



# State of Utah

## DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER  
*Executive Director*

### Division of Oil, Gas and Mining

JOHN R. BAZA  
*Division Director*

April 28, 2015

Ken May, General Manager  
Canyon Fuel Company, LLC  
597 South SR24  
Salina, Utah 84654

Subject: Waste Rock Expansion, Canyon Fuel Company, LLC, Sufco Mine, C/041/0002,  
Task ID #4809

Dear Mr. May:

The Division has reviewed your application. The Division has identified deficiencies that must be addressed before final approval can be granted. The deficiencies are listed as an attachment to this letter.

The deficiencies authors are identified so that your staff can communicate directly with that individual should questions arise. The plans as submitted are denied. Please resubmit the entire application.

If you have any questions, please call me at (801) 538-5325.

Sincerely,

Daron R. Haddock  
Coal Program Manager

DRH/sqs

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## Technical Analysis and Findings

### Utah Coal Regulatory Program

April 28, 2015

**PID:** C0410002  
**TaskID:** 4809  
**Mine Name:** SUFCO MINE  
**Title:** WASTE ROCK SITE EXPANSION

### Environmental Resource Information

#### General

##### *Deficiencies Details:*

R645-301-510 requires the engineering section be divided into operation plan, reclamation plan, design criteria, and performance standards. The current application does not clearly detail the operation plan (site preparation, foundation preparation, and construction), the various sections in -521 do not call out the specific design criteria specified for the expanded side of the waste rock (which differs from the old waste rock placement criteria), there is not discussion describing how each phase of construction will be independently reclaimed within the 540 section, and finally there is no verbiage detailing what performance standards (nuclear gauge, aerial photography, or survey) the mine will utilized to verify that the design criteria is met. The permittee will address these points of clarification in regards to each of the proposed phases 2-5 along with how phase 2 ties into the current waste rock.

cparker

#### Fish and Wildlife Resource Information

##### *Deficiencies Details:*

Information provided in the plan is not considered adequate to meet the minimum requirements of R645-301-322.210

Prior to approval the permittee must provide information regarding the resources available for the Yellow-Billed cuckoo and the potential impacts to this species.

lreinhart

#### Soils Resource Information

##### *Deficiencies Details:*

R645-301-222.400, The soils were sampled and analyzed for the parameters described in Table 2 (page 6 of Appendix V(A)), please include the nutrient status of the topsoil (N:P:K) of the topsoil and salvageable subsoil. Please refer to Table 3 of the Division's January 2008 Guidelines for Topsoil and Overburden.

pburton

#### Land Use Resource Information

*Deficiencies Details:*

Information provided in the plan is not considered adequate to meet the minimum requirements of R645-301-411.110.

Prior to approval the permittee must provide a map of the use of the land existing at the time of the filing of the application.

ireinhar

## **Probable Hydrologic Consequences Determination**

*Deficiencies Details:*

R645-301-728.300 The description of road salting activities (page 7-8) taking place on the county road adjacent to the waste rock site, should clearly indicate that these are from county operations and are not operations of the Sufco mine.

adaniels

## **Maps Affected Area Boundary Maps**

*Deficiencies Details:*

R645-301-512, and 521 .141 Requires that all boundaries of all areas proposed to be affected over the estimated total life of the mine, with a description of the size, sequence, and timing. The old waste rock site must be labeled similar to the phased on Map 4A detailing the various "phases" of placement and reclamation.

cparker

## **Operation Plan**

### **Mining Operations and Facilities**

*Deficiencies Details:*

The minimum requirements of R645-301-528, which states that "the permit application will include a narrative explaining the construction, modification, use, maintenance..." were not met in the current application. R645-301-528.320 and -528.322 also require that coal mine waste and refuse piles be placed according to R645-536.100 through -536.230 which state that the disposal facility will be designed using

- current prudent engineering practice
- attain a minimum long term static safety factor of 1.5 with the foundation and abutments stable under all conditions of construction
- sufficient foundation investigations, as well as any necessary laboratory testing of foundations materials, will be performed in order to determine the analyses of the foundation conditions
- waste placed in a controlled manner, excluding end or side dumping

The Permittee will add descriptions detailing the site preparation, foundation preparation, construction, and reclamation for each of the new phases as outlined on Map 4A and 4B as well as including the current waste rock site information.

R645-301-531 The original waste rock site geotechnical report detailed the estimated settlement at the site due the surcharge weight of the old waste rock site. There is no text describing the potential settlement at the site due to the expanded waste rock site. The Permittee will add a discussion on the expect settlement in relation to each of the new phases and any remediation measure that may be required to prevent slides between each phases construction.

R645-301-532 the application does not meet the minimum requirements of of the code as the application text only vaguely describes the designs for sediment controls that will be specifically used at the respective points of construction associated with each of the new and old waste rock phased areas. Discussions should include how the disturbance area is limited at any given point to the smallest possible footprint and that disturbed areas will be stabilized to reduce the rate and volume of runoff.

The application fails to meet the minimum requirements of R645-301-536 by not describing the design and construction specifications detailed in the Earthfax geotechnical reporting Appendix II(A). Text within this section should detail the sequence as well as the design/construction specifications that are critical to achieve the required 1.5 safety factor for the waste rock piles and the pond. The Permittee will add a description that will describe the site preparation, foundation preparation, and lift construction activists at each of old and new phases of the waste rock site.

## Air Pollution Control Plan

### Deficiencies Details:

Information provided in the application does not meet the minimum requirements of the regulations R645-301-420. The application must include documentation of communication between Canyon Fuel and DAQ for the 2011 small source exemption and the particulars of that exemption. Canyon Fuel must provide documentation of a current NOI provided to DAQ for the current proposed 46 acres expansion of the waste rock site.

Ireinhart

## Subsidence Control Plan Slides and Other Damage

### Deficiencies Details:

R645-301-515, -531 The original waste rock site geotechnical report detailed the estimated settlement at the site due the surcharge weight of the old waste rock site. There is no text describing the potential settlement at the site due to the expanded waste rock site. The Permittee will add a discussion on the expect settlement in relation to each of the new phases and any remediation measure that may be required to prevent slides between each phases construction.

cparker

## Fish and Wildlife Protection and Enhancement Plan

### Deficiencies Details:

Information provided in the plan is not considered adequate to meet the minimum requirements of R645-301-330

301.331- Prior to approval the permittee must provide a description of measures taken to disturb the smallest practicable area at any one time. Although it is indicated in other areas of the plan, there is no description (or reference) of the phased approach to development and reclamation. Interim reclamation may be used to provide food and cover for wildlife in the short term.

333.300- The permittee must include protective measures taken to avoid or minimize impacts to wildlife due to the increased traffic of the haul road. Protective measures may include establishment vehicle speed posting or wildlife crossing signs if warranted.

Ireinhart

## Topsoil and Subsoil

### Deficiencies Details:

#### Findings:

R645-301-121.200 Clear and Concise:

1. The soils chapter operation and reclamation plan is very confusing because old information on the existing waste rock site and new information on the waste rock expansion are not separated by headings. Where there are differences in approach, please try to separate the two with headings under each rule.
2. Section 222 contains references to former topsoil stockpiles and their locations and references Map 2. However, Map 2 shows a single large topsoil stockpile. Please explain how the stockpiles will be combined or if they will continue to exist, at what construction phase will they be consumed. Please provide a map showing the location of all existing stockpiles. Revise Section 234 to reflect current information on the number of stockpiles and reference the topsoil location map in Section 234.
3. Section 222 of the amendment (p. 2-4) provides a table for topsoil and subsoil volumes recovered by soil map unit in each phase, with a sum of 171,655 cu yds total. Map 2 states that 138,354 cu yds of topsoil and subsoil will be removed, total. Please explain why Map 2 and the table in Section 222 differ by 20% in the volumes of topsoil and subsoil to be removed and stockpiled.
4. Section 224 does not apply to the waste rock expansion and should be deleted. Section 231.200 incorrectly references Section 233.200. Section 233.300 does not apply to this expansion operation, since there is an abundance of suitable material to provide four feet of cover over the waste.

R645-301-230, Soils Operation Plan:

1. The acreage of each construction Phase must be stated in the narrative or on Maps 4A and 4B, so that an estimate of topsoil and subsoil volume can be checked.
2. For the same purpose, please provide Figure 5 at the same scale (1 inch = 100 ft.) as the operational maps 4A and 4B.

R645-301-234.230, Operation Plan Topsoil Protection:

1. According to Map 2, the face of the stockpile will have a 20% (3h:1v) slope. However, according to the text, the slope will be no greater than 2h:1v. The text should be revised to agree with the drawing.
2. Topsoil and subsoil must be stockpiled separately, although the piles may be adjacent.
3. The text should indicate mulching of the topsoil stockpile as well as seeding for stabilization.
4. As noted in recent inspection reports, the stockpiles must be protected from grazing, especially during vegetation establishment. Therefore, the application should include a commitment to fence the site or fence the stockpile to prevent grazing.

R645-301-231.100 Operation Plan, Description of Methods for Removing and Storing Topsoil:

1. Section 234.100 describes the use of track equipment to construct the topsoil stockpile in horizontal lifts 1.5 to 2.0 feet. In Section 231.100, specifically describe the equipment to be used to pick up, move, drop and push the salvaged topsoil and subsoil into stockpiles. The goal is to prevent excessive compaction.
2. Describe the method of monitoring salvage depth.
3. Describe the method of monitoring the distinction between topsoil and subsoil. Will the consulting soil scientist be on site?
4. Describe record keeping for soil salvage and replacement volumes and its reporting in the annual report.

R645-301-231.400, Operation Plan Narrative:

1. Please provide a narrative describing the construction of the topsoil and subsoil piles. Information found in Section 234.100 should probably be placed in Section 231.400.
2. Section 231.100 has been revised to remove protection of topsoil stockpiles, except after two years. This is not acceptable. Topsoil will be placed on a stable site, protected from compaction, protected from wind and water erosion with a quick growing, vegetative cover from the outset. Alternatives for protection may be considered, but the protection will be in place at the outset of the pile construction. Since the plan is being re-organized by rule, topsoil protection should be described in Section 234.200.
3. At the scale provided on Map 2, it appears that the face of the stockpile will have a 20% (3h:1v) slope. However, according to Section 234.100, the slope may be as steep as 2h:1v. The text should be revised to agree with the drawing.
4. Section 234.100 describes the in-exact nature of the volume calculations and mapping of the stockpiles. Provide a commitment to update the MRP with as-built drawings and cross sections and volumes of the subsoil and topsoil stockpiles.
5. Section 234.100 describes seeding stockpiles with the interim mix. The location where the mix can be found should be referenced.
6. The interim mix found in Section 341.200 includes grasses, forbes and shrubs. Section 341.200 states that only grasses will be used in the interim mix. This should be corrected to state grasses and forbes. A nitrogen fixing legume should be added to the interim mix under forbes, to optimum topsoil protection.
7. Section 234.200 refers to berms around stockpiles. This statement refers the reader to Chapter 7 for construction information. A more specific reference is requested.

R645-301-232.400, Minor Disturbances.

The option not to remove topsoil is not at the discretion of the operator, but a decision to be made by the Division. please revise all statements found under this section heading accordingly.

R645-301-232.500, There is ample topsoil and no basis for salvaging 8 inches of subsoil with the topsoil. Please delete this statement from Section 232.500.

R645-301-232.700, To demonstrate the existence of adverse conditions, please describe the locations where the Division should be consulted on invoking this rule or if there are no locations in the proposed area, delete the statements from this section of the amendment.

R645-301-233, The use of overburden is not being discussed as a topsoil substitute, but as part of the four feet of cover requirement called for in R645-301-553.252. The information provided under this heading does not apply to the rule cited and should be removed. The use of selected overburden as part of the four feet of cover requirement should be addressed under R645-301-553.252.

R645-301-234, This section of the application describes the use of the interim mix to seed the stockpiles. Please refer to the mix by table number. Please describe the use of mulch on the stockpiles.

## Spoil Waste Coal Mine Waste

### Deficiencies Details:

1. The application does not meet the minimum requirements of R645-301-533.100 through -301.533.220. Section 533.200 vaguely references the geotechnical report in Appendix II(A) but does not discuss any of the design and construction details of how the native soil that will act as the foundation under the pond and refuse pile and how the foundation preparation required for the embankments will be verified.

To meet the requirements detail in R645-301-533 the Permittee will add these clarifying points on the design and construction details to section of R645-301-533.100 through -301.533.220.

The geotechnical report done by Earthfax details the design and construction of the waste rock pile that all lifts:

- will be less than two feet
- will be allowed to drain before compaction or placement of subsequent lifts
- will be graded to drain away from recently placed fill
- will never be placed when the waste rock is frozen
- placement and compaction will be complete after the waste rock has been allowed to drain sufficiently
- containing filter cake will be placed thin and allowed to dry

To verify that the refuse pile, foundation preparation as well as construction, are built to the specifications outlined in Appendix II(A) the Permittee will confirm the existence of and make available to the Division staff the following QA/QC information on the refuse pile construction:

- Clearing and grubbing prior to refuse placement (i.e. photo documentation)
- GPS or some alternative coordinate proof of lift thickness below two feet
- A minimum of one compaction test for the foundation of each subarea phase as labeled on Maps 4A and 4B
- Quarterly compaction tests showing 95% of the Standard Proctor at  $\pm 2\%$  optimum water content was achieved

2. Sections 533.300 and 533.400 within the application does not meet the minimum requirements of R645-301-300 through 400 as the sections do not match what is written in the Earthfax geotechnical report in regards to the outslope and inslope design to achieve the required factory of safety 1.3 for the pond embankments.

The Permittee will clarify the text in section 533.300 and 533.400 to detail the design and construction specification detailed in the Earthfax report completed January 2015, which states that:

- Embankments will be keyed into the underlying subgrade and adjacent slopes
- Be compacted to at least 95% of the Standard Proctor maximum dry density at  $\pm 2\%$  of the soil's optimum moisture content
- The inside slope of constructed embankments should be armored with at least one foot of protective rock
- Topsoil be placed on the outer slope of constructed embankments and vegetation established in order to reduce the potential for erosion
- Embankments should be regularly inspected

3. R645-301-121.200 The application does not present information in a clear and concise manor as the text within the MRP states conflicting information compared to the Earthfax;s geotechnical report presented in appendix II(A). Specifically on page 5-16, Section 536.100 under the first paragraph Stability of Fill, appears to be a reference to the original refuse pile stability analysis and calls out conflicting information, such as a maximum design height of 20 feet, while the new Earthfax geotechnical report referenced in appendix II(A) state a maximum height of 65 feet. Conflicting information between the current Earthfax Geotechnical report completed on January 2015 and text in the MRP on page 5-16 within section 536.100, third paragraph under Stability of fill states that Map 2 shows a slope safety factor of 2.62. Text is needed to clarify where the stated safety factor of 2.62 is referencing. The Permittee will review the text within this section and remove erroneous or conflicting information.

4. R645-301-121.200 the application does not meet the minimum requirements of R645-301-121.200 due to conflicting information in the paragraphs under 3.1.4 and 3.4 that summarize the geotechnical information from SHB's geotechnical report of the waste rock material.

5. R645-301-536.200 the application presents conflicting information between the text within the MRP on page 5-18, section 536.200 first paragraph and Earthfax's geotechnical report located in appendix II(A). The MRP text states that waste rock will be placed in lifts not to exceed three feet in thickness; however, the Earthfax's geotechnical report states that waste rock will be placed in lifts not to exceed two feet in thickness. The Earthfax geotechnical report continues on to state a serious of

other design and construction specification that are not listed within this section, see deficiency #2 above for the detailed specification list. The Permittee will review the text within this section and remove erroneous or conflicting information.

6. R645-301-536.200 the application presents conflicting information between the text within the MRP on page 5-18, section 536.200 third paragraph and Earthfax's geotechnical report located in appendix II(A). The section is also missing detail construction sequencing descriptions and how various ditches will be active at each of the different phases. The Permittee will review the text within this section and remove erroneous or conflicting information and add information detailing the sequence on construction activities associated with each phase of the waste rock.

7. R645-301-542.200 does not meet the minimum requirements of the R645 rules as the text does not detail any of the backfilling, compacting, or grading of the individual sub-phases within each phase of the waste rock pile construction. The application is also missing supporting including contour maps or cross sections that show the individual phases as shown on Map 4A and 4B. The permittee will add more descriptive text detailing the sequence of site preparation, backfilling, and compacting for each individual phase that matches the provided Earthfax geotechnical report. The permittee will also provide supporting maps with contour information relevant to the individual phases.

8. R645-301-512 is not met as the application should include cross sections for the existing waste rock site as it currently is detailed in Map 4.

cparker

## Spoil Waste Refuse Piles

### *Deficiencies Details:*

R645-301-514.200-.230 details that a PE will inspect the refuse pile not only quarterly (-514.220) but at critical construction periods. -514.221-.230 requires inspections at site preparations (clearing and grubbing) as well as foundation preparations, placement and compaction, and final reclamation grading. The Permittee will add text to this section clarifying the existing vague statement of "during Construction" inspections to stating inspections at site preparation, foundation preparation, throughout various lifts to show placement and compaction (514.210), and final reclamation. R645-301-514.230 requires such inspection reports to be submitted to the Division promptly after each inspection. The Permittee will clarify in this section that R645-301-514.230 is being met with promptly submitted after the inspections and not held until the annual report.

cparker

## Spoil Waste Impounding Structures

### *Deficiencies Details:*

R645-301-514.300-.312 Requires that impoundment have certified inspections by a PE will promptly, after each inspection, during the construction, completion of construction, quarterly, and at removal. To meet R645-301-533.200 requirements inspections will included site preparation (-533.220), foundation preparation (-533.210), construction (-514.312), and at reclamation. The Permittee will add text to this section detailing the above specific periods for inspections to be promptly supplied to the Division.

Section 533.100 does not meet the minimum requirements of the code due to a limited discussion of only the new pond. The existing pond details need to be discussed here as well since it will be utilized during the beginning phases of the expansion and there will be additional flow from the new phases. All of the relevant design calculations for the old pond relevant to the new phases that will have drainage reporting to it need to be included.

Section 533.200 does not meet the minimum requirements of the code due to no discussion of the detail points outlined in R645-301-533.210 (Foundations and construction) and -.220 ( site preparation). There is no discussion of the site preparation and foundation design criteria outlined within the geotechnical report for either the existing or proposed pond. Design criteria as well as reference to where and how performance compliance will be documented should be detailed within this section.

Sections 533.300 and 533.400 within the application does not meet the minimum requirements of R645-301-300 through 400 as the sections do not match what is written in the Earthfax geotechnical report in regards to the outslope and inslope design to achieve the required factory of safety 1.3 for the pond embankments.

The Permittee will clarify the text in section 533.300 and 533.400 to detail the design and construction specification detailed

in the Earthfax report completed January 2015, which states that:

- Embankments will be keyed into the underlying subgrade and adjacent slopes
- Be compacted to at least 95% of the Standard Proctor maximum dry density at  $\pm 2\%$  of the soil's optimum moisture content
- The inside slope of constructed embankments should be armored with at least one foot of protective rock
- Topsoil be placed on the outer slope of constructed embankments and vegetation established in order to reduce the potential for erosion
- Embankments should be regularly inspected

R645-301-542.500 minimum requirements are not met as the application does not contain any narrative detailing the timetable and plans to remove the sediment pond. The permittee will update this section to clarify the timetable and reclamation of the pond.

cparker

## Hydrologic Ground Water Monitoring

*Deficiencies Details:*

R645-301-731.210 The text added on page 7-13 should be clarified to indicate that the monitoring wells will continue to be extended as waste is placed so that monitoring can continue throughout the reclamation of the site.

adaniels

## Hydro Surface Water Monitoring

*Deficiencies Details:*

R645-301-731 There should be a commitment added that if the new sediment pond were to discharge, water quality samples would be taken, and within 24 hours, DOGM and the Division of Water Quality will be notified.

adaniels

## Hydrologic Diversion General

*Deficiencies Details:*

R645-301-742.300 There should be an expanded description of the specific waste placement operations within each phase. The length of time each diversion stays in place, such as DD-1 and DD-6, depends on the method of waste placement in each phase and how each phase is tied into the previous phase.

adaniels

## Hydrologic Impoundments

*Deficiencies Details:*

R645-301-742.220 Please indicate in the MRP that a clean-out marker will be established in the sediment pond that clearly marks the 60% clean out level.

adaniels

## Maps Affected Area

*Deficiencies Details:*

R645-301--521 and -301-542 The drawings associated with the current waste rock site can not be removed. Map 4 needs to be resubmitted to show the current waste rock site as-builts and pond. All drawings associated with the current pond also need to be resubmitted as the pond will be the active pond for portions the new phases.

cparker

## Maps Facilities

*Deficiencies Details:*

R645-301-521 and -301-542 The drawings associated with the current waste rock site can not be removed. Map 4 needs

to be resubmitted to show the current waste rock site as built. All drawings associated with the current waste rock site (Map 2, Map 4, and Map 6) also need to be resubmitted as the current waste rock site is part of the operations.

cparker

## Reclamation Plan

### General Requirements

#### Deficiencies Details:

R645-301-525, -531 are not met due to only having a description of the settlement due to the current waste rock site and no discussion of the the settlement due to each of the new phases of the expanded waste rock site. The Permittee will edit this section to included settlements relevant to each new phase of the expanded waste rock site.

R645-301-528 is not met as the type of equipment utilized at the during the loading, transport, and placement is not clear. Text was removed from this section detailing any hauling and compaction activities schedules that must be added back in so that the Division can understand the basic sequencing of events at the expanded site. Map 4 needs to be re-added to the application as it details relevant information, such as as-builts, of the current waste rock site.

R645-301-536 is not met in the current application due to no discussion of the sequencing of the site preparation, foundation preparation, constructing, and reclamation of the old and new waste rock phases and how the operations will blend between the different phases. Nor is there any reference to R645-301-536.100 detailing what establish engineering guidelines will be followed to establish the success of construction at the various phases.

R645-301-536.900 does not meet the minimum requirements due to a lack of text detailing where each the required code information can be found within the application. The Permittee will detail where the various sections are within the application that meet the requirements of R645-301-536.900.

R645-301-542.200 is not met due to missing discussions on the backfilling and grading of the existing waste rock pile and how the different phases will be backfilled and blended together. There is also no discussion of how and when the current pond will be removed within this section.

cparker

### WildLife Protection

#### Deficiencies Details:

Pursuant to R645-301-342.100 "Where the plan does not include enhancement measures, a statement will be given explaining why enhancement is not practicable." The reference to the approved M&RP is vague and should be clearly defined. The permittee shall provide an explanation as to why enhancement is not practicable.

ireinhart

### Backfill and Grading General

#### Deficiencies Details:

R645-301-553.221 is not meet as there is no discussion within the permittee that all vegetative and organic material will be removed from the area. The geotechnical report also calls for clearing and grubbing activities prior to any waste placement; however, there is no discussion in any of the relevant sections detailing such activities. The Permittee will add the description of clearing and grubbing activities to the relevant construction sequence for all the phase of the waste rock site as well as making proof of such activities available to the Division staff upon requests.

R645-301-553.252 is not met in the current application as there is no discussion of the thickness of the cover material placed on the final lift of the waste rock pile. The permittee will add descriptive text detailing the thickness of the top and sub soil to be places at final reclamation of the various phases of the waste rock pile.

R645-301-553.800 The Permittee is placing waste in such a manor that they meet the scenario described in the rules of this section and must detail how the site will meet R645-301-553.810 through -553.820.

## Mine Openings

### Deficiencies Details:

R645-301-542.710 is not met due to missing the required description, including appropriate cross section and maps, of the measure to be used to seal or manage, and to plug, case or manage well openings within the proposed permit area. The permittee will address sealing and plugging any existing or future wells with relevant cross sections.

cparker

## Topsoil and Subsoil

### Deficiencies Details:

#### Findings:

#### R645-301-121.100, Clear and Concise and R645-301-233.100 Topsoil Substitutes and Supplements::

In Section 234.100, 240, Section 242.100, Section 541 and 542.100 the use of growth medium is stated. The source of growth medium was not identified. R645-301-233.100 requires use of the best available material in the permit area. There is ample available topsoil and subsoil to cover the waste as required. Please strike the word growth medium from the plan.

R645-301-234.200 and -234.300, Soil stockpile relocation is touched upon in this section, but no proposal is advanced. Please clearly state your intentions. What stockpiles will be moved? Where will they be moved? Will they be used in reclamation of Lift 5?

#### R645-301-242, Soil Redistribution

1. Clearly state that there will be a combined depth of subsoil and topsoil cover equal to four feet applied to the waste at final reclamation, pending the results of acid/toxic waste analyses of the surface four feet of the waste to be completed at final reclamation.
2. Section 242.100 states that topsoil will be replaced over the disturbed area shown on Map 8. Map 8 outlines the entire disturbed area, but the acreage is not mentioned. Please describe in the text or on the map the total disturbed area of Map 8. Please also distinguish the area to receive only a foot of topsoil.
3. Section 242.200 says no surface roughening will occur on the waste pile, which will be left in a roughened state. Please include a statement that the surface will be inspected and ripped if necessary to reduce slippage prior to application of stockpiled soils.
4. Section 242.200 describes surface roughening to a depth of 1.5 to 2 ft. prior to topsoil placement on roads and perimeter ditches. This statement should indicate ripping on all operational areas surrounding the waste rock pile.
5. Section 242.200 refers to Section 341.200 for more information on surface roughening methods; Section 341.200 could not be found. Please provide the correct citation.
6. Section 242.200 describes surface roughening as the creation of microbasins with a depth of 18 inches and a width of the backhoe. Further clarification on the size of hoe to be used should be stated, as very large buckets are not desirable.
7. Please provide more details on the contemporaneous reclamation that is mentioned in Section 542.100 and 553.100.

#### R645-301-243 Soil Nutrients

Section 231.300, states nutrient testing of the reclaimed site was conducted once and pending results will no longer be necessary. Section 243 states that nutrient analysis will be conducted on the stockpiled soils prior to final reclamation. These two sections are conflicting. The redistributed topsoil should be sampled after grading. The rate of sampling should be one sample/acre. The depth of sampling should be the surface 6 inches. The parameters to be sampled should be plant available nitrogen, phosphorus and potassium. Please amend the plan in Section 243 and 231.300 accordingly.

#### R645-301-244.100 Stabilization of exposed surface areas.

Please provide a plan for stabilization of exposed areas during operations.

#### R645-301-244.200 Suitable Mulch.

Please describe the use of mulch, the type of mulch, the rate of application, and the method of mulch application to all reclaimed areas.

#### R645-301-553.252 Refuse Piles.

A reference to field trials was suggested in Sections 231, 233, and 242.100 to reduce the amount of soil cover to be placed on the waste is stated in Section 233, 234.200 under the heading Topsoil Redistribution. The idea of reducing the required

four feet of cover is further touched upon in Section 240. coal rule R645-301-553.252 allows less than four feet of cover based upon physical and chemical analysis. Sampling and analysis of the waste was not mentioned in Section 240, Section 536.200 (which was cited in Section 233 as the source of sampling information), Section 553 or Section 731.300. The Permittee should propose a sampling plan for the final graded surface of the waste at final reclamation to show the chemical characteristics of the waste are non-acid/non-toxic and will be suitable for vegetation growth.

Section 244.300 describes the repair of rills and gullies using hand tools to avoid excessive compaction. In the Division's experience, rills and gullies may suddenly appear on reclaimed waste rock sites that are too large to be handled with hand equipment. It is recommended that the plan not limit the approach to be taken, rather the repair should be in consultation with the Division.

pburton

## Hydrological Information Reclamation Plan

### Deficiencies Details:

R645-301-763.100 Section 542.200 of the amendment, as referenced in chapter 7, indicates that the "sedimentation pond will be retained for as long as practical during reclamation". Please insert language that the pond will be retained until at least 2 years after the last augmented seeding, as required in the rule cited above.

R645-301-748 The plan should still reference the Division of Water Rights rules when discussing the abandonment and sealing of the water monitoring wells.

adaniels

## Contemporaneous Reclamation General

### Deficiencies Details:

The minimum requirements of R645-301-553 are not met as there is no clear text detailing the sequencing or location of the contemporaneous reclamation specific to each phase of the waste rock pile construction. The permittee will update text throughout the application detailing the various points, design, and construction of the contemporaneous reclamation areas associated with each phase of the waste rock pile phases.

cparker

## Contemporaneous Reclamation General

### Deficiencies Details:

#### Findings:

In accordance with R645-301-121.100, R645-301-121.200, R645-301-244.100, and R645-301-352: Prior to approval, the expansion plans must include a timetable for either the stabilization or the completion of reclamation of Lift 5; and either the stabilization or the completion of reclamation of the topsoil stored on Lift 4; and a proposed reclamation timetable for each of the four phases of the proposed waste rock expansion.

R645-301-536, Coal Mine Waste and R645-301-512.100 Cross Sections and Maps.

1. The final topography maps and cross sections of the existing, approved coal mine waste facility should remain in the plan.
2. A commitment in the plan is requested to provide as built topography and cross sections for the contemporaneous reclamation of Lift 5 and Lift #4 and each subsequent phase of the expanded waste rock site.

pburton

## Maps Affected Area Boundary

### Deficiencies Details:

The application does not meet the minimum requirements of R645-301-542 detailing the foot print of the affected area associated with each of the individual phases of the waste rock pile at the various stages as Map 4 detailing the existing waste rock as built is missing

cparker

## Maps Reclamation BackFilling and Grading

### Deficiencies Details:

The application does not meet the minimum requirements of R645-301-542 detailing the contours of the individual phases of the waste rock pile at the various stages. The Permittee will provide a series of maps with cross sections detailing how the waste rock pile will look at each of the additional phases outlined on Map 4A and Map 4B.

cparker

## Maps Reclamation Final Surface Configuration

### Deficiencies Details:

The application does not meet the minimum requirements of R645-301-542 due to no included Map 4 of the existing waste rock site.

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## Bonding and Insurance General

### Deficiencies Details:

R645-301-542.800 and R645-301-810 was not met in the current application as there is no line item detail included with the application in regards to the increase disturbed area relative to earthwork and seeding costs. There is no discussion on the sequence of construction and the relevant line items needed for reclamation of each sequence. The permittee will include line item details of the cost to reclaim the expanded site with details on how and the timing of reclamation for each of the phases. These details will include how and when sub and top soil will be spread along with the seeding timing.

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## Bonding Determination of Amount

### Deficiencies Details:

R645-301-830.140 The Permittee must provide updated information for estimated bond costs with supporting calculations for the estimates. This includes updated unit costs for relevant line items of reclamation. The updates should be provided using the 2014 data from RS Mean Heavy Construction Cost data manual and the Caterpillar Handbook or other appropriate resources. The bond summary and corresponding bond calculations sheets in the MRP need to be updated and appropriately escalated to 2019 dollars using the Division's approved 1.9% and 5 year escalation.

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