

 3372 Lime Road, Pueblo, CO 81004

 (719) 647 6861  
 dfurman@gcc.com

April 22, 2019

Mr. Patrick Lennberg  
Environmental Protection Specialist  
Division of Reclamation, Mining and Safety  
1313 Sherman St., Room 215  
Denver, CO 80203

*Electronically submitted to Patrick.lennberg@state.co.us*

Reference: Pueblo Cement Plant and Limestone Quarry. DRMS Permit No. M-2002-004

Subject: Response to DRMS Adequacy Review Comments on 2018 Annual Groundwater Monitoring Report

Dear Mr. Lennberg,

GCC appreciates your letter dated March 22, 2019 providing your Adequacy Review of our 2018 Annual Groundwater Monitoring Report. Provided below are our responses to your comments/requests.

- 1) In Technical Revision 06 (TR-06) GCC committed to installing a well that was screened in the Codell Sandstone or across the contact of the Fort Hayes Limestone and Codell Sandstone. When does GCC anticipate installing this well and where is the proposed location?

***The circumstances and bases for well installations were described in the Close Consulting Group (CCG) report on "Groundwater Monitoring Well Installation and Baseline Sampling: MW-6 and MW-7", dated February 8, 2018 and submitted to DRMS by GCC with cover letter dated March 6, 2018. GCC's initial plan was to install a single Codell/Fort Hayes contact well if the Fort Hays was found to be dry. A deeper Codell well was not installed due to findings during drilling. The borehole for MW-6 initially indicated a dry hole. GCC stepped off to install a deeper Codell well adjacent to MW-6, when that borehole encountered significant water in the Fort Hayes associated with a fault/fracture system. As described in the 2018 CCG report, and re-summarized in the Annual Report, GCC believes that due to the fracture/fault-related origin of the water encountered by MW-6 and MW-7, those wells (in particular MW-7) provide water representative of both horizons and also the most-representative water for the purposes of downgradient monitoring. Therefore, GCC currently has no plans to install an additional well as identified in TR-06.***

- 2) Monitoring wells 6 and 7 (MW-6 and MW-7) have been demonstrated to be low yielding wells, which has made consistent sample collection difficult. CDPHE guidelines allow for an alternative



method of purging and sampling low yielding wells and the United States Environmental Protection Agency has a variety of methods for purging and sampling low yielding wells. Please consider using an alternative method to purging and sampling these low yielding wells. The more consistent the information we have regarding groundwater conditions at the site the better GCC and the Division will be in making informed decisions in the future.

***GCC appreciates the consideration of low-stress purging and sampling of low-yielding wells. However, GCC feels it not warranted at this time for the current monitoring system. When MW-7 has been sampled it has provided ample water for sampling. Purging has resulted in minimal drawdowns in the well. Well MW-6 is certainly low-yielding, but because MW-7 intersects a fracture/fault system oriented in a downgradient direction from the quarry, it will be much more reflective of any changes in chemistry due to mining. Analytical results from MW-7 have been very consistent since the initial sampling (including the recent 1<sup>st</sup> quarter 2019 results), and state standards for the analytes are not being exceeded. GCC has used CDPHE's guidance in "Suggested Sampling Protocol for Ground Water Monitoring Wells" for sampling low yielding wells, which was also used as the basis for TR-06 sampling plans. GCC proposes to continue with current sampling methods for consistency, but is willing to consider alternative approaches to sampling low-yielding wells if warranted at future monitoring locations downgradient of mining operations.***

- 3) It is the Division's understanding that the conditions approved in TR-06 did not supersede the groundwater sampling plan approved for the site as part of permit condition #1 but clarified project specific items. In 2003, as part of permit approval condition #1, GCC developed a Groundwater Sampling and Analysis Plan (SAP) for the site. Condition #1 stipulated that GCC was to determine baseline ambient groundwater conditions at the site prior to mining. The SAP addresses the collection of field duplicates and data evaluation procedures as part of a quality assurance and quality control program, these items were not specifically addressed as part of TR-06. Please explain why no field duplicates were collected and no data evaluation was performed on the laboratory data sets during sampling efforts in 2018.

***The SAP from 2003 is dated and related to different wells and different analytes. GCC's focus was on performing the work for the new wells in accordance with TR-06 and CDPHE's "Suggested Sampling Protocol for Ground Water Monitoring Wells". Laboratory reports have been reviewed and analyzed consistently with the 2003 SAP. MW-7 generally yields sufficient water for duplicate sample collection. Going forward, GCC will perform duplicate sampling on MW-7 as long as that remains the case, as well as collection of an equipment rinsate blank. Due to all the changes and evolution of groundwater monitoring at the site, GCC recommends development of a new SAP in coordination with DRMS so that all parties are clear and in agreement on the protocols going forward. GCC will submit a revised SAP to DRMS for review prior to the 2<sup>nd</sup> quarter 2019 sampling event (planned for June).***



- 4) In the April 2018 laboratory data report, please explain and/or clarify the note on the lab check-in sheet that appears to indicate that samples were incorrectly preserved in the field? What was done to correct the issue?

***All samples for the April 2018 were properly preserved in the field. Origins Laboratory confirmed that the statement on the check-in sheet was made because analyses of those particular samples were outsourced to a different laboratory and therefore those checks were not performed internally by Origins. The sublab verified the preservations.***

- 5) Please explain why the laboratory data report submitted to the Division on May 7, 2018 reports a different set of analytes for MW-7 than in the annual report submitted to the Division on January 21, 2019, specifically barium and boron for MW-7.

***When the laboratory report was reviewed in detail after the May 7 submittal, GCC recognized that Origins Laboratory reported barium instead of boron results and failed to report nitrite due to the laboratory misreading the Change-Of-Custody. Origins subsequently modified the report to include boron and nitrite results, as well as to include the Minimum Detection Limits, per GCC request.***

- 6) In the laboratory data set for the April sampling event the laboratory matrix spike sample for lithium was outside the RPD limits, please explain why the sample was outside the RPD limit and any impacts this may have on interpreting the data set.

***Origins Laboratory reports the percent recovery is not considered applicable in this case. Spike recovery limits do not apply when sample concentration exceeds spike concentration by a factor of 4 or more.***

- 7) Please explain why TDS was omitted from the laboratory data set for December 2018 when it was requested on the Chain-Of-Custody?

***TDS was omitted from the laboratory data set due to a lab error in which the laboratory accidentally filtered all unpreserved volume of sample that was remaining after the lab ran the anions and dissolved metals. This did not leave any remaining volume for the TDS analysis. This information is provided on page 2 of 17 of the Origins report. GCC notes that the field specific conductance measurements in December were generally in line with prior results.***

- 8) During the December 2018 sampling event samples submitted to the laboratory for pH analysis were not tested for six days after the laboratory received them, something that occurred on previous sampling events. Standard laboratory practice for pH analysis of water samples is immediately or soon thereafter. Please explain what the extended hold time may have done to the lab reported pH results and why was there a delay in analyzing the samples?



***GCC agrees that the most valid pH measurements are those made in the field immediately after sample collection. Laboratory pH was run only as backup and a general check on field measurements. GCC recommends reliance on the field measurements for compliance monitoring and reporting purposes. If pH is analyzed at the laboratory, GCC will request that it be done as soon as possible after receipt. Origins reports that they have tested the effects of holding time on pH and their results have not varied much.***

- 9) As part of the sites discharge permit, permit number COG500000 certification number COG501540, any discharges from the in-pit sedimentation basin must be sampled prior to leaving control of the Permittee (GCC). Please provide the results of sampling that occurred as part of any discharges from this pit.

***No discharges occurred from the in-pit sedimentation basin in 2018 so therefore no sampling was performed.***

Again, GCC appreciates the feedback and comment from DRMS. Given field observations since TR-06 approval, the nature of changes in groundwater monitoring at the site, and changes in project personnel within both DRMS and GCC, we would appreciate the opportunity to meet with DRMS and discuss reporting schedules/requirements and the technical aspects and scope of current and future monitoring at the site. If you concur or have any additional questions regarding this report, please contact me at (719) 647-6861, or [dfurman@gcc.com](mailto:dfurman@gcc.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'Diana', with a stylized flourish extending from the end.

Diana Furman  
Environmental Engineer

CC: Bence Close