SAN MATEO - EXHIBIT Q

Adam Rankin

From: Adam Rankin
Sent: Wednesday, July 8, 2020 3:40 PM
To: Knight, Andrew, NMENV
Cc: 'Lemon, Shelly, NMENV'; Sarah.Holcomb@state.nm.us; Kaitlyn A. Luck
Subject: San Mateo - WQCC 20-16 (CO) - updated analysis
Attachments: Black River Core Sample Locations[14949705v1].PDF; Quantification of Bentonite (Montmorillonite) [14949704v1].PDF; 10572_Matador_CoreSamples_07052020_nrs[14949628v1].PDF

Andrew,

I wanted to provide you a quick update from San Mateo on an analysis the company conducted that confirms the absence of bentonite in sedimentary core samples taken in the vicinity of the alleged release. The analysis confirms the basis for the company's objections to the Bureau's approved remediation plan and the ACO's deadlines to start and complete remediation before a hearing. We wanted to convey this information to you as soon as possible, but will also file a supplement to our motion shortly. This new information materially alters the grounds for the relief we are seeking.

San Mateo researched the issue and determined that there is a recognized and reliable analytical method that can discern the presence or absence of bentonite based on an analysis of a material's mineralogy and chemical composition. The method actually consists of two related laboratory analyses: X-Ray Diffraction, or XRD, and X-Ray Fluorescence, or XRF.

XRD evaluates a material's crystalline structure. Bentonite, sometimes referred to as montmorillonite, has a known crystalline structure or signal, that can be identified using XRD. XRF evaluates a material's chemical structure and can determine what elements comprise the material. Again, bentonite has a known chemical makeup comprised of Na, Ca, Al, Mg, and Si.

Using these two laboratory techniques in combination, it is possible to check for the presence or absence of bentonite in a material.

San Mateo hired Vertek, its environmental consulting firm, to collect five core samples from the Black River. Three core samples (C1, C4, C5) serve as controls and represent areas in the river, or from the river bank, which are known to have no exposure to any alleged release of bentonite from San Mateo's boring operations. One of the control core sample (C1) was collected from approximately 60 feet upstream from the location of the alleged release (where Vertek installed sandbag mitigation during the completion of the boring operation). One of the control core sample (C5) was collected approximately 900 feet upstream from the location of the alleged release. And the third control core sample (C4) was collected approximately 8 feet up-bank from the river level at a downstream location.

Two core samples (C2 and C3) were collected in areas within the immediate downstream vicinity of the alleged release where, if bentonite had been released during San Mateo's boring operation, one would expect to find concentrations of bentonite within sedimentary deposits. C2 was collected at the sandbag mitigation location where the bubbling was observed to have occurred during the boring operation. C3 was collected approximately 80 feet downstream from the location where the sandbag mitigation structure had been constructed.

The location of the core samples relative to the pipeline easement and boring operation are depicted on the second page of the attached aerial map, which also references the physical features of the river and river bank that were highlighted and discussed during our settlement conference with the Bureau. The core samples ranged from a core depth/length of approximately 21 inches down to approximately 25 inches.

The core samples were then analyzed by a mud logger geologist who reviewed the cores based on rock type, looking for clay-like or bentonite-like layers within the cores. The core samples were transported by car to Houston where they were delivered to Impac Labs (https://www.impaclabs.com/), a laboratory which specializes in conducting geoscience analyses for oil field operations. The laboratory ran XRD and XRF analyses on samples from each rock type identified within the cores by the mud logger. The analytical results for both methods are provided in the attached spreadsheet. The key at the bottom of the data in the XRF tab is intended to reference any data that the lab identified as "Cautionary Data (possible rerun)" (Yellow), "Sample is contaminated with Ba" (Orange), and "Sample is contaminated with LCM [lost construction material] (Blue)." None of the data are flagged for any of these conditions.

To help decipher the mineralogy analysis, Impac Labs provided the attached slides which summarizes their method, analysis, and conclusions. See Quantification of Bentonite (Montmorillonite), attached.

In short, the laboratory compared the core samples collected in the field to a known bentonite crystalline diffraction signal in the XRD test and a known chemical composition for bentonite in the XRF test. The XRD analysis confirms that none of the clays present within the sample show any indication that bentonite is present because it is missing the tell-tale peaks of its crystalline diffraction.

Similarly, the XRF analysis, as a cross-check, confirms that the chemical composition of the materials and clays present in the samples do not match the known chemistry for bentonite because they are rich in calcite, which is the mineralogy that is expected for clays from this area, instead of sodium (Na) which is the chemical signature consistent with bentonite. The materials identified in the core samples are consistent with halite and limestone, which is consistent with the geology of the area.

We are hopeful that this additional information will give us a more informed basis to discuss the best path forward to resolve the ACO and remediation requirement while making the best decision for protecting the health of the river.

I know you are out of the office this week, but anticipate discussing this new development with the Bureau on your return. Because you are out of the office, I've also copied Shelly and Sarah. Hope you are all well.

Very best,
Adam

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