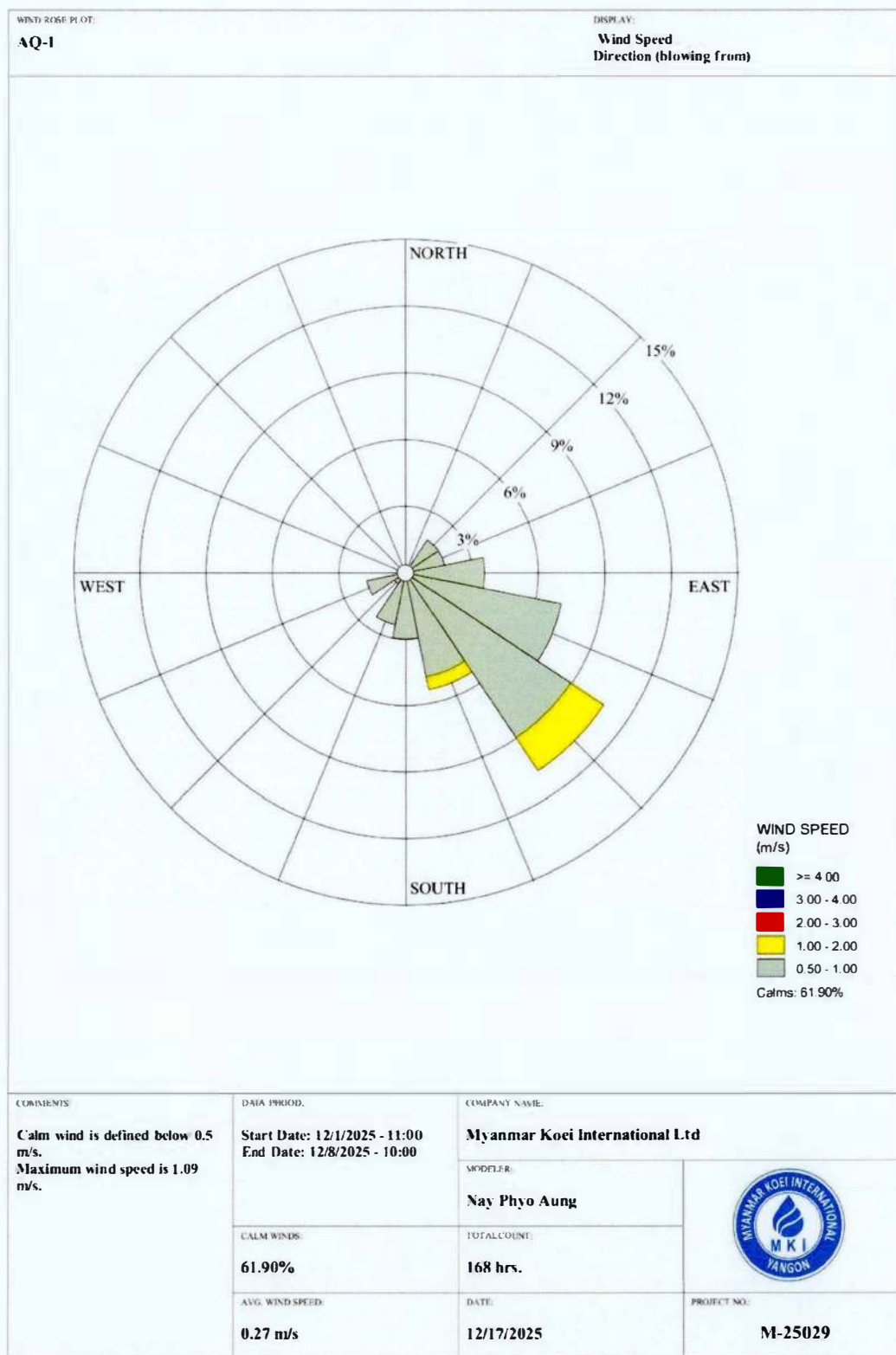


Wind direction and wind speed were measured at AQ-1. Hourly average values of measured wind direction and wind speed data are described in Appendix-1. Frequency of wind direction at AQ-1 and its wind rose diagram are described in Figure 2.5-1 and Figure 2.5-2. According to the wind rose analysis, the prevailing wind direction during monitoring was Southeast (SE) and the least frequency wind direction was West-Southwest (WSW). During the monitoring period, while the maximum wind speed was 1.09 m/s, the average speed is 0.27 m/s. The calm wind is 61.9 %, whereas the calm wind is defined below 0.5 m/s. As the average wind speed is lower than the defined calm wind, it is assumed that the wind was calm during the monitoring period.



Source: Myanmar Koei International Ltd.

Figure 2.5-1 Wind Status at AQ-1



Note: According to defined calm wind speed (< 0.5 m/s), 61.9% of all monitoring data was defined as calm wind and not considered or counted for modelling. 38.1% of wind data were used in this model.
Source: Myanmar Koei International Ltd.

Figure 2.5-2 Wind Rose Diagram of AQ-1



CHAPTER 3: CONCLUSION AND RECOMMENDATION

The result of air quality at AQ-1, concentration of CO, NO₂, PM_{2.5}, PM₁₀ and SO₂ during seven days monitoring were within limitations, thus there are no impacts on the surrounding environments.

In conclusion of this environmental survey periodical monitoring will be necessary to grasp the environmental conditions in Thilawa SEZ Zone B and to show the compliance status in the operation stage of Thilawa SEZ Zone B. The mitigation measures for environmental management will be considered in collected periodical environmental data and has to be reviewed in future.



APPENDIX-1 HOURLY AIR RESULTS



Air Quality Monitoring Report for Development of Industrial Area Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, FY December 2025)

Date	Time	CO	NO ₂	PM _{2.5}	PM ₁₀	SO ₂	Wind Speed	Wind Direction	
		mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	m/s	Deg.	Direction
		Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
01 Dec, 2025	11:00 ~ 11:59	0.781	0.010	0.014	0.023	0.015	0.74	100	E
01 Dec, 2025	12:00 ~ 12:59	0.728	0.011	0.011	0.020	0.015	0.75	161	SSE
01 Dec, 2025	13:00 ~ 13:59	0.646	0.009	0.012	0.020	0.014	0.64	131	SE
01 Dec, 2025	14:00 ~ 14:59	0.631	0.010	0.012	0.017	0.013	0.58	130	SE
01 Dec, 2025	15:00 ~ 15:59	0.631	0.011	0.011	0.014	0.011	0.38	138	SE
01 Dec, 2025	16:00 ~ 16:59	0.421	0.009	0.013	0.014	0.005	0.18	205	SSW
01 Dec, 2025	17:00 ~ 17:59	0.414	0.038	0.015	0.022	0.003	0.10	175	S
01 Dec, 2025	18:00 ~ 18:59	0.336	0.044	0.020	0.025	0.009	0.05	206	SSW
01 Dec, 2025	19:00 ~ 19:59	0.267	0.051	0.024	0.033	0.014	0.05	118	ESE
01 Dec, 2025	20:00 ~ 20:59	0.216	0.048	0.025	0.039	0.019	0.00	80	E
01 Dec, 2025	21:00 ~ 21:59	0.300	0.043	0.024	0.029	0.023	0.00	187	S
01 Dec, 2025	22:00 ~ 22:59	0.240	0.038	0.017	0.021	0.024	0.00	250	WSW
01 Dec, 2025	23:00 ~ 23:59	0.232	0.033	0.015	0.018	0.025	0.00	251	WSW
02 Dec, 2025	0:00 ~ 0:59	0.270	0.029	0.015	0.018	0.026	0.00	253	WSW
02 Dec, 2025	1:00 ~ 1:59	0.195	0.030	0.016	0.021	0.026	0.00	257	WSW
02 Dec, 2025	2:00 ~ 2:59	0.182	0.022	0.012	0.015	0.027	0.02	123	ESE
02 Dec, 2025	3:00 ~ 3:59	0.202	0.023	0.016	0.019	0.028	0.03	73	ENE
02 Dec, 2025	4:00 ~ 4:59	0.707	0.028	0.021	0.036	0.028	0.00	73	ENE
02 Dec, 2025	5:00 ~ 5:59	0.730	0.033	0.024	0.040	0.028	0.00	73	FNE
02 Dec, 2025	6:00 ~ 6:59	0.639	0.039	0.022	0.049	0.027	0.00	73	ENE
02 Dec, 2025	7:00 ~ 7:59	0.632	0.053	0.023	0.042	0.026	0.16	46	NE
02 Dec, 2025	8:00 ~ 8:59	0.627	0.023	0.018	0.024	0.022	0.35	67	ENE
02 Dec, 2025	9:00 ~ 9:59	0.421	0.010	0.013	0.018	0.021	0.54	104	ESE
02 Dec, 2025	10:00 ~ 10:59	0.407	0.010	0.011	0.016	0.018	0.67	119	ESE

Max	0.781	0.053	0.025	0.049	0.028
Avg	0.452	0.027	0.017	0.025	0.019
Min	0.182	0.009	0.011	0.014	0.003





Air Quality Monitoring Report for Development of Industrial Area Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, FY December 2025)

Date	Time	CO	NO ₂	PM _{2.5}	PM ₁₀	SO ₂	Wind Speed	Wind Direction	
		mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	m/s	Deg.	Direction
		Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
02 Dec, 2025	11:00 ~ 11:59	0.328	0.011	0.010	0.014	0.015	0.79	149.90	SSE
02 Dec, 2025	12:00 ~ 12:59	0.272	0.010	0.009	0.013	0.014	0.79	132.92	SE
02 Dec, 2025	13:00 ~ 13:59	0.217	0.012	0.011	0.016	0.012	0.65	150.23	SSE
02 Dec, 2025	14:00 ~ 14:59	0.296	0.011	0.014	0.019	0.005	0.75	208.45	SSW
02 Dec, 2025	15:00 ~ 15:59	0.243	0.011	0.012	0.016	0.004	0.82	174.53	S
02 Dec, 2025	16:00 ~ 16:59	0.215	0.010	0.012	0.016	0.010	0.19	231.35	SW
02 Dec, 2025	17:00 ~ 17:59	0.347	0.023	0.017	0.024	0.004	0.09	209.08	SSW
02 Dec, 2025	18:00 ~ 18:59	0.336	0.043	0.023	0.028	0.006	0.10	193.63	SSW
02 Dec, 2025	19:00 ~ 19:59	0.267	0.049	0.025	0.040	0.011	0.04	142.30	SE
02 Dec, 2025	20:00 ~ 20:59	0.216	0.051	0.027	0.047	0.014	0.03	178.82	S
02 Dec, 2025	21:00 ~ 21:59	0.300	0.050	0.024	0.056	0.020	0.04	160.50	SSE
02 Dec, 2025	22:00 ~ 22:59	0.240	0.048	0.022	0.054	0.022	0.02	99.28	E
02 Dec, 2025	23:00 ~ 23:59	0.225	0.041	0.025	0.049	0.022	0.01	138.00	SE
03 Dec, 2025	0:00 ~ 0:59	0.115	0.030	0.031	0.034	0.024	0.05	188.88	S
03 Dec, 2025	1:00 ~ 1:59	0.206	0.025	0.028	0.032	0.025	0.00	117.25	ESE
03 Dec, 2025	2:00 ~ 2:59	0.309	0.024	0.027	0.030	0.026	0.06	111.15	ESE
03 Dec, 2025	3:00 ~ 3:59	0.232	0.019	0.026	0.029	0.026	0.03	113.63	ESE
03 Dec, 2025	4:00 ~ 4:59	0.253	0.022	0.026	0.030	0.026	0.02	122.17	ESE
03 Dec, 2025	5:00 ~ 5:59	0.268	0.026	0.032	0.038	0.026	0.01	125.65	SE
03 Dec, 2025	6:00 ~ 6:59	0.258	0.039	0.027	0.032	0.025	0.13	81.38	E
03 Dec, 2025	7:00 ~ 7:59	0.443	0.038	0.017	0.023	0.025	0.55	67.10	ENE
03 Dec, 2025	8:00 ~ 8:59	0.300	0.008	0.012	0.017	0.023	0.60	93.43	E
03 Dec, 2025	9:00 ~ 9:59	0.257	0.008	0.010	0.015	0.021	0.65	104.53	ESE
03 Dec, 2025	10:00 ~ 10:59	0.246	0.009	0.012	0.016	0.017	0.64	106.47	ESE

Max	0.443	0.051	0.032	0.056	0.026
Avg	0.266	0.026	0.020	0.029	0.018
Min	0.115	0.008	0.009	0.013	0.004

Date	Time	CO	NO ₂	PM _{2.5}	PM ₁₀	SO ₂	Wind Speed	Wind Direction	
		mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	m/s	Deg.	Direction
		Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
03 Dec, 2025	11:00 ~ 11:59	0.239	0.009	0.010	0.014	0.017	0.65	145.27	SE
03 Dec, 2025	12:00 ~ 12:59	0.285	0.008	0.008	0.012	0.016	0.69	127.92	SE
03 Dec, 2025	13:00 ~ 13:59	0.151	0.008	0.008	0.012	0.016	0.55	135.50	SE
03 Dec, 2025	14:00 ~ 14:59	0.183	0.009	0.008	0.017	0.015	0.63	140.48	SE
03 Dec, 2025	15:00 ~ 15:59	0.228	0.008	0.008	0.017	0.013	0.58	207.55	SSW
03 Dec, 2025	16:00 ~ 16:59	0.251	0.008	0.013	0.035	0.006	0.35	220.58	SW
03 Dec, 2025	17:00 ~ 17:59	0.281	0.038	0.016	0.028	0.003	0.02	203.67	SSW
03 Dec, 2025	18:00 ~ 18:59	0.173	0.059	0.023	0.037	0.007	0.09	207.58	SSW
03 Dec, 2025	19:00 ~ 19:59	0.328	0.052	0.024	0.032	0.013	0.01	162.38	SSE
03 Dec, 2025	20:00 ~ 20:59	0.258	0.070	0.023	0.033	0.016	0.00	258.18	WSW
03 Dec, 2025	21:00 ~ 21:59	0.235	0.080	0.023	0.035	0.016	0.00	210.02	SSW
03 Dec, 2025	22:00 ~ 22:59	0.247	0.065	0.024	0.034	0.021	0.00	57.55	ENE
03 Dec, 2025	23:00 ~ 23:59	0.282	0.054	0.025	0.037	0.023	0.00	89.15	E
04 Dec, 2025	0:00 ~ 0:59	0.165	0.055	0.024	0.038	0.023	0.00	164.47	SSE
04 Dec, 2025	1:00 ~ 1:59	0.168	0.047	0.020	0.024	0.023	0.00	239.30	WSW
04 Dec, 2025	2:00 ~ 2:59	0.223	0.035	0.016	0.019	0.025	0.00	232.67	SW
04 Dec, 2025	3:00 ~ 3:59	0.268	0.016	0.011	0.013	0.026	0.03	169.73	S
04 Dec, 2025	4:00 ~ 4:59	0.266	0.011	0.009	0.011	0.026	0.30	20.30	NNE
04 Dec, 2025	5:00 ~ 5:59	0.190	0.013	0.009	0.013	0.026	0.49	38.90	NE
04 Dec, 2025	6:00 ~ 6:59	0.318	0.022	0.010	0.015	0.026	0.37	27.43	NNE
04 Dec, 2025	7:00 ~ 7:59	0.266	0.024	0.011	0.016	0.025	0.60	62.92	ENE
04 Dec, 2025	8:00 ~ 8:59	0.157	0.006	0.012	0.019	0.024	0.89	125.33	SE
04 Dec, 2025	9:00 ~ 9:59	0.115	0.010	0.012	0.016	0.020	0.75	80.87	E
04 Dec, 2025	10:00 ~ 10:59	0.115	0.010	0.012	0.013	0.017	0.66	85.08	E

Max	0.328	0.080	0.025	0.038	0.026
Avg	0.225	0.030	0.015	0.023	0.018
Min	0.115	0.006	0.008	0.011	0.003





Air Quality Monitoring Report for Development of Industrial Area Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, FY December 2025)

Date	Time	CO	NO ₂	PM _{2.5}	PM ₁₀	SO ₂	Wind Speed	Wind Direction	
		mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	m/s	Deg.	Direction
		Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
04 Dec, 2025	11:00 ~ 11:59	0.115	0.010	0.012	0.015	0.015	0.69	123.82	SE
04 Dec, 2025	12:00 ~ 12:59	0.115	0.010	0.012	0.015	0.015	0.72	120.27	ESE
04 Dec, 2025	13:00 ~ 13:59	0.320	0.007	0.011	0.014	0.015	0.66	120.03	ESE
04 Dec, 2025	14:00 ~ 14:59	0.264	0.006	0.014	0.017	0.015	0.68	194.65	SSW
04 Dec, 2025	15:00 ~ 15:59	0.206	0.006	0.014	0.017	0.012	0.52	234.00	SW
04 Dec, 2025	16:00 ~ 16:59	0.309	0.007	0.016	0.019	0.011	0.18	212.13	SSW
04 Dec, 2025	17:00 ~ 17:59	0.232	0.026	0.022	0.025	0.006	0.01	190.88	S
04 Dec, 2025	18:00 ~ 18:59	0.253	0.049	0.020	0.023	0.008	0.01	224.53	SW
04 Dec, 2025	19:00 ~ 19:59	0.115	0.054	0.012	0.015	0.010	0.01	160.32	SSE
04 Dec, 2025	20:00 ~ 20:59	0.641	0.052	0.021	0.027	0.014	0.00	239.18	WSW
04 Dec, 2025	21:00 ~ 21:59	0.466	0.061	0.026	0.034	0.017	0.12	170.22	S
04 Dec, 2025	22:00 ~ 22:59	0.354	0.055	0.028	0.033	0.019	0.00	79.77	E
04 Dec, 2025	23:00 ~ 23:59	0.263	0.051	0.027	0.032	0.020	0.00	90.00	E
05 Dec, 2025	0:00 ~ 0:59	0.215	0.036	0.017	0.019	0.021	0.02	85.97	E
05 Dec, 2025	1:00 ~ 1:59	0.303	0.019	0.015	0.017	0.023	0.43	86.25	E
05 Dec, 2025	2:00 ~ 2:59	0.238	0.008	0.013	0.014	0.022	0.33	52.32	NE
05 Dec, 2025	3:00 ~ 3:59	0.232	0.004	0.016	0.017	0.022	0.46	69.92	ENE
05 Dec, 2025	4:00 ~ 4:59	0.115	0.007	0.012	0.013	0.023	0.38	88.37	E
05 Dec, 2025	5:00 ~ 5:59	0.202	0.012	0.012	0.013	0.023	0.40	112.32	FSE
05 Dec, 2025	6:00 ~ 6:59	0.308	0.021	0.014	0.017	0.024	0.59	50.92	NE
05 Dec, 2025	7:00 ~ 7:59	0.230	0.019	0.016	0.019	0.023	0.80	54.58	NE
05 Dec, 2025	8:00 ~ 8:59	0.260	0.007	0.014	0.016	0.022	0.72	121.03	ESE
05 Dec, 2025	9:00 ~ 9:59	0.259	0.009	0.014	0.016	0.018	0.80	158.62	SSE
05 Dec, 2025	10:00 ~ 10:59	0.286	0.007	0.014	0.017	0.015	0.87	170.12	S

Max	0.641	0.061	0.028	0.034	0.024
Avg	0.263	0.023	0.016	0.019	0.017
Min	0.115	0.004	0.011	0.013	0.006

Air Quality Monitoring Report for Development of Industrial Area Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, FY December 2025)

Date	Time	CO	NO ₂	PM _{2.5}	PM ₁₀	SO ₂	Wind Speed	Wind Direction	
		mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	m/s	Deg.	Direction
		Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
05 Dec, 2025	11:00 ~ 11:59	0.239	0.007	0.010	0.013	0.016	0.79	141.67	SE
05 Dec, 2025	12:00 ~ 12:59	0.266	0.006	0.008	0.010	0.016	0.71	135.32	SE
05 Dec, 2025	13:00 ~ 13:59	0.220	0.007	0.007	0.009	0.016	0.60	137.18	SE
05 Dec, 2025	14:00 ~ 14:59	0.292	0.007	0.008	0.011	0.012	0.53	189.03	S
05 Dec, 2025	15:00 ~ 15:59	0.138	0.006	0.013	0.016	0.004	0.41	208.03	SSW
05 Dec, 2025	16:00 ~ 16:59	0.199	0.007	0.015	0.018	0.012	0.12	204.55	SSW
05 Dec, 2025	17:00 ~ 17:59	0.217	0.018	0.017	0.024	0.011	0.16	161.77	SSE
05 Dec, 2025	18:00 ~ 18:59	0.296	0.023	0.022	0.027	0.013	0.02	170.20	S
05 Dec, 2025	19:00 ~ 19:59	0.243	0.020	0.022	0.027	0.015	0.05	139.93	SE
05 Dec, 2025	20:00 ~ 20:59	0.215	0.033	0.018	0.025	0.018	0.00	33.00	NNE
05 Dec, 2025	21:00 ~ 21:59	0.192	0.043	0.020	0.028	0.020	0.00	33.00	NNE
05 Dec, 2025	22:00 ~ 22:59	0.142	0.052	0.021	0.029	0.020	0.02	101.25	ESE
05 Dec, 2025	23:00 ~ 23:59	0.161	0.034	0.023	0.033	0.021	0.07	188.27	S
06 Dec, 2025	0:00 ~ 0:59	0.172	0.033	0.021	0.030	0.021	0.25	73.42	ENE
06 Dec, 2025	1:00 ~ 1:59	0.115	0.017	0.014	0.017	0.021	0.37	49.02	NE
06 Dec, 2025	2:00 ~ 2:59	0.216	0.007	0.012	0.014	0.021	0.28	124.30	SE
06 Dec, 2025	3:00 ~ 3:59	0.118	0.008	0.010	0.012	0.021	0.47	124.58	SE
06 Dec, 2025	4:00 ~ 4:59	0.216	0.007	0.013	0.016	0.022	0.49	115.40	ESE
06 Dec, 2025	5:00 ~ 5:59	0.192	0.012	0.010	0.012	0.023	0.51	106.38	ESE
06 Dec, 2025	6:00 ~ 6:59	0.176	0.021	0.012	0.014	0.023	0.53	54.30	NE
06 Dec, 2025	7:00 ~ 7:59	0.187	0.015	0.012	0.015	0.023	0.72	91.38	E
06 Dec, 2025	8:00 ~ 8:59	0.146	0.008	0.011	0.015	0.021	0.96	135.97	SE
06 Dec, 2025	9:00 ~ 9:59	0.176	0.008	0.011	0.015	0.017	0.76	106.22	ESE
06 Dec, 2025	10:00 ~ 10:59	0.158	0.006	0.011	0.015	0.017	0.54	128.52	SE

Max	0.296	0.052	0.023	0.033	0.023
Avg	0.195	0.017	0.014	0.018	0.018
Min	0.115	0.006	0.007	0.009	0.004





Air Quality Monitoring Report for Development of Industrial Area Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, FY December 2025)

Date	Time	CO	NO ₂	PM _{2.5}	PM ₁₀	SO ₂	Wind Speed	Wind Direction	
		mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	m/s	Deg.	Direction
		Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
06 Dec, 2025	11:00 ~ 11:59	0.199	0.007	0.010	0.012	0.016	0.61	118.02	ESE
06 Dec, 2025	12:00 ~ 12:59	0.134	0.006	0.009	0.010	0.016	0.63	126.02	SE
06 Dec, 2025	13:00 ~ 13:59	0.187	0.006	0.010	0.012	0.016	0.40	134.75	SE
06 Dec, 2025	14:00 ~ 14:59	0.146	0.007	0.009	0.011	0.013	0.75	240.48	WSW
06 Dec, 2025	15:00 ~ 15:59	0.203	0.007	0.009	0.010	0.016	0.88	236.60	WSW
06 Dec, 2025	16:00 ~ 16:59	0.165	0.006	0.025	0.030	0.015	0.72	201.93	SSW
06 Dec, 2025	17:00 ~ 17:59	0.146	0.020	0.017	0.020	0.007	0.25	185.50	S
06 Dec, 2025	18:00 ~ 18:59	0.226	0.043	0.023	0.030	0.006	0.02	245.55	WSW
06 Dec, 2025	19:00 ~ 19:59	0.199	0.037	0.013	0.014	0.012	0.04	242.00	WSW
06 Dec, 2025	20:00 ~ 20:59	0.187	0.022	0.010	0.011	0.016	0.00	256.98	WSW
06 Dec, 2025	21:00 ~ 21:59	0.190	0.024	0.010	0.011	0.019	0.00	256.73	WSW
06 Dec, 2025	22:00 ~ 22:59	0.154	0.022	0.017	0.024	0.020	0.00	257.00	WSW
06 Dec, 2025	23:00 ~ 23:59	0.220	0.026	0.017	0.020	0.021	0.00	257.00	WSW
07 Dec, 2025	0:00 ~ 0:59	0.183	0.019	0.015	0.017	0.021	0.00	257.00	WSW
07 Dec, 2025	1:00 ~ 1:59	0.216	0.016	0.017	0.019	0.022	0.00	257.17	WSW
07 Dec, 2025	2:00 ~ 2:59	0.229	0.015	0.019	0.021	0.023	0.00	255.33	WSW
07 Dec, 2025	3:00 ~ 3:59	0.209	0.017	0.016	0.018	0.023	0.07	250.42	WSW
07 Dec, 2025	4:00 ~ 4:59	0.233	0.020	0.016	0.018	0.023	0.09	257.53	WSW
07 Dec, 2025	5:00 ~ 5:59	0.210	0.024	0.018	0.019	0.023	0.04	211.33	SSW
07 Dec, 2025	6:00 ~ 6:59	0.189	0.023	0.016	0.018	0.023	0.32	28.48	NNE
07 Dec, 2025	7:00 ~ 7:59	0.115	0.012	0.015	0.017	0.023	0.67	75.52	ENE
07 Dec, 2025	8:00 ~ 8:59	0.178	0.006	0.011	0.013	0.022	1.09	136.13	SE
07 Dec, 2025	9:00 ~ 9:59	0.165	0.007	0.012	0.014	0.019	0.82	150.75	SSE
07 Dec, 2025	10:00 ~ 10:59	0.161	0.006	0.010	0.012	0.017	0.87	151.97	SSE

Max	0.233	0.043	0.025	0.030	0.023
Avg	0.185	0.017	0.014	0.017	0.018
Min	0.115	0.006	0.009	0.010	0.006

Date	Time	CO	NO ₂	PM _{2.5}	PM ₁₀	SO ₂	Wind Speed	Wind Direction	
		mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	m/s	Deg.	Direction
		Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly	Hourly
07 Dec, 2025	11:00 ~ 11:59	0.213	0.007	0.007	0.011	0.016	0.97	150.55	SSE
07 Dec, 2025	12:00 ~ 12:59	0.135	0.007	0.005	0.009	0.016	0.81	178.52	S
07 Dec, 2025	13:00 ~ 13:59	0.195	0.007	0.005	0.009	0.016	0.80	163.47	SSE
07 Dec, 2025	14:00 ~ 14:59	0.224	0.007	0.005	0.009	0.016	0.73	169.53	S
07 Dec, 2025	15:00 ~ 15:59	0.210	0.007	0.005	0.008	0.016	0.76	155.05	SSE
07 Dec, 2025	16:00 ~ 16:59	0.190	0.006	0.005	0.010	0.016	0.53	256.95	WSW
07 Dec, 2025	17:00 ~ 17:59	0.193	0.023	0.012	0.017	0.010	0.24	257.20	WSW
07 Dec, 2025	18:00 ~ 18:59	0.340	0.060	0.024	0.031	0.010	0.08	269.85	W
07 Dec, 2025	19:00 ~ 19:59	0.332	0.069	0.016	0.022	0.012	0.00	271.00	W
07 Dec, 2025	20:00 ~ 20:59	0.298	0.049	0.012	0.018	0.015	0.00	271.00	W
07 Dec, 2025	21:00 ~ 21:59	0.260	0.057	0.016	0.022	0.018	0.00	271.00	W
07 Dec, 2025	22:00 ~ 22:59	0.187	0.052	0.021	0.027	0.021	0.00	271.90	W
07 Dec, 2025	23:00 ~ 23:59	0.338	0.046	0.016	0.020	0.021	0.00	249.05	WSW
08 Dec, 2025	0:00 ~ 0:59	0.115	0.045	0.016	0.020	0.021	0.01	256.20	WSW
08 Dec, 2025	1:00 ~ 1:59	0.153	0.040	0.015	0.016	0.022	0.20	247.48	WSW
08 Dec, 2025	2:00 ~ 2:59	0.405	0.037	0.014	0.016	0.022	0.08	155.40	SSE
08 Dec, 2025	3:00 ~ 3:59	0.630	0.037	0.014	0.015	0.023	0.07	87.33	E
08 Dec, 2025	4:00 ~ 4:59	0.769	0.021	0.014	0.016	0.024	0.38	59.48	ENE
08 Dec, 2025	5:00 ~ 5:59	0.729	0.016	0.011	0.019	0.024	0.48	82.22	E
08 Dec, 2025	6:00 ~ 6:59	0.750	0.016	0.013	0.018	0.024	0.61	140.87	SE
08 Dec, 2025	7:00 ~ 7:59	0.765	0.016	0.013	0.016	0.024	0.83	88.55	E
08 Dec, 2025	8:00 ~ 8:59	0.279	0.008	0.011	0.017	0.022	0.99	134.80	SE
08 Dec, 2025	9:00 ~ 9:59	0.771	0.009	0.010	0.015	0.019	0.90	108.90	ESE
08 Dec, 2025	10:00 ~ 10:59	0.745	0.008	0.009	0.010	0.017	0.75	120.40	ESE

Max	0.771	0.069	0.024	0.031	0.024
Avg	0.384	0.027	0.012	0.016	0.019
Min	0.115	0.006	0.005	0.008	0.010



APPENDIX-2 CERTIFICATE OF CALIBRATION



Calibrate report

Product	Air Quality Monitor System		Model	AQM-09		
Quantity	1pcs		Cali date	January,14,2025		
Product No.	OC202501140420007					
Appearance	☒ Clean ☒ Non corrosive ☒ No damage					
Gas type	CO:ppm	SO ₂ :ppb	NO ₂ :ppb	O ₃ :ppb	CO ₂ :ppb	
	VOC:ppm	PM2.5:ug/m ³	PM10:ug/m ³	TSP:ug/m ³		
	Wind veloci: m/s	Wind direct: °	Atmospheric : hpa	Temperature and humidity: °C/%RH		
Accuracy	±3%F.S					
resolution	0.1ppm 1ppm 1ppb 1ug/m ³					
Response time	≤ 30S					
Survey range	CO:0-200.0ppm		SO ₂ :0-2000ppb		NO ₂ :0-2000ppb	
	O ₃ :0-2000ppb		CO ₂ :0-5000ppm		VOC:0-50.0ppm	
	PM2.5:0-1000ug/m ³		PM10:0-1000ug/m ³		TSP : 0-1000ug/m ³	
	Wind veloci:0-30.0m/s		Wind direct:0-360°		Humidity:0%-100%RH	
	Atmospheric :600-1100 hpa		Temperature: -20.0~50.0℃			
Signal output mode	4G LTE					
Power supply voltage	AC 220V/50Hz					
Power dissipation	≤ 30W					
Working temperature and humidity range	-20℃~50℃ / 0%RH-100%RH					
Testing condition indoor	Temperature: 15℃ Humidity: 55%RH					
Calibration gas	CO SO ₂ NO ₂ O ₃ CO ₂ C ₄ H ₈					
Cali gas test	1.CO: Cali gas concentration: <u>12.0</u> ppm		Inspect concentration: <u>11.9</u> ppm			
	2.SO ₂ :Cali gas concentration: <u>1480</u> ppb		Inspect concentration: <u>1489</u> ppb			
	3.NO ₂ : Cali gas concentration: <u>1830</u> ppb		Inspect concentration: <u>1830</u> ppb			
	4.O ₃ : Cali gas concentration: <u>1500</u> ppb		Inspect concentration: <u>1499</u> ppb			
	5.CO ₂ : Cali gas concentration: <u>4000</u> ppm		Inspect concentration: <u>3999</u> ppm			
	6.C ₄ H ₈ : Cali gas concentration: <u>48.0</u> ppm		Inspect concentration: <u>49.9</u> ppm			
	7.PM2.5:Measured value: <u>30</u> ug/m ³		8.PM10:Measured value: <u>36</u> ug/m ³			
	9.TSP:Measured value: <u>39</u> ug/m ³		10.Wind direct:Measured value: <u>201</u>			
	11.Wind veloci:Measured value: <u>3.4</u> m/s		12.Atmospheric :Measured value: <u>1013</u> hpa			
	13.Temperature:Measured value: <u>26.9</u> °C		14.Humidity:Measured value: <u>46.5</u> %RH			
	Test result	Qualified				
	Remark					

Tester:Bing Wen Wang

Quality judgment:

OQC : Ying Liu

Date:January,14,2025

Auditor: Yan Hui Wang



Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3 (Operation phase)

Appendix- 2(a)

Water and Waste Water Monitoring Report

December 2025

**WATER QUALITY MONITORING REPORT
FOR DEVELOPMENT OF INDUSTRIAL AREA
IN THILAWA SEZ ZONE B
(PHASE 1, 2 & 3 OPERATION STAGE)**

(Bi-Annually Monitoring)

December 2025

Myanmar Koei International Ltd.



TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
1.1 General	1
CHAPTER 2: WATER QUALITY MONITORING.....	2
2.1 Monitoring Items.....	2
2.2 Description of Sampling Points.....	3
2.3 Monitoring Method	4
2.4 Monitoring Period	5
2.5 Monitoring Results.....	5
CHAPTER 3: CONCLUSION AND RECOMMENDATIONS	11
APPENDIX-1 FIELD SURVEY PHOTOS.....	A1-1
APPENDIX-2 LABORATORY RESULTS.....	A2-1

LIST OF TABLES

Table 2.1-1 Monitoring Items for Water Quality.....	2
Table 2.2-1 Outline of Sampling Points.....	3
Table 2.3-1 Analytic Method for Water Quality.....	4
Table 2.4-1 Sampling Time of Each Point.....	5
Table 2.4-2 Tide Record for Yangon River, Myanmar.....	5
Table 2.5-1 Results of Water Quality Monitoring at Discharged Points	6
Table 2.5-2 Results of Water Quality Monitoring at Creek.....	7
Table 2.5-3 Results of Water Quality Monitoring at Reference Tube Well	9

LIST OF FIGURES

Figure 1.1-1 Location of Sampling Points of Water Quality Monitoring.....	1
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CHAPTER 1: INTRODUCTION

1.1 General

Thilawa Special Economic Zone (SEZ) is located in southern district of Yangon region and about 23 km southeast of Yangon city. As the developer of Thilawa SEZ, Myanmar Japan Thilawa Development Ltd. (MJTD) has a responsibility to carry out regular monitoring in the industrial area of Zone B in accordance with the approved Environmental Impact Assessment (EIA) report and Environmental Management Plan (EMP). MJTD has implemented monitoring various environmental items with the specified time frame to know the environmental conditions in and around the area. As for the monitoring of the water quality, total five sampling points are set for water quality survey, named SW-2, SW-4, SW-7, SW-8 and GW-2 have been monitored in Thilawa SEZ and its surrounding area in timely manner. Among the five locations, SW-7 and SW-8 are main discharged points of Zone B during the operation stage. The remaining points SW-2 and SW-4 are sampled as a reference monitoring for comparison with discharged points and baseline of discharged creek. Moreover, GW-2 is monitored as a reference of existing tube well located in the monastery compound of Phalan village which is situated next to the southern boundary of the industrial area of Zone B. Location of sampling points for water quality monitoring is shown in Figure 1.1-1.



Source: Google Earth

Figure 1.1-1 Location of Sampling Points of Water Quality Monitoring

CHAPTER 2: WATER QUALITY MONITORING

2.1 Monitoring Items

Sampling points and parameters for water quality monitoring are determined to cover the environmental monitoring plan of the EIA report.

Water quality sampling was carried out at five locations. Among the five locations, water flow measurement at two locations (SW-2 and SW-4) can be carried out by current meter. However, water flow measurement cannot be conducted with current meter at two locations (SW-7 and SW-8) because water gates were closed during sampling. Monitoring items and sampling points are summarized in Table 2.1-1.

Table 2.1-1 Monitoring Items for Water Quality

No.	Parameters	SW-2	SW-4	SW-7	SW-8	GW-2	Remarks
1	Water Temperature	○	○	○	○	○	On-site measurement
2	pH	○	○	○	○	○	On-site measurement
3	Dissolved Oxygen (DO)	○	○	○	○	○	On-site measurement
4	Turbidity	○	○	○	○	○	On-site measurement
5	Suspended Solids (SS)	○	○	○	○	○	Laboratory analysis
6	BOD ₅	○	○	○	○	○	Laboratory analysis
7	COD _{Cr}	○	○	○	○	○	Laboratory analysis
8	Total Coliform	○	○	○	○	○	Laboratory analysis
9	Oil and Grease	○	○	○	○	○	Laboratory analysis
10	Total Nitrogen (T-N)	○	○	○	○	○	Laboratory analysis
11	Total Phosphorous (T-P)	○	○	○	○	○	Laboratory analysis
12	Color	○	○	○	○	○	Laboratory analysis
13	Odor	○	○	○	○	○	Laboratory analysis
14	Ammonia (NH ₃)	○	○	○	○	○	Laboratory analysis
15	Total Dissolved Solids (TDS)	○	○	○	○	○	Laboratory analysis
16	Mercury (Hg)	○	○	○	○	○	Laboratory analysis
17	Zinc (Zn)	○	○	○	○	○	Laboratory analysis
18	Arsenic (As)	○	○	○	○	○	Laboratory analysis
19	Chromium (Cr)	○	○	○	○	○	Laboratory analysis
20	Cadmium (Cd)	○	○	○	○	○	Laboratory analysis
21	Selenium (Se)	○	○	○	○	○	Laboratory analysis
22	Lead (Pb)	○	○	○	○	○	Laboratory analysis
23	Copper (Cu)	○	○	○	○	○	Laboratory analysis
24	Barium (Ba)	○	○	○	○	○	Laboratory analysis
25	Nickel (Ni)	○	○	○	○	○	Laboratory analysis
26	Silver (Ag)	○	○	○	○	○	Laboratory analysis
27	Iron (Fe)	○	○	○	○	○	Laboratory analysis
28	Cyanide (CN ⁻)	○	○	○	○	○	Laboratory analysis
29	Total Cyanide (T-CN ⁻)	○	○	○	○	○	Laboratory analysis
30	Chromium (Hexavalent) (Cr ⁶⁺)	○	○	○	○	○	Laboratory analysis
31	Fluoride (F ⁻)	○	○	○	○	○	Laboratory analysis
32	Free Chlorine (Cl)	○	○	○	○	○	Laboratory analysis
33	Total Residual Chlorine (T R C)	○	○	○	○	○	Laboratory analysis
34	Sulphide (S ²⁻)	○	○	○	○	○	Laboratory analysis
35	Formaldehyde (CH ₂ O)	○	○	○	○	○	Laboratory analysis
36	Phenols (C ₆ H ₅ OH)	○	○	○	○	○	Laboratory analysis
37	Escherichia Coli (E. coli)	-	-	○	○	○	Laboratory analysis
38	Flow Rate	○	○	-	-	-	On-site measurement

Source: Myanmar Koei International Ltd.



2.2 Description of Sampling Points

The outline of sampling points is mentioned in Table 2.2-1. The photos of conducting field survey at each sampling point are mentioned in Appendix-1.

Table 2.2-1 Outline of Sampling Points

No.	Station	Detailed Information
1	SW-2	Coordinate - N - 16° 40' 20.69", E - 96° 17' 18.04"
		Location - Upstream of Shwe Pyauk Creek
		Survey Item - Surface water sampling and water flow rate measurement
2	SW-4	Coordinate - N - 16° 39' 42.84", E - 96° 16' 27.42"
		Location - Downstream of Shwe Pyauk Creek
		Survey Item - Surface water sampling and water flow rate measurement
3	SW-7	Coordinate - N - 16° 40' 13.25", E - 96° 17' 5.66"
		Location - Outlet of retention pond of Zone B before connecting to Shwe Pyauk Creek
		Survey Item - Discharge water sampling
4	SW-8	Coordinate - N - 16° 39' 59.25", E - 96° 16' 32.77"
		Location - Another outlet of retention pond of Zone B before connecting to Shwe Pyauk Creek
		Survey Item - Discharge water sampling
5	GW-2	Coordinate - N - 16° 39' 25.30", E - 96° 17' 15.60"
		Location - In the monastery compound of Phalan village
		Survey Item - Ground water sampling

Source: Myanmar Koei International Ltd.

SW-2 (Reference Point)

SW-2 was collected at the upstream of Shwe Pyauk creek. This sampling point is located in the northeast of Zone B area and at the south of Dagon-Thilawa road. The surrounding areas are Zone A in the northwest and local industrial zone in the east respectively.

SW-4 (Reference Point)

SW-4 was collected at the downstream of Shwe Pyauk creek, after mixing of discharge water from local industrial zone, Thilawa SEZ Zone A and Zone B, which is flowing from east to west and then entering into the Yangon River. The distance is about 2.15 km downstream of SW-2. This sampling point is located in the west of Zone B area and in the south of Dagon-Thilawa road. The surrounding areas are Zone A in the northeast, local industrial zone in the east and paddy fields in the south and west respectively.

SW-7 (Discharged Point)

SW-7 is main discharged point of Zone B during operation stage. The distance is about 434 m downstream of SW-2. This sampling point is located at outlet of retention pond of Zone B, in the north of Zone B area and in the south of Dagon-Thilawa road. The surrounding areas are Zone A in the north and local industrial zone in the east respectively.

SW-8 (Discharged Point)

SW-8 is another main discharged point of Zone B during operation stage. The distance is about 500 m upstream of SW-4. This sampling point is located in the south of Dagon-Thilawa road as well as 1 km southwest of SW-7 in the retention pond of Zone B. The surrounding areas are Zone A in the north and local industrial zone in the east respectively.

GW-2 (Reference of Existing Tube Well)

GW-2 was collected from tube well as ground water sample. It is located in the monastery compound of Phalan village. The surrounding areas are Thilawa SEZ Zone A in the north, Phalan village in the

south and fields in the west and local industrial zone in the northeast and operation of Thilawa SEZ Zone B in the east and northeast respectively.

2.3 Monitoring Method

All water samples were collected with cleaned sampling bottles and analyzed by the following standard method as shown in Table 2.3-1. All samples were kept in iced boxes keeping at 2-4 °C and were transported to the laboratory. Among the parameters, water temperature, pH and DO were measured by the on-site instrument “Horiba, U-52” and water flow rate was also measured by using the on-site instrument “JFE Digital Current Meter”.

Table 2.3-1 Analytic Method for Water Quality

No.	Parameter	Method
1	Water Temperature	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
2	pH	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
3	Dissolved Oxygen (DO)	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
4	Turbidity	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
5	Suspended Solids (SS)	APHA 2540 D (Dry at 103-105°C Method)
6	BOD ₍₅₎	APHA 5210 B (5 Days BOD Test)
7	COD _(Cr)	APHA 5220D (Close Reflux Colorimetric Method)
8	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)
9	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)
10	Total Nitrogen (T-N)	HACH Method 10072(TNT Persulfate Digestion Method)
11	Total Phosphorous (T-P)	APHA 4500-P E (Ascorbic Acid Method)
12	Color	APHA 2120C (Spectrophotometric Method)
13	Odor	APHA 2150 B (Threshold Odor Test)
14	Ammonia (NH ₃)	ISO 7150/1-1984 (E)
15	Total Dissolved Solids (TDS)	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)
16	Mercury (Hg)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
17	Zinc (Zn)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
18	Arsenic (As)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
19	Chromium (Cr)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
20	Cadmium (Cd)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
21	Selenium (Se)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
22	Lead (Pb)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
23	Copper (Cu)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
24	Barium (Ba)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
25	Nickel (Ni)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
26	Silver (Ag)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
27	Iron (Fe)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
28	Cyanide (CN ⁻)	HACH 8027 (Pyridine-Pyrazalone Method)
29	Total Cyanide (T-CN ⁻)	Distillation process: APHA 4500-CN-C. Total Cyanide after Distillation, Determine cyanide Concentration Process: HACH 8027 (Pyridine – Pyrazalone Method)
30	Chromium (Hexavalent) (Cr ⁺⁶)	ISO 11083:1994 (Determination of chromium (VI) Spectrometric method using 1,5-diphenylcarbazide)
31	Fluoride (F ⁻)	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)
32	Free Chlorine (Cl)	APHA 4500-CL G (DPD Colorimetric Method)
33	Total Residual Chlorine (TRC)	APHA 4500-CL G (DPD Colorimetric Method)
34	Sulphide (S ²⁻)	HACH 8131 (USEPA Methylene Blue Method)
35	Formaldehyde (CH ₂ O)	HACH 8110 (MBTH Method)



No.	Parameter	Method
36	Phenols (C ₆ H ₅ OH)	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4-AAP With Distillation))
37	Escherichia Coli (E. coli)	APHA 9221 F (Escherichia Coli Procedure Using Fluorogenic Substrate)
38	Flow Rate	Detection of Electromagnetic Elements (Real-time measurement by AEM 213-D Digital Current Meters)

Source: Myanmar Koei International Ltd.

2.4 Monitoring Period

Water quality and water flow rate monitoring were conducted on 3 December 2025, and sampling time is shown in Table 2.4-1. In order to avoid tidal effect, the sampling was carried out during low tide especially at SW-4. The tide record for Yangon River, Myanmar on 3 December 2025 is shown in Table 2.4-2.

Table 2.4-1 Sampling Time of Each Point

No.	Station	Sampling Time
1	SW-2	03/12/2025 09:25
2	SW-4	03/12/2025 08:56
3	SW-7	03/12/2025 10:51
4	SW-8	03/12/2025 11:27
5	GW-2	03/12/2025 08:27

Source: Myanmar Koei International Ltd.

Table 2.4-2 Tide Record for Yangon River, Myanmar

Date	Time	Height (m)	Tide Conditions
03/12/2025	01:16	6.34	High Tide (highest)
	08:54	1.00	Low Tide (lowest)
	13:48	5.85	High Tide (highest)
	20:51	1.19	Low Tide (lowest)

Source: Myanmar Port Authority, Tide Table for the Yangon River and Elephant Point, 2025.

2.5 Monitoring Results

Results of water quality monitoring are summarized from Table 2.5-1 to Table 2.5-3. Analytical results of the laboratory are described in Appendix-2. The results of surface water quality were compared with the target value of effluent water quality discharging to water body stipulated in the EIA report and the National Surface Water Quality Standard (NSWQS) in Myanmar (referred to Table-2 in Section 7.1.1, Table-3 in Section 7.1.2 and Table-4 in Section 7.2). Besides, ground water quality results were compared with the target value of effluent water quality discharging to water body stipulated in the EIA report but also with Vietnam Ground Water Standard. Additionally, current monitoring results are compared with baseline results of SW-2 for surface water as well as GW-2 for ground water, measured in January and February 2016 for the mentioned EIA report.

As the comparison with the target value, the results of suspended solid (SS) at SW-4 and SW-7, and iron at SW-2, SW-4, SW-7, SW-8 and GW-2 exceeded the limitations.

2.5.1 Results of Water Quality Monitoring at Discharged Points and Creek

(1) Results of Water Quality Monitoring at Discharged Points

As for the result of SS, results at the main discharging points of Zone B (SW-7) before discharging to the creek, exceeded the limitation due to the surface water run-off from bare land in Zone B.

As for the result of iron, the results at main discharging points of Zone B (SW-7 and SW-8) before discharging to the creek were higher than the limitation. The possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Surroundings of the Thilawa SEZ



especially small hilly areas are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by strong wind. Moreover, iron remains in the natural environment for a long time.

When comparing the results of monitoring parameters with National Surface Water Quality Standard (2024), the parameters for environmental conservation (pH, DO, SS, BOD, COD, Cu and E. coli) are aligned with the standard values of Class I, II, III and IV respectively, while standard values of monitoring parameter (color, TDS and turbidity) are included in Class I and V designation. Besides, monitoring parameters for human health (Hg, As, Cd, Se, Pb, Ni, CN⁻, Cr⁺⁶, F⁻ and C₆H₅OH) are within the standard values applied for Class I-V. According to the results of monitoring parameters referred to National Surface Water Quality Standard, water quality of SW-7 and SW-8 can be applied for Class V water use.

Among the results between present monitoring and baseline survey in February 2016, BOD, COD, total coliform and oil and grease of SW-7 and SW-8 are lower than those of SW-2 (February 2016), while iron of SW-7 is higher than that of SW-2 (February 2016).

Table 2.5-1 Results of Water Quality Monitoring at Discharged Points

No.	Parameters	Unit	SW-7	SW-8	SW-2 (Baseline Result, EIA Report)*	Target Value	National Surface Water Quality Standard
1	Water Temperature	°C	27	27	27	≤ 35	-
2	pH	-	7.7	7.7	7.8	6-9	6.5-8.5 (Class I)
3	Dissolved Oxygen (DO)	mg/l	6.24	5.35	6.5	-	> 6 (Class I)
4	Turbidity	NTU	118.5	86	-	-	100 (Class V)
5	Suspended Solid (SS)	mg/l	86	28	-	50	100 (Class IV)
6	BOD ₍₅₎	mg/l	3.86	3.96	8	30	8 (Class III)
7	COD _(Cr)	mg/l	7.7	7.6	810	125	8 (Class II)
8	Total Coliform	MPN/100ml	7.8	23.0	490	400	-
9	Oil and Grease	mg/l	< 3.1	< 3.1	5.2	10	No noticeably seen
10	Total Nitrogen (T-N)	mg/l	< 0.5	< 0.5	1.1	80	-
11	Total Phosphorous (T-P)	mg/l	< 0.05	< 0.05	0.05	2	-
12	Color	TCU (True Color Unit)	3.86	2.43	-	150	15 (Class I)
13	Odor	TON (Threshold Odor Number)	1	1	-	-	-
14	Ammonia	mg/l	0.05	0.06	-	10	-
15	Total Dissolved Solids	mg/l	150	156	-	2000	500 (Class I)
16	Mercury	mg/l	≤ 0.002	≤ 0.002	< 0.0005	0.005	0.001 (Class I - V)
17	Zinc	mg/l	0.080	0.052	< 0.1	2	-
18	Arsenic	mg/l	≤ 0.010	≤ 0.010	< 0.002	0.1	0.05 (Class I - V)
19	Chromium	mg/l	≤ 0.002	≤ 0.002	< 0.02	0.5	-
20	Cadmium	mg/l	≤ 0.002	≤ 0.002	< 0.002	0.03	0.003 (Class I - V)
21	Selenium	mg/l	< 0.010	≤ 0.010	< 0.01	0.02	0.04 (Class I - V)
22	Lead	mg/l	≤ 0.002	≤ 0.002	< 0.01	0.1	0.01 (Class I - V)
23	Copper	mg/l	≤ 0.002	≤ 0.002	< 0.1	0.5	0.1 (Class I)
24	Barium	mg/l	0.130	0.062	< 0.1	1	-
25	Nickel	mg/l	≤ 0.002	≤ 0.002	< 0.01	0.2	0.07 (Class I - V)
26	Silver	mg/l	≤ 0.002	≤ 0.002	-	0.5	-
27	Iron	mg/l	20.980	4.476	8.2	3.5	-
28	Cyanide	mg/l	< 0.002	< 0.002	< 0.004	0.1	0.07 (Class I - V)
29	Total Cyanide	mg/l	0.002	0.003	-	1	-
30	Chromium (Hexavalent)	mg/l	< 0.05	< 0.05	-	0.1	0.05 (Class I - V)
31	Fluoride	mg/l	0.129	0.130	0.49	20	1.5 (Class I - V)
32	Free Chlorine	mg/l	< 0.1	< 0.1	0.03	1	-
33	Total Residual Chlorine	mg/l	< 0.1	< 0.1	-	0.2	-
34	Sulphide	mg/l	0.099	0.077	< 0.01	1	-
35	Formaldehyde	mg/l	0.015	0.014	< 0.01	1	-
36	Phenol	mg/l	0.028	< 0.002	< 0.001	0.5	0.05 (Class I - V)



No.	Parameters	Unit	SW-7	SW-8	SW-2 (Baseline Result, EIA Report)*	Target Value	National Surface Water Quality Standard
37	Escherichia Coli	MPN/100ml (SW)	< 1.8	< 1.8	-	(1000)** (CFU/100ml)	20 (Class I)

Note: Red color means exceeded value than target value.

Note: National Surface Water Quality Standard 2024.

* Baseline results monitored in February 2016 for EIA report (Industrial Area) of Zone B.

** Based on the water utilization at discharged creek, the quality standard for water baths in Japan, (Ministry of Environment, 1997) is set as a reference value for self-monitoring of E. coli for surface water monitoring. However, due to limitation of capacity for analytical laboratory in Myanmar, the method to analyze the "Colony Forming Unit (CFU)" is not available in Myanmar. Therefore, the results of "Most Probable Number (MPN)" are assumed similar to CFU values and compared with reference values. Once the method to analyze the CFU will be available in Myanmar, the analytical method will be changed. According to the quality standard for water baths in Japan, (Ministry of Environment, 1997), in case of E. Coli result is exceeding 1,000 CFU/100 ml, since it is assumed unsafety, it is considered unsuitable for water baths.

Source: Myanmar Koei International Ltd.

(2) Results of Water Quality Monitoring at Reference Monitoring points (Creek)

As the comparison with the target value, the results of suspended solid (SS) and iron exceeded the limitations.

As for the result of SS, SS result at the surface water monitoring point (SW-4) exceeded the limitations due to two expected reasons; i) delivered from upstream area such as natural origin and wastewater from local industrial zone which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to backflow by tidal fluctuation along Shwe Pyauk creek.

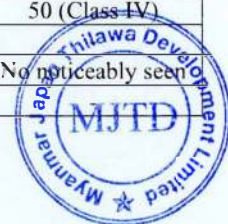
As for the result of iron, the result at the monitoring point of surface water (SW-2 and SW-4) exceeded the limitation. The possible reason for exceeded value in surface water (SW-2 and SW-4) may be due to the influence of natural origin (iron can reach out from the soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by run-off or strong wind.

When comparing the results of monitoring parameters with National Surface Water Quality Standard (2024), the parameters for environmental conservation (pH, DO, SS, BOD, COD and Cu) are aligned with standard values of Class I, III, IV, and V respectively, while standard values of monitoring parameter such as (color, TDS and Turbidity) are included in Class I, II and V designation. Besides, monitoring parameters for human health (Hg, As, Cd, Se, Pb, Ni, CN⁻, Cr⁺⁶, F⁻ and C₆H₅OH) are within the standard values applied for Class I-V. According to the results of monitoring parameters referred to National Surface Water Quality Standard, water quality of SW-2 and SW-4 can be applied for Class V water use.

Among the results between present monitoring and baseline survey in February 2016, DO, BOD, COD, total coliform and oil and grease of SW-2 and SW-4 are lower than those of SW-2 (February 2016), while iron of SW-4 is higher than that of SW-2 (February 2016).

Table 2.5-2 Results of Water Quality Monitoring at Creek

No.	Parameters	Unit	SW-2	SW-4	SW-2 (Baseline Result, EIA Report)*	Target Value	National Surface Water Quality Standard
1	Water Temperature	°C	24	24	27	≤ 35	-
2	pH	-	7.0	6.8	7.8	6-9	6.5-8.5 (Class I)
3	Dissolved Oxygen (DO)	mg/l	3.38	3.96	6.5	-	> 3 (Class IV)
4	Turbidity	NTU	29	262	-	-	100 (Class V)
5	Suspended Solid (SS)	mg/l	20	166	-	50	150 (Class V)
6	BOD ₍₅₎	mg/l	5.06	4.93	8	30	8 (Class III)
7	COD _(Cr)	mg/l	19.8	14.9	810	125	50 (Class IV)
8	Total Coliform	MPN/100ml	49.0	350	490	400	
9	Oil and Grease	mg/l	< 3.1	< 3.1	5.2	10	No noticeably seen
10	Total Nitrogen (T-N)	mg/l	3.5	5.0	1.1	80	



No.	Parameters	Unit	SW-2	SW-4	SW-2 (Baseline Result, EIA Report)*	Target Value	National Surface Water Quality Standard
11	Total Phosphorous (T-P)	mg/l	0.15	0.35	0.05	2	-
12	Color	TCU (True Color Unit)	18.14	8.14	-	150	25 (Class II)
13	Odor	TON (Threshold Odor Number)	1	1	-	-	-
14	Ammonia	mg/l	1.95	2.42	-	10	-
15	Total Dissolved Solids	mg/l	240	434	-	2000	500 (Class I)
16	Mercury	mg/l	≤ 0.002	≤ 0.002	< 0.0005	0.005	0.001 (Class I – V)
17	Zinc	mg/l	0.032	0.074	< 0.1	2	-
18	Arsenic	mg/l	≤ 0.010	≤ 0.010	< 0.002	0.1	0.05 (Class I – V)
19	Chromium	mg/l	≤ 0.002	≤ 0.002	< 0.02	0.5	-
20	Cadmium	mg/l	≤ 0.002	≤ 0.002	< 0.002	0.03	0.003 (Class I – V)
21	Selenium	mg/l	≤ 0.010	≤ 0.010	< 0.01	0.02	0.04 (Class I – V)
22	Lead	mg/l	≤ 0.002	≤ 0.002	< 0.01	0.1	0.01 (Class I – V)
23	Copper	mg/l	≤ 0.002	≤ 0.002	< 0.1	0.5	0.1 (Class I)
24	Barium	mg/l	0.074	0.096	< 0.1	1	-
25	Nickel	mg/l	≤ 0.002	≤ 0.002	< 0.01	0.2	0.07 (Class I – V)
26	Silver	mg/l	≤ 0.002	≤ 0.002	-	0.5	-
27	Iron	mg/l	3.670	14.660	8.2	3.5	-
28	Cyanide	mg/l	< 0.002	< 0.002	< 0.004	0.1	0.07 (Class I – V)
29	Total Cyanide	mg/l	0.003	0.002	-	1	-
30	Chromium (Hexavalent)	mg/l	< 0.05	< 0.05	-	0.1	0.05 (Class I – V)
31	Fluoride	mg/l	0.140	1.144	0.49	20	1.5 (Class I – V)
32	Free Chlorine	mg/l	< 0.1	< 0.1	0.03	1	-
33	Total Residual Chlorine	mg/l	< 0.1	< 0.1	-	0.2	-
34	Sulphide	mg/l	0.020	0.194	< 0.01	1	-
35	Formaldehyde	mg/l	0.035	0.025	< 0.01	1	-
36	Phenols	mg/l	0.034	< 0.002	< 0.001	0.5	0.05 (Class I – V)
37	Flow Rate	m ³ /s	0.002	0.246	-	-	-

Note: Red color means exceeded value than target value.

Note: National Surface Water Quality Standard 2024.

* Baseline results monitored in February 2016 for EIA report (Industrial Area) of Zone B.

Source: Myanmar Koei International Ltd.

2.5.2 Results of Water Quality Monitoring at Reference Monitoring Point (Tube Well)

As the comparison with the Vietnam Ground Water Standard and the target value of effluent water quality discharging to water body stipulated in the EIA report, iron concentration at the monitoring point of reference tube well (GW-2) exceeded the limitation.

For the ground water quality, National Technical Regulation on Ground Water Quality (No. QCVN 09-MT: 2015/BTNMT) in Vietnam is used as a reference because Myanmar does not have any ground water guidelines and standards, and most of the analyzed parameter are included in Vietnam standard rather the those stipulated by neighboring countries. For the result of Escherichia Coli, B1 (Irrigation water) of National Technical Regulation on Surface Water Quality (No. QCVN 08-MT: 2015/BTNMT) in Vietnam is referred, as no standard for E.coli is mentioned in Vietnam ground water regulation as a reference. In addition, the target values of effluent water quality discharging to water body stipulated in the EIA report are also considered for comparison with ground water quality.

As for the result of the iron, the result at the monitoring point of reference tube well (GW-2) exceeded the limitation. Comparison with previous monitoring results of GW-2 since April 2019, the iron concentration results range from 0.108 mg/l in April 2023 to 14.100 mg/l in December 2023 and most of the iron concentration results (from April 2019 to December 2025) exceeded the limitation except the results of August 2019, February and April 2022, and April 2023. Therefore, the possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Moreover,



Thilawa SEZ area is mainly composed of iron-rich soil (lateritic soil), and it can be saturated in the underlying confined aquifer.

Among the results between present monitoring and baseline survey in January 2016, suspended solid and COD of GW-2 is lower than those of GW-2 (January 2016), while total phosphorus, color and iron of GW-2 are higher than those of GW-2 (January 2016).

Table 2.5-3 Results of Water Quality Monitoring at Reference Tube Well

No.	Parameters	Unit	GW-2	GW-2 (Baseline Result, EIA Report)*	Target Value	Vietnam Ground Water Standard
1	Water Temperature	°C	28	28.7	≤ 35	-
2	pH	-	6.7	7.0	6~9	5.5 – 8.5
3	Dissolved Oxygen (DO)	mg/l	7.23	7.5	-	-
4	Turbidity	NTU	15	-	-	-
5	Suspended Solid (SS)	mg/l	4	26	50	-
6	BOD ₅	mg/l	2.69	< 2	30	-
7	COD _(Cr)	mg/l	< 0.7	38	125	-
8	Total Coliform	MPN/100ml	< 1.8	> 23	400	3
9	Oil and Grease	mg/l	< 3.1	< 0.5	10	-
10	Total Nitrogen (T-N)	mg/l	< 0.5	< 1	80	-
11	Total Phosphorous (T-P)	mg/l	0.66	0.34	2	-
12	Color	TCU (True Color Unit)	91	< 1	150	-
13	Odor	TON (Threshold Odo Number)	1	None	-	-
14	Ammonia	mg/l	0.10	-	10	-
15	Total Dissolved Solids	mg/l	194	-	2000	1500
16	Mercury	mg/l	≤ 0.002	< 0.0005	0.005	0.001
17	Zinc	mg/l	0.020	< 0.1	2	3
18	Arsenic	mg/l	≤ 0.010	0.001	0.1	0.05
19	Chromium	mg/l	≤ 0.002	-	0.5	-
20	Cadmium	mg/l	≤ 0.002	< 0.001	0.03	0.005
21	Selenium	mg/l	≤ 0.010	-	0.02	0.01
22	Lead	mg/l	≤ 0.002	< 0.006	0.1	0.01
23	Copper	mg/l	≤ 0.002	< 0.1	0.5	-
24	Barium	mg/l	0.040	-	1	-
25	Nickel	mg/l	≤ 0.002	< 0.002	0.2	0.02
26	Silver	mg/l	≤ 0.002	-	0.5	-
27	Iron	mg/l	12.740	0.35	3.5	5
28	Cyanide	mg/l	< 0.002	< 0.01	0.1	0.01
29	Total Cyanide	mg/l	< 0.002	-	1	-
30	Chromium (Hexavalent)	mg/l	< 0.05	< 0.02	0.1	0.05
31	Fluoride	mg/l	0.275	0.26	20	-
32	Free Chlorine	mg/l	< 0.1	-	1	-
33	Total Residual Chlorine	mg/l	< 0.1	-	0.2	-
34	Sulphide	mg/l	< 0.005	-	1	-
35	Formaldehyde	mg/l	< 0.003	-	1	-
36	Phenols	mg/l	< 0.002	-	0.5	0.001
37	Escherichia Coli	MPN/100ml	< 1.8	-	(100)** (MPN/100ml)	(100)** (MPN/100ml)

Note: Red color means exceeded value than target value.

Note: Vietnam Groundwater Standard (No: QCVN 09-MT:2015/BTNMT)

*Baseline results monitored in January 2016 for EIA report (Industrial Area) of Zone B.

**Based on the water utilization at monitoring point for ground water, BI(Irrigation water) of National Technical Regulation on Surface Water Quality in Vietnam (No: QCVN 08-MT: 2015/BTNMT) is set as a reference value of self-monitoring for ground water monitoring.

Source: Myanmar Koei International Ltd.



2.5.3 Comparison of Results of Water Quality Exceed the Target Value between Previous Monitoring and December 2025 Monitoring

In order to overview the exceed limitations of the concerned parameters during the present monitoring (December 2025), the results of the exceed parameters with respective sampling points are compared with the previous monitoring results since December 2024.

Regarding the results of the parameter of discharge points (SW-7 and SW-8), suspended solid concentration at SW-7 is higher than the limitation in April, June, October and December 2025. Noticeably, suspended solid concentrations of SW-7 are higher during rainy season and dry season, ranging from 56 to 86 mg/l.

The iron concentration at SW-7 is higher than the limitation in only current monitoring survey (December 2025). It is observed that iron concentration at SW-8 is especially higher during rainy season, in four monitoring surveys (June, August, October and December 2025) ranging from 3.726 to 8.42. It may be due to the influence of natural origin (iron can reach out from soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas, are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by strong wind. Moreover, iron remains in the natural environment for a long time.

The result of SS concentration, at the reference monitoring point (SW-4) is higher than the limitation throughout all three seasons, ranging from 70 to 817 mg/l. It is assumed that SS concentrations at SW-4 are always higher due to the agricultural and domestic run-off from the surrounding as well as the tidal effect resulting the cloudiness (turbidity) of water along Shwe Pyauk creek during all seasons. The results of iron at SW-2 are higher than the limitation in only three monitoring surveys (August, October and December 2025) ranging from 3.67 to 8.58 mg/l while iron at SW-4 exceeded limitation in six monitoring surveys (December 2024 and February, April, August, October and December 2025) ranging from 4.85 to 171.64 mg/l. It is revealed that high iron concentration, especially at (SW-4) occurred throughout all three seasons. It is possible to say that the present condition of the water quality reflects the background condition of the surrounding environment of Thilawa SEZ.

The expected reasons for the results exceeding the limitation of the parameters concerned are discussed in the upper section of this monitoring report.



CHAPTER 3: CONCLUSION AND RECOMMENDATIONS

As described in Chapter 2 (Section 2.5), the results of suspended solid (SS) at SW-4 and SW-7, and iron at SW-2, SW-4, SW-7, SW-8 and GW-2 exceeded the limitations in this monitoring period for operation stage of Thilawa SEZ Zone B.

As for the result of SS, results at the main discharging points of Zone B (SW-7) before discharging to the creek, exceeded the limitation due to the surface water run-off from bare land in Zone B.

As for the result of iron, the results at main discharging points of Zone B (SW-7 and SW-8) before discharging to the creek were higher than the limitation. The possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by strong wind. Moreover, iron remains in the natural environment for a long time.

As for the result of SS, SS result at the surface water monitoring point (SW-4) exceeded the limitations due to two expected reasons: i) delivered from upstream area such as natural origin and wastewater from local industrial zone which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to backflow by tidal fluctuation along Shwe Pyauk creek.

As for the result of iron, the result at the monitoring point of surface water (SW-2 and SW-4) exceeded the limitation. The possible reason for exceeded value in surface water (SW-2 and SW-4) may be due to the influence of natural origin (iron can reach out from the soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas, are mainly composed of iron-rich soil (lateritic soil), and it can be transported to the low land area by run-off or strong wind.

As for the result of the iron, the result at the monitoring point of reference tube well (GW-2) exceeded the limitation. Comparison with previous monitoring results of GW-2 since April 2019, the iron concentration results range from 0.108 mg/l in April 2023 to 14.100 mg/l in December 2023 and most of the iron concentration results (from April 2019 to December 2025) exceeded the limitation except the results of August 2019, February and April 2022, and April 2023. Therefore, the possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Moreover, Thilawa SEZ area is mainly composed of iron-rich soil (lateritic soil), and it can be saturated in the underlying confined aquifer.

As for the comparison of the results of monitoring parameters with National Surface Water Quality Standard, water quality of SW-2, SW-4, SW-7 and SW-8 can be applied for Class V water use.

As for future subject for main discharged points of Thilawa SEZ Zone B, the following action may be taken to achieve the limitation of suspended solid and iron appropriate water quality monitoring:

- To perform regular removal of bottom sediment and decaying vegetation present in the retention pond and retention canal to preserve its cleanliness, and
- To continue monitoring Escherichia coli (E. coli) level to identify health impact by coliform bacteria,
- To clean the drainage system routinely, and
- To inspect the quality of discharge water from the factories.

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APPENDIX-1 FIELD SURVEY PHOTOS



FOR DISCHARGED POINT OF THILAWA SEZ ZONE B

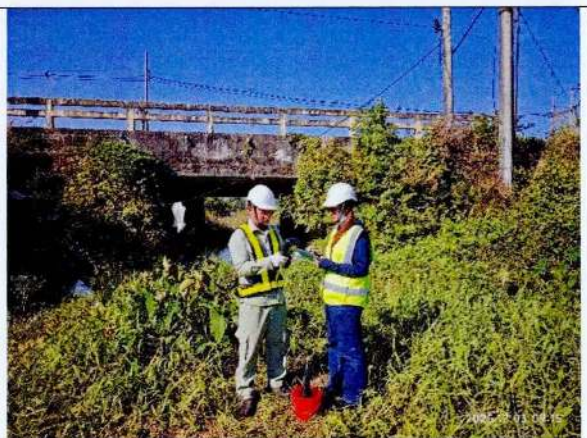
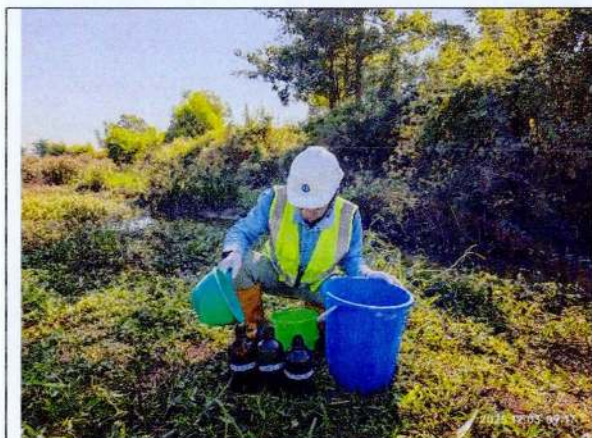


Surface water sampling and onsite measurement at SW-7



Surface water sampling and onsite measurement at SW-8

**FOR REFERENCE MONITORING POINTS FOR COMPARISON WITH DISCHARGED
POINTS AND BASELINE OF DISCHARGED CREEK**



Surface water sampling and onsite measurement at SW-2



Surface water sampling and onsite measurement at SW-4



Ground water sampling and onsite measurement at GW-2



APPENDIX-2 LABORATORY RESULTS



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)

FOR DISCHARGED POINT

DOWA

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1 Thilawa SEZ Zone A, Yangon Region, Myanmar
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Doc No: GEM-B-R006E/01/AD
Page 1 of 2

Report No: GEM-LAB-202512073

Revision No.: 1

Report Date: 17 December, 2025

Application No: 0001-C001

Test Report

Client Name: Myanmar Koei International LTD (MKI)

Address: No. 36/A, 1st Floor Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.

Project Name: Environment Monitoring report for Zone A & B

Sample Description

Sample Name: MKI-SW-7-1203

Sampling Date: 3 December, 2025

Sample No.: W-2512051

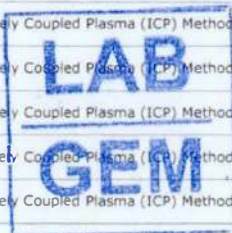
Sampling By: Withdraw GEM

Waste Profile No.: -

Sample Received Date: 3 December, 2025

Analytical Date: 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	86	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	3.86	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	7.7	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	7.8	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	3.86	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	<0.5	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	<0.05	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	0.05	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	150	2000	-
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	-	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.080	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.130	1	0.002



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**Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)**

DOWA

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Doc No: GEM-LB-R006E/01/AD
Page 2 of 2

Report No : GEM-LAB-202512073
Revision No : 1
Report Date : 17 December, 2025
Application No : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI SW-7-1203
Sample No : W-2512051
Waste Profile No : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductive y Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	20.980	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process: APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	0.002	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazide)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	0.129	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	0.099	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	0.015	1	0.003
32	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	-	1.8
33	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	0.028	0.5	0.002

Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin Dec 17, 2021
Senior Manager

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Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)



GOLDEN DOWA ECO SYSTEM MYANMAR CO., LTD
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Report No. : GEM-LAB-202512074
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar
Project Name : Environment Monitoring report for Zone A & B
Sample Description :
Sample Name : MKI-SW-8-1203
Sample No. : W-2512052
Waste Profile No. : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	28	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	3.96	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	7.6	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	23.0	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	2.43	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	<0.5	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	<0.05	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	0.06	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	156	2000	-
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	-	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.052	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.062	1	0.002

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Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)



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Doc No GEM-LB-RO06E/01/AD
Page 2 of 2

Report No. : GEM-LAB-202512074
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

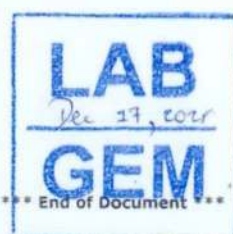
Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-8-1203 Sampling Date : 3 December, 2025
Sample No : W-2512052 Sampling By : Withdraw GEM
Waste Profile No. : - Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	4.476	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process: APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	0.003	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazide)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	0.130	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	0.077	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	0.014	1	0.003
32	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	-	1.8
33	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	<0.002	0.5	0.002

Remark : LOQ - Limit of Quantitation
APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition
APHA 2120B.6(b); Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin Dec 17, 2025
Senior Manager

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THIS ANALYSIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT WRITTEN APPROVAL OF THE LABORATORY OF
GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD



**FOR REFERENCE MONITORING POINTS FOR COMPARISON WITH DISCHARGED
POINTS AND BASELINE OF DISCHARGED CREEK**

DOWA

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar
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Doc No: GEM-LB-R006E/01/AD
Page 1 of 2

Report No. : GEM-LAB-202512070

Revision No. : 1

Report Date : 17 December, 2025

Application No : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)

Address : No. 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar

Project Name : Environment Monitoring report for Zone A & B

Sample Description

Sample Name : MKI-SW-2-1203

Sampling Date : 3 December, 2025

Sample No : W-2512048

Sampling By : Withdraw GEM

Waste Profile No. : -

Sample Received Date : 3 December, 2025

Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	20	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	5.06	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	19.8	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	49.0	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	18.14	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	3.5	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.15	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	1.95	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	240	2000	-
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	-	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.032	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.074	1	0.002

Nil



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GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD

**Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)**

DOWA

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Doc No: GEM-LB-R006E/01/AD
Page 2 of 2

Report No. : GEM-LAB-202512070
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No. 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar
Project Name : Environment Monitoring report for Zone A & B
Sample Description :
Sample Name : MKI-SW-2-1203
Sample No : W-2512048
Waste Profile No : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	3.670	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazolone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process: APHA 4500-CN-C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazolone Method)	mg/l	0.003	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazide)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	0.140	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	0.020	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	0.035	1	0.003
32	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	0.034	0.5	0.002

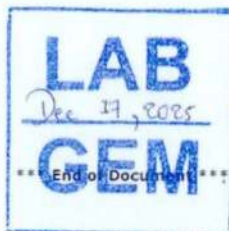
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B 6(b), Color Unit - TCU(True Color Unit) One TCU is equivalent to one Hazen unit and to one Pt-Co unit

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager

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GOLDEN DDWA ECO-SYSTEM MYANMAR CO., LTD.



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)

DOWA

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Doc No. GEM-LB-R006E/01/AD
Page 1 of 2

Report No. : GEM-LAB-202512071
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-4-1203
Sample No. : W-2512049
Waste Profile No. : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	166	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	4.93	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	14.9	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	350.0	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	8.14	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	5.0	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.35	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	2.42	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	434	2000	-
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	-	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.074	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.096	1	0.002

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)



GOLDEN DOWA ECO SYSTEM MYANMAR CO., LTD
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Report No. : GEM-LAB-202512071
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No. 36/A, 1st Floor Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar
Project Name : Environment Monitoring report for Zone A & B
Sample Description :
Sample Name : MKI-SW-4-1203 Sampling Date : 3 December, 2025
Sample No. : W 2512049 Sampling By : Withdraw GEM
Waste Profile No. : * Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	14.660	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process: APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	0.002	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazide)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	1.144	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	0.194	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	0.025	1	0.003
32	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	<0.002	0.5	0.002

Remark : LOQ - Limit of Quantitation

APHA : American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b), Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin Dec 17, 2025
Senior Manager

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO.,LTD



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)



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Doc No: GEM-LB-R006E/01/AD
Page 1 of 2

Report No. : GEM-LAB-202512075
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-GW-2-1203 Sampling Date : 3 December, 2025
Sample No. : W-2512053 Sampling By : Withdraw GEM
Waste Profile No. : - Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	4	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	2.69	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	<0.7	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	<1.8	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	91.00	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	<0.5	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.66	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	0.10	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	194	2000	-
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	-	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.020	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.040	1	0.002

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Annually Monitoring in FY December - 2025)

DOWA

GOLDEN DOWA ECO SYSTEM MYANMAR CO., LTD
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar
Phone No Fax No (+95) 1 2309051



Report No. GEM-LAB-202512075

Revision No. : 1

Report Date : 17 December, 2025

Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar
Project Name : Environment Monitoring report for Zone A & B
Sample Description :
Sample Name : MKI-GW-2-1203 Sampling Date : 3 December, 2025
Sample No. : W 2512053 Sampling By : Withdraw GEM
Waste Profile No. : Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	12.740	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process: APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazide)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	0.275	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	<0.005	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	<0.003	1	0.003
32	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	-	1.8
33	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	<0.002	0.5	0.002

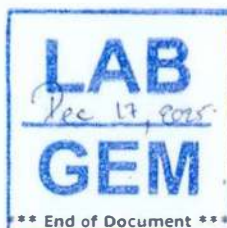
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B 6(b); Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO. LTD



Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3 (Operation phase)

Appendix-2 (b)

Water and Waste Water Monitoring Report

February 2026

**WATER QUALITY MONITORING REPORT
FOR DEVELOPMENT OF INDUSTRIAL AREA
IN THILAWA SEZ ZONE B
(PHASE 1, 2 & 3 OPERATION STAGE)**

(Bi-Monthly Monitoring)

**February 2026
Myanmar Koei International Ltd.**



TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
1.1 General	1
CHAPTER 2: WATER QUALITY MONITORING.....	2
2.1 Monitoring Items.....	2
2.2 Description of Sampling Points.....	3
2.3 Monitoring Method	4
2.4 Monitoring Period	4
2.5 Monitoring Results	5
CHAPTER 3: CONCLUSION AND RECOMMENDATIONS	11
APPENDIX-1 FIELD SURVEY PHOTOS.....	A1-1
APPENDIX-2 LABORATORY RESULTS.....	A2-1

LIST OF TABLES

Table 2.1-1 Monitoring Items for Water Quality.....	2
Table 2.2-1 Outline of Sampling Points.....	3
Table 2.3-1 Analytic Method for Water Quality.....	4
Table 2.4-1 Sampling Time of Each Point.....	4
Table 2.4-2 Tide Record for Yangon River, Myanmar.....	5
Table 2.5-1 Results of Water Quality Monitoring at Discharged Points	6
Table 2.5-2 Results of Water Quality Monitoring at Creek.....	8
Table 2.5-3 Results of Water Quality Monitoring at Reference Tube Well	9

LIST OF FIGURES

Figure 1.1-1 Location of Sampling Points of Water Quality Monitoring.....	1
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CHAPTER 1: INTRODUCTION

1.1 General

Thilawa Special Economic Zone (SEZ) is located in southern district of Yangon region and about 23 km southeast of Yangon city. As the developer of Thilawa SEZ, Myanmar Japan Thilawa Development Ltd. (MJTD) has a responsibility to carry out regular monitoring in the industrial area of Zone B in accordance with the approved Environmental Impact Assessment (EIA) report and Environmental Management Plan (EMP). MJTD has implemented monitoring various environmental items with the specified time frame to know the environmental conditions in and around the area. As for the monitoring of the water quality, total five sampling points are set for water quality survey, named SW-2, SW-4, SW-7, SW-8 and GW-2 have been monitored in Thilawa SEZ and its surrounding area in timely manner. Among the five locations, SW-7 is main discharged point of Zone B and SW-8 is another main discharged point of Zone B during the operation stage. The remaining points SW-2 and SW-4 are sampled as a reference monitoring for comparison with discharged points and baseline of discharged creek. Moreover, GW-2 is monitored as a reference of existing tube well located in the monastery compound of Phalan village which is situated next to the southern boundary of the industrial area of Zone B. Location of sampling points for water quality monitoring is shown in Figure 1.1-1.



Source: Google Earth

Figure 1.1-1 Location of Sampling Points of Water Quality Monitoring



CHAPTER 2: WATER QUALITY MONITORING

2.1 Monitoring Items

Sampling points and parameters for water quality monitoring are determined to cover the environmental monitoring plan of the EIA report.

Water quality sampling was carried out at five locations. Among the five locations, water flow measurement at one location (SW-4) can be carried out by current meter. However, water flow measurement cannot be conducted with current meter at three locations (SW-2, SW-7 and SW-8) because water gates were closed at SW-7 and SW-8, and there was no flow at SW-2 during sampling. Monitoring items and sampling points are summarized in Table 2.1-1.

Table 2.1-1 Monitoring Items for Water Quality

No.	Parameters	SW-2	SW-4	SW-7	SW-8	GW-2	Remarks
1	Water Temperature	○	○	○	○	○	On-site measurement
2	pH	○	○	○	○	○	On-site measurement
3	Dissolved Oxygen (DO)	○	○	○	○	○	On-site measurement
4	Turbidity (NTU)	○	○	○	○	○	On-site measurement
5	Suspended Solids (SS)	○	○	○	○	○	Laboratory analysis
6	BOD ₍₅₎	○	○	○	○	○	Laboratory analysis
7	COD _(Cr)	○	○	○	○	○	Laboratory analysis
8	Total Nitrogen (T-N)	○	○	○	○	○	Laboratory analysis
9	Total Phosphorous (T-P)	○	○	○	○	○	Laboratory analysis
10	Color	○	○	○	○	○	Laboratory analysis
11	Odor	○	○	○	○	○	Laboratory analysis
12	Total Coliform	○	○	○	○	○	Laboratory analysis
13	Oil and Grease (Self-monitoring)	○	○	○	○	○	Laboratory analysis
14	Chromium	-	-	○	○	○	Laboratory analysis
15	Total Dissolved Solids (TDS) (Self-monitoring)	○	○	○	○	○	Laboratory analysis
16	Iron (Self-monitoring)	○	○	○	○	○	Laboratory analysis
17	Mercury (Self-monitoring)	○	○	○	○	○	Laboratory analysis
18	Escherichia Coli (Self-monitoring)	-	-	○	○	○	Laboratory analysis
19	Flow Rate	-	○	-	-	-	On-site measurement

Source: Myanmar Koei International Ltd.



2.2 Description of Sampling Points

The outline of sampling points is mentioned in Table 2.2-1. The photos of conducting field survey at each sampling points are mentioned in Appendix-1.

Table 2.2-1 Outline of Sampling Points

No.	Station	Detailed Information
1	SW-2	Coordinate- N - 16° 40' 20.69", E - 96° 17' 18.04"
		Location - Upstream of Shwe Pyauk Creek
		Survey Item - Surface water sampling and water flow rate measurement
2	SW-4	Coordinate- N - 16° 39' 42.84", E - 96° 16' 27.42"
		Location - Downstream of Shwe Pyauk Creek
		Survey Item - Surface water sampling and water flow rate measurement
3	SW-7	Coordinate - N - 16° 40' 13.25", E - 96° 17' 5.66"
		Location - Outlet of retention pond of Zone B before connecting to Shwe Pyauk Creek
		Survey Item - Discharge water sampling
4	SW-8	Coordinate - N - 16° 39' 59.25", E - 96° 16' 32.77"
		Location - Another outlet of retention pond of Zone B before connecting to Shwe Pyauk Creek
		Survey Item - Discharge water sampling
5	GW-2	Coordinate - N - 16° 39' 25.30", E - 96° 17' 15.60"
		Location - In the monastery compound of Phalan village
		Survey Item - Ground water sampling

Source: Myanmar Koei International Ltd.

SW-2 (Reference Point)

SW-2 was collected at the upstream of Shwe Pyauk creek. This sampling point is located in the northeast of Zone B area and at the south of Dagon-Thilawa road. The surrounding areas are Zone A in the northwest and local industrial zone in the east respectively.

SW-4 (Reference Point)

SW-4 was collected at the downstream of Shwe Pyauk creek, after mixing of discharge water from local industrial zone, Thilawa SEZ Zone A and Zone B, which is flowing from east to west and then entering into the Yangon River. The distance is about 2.15 km downstream of SW-2. This sampling point is located in the west of Zone B area and in the south of Dagon-Thilawa road. The surrounding areas are Zone A in the northeast, local industrial zone in the east and paddy fields in the south and west respectively.

SW-7 (Discharged Point)

SW-7 is main discharged point of Zone B during operation stage. The distance is about 434 m downstream of SW-2. This sampling point is located at outlet of retention pond of Zone B, in the north of Zone B area and in the south of Dagon-Thilawa road. The surrounding areas are Zone A in the north and local industrial zone in the east respectively.

SW-8 (Discharged Point)

SW-8 is another main discharged point of Zone B during operation stage. The distance is about 500 m upstream of SW-4. This sampling point is located in the south of Dagon-Thilawa road as well as 1 km southwest of SW-7 in the retention pond of Zone B. The surrounding areas are Zone A in the north and local industrial zone in the east respectively.

GW-2 (Reference of Existing Tube Well)

GW-2 was collected from tube well as ground water sample. It is located in the monastery compound of Phalan village. The surrounding areas are Thilawa SEZ Zone A in the north, Phalan village in the

south and fields in the west and local industrial zone in the northeast and operation of Thilawa SEZ Zone B in the east and northeast respectively.

2.3 Monitoring Method

All water samples were collected with cleaned sampling bottles and analyzed by the following standard method as shown in Table 2.3-1. All samples were kept in iced boxes at 2-4 °C and were transported to the laboratory. Among the parameters, water temperature, pH and DO were measured by the on-site instrument “Horiba, U-52” and water flow rate was also measured by using the on-site instrument “JFE Digital Current Meter”.

Table 2.3-1 Analytic Method for Water Quality

No.	Parameter	Method
1	Water Temperature	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
2	pH	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
3	Dissolved Oxygen (DO)	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
4	Turbidity	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
5	Suspended Solids (SS)	APHA 2540 D (Dry at 103-105°C Method)
6	BOD ₍₅₎	APHA 5210 B (5 Days BOD Test)
7	COD _(Cr)	APHA 5220D (Close Reflux Colorimetric Method)
8	Total Nitrogen (T-N)	HACH Method 10072 (TNT Persulfate Digestion Method)
9	Total Phosphorous (T-P)	APHA 4500-PE (Ascorbic Acid Method)
10	Color	APHA 2120C (Spectrophotometric Method)
11	Odor	APHA 2150 B (Threshold Odor Test)
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)
13	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)
14	Chromium (Cr)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
15	Total Dissolved Solids (TDS)	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)
16	Iron (Fe)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
17	Mercury (Hg)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
18	Escherichia Coli (E. coli)	APHA 9221 F (Escherichia Coli Procedure Using Fluorogenic Substrate)
19	Flow Rate	Detection of Electromagnetic Elements (Real-time measurement by AEM 213-D Digital Current Meters)

Source: Myanmar Koei International Ltd.

2.4 Monitoring Period

Water quality and water flow rate monitoring were conducted on 3 February 2026, and sampling time is shown in Table 2.4-1. In order to avoid tidal effect, the sampling was carried out during low tide especially at SW-4. The tide record for Yangon River, Myanmar on 3 February 2026 is shown in Table 2.4-2.

Table 2.4-1 Sampling Time of Each Point

No.	Station	Sampling Time
1	SW-2	03/02/2026 09:19
2	SW-4	03/02/2026 12:22
3	SW-7	03/02/2026 10:50
4	SW-8	03/02/2026 11:13
5	GW-2	03/02/2026 08:56

Source: Myanmar Koei International Ltd.



Table 2.4-2 Tide Record for Yangon River, Myanmar

Date	Time	Height (m)	Tide Conditions
03/02/2026	04:08	6.42	High Tide
	11:38	0.29	Low Tide
	16:36	6.17	High Tide
	23:36	0.64	Low Tide

Source: Myanmar Port Authority, Tide Table for the Yangon River and Elephant Point, 2026.

2.5 Monitoring Results

Results of water quality monitoring at discharged point and creek are summarized in Table 2.5-1 and Table 2.5-2. Analytical results of the laboratory are described in Appendix-2. The results were compared with the target value of effluent water quality discharged to water body stipulated in the EIA report and the National Surface Water Quality Standard (NSWQS) in Myanmar (referred to Table-2 in Section 7.1.1, Table-3 in Section 7.1.2 and Table-4 in Section 7.2). Besides, ground water quality results were compared with the target value of effluent water quality discharging to water body stipulated in the EIA report but also with Vietnam Ground Water Standard. Additionally, current monitoring results are compared with baseline results of SW-2 for surface water as well as GW-2 for ground water, measured in January and February 2016 for the mentioned EIA report.

As the comparison with the target value, the results of suspended solid (SS) at SW-2, SW-4, SW-7 and SW-8, Total coliform at SW-2, SW-4 and SW-7, and Total Dissolved Solids at SW-4, iron at SW-2, SW-7, SW-8 and GW-2 exceeded the limitations.

2.5.1 Results of Water Quality Monitoring at Discharged Points and Creek

(1) Results of Water Quality Monitoring at Discharged Points

As the comparison with the target value, the results of suspended solid (SS), total coliform and iron exceeded the limitations.

As for the result of SS, results at the main discharging points of Zone B (SW-7 and SW-8) before discharging to the creek, exceeded the limitation due to the surface water run-off from bare land in Zone B.

As for the results of total coliform of surface water, results at the main discharging point of Zone B (SW-7) before discharging to the creek, exceeded the limitation due to the expected reason that might be natural bacteria existed in all area of Zone B because the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, and the contaminants from the surroundings into the retention pond may contain fecal matter and other pollutants, leading to increase coliform levels.

Since the composition of the total coliform includes bacteria from natural origin, and total coliform does not affect human health directly, E. Coli analysis was carried out alternatively to identify the health impact by coliform bacteria. As for the result of E. Coli of surface water at the main discharging points of Zone B (SW-7 and SW-8), the result was within limitation. Therefore, although the limitation of total coliform was exceeded at the main discharging point of Zone B (SW-7), but it is considered that there is no significant impact on human health.

As for the result of iron, the results at main discharging points of Zone B (SW-7 and SW-8) before discharging to the creek were higher than the limitation. The possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas, are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by strong wind. Moreover, iron remains in the natural environment for a long time.



When comparing the results of monitoring parameters with National Surface Water Quality Standard (2024), the parameters for environmental conservation (pH, DO, SS, BOD, COD and E. coli) are aligned with the standard values of Class I, II, III and IV respectively, while standard values of monitoring parameter (turbidity, color and TDS) are included in Class I and V designation. Besides, monitoring parameter for human health (Hg) is within the standard values applied for Class I-V. According to the results of monitoring parameters referred to National Surface Water Quality Standard, water quality of SW-7 and SW-8 can be applied for Class V water use.

Among the results between present monitoring and baseline survey in February 2016, SS, BOD, COD and iron of SW-7 and SW-8 are lower than those of SW-2 (February 2016), while total coliform of SW-7 is higher than that of SW-2 (February 2016).

Table 2.5-1 Results of Water Quality Monitoring at Discharged Points

No.	Parameters	Unit	SW-7	SW-8	SW-2 (Baseline Result, EIA Report)*	Target Value	National Surface Water Quality Standard
1	Water Temperature	°C	28	28	27	≤ 35	-
2	pH	-	8.6	8.7	7.8	6~9	6~9 (Class III)
3	Dissolved Oxygen (DO)	mg/l	5.31	5.31	6.5	-	> 5 (Class II)
4	Turbidity	NTU	75.7	111	-	-	100 (Class V)
5	Suspended Solid (SS)	mg/l	54	64	490	50	75 (Class III)
6	BOD ₍₅₎	mg/l	7.60	6.96	8	30	8 (Class III)
7	COD _(Cr)	mg/l	18.0	18.4	810	125	50 (Class IV)
8	Total Coliform	MPN/100ml	1600	220	490	400	-
9	Oil and Grease	mg/l	< 3.1	< 3.1	5.2	10	No noticeably seen
10	Total Nitrogen (T-N)	mg/l	2.0	3.2	1.1	80	-
11	Total Phosphorous (T-P)	mg/l	0.08	0.13	0.05	2	-
12	Color	TCU (True Color Unit)	0.00	0.00	-	150	15 (Class I)
13	Odor	TON (Threshold Odor Number)	I	I	-	-	-
14	Total Dissolved Solids	mg/l	322	330	-	2000	500 (Class I)
15	Mercury	mg/l	≤ 0.002	≤ 0.002	< 0.0005	0.005	0.001 (Class I – V)
16	Iron	mg/l	3.554	5.978	8.2	3.5	-
17	Chromium	mg/l	≤ 0.002	≤ 0.002	< 0.02	0.5	-
18	Escherichia Coli	MPN/100ml (SW)	< 1.8	< 1.8	-	(1000)** (CFU/100ml)	20 (Class I)

Note: Red color means exceeded value than target value.

* Baseline results monitored in February 2016 for EIA report (Industrial Area) of Zone B.

** Based on the water utilization at discharged creek, the quality standard for water baths in Japan, (Ministry of Environment, 1997) is set as a reference value for self-monitoring of E. coli for surface water monitoring. However, due to limitation of capacity for analytical laboratory in Myanmar, the method to analyze the "Colony Forming Unit (CFU)" is not available in Myanmar. Therefore, the results of "Most Probable Number (MPN)" are assumed similar to CFU values and compared with reference values. Once the method to analyze the CFU will be available in Myanmar, the analytical method will be changed. According to the quality standard for water baths in Japan, (Ministry of Environment, 1997), in case of E. Coli result is exceeding 1,000 CFU/100 ml, since it is assumed unsafety, it is considered unsuitable for water baths.

Source: Myanmar Koei International Ltd.



(2) Results of Water Quality Monitoring at Reference Monitoring points (Creek)

As the comparison with the target value, the results of suspended solid (SS), total coliform, total dissolved solid and iron exceeded the limitations.

As for the result of SS and TDS, SS result at the surface water monitoring point (SW-2 and SW-4) and TDS result at the surface water monitoring point (SW-4) exceeded the limitations. The exceeded result for SS and TDS maybe due to two expected reasons; i) delivered from upstream area such as natural origin and wastewater from local industrial zone, which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to backflow by tidal fluctuation along Shwe Pyauk creek.

As for the result of total coliform, results at surface water monitoring points (SW-2 and SW-4) exceeded the limitation due to three expected reasons: i) the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, ii) contaminants from the surroundings into the Shwe Pyauk creek may contain fecal matter and other pollutants, leading to increase coliform levels and iii) incoming tidal water can contain the fecal matter and delivered along Shwe Pyauk creek during flood tide.

As for the result of iron, the result at the monitoring point of surface water (SW-2) exceeded the limitation. The possible reason for exceeded value in surface water (SW-2) may be due to the influence of natural origin (iron can reach out from the soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas, are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by run-off or strong wind.

When comparing the results of monitoring parameters with National Surface Water Quality Standard (2024), the parameters for environmental conservation (pH, DO, SS, BOD and COD) are aligned with standard values of Class I, III, IV and V respectively, while standard values of monitoring parameter such as (color, TDS and turbidity) are included in Class II and V designation. Besides, monitoring parameters for human health (Hg) are within the standard values applied for Class I-V. According to the results of monitoring parameters referred to National Surface Water Quality Standard, water quality of SW-2 and SW-4 can be applied for Class V water use.

Among the results between present monitoring and baseline survey in February 2016, SS, BOD, COD and iron of SW-2 and SW-4 are lower than those of SW-2 (February 2016), while total coliform of SW-2 and SW-4 is higher than that of SW-2 (February 2016).



Table 2.5-2 Results of Water Quality Monitoring at Creek

No.	Parameters	Unit	SW-2	SW-4	SW-2 (Baseline Result, EIA Report)*	Target Value	National Surface Water Quality Standard
1	Water Temperature	°C	25	28	27	≤ 35	-
2	pH	-	7.6	7.7	7.8	6~9	6.5-8.5 (Class I)
3	Dissolved Oxygen (DO)	mg/l	1.40	3.34	6.5	-	> 2 (Class V)
4	Turbidity	NTU	130	227	-	-	100 (Class V)
5	Suspended Solid (SS)	mg/l	96	130	490	50	150 (Class V)
6	BOD ₅	mg/l	5.05	4.89	8	30	8 (Class III)
7	COD _{Cr}	mg/l	31.7	5.8	810	125	50 (Class IV)
8	Total Coliform	MPN/100ml	>160000	11000	490	400	-
9	Oil and Grease	mg/l	<3.1	<3.1	5.2	10	No noticeably seen
10	Total Nitrogen (T-N)	mg/l	7.0	3.5	1.1	80	-
11	Total Phosphorous (T-P)	mg/l	0.45	<0.05	0.05	2	-
12	Color	TCU (True Color Unit)	15.29	0.00	-	150	25 (Class II)
13	Odor	TON (Threshold Odor Number)	1	1	-	-	-
14	Total Dissolved Solids	mg/l	1024	3626	-	2000	2000 (Class V)
15	Mercury	mg/l	≤ 0.002	≤ 0.002	< 0.0005	0.005	0.001 (Class I - V)
16	Iron	mg/l	8.154	0.190	8.2	3.5	-
17	Chromium	mg/l	≤ 0.002	≤ 0.002	<0.02	0.5	-
18	Flow Rate	m ³ /s	-	0.122	-	-	-

Note: Red color means exceeded value than target value.

* Baseline results monitored in February 2016 for EIA report (Industrial Area) of Zone B.

Source: Myanmar Koei International Ltd.

2.5.2 Results of Water Quality Monitoring at Reference Monitoring Point (Tube Well)

Results of water quality monitoring at reference tube well monitoring point is shown in Table 2.5-3. As the comparison with the Vietnam Ground Water Standard and the target value of effluent water quality discharging to water body stipulated in the EIA report, only the result of iron exceeded the limitation.

For the ground water quality, National Technical Regulation on Ground Water Quality (No. QCVN 09-MT: 2015/BTNMT) in Vietnam is used as a reference because Myanmar does not have any ground water guidelines and standards, and most of the analyzed parameter are included in Vietnam standard rather the those stipulated by neighboring countries. For the result of Escherichia Coli, B1 (Irrigation water) of National Technical Regulation on Surface Water Quality (No. QCVN 08-MT: 2015/BTNMT) in Vietnam is referred, as no standard for E. coli is mentioned in Vietnam ground water regulation as a reference. In addition, the target values of effluent water quality discharging to water body stipulated in the EIA report are also considered for comparison with ground water quality.

As for the result of the iron, the result at the monitoring point of reference tube well (GW-2) exceeded the limitations prescribed in the EIA report of Thilawa SEZ. Comparison with previous monitoring results of GW-2 since April 2019, the iron concentration results are ranging from 0.108 mg/l in April 2023 to 14.100 mg/l in December 2023 and most of the iron concentration results (from April 2019 to February 2026) exceeded the limitation except the results of August 2019, February and April 2022, April 2023 and August 2025. Therefore, the possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Moreover, Thilawa SEZ area is mainly composed of iron rich soil (lateritic soil), and it can be saturated in the underlying confined aquifer.

Among the results between present monitoring and baseline survey in January 2016, SS and COD of GW-2 are lower than those of GW-2 (January 2016), while iron of GW-2 is higher than that of GW-2 (January 2016).



Table 2.5-3 Results of Water Quality Monitoring at Reference Tube Well

No.	Parameters	Unit	GW-2	GW-2 (Baseline Result, EIA Report)*	Target Value	Vietnam Ground Water Standard
1	Water Temperature	°C	28	28.7	≤ 35	-
2	pH	-	6.9	7.0	6~9	5.5 – 8.5
3	Dissolved Oxygen (DO)	mg/l	5.56	7.5	-	-
4	Turbidity	NTU	1.3	-	-	-
5	Suspended Solid (SS)	mg/l	2	26	50	-
6	BOD ₅	mg/l	4.65	< 2	30	-
7	COD _{Cr}	mg/l	< 0.7	38	125	-
8	Total Coliform	MPN/100ml	< 1.8	> 23	400	3
9	Oil and Grease	mg/l	< 3.1	< 0.5	10	-
10	Total Nitrogen (T-N)	mg/l	< 0.5	< 1	80	-
11	Total Phosphorous (T-P)	mg/l	0.65	0.34	2	-
12	Color	TCU (True Color Unit)	99.57	< 1	150	-
13	Odor	TON (Threshold Odo Number)	1	None	-	-
14	Total Dissolved Solids	mg/l	204	-	2000	1500
15	Mercury	mg/l	≤ 0.002	< 0.0005	0.005	0.001
16	Iron	mg/l	10.894	0.35	3.5	5
17	Chromium	mg/l	≤ 0.002	-	0.5	0.5
18	Escherichia Coli	MPN/100ml	< 1.8	-	(100)** (MPN/100ml)	(100)** (MPN/100ml)

Note: Red color means exceeded value than target value.

* Baseline results monitored in January 2016 for EIA report (Industrial Area) of Zone B.

** Based on the water utilization at monitoring point for ground water, B1(Irrigation water) of National Technical Regulation on Surface Water Quality in Vietnam (No: QCVN 08-MT: 2015/BTNMT) is set as a reference value of self-monitoring for ground water monitoring.

Source: Myanmar Koei International Ltd.



2.5.3 Comparison of Results of Water Quality Exceed the Target Value between Previous Monitoring and February 2026 Monitoring

In order to overview the exceeding limitations of the parameters concerned during the present monitoring (February 2026), the results of the exceeding parameters with respective sampling points are compared with the previous monitoring results since February 2025.

Regarding the results of the parameter of discharge points (SW-7 and SW-8), suspended solid concentration is higher at SW-7 in five monitoring surveys (April, June, October and December 2025 and February 2026), but also at SW-8 in four monitoring surveys (June, August and October 2025 and February 2026), respectively. Total coliform concentration at SW-7 is higher in four monitoring surveys (April, June and October 2025, and February 2026), ranging from 1600 MPN/100ml to 35000 MPN/100ml.

Although iron concentration at SW-7 is slightly higher than the limitation in current monitoring survey (February 2026) as 3.554 mg/l, iron at SW-8 is higher in five monitoring surveys (June, August, October and December 2025 and February 2026), ranging from 3.726 to 8.42 mg/l. It is observed that iron concentration at SW-8 is higher during both rainy and dry seasons, due to the influence of natural origin (iron can reach out from soil by run-off). Surroundings of the Thilawa SEZ, especially small hilly areas, are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by strong wind. Moreover, iron remains in the natural environment for a long time.

As for the result of SS concentration, though SS at the reference monitoring point SW-2 is higher than the limitation during current monitoring as 96 mg/l, SS at SW-4 is higher than the limitation throughout all three seasons, ranging from 74 to 817 mg/l. It is assumed that SS concentrations at SW-2 and SW-4 are higher due to the agricultural and domestic run-off from the surrounding as well as the tidal effect resulting the cloudiness (turbidity) of water along Shwe Pyauk creek during all seasons.

It is obvious that total coliform at both SW-2 and SW-4 is higher in all monitoring surveys except December 2025 monitoring, ranging from 450 to >160000 MPN/100ml for SW-2 and from 920 to 92000 MPN/100ml for SW-4, respectively. Especially the total coliform amounts at SW-2 reached the detection limit (>160000 MPN/100ml) in February 2026.

The result of TDS at SW-4 is higher than the limitation only in two monitoring surveys (5276 mg/l in April 2025 and 3626 mg/l in February 2026). It is obvious that TDS concentration at SW-4 is higher in the summer, and it may be attributable to greater solubility of ions at high temperature.

The results of iron at SW-2 are also higher than the limitation in four monitoring surveys (August, October, December 2025 and February 2026) ranging from 3.670 to 8.58 mg/l.

Regarding the results of the iron concentration at GW-2, it is always higher than the limitation in all monitoring surveys except August 2025, ranging from 3.754 to 11.920 mg/l. It is observed that iron concentration at GW-2 is higher throughout all three seasons, and it may be due to the influence of natural origin (iron can reach out from soil by run-off). Moreover, Thilawa SEZ area is mainly composed of iron rich soil (lateritic soil), and it can be saturated in the underlying confined aquifer.

It is possible to say that the present condition of the water quality reflects the background condition of the surrounding environment of Thilawa SEZ. The expected reasons for the results exceeding the limitation of the parameters concerned are discussed in the upper section of this monitoring report.



CHAPTER 3: CONCLUSION AND RECOMMENDATIONS

As described in Chapter 2 (Section 2.5), the results of suspended solid (SS) at SW-2, SW-4, SW-7 and SW-8, Total coliform at SW-2, SW-4 and SW-7, and Total Dissolved Solids at SW-4 and iron at SW-2, SW-7, SW-8 and GW-2 exceeded the limitations in this monitoring period for operation stage of Thilawa SEZ Zone B.

As for the result of SS, results at the main discharging points of Zone B (SW-7 and SW-8) before discharging to the creek, exceeded the limitation due to the surface water run-off from bare land in Zone B.

As for the results of total coliform of surface water, results at the main discharging point of Zone B (SW-7) before discharging to the creek, exceeded the limitation due to the expected reason that might be natural bacteria existed in all area of Zone B because the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, and the contaminants from the surroundings into the retention pond may contain fecal matter and other pollutants, leading to increase coliform levels.

Since the composition of the total coliform includes bacteria from natural origin, and total coliform does not affect human health directly, E. Coli analysis was carried out alternatively to identify the health impact by coliform bacteria. As for the result of E. Coli of surface water at the main discharging points of Zone B (SW-7 and SW-8), the result was within limitation. Therefore, although the limitation of total coliform was exceeded at the main discharging point of Zone B (SW-7), but it is considered that there is no significant impact on human health.

As for the result of iron, the results at main discharging points of Zone B (SW-7 and SW-8) before discharging to the creek were higher than the limitation. The possible reasons may be due to the influence of natural origin (iron can reach out from soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas, are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by strong wind. Moreover, iron remains in the natural environment for a long time.

As for the result of SS and TDS, SS result at the surface water monitoring point (SW-2 and SW-4) and TDS result at the surface water monitoring point (SW-4) exceeded the limitations. The exceeded result for SS and TDS maybe due to two expected reasons; i) delivered from upstream area such as natural origin and wastewater from local industrial zone, which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to backflow by tidal fluctuation along Shwe Pyauk creek.

As for the result of total coliform, results at surface water monitoring points (SW-2 and SW-4) exceeded the limitation due to three expected reasons: i) the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, ii) contaminants from the surroundings into the Shwe Pyauk creek may contain fecal matter and other pollutants, leading to increase coliform levels and iii) incoming tidal water can contain the fecal matter and delivered along Shwe Pyauk creek during flood tide.

As for the result of iron, the result at the monitoring point of surface water (SW-2) exceeded the limitation. The possible reason for exceeded value in surface water (SW-2) may be due to the influence of natural origin (iron can reach out from the soil by run-off). Surroundings of the Thilawa SEZ especially small hilly areas, are mainly composed of iron rich soil (lateritic soil), and it can be transported to the low land area by run-off or strong wind.

As for the result of the iron, the result at the monitoring point of reference tube well (GW-2) exceeded the limitations prescribed in the EIA report of Thilawa SEZ. Comparison with previous monitoring results of GW-2 since April 2019, the iron concentration results are ranging from 0.108 mg/l in April 2023 to 14.100 mg/l in December 2023 and most of the iron concentration results (from April 2019 to February 2026) exceeded the limitation except the results of August 2019, February and April 2022, April 2023 and August 2025. Therefore, the possible reasons may be due



to the influence of natural origin (iron can reach out from soil by run-off). Moreover, Thilawa SEZ area is mainly composed of iron rich soil (lateritic soil), and it can be saturated in the underlying confined aquifer.

As for the comparison of the results of monitoring parameters with National Surface Water Quality Standard, water quality of SW-2, SW-4, SW-7 and SW-8 can be applied for Class V water use.

Regarding the future primary discharge points of Thilawa SEZ Zone B, the following actions may be taken to ensure compliance with the appropriate water quality limits for suspended solids, total dissolved solids, total coliform, and iron.

- To perform regular removal of bottom sediment and decaying vegetation present in the retention pond and retention canal to preserve its cleanliness, and
- To continue monitoring Escherichia coli (E. coli) level to identify health impact by coliform bacteria,
- To clean the drainage system routinely, and
- To inspect the quality of discharge water from the factories.

End of the Document



APPENDIX-1 FIELD SURVEY PHOTOS



FOR DISCHARGED POINT OF THILAWA SEZ ZONE B



Surface water sampling and onsite measurement at SW-7



Surface water sampling and onsite measurement at SW-8



**FOR REFERENCE MONITORING POINTS FOR COMPARISON WITH DISCHARGED
POINTS AND BASELINE OF DISCHARGED CREEK**



Surface water sampling and onsite measurement at SW-2



Surface water sampling and onsite measurement at SW-4



Ground water sampling and onsite measurement at GW-2

APPENDIX-2 LABORATORY RESULTS



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Monthly Monitoring in FY February - 2026)

FOR DISCHARGED POINT

DOWA

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Report No. : GEM-LAB-202602093
Revision No. : 1
Report Date : 23 February, 2026
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-7-0203 Sampling Date : 03 February, 2026
Sample No. : W-2602031 Sampling By : Withdraw GEM
Waste Profile No. : * Sample Received Date : 03 February, 2026
Analytical Date : 03-23/02/2026

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	54	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	7.60	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	18.0	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	0.00	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	2.0	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.08	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	322	2000	-
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	3.554	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	1600.0	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	-	0
14	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	-	1.8

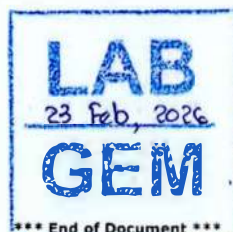
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Hein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager

23 Feb, 2026

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Monthly Monitoring in FY February - 2026)

DOWA

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Report No. : GEM-LAB-202602094
Revision No. : 1
Report Date : 23 February, 2026
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-8-0203 Sampling Date : 03 February, 2026
Sample No. : W-2602032 Sampling By : Withdraw GEM
Waste Profile No. : Sample Received Date : 03 February, 2026
Analytical Date : 03-23/02/2026

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	64	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	6.96	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	18.4	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	0.00	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	3.2	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.13	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	330	2000	—
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	5.978	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	220.0	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	—	0
14	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	—	1.8

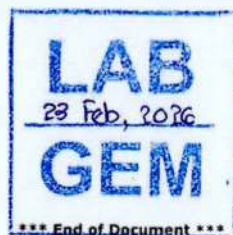
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU (True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager

23 Feb, 2026

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.



**FOR REFERENCE MONITORING POINTS FOR COMPARISON WITH DISCHARGED
POINTS AND BASELINE OF DISCHARGED CREEK**

DOWA

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Doc No: GEM-LB-R006E/01/AD
Page 1 of 1

Report No. : GEM-LAB-202602090
Revision No. : 1
Report Date : 23 February, 2026
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-2-0203
Sample No. : W-2602028
Waste Profile No. : *
Sampling Date : 03 February, 2026
Sampling By : Withdraw GEM
Sample Received Date : 03 February, 2026
Analytical Date : 03-23/02/2026

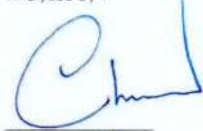
No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	96	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	5.05	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	31.7	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	15.29	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	7.0	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.45	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	1024	2000	-
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	8.154	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	>160000	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	-	0

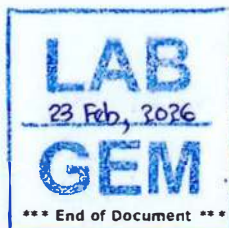
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

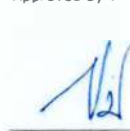
APHA 2120B.6(b); Color Unit - TCU(True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :


Chitry Myint Thiri
Manager



Approved By :


H H Aye Lwin
Senior Manager
23 Feb, 2026

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Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Monthly Monitoring in FY February - 2026)

DOWA

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Report No. : GEM-LAB-202602091
Revision No. : 1
Report Date : 23 February, 2026
Application No. : 0001-C001

Test Report

Cient Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-4-0203 Sampling Date : 03 February, 2026
Sample No. : W-2602029 Sampling By : Withdraw GEM
Waste Profile No. : Sample Received Date : 03 February, 2026
Analytical Date : 03-23/02/2026

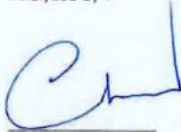
No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	130	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	4.89	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	5.8	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	0.00	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	3.5	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	<0.05	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	3626	2000	—
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.190	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	11000.0	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	—	0

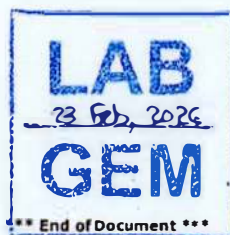
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :


Cherry Myint Hein
Manager



Approved By :


Ni Ni Aye Lwin
Senior Manager 23 Feb, 2026

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Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Monthly Monitoring in FY February - 2026)

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Report No. : GEM-LAB-202602095
Revision No. : 1
Report Date : 23 February, 2026
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-GW-2-0203 Sampling Date : 03 February, 2026
Sample No. : W-2602033 Sampling By : Withdraw GEM
Waste Profile No. : * Sample Received Date : 03 February, 2026
Analytical Date : 03-23/02/2026

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	2	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	4.65	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	<0.7	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	99.57	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	<0.5	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.65	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	204	2000	—
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	10.894	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	<1.8	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	—	0
14	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	—	1.8

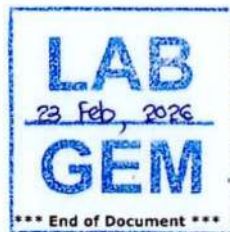
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APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager 23 Feb, 2026

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO.,LTD.



Thilawa Special Economic Zone
Zone B– Phase 1, 2,3 (Operation phase)

Appendix-2 (c)

Water and Waste Water Monitoring Report

April 2026

**WATER QUALITY MONITORING REPORT
FOR DEVELOPMENT OF INDUSTRIAL AREA
IN THILAWA SEZ ZONE B
(PHASE 1, 2 & 3 OPERATION STAGE)**

(Bi-Monthly Monitoring)

April 2026

Myanmar Koei International Ltd.



TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
1.1 General	1
CHAPTER 2: WATER QUALITY MONITORING.....	2
2.1 Monitoring Items.....	2
2.2 Description of Sampling Points.....	3
2.3 Monitoring Method	4
2.4 Monitoring Period	4
2.5 Monitoring Results	5
CHAPTER 3: CONCLUSION AND RECOMMENDATIONS	10
APPENDIX-1 FIELD SURVEY PHOTOS.....	A1-1
APPENDIX-2 LABORATORY RESULTS.....	A2-1

LIST OF TABLES

Table 2.1-1 Monitoring Items for Water Quality.....	2
Table 2.2-1 Outline of Sampling Points.....	3
Table 2.3-1 Analytic Method for Water Quality.....	4
Table 2.4-1 Sampling Time of Each Point.....	4
Table 2.4-2 Tide Record for Yangon River, Myanmar.....	5
Table 2.5-1 Results of Water Quality Monitoring at Discharged Points	6
Table 2.5-2 Results of Water Quality Monitoring at Creek.....	7
Table 2.5-3 Results of Water Quality Monitoring at Reference Tube Well	8

LIST OF FIGURES

Figure 1.1-1 Location of Sampling Points of Water Quality Monitoring.....	1
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CHAPTER 1: INTRODUCTION

1.1 General

Thilawa Special Economic Zone (SEZ) is located in southern district of Yangon region and about 23 km southeast of Yangon city. As the developer of Thilawa SEZ, Myanmar Japan Thilawa Development Ltd. (MJTD) has a responsibility to carry out regular monitoring in the industrial area of Zone B in accordance with the approved Environmental Impact Assessment (EIA) report and Environmental Management Plan (EMP). MJTD has implemented monitoring various environmental items with the specified time frame to know the environmental conditions in and around the area. As for the monitoring of the water quality, total five sampling points are set for water quality survey, named SW-2, SW-4, SW-7, SW-8 and GW-2 have been monitored in Thilawa SEZ and its surrounding area in timely manner. Among the five locations, SW-7 is main discharged point of Zone B and SW-8 is another main discharged point of Zone B during the operation stage. The remaining points SW-2 and SW-4 are sampled as a reference monitoring for comparison with discharged points and baseline of discharged creek. Moreover, GW-2 is monitored as a reference of existing tube well located in the monastery compound of Phalan village which is situated next to the southern boundary of the industrial area of Zone B. Location of sampling points for water quality monitoring is shown in Figure 1.1-1.



Source: Google Earth

Figure 1.1-1 Location of Sampling Points of Water Quality Monitoring



CHAPTER 2: WATER QUALITY MONITORING

2.1 Monitoring Items

Sampling points and parameters for water quality monitoring are determined to cover the environmental monitoring plan of the EIA report.

Water quality sampling was carried out at four locations. Water quality monitoring at SW-2 cannot be conducted because there was no water during this monitoring period. Among the four locations, water flow measurement at one location (SW-4) can be carried out by current meter. However, water flow measurement cannot be conducted with current meter at three locations (SW-2, SW-7 and SW-8) because water gates were closed at SW-7 and SW-8, and there was no water at SW-2 during sampling. Monitoring items and sampling points are summarized in Table 2.1-1.

Table 2.1-1 Monitoring Items for Water Quality

No.	Parameters	SW-2	SW-4	SW-7	SW-8	GW-2	Remarks
1	Water Temperature	-	○	○	○	○	On-site measurement
2	pH	-	○	○	○	○	On-site measurement
3	Dissolved Oxygen (DO)	-	○	○	○	○	On-site measurement
4	Turbidity (NTU)	-	○	○	○	○	On-site measurement
5	Suspended Solids (SS)	-	○	○	○	○	Laboratory analysis
6	BOD ₍₅₎	-	○	○	○	○	Laboratory analysis
7	COD _(Cr)	-	○	○	○	○	Laboratory analysis
8	Total Nitrogen (T-N)	-	○	○	○	○	Laboratory analysis
9	Total Phosphorous (T-P)	-	○	○	○	○	Laboratory analysis
10	Color	-	○	○	○	○	Laboratory analysis
11	Odor	-	○	○	○	○	Laboratory analysis
12	Total Coliform	-	○	○	○	○	Laboratory analysis
13	Oil and Grease (Self-monitoring)	-	○	○	○	○	Laboratory analysis
14	Chromium	-	-	○	○	○	Laboratory analysis
15	Total Dissolved Solids (TDS) (Self-monitoring)	-	○	○	○	○	Laboratory analysis
16	Iron (Self-monitoring)	-	○	○	○	○	Laboratory analysis
17	Mercury (Self-monitoring)	-	○	○	○	○	Laboratory analysis
18	Escherichia Coli (Self-monitoring)	-	-	○	○	○	Laboratory analysis
19	Flow Rate	-	○	-	-	-	On-site measurement

Source: Myanmar Koei International Ltd.



2.2 Description of Sampling Points

The outline of sampling points is mentioned in Table 2.2-1. The photos of conducting field survey at each sampling point are mentioned in Appendix-1.

Table 2.2-1 Outline of Sampling Points

No.	Station	Detailed Information
1	SW-2	Coordinate- N - 16° 40' 20.69", E - 96° 17' 18.04"
		Location - Upstream of Shwe Pyauk Creek
		Survey Item - Surface water sampling and water flow rate measurement
2	SW-4	Coordinate- N - 16° 39' 42.84", E - 96° 16' 27.42"
		Location - Downstream of Shwe Pyauk Creek
		Survey Item - Surface water sampling and water flow rate measurement
3	SW-7	Coordinate - N - 16° 40' 13.25", E - 96° 17' 5.66"
		Location - Outlet of retention pond of Zone B before connecting to Shwe Pyauk Creek
		Survey Item - Discharge water sampling
4	SW-8	Coordinate - N - 16° 39' 59.25", E - 96° 16' 32.77"
		Location - Another outlet of retention pond of Zone B before connecting to Shwe Pyauk Creek
		Survey Item - Discharge water sampling
5	GW-2	Coordinate - N - 16° 39' 25.30", E - 96° 17' 15.60"
		Location - In the monastery compound of Phalan village
		Survey Item - Ground water sampling

Source: Myanmar Koei International Ltd.

SW-2 (Reference Point)

SW-2 was collected at the upstream of Shwe Pyauk creek. This sampling point is located in the northeast of Zone B area and at the south of Dagon-Thilawa Road. The surrounding areas are Zone A in the northwest and local industrial zone in the east respectively.

SW-4 (Reference Point)

SW-4 was collected at the downstream of Shwe Pyauk creek, after mixing of discharge water from local industrial zone, Thilawa SEZ Zone A and Zone B, which is flowing from east to west and then entering into the Yangon River. The distance is about 2.15 km downstream of SW-2. This sampling point is located in the west of Zone B area and in the south of Dagon-Thilawa Road. The surrounding areas are Zone A in the northeast, local industrial zone in the east and paddy fields in the south and west respectively.

SW-7 (Discharged Point)

SW-7 is main discharged point of Zone B during operation stage. The distance is about 434 m downstream of SW-2. This sampling point is located at outlet of retention pond of Zone B, in the north of Zone B area and in the south of Dagon-Thilawa Road. The surrounding areas are Zone A in the north and local industrial zone in the east respectively.

SW-8 (Discharged Point)

SW-8 is another main discharged point of Zone B during construction stage. The distance is about 500 m upstream of SW-4. This sampling point is located in the south of Dagon-Thilawa Road as well as 1 km southwest of SW-7 in the retention pond of Zone B. The surrounding areas are Zone A in the north and local industrial zone in the east respectively.

GW-2 (Reference of Existing Tube Well)

GW-2 was collected from tube well as ground water sample. It is located in the monastery compound of Phalan village. The surrounding areas are Thilawa SEZ Zone A in the north, Phalan village in the

south and fields in the west and local industrial zone in the northeast and operation of Thilawa SEZ Zone B in the east and northeast respectively.

2.3 Monitoring Method

All water samples were collected with cleaned sampling bottles and analyzed by the following standard method as shown in Table 2.3-1. All samples were kept in iced boxes at 2-4 °C and were transported to the laboratory. Among the parameters, water temperature, pH and DO were measured by the on-site instrument “Horiba, U-52” and water flow rate was also measured by using the on-site instrument “JFE Digital Current Meter”.

Table 2.3-1 Analytic Method for Water Quality

No.	Parameter	Method
1	Water Temperature	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
2	pH	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
3	Dissolved Oxygen (DO)	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
4	Turbidity	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
5	Suspended Solids (SS)	APHA 2540 D (Dry at 103-105°C Method)
6	BOD ₍₅₎	APHA 5210 B (5 Days BOD Test)
7	COD _(Cr)	APHA 5220D (Close Reflux Colorimetric Method)
8	Total Nitrogen (T-N)	HACH Method 10072 (TNT Persulfate Digestion Method)
9	Total Phosphorous (T-P)	APHA 4500-P E (Ascorbic Acid Method)
10	Color	APHA 2120C (Spectrophotometric Method)
11	Odor	APHA 2150 B (Threshold Odor Test)
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)
13	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)
14	Chromium (Cr)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
15	Total Dissolved Solids (TDS)	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)
16	Iron (Fe)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
17	Mercury (Hg)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
18	Escherichia Coli (E. coli)	APHA 9221 F (Escherichia Coli Procedure Using Fluorogenic Substrate)
19	Flow Rate	Detection of Electromagnetic Elements (Real-time measurement by AEM 213-D Digital Current Meters)

Source: Myanmar Koei International Ltd.

2.4 Monitoring Period

Water quality and water flow rate monitoring were conducted on 28 April 2026, and sampling time is shown in Table 2.4-1. In order to avoid tidal effect, the sampling was carried out during low tide especially at SW-4. The tide record for Yangon River, Myanmar on 28 April 2026 is shown in Table 2.4-2.

Table 2.4-1 Sampling Time of Each Point

No.	Station	Sampling Time
1	SW-2	-
2	SW-4	28/04/2026 08:50
3	SW-7	28/04/2026 11:09
4	SW-8	28/04/2026 11:40
5	GW-2	28/04/2026 12:11

Source: Myanmar Koei International Ltd.



Table 2.4-2 Tide Record for Yangon River, Myanmar

Date	Time	Height (m)	Tide Conditions
28/04/2026	02:38	4.92	High Tide
	09:42	0.73	Low Tide
	15:03	5.32	High Tide
	22:19	0.92	Low Tide

Source: Myanmar Port Authority, Tide Table for the Yangon River and Elephant Point, 2026.

2.5 Monitoring Results

Results of water quality monitoring at discharged point and creek are summarized in Table 2.5-1 and Table 2.5-2. Analytical results of the laboratory are described in Appendix-2. The results were compared with the target value of effluent water quality discharged to water body stipulated in the EIA report and the National Surface Water Quality Standard (NSWQS) in Myanmar (referred to Table-2 in Section 7.1.1, Table-3 in Section 7.1.2 and Table-4 in Section 7.2). Besides, ground water quality results were compared with the target value of effluent water quality discharging to water body stipulated in the EIA report but also with Vietnam Ground Water Standard. Additionally, current monitoring results are compared with baseline results of SW-2 for surface water as well as GW-2 for ground water, measured in January and February 2016 for the mentioned EIA report.

As the comparison with the target value, the results of suspended solid (SS) at SW-4, SW-7 and SW-8, Total coliform at SW-8, and Total Dissolved Solids at SW-4 exceeded the limitations.

2.5.1 Results of Water Quality Monitoring at Discharged Points and Creek

(1) Results of Water Quality Monitoring at Discharged Points

As the comparison with the target value, the results of suspended solid (SS) at (SW-7 and SW-8) and total coliform at SW-8 exceeded the limitations.

As for the result of SS, results at the main discharging points of Zone B (SW-7 and SW-8) before discharging to the creek, exceeded the limitation due to the surface water run-off from bare land in Zone B.

As for the results of total coliform of surface water, results at the main discharging point of Zone B (SW-8) before discharging to the creek, exceeded the limitation due to the expected reason that might be natural bacteria existed in all area of Zone B because the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, and the contaminants from the surroundings into the retention pond may contain fecal matter and other pollutants, leading to increase coliform levels.

Since the composition of the total coliform includes bacteria from natural origin, and total coliform does not affect human health directly, E. Coli analysis was carried out alternatively to identify the health impact by coliform bacteria. As for the result of E. Coli of surface water at the main discharging points of Zone B (SW-8), the result was within limitation. Therefore, although the limitation of total coliform was exceeded at the main discharging point of Zone B (SW-8), but it is considered that there is no significant impact on human health.

When comparing the results of monitoring parameters with National Surface Water Quality Standard (2024), the parameters for environmental conservation (pH, DO, SS, BOD, COD and E. coli) are aligned with the standard values of Class I, III, IV and V respectively, while standard values of monitoring parameter (turbidity, color and TDS) are included in Class I, IV and V designation. Besides, monitoring parameter for human health (Hg) is within the standard values applied for Class I-V. According to the results of monitoring parameters referred to National Surface Water Quality Standard, water quality of SW-7 and SW-8 can be applied for Class V water use.



Among the results between present monitoring and baseline survey in February 2016, SS, BOD, COD and iron of SW-7 and SW-8 are lower than those of SW-2 (February 2016), while total coliform of SW-8 is higher than that of SW-2 (February 2016).

Table 2.5-1 Results of Water Quality Monitoring at Discharged Points

No.	Parameters	Unit	SW-7	SW-8	SW-2 (Baseline Result, EIA Report)*	Target Value	National Surface Water Quality Standard
1	Water Temperature	°C	33	32	27	≤ 35	-
2	pH	-	8.3	7.5	7.8	6~9	6.5-8.5 (Class I)
3	Dissolved Oxygen (DO)	mg/l	9.18	5.74	6.5	-	> 6 (Class I)
4	Turbidity	NTU	165	116	-	-	100 (Class V)
5	Suspended Solid (SS)	mg/l	158	104	490	50	150 (Class V)
6	BOD ₅	mg/l	7.49	1.31	8	30	8 (Class III)
7	COD _{Cr}	mg/l	21	5.0	810	125	50 (Class IV)
8	Total Coliform	MPN/100ml	1.8	3300	490	400	-
9	Oil and Grease	mg/l	< 3.1	< 3.1	5.2	10	No noticeably seen
10	Total Nitrogen (T-N)	mg/l	1.6	1.1	1.1	80	-
11	Total Phosphorous (T-P)	mg/l	0.10	0.07	0.05	2	-
12	Color	TCU (True Color Unit)	8.14	5.29	-	150	15 (Class I)
13	Odor	TON (Threshold Odor Number)	1.4	1.4	-	-	-
14	Total Dissolved Solids	mg/l	1288	1474	-	2000	1500 (Class IV)
15	Mercury	mg/l	≤ 0.002	≤ 0.002	< 0.0005	0.005	0.001 (Class I - V)
16	Iron	mg/l	2.060	1.528	8.2	3.5	-
17	Chromium	mg/l	≤ 0.002	< 0.002	< 0.02	0.5	-
18	Escherichia Coli	MPN/100ml	2	2	-	(1000)** (CFU/100ml)	20 (Class I)

Note: Red color means exceeded value than target value.

* Baseline results monitored in February 2016 for EIA report (Industrial Area) of Zone B.

** Based on the water utilization at discharged creek, the quality standard for waterbaths in Japan, (Ministry of Environment, 1997) is set as a reference value for self-monitoring of E. coli for surface water monitoring. However, due to limitation of capacity for analytical laboratory in Myanmar, the method to analyze the "Colony Forming Unit (CFU)" is not available in Myanmar. Therefore, the results of "Most Probable Number (MPN)" are assumed similar to CFU values and compared with reference values. Once the method to analyze the CFU will be available in Myanmar, the analytical method will be changed. According to the quality standard for waterbaths in Japan, (Ministry of Environment, 1997), in case of E. Coli result is exceeding 1,000 CFU/100 ml, since it is assumed unsafety, it is considered unsuitable for water baths.

Source: Myanmar Koei International Ltd.



(2) Results of Water Quality Monitoring at Reference Monitoring points (Creek)

As the comparison with the target value, the results of suspended solid (SS) and total dissolved solid exceeded the limitations.

As for the result of SS and TDS, the result at the surface water monitoring point (SW-4) exceeded the limitations. The exceeded result for SS and TDS maybe due to two expected reasons; i) delivered from upstream area such as natural origin and wastewater from local industrial zone, which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to backflow by tidal fluctuation along Shwe Pyauk creek.

When comparing the results of monitoring parameters with National Surface Water Quality Standard (2024), the parameters for environmental conservation (pH, DO, SS, BOD and COD) are aligned with standard values of Class I, III, IV and V respectively, while standard values of monitoring parameter such as (color, TDS and turbidity) are included in Class I and V designation. Besides, monitoring parameter for human health (Hg) are within the standard values applied for Class I-V. According to the results of monitoring parameters referred to National Surface Water Quality Standard, water quality of SW-4 can be applied for Class V water use.

Among the results between present monitoring and baseline survey in February 2016, SS, BOD, COD and iron of SW-4 are lower than those of SW-2 (February 2016).

Table 2.5-2 Results of Water Quality Monitoring at Creek

No.	Parameters	Unit	SW-4	SW-2 (Baseline Result, EIA Report)*	Target Value	National Surface Water Quality Standard
1	Water Temperature	°C	27	27	≤ 35	-
2	pH	-	7.3	7.8	6~9	6.5-8.5 (Class I)
3	Dissolved Oxygen (DO)	mg/l	4.54	6.5	-	> 4 (Class III)
4	Turbidity	NTU	195	-	-	100 (Class V)
5	Suspended Solid (SS)	mg/l	150	490	50	150 (Class V)
6	BOD ₍₅₎	mg/l	5.68	8	30	8 (Class III)
7	COD _(Cr)	mg/l	26.7	810	125	50 (Class IV)
8	Total Coliform	MPN/100ml	23	490	400	-
9	Oil and Grease	mg/l	<3.1	5.2	10	No noticeably seen
10	Total Nitrogen (T-N)	mg/l	0.9	1.1	80	-
11	Total Phosphorous (T-P)	mg/l	<0.05	0.05	2	-
12	Color	TCU (True Color Unit)	5.29	-	150	15 (Class I)
13	Odor	TON (Threshold Odor Number)	1.4	-	-	-
14	Total Dissolved Solids	mg/l	2814	-	2000	2000 (Class V)
15	Mercury	mg/l	≤ 0.002	< 0.0005	0.005	0.001 (Class I – V)
16	Iron	mg/l	2.478	8.2	3.5	-
17	Chromium	mg/l	≤ 0.002	<0.02	0.5	-
18	Flow Rate	m ³ /s	0.2815	-	-	-

Note: Red color means exceeded value than target value.

* Baseline results monitored in February 2016 for EIA report (Industrial Area) of Zone B.

Source: Myanmar Koei International Ltd.



2.5.2 Results of Water Quality Monitoring at Reference Monitoring Point (Tube Well)

Results of water quality monitoring at reference tube well monitoring point are shown in Table 2.5-3. As the comparison with the Vietnam Ground Water Standard and the target value of effluent water quality discharging to water body stipulated in the EIA report, all the results of ground water were within the limitation.

For the ground water quality, National Technical Regulation on Ground Water Quality (No. QCVN 09-MT: 2015/BTNMT) in Vietnam is used as a reference because Myanmar does not have any ground water guidelines and standards, and most of the analyzed parameter are included in Vietnam standard rather the those stipulated by neighboring countries. For the result of Escherichia Coli, B1 (Irrigation water) of National Technical Regulation on Surface Water Quality (No. QCVN 08-MT: 2015/BTNMT) in Vietnam is referred, as no standard for E. coli is mentioned in Vietnam ground water regulation as a reference. In addition, the target values of effluent water quality discharging to water body stipulated in the EIA report are also considered for comparison with ground water quality.

Among the results between present monitoring and baseline survey in January 2016, SS, BOD and COD of GW-2 are lower than those of GW-2 (January 2016), while iron and color of GW-2 is higher than that of GW-2 (January 2016).

Table 2.5-3 Results of Water Quality Monitoring at Reference Tube Well

No.	Parameters	Unit	GW-2	GW-2 (Baseline Result, EIA Report)*	Target Value	Vietnam Ground Water Standard
1	Water Temperature	°C	28	28.7	≤ 35	-
2	pH	-	6.2	7.0	6~9	5.5 – 8.5
3	Dissolved Oxygen (DO)	mg/l	4.79	7.5	-	-
4	Turbidity	NTU	6.8	-	-	-
5	Suspended Solid (SS)	mg/l	4	26	50	-
6	BOD ₍₅₎	mg/l	0.24	< 2	30	-
7	COD _(Cr)	mg/l	< 0.7	38	125	-
8	Total Coliform	MPN/100ml	2	>23	400	3
9	Oil and Grease	mg/l	< 3.1	< 0.5	10	-
10	Total Nitrogen (T-N)	mg/l	< 0.5	< 1	80	-
11	Total Phosphorous (T-P)	mg/l	0.60	0.34	2	-
12	Color	TCU (True Color Unit)	106.71	< 1	150	-
13	Odor	TON (Threshold Odor Number)	1	None	-	-
14	Total Dissolved Solids	mg/l	226	-	2000	1500
15	Mercury	mg/l	≤ 0.002	< 0.0005	0.005	0.001
16	Iron	mg/l	2.780	0.35	3.5	5
17	Chromium	mg/l	≤ 0.002	-	0.5	0.5
18	Escherichia Coli	MPN/100ml	< 1.8	-	(100)** (MPN/100ml)	(100)** (MPN/100ml)

* Baseline results monitored in January 2016 for EIA report (Industrial Area) of Zone B.

** Based on the water utilization at monitoring point for ground water, B1 (Irrigation water) of National Technical Regulation on Surface Water Quality in Vietnam (No. QCVN 08-MT: 2015/BTNMT) is set as a reference value of self-monitoring for ground water monitoring.

Source: Myanmar Koei International Ltd.



2.5.3 Comparison of Results of Water Quality Exceed the Target Value between Previous Monitoring and April 2026 Monitoring

In order to overview the exceeding limitations of the parameters concerned during the present monitoring (April 2026), the results of the exceeding parameters with respective sampling points are compared with the previous monitoring results since April 2025.

Regarding the results of the parameter of discharge points (SW-7 and SW-8), suspended solid concentration is higher at SW-7 in six monitoring surveys (April, June, October and December 2025; February and April 2026) ranging from 52 mg/l to 158 mg/l, but also at SW-8 in five monitoring surveys (June, August and October 2025 and February and April 2026) ranging from 64 mg/l to 154 mg/l, respectively.

Total coliform concentration at SW-8 is higher in three monitoring surveys (October 2025; February and April 2026), ranging from 220 MPN/100ml to 35000 MPN/100ml.

As for the result of SS concentration, though SS at the reference monitoring point SW-4 is higher than the limitation during current monitoring as 150 mg/l, SS at SW-4 is higher than the limitation throughout all three seasons, ranging from 74 to 817 mg/l. It is assumed that SS concentrations at SW-4 are higher due to the agricultural and domestic run-off from the surrounding as well as the tidal effect resulting the cloudiness (turbidity) of water along Shwe Pyauk creek during all seasons.

The result of TDS at SW-4 is higher than the limitation only in three monitoring surveys (5276 mg/l in April 2025, 3626 mg/l in February and 2814 mg/l in April 2026) respectively. It is obvious that TDS concentration at SW-4 is higher in the summer, and it may be attributable to greater solubility of ions at high temperature.

It is possible to say that the present condition of the water quality reflects the background condition of the surrounding environment of Thilawa SEZ. The expected reasons for the results exceeding the limitation of the parameters concerned are discussed in the upper section of this monitoring report.



CHAPTER 3: CONCLUSION AND RECOMMENDATIONS

As described in Chapter 2 (Section 2.5), the results of suspended solid (SS) at SW-4, SW-7 and SW-8, Total coliform at SW-8, and Total Dissolved Solids at SW-4 exceeded the limitations in this monitoring period for operation stage of Thilawa SEZ Zone B.

As for the result of SS, results at the main discharging points of Zone B (SW-7 and SW-8) before discharging to the creek, exceeded the limitation due to the surface water run-off from bare land in Zone B.

As for the results of total coliform of surface water, results at the main discharging point of Zone B (SW-8) before discharging to the creek, exceeded the limitation due to the expected reason that might be natural bacteria existed in all area of Zone B because the existing of various kinds of vegetation and aquatic animals, especially fecal contamination from the animals, and the contaminants from the surroundings into the retention pond may contain fecal matter and other pollutants, leading to increase coliform levels.

Since the composition of the total coliform includes bacteria from natural origin, and total coliform does not affect human health directly, E. Coli analysis was carried out alternatively to identify the health impact by coliform bacteria. As for the result of E. Coli of surface water at the main discharging points of Zone B (SW-8), the result was within limitation. Therefore, although the limitation of total coliform was exceeded at the main discharging point of Zone B (SW-8), but it is considered that there is no significant impact on human health.

As for the result of SS and TDS, the result at the surface water monitoring point (SW-4) exceeded the limitations. The exceeded result for SS and TDS maybe due to two expected reasons; i) delivered from upstream area such as natural origin and wastewater from local industrial zone, which is located outside of Thilawa SEZ, and ii) influence by water from the downstream of monitoring points due to backflow by tidal fluctuation along Shwe Pyauk creek.

As for the comparison of the results of monitoring parameters with National Surface Water Quality Standard, water quality of SW-4, SW-7 and SW-8 can be applied for Class V water use.

Regarding the future primary discharge points of Thilawa SEZ Zone B, the following actions may be taken to ensure compliance with the appropriate water quality limits for suspended solids, total dissolved solids and total coliform.

- To perform regular removal of bottom sediment and decaying vegetation present in the retention pond and retention canal to preserve its cleanliness, and
- To continue monitoring Escherichia coli (E. coli) level to identify health impact by coliform bacteria,
- To clean the drainage system routinely, and
- To inspect the quality of discharge water from the factories.

End of the Document



APPENDIX-1 FIELD SURVEY PHOTOS



FOR DISCHARGED POINT OF THILAWA SEZ ZONE B



Surface water sampling and onsite measurement at SW-7

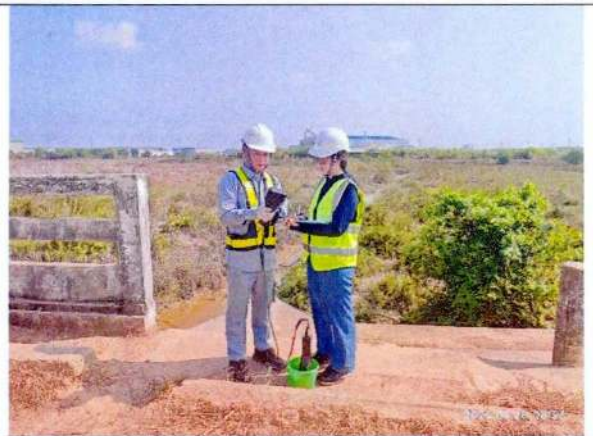


Surface water sampling and onsite measurement at SW-8

**FOR REFERENCE MONITORING POINTS FOR COMPARISON WITH DISCHARGED
POINTS AND BASELINE OF DISCHARGED CREEK**



Status of water condition at SW-2



Surface water sampling and onsite measurement at SW-4



Ground water sampling and onsite measurement at GW-2

APPENDIX-2 LABORATORY RESULTS



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Monthly Monitoring in FY April - 2026)

FOR DISCHARGED POINT

DOWA

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar
Phone No Fax No: (+95) 1 2309051



motivate our planet
Doc No: GEM-LB-R006E/01/AD
Page 1 of 1

Report No. : GEM-LAB-202605045
Revision No. : 1
Report Date : 13 May, 2026
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koel International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-7-0428
Sample No. : W-2604115
Waste Profile No. : -
Sampling Date : 28 April, 2026
Sampling By : Withdraw GEM
Sample Received Date : 28 April, 2026
Analytical Date : 28/04/26-13/05/26

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	158	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	7.49	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	21.0	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	8.14	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	1.6	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.10	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	1288	2000	-
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	2.060	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	1.8	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1.4	-	0
14	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	2.0	-	1.8

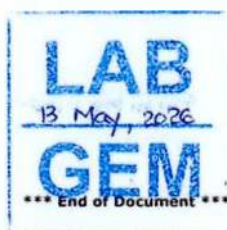
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherr y Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager 13 May, 2026

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO.,LTD.



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Monthly Monitoring in FY April - 2026)

DOWA

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar.
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Report No. : GEM-LAB-202605046
Revision No. : 1
Report Date : 13 May, 2026
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koel International LTD (MKI)
Address : No. 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-8-0428 Sampling Date : 28 April, 2026
Sample No. : W-2604116 Sampling By : Withdraw GEM
Waste Profile No. : - Sample Received Date : 28 April, 2026
Analytical Date : 28/04/26-13/05/26

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	104	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	1.31	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	5.0	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	5.29	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	1.1	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.07	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	1474	2000	-
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	1.528	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	3300.0	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1.4	-	0
14	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	2.0	-	1.8

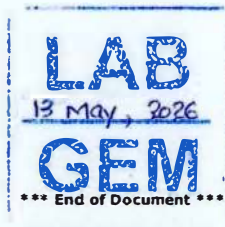
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU (True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :


Cherry Myint Thein
Manager



Approved By :


Ni Ni Aye Lwin
Senior Manager
13 May, 2026



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**FOR REFERENCE MONITORING POINTS FOR COMPARISON WITH DISCHARGED
POINTS AND BASELINE OF DISCHARGED CREEK**

DOWA

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motivate our planet
Doc No: GEM-LB-R008E/01/AD
Page 1 of 1

Report No. : GEM-LAB-202605043
Revision No. : 1
Report Date : 13 May, 2026
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koe International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-4-0428
Sample No. : W-2604113
Waste Profile No. : -
Sampling Date : 28 April, 2026
Sampling By : Withdraw GEM
Sample Received Date : 28 April, 2026
Analytical Date : 28/04/26-13/05/26

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	150	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	5.68	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	26.7	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	5.29	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	0.9	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	<0.05	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	2814	2000	—
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	2.478	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	23.0	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1.4	—	0

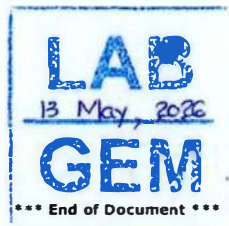
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager

13 May, 2026

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO.,LTD.



Water Quality Monitoring Report for Development of Industrial Area in Thilawa SEZ Zone B
(Phase 1, 2 & 3 Operation Stage, Bi-Monthly Monitoring in FY April - 2026)

DOWA

GOLDEN DOWA ECO-SYSTEM MYANMAR CO., LTD.
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Report No. : GEM-LAB-202605047
Revision No. : 1
Report Date : 13 May, 2026
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-GW-2-0428
Sample No. : W-2604117
Waste Profile No. : -
Sampling Date : 28 April, 2026
Sampling By : Withdraw GEM
Sample Received Date : 28 April, 2026
Analytical Date : 28/04/26-13/05/26

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	4	50	-
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	0.24	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	<0.7	125	0.7
4	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
5	Color	APHA 2120C (Spectrophotometric Method)	TCU	106.71	150	0.00
6	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	<0.5	80	0.5
7	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.60	2	0.05
8	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	226	2000	-
9	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
10	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	2.780	3.5	0.002
11	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	3.5	0.002
12	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	2.0	400	1.8
13	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	-	0
14	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	-	1.8

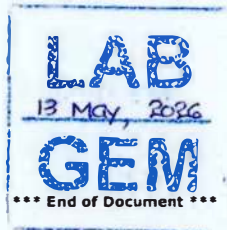
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APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).
One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :


Cherry Myint Thien
Manager



Approved By :


Ni Ni Aye Lwin
Senior Manager
13 May, 2026

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Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3 (Operation phase)

Appendix- 4

Noise and Vibration Monitoring Report

December 2025

**NOISE AND VIBRATION
MONITORING REPORT
FOR DEVELOPMENT OF INDUSTRIAL AREA
THILAWA SEZ ZONE B
(PHASE 1, 2 & 3 OPERATION STAGE)**

(BI-ANNUALLY MONITORING)

**December 2025
Myanmar Koei International Ltd.**



TABLE OF CONTENTS

CHAPTER 1: OUTLINES AND SUMMARY OF MONITORING PLAN	1
1.1 General	1
1.2 Outlines of Monitoring Plan.....	1
CHAPTER 2: NOISE AND VIBRATION LEVEL MONITORING	2
2.1 Monitoring Item	2
2.2 Monitoring Location	2
2.3 Monitoring Method	3
2.4 Monitoring Results.....	4
CHAPTER 3: CONCLUSION AND RECOMMENDATION	10
APPENDIX 1: CERTIFICATE OF CALIBRATION.....	A1-1

LIST OF TABLES

Table 1.2-1 Outlines of Noise and Vibration Level Monitoring	1
Table 2.1-1 Monitoring Parameters for Noise and Vibration Level.....	2
Table 2.4-1 Results of Noise Levels (L_{Aeq}) Monitoring at NV-1	4
Table 2.4-2 Results of Noise Levels (L_{Aeq}) Monitoring at NV-2	4
Table 2.4-3 Hourly Noise Level (L_{Aeq}) Monitoring Results at NV-1	5
Table 2.4-4 Hourly Noise Level (L_{Aeq}) Monitoring Results at NV-2	5
Table 2.4-5 Results of Vibration Levels (L_{v10}) Monitoring at NV-1	7
Table 2.4-6 Results of Vibration Levels (L_{v10}) Monitoring at NV-2.....	7
Table 2.4-7 Results of Hourly Vibration Levels (L_{v10}) Monitoring at NV-1	8
Table 2.4-8 Results of Hourly Vibration Levels (L_{v10}) Monitoring at NV-2	8

LIST OF FIGURES

Figure 2.2-1 Location of Noise and Vibration Level Monitoring Points	2
Figure 2.3-1 Status of Noise and Vibration Level Monitoring at NV-1 and NV-2	3
Figure 2.4-1 Results of Noise Levels (L_{Aeq}) Monitoring at NV-1	6
Figure 2.4-2 Results of Noise Levels (L_{Aeq}) Monitoring at NV-2	6
Figure 2.4-3 Results of Vibration Levels (L_{v10}) Monitoring at NV-1	9
Figure 2.4-4 Results of Vibration Levels (L_{v10}) Monitoring at NV-2	9



CHAPTER 1: OUTLINES AND SUMMARY OF MONITORING PLAN

1.1 General

Thilawa Special Economic Zone (TSEZ) is located in southern district of Yangon region and about 23 km southeast of Yangon city. As the developer of Thilawa SEZ, Myanmar Japan Thilawa Development Ltd., (MJTD) has a responsibility to carry out regular environmental monitoring in the industrial area of Zone B in accordance with the approved Environmental Impact Assessment (EIA) report with Environmental Management Plan (EMP). MJTD has implemented monitoring various environmental items with the specified time frame to know the environmental conditions in and around the area.

1.2 Outlines of Monitoring Plan

To assess the environmental condition under the operation of industrial area in and around Thilawa SEZ Zone B, noise and vibration levels had been monitored from 1 December to 2 December 2025 as follows;

Table 1.2-1 Outlines of Noise and Vibration Level Monitoring

Monitoring Date	Monitoring Item	Parameters	Number of Points	Duration	Monitoring Methodology
2 December 2025	Noise Level	L_{Aeq} (dB)	1 (NV-1)	8 hours	On-site measurement by “Rion NL-42 sound level meter”
1 December 2025	Noise Level	L_{Aeq} (dB)	1 (NV-2)	8 hours	On-site measurement by “Rion NL-42 sound level meter”
2 December 2025	Vibration Level	L_{v10} (dB)	1 (NV-1)	8 hours	On-site measurement by “Vibration Level Meter- VM-53A”
1 December 2025	Vibration Level	L_{v10} (dB)	1 (NV-2)	8 hours	On-site measurement by “Vibration Level Meter- VM-53A”

Source: Myanmar Koei International Ltd.



CHAPTER 2: NOISE AND VIBRATION LEVEL MONITORING

2.1 Monitoring Item

The noise and vibration level monitoring items are shown in Table 2.1-1.

Table 2.1-1 Monitoring Parameters for Noise and Vibration Level

No.	Item	Parameter
1	Noise	A-weighted loudness equivalent (L_{Aeq})
2	Vibration	Vibration level, vertical, percentile (L_{V10})

Source: Myanmar Koei International Ltd.

2.2 Monitoring Location

Noise and vibration levels were measured in the northeast corner of the Thilawa SEZ Zone B, namely NV-1 (N: 16°40'18.22", E: 96°17'18.18") for traffic noise concerned and inside the monastery compound of Phalan village, adjacent to the southern boundary of the Thilawa SEZ Zone B, as NV-2 (N: 16°39'24.90", E: 96°17'16.70") for sensitive area noise level. The locations of the noise and vibration monitoring points are shown in Figure 2.2-1.



Source: Google Earth

Figure 2.2-1 Location of Noise and Vibration Level Monitoring Points



NV-1

NV-1 is located in front of temporary gate of operation site of Thilawa SEZ Zone B and next to Thilawa Development Road. The surrounding area are Zone A in the northwest, local industrial zone in the east respectively. Possible sources of noise and vibration are generated from construction activities and road traffic.

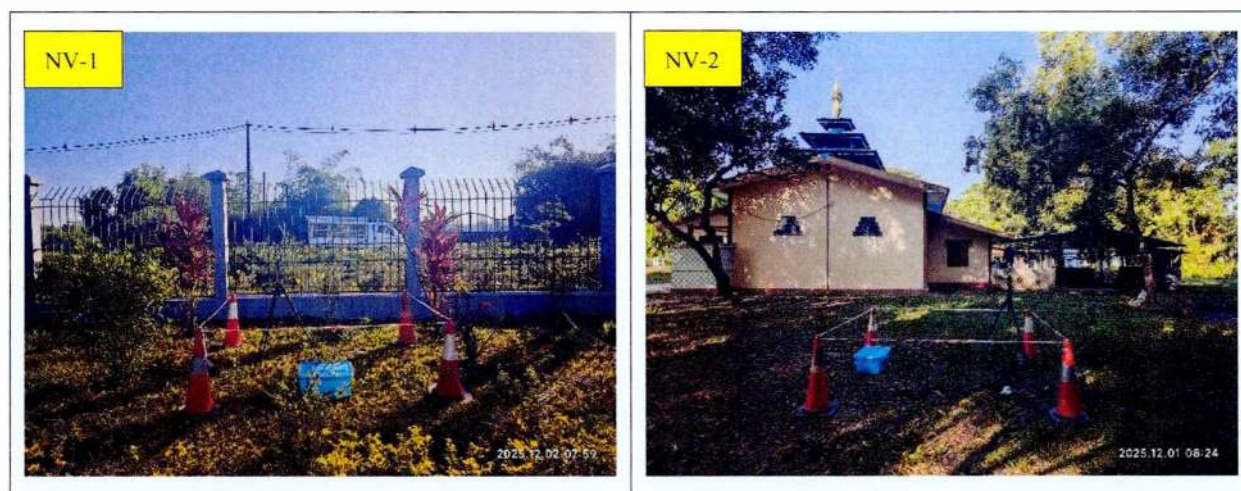
NV-2

NV-2 is located inside the monastery compound of Phalan village, adjacent to the southern boundary of the Thilawa SEZ Zone B and surrounded by the residential houses of Phalan village in the south and the paddy fields in west. Thilawa SEZ Zone A is about 2 km north of NV-2 and local industrial zone about 1 km northeast respectively. Possible sources of noise and vibration are generated from construction activities from Zone B and daily human activities from nearby Phalan village.

2.3 Monitoring Method

Noise level was measured by “Rion NL-42 sound level meter” and automatically records every 10 minutes in a memory card. The vibration level meter, VM-53A (Rion Co., Ltd., Japan), was accompanied by a 3-axis accelerometer PV-83C (Rion Co., Ltd.) and it was placed on solid soil ground. Vertical vibration (Z axis), L_v , was measured every 10 minutes within the adaptable range of (10-70) dB at NV-1 and NV-2 and recorded to a memory card.

The measurement period of noise and vibration was 8 hours for each monitoring point. The status of the noise and vibration level monitoring on NV-1 and NV-2 are shown in Figure 2.3-1.



Source: Myanmar Koei International Ltd.

Figure 2.3-1 Status of Noise and Vibration Level Monitoring at NV-1 and NV-2

2.4 Monitoring Results

Noise Monitoring Results

Noise monitoring results are separated as daytime (6:00 AM to 10:00 PM) and evening time (10:00 PM to 6:00 AM) time frames for NV-1 and daytime (7:00 AM to 7:00 PM), evening time (7:00 PM to 10:00 PM) and nighttime (10:00 PM to 7:00 AM) time frames for NV-2 respectively. Noise measurements were carried out for eight working hours (8:00 AM to 4:00 PM) at the designated locations instead of 24 hours due to safety reasons and risk avoidance. The monitoring results are summarized in Table 2.4-1 and Table 2.4-2. Hourly noise level (L_{Aeq}) monitoring results at NV-1 and NV-2 are shown in Table 2.4-3 and Table 2.4-4. Figure 2.4-1 and Figure 2.4-2 show the results of noise level (L_{Aeq}) at NV-1 and NV-2. Comparing with the target value of noise level in operation stage prescribed in EIA report for Thilawa SEZ development project Zone B, all results were within limitations. Therefore, it is considered that there is no impact from operational activities of Zone B to the surrounding environment. Additionally, when current daytime monitoring results are compared with daytime noise level results measured in November 2015 for the mentioned EIA report, there is not much difference between the results of NV-1 and 2015 baseline survey, while the result of NV-2 is lower than that of 2015 baseline survey.

Table 2.4-1 Results of Noise Level (L_{Aeq}) Monitoring at NV-1

Result	(Traffic Noise Level) Equivalent Noise Level (L_{Aeq} , dB)	
	Day Time (6:00 AM – 10:00 PM)	Night Time (10:00 PM – 6:00 AM)
2 December, 2025	62	-
NV-2 (Baseline Result, EIA Report)*	65	-
Target Value	75	70
NEQG Guideline Value (Industrial, Commercial)**	70	70

Note: Target value is applied to the noise standard along main road stipulated in the Noise Regulation Law (Japan) (Law No. 98 of 1968, Latest Amendment by Law No.91 of 2000).

* Baseline results monitored in November 2015 for EIA report (Industrial Area) of Zone B.

** In NEQG Guideline Value, daytime is 7:00 AM – 10:00 PM and nighttime is 10:00 PM – 7:00 AM.

Source: Myanmar Koei International Ltd.

Table 2.4-2 Results of Noise Level (L_{Aeq}) Monitoring at NV-2

Result	(A side next to sensitive area such as monastery, hospital and school) Equivalent Noise Level - L_{Aeq} (dB)		
	Day Time (7:00 AM – 7:00 PM)	Evening Time (7:00 PM – 10:00 PM)	Night Time (10:00 PM – 7:00 AM)
1 December, 2025	45	-	-
NV-2 (Baseline Result, EIA Report)*	65		-
Target Value	60	55	50
NEQG Guideline Value (Residential, Institutional, Educational)**	55		45

Note: Target value is applied to the noise level during the operation stage mentioned in Table 2.4-9 of EIA Report for Thilawa SEZ Development Project (Industrial Area) of Zone B.

* Baseline results monitored in November 2015 for EIA report (Industrial Area) of Zone B.

** In NEQG Guideline Value, daytime is 7:00 AM – 10:00 PM and nighttime is 10:00 PM – 7:00 AM.

Source: Myanmar Koei International Ltd.



Table 2.4-3 Hourly Results of Noise Level (L_{Aeq}) Monitoring at NV-1

Date	Time	Hourly Result L _{Aeq} (dB)	Interval Result L _{Aeq} (dB)	Target Value L _{Aeq} (dB)	NEQG Guideline Value L _{Aeq} (dB)	Remark	
2 December, 2025	6:00-7:00	-	62	75		No construction Activities	
	7:00-8:00	-					
	8:00-9:00	62			70		
	9:00-10:00	64					
	10:00-11:00	61					
	11:00-12:00	62					
	12:00-13:00	61					
	13:00-14:00	62					
	14:00-15:00	62					
	15:00-16:00	62					
	16:00-17:00	-					
	17:00-18:00	-					
	18:00-19:00	-					
	19:00-20:00	-					
	20:00-21:00	-					
	21:00-22:00	-					
	22:00-23:00	-	-	70			70
	23:00-24:00	-					
	24:00-1:00	-					
	1:00-2:00	-					
2:00-3:00	-						
3:00-4:00	-						
4:00-5:00	-						
5:00-6:00	-						

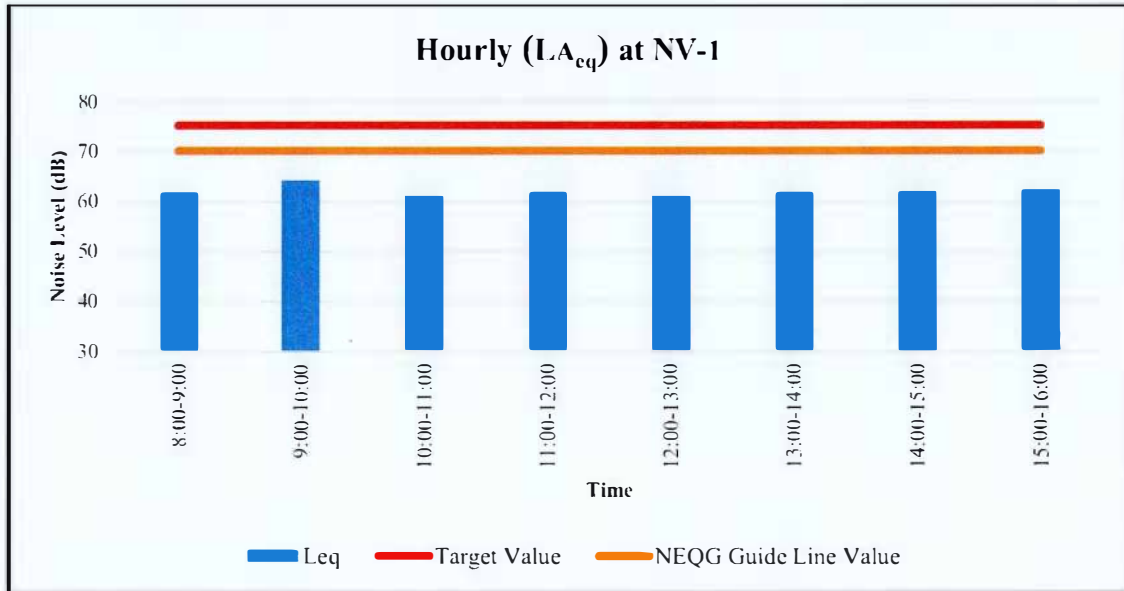
Source: Myanmar Koei International Ltd.

Table 2.4-4 Hourly Noise Level (L_{Aeq}) Monitoring Results at NV-2

Date	Time	Hourly Result LAeq (dB)	Interval Result LAeq (dB)	Target Value LAeq (dB)	NEQG Guideline Value LAeq (dB)	Remark
1 December, 2025	7:00-8:00	-	45	60	55	No construction Activities
	8:00-9:00	48				
	9:00-10:00	47				
	10:00-11:00	45				
	11:00-12:00	45				
	12:00-13:00	44				
	13:00-14:00	42				
	14:00-15:00	43				
	15:00-16:00	44				
	16:00-17:00	-				
	17:00-18:00	-				
	18:00-19:00	-				
	19:00-20:00	-	-	55		
	20:00-21:00	-				
	21:00-22:00	-				
	22:00-23:00	-				
	23:00-24:00	-	-	50	45	
	24:00-1:00	-				
	1:00-2:00	-				
	2:00-3:00	-				
3:00-4:00	-					
4:00-5:00	-					
5:00-6:00	-					
6:00-7:00	-					

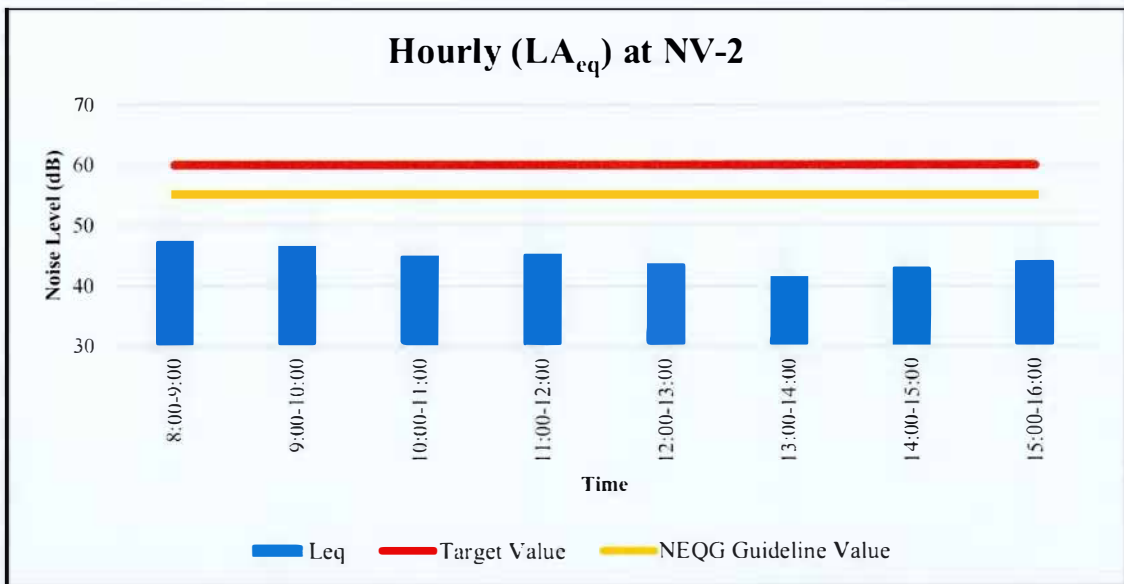
Source: Myanmar Koei International Ltd.





Source: Myanmar Koei International Ltd.

Figure 2.4-1 Hourly Results of Noise Levels (L_{Aeq}) Monitoring at NV-1



Source: Myanmar Koei International Ltd.

Figure 2.4-2 Hourly Results of Noise Levels (L_{Aeq}) Monitoring at NV-2



Vibration Monitoring Results

Vibration monitoring results are separated as daytime (7:00 AM to 7:00 PM), evening time (7:00 PM to 10:00 PM) and nighttime (10:00 PM to 7:00 AM) time frames respectively for both NV-1 and NV-2. Vibration measurement was carried out for eight working hours (8:00 AM to 4:00 PM) at the designated locations instead of 24 hours due to safety reasons and risk avoidance. The results of vibration level (L_{v10}) monitoring at NV-1 and NV-2 are shown in Table 2.4-5 and Table 2.4-6. Hourly vibration level (L_{v10}) monitoring results at NV-1 and NV-2 are shown in Table 2.4-7 and Table 2.4-8. Figure 2.4-3 and Figure 2.4-4 showed the graph of vibration level monitoring results at NV-1 and NV-2. By comparing with the target of vibration level in operation stage in EIA report for Thilawa SEZ development project Zone B, all of results were within limitations. Additionally, when current daytime monitoring results are compared with daytime vibration level results measured in January 2016 for the mentioned EIA report, the result of NV-1 is slightly higher than 2016 baseline result, but the result of NV-2 is lower than that of 2016 baseline survey.

Table 2.4-5 Results of Vibration Level (L_{v10}) Monitoring at NV-1

Result	(Office, commercial facilities, and factories) Equivalent Vibration Level - L_{v10} (dB)		
	Day Time (7:00 AM – 7:00 PM)	Evening Time (7:00 PM – 10:00 PM)	Night Time (10:00 PM – 7:00 AM)
2 December, 2025	44	-	-
NV-2 (Baseline Result, EIA Report)*	36	-	-
Target Value	70	65	65

Note: Target value is applied to the noise level during the operation stage mentioned in Table 2.4-12 of EIA Report for Thilawa SEZ Development Project (Industrial Area) of Zone B.

* Baseline results monitored in January 2016 for EIA report (Industrial Area) of Zone B.

Source: Myanmar Koei International Ltd.

Table 2.4-6 Results of Vibration Level (L_{v10}) Monitoring at NV-2

Result	(Residential houses and monastery) Equivalent Vibration Level (L_{v10} , dB)		
	Day Time (7:00 AM – 7:00 PM)	Evening Time (7:00 PM – 10:00 PM)	Night Time (10:00 PM – 7:00 AM)
1 December, 2025	27	-	-
NV-2 (Baseline Result, EIA Report)*	36	-	-
Target Value	65	60	60

Note: Target value is applied to the noise level during the operation stage mentioned in Table 2.4-12 of EIA Report for Thilawa SEZ Development Project (Industrial Area) of Zone B.

* Baseline results monitored in January 2016 for EIA report (Industrial Area) of Zone B.

Source: Myanmar Koei International Ltd.



Table 2.4-7 Hourly Results of Vibration Level (L_{v10}) Monitoring at NV-1

Date	Time	Hourly Result L _{v10} (dB)	Interval Result L _{v10} (dB)	Target Value L _{v10} (dB)	Remark
2 December, 2025	7:00-8:00	-	44	70	No construction Activities
	8:00-9:00	46			
	9:00-10:00	46			
	10:00-11:00	45			
	11:00-12:00	45			
	12:00-13:00	43			
	13:00-14:00	44			
	14:00-15:00	39			
	15:00-16:00	42			
	16:00-17:00	-			
	17:00-18:00	-			
	18:00-19:00	-			
	19:00-20:00	-	-	65	
	20:00-21:00	-			
	21:00-22:00	-			
	22:00-23:00	-	-	65	
	23:00-24:00	-			
	24:00-1:00	-			
	1:00-2:00	-			
	2:00-3:00	-			
3:00-4:00	-				
4:00-5:00	-				
5:00-6:00	-				
6:00-7:00	-				

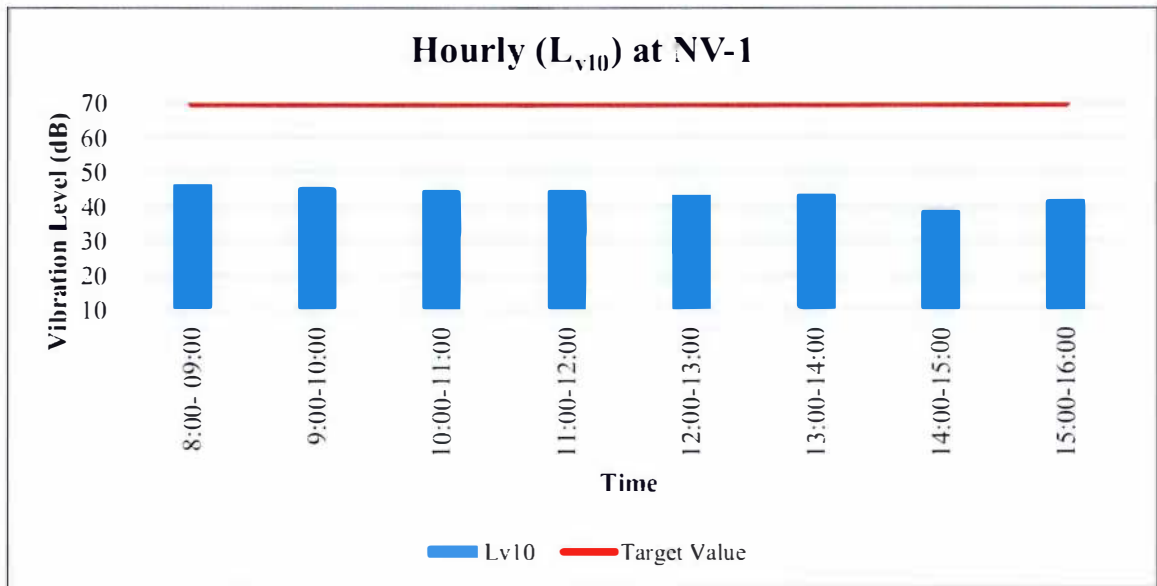
Source: Myanmar Koei International Ltd.

Table 2.4-8 Hourly Results of Vibration Level (L_{v10}) Monitoring at NV-2

Date	Time	Hourly Result L _{v10} (dB)	Interval Result L _{v10} (dB)	Target Value L _{v10} (dB)	Remark
1 December, 2025	7:00-8:00	-	27	65	No construction Activities
	8:00-9:00	27			
	9:00-10:00	28			
	10:00-11:00	27			
	11:00-12:00	27			
	12:00-13:00	22			
	13:00-14:00	28			
	14:00-15:00	27			
	15:00-16:00	29			
	16:00-17:00	-			
	17:00-18:00	-			
	18:00-19:00	-			
	19:00-20:00	-	-	60	
	20:00-21:00	-			
	21:00-22:00	-			
	22:00-23:00	-	-	60	
	23:00-24:00	-			
	24:00-1:00	-			
	1:00-2:00	-			
	2:00-3:00	-			
3:00-4:00	-				
4:00-5:00	-				
5:00-6:00	-				
6:00-7:00	-				

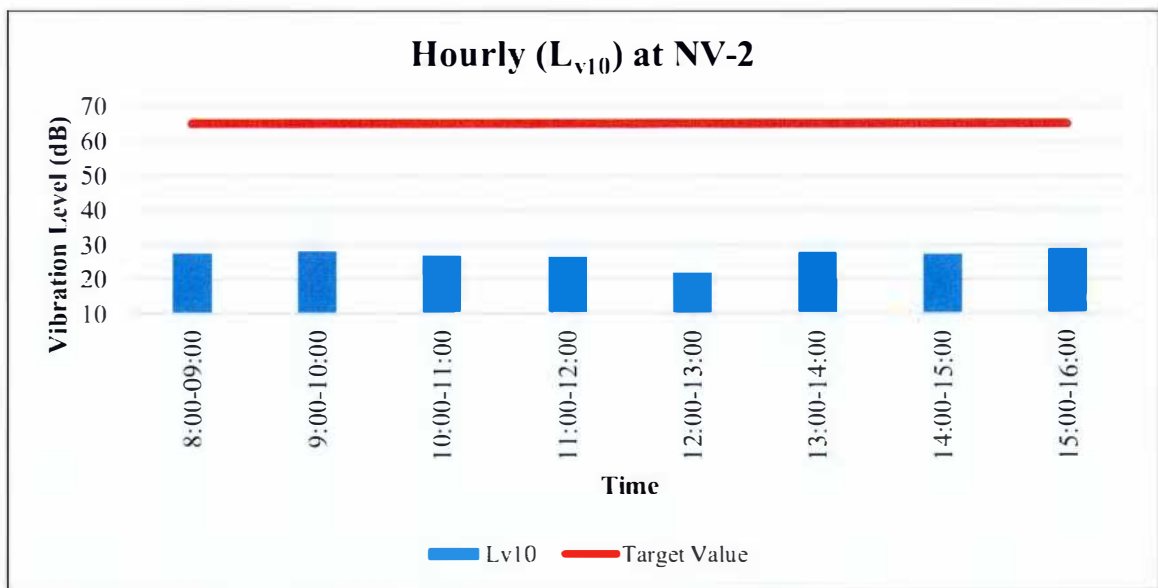
Source: Myanmar Koei International Ltd.





Source: Myanmar Koei International Ltd.

Figure 2.4-3 Hourly Results of Vibration Levels (L_{v10}) Monitoring at NV-1



Source: Myanmar Koei International Ltd.

Figure 2.4-4 Hourly Results of Vibration Levels (L_{v10}) Monitoring at NV-2

CHAPTER 3: CONCLUSION AND RECOMMENDATION

By Comparing with the target value of noise and vibration level in operation stage prescribed in EIA report for Thilawa SEZ development project Zone B, all the results of noise and vibration level at NV-1 and NV-2 were within limitations. Therefore, it is considered that there is no negative impact from operational activities of Zone B to the surrounding environment.

In conclusion of this environmental monitoring, there are no specific noise and vibration impacts to the surrounding area of industrial area of Thilawa SEZ Zone B during the monitoring period.



APPENDIX 1: CERTIFICATE OF CALIBRATION





MYANMAR KOEI INTERNATIONAL LTD.
Consulting Engineers

No. 36A, 1st Floor, Grand Pho Sein Condo,
Pho Se n Road, Tamwe Township, Yangon,
Myanmar, Tel: +95 1 9548814

Calibration Record

Project Name: MJTD (M25029)

Calibration Date: December 27, 2025

No.	Instrument (Brand, Model)	Sensor/Probe	Calibration Equipment	Unit	Calibration Index	Before Calibration	After Calibration	Remark
1.	Sound Level Meter (RION NL-42) Sr.No.00546217	Sound Level	NC-74 Sound Calibrator	dB	94	93.1	94.0	Completed.

Calibrated by

A handwritten signature in blue ink, appearing to be "Nay Phyo Aung".

Nay Phyo Aung
Environmental Expert

Checked by

A handwritten signature in blue ink, appearing to be "Ye Tun Oo".

Ye Tun Oo
Assistance Manager, Environmental Expert



CERTIFICATE of CALIBRATION

Issued by **OTS Limited**

Corporate Office: No. 24, Ground Floor, Zay Street, Byine Ywarma
Quarter, Tamwe Township, Yangon, Myanmar.
Tel: +95 99 65951199, +95 99 77514316
E-mail: sales@otsmm.com, www.otsmm.com



Certificate No.
Issue Date

025/(12-09)/1563
16/09/2025

Customer Details:

Name: Myanmar Koel International Limited
Address: 36A, Pho Sein Road, Grand Pho Sein Condominium, Tamwe, Yangon
Tel: 09975403883
E-mail: ye.tun.oo@myanmar-koel.com

Details of Unit Under Calibration (UUC):

Description: Vibration Level Meter
Manufacturer: RION
Model/Type: VM-53A
Serial Number: 00546766
ID No.: 49854
Range/working Range (dB): Ref On Obs
Least Count: Ref On Obs
Accuracy: As Per Instrument
Location of Calibration: Laboratory
Visual Inspection: OK

Date of Inst. Receipt: 12/09/2025
Date of Calibration: 13/09/2025
Suggested Due Date: 12/09/2026
Service Request No.: 1563

Calibration Procedure
The calibration has been performed under controlled conditions using OTS Laboratory reference standards, which are periodically referenced to one or more of the primary standards traceable to NPL/NIST or other national physical measures as equivalent to NIST. The calibration had been performed in accordance with calibration procedure COP/OTS/60. (Procedure based on comparison method).

Calibration Result
The details of standard equipment used for calibration & result of calibration are given in page 2 & 3.

Conclusion
For the status of measurements please refer to the guidance notes

Environment: (certified against calibrated digital temperature & humidity meter)

Temperature (°C): 23
Relative Humidity (%RH): 42

Change in temperature and relative humidity of the Laboratory during the calibration was less than 0.3°C per hour and 5.0% per 4 hours respectively

This certificate is issued strictly in accordance with the requirements of ISO 17025:2017. All calibration equipments are traceable to the International Standards. Documentary evidence is available upon request

025/(12-09)/1563

Page 1 of 3



Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3(Operation phase)

Appendix- 5

Waste Disposal Record
(December 2025 to May 2026)

Solid Waste

Item	Date	Generated from	Unit	Value	Disposed to
General Waste	16 Dec 2025	Landscaping and Plantation	Kg	3000	Waste disposing to Thanlyin Development Committee, Yangon Division
	26 Feb 2026			2850	
	27 April 2026			2900	
Total			Kg	8750	
Sludge	12 Jan 2026	Sewage Treatment Plant	Kg	4100	Golden DOWA Eco-System Myanmar Co., Ltd
	29 Jan 2026			4240	
	24 March 2026			3500	
	26 May 2026			3940	
Total			Kg	15780	

Remarks: Waste amount is not only in TSEZ-B but also combine with TSEZ-A General Waste. Generate wastes are dried waste and weight value are estimated base on type of Trash collector car. Green Waste (Grass cutting waste) are used in Bio-fertilizer.

Note: Zone-B wastewater treated at Sewage Treatment Plant of TSEZ-A. Above data are sludge generated from Sewage treatment plant of TSEZ-A.

ဘဏ္ဍာရေး - 35/2619



မြို့နယ်စည်ပင်သာယာရေးအဖွဲ့

ကျောက်တန်းမြို့

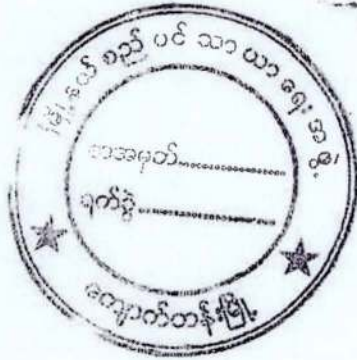
ငွေလွှဲပြောင်း/လက်ခံပြေစာ

- ၁။ လွှဲပြောင်းပေးသည့်ငွေ(စာဖြင့်) ၂၆,၀၀၀,၀၀၀/၀၀
- ၂။ လွှဲပြောင်းပေးသည့်ငွေ(ဂဏန်းဖြင့်) ၂၆,၀၀၀,၀၀၀/-
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- ၄။ လွှဲပြောင်းပေးသည့်ရက်စွဲ ၂၆.၁၂.၂၀၂၁
- ၅။ အထက်ဖော်ပြပါငွေကျပ်(..... ၂၆,၀၀၀,၀၀၀/၀၀)အားလက်ခံရရှိပါကြောင်းအောက်တွင်လက်မှတ်
ရေးထိုးပါသည်-


လွှဲပြောင်းပေးသူ
အမည် | Kyau Wai Phyo.....
ရာထူး | Associate Engineer.....


လွှဲပြောင်းလက်ခံသူ
အမည် | U Kyau Aye.....
ရာထူး |
.....





မြို့နယ်စည်ပင်သာယာရေးအဖွဲ့

ကျောက်တန်းမြို့

ငွေလွှဲပြောင်း/လက်ခံပြေစာ

- ၁။ လွှဲပြောင်းပေးသည့်ငွေ (စာဖြင့်) ၅၂၆၈၁၁၁၁.၀၀၀
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၅။ အထက်ဖော်ပြပါငွေကျပ် (..... 52,681,111) အားလက်ခံရရှိပါကြောင်းအောက်တွင်လက်မှတ်
ရေးထိုးပါသည်-


လွှဲပြောင်းပေးသူ
အမည် I. Kyauwe Khin Aye
ရာထူး I. Assistant Engineer


လွှဲပြောင်းလက်ခံသူ
အမည် I. U Kyauwe Khin Aye
ရာထူး I. Assistant Engineer



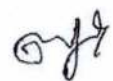
မြို့နယ်စည်ပင်သာယာရေးအဖွဲ့

ကျောက်တန်းမြို့

ငွေလွှဲပြောင်း/လက်ခံပြေစာ

- ၂။ လွှဲပြောင်းပေးသည့်ငွေ(စာဖြင့်) စာရင်းပေါ်ပြန်လှမ်းချေပေးရန်
- ၃။ လွှဲပြောင်းပေးသည့်ငွေ(ဂဏန်းဖြင့်) ၁၂၀၀၀၀ /
- ၄။ လွှဲပြောင်းပေးသည့်အကြောင်းအရာ အကျိုးအမြတ်ပေးရန်
- ၅။ လွှဲပြောင်းပေးသည့်ရက်စွဲ ၂၀၂၄. ၀၄. ၂၀
- ၆။ အထက်ဖော်ပြပါငွေကျပ်(..... ၁၂၀၀၀၀ /)အားလက်ခံရရှိပါကြောင်းအောက်တွင်လက်မှတ်ရေးထိုးပါသည်-


လွှဲပြောင်းပေးသူ
အမည် : Kyan Win Phyo
ရာထူး : Director General


လွှဲပြောင်းလက်ခံသူ
အမည် : U Kyaw Aye Win
ရာထူး : Director General



Manifest

C- Slip

* Transportation company to Waste Generator

Date of issuance	(Day Month, Year) 12 Jan 2026	Issuer Hon Ni Tun Aung Shu	(Name&Sign)
Number of issuance	0001 2601 0001		
Contractors	Waste generator	Transportation company	Waste service company
Company Name	MJTD	GEM	GEM
Tel			
Waste	Kind	Name	Style of packing
	☒ Non-Hazardous	gip Activated	
	☐ Hazardous	Quantity (Unit)	Remark
	☐ Others		
Customer code		Waste Profile code	
Trace	PIC (Name & Sign)	Date of Completion	
Transportation company	(Name&Sign)	(Day Month, Year)	
Waste service company	(Name&Sign)	(Day Month, Year)	
Designed by GOLDEN DOWA ECO - SYSTEM MYANMAR CO., LTD.		GEM-SL-R 010E/00	



* Transportation company to Waste Generator

GEM-SL-R 010E/00



5/2026

JTD

Manifest		C- Slip		* Transportation company to Waste Generator	
Date of issuance	(Day Month, Year) 25 May 2026	Issuer	(Name&Sign) Han Ni Kun Aung Star		
Number of issuance	0001 3605 0001				
Contractors	Waste generator	Transportation company		Waste service company	
Company Name	MJTD	GEM		GEM	
Tel					
Waste	Kind	Name		Style of packing	
	☐ Non-Hazardous	SIP Saturated Sludge			
	☐ Hazardous	Quantity (Unit)		Remark	
	☐ Others	3940kg		KMT-01	
Customer code	001	Waste Profile code		NH-1006	
Trace	PIC (Name & Sign)		Date of Completion		
Transportation company	(Name&Sign) 31 YIU f		(Day Month, Year) 25 5 2026 f		
Waste service company	(Name&Sign) af myo Mado		(Day Month, Year)		
Designed by GOLDEN DOWA ECO - SYSTEM MYANMAR CO., LTD. GEM-SL-R 010E/00					



Manifest		C- Slip		* Transportation company to Waste Generator
Date of issuance	(Day Month Year) 24. 7. 2026	Issuer	(Name & Sign) Han Ni H. Aung	
Number of issuance	0001 2607 0001			
Contractors	Waste generator	Transportation company	Waste service company	
Company Name	11113	CEM	CEM	
Tel				
Waste	Kind	Name	Style of packing	
	☒ Non-Hazardous	SIP Dehydrated sludge		
	☐ Hazardous	Quantity (Unit)	Remark	
	☐ Others	3500 kg	GNHT-01	
Customer code	001	Waste Profile code	N1111. 1006	
Trace	PIC (Name & Sign)	Date of Completion		
Transportation company	(Name & Sign) 22.4121 = 0053.5 f	(Day Month Year) 24. 7. 2026		
Waste service company	(Name & Sign) f Yamon	(Day Month Year)		
Designed by GOLDEN DOWA ECO - SYSTEM MYANMAR CO., LTD. GEM-SL-R 010E/00				



Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3 (Operation phase)

Appendix- 6

Traffic Volume Monitoring Report

December 2025

**TRAFFIC VOLUME MONITORING REPORT
FOR DEVELOPMENT OF INDUSTRIAL AREA
THILAWA SEZ ZONE B
(PHASE 1, 2 & 3 OPERATION STAGE)**

(BI-ANNUALLY MONITORING)

December 2025

Myanmar Koei International Ltd.



TABLE OF CONTENTS

CHAPTER 1: OUTLINES AND SUMMARY OF MONITORING PLAN	1
1.1 General	1
1.2 Outlines of Monitoring Plan	1
CHAPTER 2: TRAFFIC VOLUME MONITORING	2
2.1 Monitoring Item	2
2.2 Monitoring Location	3
2.3 Monitoring Method	4
2.4 Monitoring Results	4
CHAPTER 3: CONCLUSION AND RECOMMENDATION	6

LIST OF TABLES

Table 1.2-1 Outlines of Traffic Volume Monitoring	1
Table 2.1-1 Monitoring Parameters for Traffic Volume	2
Table 2.1-2 Classification of Vehicles Types	2
Table 2.4-1 Summary of Traffic Volume Recorded at TV-1	4
Table 2.4-2 Hourly Traffic Volume Results at TV-1 (From Phalan Village to Dagon-Thilawa Road)	5
Table 2.4-3 Hourly Traffic Volume Results at TV-1 (From Dagon-Thilawa Road to Phalan Village)	5

LIST OF FIGURES

Figure 2.2-1 Location of Traffic Volume Monitoring Point	3
Figure 2.3-1 Status of Traffic Volume Monitoring at TV-1	4



CHAPTER 1: OUTLINES AND SUMMARY OF MONITORING PLAN

1.1 General

Thilawa Special Economic Zone (TSEZ) is located in southern district of Yangon region and about 23 km southeast of Yangon city. As the developer of Thilawa SEZ, Myanmar Japan Thilawa Development Ltd., (MJTD) has a responsibility to carry out regular environmental monitoring in the industrial area of Zone B in accordance with the approved Environmental Impact Assessment (EIA) report with Environmental Management Plan (EMP). MJTD has implemented monitoring for various environmental items with the specified time frame to know the environmental conditions in and around the area.

1.2 Outlines of Monitoring Plan

To assess the environmental condition under the operation of industrial area in and around Thilawa SEZ Zone B, Traffic volume monitoring was carried out for 8 hours working time (8:00 to 16:00) at one designated location instead of 24 hours due to safety reasons and risk avoidance. Traffic volume had been monitored on 2 December 2025 as follows.

Table 1.2-1 Outlines of Traffic Volume Monitoring

Monitoring Date	Monitoring Item	Number of Point	Duration	Monitoring Methodology
2 December 2025	Traffic Volume	1 (TV-1)	8 hours	Manual Count

Source: Myanmar Koei International Ltd.



CHAPTER 2: TRAFFIC VOLUME MONITORING

2.1 Monitoring Item

The traffic volume monitoring items are shown in Table 2.1-1. All vehicles were classified into four types as detailed in Table 2.1-2.

Table 2.1-1 Monitoring Parameters for Traffic Volume

No.	Item	Parameter
1	Traffic volume	Number of Vehicle (4 Types)

Source: Myanmar Koci International Ltd.

Table 2.1-2 Classification of Vehicle Types

No.	Classification		Description
1	Two-wheeled vehicle and motorcycle sidecar		Motorbike, Motorcycle sidecar (Taxi)
2	Four-wheeled light vehicle		Pick-up car, Jeep, Taxi, Saloon car, Light truck (under 2 tons)
3	Heavy vehicle		Medium bus, Express, Big bus, medium truck, Heavy truck such as 2 axes, 3 axes and more than 4 axes and Trailer (over 4.5 tons)
4	Others		Transport tractor

Note: In vehicle classification, two-wheeled vehicle and motorcycle sidecars are included in Number 1. A motorcycle sidecar is a modified motorbike for local purpose use.

Source: Myanmar Koci International Ltd.



2.2 Monitoring Location

Traffic volume was recorded at the northeast corner of the Thilawa SEZ Zone B, namely TV-1 (N: 16°40'17.90", E: 96°17'18.20"). The location of the traffic volume survey monitoring is shown in Figure 2.2-1.



Source: Myanmar Koei International Ltd.

Figure 2.2-1 Location of Traffic Volume Monitoring Point

TV-1

TV-1 is located in front of main gate of operation site of Thilawa SEZ Zone B and next to Thilawa Development Road. The surrounding areas are Zone A in the northwest and local industrial zone in the east respectively.

2.3 Monitoring Method

The traffic volume monitoring was conducted for 8 hours at the same time as the traffic noise and vibration level monitoring. Traffic volume monitoring was conducted to count the number of vehicles moving from Phalan village to Dagon-Thilawa Road and from Dagon-Thilawa Road to Phalan village in each direction. Manual count method was used and data was recorded using tally sheets. The status of the traffic volume monitoring at TV-1 is shown in Figure 2.3-1.



Source: Myanmar Koei International Ltd.

Figure 2.3-1 Status of Traffic Volume Monitoring at TV-1

2.4 Monitoring Results

The traffic volume monitoring results are summarized in Table 2.4-1. Hourly quantity of each type of vehicle was recorded. Table 2.4-1 shows that the number of 4-wheel light vehicles are distinctly and highly utilized on weekdays (Monday-Friday). The number of heavy vehicles moving from Phalan village to Dagon-Thilawa Road but also heavy vehicles moving from Dagon-Thiawa Road to Phalan village is three times lower than that of 4-wheel light vehicles.

Table 2.4-1 Summary of Traffic Volume Recorded at TV-1

Survey Point	Direction	Date	Weekday	2-wheel Vehicles and motorcycle sidecar	4-wheel Light Vehicles	Heavy Vehicles	Others	Total
TV-1	Phalan village to Dagon-Thilawa road	2 December 2025	Tuesday	358	762	257	45	1,422
	Dagon-Thilawa road to Phalan village			314	814	280	46	1,454

Source: Myanmar Koei International Ltd.

The summary monitoring results of hourly traffic volume at TV-1 is shown in Table 2.4-2 and Table 2.4-3 respectively. Comparing the result of each direction in the morning from 8:00 to 9:00, traffic volume from Phalan village to Dagon-Thilawa Road is slightly higher than that of opposite direction. However, in the afternoon from 15:00 to 16:00, traffic volume from Dagon-Thilawa Road to Phalan village is higher than that of opposite direction. It may be possible to commute vehicles passing from Phalan village to Dagon-Thilawa Road in the morning hours and returning from Dagon-Thilawa Road to Phalan village in the afternoon during this monitoring period.



Table 2.4-2 Hourly Traffic Volume Results at TV-1 (From Phalan Village to Dagon-Thilawa Road)

From	To	Classification Type of vehicles				Total
		Two-wheeled vehicle and motorcycle sidecar	Four-wheeled light vehicle	Heavy vehicle	Others	
8:00	9:00	95	117	28	10	250
9:00	10:00	56	97	30	5	188
10:00	11:00	47	71	38	10	166
11:00	12:00	42	101	31	3	177
12:00	13:00	32	89	20	4	145
13:00	14:00	24	98	31	3	156
14:00	15:00	26	94	30	5	155
15:00	16:00	36	95	49	5	185
Total		358	762	257	45	1,422

Source: Myanmar Koei International Ltd

Table 2.4-3 Hourly Traffic Volume Results at TV-1 (From Dagon-Thilawa Road to Phalan Village)

From	To	Classification Type of vehicles				Total
		Two-wheeled vehicle and motorcycle sidecar	Four-wheeled light vehicle	Heavy vehicle	Others	
8:00	9:00	57	123	25	4	209
9:00	10:00	48	96	34	7	185
10:00	11:00	41	104	33	7	185
11:00	12:00	45	97	34	7	183
12:00	13:00	30	93	25	3	151
13:00	14:00	27	103	37	5	172
14:00	15:00	30	98	42	7	177
15:00	16:00	36	100	50	6	192
Total		314	814	280	46	1,454

Source: Myanmar Koei International Ltd



CHAPTER 3: CONCLUSION AND RECOMMENDATION

The results of the traffic volume show that the number of 4-wheel light vehicles are distinctly and highly utilized in this monitoring period. The number of heavy vehicles is three times lower than that of 4-wheel light vehicles for each direction. It seems that commuting vehicles are more utilized during this monitoring period as compared with construction related vehicles (Heavy vehicles).

Continuous monitoring will be necessary to grasp the traffic volume data in operation stage of Thilawa SEZ Zone B as well as to consider the mitigation measures if traffic congestion occurred in future.



Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3 (Operation phase)

Appendix- 7

Sewage Treatment Plant Monitoring Record
(December 2025 to May 2026)

Daily Self Monitoring of STP Inlet, Outlet and Aeration (self-monitoring)

Monthly	Date	Inlet (Zone B)				Inlet -1				Inlet -2				Outlet - 1				Outlet - 2			
		pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD
Standard		6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	125	6 - 9	2000	≤ 35	125
Unit		-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L
Dec	01-12-25	7.12	341.5	26.1	-	6.64	296.2	26.9	70	7.11	318.8	26.5	-	6.98	361.6	26.6	24	6.86	400.5	26.3	3
Dec	02-12-25	7.24	311.4	26.9	73	7.06	294.1	26.2	-	7.11	296.8	26.3	90	7.1	348.9	26.2	35	7.23	361.5	26	37
Dec	03-12-25	7.37	347	27.8	-	6.75	321.3	25.9	203	6.87	456.8	25.8	-	6.92	336.9	26	7	7.07	365.7	26.2	2
Dec	04-12-25	7.52	329.8	23.9	186	7.22	342.5	23.2	-	7.16	622.1	23.4	82	6.75	352.8	23.5	11	7.14	372	23.1	3
Dec	05-12-25	7.38	567	28.9	120	7.12	481.8	28.6	-	7.3	480.3	27.1	114	6.74	369.1	27	24	6.91	404.2	27.6	23
Dec	06-12-25	7.69	380.8	24.8	-	6.69	366.2	24.8	-	7.07	566.7	24.7	-	7.12	366.5	24.8	-	7.3	427.6	24.7	-
Dec	07-12-25	6.97	288.9	24.5	-	7.13	501.4	24.7	-	7.13	510.8	24.8	-	6.51	364.8	24.7	-	6.87	470.8	24.9	-
Dec	08-12-25	7.23	292.7	27.7	-	7.12	312.6	27.5	64	6.79	314.6	27.2	-	6.86	373.9	27.6	10	6.91	446.9	27.2	11
Dec	09-12-25	7.23	339.7	22.2	146	6.9	426.4	23.2	-	6.93	497.9	22.8	116	7.07	441	23.1	27	6.96	433.3	22.7	16
Dec	10-12-25	7.39	323.8	25.3	-	7.18	489.3	25.1	115	7.15	572.8	25.8	-	6.92	551.3	25.6	16	6.95	396.6	26.3	5
Dec	11-12-25	7.69	580.9	26.4	108	7.34	457.8	26.1	-	7.3	459.9	26.4	186	6.7	374.7	26.1	10	6.83	456.6	26.1	16
Dec	12-12-25	7.62	357	25.7	72	7.4	499.4	26.4	-	7.32	498.1	26.3	229	6.99	380.6	26.4	9	7	444.9	26.2	44
Dec	13-12-25	7.1	380.6	23.7	-	7.04	447.1	23.6	-	6.98	450.8	24.4	-	6.33	380.3	24.3	-	7.16	430	23.8	-
Dec	14-12-25	7.41	372.8	24.1	-	7.29	426.2	24	-	7.17	422.5	24.5	-	7.13	390.7	23.6	-	7.11	440.3	24	-
Dec	15-12-25	7.33	288.3	26.8	-	7.2	436.2	25.2	108	7.3	401	25.9	-	7.36	385.4	24.3	31	7.26	445.3	24.9	30
Dec	16-12-25	7.02	694.7	28.3	189	6.83	471.9	28.1	-	6.81	471.4	28.2	234	6.41	390.2	27.1	54	6.76	443.3	27.1	61
Dec	17-12-25	7.01	473.8	28	-	6.87	325.2	26.3	79	6.83	325	26.5	-	6.9	383.9	26.1	23	6.89	430.1	25.2	11
Dec	18-12-25	7.06	540.3	24.1	242	7.02	433.8	25.4	-	7.11	399.5	25.2	139	6.42	353.7	24.3	38	7.08	397.8	25	28
Dec	19-12-25	6.75	287.7	24.9	-	7.01	394.2	24.6	-	6.99	360.6	24.6	-	6.65	334.9	24.6	-	6.51	450	24.6	-
Dec	20-12-25	7.13	280.1	24.6	-	6.91	350.8	24.6	-	6.89	303.8	24.6	-	6.26	354.9	24.5	-	6.67	456.7	24.5	-
Dec	21-12-25	6.8	389.2	24.6	-	6.94	276.7	24.6	-	6.94	303.8	24.5	-	6.32	354.6	24.4	-	6.8	446.3	24.6	-
Dec	22-12-25	6.93	331.7	24.8	-	6.9	287.3	24.7	64	6.97	305.9	24.6	-	6.27	884.7	24.7	20	6.86	459	24.7	14
Dec	23-12-25	6.95	408.6	27.5	172	7	505.5	27	-	7.01	432.4	27	233	7.19	387.8	26.7	16	7.15	442.8	27	15
Dec	24-12-25	7.13	443	28.2	-	6.83	364.4	27.3	162	6.84	317.8	26.9	-	6.37	377.4	26.9	13	6.93	424.4	27	33
Dec	25-12-25	6.56	481.7	24.3	-	7.02	339.6	24.4	-	6.99	338.3	24.3	-	6.98	359	24.4	-	6.99	422.4	24.5	-
Dec	26-12-25	6.66	417.6	24.3	-	6.63	336.3	24.3	-	6.62	360	24.4	-	6.92	372	24.4	-	6.64	436.4	24.5	-
Dec	27-12-25	7.02	283.6	24.3	-	6.73	287.4	24.2	-	6.69	283.7	24.2	-	6.59	360.9	24.4	-	6.71	437.5	24.5	-
Dec	28-12-25	7.09	250.9	24.4	-	6.75	310.2	24.4	-	6.51	503.4	24.4	-	6.5	367.4	24.5	-	6.69	433.9	24.5	-
Dec	29-12-25	7.3	167.3	27	-	6.88	336.3	26.9	71	6.87	333.1	26.9	-	7.18	374.6	27.3	11	6.86	448.6	27.5	20
Dec	30-12-25	8.13	336	25.7	198	6.89	335.3	25.5	-	5.44	431.3	25.7	730	6.87	376.1	25.4	60	6.72	424.7	25.6	46
Dec	31-12-25	7.13	407	26.5	-	7.12	448.9	27	140	6.22	444.6	27.3	-	7.06	379.7	26.9	11	6.79	394.6	27.4	57
Jan	01-01-26	6.79	390.5	23.6	-	6.69	387.1	24	-	6.73	462.6	23.9	-	7.11	391.2	23.7	-	7	393.9	24	-
Jan	02-01-26	7.25	322.6	24.4	-	6.41	607.5	23.8	-	6.44	559.2	24	-	6.86	378.9	24.2	-	6.88	383.7	24	-
Jan	03-01-26	4.72	452.2	23.7	-	6.89	440.6	23.3	-	6.94	443.6	23.5	-	6.71	390.8	23.2	-	7	382.5	23.6	-
Jan	04-01-26	4.81	472.7	23.6	-	7.02	844	23.3	-	7.04	841.1	23.3	-	6.86	424.6	23.7	-	6.8	420	23.5	-
Jan	05-01-26	5	494.3	27.9	-	6.97	565	28.9	98	6.53	549.6	28.3	-	6.73	480.8	29	3	7.13	411	28.5	11
Jan	06-01-26	6.9	525.8	30.1	1125	6.85	290.6	29.9	-	6.75	483.7	26.8	742	6.93	440.7	26.7	14	6.92	426.6	26.5	21
Jan	07-01-26	7.19	446.4	29.3	-	7.2	368.3	28.5	455	7.17	491.6	28.4	-	7.07	417.1	27.1	25	7.22	422.8	27	26
Jan	08-01-26	7.44	469.4	24.3	239	7.11	349.8	25.9	-	7.39	432	26.2	229	7.14	433.5	24.6	27	7.19	457.1	24.7	19
Jan	09-01-26	7.42	464.4	29.7	562	7.33	361	25	-	7.08	632.9	24.9	477	7.25	461.1	24.7	67	7.29	473.3	24.8	65
Jan	10-01-26	7.37	504.7	25.6	53	7.16	364.2	25.6	-	7.17	360.7	25.6	45	7.2	482.7	25.3	24	7.22	481	25.3	21
Jan	11-01-26	6.9	390.8	24.1	-	7.11	361.8	24.2	-	7.1	361	24.2	-	7.26	501.9	24.2	-	7.23	488	24.2	-
Jan	12-01-26	7.33	413.1	26.4	-	7.26	639.5	26.4	750	7.27	636.7	26.2	-	7.42	510.6	25.5	50	7.49	508.5	25.4	8
Jan	13-01-26	7.57	485.1	26.3	270	7.26	368.2	26	-	7.2	647.8	25.9	591	7.17	535.3	26.1	41	7.45	499.1	25.7	12
Jan	14-01-26	7.2	453	26.8	-	6.46	209.9	25.2	1490	6.63	420.3	25.3	-	7.29	523.5	25	56	7.23	515.1	25	130
Jan	15-01-26	7.52	586.8	25.6	774	7.28	405.8	27.3	-	7.25	401.4	27.2	178	7.27	492	27.2	73	7.29	516.9	27.1	34
Jan	16-01-26	7.52	476.9	26.2	642	7.17	353.2	25.7	-	7.13	358.2	25.8	57	7.3	490.2	25.8	68	7.08	511.6	25.9	16
Jan	17-01-26	6.83	504.4	22.6	-	6.53	391.8	22.8	-	6.95	386.9	22.6	-	7.13	489.7	22.4	-	7.27	518.1	22.4	-
Jan	18-01-26	7.13	353.7	23.2	-	6.51	298.7	23.2	-	6.54	294.8	23.4	-	7.03	503.4	23.4	-	7.19	471.1	23.4	-
Jan	19-01-26	7.05	380.5	25.7	-	7.19	514.9	25.7	101	7.11	463.3	25.7	-	7.25	503.6	25.4	64	7.27	502.5	25.4	21
Jan	20-01-26	7.37	376.6	25.5	232	7.46	392.7	24.7	-	7.34	461.8	24.5	257	7.38	468.9	24	23	7.41	511.3	23.6	12
Jan	21-01-26	6.96	476.1	28.8	-	6.23	321.3	28.1	692	6.93	440.4	26.5	-	7.17	452.7	27.8	15	6.87	462.6	28	25
Jan	22-01-26	7.61	373.1	28	143	7.21	449.5	26.2	-	7.16	447.6	26.2	87	7.21	449.8	26.1	28	7.23	456.6	26	26
Jan	23-01-26	7.68	641.2	29.6	143	7.17	364.4	27.1	-	7.16	366.1	26.7	37	6.85	433.3	20.6	11	6.84	438.1	26.7	8
Jan	24-01-26	7.66	581.8	23.3	-	7.12	359	23.6	-	6.95	361.9	23.2	-	7.07	421.7	23.1	-	7.08	418.3	23.5	-
Jan	25-01-26	7.5	603.3	23.4	-	7.32	419.7	23.5	-	6.52	384.6	23.4	-	6.94	440	23.5	-	6.54	415.8	23.4	-
Jan	26-01-26	7.18	372.5	25	-	6.97	525.9	25	89	7.04	432.6	25	-	6.99	450.7	25.2	68	6.57	449.1	25.2	39
Jan	27-01-26	7.33	282.1	28.2	217	7.24	490.7	25.2	-	7.28	491.8	25.3	192	6.69	484.4	25.3	40	6.65	442.5	24.4	9
Jan	28-01-26	7.4	314.3	26.3	-	7.15	558.4	27.8	99	7.15	559.8	28.5	-	6.65	420.5	27.8	22	6.61	402.1	27.8	20
Jan	29-01-26	7.41	345.4	24.2	131	7.19	475.9	27.9	-	7.21	468.6	27	33	6.52	426.6	27.4	100	6.68	386.1	27.3	119
Jan	30-01-26	7.52	322.3	25.8	49	7.34	394.2</														



Daily Self Monitoring of STP Inlet, Outlet and Aeration (self-monitoring)

Monthly Date	Inlet (Zone B)				Inlet -1				Inlet -2				Outlet -1				Outlet -2			
	pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD
Standard	6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	125	6 - 9	2000	≤ 35	125
Unit	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L
Feb 01-02-26	7.15	402.7	24.2	-	7.09	425.3	24.1	-	6.83	444.9	24.3	-	6.94	481.6	24.2	-	7.2	445.6	24.1	-
Feb 02-02-26	7.1	451.3	25.6	-	6.9	429.5	25.4	72	6.93	424.2	25.3	-	6.97	529.5	25.1	4	7.04	449.3	25.2	19
Feb 03-02-26	7.33	315.2	25.8	206	7.15	376	27.5	-	6.8	369.5	27.4	522	6.69	510	28	7	7.24	436.1	27.5	8
Feb 04-02-26	7.35	348.7	30.8	-	7.18	473.7	28.9	91	7.14	417.8	28.8	-	6.9	469.3	28.9	24	6.98	418.8	28.9	51
Feb 05-02-26	7.18	416.5	28.7	113	7	359.7	25.3	-	7.07	352.3	25.7	50	7.09	416.2	25.5	17	6.97	415.3	25.5	19
Feb 06-02-26	6.91	769.1	26.3	323	6.84	369.3	25.6	-	6.97	365	25.7	209	6.86	459.4	25	70	6.9	456.6	24.9	81
Feb 07-02-26	7.08	462.2	24.8	-	6.98	458.1	24.6	-	7.22	343	24.6	-	6.88	526.6	24.6	-	6.88	530.8	24.6	-
Feb 08-02-26	7.14	309.7	24.7	-	7.13	398.8	24.6	-	7.11	399.5	24.6	-	7.17	506.8	24.5	-	6.93	569.5	24.5	-
Feb 09-02-26	7.31	360.5	25.8	-	6.78	318.4	25.6	94	6.92	428.4	25.6	-	6.57	499	25.8	35	6.92	600.9	25.8	23
Feb 10-02-26	7.3	552.2	26.8	169	7.21	464.7	27	-	7.26	642.1	27	108	6.88	452.2	27.1	39	7.05	604.3	27.3	12
Feb 11-02-26	7.06	319.4	28.4	-	7.02	404.2	25.8	340	6.97	579.5	26.4	-	7.03	460	26.8	15	6.97	538.9	26.5	46
Feb 12-02-26	6.69	1191	23.6	-	6.75	339.8	23.6	-	7.14	435.4	23.4	-	6.9	490.1	23.3	-	6.91	633.1	23.2	-
Feb 13-02-26	7.1	278.7	23.4	-	7.18	464	23.6	-	7.21	371.6	23.5	-	7.02	502.8	23.1	-	6.96	578.3	23.2	-
Feb 14-02-26	7.04	262	23	-	7.12	346.4	23.1	-	6.98	347.2	23.5	-	7.11	490.3	23.4	-	6.94	570.8	23.4	-
Feb 15-02-26	6.96	243.6	23.2	-	6.83	412.5	22	-	6.86	406.8	22.3	-	7.13	460.1	22.7	-	6.95	531.1	22.5	-
Feb 16-02-26	6.72	214	26.2	-	6.88	443.2	25.6	-	6.88	443.4	24.9	-	7.12	482.5	24.4	-	6.95	530.8	24.2	-
Feb 17-02-26	7.19	205.2	24.2	-	7.03	634.7	24.2	-	7.09	339.7	24.3	-	7.1	494.9	24.4	-	7.05	477.7	24.8	-
Feb 18-02-26	7.3	266.5	25.3	-	7.19	477.6	24.1	143	7.14	483.9	25.2	-	6.69	493	25.8	45	7.18	503.6	25.8	48
Feb 19-02-26	7.65	246.1	29.4	141	7.07	310.2	29.1	-	7.01	368.2	29.3	55	6.98	483.8	29	28	7.2	457.4	29.1	30
Feb 20-02-26	6.89	1034	27.1	455	6.86	354.7	27.6	-	6.95	460.9	27.9	128	7.02	477.8	28.6	29	7.16	437	28.6	22
Feb 21-02-26	7.19	226.4	26.3	181	6.83	763.5	26.3	-	6.89	819.8	25.9	106	7.14	486.2	26.6	40	7.14	455.4	26.2	26
Feb 22-02-26	7.13	210.1	24.8	-	6.97	360.3	24.5	-	6.98	312.3	24.5	-	7.11	484.6	24.4	-	7.09	453.4	24.5	-
Feb 23-02-26	7.23	213.2	25.6	-	7.09	319	25.6	182	6.99	293	25.6	-	7.05	464.8	25.8	50	7.04	466.2	25.6	12
Feb 24-02-26	7.29	250.9	27	40	7.12	409.9	26.8	-	7.12	408.4	26.3	73	6.78	471.4	26.9	22	7.18	428.6	26.3	28
Feb 25-02-26	7.45	280.5	26.5	-	7.11	335.8	25.7	57	7.16	337	25.9	-	7.22	416.4	25.4	12	7.31	406.2	25.5	13
Feb 26-02-26	7.5	414.7	25.7	71	7.32	413.3	24.9	-	7.25	408.3	24.8	127	7.22	452.4	24.5	55	7.29	403.9	24.7	47
Feb 27-02-26	7.42	422	27.9	116	7.34	365	24.9	-	7.25	366.6	23.9	64	7.34	429.3	23.8	9	7.13	427.7	23.9	4
Feb 28-02-26	6.64	727.6	23.8	-	6.74	313.8	23.5	-	6.67	326.8	23.7	-	6.88	370.2	23.4	-	6.95	363.3	23.4	-
Mar 01-03-26	7.07	474.9	25.2	-	6.85	526.8	24.7	-	7.11	522.3	24.9	-	6.93	434.6	24.5	-	7	412.5	24.6	-
Mar 02-03-26	7.09	310	23.8	-	6.9	522.5	24.1	-	6.92	534.6	23.8	-	6.94	444.9	24.3	-	7.05	449.6	23.7	-
Mar 03-03-26	7.14	250.5	30.1	555	7.04	429.8	26	-	7.12	333.6	25.5	430	7.08	472.8	25.4	81	7.06	480	25.2	61
Mar 04-03-26	7.25	260.5	26.7	-	7.22	360	27.8	99	7.26	358.2	27.4	-	6.81	465.6	27.7	31	6.79	474.2	27.7	44
Mar 05-03-26	7.33	277.7	27.3	536	7.21	390.2	27.9	-	7.25	387.2	27.6	282	6.67	436.7	28.5	47	6.72	425.6	28.5	52
Mar 06-03-26	7.1	519.1	24	163	7.02	523.3	24.4	-	6.98	524.8	24.2	63	6.23	408.7	24	32	6.98	416	24.2	30
Mar 07-03-26	6.98	255.1	25	-	7.05	515.5	25.4	-	7.09	512.8	25.4	-	7.04	417.6	25.4	-	7.09	415.4	25.3	-
Mar 08-03-26	7.2	327	24.3	-	7.15	418.1	24	-	7.13	411.1	24	-	6.94	453.2	24	-	6.96	455	24	-
Mar 09-03-26	7.31	295.2	25.1	-	7.17	352.4	25.5	69	7.19	350	25.6	-	6.98	460.2	25.3	25	7.17	438.7	25.3	32
Mar 10-03-26	6.91	633.9	27.9	204	7.22	339.6	25.7	-	7.16	336.4	27.1	121	7.11	431	26.3	30	7.17	403.9	26.5	79
Mar 11-03-26	7.53	288.5	29	-	6.89	391.7	26.4	91	7.19	367.8	26.7	-	6.69	412.2	26.7	25	6.96	396.1	26.7	32
Mar 12-03-26	7.3	286	29	164	7.21	431.5	26.9	-	7.23	411.8	26.3	75	7.34	415.9	26.9	42	7.1	582.9	26.7	27
Mar 13-03-26	7.57	296.9	25.5	54	7.03	397.1	24.3	-	7.06	445.1	24.5	117	7.1	500.3	25.1	6	7.17	398.7	24.8	12
Mar 14-03-26	7.35	287.6	25.6	-	6.85	413.8	24.6	-	7.17	442.3	24.8	-	6.84	500.4	24.4	-	7.06	392.3	24.4	-
Mar 15-03-26	7.27	292.2	24.9	-	7.21	536.7	24.9	-	6.94	430.6	24.7	-	6.91	462.7	24.8	-	6.76	405.6	24.7	-
Mar 16-03-26	6.89	587.6	29.7	-	6.82	451.2	29.5	439	6.97	358.7	29.7	-	6.76	510.2	29.5	27	7.1	412	29.7	75
Mar 17-03-26	7.24	605.1	28.8	242	7.18	335.9	28.9	-	7.1	398.9	28.9	73	6.73	409.4	28.9	58	6.8	458.4	28.9	31
Mar 18-03-26	7.39	535.8	29.1	-	7.16	397.6	25.9	100	7.15	450	26.1	-	7.11	439.1	26.3	30	7.06	382	26.1	34
Mar 19-03-26	7.07	261.6	28.3	32	7.2	374.6	24.6	-	7.18	365.3	25	64	7.13	406.5	24.5	99	7.1	395.6	24.3	42
Mar 20-03-26	7.2	222.9	25	195	7.12	412.6	28.6	-	7.13	411.8	28.9	43	6.79	399.6	28.7	16	6.78	392.7	28.9	50
Mar 21-03-26	7.14	306.4	24.4	-	7.11	408.2	24.4	-	7.01	409.6	24.3	-	6.74	435.5	23.9	-	6.79	414.1	24.1	-
Mar 22-03-26	7.29	271.4	24.6	-	7	340.7	24.6	-	7.21	403.6	24.2	-	7.04	461.3	24.1	-	7.1	390	24.3	-
Mar 23-03-26	7.16	242.4	27.3	-	7.09	319	25.6	119	6.99	293	25.6	-	7.05	464.8	25.8	34	7.04	466.2	25.6	14
Mar 24-03-26	7.28	234.9	24.8	133	6.83	438.3	27.2	-	6.96	342.2	27.2	271	6.74	410.5	27.5	4	7.03	383.8	27.5	5
Mar 25-03-26	8.6	260.3	25.1	-	7.27	526.3	25.1	48	7.26	352.1	25.4	-	7.09	402.7	25.1	19	7.36	391.5	25.5	20
Mar 26-03-26	7.14	234.7	24.9	67	7.17	398.8	27.1	-	7.18	402.9	27	135	7.02	435.8	27.3	31	7.09	353.3	27.3	32
Mar 27-03-26	7.54	240.8	24.9	-	6.93	301.4	24.7	-	6.95	319.6	24.9	-	6.79	397	24.9	-	6.78	357.4	24.6	-
Mar 28-03-26	7.14	257.7	25	-	6.98	450.8	24.7	-	6.99	458.2	24.9	-	6.93	460.4	24.7	-	6.98	349.3	24.7	-
Mar 29-03-26	7.22	241.3	24.9	-	7.2	286.6	24.9	-	7.19	288.2	24.9	-	6.73	402.1	24.9	-	7.28	451.5	24.9	-
Mar 30-03-26	7.54	417.3	25.2	-	7.14	464.1	29.2	224	7.18	459	28.9	-	6.86	409.2	29.2	30	7.06	423.6	29.1	24
Mar 31-03-26	6.91	367.6	21.8	353	7.29	392.3	27.5	-	7.02	396.5	27.2	124	7.17	378.9	27.3	28	7.07	386.1	27.2	57



Daily Self Monitoring of STP Inlet, Outlet and Aeration (self-monitoring)

Monthly	Date	Inlet (Zone B)				Inlet-1				Inlet -2				Outlet - 1				Outlet - 2			
		pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD	pH	TDS	Tem	COD
Standard		6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	400	6 - 9	2000	≤ 35	125	6 - 9	2000	≤ 35	125
Unit		-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L	-	mg/L	°C	mg/L
Apr	01-04-26	7.07	325.1	22.9	-	7.1	330.2	22.4	32	7.11	328.6	23	-	6.77	387.8	22.1	24	6.92	376.9	22.4	28
Apr	02-04-26	7.12	340.8	24.7	145	7.05	361.8	24.6	-	7.09	343	24	142	6.78	399.7	24.7	43	6.89	388.5	24.5	63
Apr	03-04-26	7.16	421	27.5	206	7.09	456.6	27.7	-	7.07	452.4	27.9	149	6.56	398.9	27.9	50	6.38	391.3	27.9	58
Apr	04-04-26	6.81	304	25	-	7.11	420.4	25.1	-	7.12	421.7	25	-	6.9	414.7	25.1	-	6.87	414.5	25.1	-
Apr	05-04-26	7.95	309.7	25.9	-	7.11	465.3	25.9	-	6.57	463.4	25.9	-	6.93	415.7	25.7	-	6.87	416.4	25.7	-
Apr	06-04-26	7.57	368.8	27	-	6.95	527	27.2	183	7.03	455.9	27.2	-	6.97	415.1	27	82	6.95	418.5	27	93
Apr	07-04-26	7.16	311.2	21.9	93	7.1	387.1	24.6	-	7.07	351.3	24.5	196	6.77	424.9	23.8	46	6.72	442.3	23.7	40
Apr	08-04-26	7.26	336.2	28.2	-	6.79	303.7	27.8	1360	6.96	271.6	28.1	-	6.94	403.6	28.5	36	6.67	422.8	28.2	70
Apr	09-04-26	7.12	333.2	27.9	110	7.18	306.2	27.6	-	7.22	381.5	27.1	108	6.94	405.3	27.1	44	6.74	435.4	27	14
Apr	10-04-26	7.38	399.5	28.2	135	7.22	350.2	28.5	-	7.26	345.5	28.2	100	6.93	398.8	28.3	47	6.67	420	28.5	20
Apr	11-04-26	7.26	301.2	23.2	-	7.04	569.9	22.9	-	7.01	567.1	22.8	-	6.58	371.8	23.4	-	6.45	407.9	22.9	-
Apr	12-04-26	7.31	325.8	22.8	-	6.56	374.9	23.1	-	6.81	349.6	22.8	-	6.77	342.9	23.1	-	6.51	453.6	22.7	-
Apr	13-04-26	7.15	323.7	23.8	-	6.9	638.6	23.1	-	6.89	641.3	23.1	-	6.77	457.3	22.8	-	6.69	461.1	22.7	-
Apr	14-04-26	6.75	294.6	23.3	-	6.98	343.9	23.6	-	7.01	343.1	23.4	-	6.74	381.4	23.2	-	6.72	475.4	23.2	-
Apr	15-04-26	7.07	230.3	24.3	-	6.93	561.5	23.9	-	6.74	455.1	23.8	-	6.88	381.7	23.5	-	6.81	469.2	23.5	-
Apr	16-04-26	6.52	289.3	23.5	-	6.92	373.3	24	-	6.91	371	24.7	-	6.76	465.6	24.5	-	6.74	467.9	25	-
Apr	17-04-26	6.67	345.9	24	-	7.09	352.5	23.9	-	7.1	338.1	24	-	6.29	381.3	23.6	-	no operation	no operation	no operation	no operation
Apr	18-04-26	6.82	740.8	27.3	-	7.12	252.1	27.6	-	7.18	248.3	27.1	-	6.42	377.1	27.2	-	no operation	no operation	no operation	no operation
Apr	19-04-26	6.93	871.9	27.3	-	7.11	335.3	27.4	-	7.1	340.8	27.6	-	7.03	321.5	27.5	-	no operation	no operation	no operation	no operation
Apr	20-04-26	6.87	274.9	23.2	-	7.15	351.7	23.5	65	7.13	350.5	23.8	-	6.86	368.5	24.1	23	no operation	no operation	no operation	no operation
Apr	21-04-26	7.48	309.9	26.4	53	6.96	369.5	27.4	-	6.81	335.2	27.3	48	7.08	690.2	27.6	28	no operation	no operation	no operation	no operation
Apr	22-04-26	6.53	304.4	23.4	-	6.6	275.4	23	721	6.59	265.7	23.1	-	6.87	389.7	23.4	85	no operation	no operation	no operation	no operation
Apr	23-04-26	6.91	331	28.3	54	7.05	331.2	27.5	-	7.06	325.1	27.3	108	7.04	411.6	27.1	40	6.53	437.5	27.6	9
Apr	24-04-26	7.08	259.3	27.5	53	7.22	503	27.6	-	7.26	496.6	27.6	88	6.74	407.2	27.5	12	6.58	420.6	27.5	11
Apr	25-04-26	7.56	280.6	25.6	-	6.53	282.3	25.2	-	6.52	286.9	25.2	-	6.57	393.4	25	-	7.03	398.9	25.2	-
Apr	26-04-26	8.5	350.8	25.2	-	7.11	526.7	25.5	-	6.75	528	25.1	-	6.65	403.7	25	-	6.61	402.3	25	-
Apr	27-04-26	7.13	367.7	26.7	-	6.79	403.7	26.5	46	7.24	403.8	26.7	-	7.14	436.1	26.5	38	7.12	449.9	26.5	32
Apr	28-04-26	7.27	252.9	27.1	467	6.95	378.9	26.9	-	6.94	387.5	26.9	484	6.78	463.8	26.7	31	6.31	380.3	26.7	39
Apr	29-04-26	7.06	243.5	24	-	6.91	355.4	24	208	6.9	353.9	24	-	6.95	427.8	24	15	7	418	24	22
Apr	30-04-26	6.7	464.7	23.7	-	6.78	397	23.7	-	6.76	389.7	23.7	-	6.7	369.3	23.7	-	6.6	370.9	23.7	-
May	01-05-26	6.91	195.4	23.7	-	6.87	311.9	23.9	-	7.02	263.8	23.9	-	6.76	407.6	23.8	-	6.93	411	23.8	-
May	02-05-26	6.97	177.8	23.7	-	6.68	427.8	23.7	-	6.77	433.5	23.7	-	6.84	401.1	23.7	-	6.84	403.8	23.7	-
May	03-05-26	6.65	338.9	23.7	-	6.89	293.6	23.7	-	6.87	292.2	23.7	-	6.85	428.4	23.7	-	6.83	407.2	23.7	-
May	04-05-26	6.81	198.5	28.1	-	6.8	457.7	28.9	83	6.59	468.2	28.9	-	6.74	448.2	28.9	34	6.71	351.2	28.9	14
May	05-05-26	7.33	243.9	27.8	71	7.2	372.3	27.3	-	7.18	373.6	27.3	139	6.63	422	27.1	17	6.61	356.6	27.2	46
May	06-05-26	7.32	220.7	25.3	-	7.08	577.8	25.1	444	6.98	503	25.1	-	6.67	407.6	25	47	6.35	338.4	25.1	45
May	07-05-26	7.34	334	26.9	77	7.11	514	27.1	-	7.08	496	27.2	79	6.81	446	27.4	14	6.85	375.4	27.4	9
May	08-05-26	8.13	302.9	27.1	135	7.58	506.7	27.4	-	7.25	583.6	27.4	150	6.76	450.6	27.4	34	7.05	400.9	27.2	31
May	09-05-26	7.26	560.2	24.8	-	6.8	231.2	25	-	6.78	226	25.1	-	6.54	416.3	24.7	-	6.55	417.8	24.8	-
May	10-05-26	7.25	453.8	25.3	-	7.24	362.1	25.7	-	7.32	428.3	25.4	-	6.85	322.9	25.7	-	6.82	324.8	25.4	-
May	11-05-26	7.08	473	27.6	-	6.91	546.6	29.4	101	6.89	542.6	28.9	-	6.67	346.7	28.6	51	6.39	397.9	29.6	56
May	12-05-26	6.37	311.6	25.3	106	7.12	318.9	25.8	-	7.27	317.3	25.6	99	6.54	356	25.4	53	6.75	406.5	25.4	45
May	13-05-26	6.9	259.1	23.5	-	7.05	418.5	23.6	138	7.01	430.5	23.5	-	6.54	368.9	23.8	17	6.53	422.5	23.6	17
May	14-05-26	7.24	245.7	28.8	126	6.99	229	26.8	-	6.29	348	26.9	192	6.67	322.5	26.9	28	6.3	394.6	26.3	31
May	15-05-26	6.87	129.4	25.9	74	7.11	344.7	26.2	-	7.1	341.9	25.7	194	6.88	351.3	25.7	29	6.39	354.5	26	45
May	16-05-26	7.04	291.5	24.6	-	7.16	303.2	24.7	-	7.2	299.1	25.1	-	6.7	468.8	24.9	-	6.62	385.5	25	-
May	17-05-26	7.11	374.1	24.7	-	6.94	285.1	24.7	-	6.95	285.5	24.5	-	6.87	314.1	24	-	6.6	359.4	24.8	-
May	18-05-26	7.23	259.2	25	-	7.17	299.5	25.4	139	7.19	301.9	25	-	6.85	318.9	26.1	38	6.62	358.7	25.6	28
May	19-05-26	7.37	278.2	24.4	117	6.53	330.5	25	-	6.68	336.2	24.3	145	6.94	363.7	24.6	59	6.9	411.5	24.6	29
May	20-05-26	7.08	391	26.8	-	5.42	335.6	25.6	129	5.33	329.3	25.1	-	6.89	370.1	24	27	6.52	364.1	24.2	55
May	21-05-26	7.31	318.4	26.7	163	7.21	263.1	26.5	-	7.26	256.8	26.6	90	6.71	388	26.3	22	6.67	384.4	26.7	25
May	22-05-26	7.69	306.3	25.1	170	6.85	464.1	25.3	-	6.88	457.6	25.3	136	6.94	360	25.4	28	7.16	374.8	25.4	27
May	23-05-26	7.16	340.8	23.8	-	6.81	397.1	23.8	-	6.84	399.4	23.8	-	6.96	376.5	23.8	-	6.98	378.2	23.7	-
May	24-05-26	7.18	312	24.4	-	6.84	452.8	24.3	-	6.9	448.5	24.4	-	6.6	357.5	24.3	-	6.74	347.2	24.3	-
May	25-05-26	7.09	276	24.9	-	7.02	317.5	25.7	196	7.16	360.4	25.4	-	6.76	397.1	24.7	8	6.88	391.2	24.6	7
May	26-05-26	7.15	312.1	26.7	166	6.86	320.5	27.7	-	6.89	319.4	27.3	161	7.02	277.4	28	52	6.87	317.5	27.2	53
May	27-05-26	7.23	318.6	25.2	-	6.95	369.6	25.5	97	6.91	377.3	25.1	-	6.86	301.2	25.1	35	6.99	321.8	24.9	10
May	28-05-26	6.76	576.7	23.5	-	6.91	418.9	23.4	-	7.01	420.6	23.6	-	6.68	313.7	23.9	-	6.71	331.8	24	-
May	29-05-26	7.25	227.4	24.9	194	7.03	259.4	25.8	-	7.01	257.3	25.6	46	6.94	312.9	25.7	21	6.83	354.9	25.7	-
May	30-05-26	6.86	363.7	24.4	-	6.54	382.6	24.2	-	6.63	386.4	24.5	-	6.83	267.1	24.3	-	6.71	396.5	24.5	-
May	31-05-26	6.53	195.8	24.6	-	6.66	333.9	24.7	-	6.55	332.8	24.7	-	6.82							

Monthly Monitoring Parameters Result for STP (self-monitoring)

Month	Date	Outlet -1						Outlet -2					
		Cyanide	Formal-dehyde	Total Chlorine	Color	Iron	Ammonia	Cyanide	Formal-dehyde	Total Chlorine	Color	Iron	Ammonia
Standard		Max 0.1	Max 1	Max 0.2	Max 150	Max3.5	Max10	Max 0.1	Max 1	Max 0.2	Max 150	Max3.5	Max10
Unit		mg/l	mg/l	mg/l	TCU	mg/l	mg/l	mg/l	mg/l	mg/l	TCU	mg/l	mg/l
Dec	03-12-25	0.003	0.026	2.25	6.65	0.184	0.393	0.003	0.021	0.3	2.67	0.017	0.089
Jan	06-01-26	0.002	0.018	0.15	5.92	0.084	0.116	0.002	0.029	0.15	4.63	0.028	0.116
Feb	03-02-26	0.002	0.104	0.87	6.9	0.221	0.118	0.001	0.057	1.79	2.25	0.077	0.114
Mar	04-03-26	0.002	0.022	0.6	6.78	0.125	0.219	0.002	0.039	0.06	8.08	0.225	0.072
Apr	28-04-26	0.002	0.052	0.64	10.7	1.386	6.89	0.002	0.056	0.58	5.23	0.562	0.037
May	12-05-26	0.005	0.071	0.31	9.25	0.13	0.151	0.004	0.044	1.32	2.58	0.048	0.055



Weekly STP Water Analysis Results (self-monitoring)

Month	Date	Zone A (Inlet) -1		Zone A (Inlet) -2			Outlet - 1									Outlet - 2							
		SS	BOD	T-P	SS	BOD	T-P	SS	BOD	T-N	T-P	O&G	T-Coli	E-Coli	Free Chlorine	SS	BOD	T-N	T-P	O&G	T-Coli	E-Coli	Free Chlorine
Standard		Max 200	Max 200	Max8	Max 200	Max 200	Max8	Max 50	Max 30	Max80	Max 2	Max 10	Max 400	Max 1000	Max 1	Max 50	Max 30	Max 80	Max 2	Max 10	Max 400	Max 1000	Max 1
Unit		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	MNP/100ml	MNP/100ml	mg/L	ppm	ppm	ppm	ppm	ppm	MNP/100ml	MNP/100ml	mg/L
Dec	03-12-25	-	-	-	20	114	1.35	10	1.3	13.4	0.392	0	< 1	< 1	1.76	5	0.5	12	0.774	0	< 1	< 1	0.19
Dec	09-12-25	-	-	-	50	141	2.5	5	2.9	10.4	0.457	0	10	< 1	0.04	5	1.3	14.7	1.24	0	1	< 1	0.08
Dec	17-12-25	20	75	0.905	-	-	-	5	1.9	9.3	0.534	0	< 1	< 1	0.06	10	0.6	12.6	1.07	0	1	< 1	0.04
Dec	24-12-25	40	81	2.04	-	-	-	5	1.3	12.7	0.385	0	< 1	< 1	0.06	15	2.4	10.7	0.982	0	1	< 1	0.03
Dec	30-12-25	-	-	-	120	381	2.43	5	3.2	2.6	0.957	0	255	242	0.01	5	3.1	9.2	0.454	0	262	168	0.01
Jan	06-01-26	40	267	2.73	-	-	-	5	1	10.9	0.562	0	< 1	< 1	0.09	5	1.4	10.3	0.966	0	1	1	0.02
Jan	13-01-26	-	-	-	180	360	5.71	20	8	13.9	0.761	0	4	1	0.04	15	1.1	12	0.942	0	3	1	0.03
Jan	21-01-26	20	273	2.16	-	-	-	5	3.5	11.5	0.61	0	1	< 1	0.04	5	1.5	19.3	1.24	0	29	14	0.01
Jan	27-01-26	-	-	-	30	93	2.79	40	13	24.4	1.51	0.2	316	185	0.01	10	2.1	13.6	0.981	0	165	126	0.02
Feb	03-02-26	-	-	-	110	117	2.87	5	1.8	17.4	0.926	0	< 1	< 1	0.1	6	4.9	16.8	0.769	0.1	< 1	< 1	0.99
Feb	10-02-26	10	111	2.04	-	-	-	20	19	10.1	1.14	0	< 1	< 1	0.04	8	1.1	13.3	1.18	0	< 1	< 1	0.42
Feb	20-02-26	-	-	-	50	109	2.59	12	19	6.5	0.773	0.3	395	272	0.02	2	12	6.1	1.01	0.1	12	12	0.04
Feb	24-02-26	30	34	1.95	-	-	-	8	5	15	0.841	0	22	22	0.03	2	0.8	12.7	0.523	0	1	1	0.05
Mar	04-03-26	-	-	-	80	22	3.65	10	0.3	12	0.561	0	1	1	0.41	30	3.5	12.7	1.21	0	312	209	0.02
Mar	12-03-26	70	93	3.22	-	-	-	20	12	10	0.838	0	77	77	0.03	10	3.5	9.3	1.13	0	364	184	0.01
Mar	18-03-26	-	-	-	80	70	3.97	10	4.5	10.6	1.11	0.1	142	142	0.02	5	19	18.9	1.01	0	162	162	0.02
Mar	24-03-26	70	48	6.74	-	-	-	6	1.4	7.7	0.809	0.3	81	81	0.02	10	2.2	21	0.983	0	216	189	0.01
Apr	02-04-26	40	71	4.38	-	-	-	12	2.5	7.3	1.06	0.1	1	< 1	0.04	8	4.6	11	0.878	0.2	1	< 1	0.03
Apr	07-04-26	-	-	-	30	54	6.32	10	8.2	13	0.784	0.1	1	< 1	0.04	4	11.1	14.5	0.742	0.1	1	1	0.02
Apr	21-04-26	50	69	3.1	-	-	-	13	15	18	0.566	0.2	< 1	< 1	0.45	maintenance process		-	-	-	-	-	-
Apr	28-04-26	50	123	1.92	-	-	-	16	1.1	6.1	1.27	0.2	< 1	< 1	0.13	10	0.3	19.1	1.2	0	< 1	< 1	0.07
May	08-05-26	87	27	2.44	-	-	-	20	0.4	10.7	1.22	0.1	< 1	< 1	0.04	10	0.2	14.1	1.14	0	< 1	< 1	1.42
May	12-05-26	-	-	-	30	3.6	2.76	18	1.5	4.6	0.898	0	1	1	0.03	3	0.8	9.2	0.924	0	< 1	< 1	1



Monthly Monitoring Parameters Result for STP

Month	Date	Outlet-1																Outlet - 2																	
		Odor	Mercury	Zinc	Arsenic	Chromium	Cadmium	Selenium	Lead	Copper	Barium	Nickel	Silver	Sulphide	Total Cyanide	Hexavalent Chromium(Cr6+)	Fluoride	Phenols	Odor	Mercury	Zinc	Arsenic	Chromium	Cadmium	Selenium	Lead	Copper	Barium	Nickel	Silver	Sulphide	Total Cyanide	Hexavalent Chromium(Cr 6+)	Fluoride	Phenols
Standard		-	Max 0.005	Max2	Max0.1	Max0.5	Max 0.03	Max 0.02	Max0.1	Max0.5	Max 1	Max 0.2	Max0.5	Max 1	Max 1	Max0.1	Max20	Max 0.5	-	Max 0.005	Max 2	Max0.1	Max 0.5	Max 0.03	Max 0.02	Max0.1	Max0.5	Max 1	Max 0.2	Max0.5	Max 1	Max 0.1	Max20	Max0.5	
Unit		TON	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	TON	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
Dec	03-12-25	2	≤ 0.002	0.056	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.044	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	2.138	0.015	1	≤ 0.002	0.046	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.034	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	1.257	< 0.002
Jan	06-01-26	1.4	≤ 0.002	0.078	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.034	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	5.636	< 0.002	1	≤ 0.002	0.008	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	3.029	< 0.002	
Feb	03-02-26	1	≤ 0.002	0.08	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.026	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	3.903	< 0.002	2	≤ 0.002	0.07	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.024	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	2.383	< 0.002
Mar	04-03-26	1.4	≤ 0.002	0.008	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.002	≤ 0.002	≤ 0.002	< 0.005	0.002	< 0.05	3.28	< 0.002	1	≤ 0.002	0.028	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.008	≤ 0.002	≤ 0.002	< 0.005	0.002	< 0.05	1.731	< 0.002
Apr	28-04-26	1	≤ 0.002	0.046	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.002	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	3.886	0.007	1	≤ 0.002	0.082	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	2.179	0.012	
May	12-05-26	1.4	≤ 0.002	0.044	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.006	≤ 0.002	≤ 0.002	0.012	< 0.002	< 0.05	3.141	< 0.002	8	≤ 0.002	0.042	≤ 0.01	≤ 0.002	≤ 0.002	≤ 0.01	≤ 0.002	≤ 0.002	0.006	≤ 0.002	≤ 0.002	< 0.005	< 0.002	< 0.05	1.994	0.032



Thilawa Special Economic Zone
Zone B– Phase 1,2 & 3 (Operation phase)

Appendix- 8

Chemical consumption at Water Sending Station at TSEZ-B

Sludge Generated from Sewage Treatment Plant at TSEZ-A

Water Supply Volume to TSEZ-B

(December 2025 to May 2026)

Chemical consumption in WSS	
Months- Year	NaOCl (Liters)
Dec-26	1462.16
Jan-26	1317.12
Feb-26	0.00
Mar-26	0.00
Apr-26	0.00
May-26	0.00
Total	2,779.28

Note: Above chemical consumption volume are used in Water Sending Station (WSS).

Generate Sludge Volume

Date	Items	Generated from	Volume (Kg)
Dec-25	Sludge	Sewage Treatment Plant at Zone-A	0
Jan-26	Sludge	Sewage Treatment Plant at Zone-A	8340
Feb-26	Sludge	Sewage Treatment Plant at Zone-A	0
Mar-26	Sludge	Sewage Treatment Plant at Zone-A	3500
Apr-26	Sludge	Sewage Treatment Plant at Zone-A	0
May-26	Sludge	Sewage Treatment Plant at Zone-A	3940
Total			15780

Note: TSEZ-B wastewater are treated at Sewage Treatment Plant at Zone-A

Water Supply Volume in Zone-B

Months - Year	Zone B Locator Water Volume (m3)	Outsource Customer V power (m3)	Total Water Volume (m3)
Dec-25	26219	173	26392
Jan-26	33949	114	34063
Feb-26	36449	140	36589
Mar-26	40623	0	40623
Apr-26	28630	0	28630
May-26	33196	0	33196
Total			199493

Note: Above mention water supply are distributed from Water Sending Station (WSS)



သီလဝါအထူးစီးပွားရေးဇုန် အပိုင်း(ခ)ရှိ
စက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်ရေးအတွက်
ရေအရည်အသွေးစောင့်ကြည့်လေ့လာခြင်းအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃)

(တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း)

၂၀၂၅ ခုနှစ်၊ ဒီဇင်ဘာလ
မြန်မာ့အံ့အင်တာနေရှင်နယ်လီမိတက်



မာတိကာ

အခန်း ၁ နိဒါန်း.....	၁
၁.၁ ယေဘုယျ ဖော်ပြချက်	၁
အခန်း ၂ ရေအရည်အသွေးစောင့်ကြည့်လေ့လာခြင်း	၃
၂.၁ စောင့်ကြည့်လေ့လာသည့်အမျိုးအစား.....	၃
၂.၂ ရေနမူနာရယူသည့်နေရာများ၏တည်နေရာနှင့်အချက်အလက်များဖော်ပြချက်.....	၆
၂.၃ စောင့်ကြည့်လေ့လာသည့်နည်းလမ်း	၈
၂.၄ စောင့်ကြည့်လေ့လာသည့်ကာလ	၁၀
၂.၅ စောင့်ကြည့်လေ့လာမှုရလဒ်များ	၁၁
အခန်း ၃ နိဂုံးချုပ် နှင့် အကြံပြုချက်များ	၂၃
နောက်ဆက်တွဲ ၁ ရေနမူနာရယူသည့် မှတ်တမ်းဓာတ်ပုံများ	က၁-၁
နောက်ဆက်တွဲ ၂ ဓာတ်ခွဲခန်းရလဒ်များ	က၂-၁

ဇယားများစာရင်း

ဇယား ၂.၁-၁ စောင့်ကြည့်လေ့လာသည့်အမျိုးအစား	၃
ဇယား ၂.၂-၁ ရေနမူနာရယူသည့်နေရာများ.....	၆
ဇယား ၂.၃-၁ ရေအရည်အသွေးစစ်ဆေးသည့် နည်းလမ်းများ	၈
ဇယား ၂.၄-၁ နေရာတစ်ခုချင်းစီအတွက် နမူနာရယူသည့်အချိန်	၁၀
ဇယား ၂.၄-၂ မြန်မာနိုင်ငံ၊ ရန်ကုန်မြစ်၏ ဒီရေမှတ်တမ်း.....	၁၀
ဇယား ၂.၅-၁ ရေထွက်ပေါက်များ၏ ရေအရည်အသွေး စောင့်ကြည့်လေ့လာမှု ရလဒ်များ.....	၁၂
ဇယား ၂.၅-၂ ချောင်းမှရေအရည်အသွေး စောင့်ကြည့်လေ့လာမှုရလဒ်များ.....	၁၆
ဇယား ၂.၅-၃ ရည်ညွှန်းရေတွင်း၏ ရေအရည်အသွေး စောင့်ကြည့်လေ့လာမှုရလဒ်များ	၁၉

ပုံများစာရင်း

ပုံ ၁.၁-၁ ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအတွက်ရေနမူနာရယူသောနေရာများ၏ တည်နေရာပြပုံ ...	၂
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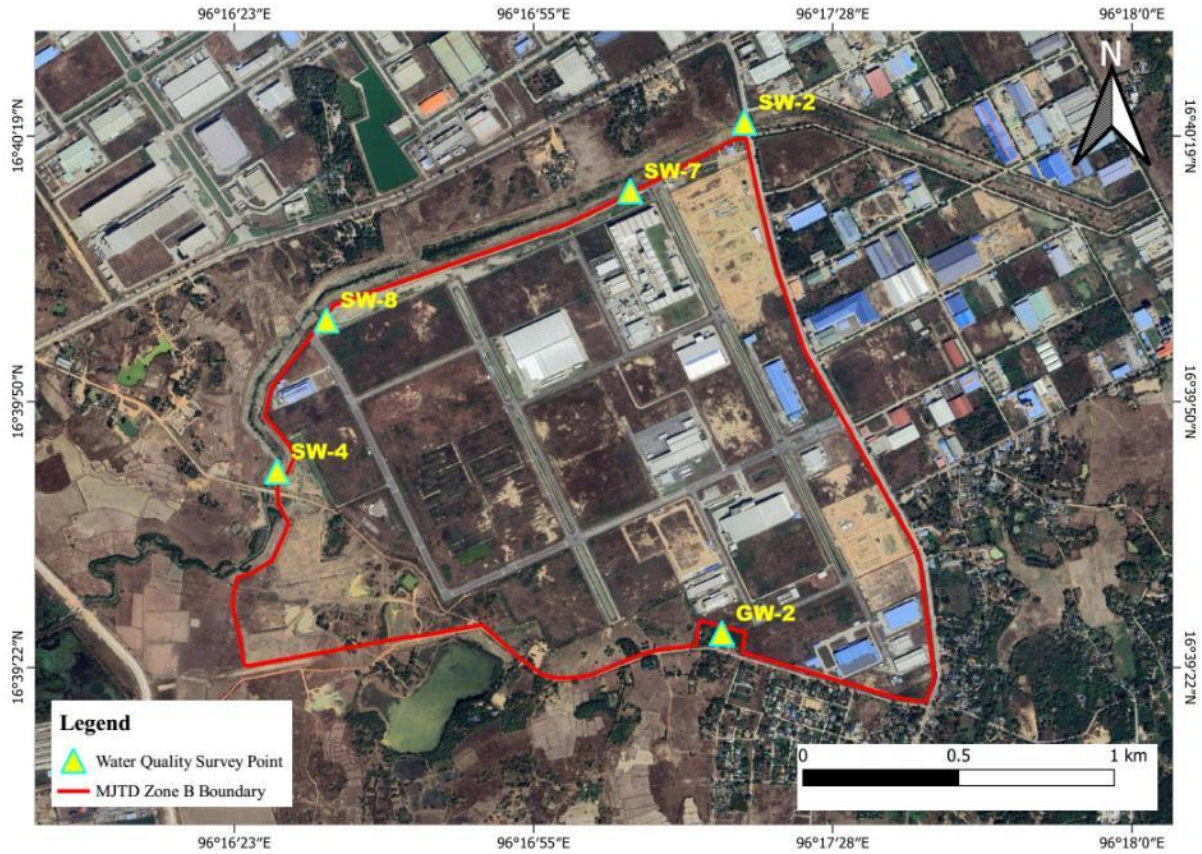
အခန်း ၁ နိဒါန်း

၁.၁ ယေဘုယျ ဖော်ပြချက်

သီလဝါအထူးစီးပွားရေးဇုန်သည် ရန်ကုန်တိုင်းဒေသကြီး၏ တောင်ပိုင်းခရိုင်တွင်တည်ရှိပြီး ရန်ကုန်မြို့၏ အရှေ့တောင်ဘက် ၂၃ ကီလိုမီတာတွင် တည်ရှိပါသည်။ သီလဝါအထူးစီးပွားရေးဇုန်၏ အကောင်အထည် ဖော်ဆောင်သူအနေဖြင့် ဇုန်အပိုင်း(ခ)အတွင်းရှိ စက်မှုမြေနေရာအတွက် ခွင့်ပြုချက်ရရှိထားသော ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီရင်ခံစာနှင့် ပတ်ဝန်းကျင်ဆိုင်ရာစီမံခန့်ခွဲမှုအစီအစဉ်အတိုင်း ပုံမှန်စောင့်ကြည့်စစ်ဆေးခြင်းကို ဆောင်ရွက်ရန် မြန်မာ-ဂျပန် သီလဝါဖွံ့ဖြိုးရေးလီမိတက်တွင် တာဝန်ရှိပါသည်။ မြန်မာ-ဂျပန် သီလဝါဖွံ့ဖြိုးရေးလီမိတက်သည် ဇုန်အတွင်းနှင့် အနီးပတ်ဝန်းကျင်ရှိ သဘာဝပတ်ဝန်းကျင် အခြေအနေများကိုသိရှိစေရန် သဘာဝပတ်ဝန်းကျင်နှင့် သက်ဆိုင်သောအချက်အလက် စောင့်ကြည့်လေ့လာမှုများကို ရေးဆွဲထားပြီး ထိုအစီအစဉ်များအရ အကောင်အထည်ဖော်ဆောင်ရွက် ခဲ့ပါသည်။

ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအတွက် ရေနမူနာရယူရာတွင် သီလဝါအထူးစီးပွားရေးဇုန်အတွင်းနှင့် အနီးပတ်ဝန်းကျင်ရှိ စုစုပေါင်းနေရာ ငါးနေရာ၊ နာမည်အားဖြင့် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၂ (SW-2)၊ မြေပေါ်ရေနမူနာယူသည့် နေရာ-၄ (SW-4)၊ မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7)၊ မြေပေါ်ရေနမူနာယူသည့် နေရာ-၈ (SW-8)နှင့် မြေအောက်ရေနမူနာယူသည့် နေရာ-၂ (GW-2) တို့တွင် စောင့်ကြည့်လေ့လာခဲ့ပါသည်။ ဇုန်အပိုင်း(ခ) လုပ်ငန်းလည်ပတ်နေစဉ်ကာလတွင် ထိုနေရာ ငါးနေရာမှ မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7)သည် ဇုန်အပိုင်း(ခ)၏ အဓိကစွန့်ထုတ်ရေထွက်ပေါက်ဖြစ်ပြီး မြေပေါ်ရေနမူနာယူသည့် နေရာ-၈ (SW-8)သည် ဇုန်အပိုင်း(ခ)၏ အခြားသော (နောက်ထပ်) အဓိကစွန့်ထုတ်ရေထွက်ပေါက် ဖြစ်ပါသည်။ ကျန်ရှိသော မြေပေါ်ရေနမူနာယူသည့်နေရာ-၂ (SW-2)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)တို့ကို စွန့်ထုတ်ရေထွက်ရှိသောနေရာများနှင့် စွန့်ထုတ်ရေ ရောက်ရှိသည့်ချောင်း၏ အခြေခံအချက်အလက်များနှင့် နှိုင်းယှဉ်နိုင်ရန် ကိုးကားစောင့်ကြည့်လေ့လာမှုအဖြစ် နမူနာရယူခဲ့သည်။ ထို့အပြင် မြေအောက်ရေနမူနာယူသည့် နေရာ-၂ (GW-2)အား သီလဝါအထူးစီးပွားရေး ဇုန်အပိုင်း(ခ)၏ တောင်ဘက်နယ်နိမိတ်အနီး ဖလမ်းကျေးရွာတွင်တည်ရှိသော ဘုန်းကြီးကျောင်းပရဝဏ် အတွင်းရှိ ရေတွင်းအားရည်ညွှန်းနိုင်ရန် စောင့်ကြည့်လေ့လာခဲ့သည်။ ရေအရည်အသွေး စောင့်ကြည့်လေ့လာမှု အတွက် ရေနမူနာရယူသော နေရာများ၏ တည်နေရာများကို ပုံ ၁.၁-၁ တွင် ဖော်ပြထားပါသည်။

သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)ရှိစက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်မှုအတွက်ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)



မူရင်း။ ဂူဂဲလ်အက်

ပုံ ၁.၁-၁ ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအတွက်ရေနေမှုနာရယူသောနေရာများ၏ တည်နေရာပြပုံ

အခန်း ၂ ရေအရည်အသွေးစောင့်ကြည့်လေ့လာခြင်း

၂.၁ စောင့်ကြည့်လေ့လာသည့်အမျိုးအစား

ရေအရည်အသွေး စောင့်ကြည့်လေ့လာမှုအတွက် ရေနမူနာရယူသောနေရာများနှင့် ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ(Parameters)ကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်းဆိုင်ရာ အစီအရင်ခံစာပါ ပတ်ဝန်းကျင်ဆိုင်ရာ စောင့်ကြည့်လေ့လာမှု အစီအစဉ်အား ခြုံငုံမိစေရန်အလို့ငှာ ဆောင်ရွက်ထားပါသည်။

ရေအရည်အသွေးနမူနာစစ်တမ်းရယူမှုအား နေရာငါးနေရာတွင် ဆောင်ရွက်ခဲ့ပါသည်။ ထိုနေရာ ငါးနေရာမှ ရေစီးဆင်းမှုတိုင်းတာခြင်းကို ရေစီးနှုန်းတိုင်းကိရိယာဖြင့် တိုင်းတာနိုင်သော နေရာနှစ်နေရာ ဖြစ်သည့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၂ (SW-2)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)တို့တွင် တိုင်းတာခဲ့ပါသည်။ သို့သော်လည်း မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)နှင့် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၈ (SW-8)တွင် ရေစီးနှုန်းတိုင်းကိရိယာဖြင့် တိုင်းတာခဲ့ခြင်း မလုပ်ဆောင်ခဲ့ပါ။ အဘယ့်ကြောင့်ဆိုသော် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၈ (SW-8)တွင် ရေတံခါးများ ပိတ်ထားသောကြောင့်ဖြစ်ပါသည်။ စောင့်ကြည့်လေ့လာသော ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ (Parameters)နှင့် ရေနမူနာရယူသောနေရာများကို ဇယား ၂.၁-၁ တွင် အကျဉ်းချုပ် ဖော်ပြထားပါသည်။

ဇယား ၂.၁-၁ စောင့်ကြည့်လေ့လာသည့်အမျိုးအစား

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစား (Parameters)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၂ (SW-2)	မြေပေါ် ရေ နမူနာ ယူသည့် နေရာ-၄ (SW-4)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၇ (SW-7)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၈ (SW-8)	မြေအောက်ရေ နမူနာယူသည့် နေရာ-၂ (GW-2)	မှတ်ချက်
၁	ရေအပူချိန် (Water Temperature)	○	○	○	○	○	ရေနမူနာရယူသည့် နေရာတွင်တိုက်ရိုက် တိုင်းတာခြင်း
၂	ချဉ်ဖန်ကိန်း (pH)	○	○	○	○	○	ရေနမူနာရယူသည့် နေရာတွင်တိုက်ရိုက် တိုင်းတာခြင်း
၃	ပျော်ဝင်အောက်စီဂျင် (DO)	○	○	○	○	○	ရေနမူနာရယူသည့် နေရာတွင်တိုက်ရိုက် တိုင်းတာခြင်း
၄	နောက်ကျိမှု (Turbidity)	○	○	○	○	○	ရေနမူနာရယူသည့် နေရာတွင်တိုက်ရိုက် တိုင်းတာခြင်း
၅	ဆိုင်းကြွအနယ်များ (Suspended Solids)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၆	ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (၅-ရက်) (BOD ₍₅₎)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း

သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)ရှိစက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်မှုအတွက်ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစား (Parameters)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၂ (SW-2)	မြေပေါ် ရေ နမူနာ ယူသည့် နေရာ-၄ (SW-4)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၇ (SW-7)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၈ (SW-8)	မြေအောက်ရေ နမူနာယူသည့် နေရာ-၂ (GW-2)	မှတ်ချက်
၇	ဓာတုနည်းဖြင့် ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (COD _(Cr))	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၈	ကိုလီဖောင်းစုစုပေါင်း (Total Coliform)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၉	ဆီနှင့်အမဲဆီ (Oil and Grease)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၀	နိုက်ထရိုဂျင်စုစုပေါင်း (Total Nitrogen)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၁	ဖော့စဖောရက်စုစုပေါင်း (Total Phosphorus)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၂	အရောင် (Color)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၃	အနံ့ (Odor)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၄	အမိုးနီးယား (Ammonia)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၅	ပျော်ဝင်အနည်စုစုပေါင်း (Total Dissolved Solids)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၆	ပြွဲဒါးဓာတ် (Mercury)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၇	သွပ် (Zinc)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၈	အာဆီနစ် (Arsenic)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၁၉	ခရိုမီယမ် (Chromium)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၀	ကက်ဒမီယမ် (Cadmium)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၁	ဆယ်လီနီယမ် (Selenium)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၂	ခဲ (Lead)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၃	ကြေးနီ (Copper)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၄	ဗေရီယမ် (Barium)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၅	နစ်ကယ် (Nickel)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၆	ငွေ (Silver)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၇	သံဓာတ် (Iron)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၈	ဆိုင်းယာနိုဒ် (Cyanide)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၂၉	ဆိုင်းယာနိုဒ်စုစုပေါင်း (Total Cyanide)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း

သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)ရှိစက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်မှုအတွက်ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစား (Parameters)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၂ (SW-2)	မြေပေါ် ရေ နမူနာ ယူသည့် နေရာ-၄ (SW-4)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၇ (SW-7)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၈ (SW-8)	မြေအောက်ရေ နမူနာယူသည့် နေရာ-၂ (GW-2)	မှတ်ချက်
၃၀	ခရိုမီယမ် (Chromium Hexavalent)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၃၁	ဖလူအိုရိုက် (Fluoride)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၃၂	ဖရီးကလိုရင်း (Free Chlorine)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၃၃	ကြွင်းကျန်သော ကလိုရင်းစုစုပေါင်း (Total Residual Chlorine)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၃၄	ဆာလဖိုင် (Sulphide)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၃၅	ဖော်မယ်ဒီဟိုက် (Formaldehyde)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၃၆	ဖီနော (Phenols)	○	○	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၃၇	ဝမ်းကိုက်ရောဂါကိုဖြစ်စေ သော ကိုလီဖောင်း ဘက်တီးရီးယား (Escherichia Coli) (ကိုယ်တိုင်စောင့်ကြည့်လေ့ လာခြင်း)	-	-	○	○	○	ဓာတ်ခွဲစမ်းသပ်ခြင်း
၃၈	ရေစီးဆင်းနှုန်း	○	○	-	-	-	ရေနမူနာရယူသည့် နေရာတွင်တိုက်ရိုက် တိုင်းတာခြင်း

မူရင်း။ မြန်မာ့အံ့အင်တာနေရှင်နယ်လီမိတက်



၂.၂ ရေနမူနာရယူသည့်နေရာများ၏တည်နေရာနှင့်အချက်အလက်များဖော်ပြချက်

ရေနမူနာရယူသည့်နေရာများကို ဇယား ၂.၂-၁ တွင် ဖော်ပြထားပါသည်။ ရေနမူနာရယူသည့် နေရာတစ်နေရာစီတွင် စစ်တမ်းရယူခဲ့သည့်မှတ်တမ်းပုံများကို နောက်ဆက်တွဲ-၁ တွင်ဖော်ပြထားသည်။

ဇယား ၂.၂-၁ ရေနမူနာရယူသည့်နေရာများ

စဉ်	တည်နေရာ	အသေးစိတ်အချက်အလက်
၁	မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၂ (SW-2)	ကိုဩဒိနိတ် - မြောက်လတ္တီတွဒ် - ၁၆° ၄၀' ၂၀.၆၉"၊ အရှေ့လောင်ဂျီတွဒ် - ၉၆° ၁၇' ၁၈.၀၄" တည်နေရာ - ရွှေပျောက်ချောင်းအထက်ပိုင်း ရေနမူနာရယူသော အမျိုးအစား - မြေပေါ်ရေရယူခြင်းနှင့်ရေစီးနှုန်းတိုင်းတာခြင်း
၂	မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၄ (SW-4)	ကိုဩဒိနိတ် - မြောက်လတ္တီတွဒ် - ၁၆° ၃၉' ၄၂.၈၄"၊ အရှေ့လောင်ဂျီတွဒ် - ၉၆° ၁၆' ၂၇.၄၂" တည်နေရာ - ရွှေပျောက်ချောင်းအောက်ပိုင်း ရေနမူနာရယူသော အမျိုးအစား - မြေပေါ်ရေရယူခြင်းနှင့်ရေစီးနှုန်းတိုင်းတာခြင်း
၃	မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၇ (SW-7)	ကိုဩဒိနိတ် - မြောက်လတ္တီတွဒ် - ၁၆° ၄၀' ၁၃.၂၅"၊ အရှေ့လောင်ဂျီတွဒ် - ၉၆° ၁၇' ၅.၆၆" တည်နေရာ - ရွှေပျောက်ချောင်းသို့မရောက်မီ ဇုန်အပိုင်း(ခ)၏ ရေထိန်းကန်ရှိ ထွက်ပေါက် ရေနမူနာရယူသော အမျိုးအစား - စွန့်ထုတ်ရေရယူခြင်း
၄	မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၈ (SW-8)	ကိုဩဒိနိတ် - မြောက်လတ္တီတွဒ် - ၁၆° ၃၉' ၅၉.၂၅"၊ အရှေ့လောင်ဂျီတွဒ် - ၉၆° ၁၆' ၃၂.၇၇" တည်နေရာ - ရွှေပျောက်ချောင်းသို့မရောက်မီ ဇုန်အပိုင်း(ခ)၏ ရေထိန်းကန်ရှိ အခြား ရေထွက်ပေါက် ရေနမူနာရယူသော အမျိုးအစား - စွန့်ထုတ်ရေရယူခြင်း
၅	မြေအောက်ရေနမူနာရယူသည့် နေရာ-၂ (GW-2)	ကိုဩဒိနိတ် - မြောက်လတ္တီတွဒ် - ၁၆° ၃၉' ၂၅.၃၀"၊ အရှေ့လောင်ဂျီတွဒ် - ၉၆° ၁၇' ၁၅.၆၀" တည်နေရာ - ဖလမ်းကျေးရွာရှိ ဘုန်းကြီးကျောင်းပရဝဏ်အတွင်း ရေနမူနာရယူသော အမျိုးအစား - မြေအောက်ရေရယူခြင်း

မူရင်း။ မြန်မာ့အံ့အင်တာနေရှင်နယ်လီမိတက်

မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၂ (SW-2) (ရေအရည်အသွေး ရည်ညွှန်းအမှတ်)

မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၂ (SW-2)အား ရွှေပျောက်ချောင်း၏ အထက်ပိုင်းတွင် ရယူခဲ့ခြင်းဖြစ်သည်။ အဆိုပါအမှတ်သည် ဇုန်အပိုင်း(ခ)ဧရိယာ၏ အရှေ့မြောက်ဘက်နှင့် ဒဂုံ-သီလဝါလမ်း၏ တောင်ဘက်တွင် တည်ရှိပါသည်။ အနောက်မြောက်တွင် ဇုန်အပိုင်း(က)နှင့် အရှေ့ဘက်တွင် ပြည်တွင်းစက်မှုဇုန်တို့က အသီးသီး ဝန်းရံလျက် ရှိသည်။

မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၄ (SW-4) (ရေအရည်အသွေး ရည်ညွှန်းအမှတ်)

ပြည်တွင်းစက်မှုဇုန်၊ သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(က)နှင့် ဇုန်အပိုင်း(ခ)ရှိ လုပ်ငန်းခွင်များမှ စွန့်ထုတ်လိုက်သောရေများပေါင်းစည်းရောနှောသွားသောနေရာ ရွှေပျောက်ချောင်း၏ အောက်ပိုင်းတွင် မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၄ (SW-4)တွင် ရယူခဲ့ခြင်းဖြစ်သည်။ ရွှေပျောက်ချောင်းသည် အရှေ့မှအနောက်သို့စီးဆင်းပြီး ရန်ကုန်မြစ်အတွင်းသို့စီးဝင်သည်။ မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၄ (SW-4)သည် မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၂ (SW-2)၏ ချောင်းအောက်ပိုင်း ၂.၁၅ ကီလိုမီတာအကွာတွင် တည်ရှိပါသည်။ အဆိုပါ ရေနမူနာရယူသည့်နေရာသည် ဇုန်အပိုင်း(ခ)ဧရိယာ၏ အနောက်ဘက်တွင်တည်ရှိပြီး ဒဂုံ-သီလဝါလမ်း၏ တောင်ဘက်တွင်တည်ရှိပါသည်။ ပတ်ဝန်းကျင်အနီးအနားတွင် အရှေ့မြောက်ဘက်တွင်

ဇုန်အပိုင်း (က)၊ အရှေ့ဘက်တွင် ပြည်တွင်းစက်မှုဇုန်၊ တောင်ဘက်နှင့် အနောက်ဘက်တို့တွင် စပါးခင်းတို့ အသီးသီးတည်ရှိပါသည်။

မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7) (စွန့်ထုတ်ရေထွက်ပေါက်)

မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7)သည် ဇုန်အပိုင်း(ခ)၏ လုပ်ငန်းလည်ပတ်နေစဉ်ကာလအတွင်း အဓိကစွန့်ထုတ်ရေထွက်ပေါက် ဖြစ်ပါသည်။ ထိုနေရာသည် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၂ (SW-2)၏ ချောင်းအောက်ပိုင်း၊ အကွာအဝေးအားဖြင့် ၄၃၄ မီတာ အကွာတွင် တည်ရှိပါသည်။ နမူနာရယူသည့်နေရာမှာ ဇုန်အပိုင်း(ခ) ရေထိန်းကန်၏ထွက်ပေါက်၊ ဇုန်အပိုင်း(ခ) ဧရိယာ၏ မြောက်ဘက်နှင့် ဒဂုံ-သီလဝါလမ်းမကြီး၏ တောင်ဘက်တွင် တည်ရှိပါသည်။ အနီးအနားပတ်ဝန်းကျင်၌ မြောက်ဘက်တွင် ဇုန်အပိုင်း(က)နှင့် အရှေ့ဘက်တွင် ပြည်တွင်းစက်မှုဇုန်တို့ အသီးသီးတည်ရှိပါသည်။

မြေပေါ်ရေနမူနာယူသည့် နေရာ-၈ (SW-8) (စွန့်ထုတ်ရေထွက်ပေါက်)

မြေပေါ်ရေနမူနာယူသည့် နေရာ-၈ (SW-8)သည် ဇုန်အပိုင်း(ခ)၏ လုပ်ငန်းလည်ပတ်နေစဉ်ကာလအတွင်း အခြားအဓိကစွန့်ထုတ်ရေထွက်ပေါက် ဖြစ်ပါသည်။ ထိုနေရာသည် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၄ (SW-4) ၏ ချောင်းအထက်ပိုင်း၊ အကွာအဝေးအားဖြင့် ၅၀၀ မီတာ အကွာတွင် တည်ရှိပါသည်။ နမူနာရယူသည့်နေရာမှာ ဇုန်အပိုင်း(ခ) ရေထိန်းကန်၏ထွက်ပေါက်၌ရှိသော မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7)၏ အနောက်တောင်ဘက် ၁ ကီလိုမီတာအကွာတွင် တည်ရှိသကဲ့သို့ ဒဂုံ-သီလဝါလမ်းမကြီး၏ တောင်ဘက်တွင် တည်ရှိပါသည်။ အနီးအနားပတ်ဝန်းကျင်၌ မြောက်ဘက်တွင် ဇုန်အပိုင်း(က)နှင့် အရှေ့ဘက်တွင် ပြည်တွင်း စက်မှုဇုန်တို့ အသီးသီးတည်ရှိပါသည်။

မြေအောက်ရေနမူနာယူသည့် နေရာ-၂ (GW-2) (မူလတည်ရှိနေသောရေတွင်းအား ရည်ညွှန်းခြင်း)

မြေအောက်ရေနမူနာယူသည့် နေရာ-၂ (GW-2)အား တူးဖော်ထားသောရေတွင်းမှ ရယူခဲ့ပါသည်။ အဆိုပါ ရေတွင်းသည် ဖလမ်းကျေးရွာရှိ ဘုန်းကြီးကျောင်းပရဝဏ်အတွင်းတွင် တည်ရှိပါသည်။ အနီးအနားပတ်ဝန်းကျင်၌ မြောက်ဘက်တွင် သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(က)၊ တောင်ဘက်တွင် ဖလမ်းကျေးရွာ၊ အနောက်ဘက်တွင် လယ်ကွင်းများ၊ အရှေ့မြောက်ဘက်တွင် ပြည်တွင်းစက်မှုဇုန်နှင့် အရှေ့နှင့်အရှေ့မြောက်ဘက်တွင် သီလဝါအထူးစီးပွားရေးဇုန် အပိုင်း(ခ)တို့ အသီးသီးတည်ရှိနေပါသည်။

၂.၃ စောင့်ကြည့်လေ့လာသည့်နည်းလမ်း

ရေနမူနာများကိုရယူပြီး သန့်စင်ထားသောဖန်ပုလင်းညှို့များဖြင့် သိမ်းဆည်းပြီး ဇယား ၂.၃-၁ တွင် ဖော်ပြထားသောနည်းလမ်းများဖြင့် ဓာတ်ခွဲခန်း၌စစ်ဆေးပါသည်။ ရေနမူနာများကို ရေခဲပုံးများဖြင့် ၂-၄ဒီဂရီ ဆဲလ်စီးယပ်တွင် သိမ်းဆည်းထားပြီး ဓာတ်ခွဲခန်းသို့ပို့ဆောင်ပါသည်။ တိုင်းတာသည့် ရေအရည်အသွေး အမျိုးအစားများ၌ ရေအပူချိန်၊ ချဉ်ဖန်ကိန်းနှင့် ပျော်ဝင်အောက်စီဂျင်တို့အား ရေအရည်အသွေး တိုင်းတာသော စက်ကိရိယာ (Horiba U-52)ကို အသုံးပြု၍ ရေနမူနာရယူသည့်နေရာ၌ပင် တိုက်ရိုက်တိုင်းတာခဲ့ပါသည်။ ထို့အပြင် ရေစီးဆင်းမှုနှုန်းကိုလည်း ဒီဂျစ်တယ်ရေစီးနှုန်းတိုင်းကိရိယာ (JFE Digital Current Meter) ဖြင့် ရေနမူနာရယူသည့်နေရာ၌ တိုင်းတာခဲ့ပါသည်။

ဇယား ၂.၃-၁ ရေအရည်အသွေးစစ်ဆေးသည့် နည်းလမ်းများ

စဉ်	အမျိုးအစားများ	နည်းလမ်း
၁	ရေအပူချိန် (Water Temperature)	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
၂	ချဉ်ဖန်ကိန်း (pH)	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
၃	ပျော်ဝင်အောက်စီဂျင် (Dissolved Oxygen)	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
၄	နောက်ကျိုမှု (Turbidity)	Instrument Analysis Method (Horiba, U-52, Multi Water Quality Checker)
၅	ဆိုင်းကြွအနယ် (Suspended Solids)	APHA 2540 D (Dry at 103-105°C Method)
၆	ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (၅-ရက်) (BOD ₍₅₎)	APHA 5210 B (5 Days BOD Test)
၇	ဓာတုနည်းဖြင့် ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (COD _(Cr))	APHA 5220D (Close Reflux Colorimetric Method)
၈	ကိုလီဖောင်း စုစုပေါင်း (Total Coliform)	APHA 9221B (Standard Total Coliform Fermentation Technique)
၉	ဆီနှင့် အမဲဆီ (Oil and Grease)	APHA 5520B (Partition-Gravimetric Method)
၁၀	နိုက်ထရိုဂျင်စုစုပေါင်း (Total Nitrogen)	HACH Method 10072 (TNT Persulfate Digestion Method)
၁၁	ဖော့စဖောရက်စုစုပေါင်း (Total Phosphorus)	APHA 4500-P E (Ascorbic Acid Method)
၁၂	အရောင် (Color)	APHA 2120C (Spectrophotometric Method)
၁၃	အနံ့ (Odor)	APHA 2150 B (Threshold Odor Test)
၁၄	အမိုးနီးယား (Ammonia)	ISO 7150/1-1984 (E)
၁၅	ပျော်ဝင်အနည်စုစုပေါင်း (Total Dissolved Solids)	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)
၁၆	ပြဒါးဓာတ် (Mercury)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၁၇	သွပ် (Zinc)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၁၈	အာဆီနစ် (Arsenic)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)

သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)ရှိစက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်မှုအတွက်ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)

စဉ်	အမျိုးအစားများ	နည်းလမ်း
၁၉	ခရိုမီယမ် (Chromium)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၀	ကက်ဒမီယမ် (Cadmium)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၁	ဆယ်လီနီယမ် (Selenium)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၂	ခဲ (Lead)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၃	ကြေးနီ (Copper)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၄	ဗေရီယမ် (Barium)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၅	နစ်ကယ် (Nickel)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၆	ငွေ (Silver)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၇	သံဓာတ် (Iron)	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)
၂၈	ဆိုင်ယာနိုဒ် (Cyanide)	HACH 8027 (Pyridine-Pyrazalone Method)
၂၉	ဆိုင်ယာနိုဒ်စုစုပေါင်း (Total Cyanide)	Distillation process: APHA 4500-CN-C. Total Cyanide after Distillation, Determine cyanide Concentration Process: HACH 8027 (Pyridine – Pyrazalone Method)
၃၀	ခရိုမီယမ် (Chromium Hexavalent)	ISO 11083:1994 (Determination of chromium (VI) Spectrometric method using 1,5-diphenylcarbazine)
၃၁	ဖလူအိုရိုက် (Fluoride)	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)
၃၂	ဖရီးကလိုရင်း (Free Chlorine)	APHA 4500-CL G (DPD Colorimetric Method)
၃၃	ကြွင်းကျန်သောကလိုရင်းစုစုပေါင်း (Total Residual Chlorine)	APHA 4500-CL G (DPD Colorimetric Method)
၃၄	ဆာလဖိုဒ် (Sulphide)	HACH 8131 (USEPA Methylene Blue Method)
၃၅	ဖော်မယ်ဒီဟိုက် (Formaldehyde)	HACH 8110 (MBTH Method)
၃၆	ဖီနော (Phenols)	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4 AAP With Distillation))
၃၇	ဝမ်းကိုက်ရောဂါကိုဖြစ်စေသော ဘက်တီးရီးယား (Escherichia Coli)	APHA 9221 F (Escherichia Coli Procedure Using Fluorogenic Substrate)
၃၈	စီးဆင်းနှုန်း (Flow Rate)	Detection of Electromagnetic Elements (Real-time measurement by AEM 213-D Digital Current Meters)

မူရင်း။ မြန်မာ့သို့အင်တာနေရှင်နယ်လီမိတက်



၂.၄ စောင့်ကြည့်လေ့လာသည့်ကာလ

ရေအရည်အသွေးနှင့် ရေစီးဆင်းမှုနှုန်း စောင့်ကြည့်လေ့လာမှုတိုင်းတာခြင်းအား ဒီဇင်ဘာလ ၃ ရက်၊ ၂၀၂၅ ခုနှစ်တွင် ဆောင်ရွက်ခဲ့သည်ကို ဇယား ၂.၄-၁တွင် ဖော်ပြထားပါသည်။ အထူးသဖြင့် မြေပေါ်ရေ နမူနာရယူသည့် နေရာ-၄ (SW-4)တွင် ဒီရေအတက်အကျကြောင့် ဖြစ်ပေါ်လာနိုင်သော သက်ရောက်မှုများကို ရှောင်ရှားနိုင်ရန်အတွက် ဒီရေကျနေစဉ်အတွင်း ရေနမူနာရယူခဲ့သည်။ မြန်မာနိုင်ငံ၊ ရန်ကုန်မြစ်၏ ဒီဇင်ဘာလ ၃ ရက်၊ ၂၀၂၅ ခုနှစ် အတွက် ဒီရေမှတ်တမ်းကို ဇယား ၂.၄-၂ တွင်ဖော်ပြထားပါသည်။

ဇယား ၂.၄-၁ နေရာတစ်ခုချင်းစီအတွက် နမူနာရယူသည့်အချိန်

စဉ်	ရေနမူနာရယူသည့်နေရာ	ရေနမူနာရယူသည့်အချိန်
၁	မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၂ (SW-2)	ဒီဇင်ဘာလ ၃ ရက်နေ့ ၂၀၂၅ ခုနှစ် (၀၉ နာရီ : ၂၅ မိနစ်)
၂	မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၄ (SW-4)	ဒီဇင်ဘာလ ၃ ရက်နေ့ ၂၀၂၅ ခုနှစ် (၀၈ နာရီ : ၅၆ မိနစ်)
၃	မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၇ (SW-7)	ဒီဇင်ဘာလ ၃ ရက်နေ့ ၂၀၂၅ ခုနှစ် (၁၀ နာရီ : ၅၁ မိနစ်)
၄	မြေပေါ်ရေနမူနာရယူသည့် နေရာ-၈ (SW-8)	ဒီဇင်ဘာလ ၃ ရက်နေ့ ၂၀၂၅ ခုနှစ် (၁၁ နာရီ : ၂၇ မိနစ်)
၅	မြေအောက်ရေနမူနာရယူသည့် နေရာ-၂ (GW-2)	ဒီဇင်ဘာလ ၃ ရက်နေ့ ၂၀၂၅ ခုနှစ် (၀၈ နာရီ : ၂၇ မိနစ်)

မူရင်း။ မြန်မာ့အိတ်အင်တာနေရှင်နယ်လီမိတက်

ဇယား ၂.၄-၂ မြန်မာနိုင်ငံ၊ ရန်ကုန်မြစ်၏ ဒီရေမှတ်တမ်း

ရက်စွဲ	အချိန်	အမြင့် (မီတာ)	ဒီရေအခြေအနေ
ဒီဇင်ဘာလ ၃ ရက်နေ့ ၂၀၂၅ ခုနှစ်	၀၁:၁၆	၆.၃၄	ဒီရေအတက် (အတက်ဆုံး)
	၀၈:၅၄	၁.၀၀	ဒီရေအကျ (အကျဆုံး)
	၁၃:၄၈	၅.၈၅	ဒီရေအတက် (အတက်ဆုံး)
	၂၀:၅၁	၁.၁၉	ဒီရေအကျ(အကျဆုံး)

မူရင်း။ မြန်မာ့အိတ်အင်တာနေရှင်နယ်လီမိတက်၊ ၂၀၂၅ ခုနှစ်အတွက် ရန်ကုန်မြစ်၏ ဒီရေမှတ်တမ်း

၂.၅ စောင့်ကြည့်လေ့လာမှုရလဒ်များ

ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုရလဒ်များကို ဇယား ၂.၅-၁ မှ ဇယား ၂.၅-၃ အထိ ဖော်ပြထားပါသည်။ ဓာတ်ခွဲခန်းဆန်းစစ်မှုရလဒ်များကို နောက်ဆက်တွဲ-၂တွင် ဖော်ပြထားသည်။ မြေပေါ်ရေနမူနာယူသည့် ရေအရည်အသွေးရလဒ်များကို ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီအရင်ခံစာတွင် ပါရှိသည့် ရေအရည်အသွေး ရည်မှန်းတန်ဖိုးများနှင့် မြန်မာနိုင်ငံ၏ အမျိုးသားမြေပေါ်ရေအရည်အသွေးဆိုင်ရာ စံချိန်စံညွှန်း (အပိုင်း ၇.၁.၁ တွင် ဖော်ပြထားသော ဇယား ၂၊ အပိုင်း ၇.၁.၂ တွင် ဖော်ပြထားသော ဇယား ၃နှင့် အပိုင်း ၇.၂ တွင် ဖော်ပြထားသော ဇယား ၄)တို့ဖြင့် နှိုင်းယှဉ်ထားပါသည်။ ထို့အပြင် မြေအောက် ရေအရည်အသွေးရလဒ်များကို ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီအရင်ခံစာတွင်ပါရှိသည့် ရေအရည်အသွေး ရည်မှန်းတန်ဖိုးများနှင့် နှိုင်းယှဉ်သည့်အပြင် ဗီယက်နမ်နိုင်ငံ၏ မြေအောက်ရေ အရည်အသွေးဆိုင်ရာ ရည်မှန်းတန်ဖိုးတို့ဖြင့် နှိုင်းယှဉ်ထားပါသည်။ ဖြည့်စွက်ချက်အနေဖြင့် မြေပေါ်ရေ အရည်အသွေးရလဒ်များအတွက် လက်ရှိစောင့်ကြည့် လေ့လာခြင်းရလဒ်များကို ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီအရင်ခံစာအတွက် ဇန်နဝါရီလနှင့် ဖေဖော်ဝါရီလ ၂၀၁၆ ခုနှစ်တွင် တိုင်းတာခဲ့သော SW-2၏ မြေပေါ်ရေအရည်အသွေးရလဒ်များနှင့် နှိုင်းယှဉ်ဖော်ပြထားသကဲ့သို့ မြေအောက်ရေအရည်အသွေး ရလဒ်များကို GW-2၏ မြေအောက်ရေအရည်အသွေးရလဒ်များနှင့် နှိုင်းယှဉ်ဖော်ပြထားပါသည်။

ရည်မှန်းတန်ဖိုးများနှင့် နှိုင်းယှဉ်ချက်အရ၊ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)၊ မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7)တွင် ဆိုင်းကြွအနည်နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၂ (SW-2)၊ မြေပေါ်ရေ နမူနာယူသည့်နေရာ-၄ (SW-4)၊ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)၊ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၈ (SW-8)နှင့် မြေအောက်ရေနမူနာယူသည့်နေရာ-၂ (GW-2)တွင် သံဓာတ်သည် ကန့်သတ်တန်ဖိုးများထက် ကျော်လွန်နေပါသည်။

၂.၅.၁ စွန့်ထုတ်ရေထွက်ပေါက်နှင့် စွန့်ထုတ်ရေရောက်ရှိသောချောင်းတွင်းရှိရလဒ်များ

(၁) စွန့်ထုတ်ရေထွက်ပေါက်ရှိ ရေအရည်အသွေးရလဒ်များ

ဆိုင်းကြွအနည်ရလဒ်အနေဖြင့် ချောင်းတွင်းသို့ မစွန့်ထုတ်ခင် ဇုန်အပိုင်း(ခ)၏ အဓိက စွန့်ထုတ်ရေထွက်ပေါက်ဖြစ်သော မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)ရှိ ရလဒ်များသည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေခြင်းမှာ ဇုန်အပိုင်း(ခ)ရှိ မြေလွတ်များမှ မြေမျက်နှာပြင် စီးဆင်းရေများကြောင့် ဖြစ်နိုင်ပါသည်။

သံဓာတ်ရလဒ်အနေဖြင့် ချောင်းတွင်းသို့ မစွန့်ထုတ်ခင် ဇုန်အပိုင်း(ခ)၏ အဓိကစွန့်ထုတ်ရေထွက်ပေါက်တစ်ခု ဖြစ်သော မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၈ (SW-8)ရှိ ရလဒ်သည် ကန့်သတ်တန်ဖိုးထက် အနည်းငယ်ကျော်လွန်နေကြောင်း တွေ့ရှိရပါသည်။ ဖြစ်နိုင်သော အကြောင်းအရာများမှာ သဘာဝမြေဆီလွှာမှ သံဓာတ်အရင်းအမြစ် လွှမ်းမိုးမှု (သံဓာတ်သည် ရေစီးဆင်းမှုကြောင့် မြေဆီလွှာအတွင်းမှ ထွက်လာနိုင်ပါသည်) ကြောင့်ဖြစ်နိုင်ပါသည်။ အထူးသဖြင့် သီလဝါအထူးစီးပွားရေးဇုန်၏ ပတ်ဝန်းကျင်ရှိတောင်ကုန်းငယ်များသည် သံဓာတ်ကြွယ်ဝသော မြေဆီလွှာ(ဂဝံမြေ)ဖြင့် အဓိကဖွဲ့စည်းထားပြီး လေပြင်းတိုက်ခတ်မှုများကြောင့် ၎င်းမြေသားများ



မြေနိမ့်ပိုင်းဒေသများသို့ ရောက်ရှိသွားသောကြောင့် ဖြစ်နိုင်ပါသည်။ ထို့အပြင် သံဓာတ်များသည် သဘာဝအတိုင်း ပတ်ဝန်းကျင်တွင် အချိန်ကြာမြင့်စွာ ကျန်ရှိနေခြင်းကြောင့်ဖြစ်သည်။

စောင့်ကြည့်လေ့လာသောရလဒ်များအား ၂၀၂၄တွင် ထုတ်ပြန်ထားသော အမျိုးသားမြေပေါ်ရေအရည်အသွေး ဆိုင်ရာ စံချိန်စံညွှန်းနှင့် နှိုင်းယှဉ်သောအခါတွင် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးအတွက် ရေအရည်အသွေး အမျိုးအစားများ (ချဉ်ဖန်ကိန်း၊ ပျော်ဝင်အောက်စီဂျင်၊ ဆိုင်းကြွအနယ်၊ ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက်၊ ဓာတုနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင်လိုအပ်ချက်၊ ကြေးနီနှင့် ဝမ်းကိုက်ရောဂါကိုဖြစ်စေသော ကိုလီဖောင်းဘက်တီးရီးယား)၏ တန်ဖိုးများသည် ရေအသုံးပြုမှုအမျိုးအစား ၁၊ ၂၊ ၃ နှင့် ၄ တို့နှင့် ကိုက်ညီနေသကဲ့သို့ စောင့်ကြည့်လေ့လာသည့် အမျိုးအစားများ (အရောင်၊ ပျော်ဝင်အနည်စုစုပေါင်း နှင့် နောက်ကျိမှု)များသည် ရေအသုံးပြုမှုအမျိုးအစား ၁ နှင့် ၅ တို့နှင့် အသီးသီး လိုက်လျောညီထွေမှုရှိနေပါသည်။ ထို့အပြင် လူသားတို့၏ကျန်းမာရေးအတွက် စောင့်ကြည့်လေ့လာသည့် ရေအရည်အသွေးအမျိုးအစားများ (ပြဒါးဓာတ်၊ အာဆီနစ်၊ ကက်ဒမီယမ်၊ ဆယ်လီနီယမ်၊ ခဲ၊ နစ်ကယ်၊ ဆိုင်ယာနိုဒ်၊ ခရိုမီယမ်၊ ဖလူအိုရိုက်နှင့် ဖီနော)တို့သည် ရေအသုံးပြုမှုအမျိုးအစား ၁ မှ ၅ အတွင်း ရှိပါသည်။ စောင့်ကြည့်လေ့လာသော ရေအရည်အသွေးအမျိုးအစား၏ရလဒ်များအား အမျိုးသားမြေပေါ်ရေအရည်အသွေးဆိုင်ရာစံချိန် စံညွှန်းဖြင့် ကိုးကားသည့်အခါ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7) နှင့် မြေပေါ်ရေ နမူနာယူသည့်နေရာ-၈ (SW-8) တို့၏ ရေအရည်အသွေးအား ရေအသုံးပြုမှုအမျိုးအစား ၅ အဖြစ်အသုံးပြုနိုင်ပါသည်။

ယခုစောင့်ကြည့်လေ့လာသောရလဒ်များနှင့် ဖေဖော်ဝါရီလ၊ ၂၀၁၆ခုနှစ်တွင် တိုင်းတာခဲ့သော အခြေခံရလဒ်များအား နှိုင်းယှဉ်ခဲ့ရာတွင် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7)နှင့် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၈ (SW-8)တို့၏ ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင်လိုအပ်ချက်၊ ဓာတုနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင်လိုအပ်ချက်၊ ကိုလီဖောင်းစုစုပေါင်းနှင့် ဆီနှင့် အမဲဆီ တို့၏ ရလဒ်များသည် SW-2 (ဖေဖော်ဝါရီလ၊ ၂၀၁၆ခုနှစ် အခြေခံအချက်အလက်တိုင်းတာခြင်း)၏ ရလဒ်များအောက် နည်းပါးနေသော်လည်း မြေပေါ်ရေနမူနာ ယူသည့်နေရာ-၇ (SW-7)၏ သံဓာတ်ရလဒ်သည် SW-2 (ဖေဖော်ဝါရီလ၊ ၂၀၁၆ခုနှစ် အခြေခံအချက်အလက်တိုင်းတာခြင်း)၏ ရလဒ်ထက် ပို၍မြင့်မားနေကြောင်း တွေ့ရှိရပါသည်။

ဇယား ၂.၅-၁ ရေထွက်ပေါက်များ၏ ရေအရည်အသွေး စောင့်ကြည့်လေ့လာမှု ရလဒ်များ

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ (Parameters)	ယူနစ်	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၇ (SW-7)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၈ (SW-8)	SW-2 (အခြေခံရလဒ်၊ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ)*	ရည်မှန်း တန်ဖိုး	အမျိုးသား မြေပေါ်ရေ အရည်အသွေး ဆိုင်ရာ စံချိန်စံညွှန်း
၁	ရေအပူချိန် (Water Temperature)	°C	၂၇	၂၇	၂၇	≤ ၃၅	-
၂	ချဉ်ဖန်ကိန်း (pH)	-	၇.၇	၇.၇	၇.၈	၆-၉	၆.၅-၈.၅ (Class I)
၃	ပျော်ဝင်အောက်စီဂျင် (Dissolved Oxygen)	mg/l	၆.၂၄	၅.၃၅	၆.၅	-	> ၆ (Class I)
၄	နောက်ကျိမှု (Turbidity)	NTU	၁၁၈.၅	၈၆	-	-	၁၀၀ (C



သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)ရှိစက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်မှုအတွက်ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ (Parameters)	ယူနစ်	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၇ (SW-7)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၈ (SW-8)	SW-2 (အခြေခံရလဒ်၊ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ)*	ရည်မှန်း တန်ဖိုး	အမျိုးသား မြေပေါ်ရေ အရည်အသွေး ဆိုင်ရာ စံချိန်စံညွှန်း
၅	ဆိုင်းကြွအနယ် (Suspended Solid)	mg/l	၈၆	၂၈	-	၅၀	၁၀၀ (Class IV)
၆	ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (၅-ရက်) (BOD ₍₅₎)	mg/l	၃.၈၆	၃.၉၆	၈	၃၀	၈ (Class III)
၇	ဓာတုနည်းဖြင့် ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (COD _(Cr))	mg/l	၇.၇	၇.၆	၈၁၀	၁၂၅	၈ (Class II)
၈	ကိုလီဖောင်း စုစုပေါင်း (Total Coliform)	MPN/ 100ml	၇.၈	၂၃.၀	၄၉၀	၄၀၀	-
၉	ဆီနှင့် အမဲဆီ (Oil and Grease)	mg/l	< ၃.၁	< ၃.၁	၅.၂	၁၀	No noticeably seen
၁၀	နိုက်ထရိုဂျင် စုစုပေါင်း (Total Nitrogen)	mg/l	< ၀.၅	< ၀.၅	၁.၁	၈၀	-
၁၁	ဖော့စဖောရပ်စ် စုစုပေါင်း (Total Phosphorus)	mg/l	< ၀.၀၅	< ၀.၀၅	၀.၀၅	၂	-
၁၂	အရောင် (Color)	TCU (True Color Unit)	၃.၈၆	၂.၄၃	-	၁၅၀	၁၅ (Class I)
၁၃	အနံ့ (Odor)	TON (Threshold Odor Number)	၁	၁	-	-	-
၁၄	အမိုးနီးယား (Ammonia)	mg/l	၀.၀၅	၀.၀၆	-	၁၀	-
၁၅	ပျော်ဝင်အနည် စုစုပေါင်း (Total Dissolved Solids)	mg/l	၁၅၀	၁၅၆	-	၂၀၀၀	၅၀၀ (Class I)
၁၆	ပြဒါးဓာတ် (Mercury)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၀၀၅	၀.၀၀၅	၀.၀၀၁ (Class I – V)
၁၇	သွပ် (Zinc)	mg/l	၀.၀၈၀	၀.၀၅၂	< ၀.၁	၂	-
၁၈	အာဆီနစ် (Arsenic)	mg/l	≤ ၀.၀၁၀	≤ ၀.၀၁၀	< ၀.၀၀၂	၀.၁	၀.၀၅ (Class I – V)
၁၉	ခရိုမီယမ် (Chromium)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၂	၀.၅	-
၂၀	ကက်ဒမီယမ် (Cadmium)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၀၂	၀.၀၃	၀.၀၀၃ (Class I – V)
၂၁	ဆယ်လီနီယမ် (Selenium)	mg/l	≤ ၀.၀၁၀	≤ ၀.၀၁၀	< ၀.၀၁	၀.၀၂	၀.၀၄ (Class I – V)
၂၂	ခဲ (Lead)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၁	၀.၁	၀.၀၁ (CI)

သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)ရှိစက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်မှုအတွက်ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ (Parameters)	ယူနစ်	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၇ (SW-7)	မြေပေါ်ရေ နမူနာ ယူသည့် နေရာ-၈ (SW-8)	SW-2 (အခြေခံရလဒ်၊ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ)*	ရည်မှန်း တန်ဖိုး	အမျိုးသား မြေပေါ်ရေ အရည်အသွေး ဆိုင်ရာ စံချိန်စံညွှန်း
၂၃	ကြေးနီ (Copper)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	<၀.၁	၀.၅	၀.၁ (Class I)
၂၄	ဗေရီယမ် (Barium)	mg/l	၀.၁၃၀	၀.၀၆၂	<၀.၁	၁	-
၂၅	နစ်ကယ် (Nickel)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	<၀.၀၁	၀.၂	၀.၀၇ (Class I – V)
၂၆	ငွေ (Silver)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	-	၀.၅	-
၂၇	သံဓာတ် (Iron)	mg/l	၂၀.၉၈၀	၄.၄၇၆	၈.၂	၃.၅	-
၂၈	ဆိုင်ယာနိုဒ် (Cyanide)	mg/l	< ၀.၀၀၂	< ၀.၀၀၂	<၀.၀၀၄	၀.၁	၀.၀၇ (Class I – V)
၂၉	ဆိုင်ယာနိုဒ်စုစုပေါင်း (Total Cyanide)	mg/l	၀.၀၀၂	၀.၀၀၃	-	၁	-
၃၀	ခရိုမီယမ် (Chromium Hexavalent)	mg/l	< ၀.၀၅	< ၀.၀၅	-	၀.၁	၀.၀၅ (Class I – V)
၃၁	ဖလူအိုရိုက် (Fluoride)	mg/l	၀.၁၂၉	၀.၁၃၀	၀.၄၉	၂၀	၁.၅ (Class I – V)
၃၂	ဖရီးကလိုရင်း (Free Chlorine)	mg/l	< ၀.၁	< ၀.၁	၀.၀၃	၁	-
၃၃	ကြွင်းကျန်သော ကလိုရင်း စုစုပေါင်း (Total Residual Chlorine)	mg/l	< ၀.၁	< ၀.၁	-	၀.၂	-
၃၄	ဆာလဖိုဒ် (Sulphide)	mg/l	၀.၀၉၉	၀.၀၇၇	<၀.၀၁	၁	-
၃၅	ဖော်မယ်ဒီဟိုက် (Formaldehyde)	mg/l	၀.၀၁၅	၀.၀၁၄	<၀.၀၁	၁	-
၃၆	ဖီနော (Phenols)	mg/l	၀.၀၂၈	<၀.၀၀၂	<၀.၀၀၁	၀.၅	၀.၀၅ (Class I – V)
၃၇	ဝမ်းကိုက်ရောဂါကိုဖြစ်စေ သော ကိုလီဖောင်း ဘက်တီးရီးယား (Escherichia Coli)	MPN/ 100ml	< ၁.၈	< ၁.၈	-	(၁၀၀၀)** (CFU/၁၀၀ ml)	၂၀ (Class I)

မှတ်ချက်။ အနီရောင်ဖြင့်ဖော်ပြထားသောတန်ဖိုးများသည်သတ်မှတ်ထားသည့်တန်ဖိုးများထက်ကျော်လွန်နေသည်ကိုဆိုလိုပါသည်။

မှတ်ချက်။ အမျိုးသားမြေပေါ်ရေအရည်အသွေးဆိုင်ရာ စံချိန်စံညွှန်း ၂၀၂၄။

* ဖေဖော်ဝါရီလ ၂၀၁၆ တွင် တိုင်းတာခဲ့သော ဇုန်အပိုင်း(ခ)၏ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီအရင်ခံစာတွင် ဖော်ပြထားသော အခြေခံရလဒ်များ။

** စွန့်ထုတ်ရေများ စွန့်ထုတ်လိုက်သောချောင်း၏ အသုံးပြုမှုပေါ်မူတည်၍ ဂျပန်နိုင်ငံ၏ ချိုးရေစံချိန်စံညွှန်း (ပတ်ဝန်းကျင် ဆိုင်ရာဝန်ကြီးဌာန၊ ၁၉၉၇)ကို ဝမ်းကိုက်ရောဂါကိုဖြစ်စေသော ကိုလီဖောင်းဘက်တီးရီးယား(E.coli)၏ ရည်မှန်းတန်ဖိုးအဖြစ် သတ်မှတ်ထားပါသည်။ သို့သော်လည်း မြန်မာနိုင်ငံရှိ ဓာတ်ခွဲခန်းများ၏ လုပ်ဆောင်နိုင်မှု ကန့်သတ်ချက်များကြောင့် စီအက်မ်ယူတန်ဖိုး "Colony Forming Unit (CFU)" အား တိုင်းတာ၍မရပါ။ ထို့ကြောင့် အမ်ပီအန် "Most Probable Number (MPN)" ရလဒ်များကို စီအက်မ်ယူတန်ဖိုးနှင့် တူညီသည်ဟုယူဆပြီး ရည်မှန်းတန်ဖိုးနှင့် နှိုင်းယှဉ်ပါသည်။ မြန်မာနိုင်ငံတွင် စီအက်မ်ယူတန်ဖိုးကို သုံးသပ်နိုင်သည်နှင့် တစ်ပြိုင်နက် သုံးသပ်သည့်နည်းလမ်းများ ပြောင်းလဲမည်ဖြစ်သည်။ ဂျပန်နိုင်ငံ၏ ချိုးရေ စံချိန်စံညွှန်း (ပတ်ဝန်းကျင်ဆိုင်ရာဝန်ကြီးဌာန၊ ၁၉၉၇)အရ ဝမ်းကိုက်ရောဂါကိုဖြစ်စေသော ကိုလီဖောင်းဘက်တီးရီးယား (E. coli) တန်ဖိုး ၁၀၀၀ CFU/၁၀၀ ml ထက်ကျော်လွန်နေသည်မှာ ချိုးရေအဖြစ်သုံးရန် မသင့်တော်ဟုယူဆပါသည်။

မူရင်း။ မြန်မာ့သို့အင်တာနေရှင်နယ်လီမိတက်



(၂) စောင့်ကြည့်လေ့လာသည့် ရည်ညွှန်းအမှတ်များ၏ ရေအရည်အသွေးရလဒ်များ (ချောင်း)

ရည်မှန်းတန်ဖိုးများနှင့် နှိုင်းယှဉ်ရာတွင် ဆိုင်းကြွအနယ်များနှင့် သံဓာတ်တို့၏ရလဒ်များမှာ ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေကြောင်း တွေ့ရသည်။

ဆိုင်းကြွအနည်၏ ရလဒ်အနေဖြင့် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၄ (SW-4)ရှိ ဆိုင်းကြွအနည်ရလဒ်သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေခြင်းမှာ (၁) ချောင်းအထက်ပိုင်းမှ ရေများသဘာဝအလျောက် စီးဆင်းလာခြင်းနှင့် သီလဝါအထူးစီးပွားရေးဇုန်ပြင်ပရှိ ပြည်တွင်းစက်မှုဇုန်မှ စွန့်ထုတ်လိုက်သော ရေများကြောင့်လည်းကောင်း၊ (၂) ရွှေပျောက်ချောင်းတလျှောက် ချောင်းအောက်ဘက်ရှိ ရေများသည် ဒီရေအတက်အကျကြောင့် အထက်သို့ ပြန်လည်စီးဝင်လာခြင်းကြောင့်လည်းကောင်း ဖြစ်နိုင်ပါသည်။

သံဓာတ်ရလဒ်အနေဖြင့် စောင့်ကြည့်လေ့လာသည့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၂ (SW-2)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)ရှိ ရလဒ်သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေပါသည်။ ဖြစ်နိုင်ချေရှိသော မြေပေါ်ရေနမူနာယူသည့်နေရာ-၂ (SW-2)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)ရှိ ရလဒ်ကျော်လွန်နေခြင်း အကြောင်းအရာများမှာ သဘာဝသံဓာတ်အရင်းအမြစ်၏ လွှမ်းမိုးမှုကြောင့် ဖြစ်နိုင်ပါသည် (သံဓာတ်သည် ရေစီးဆင်းမှုကြောင့် မြေဆီလွှာအတွင်းမှ ထွက်လာနိုင်ပါသည်)။ အထူးသဖြင့် သီလဝါအထူးစီးပွားရေးဇုန်၏ ပတ်ဝန်းကျင်ရှိ တောင်ကုန်းငယ်များသည် သံဓာတ်ကြွယ်ဝသော မြေဆီလွှာ (ဂဝံမြေ)ဖြင့် အဓိကဖွဲ့စည်းထားပြီး စီးဆင်းရေများ သို့မဟုတ် လေပြင်းတိုက်ခတ်မှုများကြောင့် ၎င်းမြေသားများသည် မြေနိမ့်ပိုင်းဒေသများသို့ ရောက်ရှိသွားသောကြောင့် ဖြစ်နိုင်ပါသည်။

စောင့်ကြည့်လေ့လာသောရလဒ်များအား ၂၀၂၄တွင် ထုတ်ပြန်ထားသော အမျိုးသားမြေပေါ်ရေအရည်အသွေးဆိုင်ရာ စံချိန်စံညွှန်းနှင့် နှိုင်းယှဉ်သောအခါတွင် ပတ်ဝန်းကျင်ထိန်းသိမ်းရေးအတွက် ရေအရည်အသွေးအမျိုးအစားများ (ချဉ်ဖန်ကိန်း၊ ပျော်ဝင်အောက်စီဂျင်၊ ဆိုင်းကြွအနယ်၊ ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင်လိုအပ်ချက်၊ ဓာတုနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင်လိုအပ်ချက်နှင့် ကြေးနီ)၏ တန်ဖိုးများသည် ရေအသုံးပြုမှုအမျိုးအစား ၁၊ ၃၊ ၄ နှင့် ၅ တို့နှင့် ကိုက်ညီနေသကဲ့သို့ စောင့်ကြည့်လေ့လာသည့် အမျိုးအစားများ (အရောင်၊ ပျော်ဝင်အနည်စုစုပေါင်းနှင့် နောက်ကျိုမှု)များသည် ရေအသုံးပြုမှုအမျိုးအစား ၁၊ ၂ နှင့် ၅ တို့နှင့် အသီးသီး လိုက်လျောညီထွေမှု ရှိနေပါသည်။ ထို့အပြင် လူသားတို့၏ကျန်းမာရေးအတွက် စောင့်ကြည့်လေ့လာသည့် ရေအရည်အသွေး အမျိုးအစားများ (ပြဒါးဓာတ်၊ အာဆီနစ်၊ ကက်ဒမီယမ်၊ ဆယ်လီနီယမ်၊ ခဲ၊ နစ်ကယ်၊ ဆိုင်ယာနိဒ်၊ ခရိုမီယမ်၊ ဖလူအိုရိုက် နှင့် ဖီနော) တို့သည် ရေအသုံးပြုမှုအမျိုးအစား ၁ မှ ၅ အတွင်း ရှိပါသည်။ စောင့်ကြည့်လေ့လာသော ရေအရည်အသွေး အမျိုးအစားများ၏ ရလဒ်များအား အမျိုးသားမြေပေါ်ရေအရည်အသွေးဆိုင်ရာ စံချိန်စံညွှန်းဖြင့် ကိုးကားသည့်အခါ မြေပေါ်ရေနမူနာယူသည့် နေရာ-၂ (SW-2)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)တို့၏ ရေအရည်အသွေးအား ရေအသုံးပြုမှုအမျိုးအစား ၅ အဖြစ်အသုံးပြုနိုင်ပါသည်။

ယခုစောင့်ကြည့်လေ့လာသောရလဒ်များနှင့် ဖေဖော်ဝါရီလ၊ ၂၀၁၆ ခုနှစ်တွင် တိုင်းတာခဲ့သော အခြေခံရလဒ်များအား နှိုင်းယှဉ်ရာတွင် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၂ (SW-2)နှင့် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၄ (SW-4)တို့၏ ပျော်ဝင်အောက်စီဂျင်၊ ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင်လိုအပ်ချက်၊ ဓာတုနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင်လိုအပ်ချက်၊ ကိုလီဖောင်းစုစုပေါင်းနှင့် ဆီနှင့် အမဲဆီ ကိန်းရလဒ်များသည် SW-2 (ဖေဖော်ဝါရီလ၊ ၂၀၁၆ခုနှစ် အခြေခံအချက်အလက်တိုင်းတာခြင်း)၏ ရလဒ်များ

နည်းပါးနေသော်လည်း မြေပေါ်ရေနမူနာ ယူသည့်နေရာ-၄ (SW-4)၏ သံဓာတ်ရလဒ်သည် SW-2 (ဖေဖော်ဝါရီလ၊ ၂၀၁၆ခုနှစ် အခြေခံအချက်အလက်တိုင်းတာခြင်း)၏ ရလဒ်ထက် ပို၍မြင့်မားနေကြောင်း တွေ့ရှိရပါသည်။

ဇယား ၂.၅-၂ ချောင်းမှရေအရည်အသွေး စောင့်ကြည့်လေ့လာမှုရလဒ်များ

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ (parameters)	ယူနစ်	မြေပေါ်ရေ နမူနာယူ သည့် နေရာ-၂ (SW-2)	မြေပေါ်ရေ နမူနာယူ သည့် နေရာ-၄ (SW-4)	SW-2 (အခြေခံရလဒ်၊ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ)*	ရည်မှန်း တန်ဖိုး	အမျိုးသား မြေပေါ်ရေ အရည်အသွေး ဆိုင်ရာစံချိန်စံညွှန်း
၁	ရေအပူချိန် (water temperature)	°C	၂၄	၂၄	၂၇	≤ ၃၅	-
၂	ချဉ်ဖန်ကိန်း (pH)	-	၇.၀	၆.၈	၇.၈	၆-၉	၆.၅-၈.၅ (Class I)
၃	ပျော်ဝင်အောက်စီဂျင် (Dissolved Oxygen)	mg/l	၃.၃၈	၃.၉၆	၆.၅	-	> ၃ (Class IV)
၄	နောက်ကျိမှု (Turbidity)	NTU	၂၉	၂၆၂	-	-	၁၀၀ (Class V)
၅	ဆိုင်းကြွအနယ် (suspended solid)	mg/l	၂၀	၁၆၆	-	၅၀	၁၅၀ (Class V)
၆	ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (၅-ရက်) (BOD ₍₅₎)	mg/l	၅.၀၆	၄.၉၃	၈	၃၀	၈ (Class III)
၇	ဓာတုနည်းဖြင့် ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (COD _(Cr))	mg/l	၁၉.၈	၁၄.၉	၈၁၀	၁၂၅	၅၀ (Class IV)
၈	ကိုလီဖောင်းစုစုပေါင်း (Total Coliform)	MPN/ 100ml	၄၉.၀	၃၅၀	၄၉၀	၄၀၀	-
၉	ဆီနှင့် အမဲဆီ (Oil and Grease)	mg/l	< ၃.၁	< ၃.၁	၅.၂	၁၀	No noticeably seen
၁၀	နိုက်ထရိုဂျင်စုစုပေါင်း (Total Nitrogen)	mg/l	၃.၅	၅.၀	၁.၁	၈၀	-
၁၁	ဖော့စဖောရက်စုစုပေါင်း (Total Phosphorus)	mg/l	၀.၁၅	၀.၃၅	၀.၀၅	၂	-
၁၂	အရောင် (Color)	TCU (True Color Unit)	၁၈.၁၄	၈.၁၄	-	၁၅၀	၂၅ (Class II)
၁၃	အနံ့ (Odor)	TON (Threshold Odor Number)	၁	၁	-	-	-
၁၄	အမိုးနီးယား (Ammonia)	mg/l	၁.၉၅	၂.၄၂	-	၁၀	-
၁၅	ပျော်ဝင်အနည်စုစုပေါင်း (Total Dissolved Solids)	mg/l	၂၄၀	၄၃၄	-	၂၀၀၀	၅၀၀ (Class I)

သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)ရှိစက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်မှုအတွက်ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ (parameters)	ယူနစ်	မြေပေါ်ရေ နမူနာယူ သည့် နေရာ-၂ (SW-2)	မြေပေါ်ရေ နမူနာယူ သည့် နေရာ-၄ (SW-4)	SW-2 (အခြေခံရလဒ်၊ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ)*	ရည်မှန်း တန်ဖိုး	အမျိုးသား မြေပေါ်ရေ အရည်အသွေး ဆိုင်ရာစံချိန်စံညွှန်း
၁၆	ပြဒါးဓာတ် (Mercury)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၀၀၅	၀.၀၀၅	၀.၀၀၁ (Class I – V)
၁၇	သွပ် (Zinc)	mg/l	၀.၀၃၂	၀.၀၇၄	< ၀.၁	၂	-
၁၈	အာဆီနစ် (Arsenic)	mg/l	≤ ၀.၀၁၀	≤ ၀.၀၁၀	< ၀.၀၀၂	၀.၁	၀.၀၅ (Class I – V)
၁၉	ခရိုမီယမ် (Chromium)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၂	၀.၅	-
၂၀	ကက်ဒမီယမ် (Cadmium)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၀၂	၀.၀၃	၀.၀၀၃ (Class I – V)
၂၁	ဆယ်လီနီယမ် (Selenium)	mg/l	≤ ၀.၀၁၀	≤ ၀.၀၁၀	< ၀.၀၁	၀.၀၂	၀.၀၄ (Class I – V)
၂၂	ခဲ (Lead)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၁	၀.၁	၀.၀၁ (Class I – V)
၂၃	ကြေးနီ (Copper)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၁	၀.၅	၀.၁ (Class I)
၂၄	ဗေရီယမ် (Barium)	mg/l	၀.၀၇၄	၀.၀၉၆	< ၀.၁	၁	-
၂၅	နစ်ကယ် (Nickel)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	< ၀.၀၁	၀.၂	၀.၀၇ (Class I – V)
၂၆	ငွေ (Silver)	mg/l	≤ ၀.၀၀၂	≤ ၀.၀၀၂	-	၀.၅	-
၂၇	သံဓာတ် (Iron)	mg/l	၃.၆၇၀	၁၄.၆၆၀	၈.၂	၃.၅	-
၂၈	ဆိုင်ယာနိုက်ဒ် (Cyanide)	mg/l	< ၀.၀၀၂	< ၀.၀၀၂	< ၀.၀၀၄	၀.၁	၀.၀၇ (Class I – V)
၂၉	ဆိုင်ယာနိုက်ဒ်စုစုပေါင်း (Total Cyanide)	mg/l	< ၀.၀၀၂	< ၀.၀၀၂	-	၁	-
၃၀	ခရိုမီယမ် (Chromium Hexavalent)	mg/l	< ၀.၀၅	< ၀.၀၅	-	၀.၁	၀.၀၅ (Class I – V)
၃၁	ဖလူအိုရိုက် (Fluoride)	mg/l	၀.၁၄၀	၁.၁၄၄	၀.၄၉	၂၀	၁.၅ (Class I – V)
၃၂	ဖရီးကလိုရင်း (Free Chlorine)	mg/l	< ၀.၁	< ၀.၁	၀.၀၃	၁	-
၃၃	ကြွင်းကျန်သော ကလိုရင်း စုစုပေါင်း (Total Residual Chlorine)	mg/l	< ၀.၁	< ၀.၁	-	၀.၂	-
၃၄	ဆာလဖိုက်ဒ် (Sulphide)	mg/l	၀.၀၂၀	၀.၁၉၄	< ၀.၀၁	၁	-
၃၅	ဖော်မယ်ဒီဟိုက် (Formaldehyde)	mg/l	၀.၀၃၅	၀.၀၂၅	< ၀.၀၁	၁	-
၃၆	ဖီနော (Phenols)	mg/l	၀.၀၃၄	< ၀.၀၀၂	< ၀.၀၀၁	၀.၅	၀.၀၅ (Class I – V)
၃၇	စီးဆင်းနှုန်း (Flow Rate)	m³/s	၀.၀၀၂	၀.၂၄၆	-	-	-

မှတ်ချက်။ အနီရောင်ဖြင့်ဖော်ပြထားသောတန်ဖိုးများသည်သတ်မှတ်ထားသည့်တန်ဖိုးများထက်ကျော်လွန်နေသည်ကိုဆိုလိုပါသည်။

မှတ်ချက်။ အမျိုးသားမြေပေါ်ရေအရည်အသွေး ဆိုင်ရာစံချိန်စံညွှန်း ၂၀၂၄။

* ဖေဖော်ဝါရီလ ၂၀၁၆ တွင် တိုင်းတာခဲ့သော ဇုန်အပိုင်း(ခ)၏ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီအရင်ခံစာတွင် ဖော်ပြထားသော အခြေခံရလဒ်များ။
မူရင်း။ မြန်မာ့သို့အင်တာနေရှင်နယ်လီမိတက်

၂.၅.၂ စောင့်ကြည့်လေ့လာသည့် ရည်ညွှန်းအမှတ်၏ ရေအရည်အသွေးရလဒ် (ရေတွင်း)

ဗီယက်နမ်နိုင်ငံ၏ မြေအောက်ရေအရည်အသွေးဆိုင်ရာ ရည်မှန်းတန်ဖိုးနှင့် ပတ်ဝန်းကျင်ထိခိုက်မှုဆန်းစစ်ခြင်း အစီအရင်ခံစာတွင်ပါရှိသည့် ရေအရည်အသွေး ရည်မှန်းတန်ဖိုးများဖြင့် နှိုင်းယှဉ်ရာတွင် မြေအောက်ရေမူနာ ယူသည့်နေရာ-၂ (GW-2)၏ ရည်မှန်းတန်ဖိုးအားလုံးသည် ကန့်သတ်တန်ဖိုးအတွင်းရှိကြောင်း တွေ့ရှိရပါသည်။

မြေအောက်ရေအရည်အသွေးအတွက် ဗီယက်နမ်နိုင်ငံ၏ မြေအောက်ရေအရည်အသွေးဆိုင်ရာ အမျိုးသား နည်းပညာစည်းမျဉ်းဥပဒေ (No. QCVN 09-MT: 2015/BTNMT) ကို ကိုးကားထားပါသည်။ အဘယ်ကြောင့် ဆိုသော် မြန်မာနိုင်ငံတွင် မြေအောက်ရေအရည်အသွေး လမ်းညွှန်ချက်တန်ဖိုးများ မရှိသည့်အပြင် မြေအောက်ရေအရည်အသွေးတိုင်းတာသည့် အမျိုးအစားများအတွက် အိမ်နီးချင်းနိုင်ငံများ၏ လမ်းညွှန်ချက် တန်ဖိုးများထက် ဗီယက်နမ်နိုင်ငံ၏ လမ်းညွှန်ချက်တန်ဖိုးများတွင် ပိုမိုပါဝင်နေသောကြောင့် ဖြစ်သည်။ ဗီယက်နမ်နိုင်ငံ၏ မြေအောက်ရေတိုင်းတာမှုဆိုင်ရာ လမ်းညွှန်ချက်များတွင် ဝမ်းကိုက်ရောဂါကို ဖြစ်စေသော ကိုလီဖောင်းဘက်တီးရီးယား၏ ရည်ညွှန်းတန်ဖိုးဖော်ပြထားခြင်းမရှိသောကြောင့် ဗီယက်နမ်နိုင်ငံ၏ မြေပေါ်ရေအရည်အသွေးဆိုင်ရာ အမျိုးသားနည်းပညာစည်းမျဉ်းဥပဒေ (No. QCVN 08-MT: 2015/BTNMT)ကို ကိုးကားချက်အဖြစ် အသုံးပြုထားသည်။ ဖြည့်စွက်ချက်အနေဖြင့် မြေအောက်ရေ အရည်အသွေး ရလဒ်များနှင့်အတူ နှိုင်းယှဉ်ရန်အတွက် ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီအရင်ခံစာတွင်ပါရှိသည့် ပတ်ဝန်းကျင်ရေထုသို့ စွန့်ထုတ်မည့်ထုတ်လွှတ်ရေအရည်အသွေး ရည်မှန်းတန်ဖိုးများကိုလည်း စဉ်းစားထား ပါသည်။

သံဓာတ်ရလဒ်အနေဖြင့် မြေအောက်ရေမူနာယူသည့်နေရာ-၂ (GW-2)သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေပါသည်။ ဧပြီလ၊ ၂၀၁၉ ခုနှစ်ကတည်းက မြေအောက်ရေမူနာယူသည့်နေရာ-၂ (GW-2)၏ ယခင် စောင့်ကြည့်လေ့လာမှုရလဒ်များနှင့် နှိုင်းယှဉ်သောအခါတွင် သံဓာတ်ရလဒ် အပိုင်းအခြားများသည် ဧပြီလ၊ ၂၀၂၃ ခုနှစ်တွင် ၀.၁၀၈ mg/l မှ ဒီဇင်ဘာလ၊ ၂၀၂၃ခုနှစ် တွင် ၁၄.၁၀၀ mg/l အတွင်းရှိပါသည်။ ဩဂုတ်လ ၂၀၁၉ခုနှစ်၊ ဖော်ဖော်ဝါရီလ နှင့် ဧပြီလ၊ ၂၀၂၂ခုနှစ် နှင့် ဧပြီလ၊ ၂၀၂၃ခုနှစ် တို့၏ သံဓာတ်ပါဝင်မှုရလဒ်မှလွဲ၍ သံဓာတ်ပါဝင်မှုရလဒ်အများစု (ဧပြီလ၊ ၂၀၁၉ခုနှစ် မှ ဒီဇင်ဘာလ၊ ၂၀၂၅ခုနှစ်အထိ)သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေကြောင်း တွေ့ရသည်။ ထို့ကြောင့် ဖြစ်နိုင်ချေရှိသော အကြောင်းအရာများမှာ သဘာဝမြေဆီလွှာမှ သံဓာတ်အရင်းအမြစ် လွှမ်းမိုးမှုကြောင့် ဖြစ်နိုင်ပါသည် (သံဓာတ်သည်ရေစီးဆင်းမှုကြောင့် မြေဆီလွှာအတွင်းမှ ထွက်လာနိုင်ပါသည်။)။ အထူးသဖြင့် သီလဝါ အထူးစီးပွားရေးဇုန်၏ ပတ်ဝန်းကျင်ရှိ တောင်ကုန်းငယ်များသည် သံဓာတ်ကြွယ်ဝသောမြေဆီလွှာ (ဂဝံမြေ)ဖြင့် အဓိကဖွဲ့စည်းထားပြီး စီးဆင်းရေများကြောင့် ၎င်းသံဓာတ်များ သည် မြေအောက်ရေအောင်းလွှာ အတွင်းသို့ ရောက်ရှိသွားသောကြောင့် ဖြစ်နိုင်ပါသည်။

ယခုစောင့်ကြည့်လေ့လာသောရလဒ်များနှင့် ဇန်နဝါရီလ၊ ၂၀၁၆ ခုနှစ်တွင် တိုင်းတာခဲ့သော အခြေခံ ရလဒ်များအားနှိုင်းယှဉ်ခဲ့ရာတွင် မြေအောက်ရေမူနာယူသည့် နေရာ-၂ (GW-2)၏ ဆိုင်းကြွအနယ်၊ ဓာတုနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင်လိုအပ်ချက်ရလဒ်များသည် GW-2 (ဇန်နဝါရီလ၊ ၂၀၁၆ ခုနှစ် အခြေခံ အချက်အလက်တိုင်းတာခြင်း)၏ ရလဒ်များထက်နည်းပါးသော်လည်း၊ မြေအောက်ရေမူနာယူသည့်နေရာ-၂ (GW-2)၏ ဖော့စဖောရက် စုစုပေါင်း၊ အရောင်နှင့် သံဓာတ်ရလဒ်များသည် GW-2 (ဇန်နဝါရီလ၊ ၂၀၁၆ ခုနှစ် အခြေခံအချက်အလက်တိုင်းတာခြင်း)၏ ရလဒ်များထက် ပို၍မြင့်မားနေကြောင်း တွေ့ရှိရပါသည်။

ဇယား ၂.၅-၃ ရည်ညွှန်းရေတွင်း၏ ရေအရည်အသွေး စောင့်ကြည့်လေ့လာမှုရလဒ်များ

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ (Parameters)	ယူနစ်	မြေအောက်ရေ နမူနာယူသည့် နေရာ-၂ (GW-2)	GW-2 (အခြေခံရလဒ်၊ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ)*	ရည်မှန်း တန်ဖိုး	ဗီယက်နမ် မြေအောက်ရေ အရည်အသွေး
၁	ရေအပူချိန် (Water Temperature)	°C	၂၈	၂၈.၇	≤ ၃၅	-
၂	ချဉ်ဖန်ကိန်း(pH)	-	၆.၇	၇.၀	၆-၉	၅.၅ - ၈.၅
၃	ပျော်ဝင်အောက်စီဂျင် (Dissolved Oxygen)	mg/l	၇.၂၃	၇.၅	-	-
၄	နောက်ကျိမှု (Turbidity)	NTU	၁၅	-	-	-
၅	ဆိုင်းကြွအနယ် (Suspended Solid)	mg/l	၄	၂၆	၅၀	-
၆	ဇီဝနည်းဖြင့်ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (၅-ရက်) (BOD ₍₅₎)	mg/l	၂.၆၉	< ၂	၃၀	-
၇	ဓာတုနည်းဖြင့် ဖြိုခွဲရန် အောက်စီဂျင် လိုအပ်ချက် (COD _(Cr))	mg/l	< ၀.၇	၃၈	၁၂၅	-
၈	ကိုလီဖောင်းစုစုပေါင်း (Total Coliform)	MPN/ 100ml	< ၁.၈	> ၂၃	၄၀၀	၃
၉	ဆီနှင့် အမဲဆီ (Oil and Grease)	mg/l	< ၃.၁	< ၀.၅	၁၀	-
၁၀	နိုက်ထရိုဂျင်စုစုပေါင်း (Total Nitrogen)	mg/l	< ၀.၅	< ၁	၈၀	-
၁၁	ဖော့စဖောရက်စုစုပေါင်း (Total Phosphorus)	mg/l	၀.၆၆	၀.၃၄	၂	-
၁၂	အရောင် (Color)	TCU (True Color Unit)	၉၁	< ၁	၁၅၀	-
၁၃	အနံ့ (Odor)	TON (Threshold Odor Number)	၁	None	-	-
၁၄	အမိုးနီးယား (Ammonia)	mg/l	၀.၁၀	-	၁၀	-
၁၅	ပျော်ဝင်အနည်စုစုပေါင်း (Total Dissolved Solids)	mg/l	၁၉၄	-	၂၀၀၀	၁၅၀၀
၁၆	ပြဒါးဓာတ် (Mercury)	mg/l	≤ ၀.၀၀၂	< ၀.၀၀၀၅	၀.၀၀၅	၀.၀၀၁
၁၇	သွပ် (Zinc)	mg/l	၀.၀၂၀	< ၀.၁	၂	၃
၁၈	အာဆီနစ် (Arsenic)	mg/l	≤ ၀.၀၁၀	၀.၀၀၁	၀.၁	

သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)ရှိစက်မှုဇုန်ဖွံ့ဖြိုးတိုးတက်မှုအတွက်ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုအစီရင်ခံစာ
(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)

စဉ်	ရေအရည်အသွေး တိုင်းတာသည့် အမျိုးအစားများ (Parameters)	ယူနစ်	မြေအောက်ရေ နမူနာယူသည့် နေရာ-၂ (GW-2)	GW-2 (အခြေခံရလဒ်၊ ပတ်ဝန်းကျင် ထိခိုက်မှု ဆန်းစစ်ခြင်း အစီရင်ခံစာ)*	ရည်မှန်း တန်ဖိုး	ဗီယက်နမ် မြေအောက်ရေ အရည်အသွေး
၁၉	ခရိုမီယမ် (Chromium)	mg/l	≤ ၀.၀၀၂	-	၀.၅	-
၂၀	ကက်ဒမီယမ် (Cadmium)	mg/l	≤ ၀.၀၀၂	< ၀.၀၀၁	၀.၀၃	၀.၀၀၅
၂၁	ဆယ်လီနီယမ် (Selenium)	mg/l	≤ ၀.၀၁၀	-	၀.၀၂	၀.၀၁
၂၂	ခဲ (Lead)	mg/l	≤ ၀.၀၀၂	< ၀.၀၀၆	၀.၁	၀.၀၁
၂၃	ကြေးနီ (Copper)	mg/l	≤ ၀.၀၀၂	< ၀.၁	၀.၅	-
၂၄	ဗေရီယမ် (Barium)	mg/l	၀.၀၄၀	-	၁	-
၂၅	နစ်ကယ် (Nickel)	mg/l	≤ ၀.၀၀၂	< ၀.၀၀၂	၀.၂	၀.၀၂
၂၆	ငွေ (Silver)	mg/l	≤ ၀.၀၀၂	-	၀.၅	-
၂၇	သံဓာတ် (Iron)	mg/l	၁၂.၇၄၀	၀.၃၅	၃.၅	၅
၂၈	ဆိုင်ယာနိုက်ဒ် (Cyanide)	mg/l	< ၀.၀၀၂	< ၀.၀၁	၀.၁	၀.၀၁
၂၉	ဆိုင်ယာနိုက်ဒ်စုစုပေါင်း (Total Cyanide)	mg/l	< ၀.၀၀၂	-	၁	-
၃၀	ခရိုမီယမ် (Chromium Hexavalent)	mg/l	< ၀.၀၅	< ၀.၀၂	၀.၁	၀.၀၅
၃၁	ဖလူအိုရိုက် (Fluoride)	mg/l	၀.၂၇၅	၀.၂၆	၂၀	-
၃၂	ဖရီးကလိုရင်း (Free Chlorine)	mg/l	< ၀.၁	-	၁	-
၃၃	ကြွင်းကျန်သောကလိုရင်းစုစုပေါင်း (Total Residual Chlorine)	mg/l	< ၀.၁	-	၀.၂	-
၃၄	ဆာလဖိုက်ဒ် (Sulphide)	mg/l	< ၀.၀၀၅	-	၁	-
၃၅	ဖော်မယ်ဒီဟိုက် (Formaldehyde)	mg/l	< ၀.၀၀၃	-	၁	-
၃၆	ဖီနော (Phenols)	mg/l	< ၀.၀၀၂	-	၀.၅	၀.၀၀၁
37	ဝမ်းကိုက်ရောဂါကိုဖြစ်စေသော ကိုလီဖောင်း ဘက်တီးရီးယား (Escherichia Coli)	MPN/100ml	< ၁.၈	-	(၁၀၀)** (MPN/၁၀၀ml)	(၁၀၀)** MPN/၁၀၀ml)

မှတ်ချက်။ အနီရောင်ဖြင့်ဖော်ပြထားသောတန်ဖိုးများသည်သတ်မှတ်ထားသည့်တန်ဖိုးများထက်ကျော်လွန်နေသည်ကိုဆိုလိုပါသည်။

မှတ်ချက်။ ဗီယက်နမ် မြေအောက် ရေအရည်အသွေး ရည်မှန်းတန်ဖိုး (No. QCVN 09-MT: 2015/BTNMT)

* ဇန်နဝါရီလ ၂၀၁၆ တွင် တိုင်းတာခဲ့သော ဇုန်အပိုင်း(ခ)၏ ပတ်ဝန်းကျင်ထိခိုက်မှု ဆန်းစစ်ခြင်းအစီအရင်ခံစာတွင် ဖော်ပြထားသော အခြေခံရလဒ်များ။

** မြေအောက်ရေစောင့်ကြည့်လေ့လာသောနေရာတွင် ရေအသုံးပြုမှုပေါ်မူတည်၍ ဗီယက်နမ်နိုင်ငံရှိ မြေပေါ်ရေအရည်အသွေးဆိုင်ရာ အမျိုးသားနည်းပညာ စည်းမျဉ်းဥပဒေ B1 (ဆည်မြောင်းရေ) (No. QCVN08-MT: 2015/BTNMT) ကိုမြေအောက်ရေကိုယ်တိုင် စောင့်ကြည့်လေ့လာခြင်းအတွက် ရည်မှန်းတန်ဖိုးအဖြစ်သတ်မှတ်ပါသည်။

မူရင်း။ မြန်မာ့အံ့အေတာနေရှင်နယ်လီမိတက်



**၂.၅.၃ ယခင်စောင့်ကြည့်လေ့လာမှုရလဒ်များ နှင့် ၂၀၂၅ခုနှစ် ဒီဇင်ဘာလတွင် စောင့်ကြည့်လေ့လာမှု
ရလဒ်များ ၏ ရည်မှန်းတန်ဖိုးထက် ကျော်လွန်နေသော ရေအရည်အသွေးများ နှိုင်းယှဉ်ခြင်း**

ယခု စောင့်ကြည့်လေ့လာနေစဉ်ကာလ (ဒီဇင်ဘာလ ၂၀၂၅) အတွင်း ရည်မှန်းတန်ဖိုးထက် ကျော်လွန်နေသော
ရေအရည်အသွေးများအား ခြုံငုံသုံးသပ်ကြည့်ရန်အတွက် ၂၀၂၄ ခုနှစ် ဒီဇင်ဘာလကတည်းက ရရှိသော
စောင့်ကြည့်မှုရလဒ်များနှင့် နှိုင်းယှဉ်ထားပါသည်။

ရေစွန့်ထုတ်လိုက်သောနေရာများ၏ ရေအရည်အသွေးရလဒ်များနှင့် ပတ်သက်၍ မြေပေါ်ရေနမူနာယူသည့်
နေရာ-၇ (SW-7)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၈ (SW-8)တို့၏ ဆိုင်းကြွအနယ်ရလဒ်တန်ဖိုးများသည်
ဧပြီလ၊ ဇွန်လ၊ အောက်တိုဘာလနှင့် ဒီဇင်ဘာလ ၂၀၂၅ တို့တွင် ကန့်သတ် တန်ဖိုးထက် ကျော်လွန်နေကြောင်း
တွေ့ရှိရပါသည်။ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)၏ ဆိုင်းကြွအနယ်ရလဒ်တန်ဖိုးသည် မိုးရာသီနှင့်
ခြောက်သွေ့သောရာသီတို့တွင် ၅၆ မှ ၈၆ mg/l တန်ဖိုးအပိုင်းအခြားထိ သိသိသာသာ မြင့်မားနေသည်ကို
တွေ့မြင်ရပါသည်။

မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)၏ သံဓာတ်ပါဝင်မှုရလဒ်သည် ယခုစောင့်ကြည့်လေ့လာသည့်
ကာလ (ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)တွင် ကန့်သတ်တန်ဖိုးထက် မြင့်မားနေပြီး မြေပေါ်ရေနမူနာယူသည့်နေရာ-၈
(SW-8)၏ သံဓာတ်ပါဝင်မှုရလဒ်သည် စောင့်ကြည့်လေ့လာသည့် ကာလလေးခု (ဇွန်လ၊ ဩဂုတ်လ၊
အောက်တိုဘာလ နှင့် ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)တွင် ကန့်သတ်ချက်ထက် အနည်းငယ် ပိုမိုမြင့်မားနေပြီး ၃.၇၂၆
မှ ၈.၄၂ mg/l အပိုင်းအခြားအတွင်း ရှိပါသည်။ ဖြစ်နိုင်သော အကြောင်းအရင်းမှာ သဘာဝ
သံဓာတ်အရင်းအမြစ်၏ လွှမ်းမိုးမှုကြောင့် ဖြစ်နိုင်ပါသည် (သံဓာတ်သည် ရေစီးဆင်းမှုကြောင့် မြေဆီလွှာ
အတွင်းမှ ထွက်လာနိုင်ပါသည်)။ အထူးသဖြင့် သီလဝါအထူးစီးပွားရေးဇုန် ပတ်ဝန်းကျင်ရှိ
တောင်ကုန်းငယ်များသည် သံဓာတ်ကြွယ်ဝသော မြေဆီလွှာ(ဂဝံမြေ)ဖြင့် အဓိကဖွဲ့စည်းထားပြီး စီးဆင်းရေများ
သို့မဟုတ် လေပြင်းတိုက်ခတ်မှုများကြောင့် ၎င်းမြေသားများသည် မြေနိမ့်ပိုင်းဒေသများသို့
ရောက်ရှိသွားသောကြောင့် ဖြစ်နိုင်ပါသည်။ ထို့အပြင် သံဓာတ်များသည် သဘာဝအတိုင်း ပတ်ဝန်းကျင်တွင်
အချိန်ကြာမြင့်စွာ ကျန်ရှိနေခြင်းကြောင့်ဖြစ်သည်။

အခြားတစ်ဖက်တွင် စောင့်ကြည့်လေ့လာသည့် ရည်ညွှန်းအမှတ် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4) ရှိ
ဆိုင်းကြွအနယ်ရလဒ်သည် သုံးရာသီတလျှောက်လုံးတွင် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေပြီး၊ ၇၀ မှ ၈၁၇
mg/l ထိ တန်ဖိုးအပိုင်းအခြား အတွင်းရှိနေပါသည်။ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4) တွင်
ဆိုင်းကြွအနည်ရလဒ်သည် အမြဲမြင့်မားနေခြင်းမှာ ရွှေပျောက်ချောင်းတလျှောက် ချောင်းအောက်ဘက်ရှိ
ရေများသည် သုံးရာသီတလျှောက်လုံးတွင် ဒီရေအတက်အကျကြောင့် အထက်သို့ပြန်လည် စီးဝင်လာသော
ကြောင့် ရေများ နောက်ကျိမှု ဖြစ်သွားသကဲ့သို့ အနီးပတ်ဝန်းကျင်မှ စိုက်ပျိုးရေးလုပ်ငန်းများနှင့် အိမ်သုံး
စွန့်ပစ်ရေများ စီးဆင်းမှုကြောင့်ဖြစ်ပါသည်။ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၂ (SW-2)ရှိ
သံဓာတ်ရလဒ်တန်ဖိုးသည် စောင့်ကြည့်လေ့လာသည့်ကာလ (၃) ခု (ဩဂုတ်လ၊ အောက်တိုဘာလ နှင့်
ဒီဇင်ဘာလ ၂၀၂၅) တွင် ကန့်သတ် တန်ဖိုးထက် ကျော်လွန်နေပြီး ၃.၆၇ mg/l မှ ၈၁၇ mg/l ထိမြင့်မားနေပြီး
မြေပေါ်ရေနမူနာယူသည့် နေရာ-၄ (SW-4)၏ သံဓာတ်တန်ဖိုးမြင့်မားမှုသည် စောင့်ကြည့်လေ့လာသည့်ကာလ
(၆) ခု (ဒီဇင်ဘာလ ၂၀၂၄ နှင့် ဖေဖော်ဝါရီလ၊ ဧပြီလ၊ ဩဂုတ်လ၊ အောက်တိုဘာလနှင့် ဒီဇင်ဘာလ ၂၀၂၅)
တို့တွင် ကန့်သတ်တန်ဖိုးထက်မြင့်မားနေပြီး၊ ၄.၈၅ မှ ၁၇၁.၆၄ mg/l တန်ဖိုးအပိုင်းအခြား အတွင်းရှိနေပါ



မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4) ၏ သံဓာတ် တန်ဖိုးမြင့်မားမှုသည် သုံးရာသီတလျှောက်လုံးတွင် မြင့်မားနေကြောင်း တွေ့ရှိရသည်။ ယခုလက်ရှိ ရေအရည်အသွေးများ၏ ရလဒ်များအခြေအနေသည် သီလဝါအထူးစီးပွားရေးဇုန် ယခင်နှင့်ယခုလက်ရှိကာလ လည်ပတ်မှု၏ ပတ်ဝန်းကျင်အခြေနေများကို ထင်ဟပ်နေသည်ဟု ဆိုနိုင်ပါသည်။

ရည်မှန်းတန်ဖိုးထက်ကျော်လွန်နေသည့် သက်ဆိုင်ရာ ရေအရည်အသွေး အမျိုးအစားများအတွက် ဖြစ်နိုင်သော အကြောင်းပြချက်များအား ဤ အစီရင်ခံစာ၏ အရှေ့ပိုင်းရှင်းလင်းချက်တွင် ဖော်ပြထားပါသည်။

အခန်း ၃ နိဂုံးချုပ် နှင့် အကြံပြုချက်များ

အခန်း ၂ (အပိုင်း ၂.၅) တွင်ဖော်ပြထားသကဲ့သို့ သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ) လုပ်ငန်းလည်ပတ်နေစဉ် ကာလ စောင့်ကြည့်လေ့လာသောအချိန်အတွင်း မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)နှင့် မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7) တို့တွင် ဆိုင်းကြွအနယ်၊ မြေပေါ်ရေနမူနာယူသည့် နေရာ-၂ (SW-2)၊ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)၊ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)၊ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၈ (SW-8)နှင့် မြေအောက်ရေနမူနာယူသည့်နေရာ-၂ (GW-2) တို့တွင် သံဓာတ် စသည်တို့သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေပါသည်။

ဆိုင်းကြွအနယ်ရလဒ်အနေဖြင့် ချောင်းတွင်းသို့ မစွန့်ထုတ်ခင် ဇုန်အပိုင်း(ခ)၏ အဓိက စွန့်ထုတ်ရေထွက်ပေါက်ဖြစ်သော မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7) ရလဒ်သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေခြင်းမှာ ဇုန်အပိုင်း(ခ)ရှိ မြေလွတ်များမှ မြေမျက်နှာပြင် စီးဆင်းရေများကြောင့် ဖြစ်နိုင်ပါသည်။

သံဓာတ်ရလဒ်အနေဖြင့် ချောင်းတွင်းသို့ မစွန့်ထုတ်ခင် ဇုန်အပိုင်း(ခ)၏ အဓိကစွန့်ထုတ်ရေထွက်ပေါက်တစ်ခု ဖြစ်သော မြေပေါ်ရေနမူနာယူသည့်နေရာ-၇ (SW-7)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၈ (SW-8)ရှိ ရလဒ်သည် ကန့်သတ်တန်ဖိုးထက် အနည်းငယ်ကျော်လွန်နေကြောင်း တွေ့ရှိရပါသည်။ ဖြစ်နိုင်သော အကြောင်းအရာများမှာ သဘာဝမြေဆီလွှာမှ သံဓာတ်အရင်းအမြစ်လွှမ်းမိုးမှု (သံဓာတ်သည် ရေစီးဆင်းမှု ကြောင့် မြေဆီလွှာအတွင်းမှ ထွက်လာနိုင်ပါသည်) ကြောင့်ဖြစ်နိုင်ပါသည်။ အထူးသဖြင့် သီလဝါ အထူး စီးပွားရေးဇုန်၏ ပတ်ဝန်းကျင်ရှိ တောင်ကုန်းငယ်များသည် သံဓာတ်ကြွယ်ဝသော မြေဆီလွှာ(ဂဝံမြေ)ဖြင့် အဓိကဖွဲ့စည်းထားပြီး လေပြင်းတိုက်ခတ်မှုများကြောင့် ၎င်းမြေသားများသည် မြေနိမ့်ပိုင်းဒေသများသို့ ရောက်ရှိသွားသောကြောင့် ဖြစ်နိုင်ပါသည်။ ထို့အပြင် သံဓာတ်များသည် သဘာဝအတိုင်း ပတ်ဝန်းကျင်တွင် အချိန်ကြာမြင့်စွာ ကျန်ရှိနေခြင်းကြောင့်ဖြစ်သည်။

စောင့်ကြည့်လေ့လာသည့် ရည်ညွှန်းအမှတ် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)တွင် ဆိုင်းကြွအနယ် ရလဒ်သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေပါသည်။ မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)ရှိ ဆိုင်းကြွအနည်ရလဒ်သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေခြင်းမှာ (၁) ချောင်း အထက်ပိုင်းမှရေများ သဘာဝအလျောက် စီးဆင်းလာခြင်းနှင့် သီလဝါအထူးစီးပွားရေးဇုန်ပြင်ပရှိ ပြည်တွင်းစက်မှုဇုန်မှ စွန့်ထုတ်လိုက်သော ရေများကြောင့်လည်းကောင်း၊ (၂) ရွှေပျောက်ချောင်းတလျှောက် ချောင်းအောက်ဘက်ရှိ ရေများသည် ဒီရေအတက်အကျကြောင့် အထက်သို့ပြန်လည်စီးဝင်လာခြင်းကြောင့် လည်းကောင်း ဖြစ်နိုင်ပါသည်။

သံဓာတ်ရလဒ်အနေဖြင့် စောင့်ကြည့်လေ့လာသည့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၂ (SW-2)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)ရှိ ရလဒ်သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေပါသည်။ ဖြစ်နိုင်ချေရှိသော မြေပေါ်ရေနမူနာယူသည့်နေရာ-၂ (SW-2)နှင့် မြေပေါ်ရေနမူနာယူသည့်နေရာ-၄ (SW-4)ရှိ ရလဒ် ကျော်လွန်နေခြင်းအကြောင်းအရာများမှာ သဘာဝသံဓာတ်အရင်းအမြစ်၏ လွှမ်းမိုးမှုကြောင့် ဖြစ်နိုင်ပါသည် (သံဓာတ်သည် ရေစီးဆင်းမှုကြောင့် မြေဆီလွှာအတွင်းမှ ထွက်လာနိုင်ပါသည်)။ အထူးသဖြင့် သီလဝါအထူးစီးပွားရေးဇုန်၏ ပတ်ဝန်းကျင်ရှိတောင်ကုန်းငယ်များသည် သံဓာတ်ကြွယ်ဝသော မြေ^၁

(ဂဝံမြေ)ဖြင့် အဓိကဖွဲ့စည်းထားပြီး စီးဆင်းရေများ သို့မဟုတ် လေပြင်းတိုက်ခတ်မှုများကြောင့် ၎င်းမြေသားများသည် မြေနိမ့်ပိုင်းဒေသများသို့ ရောက်ရှိသွားသောကြောင့် ဖြစ်နိုင်ပါသည်။

သံဓာတ်ရလဒ်အနေဖြင့် မြေအောက်ရေမူနာယူသည့်နေရာ-၂ (GW-2)သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေပါသည်။ ဧပြီလ၊ ၂၀၁၉ ခုနှစ်ကတည်းက မြေအောက်ရေမူနာယူသည့်နေရာ-၂ (GW-2)၏ ယခင် စောင့်ကြည့်လေ့လာမှုရလဒ်များနှင့် နှိုင်းယှဉ်သောအခါတွင် သံဓာတ်ရလဒ် အပိုင်းအခြားများသည် ဧပြီလ၊ ၂၀၂၃ ခုနှစ်တွင် ၀.၁၀၈ mg/l မှ ဒီဇင်ဘာလ၊ ၂၀၂၃ခုနှစ် တွင် ၁၄.၁၀၀ mg/l အတွင်းရှိပါသည်။ ဩဂုတ်လ ၂၀၁၉ခုနှစ်၊ ဖော်ဖော်ဝါရီလနှင့် ဧပြီလ၊ ၂၀၂၂ခုနှစ်နှင့် ဧပြီလ၊ ၂၀၂၃ခုနှစ် တို့၏ သံဓာတ်ပါဝင်မှုရလဒ်မှလွဲ၍ သံဓာတ်ပါဝင်မှုရလဒ် အများစု (ဧပြီလ၊ ၂၀၁၉ခုနှစ် မှ ဒီဇင်ဘာလ၊ ၂၀၂၅ခုနှစ်အထိ)သည် ကန့်သတ်တန်ဖိုးထက် ကျော်လွန်နေကြောင်း တွေ့ရသည်။ ထို့ကြောင့် ဖြစ်နိုင်ချေရှိသော အကြောင်းအရာများမှာ သဘာဝမြေဆီလွှာမှ သံဓာတ်အရင်းအမြစ် လွှမ်းမိုးမှုကြောင့် ဖြစ်နိုင်ပါသည် (သံဓာတ်သည်ရေစီးဆင်းမှုကြောင့် မြေဆီလွှာအတွင်းမှ ထွက်လာနိုင်ပါသည်။)။ အထူးသဖြင့် သီလဝါ အထူးစီးပွားရေးဇုန်၏ ပတ်ဝန်းကျင်ရှိ တောင်ကုန်းငယ်များသည် သံဓာတ်ကြွယ်ဝသောမြေဆီလွှာ (ဂဝံမြေ)ဖြင့် အဓိကဖွဲ့စည်းထားပြီး စီးဆင်းရေများကြောင့် ၎င်းသံဓာတ်များ သည် မြေအောက်ရေအောင်းလွှာ အတွင်းသို့ ရောက်ရှိသွားသောကြောင့် ဖြစ်နိုင်ပါသည်။

စောင့်ကြည့်လေ့လာသော ရေအရည်အသွေးရလဒ်များနှင့် အမျိုးသားမြေပေါ်ရေအရည်အသွေးဆိုင်ရာ စံချိန်စံညွှန်းများနှင့် နှိုင်းယှဉ်သောအခါတွင် မြေပေါ်ရေမူနာယူသည့်နေရာ-၂ (SW-2)၊ မြေပေါ်ရေမူနာ ယူသည့်နေရာ-၄ (SW-4)၊ မြေပေါ်ရေမူနာယူသည့်နေရာ-၇ (SW-7)နှင့် မြေပေါ်ရေမူနာယူသည့်နေရာ-၈ (SW-8)တို့၏ ရေအရည်အသွေးရလဒ်များသည် ရေအသုံးပြုမှုအမျိုးအစား ၅ နှင့် ကိုက်ညီပါသည်။

အနာဂတ်တွင် သီလဝါအထူးစီးပွားရေးဇုန်အပိုင်း(ခ)၏ အဓိကစွန့်ထုတ်ရေ ထွက်ရှိသောနေရာများမှ ထွက်ရှိလာသော ရေအရည်အသွေးများဖြစ်သည့် ဆိုင်းကြွအနယ်နှင့် သံဓာတ်ရလဒ်၏ ရည်မှန်းတန်ဖိုးနှင့် သင့်လျော်သော ရေအရည်အသွေးစောင့်ကြည့်လေ့လာမှုရရှိနိုင်ရန် အောက်ပါဆောင်ရွက်ချက်များကို လုပ်ဆောင်သင့်ပါသည်။

- ရေထိန်းကန်အတွင်းရှိနေသော စုခဲနေသောအနည်အနှစ်များနှင့် ပေါက်ရောက်နေသောအပင်များကို ပုံမှန်ဖယ်ရှားရှင်းလင်းပေးခြင်းဖြင့် သန့်ရှင်းမှုကို အပြည့်အဝဆက်လက်ဆောင်ရွက်ရန်၊
- ကိုလီဖောင်းဘက်တီးရီးယားများ၏ ကျန်းမာရေးအပေါ်သက်ရောက်မှုကိုသိရှိနိုင်ရန် ဝမ်းကိုက်ရောဂါကို ဖြစ်စေသော ကိုလီဖောင်းဘက်တီးရီးယား(E. Coli)ကိုဆက်လက်စောင့်ကြည့်ရန်၊
- စွန့်ထုတ်ရေများစီးဆင်းသောရေမြောင်းများကို ပုံမှန်သန့်ရှင်းရေးပြုလုပ်ရန်၊
- စက်ရုံများမှထွက်ရှိလာသောစွန့်ပစ်ရေများ၏ ရေအရည်အသွေးများအားစစ်ဆေးရန်။

ဤတွင်စာတမ်းပြီးဆုံးပါသည်။



နောက်ဆက်တွဲ ၁ ရေနမူနာရယူသည့် မှတ်တမ်းဓာတ်ပုံများ



သီလဝါအထူးစီးပွားရေးဇုန် အပိုင်း (ခ) ရှိ စွန့်ထုတ်ရေနမူနာရယူသည့်နေရာ



မြေပေါ်ရေနမူနာယူသည့် နေရာ-၇ (SW-7) ၌ ရေနမူနာရယူခြင်းနှင့်တိုင်းတာခြင်း



မြေပေါ်ရေနမူနာယူသည့် နေရာ-၈ (SW-8) ၌ ရေနမူနာရယူခြင်းနှင့်တိုင်းတာခြင်း

**စွန့်ထုတ်ရေထွက်ရှိသောနေရာများနှင့် စွန့်ထုတ်ရေရောက်ရှိနိုင်သည့်ချောင်း၏
အခြေခံအချက်အလက်များကို နှိုင်းယှဉ်ရန်အတွက် ရည်ညွှန်းစောင့်ကြည့်လေ့လာသည့် နေရာများ**



မြေပေါ်ရေနမူနာယူသည့် နေရာ-၂ (SW-2) ၌ ရေနမူနာရယူခြင်းနှင့်တိုင်းတာခြင်း



မြေပေါ်ရေနမူနာယူသည့် နေရာ-၄ (SW-4) ၌ ရေနမူနာရယူခြင်းနှင့်တိုင်းတာခြင်း



မြေအောက်ရေနမူနာယူသည့် နေရာ-၂ (GW-2) ရေနမူနာရယူခြင်းနှင့်တိုင်းတာခြင်း

နောက်ဆက်တွဲ ၂ ဓာတ်ခွဲခန်းရလဒ်များ



စွန့်ထုတ်ရေထွက်ရှိရာနေရာ

DOWA

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Phone No Fax No: (+95) 1 2309051



Report No. : GEM-LAB-202512073

Revision No. : 1

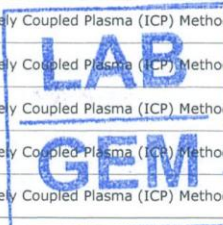
Report Date : 17 December, 2025

Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-7-1203 Sampling Date : 3 December, 2025
Sample No. : W-2512051 Sampling By : Withdraw GEM
Waste Profile No. : - Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	86	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	3.86	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	7.7	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	7.8	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	3.86	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	<0.5	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	<0.05	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	0.05	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	150	2000	—
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	—	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.080	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.130	1	0.002



Nil

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GOLDEN DOWA ECO-SYSTEM MYANMAR CO.,LTD.



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(လုပ်ငန်းလည်ပတ်နေစဉ်ကာလ အပိုင်း ၁၊ အပိုင်း ၂ နှင့် အပိုင်း ၃၊ တစ်နှစ် နှစ်ကြိမ် စောင့်ကြည့်လေ့လာခြင်း၊ ဒီဇင်ဘာလ ၂၀၂၅ ခုနှစ်)

DOWA

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Doc No: GEM-LB-R006E/01/AD
Page 2 of 2

Report No. : GEM-LAB-202512073

Revision No. : 1

Report Date : 17 December, 2025

Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-7-1203 Sampling Date : 3 December, 2025
Sample No. : W-2512051 Sampling By : Withdraw GEM
Waste Profile No. : - Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	20.980	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazolone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process:APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazolone Method)	mg/l	0.002	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazine)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	0.129	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	0.099	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	0.015	1	0.003
32	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	—	1.8
33	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	0.028	0.5	0.002

Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager

REPORT RESULT IS ONLY OF THE SAMPLE SUBMITTED FOR ANALYSIS.
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DOWA

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Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051



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Doc No: GEM-LB-R006E/01/AD
Page 1 of 2

Report No. : GEM-LAB-202512074
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-8-1203
Sample No. : W-2512052
Waste Profile No. : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	28	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	3.96	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	7.6	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	23.0	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	2.43	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	<0.5	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	<0.05	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	0.06	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	156	2000	—
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	—	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.052	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.062	1	0.002

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DOWA

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Doc No: GEM-LB-R006E/01/AD
Page 2 of 2

Report No. : GEM-LAB-202512074

Revision No. : 1

Report Date : 17 December, 2025

Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-8-1203
Sample No. : W-2512052
Waste Profile No. : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	4.476	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process:APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	0.003	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazine)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	0.130	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	0.077	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	0.014	1	0.003
32	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	—	1.8
33	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	<0.002	0.5	0.002

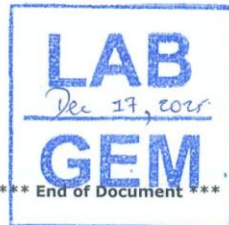
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin Dec 17, 2025
Senior Manager

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**စွန့်ထုတ်ရေထွက်ရှိသောနေရာများနှင့် စွန့်ထုတ်ရေရောက်ရှိနိုင်သည့်ချောင်း၏
အခြေခံအချက်အလက်များကို နှိုင်းယှဉ်ရန်အတွက် ရည်ညွှန်းစောင့်ကြည့်လေ့လာသည့် နေရာများ**

DOWA

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Doc No: GEM-LB-R006E/01/AD
Page1of2

Report No. : GEM-LAB-202512070

Revision No. : 1

Report Date : 17 December, 2025

Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-2-1203
Sample No. : W-2512048
Waste Profile No. : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	20	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	5.06	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	19.8	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	49.0	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	18.14	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	3.5	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.15	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	1.95	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	240	2000	—
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	—	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.032	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.074	1	0.002

Ni

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Lot No E1, Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051



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Doc No: GEM-LB-R006E/01/AD
Page 2 of 2

Report No. : GEM-LAB-202512070

Revision No. : 1

Report Date : 17 December, 2025

Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-2-1203 Sampling Date : 3 December, 2025
Sample No. : W-2512048 Sampling By : Withdraw GEM
Waste Profile No. : - Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	3.670	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazalane Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process: APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalane Method)	mg/l	0.003	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazine)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	0.140	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	0.020	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	0.035	1	0.003
32	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	0.034	0.5	0.002

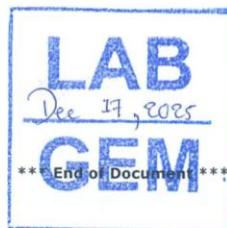
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager

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Lot No E1. Thilawa SEZ Zone A, Yangon Region, Myanmar.
Phone No Fax No: (+95) 1 2309051



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Doc No: GEM-LB-R006E/01/AD
Page1of2

Report No. : GEM-LAB-202512071
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-4-1203
Sample No. : W-2512049
Waste Profile No. : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	166	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	4.93	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	14.9	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	350.0	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	8.14	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	5.0	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.35	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	2.42	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	434	2000	—
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	—	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.074	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.096	1	0.002

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Doc No: GEM-LB-R006E/01/AD
Page 2 of 2

Report No. : GEM-LAB-202512071
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-SW-4-1203 Sampling Date : 3 December, 2025
Sample No. : W-2512049 Sampling By : Withdraw GEM
Waste Profile No. : - Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	14.660	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process: APHA 4500-CN- G. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	0.002	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazide)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	1.144	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	0.194	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	0.025	1	0.003
32	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	<0.002	0.5	0.002

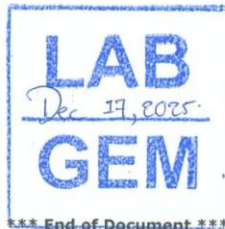
Remark : LOQ - Limit of Quantitation

APHA - American Public Health Association (APHA), the American Water Works Association (AWWA), and the Water Environment Federation (WEF), Standard Methods for the Examination of Water and Wastewater, 22nd edition

APHA 2120B.6(b); Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin Dec 17, 2025
Senior Manager

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Doc No: GEM-LB-R006E/01/AD
Page 1 of 2

Report No. : GEM-LAB-202512075
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-GW-2-1203
Sample No. : W-2512053
Waste Profile No. : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
1	SS	APHA 2540D (Dry at 103-105°C Method)	mg/l	4	50	—
2	BOD (5)	APHA 5210 B (5 Days BOD Test)	mg/l	2.69	30	0.00
3	COD (Cr)	APHA 5220D (Close Reflux Colorimetric Method)	mg/l	<0.7	125	0.7
4	Total Coliform	APHA 9221B (Standard Total Coliform Fermentation Technique)	MPN/100ml	<1.8	400	1.8
5	Oil and Grease	APHA 5520B (Partition-Gravimetric Method)	mg/l	<3.1	10	3.1
6	Color	APHA 2120C (Spectrophotometric Method)	TCU	91.00	150	0.00
7	Total Nitrogen	HACH Method 10072 (TNT Persulfate Digestion Method)	mg/l	<0.5	80	0.5
8	Total Phosphorous	APHA 4500-P E (Ascorbic Acid Method)	mg/l	0.66	2	0.05
9	Ammonia	ISO 7150/1-1984(E)	mg/l	0.10	10	0.01
10	TDS	APHA 2540 C (Total Dissolved Solids Dried at 180°C Method)	mg/l	194	2000	—
11	Odor	APHA 2150 B (Threshold Odor Test)	TON	1	—	0
12	Mercury	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.005	0.002
13	Zinc	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.020	2	0.002
14	Arsenic	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.1	0.010
15	Chromium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
16	Cadmium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.03	0.002
17	Selenium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.010	0.02	0.010
18	Lead	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.1	0.002
19	Copper	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
20	Barium	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	0.040	1	0.002

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Doc No: GEM-LB-R006E/01/AD
Page 2 of 2

Report No. : GEM-LAB-202512075
Revision No. : 1
Report Date : 17 December, 2025
Application No. : 0001-C001

Test Report

Client Name : Myanmar Koei International LTD (MKI)
Address : No, 36/A, 1st Floor, Grand Pho Sein Condominium, Pho Sein Road, Tamwe Township, Yangon, Myanmar.
Project Name : Environment Monitoring report for Zone A & B
Sample Description
Sample Name : MKI-GW-2-1203
Sample No. : W-2512053
Waste Profile No. : -
Sampling Date : 3 December, 2025
Sampling By : Withdraw GEM
Sample Received Date : 3 December, 2025
Analytical Date : 3-17/12/2025

No.	Parameter	Method	Unit	Result	TSEZ's WQ Standard	LOQ
21	Nickel	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.2	0.002
22	Silver	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	≤0.002	0.5	0.002
23	Iron	APHA 3120 B (Inductively Coupled Plasma (ICP) Method)	mg/l	12.740	3.5	0.002
24	Cyanide	HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	0.1	0.002
25	Total Cyanide	Distillation Process: APHA 4500-CN- C. Total Cyanide after Distillation, Determine Cyanide Concentration Process: HACH 8027 (Pyridine -Pyrazalone Method)	mg/l	<0.002	1	0.002
26	Hexavalent Chromium (Cr6+)	ISO 11083:1994 (Determination of chromium(VI) Spectrometric method using 1,5-diphenylcarbazide)	mg/l	<0.05	0.1	0.05
27	Fluoride	APHA 4110 B (Ion Chromatography with Chemical Suppression of Eluent Conductivity)	mg/l	0.275	20	0.014
28	Free Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	1	0.1
29	Total Residual Chlorine	APHA 4500 CL G (DPD Colorimetric Method)	mg/l	<0.1	0.2	0.1
30	Sulphide	HACH 8131 (USEPA Methylene Blue Method)	mg/l	<0.005	1	0.005
31	Formaldehyde	HACH 8110 (MBTH Method)	mg/l	<0.003	1	0.003
32	Escherichia Coli	APHA 9221 F Escherichia Coli Procedure Using Fluorogenic Substrate	MPN/100ml	<1.8	-	1.8
33	Phenols	USEPA Method 420.1 (Phenolics (Spectrophotometric, Manual 4AAP With Distillation))	mg/l	<0.002	0.5	0.002

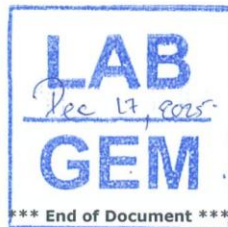
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APHA 2120B.6(b); Color Unit - TCU(True Color Unit).One TCU is equivalent to one Hazen unit and to one Pt-Co unit.

Analysed By :

Cherry Myint Thein
Manager



Approved By :

Ni Ni Aye Lwin
Senior Manager

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