



**BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT**

July 15, 2022

VIA ELECTRONIC MAIL

Taryn Wier
Manager, Environmental Engineering - Benicia Refinery
Valero Refining Company - California
3400 East Second Street
Benicia, CA 94510-1097

RE: Notification of Deficiency in Regulation 12, Rule 15 Fenceline Air Monitoring Plan and Quality Assurance Project Plan

Dear Ms. Wier:

Thank you for submitting a revised Fenceline Air Monitoring Plan (AMP) and Quality Assurance Project Plan (QAPP) on June 1, 2022 pursuant to Section 403 of Bay Area Air Quality Management District (Air District) Regulation 12, Rule 15. Valero revised the AMP to accommodate installation of a new open-path H₂S monitoring system.

In accordance with Regulation 12, Rule 15, the Air District has 45 days from receipt of a new or modified AMP to identify any deficiencies. We are writing to notify you that the Air District has reviewed the revised AMP and associated QAPP, and has identified several deficiencies, which must be corrected before the Air District can proceed to solicit public comment on the documents as outlined in Section 404 of Regulation 12, Rule 15. Pursuant to Section 404.2 of the same rule, Valero has 45 days from the date of this letter to address the issues outlined in the enclosed document and resubmit a proposed plan. Failure to submit a revised plan or adequately address the deficiencies in the enclosure may result in disapproval of the plan.

We are committed to working with you to resolve the issues we have identified as expeditiously as possible. If you have any questions concerning these issues, please contact me at (415) 749-4601 or jbovee@baaqmd.gov.

Sincerely,

Jerry Bovee, P.E., QSTI
Air Quality Engineering Manager
Meteorology & Measurement Division

Enclosure

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ENCLOSURE

Air District Comments on Valero's Revised Fenceline Air Monitoring Plan and Quality Assurance Project Plan, Dated June 1, 2022

1. In a letter dated October 6, 2021, the Air District outlined the minimum requirements that any open-path H₂S monitoring system must have. Among them is a requirement for the confirmed minimum detection limit to be between 3 ppb and 25 ppb H₂S depending on environmental and operational conditions. The Air District has the following comments regarding this requirement:
 - a. While Table 2 of the AMP and Table 1 of the QAPP state that the minimum detection limit (MDL) is 25 ppb for all paths, the AMP and QAPP should discuss whether and under what conditions MDLs at the lower end of the specified range can be achieved and demonstrated for each path.
 - b. The AMP and the QAPP inappropriately characterize the detection limits of the open-path H₂S monitors as a "target" (AMP, p. 28; QAPP, p. 7). The documents go on to say that further instrument adjustments and additional field accuracy tests are necessary to confirm the minimum detection limit for the system. Instead, the AMP and QAPP should state that the 25 ppb MDL for H₂S is not to be exceeded. If an MDL of 25 ppb cannot be guaranteed by the manufacturer and further testing is necessary, the AMP and QAPP should explain in more detail what work needs to be done, lay out a schedule for the additional work and tests, and specify a date by which Valero will re-submit an updated AMP and QAPP with confirmed detection limits. In any case, the minimum MDL of 25 ppb must be achieved prior to the data collection commencement date of January 1, 2023.
2. The Air District's October 6, 2021 letter regarding the minimum requirements for the open-path H₂S monitoring system specified that it should have a repeatable detection limit of 25 ppb at a light transmission less than 1%. This specification could not be found in the AMP or QAPP and must be added, including verifiable procedures and metrics for how it is determined.
3. The Air District's October 6, 2021 letter regarding the minimum requirements for the open-path H₂S monitoring system specified that it should have an accuracy of 2% and repeatability of 1% over the measurement range. These specifications and how they will be assessed and documented could not be found in the AMP or QAPP and must be added.
4. The Air District's October 6, 2021 letter regarding the minimum requirements for the open-path H₂S monitoring system stated that the detection limit must be quantified and verified continuously in real time, reported in near real time on the refinery fenceline monitoring website, and included in the quarterly reports along with the measurement data. The Air District has the following comments regarding these requirements:
 - a. Section 1.3 of the AMP (p. 5) states that a next step for implementation of the H₂S fenceline monitoring system is to modify the data management system to display an updated minimum detection limit every five minutes, and the caption of Table 1 in the QAPP states that H₂S MDLs will be evaluated in real time (p. 7). Aside from this, neither the AMP nor the QAPP otherwise state that the detection limit will be continuously quantified and verified as required. The AMP and QAPP also do not identify and explain the method that will be used to continuously quantify the MDLs, or identify acceptance criteria that will be used for quality assurance purposes. Valero must update the AMP and QAPP to include this information.
 - b. Neither the AMP nor the QAPP state that the minimum detection limit will be reported in near real time on the refinery fenceline monitoring website; Valero must update the AMP and QAPP to include this requirement.

- c. Section 1.2 of the AMP (p. 5), section 3.2.2 of the AMP (p. 45), and Section 4.6 of the QAPP (p. 30) state that final data sets are compiled quarterly and provided to the Air District. However, none of these sections state that the detection limit data will be among the information provided in the quarterly reports. Please revise the AMP and QAPP accordingly and specify that the data will be provided in CSV format.
5. The Air District's October 6, 2021 letter regarding the minimum requirements for the open-path H₂S monitoring system stated that it should include real time data validation using measurement of another common ambient air component present in the spectra. Table 7 of the AMP (p. 43) and Table 10 of the QAPP (p. 28) indicate that instrument QA/QC checks will include H₂O correlation on a continuous basis. However, this is not otherwise explained in the document. Please include a narrative explanation of this data validation process and fully document why H₂O is an appropriate measurement parameter for ongoing data validation.
6. The Air District's October 6, 2021 letter regarding the minimum requirements for the open-path H₂S monitoring system stated that the signal intensity must be measured in real time and provided to the Air District in the quarterly reports. The Air District has the following comments regarding these requirements:
 - a. While Table 7 of the AMP (p. 43) and Table 10 of the QAPP (p. 28) state the signal power will be measured continuously, Table 5 of the AMP (p. 35) and Table 3 of the QAPP (p. 12) states that the light and signal levels will be reviewed and tested quarterly. Please clarify the difference between these activities.
 - b. Please explain the significance of 0.4 as the acceptance criterion for signal intensity.
 - c. Section 1.2 of the AMP (p. 5), section 3.2.2 of the AMP (p. 45), and Section 4.6 of the QAPP (p. 30) state that final data sets are compiled quarterly and provided to the Air District. However, none of these sections state that the signal intensity data will be among the information provided in the quarterly reports. Please revise the AMP and QAPP accordingly and specify that the data will be provided in CSV format.
 - d. Include in the QAPP a description of the real time data assessment procedures that will be implemented to determine signal intensity.
7. Tables 5 and 7 of the AMP (pp. 35 and 43, respectively), and Tables 3 and 10 of the QAPP (pp. 12 and 28, respectively) identify the maintenance activities and QA/QC checks that will be performed on the open-path H₂S systems. As a general matter, the QAPP contains an insufficient level of detail regarding the methods, procedures, equations, and calculations that will be used to perform these actions. For example, Table 5 states that system performance indicators will be checked on a quarterly basis but it says the checks are based on an evolving checklist and it is unclear what indicators will be checked, how they will be checked, and what acceptance criteria will be used. Furthermore, multiple footnotes throughout the documents state that the processes for using sealed gas cells for bump checks and 3-point calibration checks are still in development, neither document discusses performance of the tests using sealed cells capable of incorporating the atmospheric path, and neither document reflects the requirement that bump tests will be performed with a unique concentration that differs from the calibration checks. Valero must attach standard operating procedures for all maintenance and QA/QC activities, which will become part of the publicly available QAPP, or else describe them more fully in the body of the QAPP.
8. Appendix B to the QAPP describes maintenance, commissioning, and performance audit procedures involving optical fiber connections to gas cells. Please note that all calibrations and bump tests must be performed in the actual transmitted light path by using fixed or flow through cells containing a

NIST traceable calibration gas standard. Additional optical fiber checks can be implemented as part of the QA/QC program, but do not fulfill the calibration and ongoing bump test requirements.

9. While the AMP and QAPP indicate that bump tests will be performed on a monthly basis, the AMP states elsewhere that bump tests are performed, "approximately monthly" (p. 32), and both documents contain footnotes that state the tests may be performed less frequently in the future. Some (but not all) of the footnotes go on to state that any reduction in the frequency of bump tests "should come as a request to the BAAQMD and be agreed to by the BAAQMD...". As the requirement established by the Air District is to perform bump tests on a monthly basis, any suggestion that they may be performed less frequently must be stricken from the AMP and QAPP.
10. Section 1.3 of the AMP (p. 5) states that one of the next steps for implementing the H₂S fenceline monitoring system is to update the QAPP based on changes to the instruments and data system. Valero's June 1, 2022 letter to the Air District represented that the revised QAPP (also dated June 1, 2022) "covers all required fenceline monitoring systems including the new specifications for H₂S fenceline monitoring...". Please clarify what additional updates to the QAPP are referred to on page 5 of the AMP.
11. Regarding data completeness:
 - page 4 of the AMP states that instruments are operated to strive for a minimum of 75% completeness by hour and day, and 90% completeness by annual quarters;
 - page 32 of the AMP states the completeness requirement as 90% per calendar quarter (applicable to 5-minute data); and
 - page 20 of the QAPP states the completeness requirement as 90% per calendar calculated using 5-minute data for the respective quarter.

However, according to the Air Monitoring Guidelines for Petroleum Refineries (April 2016) established pursuant to Regulation 12, Rule 15, instrumentation must meet a minimum of 75% completeness on an hourly basis, 90% of the time based on annual quarters. Valero must revise the AMP and QAPP accordingly.

12. The AMP recognizes the requirement to implement open-path H₂S monitoring by January 1, 2023. Please include a statement in the AMP that Valero will notify the Air District of the system status within seven days after it is fully operational and put into production.
13. The Air District's October 6, 2021 letter regarding the minimum requirements for the open-path H₂S monitoring system specified that raw spectral data files must be saved as single files and made available to the Air District upon request. This requirement could not be found in the AMP or QAPP and must be added.
14. The Air Monitoring Guidelines for Petroleum Refineries (April 2016) established pursuant to Regulation 12, Rule 15 state that air monitoring plans must include the location and elevation of equipment among other information. While the current version of the AMP includes a map of the open-path and point monitoring equipment and provides the elevation above ground level, the AMP should also include the geographic coordinates and the height above mean sea level for the equipment. Please include a table with this information in the AMP.
15. Please include a table in the AMP and QAPP documenting the version history of each document. The table should include the version or revision number, the corresponding date, and a brief description of the revisions.

16. All procedures and metrics for exclusion, or invalidation, of data must be fully described and documented in the QAPP and on the publicly facing facility fence line data website, including environmental conditions, system maintenance, or system failure. Any data exclusion, or invalidation, must be reported to the Air District and verifiable through review and audit of logged operational data. Data exclusion, or invalidation, that cannot be verified will not be accepted and will be counted against the systems operational uptime requirements.