**MEMORANDUM**

To: Tennessee Department of Environment and Conservation

Division of Water Resources – Mining Section

From: Rep. Jim Cooper

Date: April 20, 2016

Re: Comments for TDEC Permit Number: TN0069922

1. Groundwater flows and unknown site-specific geologic conditions in the area are highly concerning. The proposed site contains over 11 acres of wetlands, one perennial stream and one ephemeral stream. The proposed initial excavation area falls within 40 ft. of the wetlands, as well as approximately 400 ft. of Old Hickory Lake. Floodplains cross or abut the property on three sides. All of these features combine to suggest extensive subsurface groundwater flows in the area. As such:
2. Wastewater limits for Outfall 001 may be met during general operating conditions. However, there may be exceptions during high groundwater flow and/or stormwater events when settled pond solids will be flushed through outfall due to high incoming treatment volumes. I request the engineering of the pond, as well as subsequent necessary studies, be revisited in order to adequately demonstrate the pond’s ability to settle/capture the type of sediments and fines generated by the quarry operations to include periods of all types of high-flow inputs, including groundwater, concentrated washwaters, etc.
3. Multiple studies show limestone aggregate quarries in karst terrain are often at considerable risk of inflow from groundwater and surface water channeled through conduits in karstic rock. Inflow rates can also dramatically increase over time as turbulent flow through the conduit erodes its soft residual clay-rich fill, and have been measured as high as 2,500 liters/second with these features. Additionally, the presence of losing streams and wetlands on the property reflect possible geologic indicators of these conditions. Heavier inflow rates would also require quarry operators to pump the water, which could depress the local water table, and lead to the development of sinkholes in the area.

Aside from safety concerns for Old Hickory Dam and the surrounding neighborhood, sinkholes can also pose a threat to local groundwater quality due to minimal soil filtering of surface water runoff. Dumping and other forms of contaminated runoff can become a serious issue for sinkholes in a populated and industrial area. Contaminated groundwater can then flow easily through solution channels in carbonate bedrock and pollutes water supplies located far away from the contamination source.

Given these possibilities, I respectfully request you complete the necessary geologic and hydrologic surveying to ensure this will not be an issue and/or postpone issuing a final National Pollutant Discharge Elimination System (NPDES) permit until the U.S. Army Corps of Engineers has responded to the attached letter (dated: 4/12/2016). I also request you include any sinkhole filling and pollution mitigation practices, including cleaning and revegetation, required should they become an issue.

1. Depending on groundwater levels in comparison with the Cumberland River/Old Hickory Lake, backflow from the quarry to the surrounding area may be an issue. Depending on the explosive being used, the carcinogen benzene from detonations/failed detonations of Ammonium Nitrate Fuel Oil (ANFO) as well as ammonia, nitrate and nitrite can pollute surrounding ground and surface water, especially under conditions listed in point B. I respectfully request the necessary hydrologic surveying to ensure backflow will not be an issue.
2. Sediment samples should be representative/inclusive of “worst” discharges allowed by pond design. Rock sediment can be difficult to settle out and subsequently hard to detain; sampling may not violate the 40 mg/l limit, but possibly the limit of color contrast. Please revise Sec. 5 A and B to clarify.
3. Chronic flow volumes in the unnamed tributary via Outfall 001 discharges from quarry pit pumped water and stormwater would likely be much larger than current background flow, which could result in overall higher pollutant loadings. Taking this into consideration, please revise/reconsider/elaborate on possible impacts to unnamed tributary’s water quality and aquatic life.
4. I request the inclusion of Total Dissolved Solids (TDS) in the permit limit parameters. Past investigations demonstrate that quarry-treated wastewater can have a propensity to contain more impacting TDS than Total Suspended Solids (TSS), which can result in an objectionable color contrast to a stream.
5. Instead of annual stormwater discharge sampling, I request either quarterly or semi-annual sampling. Given discharges are into a small tributary, increased sampling is necessary to more accurately reflect and monitor sediment discharges/overall pollutant loadings.
6. Is the site treatment pond that discharges via Outfall 001 required to consider the utilization of pond forebays in its design as well as depict a defined access point into the pond for maintenance equipment to enter?
7. I have requested additional information from the U.S. Army Corps of Engineers on permitting authority under 33 USC Sec. 408 (see attached letter dated: 4/4/2016). I respectfully request you postpone finalizing the NPDES permit until a sufficient response has been received.
8. Three wetlands and a cemetery sit within the proposed permit delineations. Please detail how the quarry operator plans to avoid interference with/degradation of these features once mining has expanded beyond the initial excavation area, and how TDEC plans to monitor these activities.
9. The quarry operator is currently applying for a U.S. Fish and Wildlife Service (FWS) Rule 4(d) permit for the Northern Long-Eared Bat, a FWS Eagle Take Permit, and possibly other required endangered species permits. I respectfully request you postpone finalizing the NPDES permit until each permit has been completed.