U.S. Department of Labor

Mine Safety and Health Administration
2300 Willow Street
Vincennes, IN 47591-5416

March 24, 2021

Facility Mine File
Date Fwd 3.24.2021
Initials BJE

Mr. Doug Latoz, Acting General Manager
Peabody Midwest Mining, LLC
12968 State Route 13
Coulterville, Illinois 62337

RE: Recommendation of Approval for Phase II at the Cell 5 Slurry Impoundment, MSHA ID No. IL08-02546-08, Peabody Midwest Mining, LLC, Gateway Preparation Plant, Mine ID No. 11-02546

Dear Mr. Latoz:

The Mine Safety and Health Administration Vincennes District Office completed a review of the proposed modification to raise the existing diked impoundment during Phase II construction at Gateway Preparation Plant's refuse facility on March 16, 2021.

Based on the information submitted, the attached report with review recommendations from Technical Support, and according to the information included in the previously approved plan, *the proposal to construct Phase II of Slurry Cell No. 5*, is **APPROVED**.

Section 77.216-2 (b) specifies that any changes or modifications to this plan requires approval by the District Manager prior to implementation of such changes or modifications.

If Gateway Preparation Plant has any questions concerning this matter, please do not hesitate to contact Bob Gerth at (812) 882-7617.

Sincerely,

DAVID STEPP

Digitally signed by DAVID STEPP
Date: 2021.03.24 14:36:14 -04'00'

FOR/ Ronald W. Burns
District Manager
Mine Safety and Health Enforcement
Vincennes District

cc: Mr. Darren Blank, Tech Support

U.S. Department of Labor

Mine Safety and Health Administration
Pittsburgh Safety and Health Technology Center
626 Cochrans Mill Road
Pittsburgh, PA 15236

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March 16, 2021

MEMORANDUM FOR RONALD W. BURNS
District Manager, Vincennes District
Mine Safety and Health Enforcement

RONALD BURNS
Digitally signed by RONALD BURNS
Date: 2021.03.17 09:29:19 -04'00'

THROUGH: GEORGE H. GARDNER
Chief, Pittsburgh Safety and Health Technology Center

DEAN SKORSKI
Digitally signed by DEAN SKORSKI
Date: 2021.03.16 17:02:57 -04'00'

FROM: STANLEY J. MICHALEK
Chief, Mine Waste and Geotechnical Engineering Division

STANLEY MICHALEK
Digitally signed by STANLEY MICHALEK
Date: 2021.03.16 16:12:01 -04'00'

SUBJECT: Recommendation of Approval for Phase II at the Cell 5 Slurry Impoundment, MSHA ID No. IL08-02546-08, Peabody Midwest Mining, LLC, Gateway Preparation Plant, Mine ID No. 11-02546, Coulterville, Randolph County, Illinois

We have completed a technical review of the design plan modification for the Cell 5 Slurry Impoundment owned and operated by Peabody Midwest Mining, LLC. The company is proposing to raise the existing diked impoundment through Phase II construction with a maximum crest elevation of 585 feet and a maximum pool elevation of 579.4 feet. The Phase II expansion will inundate the adjacent Cell 4 Slurry Impoundment. All outstanding review comments have now been addressed. Report No. MW21-017, which is attached, recommends approval of the plan. Impoundment and IRPI data sheets for Phase II are included with this report.

This document has been digitally signed and provided electronically. You will need to make additional copies for the mine operator and miners' representative. If there are any questions regarding this report, please contact this office.

Attachments

cc: W. Francart, Director, TS
M. Calhoun, Deputy Director, TS
S. Gigliotti, Chief, Div. of Safety, MS&H Enforcement
D. Braenovich, Div. of Safety, MS&H Enforcement
R. Roark, Div. of Safety, MS&H Enforcement
H. Kirk, Div. of Safety, MS&H Enforcement

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UNITED STATES DEPARTMENT OF LABOR

MINE SAFETY AND HEALTH ADMINISTRATION

PITTSBURGH SAFETY AND HEALTH TECHNOLOGY CENTER
MINE WASTE AND GEOTECHNICAL ENGINEERING DIVISION
626 COCHRANS MILL ROAD
PITTSBURGH, PENNSYLVANIA 15236

REPORT NUMBER MW21-017

RECOMMENDATION OF APPROVAL OF PROPOSED PHASE II CELL 5 SLURRY IMPOUNDMENT
MSHA ID NO. IL08-02546-08
GATEWAY PREPARATION PLANT
MINE ID NO. 11-02546
PEABODY MIDWEST MINING, LLC
COULTERVILLE, RANDOLPH COUNTY, ILLINOIS

MARCH 16, 2021

BY

STEVEN J. VAMOSSY, P.E.
CIVIL ENGINEER

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REPORT NO. MW21-017

LOCATION AND OWNERSHIP

The Cell 5 Slurry Impoundment (Cell 5), MSHA ID No. IL08-02546-08, provides refuse disposal for the Gateway Preparation Plant, Mine ID No. 11-02546. It is located near the town of Coulterville in Randolph County, Illinois. More precisely, the site is located at 38°10'28" north latitude and 89°38'55" west longitude as shown on the Tilden, Illinois, USGS 7.5-minute quadrangle map. The facility is owned and operated by Peabody Midwest Mining, LLC, 7100 Eagle Crest Boulevard, Evansville, Indiana 47715.

MATERIAL REVIEWED

The following submittal has been evaluated as part of the current review.

"Application for Impoundment, IL08-02546-08 – Response to Comments, Slurry Cell 5, Phase II Modification," dated November 6, 2020, and received by Technical Support on November 25, 2020.

The following submittal has been previously reviewed and documented.

"Cell 5, Phase II Slurry Impoundment, Gateway Preparation Plant," dated November 2019 and received by Technical Support on November 26, 2019.

The above submittals were prepared by the company's consultant, NPN Environmental Engineers, Incorporated.

BACKGROUND

Cell 5 has been designed as a large, low hazard potential facility. The facility has a diked configuration and has been constructed adjacent to (due west of) the Cell 4 Slurry Impoundment (Cell 4), MSHA ID No. IL08-02546-07. Cell 5 has been approved and constructed through Phase I with a crest elevation of 553.2 feet and a maximum pool elevation of 548.2 feet. The dikes were constructed as zoned embankments using the downstream construction method, with coarse coal refuse (CCR) placed in an upstream zone and clay soil placed in a downstream zone. The proposed Phase II expansion will consist of raising the embankments with CCR primarily by the downstream construction method to a maximum crest elevation of 585 feet, or a maximum height of 80 feet as measured from the downstream toe. Cells 4 and 5 are separated by the west dike of Cell 4. As part of the Phase II expansion, the pool will inundate the Cell 4 west dike. To contain the new pool area, the Cell 5 south dike will extend east across the Cell 4 south dike. Upstream construction will be required to raise the Cell 4 south dike.

Given the large size of the impoundment (greater than 1,000 acre-feet in storage capacity), it has been designed to store and route one-half of the Probable Maximum Flood. The company will use both the Cell 5 and Cell 4 existing decant pipes for flood routing purposes. Each pipe consists of a 30-inch-diameter high density polyethylene (HDPE) riser connected to a 24-inch-

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diameter HDPE transport section. During Phase II, the riser pipes will initially be raised to an inlet elevation of 562.1 feet, and then raised to their final inlet elevation of 579.4 feet.

The Spartan Underground Mine (Mine ID No. 11-00612), abandoned in 1997, is located below the impoundment at depths ranging between 146 to 240 feet. A 50 percent extraction ratio was reportedly incorporated in the room-and-pillar mine and the mining height is approximately 6.6 feet. Given the overburden depth and mining geometry, the previous mining exceeds the criteria for mining under bodies of water as recommended in "Results of Research to Develop Guidelines for Mining Near Surface and Underground Bodies of Water" (U.S. Bureau of Mines Information Circular 8741). In addition, the consultant evaluated the pillar stability and the factors of safety exceeded the recommended minimum of 1.5. The company indicates that no signs of differential settlement have been observed at Cell 5 or their other nearby impoundments, which are also located above the Spartan Underground Mine.

REVIEW COMMENTS

My previous review comments were primarily related to the proposed piezometers and the upstream construction safety procedures.

For Phase II, the company originally proposed to install two piezometers (P5-1 and P5-2), both located in the west dike of Cell 5. I commented that it would be prudent to monitor the phreatic level within the south dike as well. In response, the company revised the plan to include two additional piezometers (P5-3 and P5-4) within the south dike, and they provided revised slope stability analyses to determine the warning levels for these piezometers.

The original plan did include upstream construction safety procedures in Section 3.4 of the construction specifications. However, I recommended additional provisions such as lowering the pool water prior to pushout construction so that the initial pushout is constructed on an exposed fine coal refuse delta. With regard to crack(s) observed in the pushout, I recommended that the immediate area within 100 feet of the crack be evacuated, and recommended specific time periods for allowing the area to settle before placing additional material beyond the crack(s). In response, the company adequately revised Section 3.4 of the construction specifications.

Specific details regarding the critical construction activities, maximum piezometer levels, embankment dimensions, storage capacity, etc., for Phase II can be found on the attached impoundment and IRPI data sheets.

CONCLUSION AND RECOMMENDATION

All of the submitted information has been reviewed. The proposal to construct Phase II of the Cell 5 Slurry Impoundment is technically acceptable and it is recommended that the District approve the plan.

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Report Prepared by:

STEVEN VAMOSSY Digitally signed by STEVEN VAMOSSY Date: 2021.03.16 14:02:37 -04'00'

Steven J. Vamossy, P.E.
Civil Engineer

Report Approved by:

JOHN DURIG Digitally signed by JOHN DURIG Date: 2021.03.16 15:39:45 -04'00'

J. Jarrod Durig, P.E.
Supervisory Civil Engineer

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IMPOUNDMENT DATA SHEET

Completed by: Steven Vamossy Date 03/12/2021
All Information Pertains to Construction Stage Phase II
Impoundment Name Cell 5 Slurry Impoundment
Site ID No. IL08-025446-08

Hazard Potential Classification ☐ High ☐ Significant ☒ Low

CONFIGURATION

Maximum Crest Elevation 585.00 feet
Minimum Crest Width 50.00 feet
Minimum Required Freeboard from Decant Inlet to Crest is 5.6 feet

Decant Pipe
Material Type HDPE
Inside Diameter 25 inches
Inlet Elevation 579.40 feet

Open Channel (Emergency) Spillway
Invert Elevation feet
Bottom Width feet
Lining Type

Embankment Slopes
Upstream 2H:1V
Downstream 3H:1V

Embankment Benches
Width feet
Vertical Interval feet

Groin Ditches
Lining Type

COMPACTION

Compaction Test Frequency Once every 2,000 cubic yards with at least one per lift
Moisture Content Range minus 2.00 % to plus 3.00 %
Compaction Density Standard 95.00 % Lift Thickness(es) 12.00 inches

INSTRUMENTATION

Piezometer No.	Maximum Allowable Water Elevation (feet)	Piezometer No.	Maximum Allowable Water Elevation (feet)
P5-1	550.40		
P5-2	577.70		
P5-3	552.50		
P5-4	574.30		

CRITICAL CONSTRUCTION ITEMS

internal drain construction, decant pipe raise, upstream construction

Flow Monitoring Location(s)
internal drain outlflows

Number of Settlement Monitoring Devices
Frequency of Settlement Measurements

Special Notes, Observations, and Other Instrumentation

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IRPI DATA FROM IMPOUNDMENT PLANS

Date 3/12/2021 Completed by: Steven Vamossy

(2) State IL (2) County Randolph

(3) Impoundment Name Cell 5 Slurry Impoundment

(4) Impoundment ID No. IL08-02546-08

(8) All Information Pertains to Construction Stage Phase II

(9) Nearest Downstream City/Town Tilden (10) Distance to Nearest City/Town (mi.) 3.0

(11) Latitude 38.17444 (Degrees + (Minutes/60) + (Seconds/3600)) (12) Longitude 89.64861 (Degrees + (Minutes/60) + (Seconds/3600))

(15) Stream impoundment is located on or tributary to: None (Diked Structure)

(16) Section/Range/Township

(20) Company or consultant who prepared plan NPN Environmental Engineers, Inc.

(35) Foundation Type (rock; rock and soil; soil; unknown) soil

(37) Core Type (earth, plastic, etc.) None

(38) Core Position (Upstream, Homogeneous, Core) U H C

(40) Type of Construction (Upstream, Downstream, Centerline) U ☒D C

(41) Dam Crest Length 15600.00 feet

(42) Structure Height (from downstream toe) 80.00 feet

(43) Open Channel Spillway Type ☐ Controlled ☐ Uncontrolled ☒ None

(44) Spillway Width at Maximum Discharge feet

(45) Maximum Storage 9404.90 acre-feet

(46) Normal Storage 8349.4 acre-feet

(47) Maximum Discharge 75.80 cfs

(49) Drainage Area 0.00 square miles

(50) Surface Area 185.7 acres

(51) Decant Pipe Type HDPE

(52) Decant Pipe Diameter (ID) 25.30 inches

(54) Mining Underneath or Adjacent: ☒ Yes ☐ No

(55) Hazard Potential Classification ☐ High ☐ Significant ☒ Low

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