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Memorandum

To: Brian Kimmel

From: Carrie Lile, Consulting Water Engineer

Subject: GCC Energy Water Use: Current and Future

To date, Harris Water Engineering, Inc. has prepared multiple Supplement Reports to the original "GCC Energy Mine Water Supply and Demand Report." The first report was prepared on June 5, 2013 that described the water demand and supply for the GCC Energy – King II Mine (Mine). There have been three further supplemental reports: August of 2013, January 10, 2014 and September 3, 2014. This memo serves as an additional report describing the water use and demand for the Mine.

Estimated Usage

Demand for an average production year of coal is described by water source below. Based on past usage, the Mine on average uses 2.4 to 3.4 acre-feet per month while producing 66,000 to 95,000 tons of coal per month. The amount permitted by CDRMS permit is a maximum of 108,300 tons of coal per month. Water usage varies with air moisture content (i.e. more moisture in the air leads to less need for de-watering inside and outside the Mine). Water Court Decree 07CW100 dated December 31, 2007 (Decree) provides for up to 36.04 acre-feet annually to be used in conjunction with storage.

- **Huntington dry up lands:** The Decree provides for a consumptive use of 9 acres of dry up land for use at the Mine. The consumptive use for this amount of land is estimated to be 14.07 acre-feet (using the Blaney-Criddle Method). While the majority of the diversion is used during the irrigation season at the Mine, any excess would be stored in the reservoir. The dry up occurs from May through September, which is about 2.8 acre-feet per month of use.
- **La Plata River diversions:** The Decree allows for diversions from the La Plata River when in priority during the winter months. The maximum diversion from the river is 27.23 acre-feet (based on 80 gallons per minute for 77 days). This water is stored in the reservoir for use. Outside of the irrigation season is when the stored reservoir water is typically used. The total volume of direct runoff, 27.23 acre-feet, is either stored or used immediately. If the average use is 2.9 acre-feet per month, a remaining 6.93 acre-feet of water is stored and available for use at other times in the year.
- **Reservoir:** A storage facility, such as the underground reservoir, is key to providing an adequate water supply to the Mine when utilizing existing water

rights. The end of the year reservoir content will range depending on that year's coal production and water availability in the river.

GCC Water Demands

The water right in the Decree provides water supply for the Mine primarily for dust control inside the Mine and at the entrance but also domestic use for the Mine employees. The Decree includes three sources of water: Huntington irrigation dry-up, diversion from the La Plata River for storage, and well water. At this time, wells are not included as a source of water supply and the Mine has no plans to utilize wells as a water source in the future. All of the current sources require a reservoir to store water for month-to-month and year-to-year usage. From the known data of the Mine's usage to date, the existing water supplies in place are adequate to satisfy the demand.

The Decree provides a water supply of up to 34.07 acre-feet per year. To achieve adequate water supplies for a demand of maximum tonnage per year, and to meet recent regulatory water usage requirements, a redundant and expansive water supply is being pursued to ensure the Mine's *total* water supply is adequate during a wide range of hydrological conditions. In conjunction, the existing underground 20 acre-foot reservoir is unavailable for use for storage due to unexpected circumstances. A new storage facility is being pursued at this time.

The proposed redundant/expanded water source and potential storage facility are described below along with steps towards implementation. At this time, the proposed additional supplies are accommodated within the existing and proposed augmentation plan.

Additional Huntington Irrigation Dry-Up

To provide additional water, GCC has made arrangements with Huntington Ranches, LLC's (Huntington) using Class A shares in the Hay Gulch Ditch (HGD) to supply the additional water, for the life of the Mine, through dry-up of an additional 43.5 acres. The change of irrigation water to use at the Mine will be nearly identical to the conversion of the previous dry-up acreage in the Decree. There will be a couple exceptions as described herein that the land has been historically sprinkler irrigated, water has been provided through the Huntington lateral of the HGD, and the land is further from HGD requiring analysis of lagged return flow.

Huntington Reservoir

To provide a new storage facility, Huntington proposed enlargement of an existing pond to accommodate Huntington's needs as well as provide storage for the Mine's water supply. GCC may store in the reservoir its First Lease Water, Second Lease Water, and/or any other water rights in the Decree. A key component of utilizing the Decree and additional supplies fully is having storage for usage month-to-month and year-to-year. The proposed Huntington Reservoir (Reservoir) will have a volume of up to 30 acre-feet dependent upon numerous aspects of design and construction.

Steps for Implementation

1. Secure a letter of intent to lease additional water from Huntington by September 1, 2015.
(Completed)

2. GCC will file a water application and substitute water supply plan (SWSP) to the Colorado Division of Water Resources to allow the redundant/expanded water supply and the Reservoir to be used in conjunction with the Mine's operations. The application and SWSP will be pursued concurrently. While the application is prepared and processed, the SWSP will be requested to be in effect to provide water to the Mine. Typically, a SWSP is reviewed and processed by the Division of Water Resources within 90 days of submittal. The application and SWSP will be submitted no later than December 31, 2015. Documents with their associated attachments that will be updated and drafted are listed below:
 1. Update GCC Energy Mine Water Supply and Demand Report (Pending)
 2. Draft Substitute Water Supply Plan (Pending)
 3. Draft Decree Application for additional water (Pending)
3. Preliminary investigation into the Reservoir's potential location has begun. Surveying of the proposed location will commence the first week of September 2015. The Reservoir will be designed to satisfy the needs of Huntington and GCC as well as conform to all applicable regulations. Construction is estimated to begin the winter of 2015 and be completed by May 1, 2016. The Reservoir plans to be online and available for use in time to collection 2016 spring run-off (if water is legally available). (Ongoing, initial site evaluations completed)

