

## **Attachment 1 – Basis for Determination That Martinez Refining Company’s Revised Fenceline Air Monitoring Plan and Quality Assurance Project Plan (Submitted February 15, 2023) Do Not Meet District Regulation 12-15-403**

1. According to the Air Monitoring Guidelines for Petroleum Refineries (Guidelines) established pursuant to District Regulation 12-15-406 in April 2016, fenceline measurements must be continuously measured with a time resolution of five minutes, and instrumentation must meet a minimum of 75% completeness on an hourly basis, 90% of the time based on annual quarters (p. 5).

Page 23 of the air monitoring plan (AMP) and page 7 of the quality assurance project plan (QAPP) reflect this requirement and refer to “FLM-QLT-GUI-001 Operations Guidance Document” for detailed information about how completeness is determined. However, the procedures and equations for determining data completeness outlined in reference document FLM-QLT-GUI-001 are not consistent with the procedures set forth in our December 22, 2022 letter interpreting Regulation 12-15 and the associated Guidelines (12/22/2022 letter).

This issue is among several others previously identified in a notice of deficiency sent to Martinez Refining Company (MRC) on July 15, 2022. To aid in resolving this deficiency, Attachment 3 to our 12/22/2022 letter outlined detailed procedures MRC must use to demonstrate compliance with the data completeness requirement. The problem nevertheless remains unresolved as the AMP, QAPP, and associated standard operating procedures (SOPs) still have unacceptable procedures regarding data completeness. MRC must incorporate the content of Attachment 3 to our 12/22/2022 letter into the QAPP or associated SOPs.

2. With regard to the detection capabilities of the hydrogen sulfide (H<sub>2</sub>S) monitoring equipment, our 12/22/2022 letter stated that a tunable diode laser (TDL) system used to monitor H<sub>2</sub>S must have a limit of quantitation (LOQ), which ranges from 3 to 25 ppb depending on environmental and operational conditions. In comparison to this requirement:
  - a. Table 2.2 of the AMP and Table 1.2 of the QAPP state that the lower detection limit (“LDL” or alternatively “MDL”) is 3 ppb for all paths; and
  - b. reference document FLM-QLT-SOP-007 describes how the MDL is defined and calculated but neither the AMP, nor the QAPP, nor any of the referenced SOPs state the LOQ of the H<sub>2</sub>S monitoring systems or state how the LOQ is defined and calculated.

The AMP and QAPP are deficient as they are inconsistent with the specifications in our 12/22/2022 letter. MRC must revise the AMP, QAPP, and SOPs to explain how the LOQ is determined and reflect the requirement that the LOQ (not MDL) of the H<sub>2</sub>S system be between 3 and 25 ppb.

3. With regard to quarterly reporting, page 25 of the AMP and page 29 of the QAPP state that MRC will provide one-hour average concentration data to the Air District in a comma separated value (CSV) file, along with the signal intensity, MDL calculations, and data and supporting documentation for invalidated or flagged data. These provisions are either inconsistent with the procedures specified in our 12/22/2022 letter, or lack an adequate level of detail. In particular, attachments 2 and 3 to the letter:
  - stated that all fenceline monitoring concentration data should be provided as 5-minute averages (hourly data are not needed);
  - identified several required data elements;

- specified formats for the required data elements;
- specified procedures for reporting missing data;
- specified reporting procedures for bump tests and calibration checks; and
- specified reporting procedures for quarterly data completeness.

These provisions are either missing or inadequately specified in the AMP, QAPP, and SOPs. The contents of attachments 2 and 3 to our 12/22/2022 letter must be included in the AMP, QAPP, or SOPs.

4. With regard to quarterly reporting:

- page 25 of the AMP states, "Once QA/QC of the final data is completed within 60 days after the end of each calendar quarter, the refinery will provide...data in tabular format...to the BAAQMD" and
- page 29 of the QAPP states, "Once QA/QC of the final data is completed within 60 days after the end of each calendar quarter, the refinery will provide...data in tabular format...to the BAAQMD...."

The AMP must be revised to clearly state that the quarterly reports will be provided to the Air District no later than 60 days after the end of each calendar quarter.

5. In discussing the required bump tests and 3-point calibration checks, pages 16-17 of the QAPP state that the following performance parameters of the TDL will be verified at least quarterly:

- **Detection Limit Range: 3-25 ppb, depending on operational conditions with precision and accuracy no greater than 15%**
- **Average Path-Averaged Detection Limit 15 ppb**
- **Repeatable Detection Limit of 25 ppb with light transmission less than 1%**
- **Path-averaged Range of 3-5000 ppb (with the above caveats)**
- **Reports to BAAQMD will follow the prescribed format provided by BAAQMD**

These provisions are inconsistent with the requirement in the Air District's 12/22/2022 letter that the accuracy and precision specifications of 15% must be met for each monthly bump test. The QAPP must be revised accordingly.

6. With regard to quality assurance and quality control, the Guidelines require the AMP to include a QAPP that follows EPA guidelines and specifies methodologies for ensuring appropriate levels of QA/QC, data acceptance criteria, levels of data quality, data management issues and procedures, and data review and validation procedures (p. 10).

Section 4 of the QAPP and the associated SOPs discuss QA/QC activities for the H<sub>2</sub>S monitoring system. As a general matter, the QAPP and SOPs are incomplete, lack clarity, and are at times inconsistent with the established requirements for the H<sub>2</sub>S TDL.

As a preliminary matter, not all of the reference documents identified in Table 4.1 of the QAPP were provided to us. Missing documents include:

- FLM-QLT-SOP-004

- FLM-QLT-SOP-005
- FLM-QLT-SOP-008
- FLM-QLT-SOP-014
- FLM-QLT-SOP-015
- FLM-QLT-SOP-16
- FLM-QLT-SOP-17
- IMS-QLT-MAN-010
- IMS-QLT-MAN-008

Additional examples include the following:

- Table 4.1 refers to reference document FLM-QLT-SOP-015 with regard to the monthly accuracy checks but references FLM-QLT-SOP-009 with regard to quarterly accuracy checks. Since reference document FLM-QLT-SOP-015 was not provided to us, it is unclear if the different references reflect an error or if there are actual differences in the procedures.
- Table 4.1 of the QAPP provides a summary of the measurement quality objectives for each instrument and pages 23-25 of the QAPP go on to list instrument-specific QA/QC checks. However, the list on pages 23-25 is inconsistent with the content of Table 4.1.
- Our 12/22/2022 letter stated that the detection TDL detection limit must be quantified and verified in real time. While determination of the MDL appears in Table 4.1 as a monthly requirement it is not included as a real-time check.
- Reference document FLM-QLT-SOP-011 states an acceptance criterion for the relative standard deviation, which is inconsistent with the 15% coefficient of variation requirement stated in our 12/22/2022 letter.
- Reference document FLM-QLT-SOP-009 states an acceptance criterion for relative accuracy, which is inconsistent with the 15% accuracy requirement stated in our 12/22/2022 letter.

While these examples are not exhaustive, they illustrate a fundamental lack of clarity and consistency in the QAPP and SOPs. To resolve this issue, MRC must do the following:

- a. add a column to Table 4.1 to specify the system- or pollutant-specific acceptance criteria for each QA/QC check in the table (MRC may also consider splitting Table 4.1 by system or pollutant to improve clarity);
- b. revise Table 4.1 to ensure it reflects all requirements stated in our 12/22/2022 letter;
- c. ensure the narrative discussion following Table 4.1 is consistent with the contents of the table;
- d. provide the Air District with copies of all reference documents identified in Table 4.1;
- e. review and revise all reference documents identified in Table 4.1 to state system- or pollutant-specific procedures and acceptance criteria, which are consistent with the established requirements; and
- f. for each performance indicator check, corrective action, maintenance activity, QA/QC activity, data management activity, or reporting activity identified in the AMP or QAPP, provide references to the relevant SOPs.

Note that this is among the issues discussed in our July 15, 2022 and 12/22/2022 letters that MRC has failed to resolve. Also note that the SOPs will become part of the publicly available AMP and QAPP. As a

result, if an SOP contains confidential information, two copies must be submitted - one that has the confidential information redacted and that can be made available to the public, and another unredacted copy for internal Air District reference.

Finally, note that while MRC previously asserted a claim of confidentiality over all of the reference documents previously provided to us, we disagree that all of the information in those documents is confidential. By submitting a confidential redacted version, MRC represents to the District that it includes information recognized as trade secret under California law.

7. Section 5 of the QAPP identifies a variety of maintenance activities for the H<sub>2</sub>S monitoring system. As a general matter, the QAPP contains an insufficient level of detail regarding the methods and procedures, that will be used to perform these actions. For example, Table 5.2 states that system settings will be verified on a monthly basis but the QAPP does not explain what that involves or include procedures for performing the verification. Details that should be provided in the QAPP or in SOPs attached to the QAPP include: an explanation of the settings and how they affect instrument performance, the range of options available for each setting, typical or expected values for each setting, considerations to make when adjusting the settings, and procedures for documenting adjustments that are made. MRC must attach to the QAPP detailed SOPs for all maintenance activities and corrective actions and provide references to the relevant SOPs in the QAPP.
8. With regard to the required 3-point calibration checks and bump tests, the Air District's 12/22/2022 letter stated that a failure to meet the stated accuracy and precision specifications must trigger repair, maintenance, and root cause analysis followed by repeat calibration checks or bump tests, until a passing check or test is completed. The letter also stated that all steps in this process, including results of each passing and failed calibration check and bump test, and monitor response or calibration adjustments, must be fully documented in the quarterly report submitted to the Air District. These provisions could not be found in the AMP, QAPP, or any of the SOPs and must be included.
9. With regard to the established precision and accuracy specifications, the Air District's 12/22/2022 letter stated that a failure to meet the specifications during two or more bump tests in any quarter, or four bump tests in any 12-month period, will result in a violation of the accuracy or precision specifications (as applicable) and QAPP requirements. The letter further stated that such occurrences will invalidate all data prior to the failed bump test going back to the last passing bump test, and that invalidated data will count against data completeness requirements. These requirements and procedures cannot be found in the QAPP or any of the SOPs and must be added.
10. Page 27 of the AMP states that a "preliminary" QAPP has been provided and that it is to be updated with the approved AMP and finalization of equipment and contractor support for operating the monitoring equipment and website. When an AMP and QAPP are submitted for Air District review and approval, it is expected both documents are what MRC considers to be final versions. Subsequent changes to either document would require additional Air District review and approval in accordance with the procedures in Rule 12-15. As a result, language characterizing the QAPP as "preliminary" should be stricken from the AMP. It must also be made clear that the AMP and QAPP will be submitted to the Air District for approval whenever they are revised.
11. The AMP, QAPP, and SOPs contain unclear and unacceptable provisions regarding the data management, validation, and reporting process. For example, page 25 of the AMP and page 29 of the

QAPP state that an automated system conducts quality assurance checks on data before it is reported to the public website. Those sections of the AMP and QAPP are not clear about exactly what automated checks are performed and how those checks influence what is presented on the website or submitted to the Air District in quarterly reports.

Assuming some of the checks referred to on page 25 of the AMP and page 29 of the QAPP are the same as the real-time checks presented in Table 4.1 of the QAPP, the QAPP and the associated SOPs are equally unclear. For instance, Table 4.1 states that methane and H<sub>2</sub>O are checked in real time as outlined in reference document FLM-QLT-SOP-001. However, we find no mention of methane or H<sub>2</sub>O checks in that document.

As another example, pages 10-11 of the AMP describe a process in which MRC apparently screens out all data from public view that is not at least two times the manufacturer's claimed detection limit. This practice is inappropriate and all values equal to or above the manufacturer's MDL should be reported as measured.

To resolve these issues, MRC must:

- a. include in the QAPP a detailed process flow diagram depicting the end-to-end data handling, review, and management process from the moment of data acquisition to the quarterly submittal of final quality controlled data to the Air District;
- b. revise the narrative descriptions of the data handling, review, and management process in the AMP and QAPP to clearly and fully describe the step-by-step process depicted in the flow diagram;
- c. articulate all decision rules used to automatically or manually screen data;
- d. illustrate the application of all auto-screening rules using real data and screen shots depicting how the auto-screened data are displayed on the public website; and
- e. improve transparency about the data that has been invalidated by revising the website to allow members of the public to see two alternative views of the data - one view with invalid data removed, and another view showing all data (valid and invalid). Invalid data displayed on the website must be flagged as such and the reason for invalidation must be indicated on the website alongside the corresponding invalid data.

12. The Air District's 12/22/2022 letter stated that bump tests must be performed at least monthly at a unique concentration that differs from the calibration checks. The letter went on to say that the bump check concentration should be 50 to 100 ppb and that the accuracy and precision specifications of 15% must be met for each test. While Table 4.1 of the QAPP includes a requirement for a monthly single point check and pages 16 and 17 of the QAPP briefly describe the bump tests, the QAPP lacks adequate detail to satisfy the requirements in our letter. While it is possible these details are specified in reference document FLM-QLT-SOP-008, we are unable to verify that as MRC failed to provide the document to us. MRC must ensure the contents of FLM-QLT-SOP-008 satisfy the bump test requirements in our 12/22/2022 letter and submit it to the Air District or otherwise incorporate the content of the reference document into the AMP and QAPP.

13. Page 5 of the AMP states MRC's intent to meet the installation milestones associated with Rule 12-15 and it goes on to say that the actual time for installation, "may be delayed" for reasons outside of MRC's control. While the purpose of this statement might be to express the possibility of delays outside of MRC's control, it could be misinterpreted as providing approval for missing milestones in the rule. This language must be revised to avoid such a misinterpretation.