REPORT

METRO VANCOUVER QUATERLY AIR PERMIT REPORTING

Neptune Bulk Terminal Ltd

Prepared for:

Neptune Bulk Terminal Ltd.
1001 Low Level Road
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Envirochem Project No.: 8005-25

Reporting Period: 2024 – Q4

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1.0 BACKGROUND

To meet Metro Vancouver Air Permit GVA0081 (issued September 23rd, 2016) requirements, Neptune Bulk Terminals Ltd. (Neptune) has implemented a procedure for periodic permit reporting requirements to Metro Vancouver including this quarterly reporting.

Fulfilling these requirements requires processing and checking large amounts of data. The procedures in this report provide an efficient means of processing large amounts of data and ensuring that all calculations and outputs generated are completed accurately. In order to increase the efficiency of this process, Neptune has implemented a data management system which allows for uploading of data to the Neptune database and generation of outputs. Envirochem Services Inc. (Envirochem) has been retained to calculate, tabulate and report these requirements to Metro Vancouver and ensure that:

- Raw data being collected and used for generating outputs is valid,
- Correct methodologies are used to generate these outputs, and
- Any outputs being generated undergo quality assurance/quality control (QA/QC) before being submitted electronically to Metro Vancouver.

All of the procedures contained within this report detail methodologies in conformance with Section 3 Schedules A and B of the current version of the permit (September 23rd, 2016).

This report includes quarterly particulate matter monitoring reporting requirements.

2.0 QUARTERLY REPORTING

2.1 ON-SITE $PM_{2.5}$ AND PM_{10} MONITORING – 24 HR ROLLING AVERAGES

2.1.1 METHODOLOGY

Neptune is conducting continuous $PM_{2.5}$ and PM_{10} monitoring using two Met-One E-BAM Plus monitors on-site near the northwest boundary of Neptune Terminals on the roof of the terminal's electrical substation building.

Ambient Air Monitoring data for $PM_{2.5}$ and PM_{10} are stored in Neptune's database. These data are retrieved and verified by Envirochem. QA/QC is performed on the raw data and any invalid data are flagged. Neptune's data management system is then updated accordingly.

2.1.2 RESULTS

Using Neptune's data management system, Envirochem:

- Converts the vetted $PM_{2.5}$ and PM_{10} data to 24-hour rolling averages and performs QA/QC;
- On a quarterly basis, submits the graphs (**Figure 1** and **Figure 2**) to Metro Vancouver.

During Quarter 4 of 2024, there was a brief minimal exceedance of the 24-hour PM_{10} AAQO at Neptune's on-site monitor (see **Figure 2**). No exceedances of the $PM_{2.5}$ AAQO were observed. To investigate the attributable particulate for exceedances of the 24-hour PM_{10} AAQO, Wind speed and direction were analyzed during hours with PM_{10} concentrations where the hourly average concentration was at or above the 24-hour AAQO level of 50 µg/m^3. During these hours, the most frequent wind direction was a westerly wind blowing from outside the facility perimeter towards the on-site monitor.

Results and findings are summarized below.

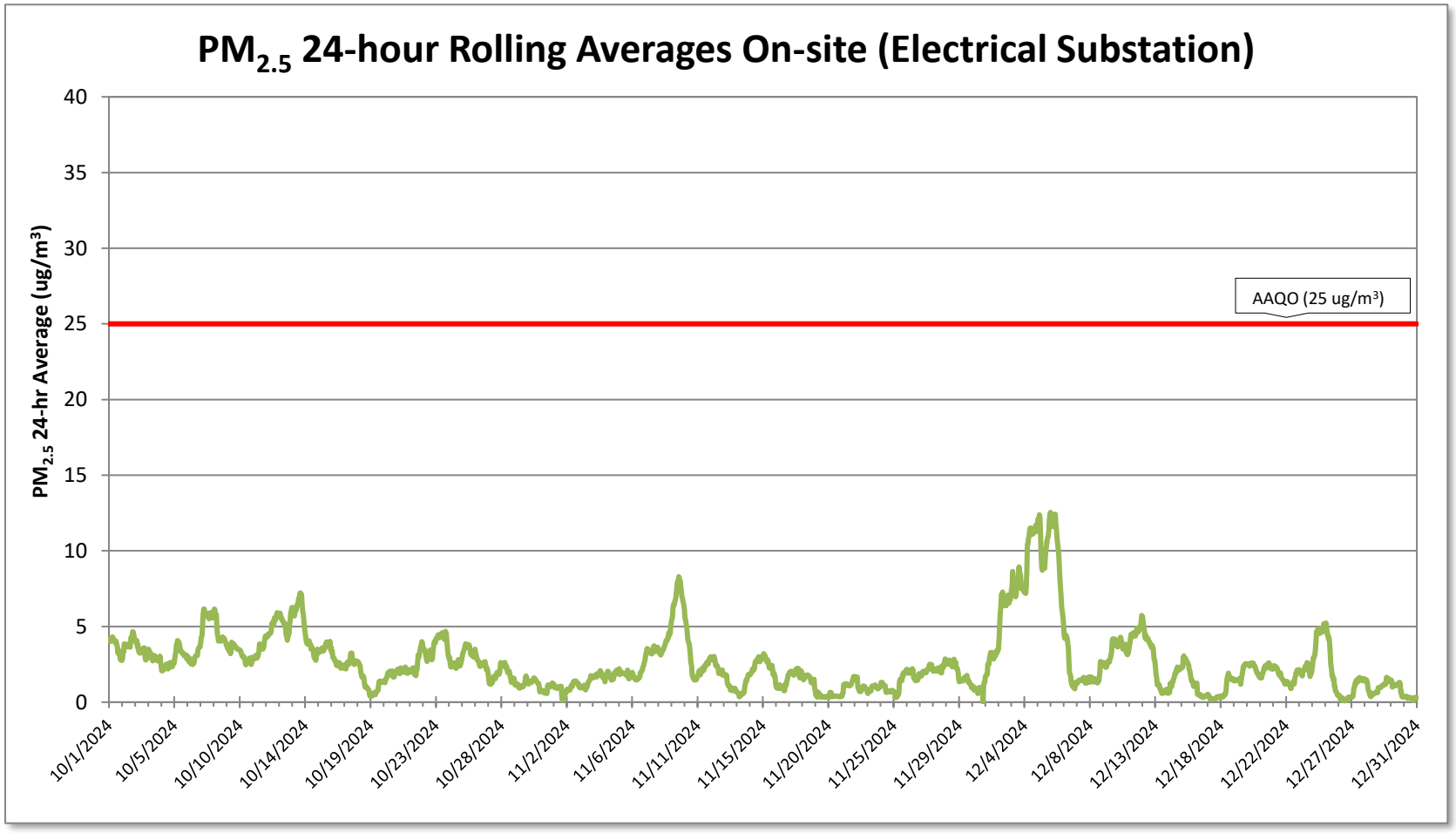

Figure 1: 24-hour rolling averages of $PM_{2.5}$ data from on-site monitor for the fourth calendar quarter 2024 (October 1st to December 31st, 2024)

Note: *Blank spaces indicate that no data is available due to power failure or instrument maintenance.*

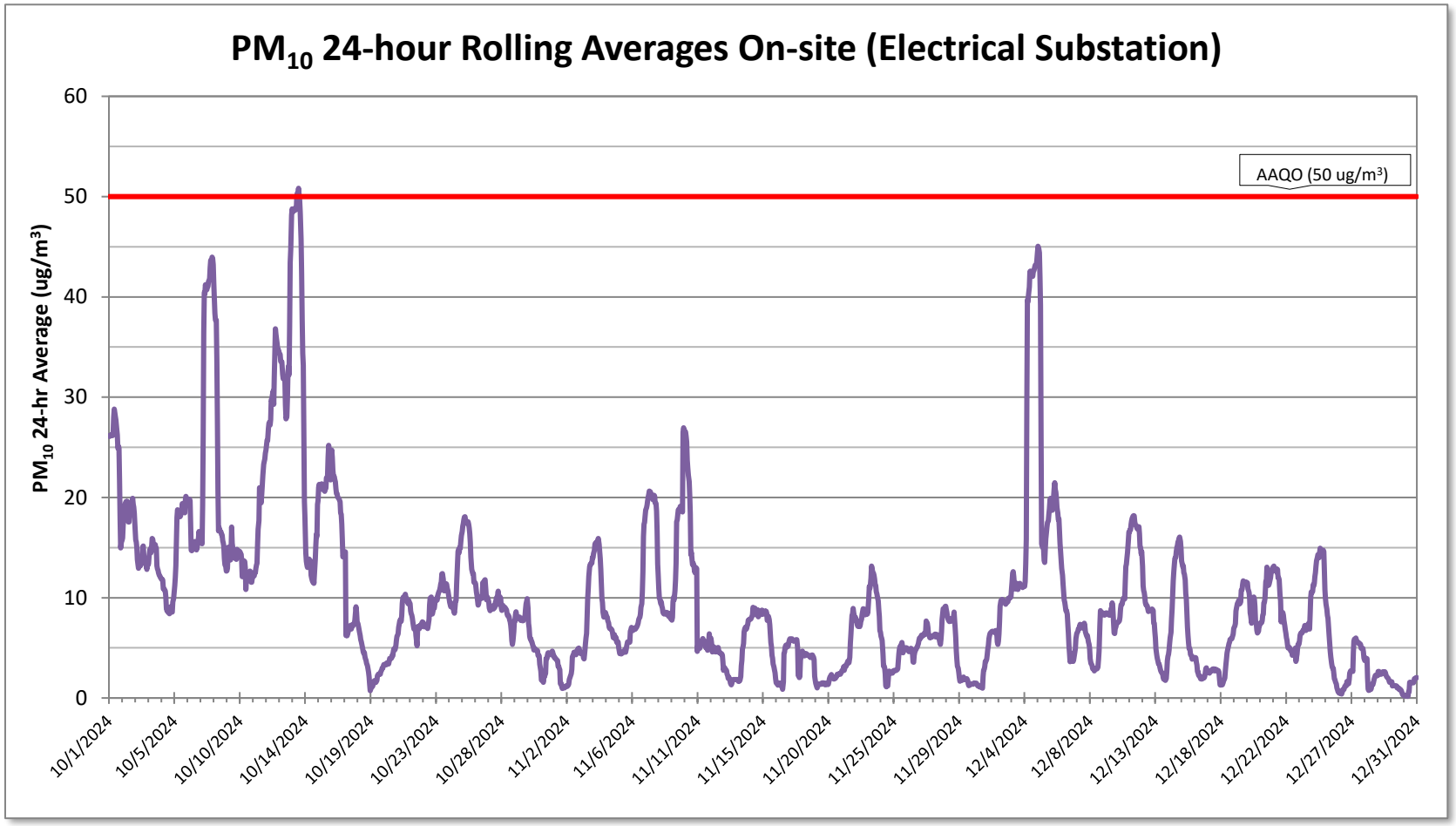

Figure 2: 24-hour rolling averages of PM_{10} data from on-site monitor for the fourth calendar quarter 2024 (October 1st to December 31st, 2024)

Note: *Blank spaces indicate that no data is available due to power failure or instrument maintenance.*

2.2 OFF-SITE $PM_{2.5}$ AND PM_{10} MONITORING – 24 HR ROLLING EXCEEDANCES OF $PM_{2.5}$ AND PM_{10} FROM AAQO

2.2.1 METHODOLOGY

Neptune is conducting continuous $PM_{2.5}$ and PM_{10} monitoring off-site from the terminal at these two locations (in the neighbouring areas):

- To the northeast of the Neptune Terminals, on the roof of 340 Brooksbank Avenue (Neptune's office) equipped with a PM_{10} monitor (Met One E-BAM Plus) and a $PM_{2.5}$ monitor (SHARP 5030i).
- To the northwest of the Neptune Terminals in the residential area at 618 2nd Street East using two pole mounted $PM_{2.5}$ and PM_{10} monitors (Met One E-BAM Plus). *(Note that this location was non-operational during this period due to construction, demolition, and electrical supply issue. This was communicated to Metro Vancouver and relocation plan has been submitted pending approval.*

Ambient Air Monitoring data for $PM_{2.5}$ and PM_{10} is stored in Neptune's database. These data are retrieved and verified by Envirochem. QA/QC is performed on the raw data and any invalid data are flagged. Neptune's data management system is then updated accordingly.

2.2.2 RESULTS

Using Neptune's data management system, Envirochem:

- Converts the vetted $PM_{2.5}$ and PM_{10} data to 24-hour rolling averages;
- Retrieves the quarterly 24-hour rolling averages from Neptune's database;
- Identifies and flags any 24-hour rolling averages which exceed Metro Vancouver Ambient Air Quality Objectives (AAQOs) for $PM_{2.5}$ and PM_{10};
- On a quarterly basis, tabulates all exceedances (**Table 1**) and submits them to Metro Vancouver.

Table 1: Off-Site 24-hour rolling average $PM_{2.5}$ and PM_{10} AAQO exceedances for the fourth calendar quarter 2024 (October 1st to December 31st, 2024)

METRO VANCOUVER PERMIT GVA 0081	
Neptune Bulk Terminals (Canada) Ltd.	
OFF-SITE 24-HR ROLLING AVERAGE $PM_{2.5}$ AND PM_{10} AAQO EXCEEDANCES	
Reporting Period:	**October 1st to December 31st, 2024**

Exceedance Event	MV AAQO		Neptune Office (340 Brooksbank Ave)	Neighbourhood Pole (618 E 2nd St.)	Possible Cause
	Contaminant	µg/m³	Period of Exceedance		
1	$PM_{2.5}$	25	No exceedances	(a)	N/A
	PM_{10}	50	No exceedances	(a)	N/A
2	$PM_{2.5}$	25	No exceedances	(a)	N/A
	PM_{10}	50	No exceedances	(a)	N/A

Note: *AAQOs are based on 24-hour rolling averages. For hours presented above, periods are representative of the previous 24 hours.*

(a): *The $PM_{2.5}$ and PM_{10} units at Neighbourhood Pole (618 E 2nd St) were non-operational during this period due to construction, demolition, and electrical supply issue. This was communicated to Metro Vancouver and relocation plan has been submitted pending approval.*