GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Land Protection Branch
4244 International Parkway
Suite 104
Atlanta, Georgia 30354
404-362-2537

September 10, 2021

Mr. Steven Ingle
Twin Pines Minerals, LLC
2100 Southbridge Pkwy, Suite 540
Birmingham, AL 35209

SUBJECT: **Twin Pines Minerals, LLC Permit Coordination Comments**
Mine Name: Saunders Demonstration Mine
Mine ID: 2073
County: Charlton

Dear Mr. Ingle:

The Environmental Protection Division (EPD) has reviewed the Response to Comments received on June 25, 2021 and the Part 2 Response to EPD Permit Coordination Comments received on July 16, 2021.

EPD has provided comments of the submittals and are enclosed. Please submit responses to jamie.lancaster1@dnr.ga.gov or by submitting hard copies to EPD Surface Mining Unit, Attn: Jamie Lancaster, 4244 International Parkway, Suite 104, Atlanta, GA 30354.

If you have any questions, please contact me at (470)251-2589.

Sincerely,

Jamie Lancaster

Jamie Lancaster
Unit Manager
Surface Mining Unit

cc: TTL

Enclosure

Twin Pines Permit Coordination Document
Charlton County: Saunders Demonstration Mine
September 10, 2021

1. **Mining Land Use Plan Comments by Surface Mining Unit and James L. Kennedy Ph.D., P.G.**

Sheet 8: 1. Soil Amendment Plan: 1.1 bullet five states that "because the sand/bentonite mixture is very cohesive, it can be cast into the open pit whether it is wet or dry without separating". The model done by GSI simulated a 10.9 percent mixture with bentonite would be sufficient to reproduce the effect of the shallow consolidated black sand layer. A mixture of 89 percent sand and 11 percent bentonite will not have enough cohesion to prevent Stokes Law separation of the sand and clay if it is placed in a mine pit filled with water. Please explain how the blended sand/bentonite material will be placed at the design level/interval below the water table in the mine excavation in a manner that does not allow the bentonite to separate from the sand, or explain how the mine excavation will be temporarily dewatered to allow placement of the blended sand/bentonite material.

Sheet 10: Groundwater & Surface Water Monitoring Plan(1) Section 3.2: For Groundwater and Surface Water Location tables, please modify number 3 on each table with a clearer statement. For example, "Post-mining Monitoring will begin at the end of active mining for a period of approximately 5 years". (This example is based off the projected 5-year mining plan in the MLUP.) Also, please add a number 4 below each table that states "EPD may require an extension of the monitoring plan if necessary".

The only leaching tests of the mine spoil have been done with groundwater flowing through the mine spoil. Leaching tests must be done with native rain fall and the mine spoil since it is the native rainfall, with a slightly lower pH, which will be the majority of the water which over the long term will interact with and possibly leach metals from the mine spoil and discharge to surface water.

Sheet 12: Groundwater & Surface Water Monitoring Plan(3): Cross section D-D' shows the upper consolidated black sand layers as discontinuous from wells MPZ-10S/D to MPZ-13S/D at ~155ft above sea level. The black sand layer is ~70% continuous and therefore the cross sections must show horizontality at this elevation. Please include a note on the reclamation page stating that the bentonite later will be 100% continuous and a projected cross section of the final reclamation with the bentonite in place.

2. **Exhibit I Modeling the GW Flow System Comments James L. Kennedy Ph.D., P.G.**

Page 1: The description of the method to be used to place the bentonite-enhanced layer of soil will not work given that the mine pit will not be dewatered. It was noted that placement of the bentonite-enhanced soil layer is not a modeling issue, which is correct, but the description of the process on Page 1 must say placement of the bentonite-enhanced soil layer cannot be simulated by the model.

Page 8: Explicitly explain what use of the drains versus rivers means in the model. In MODFLOW drains can receive water from the modeled aquifer but cannot recharge the modeled

aquifer. A river can both receive water from the modeled aquifer and discharge water to the modeled aquifer. Explain that the drains were modeled based on the surface water courses shown on Figures 22 and 23. Explain that no rivers were modeled because there are no rivers within the model domain.

Page 8: Say how many grids there are in the mining area (there are enough grids).

Page 12: Please say explicitly if the addition of bentonite was simulated in the mining area shown on Figure 3 (and later figures) or if it was simulated for the entire are (it was simulated in the mining area shown on Figure 3 but that needs to be clarified in the report).
Does the software used for the model include an LGR (Local Grid Refinement) capability? If it does LGR should be used to model the mine area. LGR could be used to model the mine area at a grid size of 250 ft. x 250 ft. LGR is not needed to make the model acceptable but it would be helpful to see a more detailed numerical analysis of the mining area.