



COLORADO

Air Pollution Control Division

Department of Public Health & Environment

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Re: Cripple Creek & Victor Gold Mine, AIRS ID 119-0011
Response to comments on Draft Construction Permit 98TE0545 (Issuance 14)

March 14, 2023

Dear Director Rosenthal:

The Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (Division) received comments from you (letter dated December 11, 2022) on the draft construction permit (98TE0545, Issuance 14) and supporting preliminary analysis (PA) for Cripple Creek & Victor Gold Mine ("CC&V") during the public comment period that ended on December 11, 2022. Thank you for providing your comments and allowing the Division time to thoughtfully review and evaluate your input. The subject of your comments, along with the Division's responses, are provided below.

The Division typically only responds to public comments regarding the modifications proposed as part of a specific permitting action. The Division will only make a final determination regarding the proposed modifications in this permitting action. Specifically, the proposed modifications for this permitting action were outlined in the public notice materials. They relate only to an increase of the existing material throughput limits for Point 040 (a lime and cement silo) in the facility-wide permit (i.e., 98TE0545), from 240 tons per day ("tpd") to 480 tpd, and from 90,000 tons per year ("tpy") to 175,000 tpy. Point 040 was previously permitted under permit number 19TE0420 (Issuance 2), which allowed material throughput up to 480 tpd and 175,000 tpy; however, this permit was canceled by Issuance 12 of permit number 98TE0545. Permit number 98TE0545 (Issuance 12) included Point 040, but limited material throughput for this point to 240 tpd and 90,000 tpy. Therefore, in this permitting action, the Division is only incorporating these previously-permitted higher throughput limits into the facility-wide permit (i.e., 98TE0545).

The only pollutants associated with this narrow permit action are particulate matter, including PM_{10} and $PM_{2.5}$. Although the current permitting action adds the previously-permitted material throughput increase from since-cancelled permit number 19TE0420 to the facility-wide permit, calculated $PM_{2.5}$ emissions are actually decreasing. This is because the previous analyses assumed that the $PM_{2.5}$ and PM_{10} emissions from Point 040 were equal, but the new analysis calculates Point 040 $PM_{2.5}$ emissions at 15% of the PM_{10} emissions, which is reflective and more accurate of the actual particle size distribution found in lime and cement. Therefore, based on this more accurate calculation, $PM_{2.5}$ emissions are decreasing in this permitting action. Furthermore, while the locations of both Point 040 and Point 041 have changed, throughput and emission limits for Point 041 are not being modified in this permitting action. However, since both Point 040 and Point 041 were relocated, both were reevaluated for National Ambient Air Quality Standards ("NAAQS") compliance purposes.



In addition to the specific comments listed below, your comments included frequent references to the July 2022 Environmental Protection Agency Office of Inspector General (“EPA OIG”) report. Where your comments included a reference to a specific concern not discussed in the EPA OIG report, they will be addressed in this response. However, for general responses to the concerns listed in the EPA OIG report, please refer to the Division’s official response to that report, dated October 21, 2022, which is attached hereto.

To the extent your comments relate to permit terms and/or pollutants that are not being modified and/or implicated in this permitting action, the Division considers those comments to be outside the scope of public notice as there will be no final determination by the Division regarding non-modified permit terms. However, in an attempt to help PEER better understand this permitting action and permit, the Division has provided brief responses to specific comments which are outside the scope of this permit action and public comment opportunity.

Comment I: The existing 2018 modeling analysis “indicates that there are modeled NAAQS [National Ambient Air Quality Standards] violations for the 1-hr NO₂ standards” and “compliance with the rest of the NAAQS cannot be determined until critical errors in the modeling analysis are corrected.”

This comment is outside the scope of the proposed modifications. The current requested modifications to permit number 98TE0545 did not involve recalculations, revisions, corrections, or any other changes to facility sources of NO₂. The “proposed source or activity” as used in Regulation Number 3, Part B, Section III.D.1 does not include modifications to the facility’s NO_x emissions. The Division has not made any final determinations regarding NO₂ or NO_x as part of this permitting action. Therefore, no new NO₂ modeling was conducted as part of this permitting action. To the extent this comment relates to PM, PM₁₀ and PM_{2.5}, which are at issue here, please see below and the revised preliminary analysis (attached hereto) which addresses your comment.

Because any comment as it relates to NO₂ is outside the scope of the proposed modifications, for your information only, I am directing you to the previous Division [response to PEER comments dated November 4, 2020](#) which directly addresses the concern raised in your comment that “critical errors [were] made when calculating the emissions from mobile sources[.]” To summarize, it is the Division’s position that a) using manufacturer-provided NO₂/NO_x in-stack ratios, and b) determining non-road engine loading based on CC&V’s proposed calculation methods are both acceptable methodologies and are sufficient to safeguard the NAAQS. For a more detailed discussion, the Division directs you to the response letter linked above. While that letter’s response to position (b) above is written specifically in reference to NO₂ emissions, the same argument applies to all pollutants emitted by the non-road engines, including particulates.

Although outside the scope of this permitting action, further clarification on the NO₂/NO_x in-stack ratios are included below.



NO₂/NO_x In-Stack Ratios (ISRs)

In its guidance captioned “Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂ National Ambient Air Quality Standard”, EPA recommends “[g]eneral acceptance of 0.50 as a default in-stack ratio of NO₂/NO_x [...] **in the absence of more appropriate source-specific information on in-stack ratios.**” However, in this case, source-specific in-stack ratio (“ISR”) information for the engines in question was provided by the manufacturer. Because we have more appropriate source-specific information, EPA’s general acceptance of 0.50 as a default ISR does not apply here.

While the 2018 modeling report expressed concern that engines of the type in question are not likely to have low NO₂/NO_x ISRs, the 2018 modeling report also notes “there are very few available academic or official studies evaluating real-world emissions [of Tier 4 final non-road diesel engines].” The 2018 modeling report did not include direct justification for why the manufacturer-provided data for these specific engines would be inaccurate. Manufacturers are in the best position to determine the ISRs for their own engines, as they have far more experience with the specific engine models and have done specific emission testing to establish the appropriate ratio.

In light of the NO₂/NO_x ISRs provided by the manufacturer, and in the absence of reasoning why these ISRs are inaccurate for these specific engines, the Division finds that their use in the modeling analysis is justified and aligns with current modeling practices.

Comment II: There are critical errors in the calculation of particulate emissions from mobile sources

Your comment contends that the calculated particulate emissions from haul truck engine operation are in error, since they do not take into account deterioration factors and transient load adjustment factors (i.e., “Adjustment Factors”). Deterioration factors increase the predicted tailpipe emission rates as the engine ages, and transient load adjustment factors alter the predicted tailpipe emission rates based on the instantaneous load on the engine at a given time and location - e.g., while the truck is traveling downhill the engine could be operating at only 10% of its maximum power rating, and the corresponding predicted emission rate would decrease proportionally.

First, the Division understands that including any amount of mobile source exhaust emissions in the modeling analysis is not required by law because the permit is for a stationary source, a category that explicitly excludes non-road engines as defined below. Therefore, the approach taken in the 2018 modeling report (which included mobile source exhaust emissions) was overly conservative by considering the impacts of mobile sources. The haul truck engines are defined under Colorado Regulation Number 3 as “non-road” engines, since they are internal combustion engines within a piece of equipment that is self-propelled. This same regulation also excludes non-road engines from the definition of “stationary source”, meaning that the Division does not regulate non-road engines as stationary sources. However, the Modeling and Emission Inventory Unit (MEIU) and current Permit Modeling Unit (PMU) have interpreted the language in Regulation Number 3 to allow the state to include mobile source emissions (including emissions from non-road engines) in model assessments, at the state’s discretion. Therefore, these emissions have been included in the modeling per current Division guidance. The vast majority of state-level permitting programs, including Wyoming, Idaho, Utah and New Mexico, do not typically include mobile source emissions when modeling stationary sources, since these sources are covered under a different Title of the Clean Air Act. Furthermore, the



Guideline on Air Quality Models (Appendix W) only covers mobile exhaust emissions in the context of Transportation Conformity studies, not for NSR permit modeling. The fact that mobile source emissions are not commonly included when modeling stationary sources like CC&V was confirmed by EPA Region 8 staff during meetings held between the Division and EPA on November 8, 2022 and January 30, 2023. Based on this information, the Division reserves the right to review and adjust its current guidance in the future regarding the inclusion of mobile source emissions in modeling assessments. Removing the mobile source engine exhaust PM_{10} and $PM_{2.5}$ emissions from the 2018 model would reduce the modeled impacts of these pollutants; therefore, including them makes the modeled impacts overly conservative (i.e., results in higher modeled concentrations). Thus, even though no Adjustment Factors were applied to the haul truck engine emissions, the modeled impacts are still higher than they otherwise would have been if no mobile source emissions were included in the model at all, as allowed by minor NSR.

The Division does not dispute that steady-state, zero-hour emission factors were used to calculate PM_{10} and $PM_{2.5}$ emission rates from the haul truck engines. However, the Division finds that any potential underestimation of emissions caused by a lack of such Adjustment Factors is sufficiently offset by an overestimation of emissions caused by other aspects of the modeling methodology. These overestimations are discussed below.

In addition to including mobile source emissions, another source of overestimation comes from the specific terrain parameters used in the modeling. In the 2018 PM_{10} and $PM_{2.5}$ modeling, projected impacts were calculated two ways: first, using elevated terrain parameters (i.e., using the actual topography of the site) and secondly using flat terrain parameters (i.e., assuming all non-buoyant fugitive emissions and the corresponding receptors for those sources exist on a flat plane). The elevated terrain option uses inputs representative of real-world conditions. The modeled maximum impacts in the report are based on the flat terrain results which result in higher predicted concentrations. The Division is not aware of any regulatory requirement or recent guidance that directs the use of flat terrain results; this choice was made based on Division modeling policy at the time, representing a more conservative, but unrealistic condition. The Division has contacted the modeling staff from EPA's Region 8 and Office of Air Quality Planning and Standards (OAQPS) to seek clarification on this modeling practice. EPA Region 8 did not discount the use of this practice, but did confirm Colorado has ultimate discretion to use the FLAT option. Because the modeled concentrations using the flat terrain option are higher than the modeled concentrations using the complex terrain option, using those higher flat terrain results introduces a larger safety factor into the NAAQS compliance demonstration and offsets the lack of Adjustment Factors.

Because the Division already overestimated PM_{10} and $PM_{2.5}$ impacts by (1) including mobile source emission impacts and (2) using the flat terrain option in the 2018 modeling analysis, the additional application of Adjustment Factors is unnecessary. Therefore, the Division finds that the overall engine exhaust modeling approach, as used in the 2018 modeling report for PM_{10} and $PM_{2.5}$, conservatively accounts for total PM_{10} and $PM_{2.5}$ emissions and ensures this source, operating in compliance with permit limits, would not cause or contribute to a violation of the NAAQS.



Comment III: Splitting the overall CC&V project into multiple smaller projects does not adequately assess total impacts

This comment is outside the scope of this permitting action to the extent it relates to previous permitting actions. However, to the extent it relates to the current permitting action, when PMU looked at the changes to the projected particulate emissions caused by the currently proposed modification to increase the throughput limit of point 040, they evaluated all existing PM₁₀ and PM_{2.5} emissions. This encompasses all particulate emission sources at the mine, including those sources that were added or modified as part of the Mine Life Extension 2 (MLE 2) project, of which the installation of the Squaw Gulch Adsorption, Desorption, and Recovery (SGADR) plant was a constituent sub-project.

The EPA OIG report expressed a concern that the SGADR plant installation sub-project was split off from the overall MLE 2 project into a separate permitting action without justification, which was echoed by your stated interpretation that splitting a project could result in “the potential of the air quality impacts of the larger project not being adequately assessed.” While this was listed in the EPA OIG report as both a *secondary* concern and a *potential* issue, it is not a given that splitting a project means that the total impacts are not included in the overall assessment. In this case, the newly reassessed impacts from the modified AIRS points 040 and 041 were added to the *existing* impacts for the rest of the facility to determine the total facility impacts. The applicant did not request changes to any permitted emission sources other than points 040 and 041. However, the Division took the most conservative approach and conducted a cumulative impact analysis, as defined in the Colorado Modeling Guidelines for Air Quality Permits (May 2022), by using the 2018 base model run and altering the emissions from these two emission points to reflect the requested changes to activity rates and locations.

As mentioned above, the EPA OIG report listed potential total impact assessment issues as a secondary concern with regards to project splitting. The *primary* concern included in the EPA OIG report had to do with circumvention of major source permit program requirements. This concern was addressed by the Division’s response to that report dated October 21, 2022, which is attached hereto. In addition, the analysis conducted as part of the current permitting action confirmed that the CC&V mine is not a major source. The Division’s response to the EPA OIG report on this issue has been summarized below.

The analysis of the emission sources at the Squaw Gulch Adsorption, Desorption, and Recovery (SGADR) Plant was split off from the analysis of the overall Mine Life Extension 2 (MLE 2) project, and the SGADR sources were permitted separately. Thus, this single project was indeed split across two separate minor source permits. However, this splitting action did not bypass any regulatory requirements - CC&V was still required to demonstrate compliance with the NAAQS based on the total MLE 2 project emission rates, and all emission modeling calculations submitted to the Division by CC&V included all criteria emission contributions from the SGADR emission sources. This includes the final modeling data used by the Division to determine that the CC&V mine would not cause or contribute to a violation of the NAAQS. Therefore, despite being issued as two separate permits, the total impacts of both the MLE 2 and SGADR projects were modeled in the aggregate, comparing the total facility impacts against the PM₁₀ and PM_{2.5} NAAQS.



Comment IV: The previous issuance of this permit was illegal, and irregular actions were taken to ensure the permit would be issued regardless

Any comment regarding the previous issuance of a permit is outside the scope of the proposed modifications. The public comment period for this specific permit action is limited to comments on the modifications proposed during this action and not more broadly, as the Division will only be making a final determination regarding the proposed modifications.

The Division believes the current proposed permit is supported by the accompanying analysis, and that concerns relating to previous modeling of PM_{10} and $PM_{2.5}$ are adequately addressed in the record.

Comment V: Issuing this permit would disregard the health and well-being of the population of Victor

This comment does not explain how this specific permitting action, which relates only to particulate emissions¹, disregards the health and well-being of the population of Victor. To the extent this comment relates to any non-particulate air pollutants, it is outside the scope of the proposed modification, as the Division will only be making a final determination regarding particulate emissions in this permitting action.

However, your comment notes that the bordering town of Victor is classified as a Disproportionately Impacted (DI) community under Colorado's Environmental Justice Act (HB21-1266). The Division agrees that this community meets the statutory definition. CDPHE has started the stakeholder process for the [Disproportionately Impacted Community Permitting Rulemaking](#) that will define enhanced modeling and monitoring requirements for construction permits located in Disproportionately Impacted communities. This 2023 rulemaking will provide further opportunities to enshrine environmental justice provisions into regulatory requirements that apply to the Division's permitting actions.

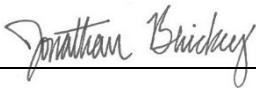
Though the Disproportionately Impacted Community Permitting Rulemaking is not yet final, the Division still seeks to mitigate adverse impacts when possible. Construction permit number 98TE0545 (Issuance 14) contains an especially robust dust control plan intended to reduce fugitive particulate emissions. All PM_{10} and $PM_{2.5}$ emission sources at the site and nearby facilities were taken into account when performing the impact modeling. The impact modeling predicts that no violations of the PM_{10} and $PM_{2.5}$ NAAQS should occur in the future based on the proposed permit conditions, including the emission limits and fugitive dust control plan. Furthermore, although outside the scope of this permitting action, an air quality monitor near the Cripple Creek & Victor facility was installed in 2019 to help identify any possible exceedances of the NO_2 NAAQS, and none have occurred to date. In fact, actual monitored NO_2 concentrations remain well below the NAAQS.

¹ While this permitting action results in changes to the emission rate of all particulate pollutants (PM, PM_{10} , and $PM_{2.5}$), there is no established NAAQS for total PM. Therefore, emissions modeling in support of this permitting action was only conducted for PM_{10} and $PM_{2.5}$.



At the current time there are no provisions in the Environmental Justice Act (EJA) that support imposing other conditions or denying a permit modification that is otherwise found to be lawful. Without additional authority and specific support as to what other environmental justice requirements would justify the denial of this modification, the Division is unable to impose further conditions to address this issue.

In closing, after careful consideration and review the Division intends to issue the modified construction permit 98TE0545, Issuance 14. The Division appreciates the time you took to review the draft permit and provide meaningful comments. Such comments help the Division in developing even stronger permits in the future to even more fully protect public health and the environment.



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cc: Trisha Oeth, Director of Environmental Health and Protection, CDPHE
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