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February 7, 2022

Transmitted Via: **Email (jamie.lancaster1@dnr.ga.gov)**

Ms. Jamie Lancaster
Georgia Department of Natural Resources
Environmental Protection Division
Unit Manager, Surface Mining Unit
Land Protection Branch
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

SUBJECT: Twin Pines Minerals, LLC Permit Coordination Comments
Mine Name: Saunders Demonstration Mine
Mine ID: 2073
Charlton County, Georgia
Wood Project Number: 7382-22-4061

Dear Ms. Lancaster:

This letter and attachments were prepared by TTL, Inc. (TTL) and Wood Environment & Infrastructure Solutions, Inc. (Wood) in response to the Environmental Protection Division's (EPD's) Comments as contained in EPD's letter addressed to Mr. Steve Ingle (President, Twin Pines Minerals, LLC), dated December 7, 2021. The attached responses are preliminary in anticipation of the forthcoming 15% Basis of Design and 30% Schematic packages which will provide additional technical information.

Wood appreciates the opportunity to present this response for this important project. If you have any questions, please contact Philip Marcum at Philip.Marcum@woodplc.com or 404-310-0849.

Sincerely,
WOOD ENVIRONMENT & INFRASTRUCTURE SOLUTIONS, INC.

Dr. Don Dotson, PE, DGE
Vice-President, Global Technical Lead
Geotech & Materials

Philip W. Marcum, PE
Associate Project Manager
For Philip W Marcum with permission

CC: Richard E. Dunn, Director, EPD (richard.dunn@dnr.ga.gov)

Enclosures:
Response to EPD Comments, EPD Letter dated December 7, 2021 (Two pages)
Detail Sheet – FIG1 – Typical Water Management Pond Berm and FIG2 Liner at Top of Berm

Enclosures

Response to EPD Comments, EPD Letter dated December 7, 2021 (two pages)
Detail Sheet – FIG1 – Typical Water Management Pond Berm and FIG2 Liner at Top of Berm

GA EPD Review Comments
Date: 02/07/22
Wood Proj #.: 7382-22-4061
Mine ID: 2073 **Owners Engineer:** TTL
Project Title: Saunders Demonstration Mine
Subject: Responses to EPD Questions dated December 7, 2021,

	NO.	ITEM / NOTES
1.	Comment:	Please provide design characteristics (gates, valves, and spillway) for the Emergency Overflow Spillways (spillway), which include a cross section of the spillways with liners and riprap.
	Response:	*The design has been modified to limit the height of the berm to less than 5.0-feet above natural grade. The pond contents consist solely of process water that is pumped into the pond and rainfall. Engineering controls will be incorporated to prevent overfill of process water; the pond will be sized to contain rainfall from the 24-hr/100-yr storm event per Table 2.2.3-1 of volume 2 of the Georgia Stormwater Management Manual. Preliminary cross sections of the pond design are included in the attached figures. Design will include the following criteria:* *Berm Height- no more than 4.90 feet above natural grade.* *Berm Width – 20-foot* *Berm Slopes (Interior/Exterior)- Rise/Run, 1:3 / 1:3* *Design Standards:* *Pond Capacity – 100% of Process Flow Requirements plus the 24-hr/100-yr storm event, plus additional freeboard.* *Drainage Design – GDOT Drainage Design, GA Stormwater Management Manual and Coastal Stormwater Supplement* *Erosion and Sediment Control: Manual for Erosion and Sediment Control in GA, GSWCCC*
2.	Comment:	Please provide a contingency plan if an overflow discharge were to occur.
	Response:	*Engineering controls will be incorporated to prevent overflow and emergency discharge.* *Control 1 – Prevent overfilling of the pond* *A float control system will be included in the design to prevent the process water from overfilling the pond.* *Control 2 – Water Evacuation* *Portable pumps will be used to convey process water to an alternate water storage facility location on site. Standby fuel, pumps and generator(s) will also be provided to support this contingency.*
3.	Comment:	Please provide pump capacity and pipeline size.
	Response:	*At this stage of design development, the design is conceptual. Each pond in the treatment system will be connected via force*

		main, recirculating the process water, and we anticipate duplex pump stations at each pond.
4.	Comment:	Please provide berm construction details including the placement of the liner.
	Response:	*The berm will be composed of engineered fill. Additional pond capacity will be provided within an excavation below the berm. The liner will be anchored at the berm crest and will cover the interior of the pond(s). Liner flotation issues will be evaluated and addressed as needed. (See attached Figure No. 1)*
5.	Comment:	Please provide liner system specifications and geometry.
	Response:	*The liner will be seamed 60 mil HDPE. Liner flotation issues related to fluctuating groundwater levels will be evaluated and addressed as needed. (See attached Figure No. 2)*
6.	Comment:	Please provide the liner support base material and thickness.
	Response:	*The liner will be placed over engineered fill (either the constructed berm, or bedding material placed within the excavated portion of the pond). The borrow for the engineered fill will likely be clayey sand, but the upper 6 inches of the engineered fill that will serve as liner bedding will only contain soil that passes the ¼" sieve. (See attached Figure No. 2)*

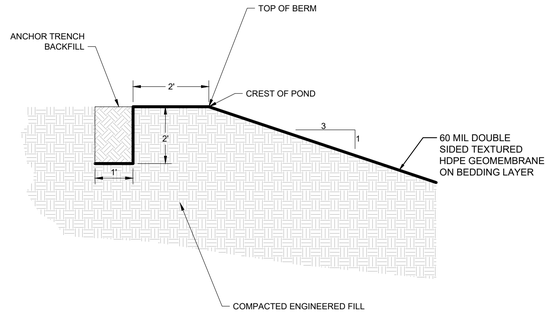

FIG2 C-501 LINER AT TOP OF BERM

SCALE: 1/2" = 1'-0"

0' 1' 2' 3' 4'

1/2"=1'-0"

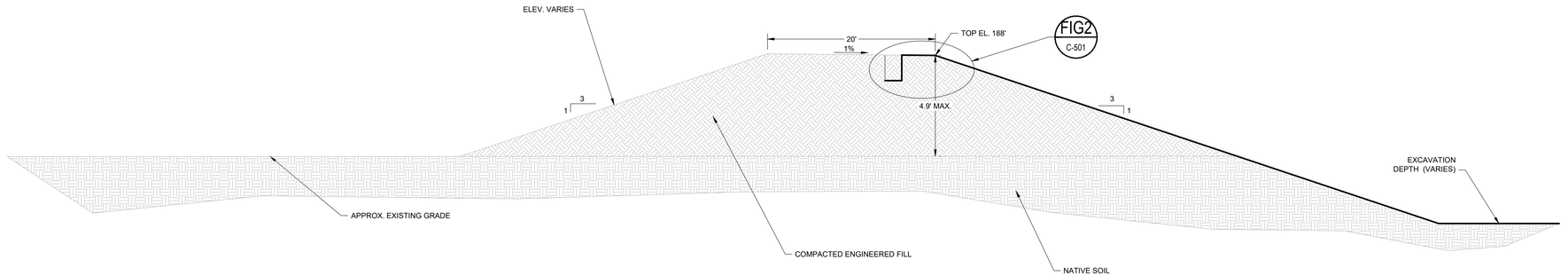

FIG1 C-501 TYPICAL WATER MANAGEMENT POND BERM

SCALE: 1/4" = 1'-0"

0' 1' 5' 10'

1/4"=1'-0"

REV	DDMMMYY	REVISION / ISSUE DESCRIPTION	DRN	CHK	APP	APP	APP	APP

REV	DDMMMYY	REVISION / ISSUE DESCRIPTION	DRN	CHK	APP	APP	APP	APP
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REF	NUMBER	TITLE

REFERENCES

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APPROVED FOR _____

CLIENT PROJECT MGR TECHNICAL MGR PROJECT MGR

PROJECT PHASE
15 PERCENT DESIGN

PROJECT NO.
7382224061

SCALE
AS SHOWN

	BY	DDMMMYY
DES	-	07FEB22
DRN	-	07FEB22
CHK	-	07FEB22
APP	-	07FEB22

TWIN PINES MINERALS, LLC
SAUNDERS DEMONSTRATION MINE
MINE ID 2073

SUBJECT
DETAILS 1

wood.
4000 MEADOW LAKE DRIVE
SUITE 121
BIRMINGHAM, AL 35242
(205) 980-6402

AREA: CERTIFICATE OF AUTHORIZATION ECA2221

CLIENT DWG NO.

DRAWING NO. C-501

REV ----

SAVED: 07-Feb-22 11:08 AM PLOTTED: 07-Feb-22 11:48 AM USER: LORENZ, MAX J

CAD FILE: W:\CAD\CIVIC-501 DETAILS1.DWG

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