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State of Utah

DEPARTMENT OF NATURAL RESOURCES

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April 11, 2018

Gary Petty, Mayor Emery Town
65 North Center Street
P.O. Box 108
Emery, Utah 84552

Subject: Hydrology Concerns: SUFCO Mine, Greens Hollow Lease Expansion

Dear Mayor Petty:

The Division of Oil, Gas and Mining (DOGM) received your letter on March 30th, 2018. In your letter, you expressed concerns and identified questions regarding the addition of the Greens Hollow Lease Area (the Lease) to the SUFCO Mine and the potential for impacts to hydrologic resources. We are currently in the process of working through the final issues identified with this permitting action and would anticipate completing our work within the next two to three weeks.

We are well aware that the Muddy Creek drainage is the primary source of culinary water for the town of Emery. I want to assure you that we take our responsibility as the regulatory authority under the Surface Coal Mining and Reclamation Act (SMCRA) very seriously. As a result, our staff has thoroughly evaluated the proposed mining activity within the Lease and the potential for impacts to Muddy Creek.

Your letter posed three questions regarding water resources and concerns about impacts as a result of mining in the Lease. I'll address those questions briefly in the following discussion. I would mention that I will gladly make our technical review staff available to you should you need additional information or have further questions.

Question 1: *"Will they be discharging any water into the Muddy Creek by pumps or natural flow?"*

The mine plan under review does not call for pumping or a natural discharge to report to the Muddy Creek drainage. Encountered mine-water will continue to be pumped into the Quitchupah Creek drainage. However, it is DOGM's position that the mine plan in the Lease area has been designed to prevent impacts to the Muddy Creek drainage. The finding is based on several factors. One of the primary factors is that subsidence mining will not be allowed under any portion of the Muddy Creek drainage, nor the perennial sections of Greens Hollow, Cowboy Creek, and the North Fork of Quitchupah Creek.

As part of the Bureau of Land Management's (BLM) Federal leasing process, an Environmental Impact Statement (EIS) was prepared that identified a mining plan alternative that precluded subsidence mining from occurring beneath the aforementioned sections of stream channel. It is this mining alternative that was adopted and incorporated into the Greens Hollow Federal Lease (as issued from the BLM to the SUFCO Mine) and will subsequently be incorporated into DOGM's mining permit. As a result, the potential for subsidence cracks to intercept flow within the Muddy Creek drainage and supporting drainages (i.e. Greens Hollow, Cowboy Creek and North Fork of Quitchupah Creek) is very low.

Additionally, the vast majority of springs within the Lease discharge from the Price River and North Horn geologic formations at high elevation. The flow of these springs has been well characterized as being driven by snowpack and the resulting thaw/melt in the spring and early summer months; with flows generally tapering off significantly by August and September. Given that condition and the amount of overburden separating these springs from the mine workings, it's very unlikely that these springs are in active communication with the water encountered in the mine and subsequently pumped into Quitchupah Creek.

It should also be noted that extensive baseline data has been provided to DOGM and a thorough water monitoring program has been developed in conjunction with our staff. Seven water monitoring sites have been established on the Muddy Creek drainage alone. The locations are located above, within and below the area of mining. Additionally, numerous water monitoring sites have been established on the Greens Hollow, Cowboy Creek and North Fork of Quitchupah drainages. Including the seven monitoring sites on Muddy Creek, a total of twenty-five stream monitoring sites are in place to monitor for any potential impacts to the major drainages located within and adjacent to the Lease.

Question 2: *"If they dry up any springs will this water be replaced?"*

The short answer to this question is 'yes'. Per State Rule R645-301-731.530, a coal permittee is required to *"promptly replace any State-appropriated water supply that is contaminated, diminished or interrupted by underground coal mining..."*

In order to ascertain whether mining activity has impacted a spring, the SUFCO Mine has developed a monitoring plan of twenty-eight springs within and adjacent to the Lease. The addition of the Lease to the SUFCO Mine was initiated by the company in the early 2000's. At that time, an extensive spring and seep survey was conducted. Based on that survey, the SUFCO Mine began collecting baseline data to characterize the quality and quantity of the springs within the Lease and adjacent area. For the majority of the aforementioned twenty-eight springs, well over a decade's worth of baseline data has been collected and provided to DOGM. The result of

that effort, going forward into active mining, is that DOGM will be better equipped to determine potential impacts to area springs as a result of mining.

An instance of water replacement by the SUFCO Mine, that you may be aware of, occurred at what's referred to as the North Water Spring. The North Water Spring was impacted by subsidence mining where the surface geology was predominantly comprised of Castlegate Sandstone. The Castlegate Sandstone's physical properties make it susceptible to subsidence deformation and cracking. When mining occurred in the area of the North Water Spring, surface subsidence cracks did form and the spring was impacted. As an immediate mitigation effort, the SUFCO Mine established a solar panel/pumping system to provide stock-water in the area of the impacted North Water Spring. Eventually an agreement between DOGM, the SUFCO Mine, and the USDA Forest Service was formulated to address a more long-term mitigation and water replacement plan. The plan directed the SUFCO Mine to develop three new water sources in the area of the North Water Spring. The work has been completed resulting in three fenced, developed spring sources and associated riparian vegetation.

The surficial geology of the Lease area is dominated by the Price River and North Horn formations. The physical properties of these two formations are much more resistant to subsidence impacts as opposed to the Castlegate Sandstone. The result of which is that the potential for the springs in the Lease and adjacent area to be impacted by subsidence is very low.

Question 3: *"What will happen to the water when the Greens Tract is mined out?"*

A post-mining discharge from the SUFCO Mine is not anticipated. When mining activity ends and the pumps and pipelines are removed from the mine, the workings will begin to flood and fill with water. It's anticipated that over time, the ground-water systems located within the coal seam and adjacent strata will return to pre-mining levels.

I would reiterate that we certainly understand your concerns and we're working hard to ensure that in the event an issue arises, we're in a position to identify it, address it, and find a solution.

If you have any questions, please don't hesitate to call me at (801) 538-5325.

Sincerely,



Daron R. Haddock
Coal Program Manager

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cc: Morris Sorensen,
Muddy Creek Irrigation