



COLORADO
Division of Reclamation,
Mining and Safety
Department of Natural Resources

March 22, 2023

Julie Mikulas
Martin Marietta Materials, Inc.
1800 N. Taft Hill Road
Fort Collins, CO 80521

**Re: Martin Marietta Materials, Inc., Windsor East Mine, File No. M-2022-042,
Exhibit G - Water Information, Second Adequacy Review Letter**

Ms. Mikulas,

The Division of Reclamation, Mining and Safety (Division/DRMS) reviewed the Exhibit G - Water Information response within the Response to Adequacy Review Comments submittal dated March 3, 2023 for the Martin Marietta Materials, Inc., Windsor East Mine permit application.

A copy of the Summary of Adequacy Response Review letter from Eric Scott dated March 17, 2023 is attached for review.

If you have any questions, please contact me at peter.hays@state.co.us or (303) 866-3567 Ext. 8124.

Sincerely,

Peter S. Hays
Environmental Protection Specialist

Enclosure - Review Letter

Ec: Jared Ebert; Division of Reclamation, Mining & Safety





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To: Peter Hays
From: Eric Scott
Date: March 13, 2023
Re: **Summary of Adequacy Response Review – Section 07 Exhibit G Water Information; provided March 6, 2023**

The information provided in the above referenced Adequacy Response generally addresses all adequacy issues noted in the adequacy review dated October 14, 2022 as shown below. Response to the adequacy information provided, and items that may require additional information/clarification have been summarized below in bold type.

- 1) What will cells B and D be backfilled with and how? The narrative implies that these areas will be as permeable as native materials and pose no impediment to GW flow when mining is completed, however if they are backfilled with wash fines, or the backfill is compacted during placement, it is much more likely that they will create a similar barrier to GW flow as the lined cells along with the same potential impacts due to mounding/shadowing.

Adequate as submitted

- 2) There seems to be a great deal of uncertainty about the location of well 1472-R-R, up to and including what side of the river it is on. The location of this well should be field verified so that it can be accurately shown on the provided maps, and potential impacts be more accurately determined.

Adequate as submitted

- 3) All of the baseline GW level, flow direction data, and estimated flow mapping presented in this exhibit is derived from WL data collected from the adjacent Parsons site. However, it is stated that the measuring point elevations for the Parsons wells were “estimated from topo maps”. Basing this kind of data presentation on “estimated” elevations from topo maps is not consistent with industry standards or the TSOP presented in the provided exhibit. For DRMS to be able to consider water level data from the Parsons site in this review, all measuring points should be surveyed to 0.01’ (and tied to the same reference elevations as the WEM wells), the historic readings recalculated, and the associated tables and figures re-created as needed.

- a. It appears that the 5 new WEM wells have been properly surveyed as the elevations are given to 0.01’, however this should be confirmed.
- b. All subsequent WL readings collected at the WEM and Parsons sites should be recorded to the nearest 0.01’, not just the nearest tenth of a foot as shown in the provided materials. This would also be consistent with the provided TSOP.

Adequate as submitted

- 4) Section 1.6 of the provided materials describes a “simplified model” and states that it was calibrated/verified based on observed drawdown in one well. This model is then used to predict groundwater drawdowns due to mining after one year and 5 years of dewatering at distances up to 2640 feet. DRMS will require a substantially more rigorous modelling demonstration to predict and illustrate the maximum groundwater drawdown impacts from dewatering during mining.



potential impacts to nearby wells, as well as any post-mining mounding and shadowing impacts due to the construction of impermeable or low permeability mine cells. The model should provide GW drawdown/mounding contour maps based on, and verified against all available site setting and geologic information, current and historic water level data, and the predicted size and location of mining cells (for both sites).

Additional modeling was not provided, however, the rationale for not providing a modeling evaluation based on: existing monitoring and drawdown data, distance and direction to nearest non-monitoring wells, and nearest well ownership and use is sound. In addition, although the likelihood of impacts to off-site wells is minimal, the monitoring and mitigation plans provided should be able to sufficiently address any unforeseen impacts if any are observed.

- 5) Section 2.1 of the provided exhibit states that up to 5 quarters of “baseline” GW level data will be collected for the WEM site with the exception of Cell A where dewatering will commence immediately. This is based on the rationale that GW levels in that area have already been impacted by the adjacent Parsons dewatering activity. DRMS acknowledges that the historic GW regime has likely already been impacted to some extent by the adjacent Parsons site. However, based on the observations of significant GW drawdowns at distance from the Parsons site, allowing dewatering of Cell A while attempting to collect “baseline” water level data for the remainder of the WEM site will likely render that data useless as a “baseline” for later mining drawdown comparison. Dewatering or exposure of GW should not be allowed on the WEM site until the full 5 quarters of baseline data can be collected.

- a. Mining below groundwater/dewatering of Cell A during collection of the 5 quarters of baseline data may also adversely impact the validity of the baseline analytical data results.

Not addressed, however, rationale provided for the proposed activity based on existing data and continued monitoring is sound.

- 6) Water Quality Parameters and rationale presented in section 2.2.1 and Table 5 are acceptable as presented with the following edits.
- a. Add CN to section 2.2.1 or sample for it..
 - b. WQS for U should be 0.0168 to 0.03, not 0.02 as stated in Table 5
 - c. Will any QA/QC samples be collected/run to verify field and lab procedures?
 - d. I note that although there are several wells on the adjacent Parsons site, no analytical data has been presented as “background” for WEM, however, that may be a subject for another discussion.

Adequate as submitted - with the exception of item “c.” No response was provided to address the question if any QA/QC samples would be collected/run to verify field and lab procedures as a component of the provided analytical monitoring plan. If no QA/QC samples are collected the applicant will need to acknowledge that the only way to address potential “outlier” data, if observed, will be through re-sampling and re-analysis.

- 7) Section 2.2 (as well as 2.2.2) states that “regular data collection” from the 5 new GW wells will take place, but does not specify what that means. I would suggest that WL data be collected at

least monthly and analytical sampling be conducted quarterly (as stated) until the 5 quarters of baseline data have been obtained. Analytical sampling intervals after the initial 5 quarters are acceptable as presented.

Adequate as submitted

- 8) All baseline data as well as any proposed modifications to the analyte list or sampling intervals should be submitted to DRMS as a TR for review and approval.

Adequate as submitted

- 9) Section 2.3 states that “in the event of a well owner compliant within 600’ of the affected area” MM will submit a report to DRMS within 30 days. DRMS does not restrict the radius of impact to 600’ and therefore will require MM to commit to reporting any complaints by well owners to DRMS within 48 hrs or less. MM will be required to initiate an investigation into the complaint immediately, and submit the results to DRMS for evaluation within 30 days.

Adequate as submitted

- 10) Section 2.3 also states that “if a well goes dry, MM will implement mitigation measures within 7 days.” In the event that a well owner reports that their well has become unusable, MM will be required to implement mitigation measures immediately (as soon as practically possible). MM will concurrently commence an investigation into the status of the complaint. The results of this investigation as well as any proposed remediation or rationale for discontinuing mitigation will be submitted to DRMS for approval within 30 days.

Partly addressed. The language in comment #9 above has been incorporated. The initial investigation, as well as the temporary, and long-term impact mitigation measures proposed are reasonable and appropriate. However, the operator should acknowledge that the DRMS, and potentially the MLRB, are responsible for determining if mitigation is required, as well as when and how any mitigation measures are implemented and discontinued after the initial complaint is received.

- 11) Appendix G-3: Because the analyte list and reporting levels have been identified, please identify and include the sample container type and size, preservative (if required), holding times, and analytical method to be used. This information could also be included in Table 5.

Adequate as submitted - Analytical methods have not been provided, but it has been noted on Table 5 that the method selected must provide reporting levels below the applicable standards.

- 12) Field forms or logbooks should be used to record GW well purging and field sampling data consistent with industry standards.

Adequate as submitted