



COLORADO

Division of Reclamation,
Mining and Safety

Department of Natural Resources

1313 Sherman Street, Room 215
Denver, Colorado 80203

MEMORANDUM

DATE: November 1, 2018

TO: Permit File, Boettcher Limestone Quarry, Permit No. M-1977-348

FROM: Amy Eschberger, DRMS

RE: Boettcher Limestone Quarry October 18, 2018 Meeting Summary, submitted by Golder Associates Inc. on October 24, 2018

On October 18, 2018, the Division of Reclamation, Mining and Safety (DRMS) participated in a meeting with Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Division (WQCD), Holcim (US) Inc. (Holcim), and Golder Associates Inc. (Golder) at the office of CDPHE, and at the request of Holcim and Golder, to discuss the groundwater monitoring program for the Boettcher Limestone Quarry and the prospect of reclamation liability release.

On October 24, 2018, Golder provided their summary of this meeting, including a list of key points of discussion. DRMS does not fully agree with some of the discussion point summaries provided by Golder, and would therefore, like to provide the following clarifications to the permit file:

- 1) DRMS made no conclusions or determinations during the meeting regarding impacts to groundwater at this site, the extent of any such impacts, or regulatory or remedial actions for such impacts.
- 2) DRMS made no determinations during the meeting regarding the groundwater isotopic dating results for the site, first presented to DRMS in a Technical Memorandum to the permit file on February 17, 2015.
- 3) DRMS informed the operator during the meeting that a permit revision must be submitted in order to obtain a formal decision/determination from DRMS. Pursuant to Rule 1.4.11(1)(b), this decision/determination may be appealed to the Mined Land Reclamation Board within 30 days of the decision date by any person who can demonstrate that he/she/it is directly and adversely affected or aggrieved by the decision, and whose interests are entitled to legal protection under the Act.
- 4) DRMS reserves the right to formally raise questions during the review process for the proposed permit revision that may have been informally discussed during the meeting.



- 5) The purpose of the proposed permit revision would be to request that, pursuant to WQCC's Regulation No. 41.5(C)(6)(b)(iii), DRMS exercise its best professional judgement to determine whether data generated subsequent to January 31, 1994 shall be presumed to be representative of existing quality as of January 31, 1994, if the available information indicates that there have been no new or increased sources of groundwater contamination initiated in the area in question subsequent to that date.
- 6) The proposed permit revision must address all relevant items in WQCC's Regulation No. 41.5(C)(6) that would allow DRMS, as an implementing agency of WQCC's adopted water quality standards and classifications, to determine that groundwater quality at the Boettcher Limestone Quarry can be maintained at less restrictive levels than the most stringent criteria set forth in Tables 1 through 4 of WQCC's "The Basic Standards of Ground Water".
- 7) The proposed permit revision must also address Rule 3.1.7(8) demonstrating, to the satisfaction of DRMS, that reclamation has been achieved so that existing and reasonably potential future uses of groundwater are protected.
- 8) DRMS is the lead regulatory agency with respect to the groundwater monitoring program approved in the mine permit. However, as stated in the Memorandum of Agreement between DRMS, WQCC, and WQCD, last revised on December 14, 2010, each implementing agency (DRMS) is required to adopt and implement approaches to protect water quality standards and classifications adopted by the WQCC through their own program after consultation with the WQCC and the WQCD. Therefore, any determination/decision issued by DRMS on the proposed permit revision must be done in consultation with WQCD.
- 9) DRMS informed the operator during the meeting that at least one (ideally more than one) sampling event must be conducted as approved under Technical Revision No. 9 and the results submitted to DRMS for review prior to submitting the proposed permit revision.
- 10) DRMS informed the operator during the meeting that the intent of Technical Revision No. 9 is to provide additional information on existing groundwater conditions at the site, which will be helpful in assessing whether reclamation has been achieved in accordance with Rule 3.1.7(8). However, the Division reserves the right to pursue enforcement actions or to require additional permit modifications with regard to the groundwater monitoring program and/or existing groundwater conditions at any time in accordance with the Act and Rules.

Enclosure: Boettcher Limestone Quarry October 18, 2018 Meeting Summary, submitted by Golder Associates Inc. on October 24, 2018



STATE OF
COLORADO

Eschberger - DNR, Amy <amy.eschberger@state.co.us>

Boettcher Limestone Quarry- Meeting Summary

Harkins, Sara <Sara_Harkins@golder.com>

Wed, Oct 24, 2018 at 4:43 PM

To: "Eschberger - DNR, Amy" <amy.eschberger@state.co.us>, Derrick Dease <derrick.dease@lafargeholcim.com>

Cc: "March, Randy" <Randy_March@golder.com>, "McClain, Mark" <Mark_McClain@golder.com>

Hello Amy,

Please see the attached summary of the October 18, 2018 meeting concerning the Boettcher Quarry between Holcim, Golder, the DRMS, and the WQCD.

Please let us know if you have any questions or difficulty opening the document.

Thanks,

Sara

**Sara Harkins**

Senior Project Geologist/Geochemist

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2 attachments

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65K**GOLDER****18107649_Limestone_Quarry_Meeting_Minutes_Rev1_18Oct18.pdf**

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October 24, 2018

Project No. 18107649

Ms. Amy Eschberger

Colorado Division of Reclamation, Mining, and Safety
Department of Natural Resources
1313 Sherman St., Room 215
Denver, Colorado 80203

BOETTCHER LIMESTONE QUARRY OCTOBER 18, 2018 MEETING SUMMARY

On October 18, 2018, a meeting was held between Golder Associates Inc. (Golder), Holcim (US) Inc. (Holcim), the State of Colorado Division of Reclamation, Mining and Safety (DRMS), and the State of Colorado Water Quality Control Division (WQCD). The main purpose of this meeting was to discuss the groundwater monitoring program for the Boettcher Limestone Quarry, and the meeting included the following three agenda items:

- 1) Discuss isotopic age dating analysis for groundwater conducted in 2015 as it relates to Section 41.5 (C) (6) of Regulation No. 41 – Colorado Basic Standards for Groundwater (5 CCR 1002, BSGW).
- 2) Discuss the technical approach to defining an “interim narrative standard” that reflects existing ambient quality as of January 31, 1994.
- 3) Determine the next steps for the groundwater monitoring program at the site.

Attendees at the meeting included:

- Kimberly Dennis and Derrick Dease, with Holcim
- Sara Harkins and Randy March, with Golder
- Amy Eschberger, Michael Cunningham, and Russ Means, with the DRMS
- Robert Hillegas, Aimee Konowal, and Kristy Richardson, with the WQCD

The meeting started with Golder providing an overview of the site history and groundwater monitoring program. Following a brief question period to clarify well placement and the site history, meeting attendees were walked through the technical basis and site-specific results for groundwater isotopic dating via tritium, which was conducted on samples collected August 27, 2014. These findings were originally presented to the DRMS in Golder's February 17, 2015 technical memorandum entitled *Boettcher Limestone Quarry*. The tritium results indicated the isotopic signature of groundwater in the downgradient wells is predominantly pre-1952.

Based on the tritium results, Golder concluded that groundwater samples at the time of and prior to the tritium dating represent ambient concentrations of pre-January 31, 1994 groundwater. Therefore, Golder proposed that:

1) the recent data can be used to assess ambient conditions as of January 31, 1994; and 2) in cases where ambient conditions are greater than the Regulation 41 Table Values Standards, a less restrictive standard based on the ambient conditions, can be applied.

The DRMS stipulated that to decide on whether a less restrictive standard could be applied, the request will need to be formally made as a technical revision to the mine permit. The WQCD agreed that the DRMS has the regulatory authority to decide whether a less restrictive standard could be applied under Regulation 41, Section 41.5 (C) (6). There was agreement that this is the clearest path forward to close the monitoring program at this Boettcher Quarry.

The technical revision request will include reframing of the February 2015 technical memorandum, with additional discussion and data presented, as needed. At minimum, the technical revision submittal will present the following items:

- Review of the site history
- Updated site cross section and conceptual model
- Summary and discussion of routine groundwater monitoring data
- Discussion of tritium results
- Discussion of cement kiln dust (CKD) leachate characteristics
- Discussion of background groundwater conditions
- Conclusions and recommendations

The following present other key points of discussion in the meeting:

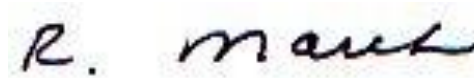
- The DRMS questioned why alternate chemical techniques weren't used to confirm the tritium results. Golder discussed the sampling/analytical limitations associated with two other common groundwater dating techniques. First, chlorofluorocarbon (CFC) analytical testing is very sensitive to sampling error and requires the ability to sample using submersible pumps to prevent atmospheric CFC contamination (because of the low transmissivity at the site, samples must be collected using bailers). Second, chlorine isotopes are only applicable for much older groundwaters.
- The origin of the upward trends in the barium, chloride, and total dissolved solids (TDS) concentrations in samples collected between 1999–2000 from well MW-4 was discussed. The initial sampling events were conducted over a very short time period, and similar trends were observed in samples collected from MW-6 and MW-7 following well installation. This stabilization process may indicate an initial influence of drilling water on water quality.
- The DRMS asked why questions from their June 25, 2012 letter concerning the extent of contamination have not been addressed. A response to these questions was provided in Golder's April 28, 2014 report entitled *Groundwater Characterization Report, Boettcher Limestone Quarry - Laporte Colorado*. Additionally, as concluded in Golder's February 17, 2015 technical memorandum, the available data indicated that there have not been CKD impacts to downgradient wells; therefore, it was concluded that the DRMS questions regarding groundwater impacts were no longer applicable.

- The WQCD clarified whether or not the 10,000 milligrams per liter (mg/L) TDS exception in Regulation 41, Section 41.5 (C) (6) applies to a site is a determination that needs to be made by the Water Quality Control Commission, and would likely involve the need to establish a site-specific standard under Regulation 42.
- The process for establishing a site-specific standard under Regulation 42 was discussed. It was agreed that a technical revision to establish an interim narrative standard based on ambient concentrations of pre-January 31, 1994 (see above) is a better option for the site at this time.
- The DRMS clarified that the reporting under pending TR-9 for exceedance above the interim narrative standard is for informational purposes only and an exceedance will not have regulatory or remedial repercussions.
- The DRMS and the WQCD agreed that the DRMS is the lead agency with respect to the groundwater monitoring program and the site, and that the WQCD will serve in a support role. In the event that the DRMS has specific questions regarding Regulation 41 for the WQCD, the DRMS will be responsible for coordinating with the WQCD.

Golder Associates Inc.



Sara Harkins, PG
Senior Project Geochemist



Randy March, PE, PG
Principal Geological Engineer

SH/RM/af

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