BOWIE RESOURCES, LLC
Bowie No. 2 Mine
Coal Mine Waste Bank Nos. 1, 2, & 3 Inspections 2nd Quarter 2023

On June 29th, 2023, a visual inspection of the Bowie No. 2 Mine coal mine waste banks was performed by the undersigned in accordance with Rule 4.10.2. This inspection includes Gob Pile Nos. 1, 2, and 3. Pile No. 1 is considered inactive. Pile no. 2 is located north of Bowie Road and is currently idle. Pile no. 3 is located south of Bowie Road. Pile No.4 has been reclaimed and is inactive.

I, Tamme Bishop, P.E., have a wide variety of experience in the design and construction of earth fill embankments. Nothing was observed during the inspection that would indicate the piles have a potential for failure. The slips discussed in the 4Q 2016 and 1Q 2017 report have been regraded to the design contours and had shown no evidence that would be cause for concern of slipping again. However, the mine site received a significant amount of rain and snow over the winter months. A blowout of gob material occurred on March 16, 2023 in the same location as one of the blowout/slide areas in the 1Q of 2017. The location of the blowout is north and west of the topsoil stockpile and located on the second bench of gob pile #4. The area was not within the reclaimed portions of gob pile #4. The height of the blowout is approximately seven feet, and the width is approximately 10 feet. The area appears to be localized.

Buckhorn Geotech inspected the area on March 29 and again on June 20 and submitted a report that will be attached to this certification. Buckhorn did a thorough job in evaluating the site and made a few key recommendations, most importantly to manage drainage above and below the blowout location. However, there are a few points made by Buckhorn that need to be corrected or further addressed. Photo 9 shows the upper diversion ditch above gob pile #4. The upper diversion ditch is cleaned out once a year by BRL, therefore, there is very little risk of this ditch overtopping and having water run under gob pile #4. Figure 1 is a Google Earth Historical image. An underdrain was installed in this channel prior to construction of the gob pile, and to date has never had any water flowing out of it. Figure 2 shows an approximate location of the blowout. It is suggested the blowout may be due to the drainage feature shown in Figure 1, but again, due to the underdrain being installed there is very little chance of communication between groundwater and surface water.

BRL repaired the blowout area in the 2Q with a design the mimics the design of underdrains at the gob pile #2 area as shown in the PAP Volume IX, page 9.

Gob Pile #2: A small area of seepage discussed in past reports at the toe of gob pile #2 and west of the haul road was not actively seeping during the inspection. There is still no movement associated with the seep and nothing seen during the inspection that would indicate the pile has a potential for failure. The aforementioned seep was first documented in 2Q of 2016. Since that time, the seep has not increased noticeably in flow and has not caused any instability in the pile. This area will continue to be monitored and discussed as needed in quarterly reports. be monitored and discussed as needed in quarterly reports.

There are no windrows remaining on top of gob pile #2. All organic material and topsoil has been removed ahead of the waste bank founding. Both the East and West upper diversion ditches were cleaned out during the third quarter of 2022 and were in good repair.

At gob pile #2, the first bench east of the haul road is covered with soil. The second bench east of the haul road is mostly covered with a subsoil pile. Most of the third and forth benches east of the road are covered with soil. Soil has been placed on most of the second, third, fourth and fifth benches west of the haul road and east of gob pile #4.

The top of gob pile #2 can serve as a drying area for end dumped gob, however, no gob is currently stockpiled on top of the pile. When necessary, gob is to be stacked to a maximum height of 20 feet, with a slope angle up to 1.5h:1v. A 25-foot buffer zone on the face of the gob pile will be maintained at all times. Gob will be spread and compacted to the currently approved slope configuration as soon as gob and weather conditions allow.

Gob Pile #3: The gob pile #3 area was in good condition during the. Placement of gob is complete. The Operator has covered nearly the entire area below the first bench. Work on covering the top of the pile was occurring during the site visit. A seep that is north of the east drying area was actively seeping at the time of the inspection. This seep seems to correlate to when water is in the Fire Mountain Canal. Approval of the underdrain design was incorporated into the permit under Technical Revision No. 105. Revision of the east underdrain has been approved under Technical Revision Application No. 122.

There was no coal mine waste generated from the preparation plant during the quarter. Coal mine waste is to be placed in the piles in approximately horizontal lifts no more than 24-inches thick. The coal mine waste is dried and then spread and compacted by self propelled sheepsfoot compactors. There were zero compaction tests were taken at gob pile #3 during the quarter. There were no compaction tests taken at gob pile #2 during the quarter.

During active mining conditions, the westernmost and easternmost sections of gob pile #3 were able to serve as drying areas for end dumped material. The purpose of the gob drying areas was to provide an area for temporary storage of gob for drying purposes. End-dumped gob in the gob drying areas has been worked and placed in the final configuration. No end dumped material remains in either drying area.

During active mining conditions, it is necessary to stockpile gob material at gob pile #3 during the winter months, then place and compact the stockpiled gob when weather allows. Stockpiling of gob can commence November 15 and end April 15. Winter stockpiled material will be re-handled and compacted by September 30. Beginning on October 1, the Operator should be compacting all material concurrently, until conditions again require stockpiling. The stockpiling dates listed above should be considered flexible and may change slightly from year to year based on weather conditions. The gob material will be stockpiled in rows generally running from northwest to southeast. The rows of gob will be placed in a controlled manner and overlap will be minimized so there is space between rows to allow for drainage to the southeast.

The available volume of coverfill material is sufficient to meet the requirements of Rule 4.10.4(5). No coverfill was used for blending or other uses during the quarter. A coverfill survey was conducted in November of 2019. This survey was compared to surveys conducted in 2015 as well as evaluated estimations of material placed on gob pile #2. During years 2015 and 2016, cover was placed on gob pile #2 on benches 2, 3, 4 & 5 between the haul road and gob pile #4. Estimated placement depths vary between 1.5' and 3.5 feet and the cover placed on those benches was approximately 50,000 CY. The coverfill was generated from the "West" Coverfill stockpile, which is now depleted, and from the "East" coverfill stockpile.

A coverfill survey at gob pile #3 was conducted in November 2022. Approximately 12,000 cubic yards of coverfill was removed from the coverfill stockpile and all of that material was hauled to gob pile #3. Annual cover fill surveys are conducted in the 4th Quarter, new volumes salvaged and placed will be included in the fourth quarter report which is due by February 1st of the following year.

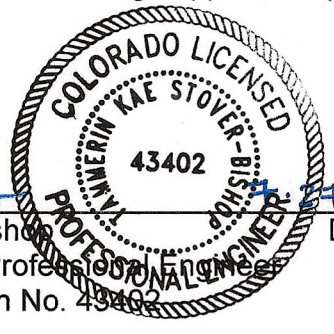
A failure of the gob pile no. 1 would probably not be a hazard to human life. The pile is located above a large flat bench. The bench is approximately 80 to 150-feet wide directly below the pile. Additionally, the gob pile sediment pond is located below the pile. If the coal mine waste bank failed, the material would very likely be contained on the bench below the pile and or within the gob pile sediment pond.

A failure of gob pile no. 2 would probably not be a hazard to human life. A residential dwelling is located over 300-feet below pile no. 2. The piles are located above Bowie Road. A failure of the piles might damage Bowie Road and the Fire Mountain Canal but would not likely impact the residential dwelling.

A failure of gob pile no. 3 would not be a hazard to human life. A failure of the pile might damage the rail track below the pile.

A failure of gob pile no. 4 would probably not be a hazard to human life. Gob pile no. 4 sits above gob pile no.1 and topsoil and coverfill piles and sediment pond D. If the coal mine waste bank failed it would be contained by gob pile no.1, the coverfill or topsoil piles or the sediment pond.

I certify that to the best of my knowledge and belief, that the fill and other aspects of the coal mine waste banks have been constructed as permitted in the design approved by the DRMS.



7.24.23

Tamme Bishop Date
Colorado Professional Engineer
Registration No. 43402

BUCKHORN ENGINEERING

July 1, 2023

Mr. Mike Berry, PE
Huddleston-Berry Engineering and Testing, LLC
2789 Riverside Parkway
Grand Junction, CO 81501

SUBJECT: CWDA#2 West Gob Pile Blowout Assessment

Dear Mr. Berry:

At your request, Buckhorn Engineering, Inc. (BEI) assessed a blowout feature at the western Coal Waste Disposal Area #2 (CWDA #2), Bowie Resources, LLC Bowie Mine #2. We visited the site on March 29 and June 20, 2023, to observe and photograph the feature and the hillside around it for information about the nature, cause, and extent of the failure. The report summarizes our findings and recommendations for further study.

Background

You sent us the following drone images that were taken of the blowout feature around March 27, 2023. They show the position and nature of the blowout. Two of these images are shown below on Photos 1 and 2.

Photo 1 (left) and Photo 2 (right) are drone images of the blowout feature from the west to southwest. (Photos courtesy Huddleston-Berry).

Note the location of the blowout feature roughly mid-gob pile and just above a drain ditch (Photo 1). We understand this feature had blown out before and been repaired, as can be seen by the scar in the slope to the left (west) of the current feature in Photo 2. Also seen in Photo 2 is the black plastic drainpipe laying on the surface of the hillside and extending downslope to the lower right portion of the photograph (to the southeast). Inspection of this pipe on March 29th indicated it was disconnected and not functioning. The following two photographs show the nature of the feature a close-up from the drone and during our March 29th visit.


Photo 3 (left) close-up view from the drone. Photo 4 (right) ground view on 3/29/23 looking upslope from the drain ditch area.

Note the muddy, lobate soils in the drainage zone of the blowout in Photo 3 and the mudflow fan developed downslope of the feature. In March, this area was saturated and was impossible to walk upon. Soil tension cracks were noted adjacent to the blowout due to loss of support of the soils. Although the blowout is not a slump type slope failure, it appears to be an area of concentrated groundwater seepage that has created an earthflow failure. The composition of the mudflow fan indicates it contains both black gob pile coal waste and red-brown cover soil (Photos 3 and 4). The following ground view photographs (Photos 5-8) from March 29th show the nature of the blowout, the areas of saturated soils, and the drainage patterns.


Photo 5 (left) view northwest at the blowout from below the drain ditch. Photo 6 (right) view west along the drain ditch below the blowout. Note the disconnected pipe in the distance on Photo 6.

Both Photos 5 and 6 show the ponded water in the drain ditch below the blowout. Mudflow deposits from the blowout have dammed the ditch and prevent water from draining to the west. This further saturates the slope which could lead to slope failure below the blowout.

Above the blowout, as seen in Photos 7 and 8, there is another drain ditch with poor drainage. It actually serves as a collection basin, and it was saturated (muddy with standing water) when observed on March 29th. The hillside is heavily used by deer and elk and their hoof prints left deep holes in the muddy soil with standing water in the ditch area. This ditch was mostly filled with slope wash soils, so it does not serve to drain the slope well. It collects runoff and snow (Photo 8). We estimate that standing water could collect in this area to a depth of 6-8 inches in a width of roughly 65-70 feet.

Photo 7 (left) view upslope (north) at the drain ditch above the blowout. Photo 8 (right) view west at snow collected along the drain ditch above the blowout.

Further up the slope are additional drain ditches at the top of the gob pile, including one at the base of the hillside, as seen in Photos 9 and 10 below.

Photo 9. View upslope (north) at drainage swales/ditches above the gob pile. Note the coal-stained drainage channel on the slope above the top ditch. Water could run down this channel and under the gob pile if not sufficiently captured by the drainage channels.

Photo 10. View west at the drainage ditch at the base of the hillside north of the gob pile. This is the uppermost drainage feature. It appears to be mostly intact (although it has some infilling and rockfall) and functions to drain snow and runoff around the gob pile.

The following four photographs (Photos 11-13) are from our site visit on June 20th. Some remediation has been done such as to remove the debris and regrade the slope below the blowout, install a drainpipe, and clean out the drain ditch.

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Photo 11 (left) view upslope (northeast) at the blowout and the former mudflow fan that has been mostly removed. Photo 12 (right) is a close-up view of the cover soils and gob material in the blowout headwall.

Both Photos 11 and 12 show the active seepage that continues at the blowout, although the saturated area is much reduced from March. Note in Photo 12 that the seepage appears to be from within the black coal waste material in the lower portion and bottom of the scarp, not in the cover soils above it. During our June 20th site visit, the blowout scarp area was approximately 6-8 feet wide, 20 feet long from scarp to fan material, with 3-4 feet of reddish-brown topsoil cover over roughly 2-feet of exposed gob. Much of the debris fan had been removed/regraded, but it extends into and spreads out laterally into the drain ditch at the toe of the slope. Some tension cracking along the lateral edges of the scarp was observed and continued lateral erosion should be expected. No tension cracks, slumping/bulging, or other signs of slope movement above the head scarp was observed. There is a slight depression to the east of the exiting new scarp that is potentially a small historical slump or seep area, but it is not fresh. No rotational movement was observed around the scarp structure; rather, it is more indicative of an earthflow/mudflow. Photo 13 shows a drainpipe below that blowout that needs improvement.

Photo 13. View upslope (north) of the regraded slope below the blowout where a drainpipe was installed below the drain ditch. This pipe drains back into the hillside not out, so it should be corrected. The active seepage from the blowout, although much reduced since March, can be seen at the top right edge of the photograph.

It should be noted that an additional feature was observed on June 20th. Approximately 25 feet downslope of the blowout is possible daylighting or seepage that runs along contour to the east across

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the slope. This should be investigated further to determine the source of the water and how to capture and direct it downslope so that it does not infiltrate the pile.

Historical Imagery

To better understand the source of the water that is contributing to the blowout and possibly other seepage in the hillside, we evaluated historic Google Earth satellite imagery. Further investigation using higher resolution airplane aerial images might be more helpful to better understand the structure of the slope and sources of water, but this exercise provided some useful information. Also, a survey of the blowout and other features would also be helpful to locate the details on images and maps. The first image (Figure 1) is from 6/16/05 and we attempted to locate the feature (circled) on the image based on other landscape features. Notice the north-south drainage feature on the hillside that seems to run through the blowout area. This could be a natural drainage or a man-made (enhanced) feature, but it clearly creates a north-south potential passageway for future water flow at the base of the gob pile. The second image (Figure 2) is rom 10/12/15 and shows the western-most stage of cover soil on the gob pile and its' eastern edge somewhat aligns with the drainage feature seen on Figure 1. These images suggest that the blowout is above a relict drainage feature and is at a vertical (north-south) seam in the cover soils.

Figure 1. Google Earth image from 6/16/05.

Figure 2. Google Earth image from 10/12/15.

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Figure 3. Google Earth image from 10/13/22.

The above Figure 3 from 10/13/22, shows the blowout area on the completed gob pile. The outline of the western cover soil shape seen in Figure 2 can be faintly seen in Figure 3. The black drainpipe installed after the first blowout failure can also be seen oriented to the southeast from the blowout area. These images suggest a possible drainage feature at the base of the gob pile as well as a potential structural/drainage weakness at the seam between two phases of the gob pile construction of the cover soils. This seam may be a pathway for vertical movement of water within the pile. Additionally, the relict drainage feature may be carrying water downslope under the pile from drainages higher on the hillside above the pile (see Photo 9).

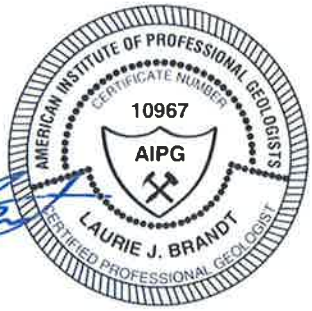
Conclusions

The blowout feature is a shallow earthflow/mudflow slope failure with a distinct water or drainage point source within the gob pile and when the failure occurred, it created a headwall scarp that is currently roughly 6+ feet high and 6-8 feet wide. The slope had previously failed, likely in the same fashion, and was remediated by being covered and a drainpipe installed. After our heavy precipitation in the winter and spring, water and snow collected in various locations on the slope, which allowed it to infiltrate the pile and saturate the slope. The blowout location appears to be located at the seam of a west cover soil phase and an east cover soil phase, which also roughly aligns with a relict north-south drainage under the gob pile. The drain ditches on the pile appear to be blocked with slope wash, thus disrupting proper drainage to the east and west, and also contain depressions that collect water and snow.

Improving drainage above and below the blowout will be critical in not only allowing the blowout to be successfully repaired and reducing the potential for future failure at that location, but should also reduce the potential for additional slope failures above and below the blowout. All drain ditches will need to be cleaned regularly and graded to the east and west to capture and divert, rather than infiltrate runoff and snowmelt. The blowout area can be armored, filled, and regraded under the direction of a geotechnical engineer once proper drainage has been installed. This should keep it from expanding in size and propagating upslope. The blowout should be visited quarterly by a geologist or geotechnical engineer, once the drainage has been improved, to document any changes to the site. Photographs and notes should be taken during the observations and provided to the oversight geotechnical engineer to determine if any follow-up studies or additional remediation is needed.

If you have any questions about this assessment please contact me at (970) 497-8821 or *lbrandt@buckhornengineering.com*.

Respectfully Submitted,
BUCKHORN ENGINEERING, INC.



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