

STATE OF
COLORADO

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

Boettcher Limestone Quarry / TR-9 / Adequacy Review

Harkins, Sara <Sara_Harkins@golder.com>

Thu, Oct 11, 2018 at 8:37 AM

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,

On behalf of Holcim (US) Inc., Golder is pleased to submit the attached revised Technical Revision No. 9 for the Boettcher Limestone Quarry. A paper copy will also be mailed.

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

Thanks,

Sara

**GOLDER****Work Safe, Home Safe****Sara Harkins**

Senior Project Geologist/Geochemist

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Please consider the environment before printing this email.**From:** Eschberger - DNR, Amy <amy.eschberger@state.co.us>**Sent:** Monday, October 1, 2018 4:08 PM**To:** Derrick Dease <derrick.dease@lafargeholcim.com>**Cc:** Harkins, Sara <Sara_Harkins@golder.com>**Subject:** Boettcher Limestone Quarry / TR-9 / Adequacy Review

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2 attachments**GOLDER****image001.jpg**
65K**18107649_TM_Holcim_TechRevision_Rev1_10Oct18.pdf**

47K

October 10, 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

RE: REQUEST FOR TECHNICAL REVISION OF PERMIT M-1977-348: CHANGES TO THE GROUNDWATER ANALYTE LIST AT THE BOETTCHER QUARRY

Dear Ms. Eschberger

On behalf of Holcim (US) Inc., Golder Associates Inc. (Golder) is submitting this request for a technical revision to permit M-1977-348 to modify the groundwater monitoring program for the Boettcher Limestone Quarry located at 3060 West County Road 56, Laporte, Colorado 80535.

This technical revision was requested by the Division of Reclamation, Mining, and Safety (DRMS) in their June 7, 2018 Minerals Program Inspection Report. The request from the DRMS was to modify the groundwater analyte list for the site to include parameters on Table 1 through Table 4 of the Regulation No. 41 – Colorado Basic Standards for Groundwater (5 CCR 1002), herein referred to as the BSGW. Based on a call between Golder, Holcim, and the DRMS on August 10, 2018, the technical basis for not including certain parameters in the proposed analyte list is provided below. Additionally, although not included in the BSGW, dissolved calcium, magnesium, sodium, and potassium are included in the proposed analyte list to be consistent with the current monitoring program, to provide a full suite of major ions to assist in interpretation of results, and for quality assurance/quality control purposes.

An updated parameter list is included as Table 1. The following BSGW parameters have been excluded from the parameter list, with justification provided below:

- Total Coliforms (30-day average and maximum value in 30 days): No sewage or septic system exists on site, and coliforms are not associated with cement kiln dust (CKD), which was generated at the site. As such, no source of coliforms is present at the site.
- Asbestos: Asbestos is a product of six specific naturally occurring silicate materials of metamorphic origin (ATSDR, 2001; WHO 1996). Asbestos is not associated with CKD, and the geology of the site does not include metamorphic formations, eliminating the potential for the presence of natural asbestos.
- Chlorophenol: Chlorophenol compounds are not naturally occurring and are not associated with CKD. Chlorophenols are used either directly as pesticides, or are converted into pesticides, or may be produced

during drinking water or waste water disinfection (USEPA, 1980). There is not a source of chlorophenol at the site.

- Phenol: Phenol is commonly found in household products, domestic, agricultural, and municipal waste, and in industries outside of mining, particularly in production of phenolic resins, slimicides, and disinfectants (USEPA, 2002). Phenol is not associated with CKD, and there is not a source of phenol at the site.
- Color: Color is typically a constituent of concern in domestic and industrial waste waters, which are not present at the site. In groundwater samples, color could be a function of sample turbidity or suspended solids related to the aquifer solids or high levels of dissolved constituents, a likely occurrence given that the total dissolved solids concentrations of some wells at the site exceed 10,000 milligrams/Liter.
- Odor: Odor is typically a constituent of concern in domestic and industrial waste waters, which are not present at the site. Additionally, present methods of measuring odor are subjective and the task of identifying an unacceptable level for each chemical in different waters requires more study. Further, it is typically very expensive and often impossible to identify the exact odor-producing substance (USEPA 1992).
- Corrosivity: Corrosivity is a condition generally associated with low pH (i.e. acidic) waters. Groundwater samples collected at the site are circumneutral to alkaline.
- Foaming Agents: Foaming agents or surfactants are usually associated with detergents and similar substances in waters. Foaming agents are not associated with CKD, and there is not a source of foaming agents at the site.

It is assumed that the revised parameter list will be used for the next three sampling events, through the end of 2019. Pending the results of the analyses through 2019, a Technical Revision request may be made to reduce the analyte list after 2019. Per Technical Revision No. 7, TR-Sampling will continue to be conducted on a semi-annual basis for monitoring wells MW-1 through MW-7. This frequency was approved by the DRMS as adequate to assess groundwater conditions and to allow for well recharge between sampling events and true independent measurements based on groundwater equilibrium conditions.

Following each sampling event, analytical results from MW-1, MW-2, MW-3, and MW-5 will be compared to the Regulation 41 "Interim Narrative Standard" provided in Table 1. Wells MW-4, MW-6, and MW-7 will not be compared to the Table 1 limits because per Section 41.5 (C) (6) of Regulation 41, the "Interim Narrative Standard" does not apply the waters with TDS greater than 10,000 mg/L. The DRMS will be notified via email of an exceedance of the limits specified on Table 1 within five working days after the completion of the comparison to limits, including any data quality review necessary to address questions concerning the validity of sampling or laboratory analyses. Additionally, these exceedances will be noted in the summary page of the monitoring report submitted to the DRMS following each sampling event.

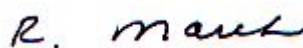
If you have any questions or comments about this request, please contact the undersigned at (303) 980-0540.

Sincerely,

Golder Associates Inc.



Sara Harkins, PG
Senior Project Geochemist



Randy March, PE, PG
Principal Geological Engineer

ELH/SAH/ds

CC: Derrick Dease, Holcim (US) Inc.

Attachments: Table 1 – Proposed Analyte List

https://golderassociates.sharepoint.com/sites/33029g/deliverables/techmemos/tm_techrevision_r1_10oct18/18107649_tm_holcim_techrevision_rev1_10oct18.docx

References

Agency for Toxic Substances and Disease Registry (ATSDR), 2001. Public Health Statement of Asbestos CAS#: 1332-21-4. Available at: <https://www.atsdr.cdc.gov/ToxProfiles/tp61-c1-b.pdf>

Golder, 2013. Proposed Changes to the Analytical List for Groundwater sampling at the Boettcher Quarry. Project Number 103-80640 February 5, 2013

United States Environmental Protection Agency (USEPA), 1980. Ambient Water Quality Criteria for Chlorinated Phenols. EPA 440/5-80-032, October 1980.

USEPA, 1992. Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals, EPA 810/K-92-01, July 1992.

USEPA, 2002. Toxicological Review of Phenol CAS# 108-95-2, EPA/635/R-02/006, September 2002.

World Health Organization (WHO), 1996. Guidelines for drinking-water quality, 2nd ed. Vol. 2. Health criteria and other supporting information.

TABLE 1

Proposed Analyte List

Table 1: Proposed Analyte List

Parameter	BSGW Reference	Interim Narrative Standard
Metals		
Aluminum, dissolved	Table 3	5 mg/L
Antimony, dissolved	Table 1	0.006 mg/L
Arsenic, dissolved	Table 1; Table 3	0.01 mg/L
Barium, dissolved	Table 1	2.0 mg/L
Beryllium, dissolved	Table 1; Table 3	0.004 mg/L
Boron, dissolved	Table 3	0.75 mg/L
Cadmium, dissolved	Table 1; Table 3	0.005 mg/L
Chromium, dissolved	Table 1, Table 3	0.1 mg/L
Cobalt, dissolved	Table 3	0.05 mg/L
Copper, dissolved	Table 2; Table 3	0.2 mg/L
Iron, dissolved	Table 2; Table 3	0.3 mg/L
Lead, dissolved	Table 1, Table 3	0.05 mg/L
Lithium, dissolved	Table 3	2.5 mg/L
Manganese, dissolved	Table 2; Table 3	0.05 mg/L
Mercury (inorganic), dissolved	Table 1; Table 3	0.002 mg/L
Molybdenum, dissolved	Table 1	0.21 mg/L
Nickel, dissolved	Table 1; Table 3	0.1 mg/L
Selenium, dissolved	Table 1; Table 3	0.02 mg/L
Silver, dissolved	Table 1	0.05 mg/L
Thallium, dissolved	Table 1	0.002 mg/L
Uranium, dissolved	Table 1	0.0168 to 0.03 mg/L
Vanadium, dissolved	Table 3	0.1 mg/L
Zinc, dissolved	Table 2; Table 3	2 mg/L
Major Ions and Water Quality Parameters		
Chloride	Table 2	250 mg/L
Fluoride	Table 1; Table 3	2 mg/L
Nitrate	Table 1	10.0 mg/L as N
Nitrite	Table 1; Table 3	1.0 mg/L as N
Nitrate + Nitrite, Total	Table 1; Table 3	10.0 mg/L as N
pH	Table 2; Table 3	6.5 - 8.5 pH units
Sulfate	Table 2	250 mg/L
Total Dissolved Solids	Table 4	1.25 times background
Cyanide, Free	Table 1	0.2 mg/L
Gross Alpha	Table 1	15 pCi/L
Beta and Photon Emitters	Table 1	4 mrem/year
Calcium, Dissolved	Not Included	Not Applicable
Magnesium, Dissolved	Not Included	Not Applicable
Potassium, Dissolved	Not Included	Not Applicable
Sodium, Dissolved	Not Included	Not Applicable

Notes:

Per Section 41.5 (C) (6) of Regulation 41, the "Interim Narrative Standard", is the minimum of Table 4 of The Basic Standards for Groundwater (BSGW)

Per Section 41.5 (C) (6) of Regulation 41, the "Interim Narrative Standard" does not apply to waters with TDS greater than 10,000 mg/L