



July 14, 2017

Sent via ePermit system

Gabe Johnson
Spring Creek Coal LLC
Spring Creek Mine
PO Box 67
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Permit ID: C1979012
Revision Type: Amendment
Permitting Action: Deficiency
Subject: APPAM5; Arrowhead Amendment-Round 2 Acceptability Deficiency

Dear Gabe:

The Department of Environmental Quality (DEQ) has completed its acceptability review regarding Spring Creek Coal LLC's application for Amendment APPAM5. The following deficiencies must be adequately addressed before DEQ can determine the application acceptable:

ARM 17.24.304(1)(f)(i): In APXIV5_SW_GW_Hydro Base_20170131_APPAM5 (3).PDF, Section 2.1.2, page 20, the statement, "...groundwater of practical development depth (considered herein as less than 1,000 feet) is found predominately and only consistently..." should be "predominantly", or better yet "primarily".

In Section 2.3.1, page 23, "PZ-YZ-3" should be "PZ-YC-3".

In Section 2.3.1, page 24, regarding DCAL-1, "Only about 0.6 feet of saturation remained as of mid-August 2015, and the well is likely to go dry before the end of 2015." There is another year of data available, and water levels are indeed below the bottom of the screen in August 2016. This can be updated.

In Section 2.3.1, page 25, it is not clear if OB-11 is screened in or below the Smith coal. It is implied by the water level being 18 feet below the Smith that it is screened below, but the other wells discussed explicitly state where they are screened.

Section 2.4.2, page 29 "Having highly vesicular and porous textures, scoria deposits..." "Vesicular", according to Bates & Jackson, specifically refers to cavities in aphanitic and glassy igneous rocks. It is also commonly applied to the "paralava" portions of clinker, but these conditions are fairly uncommon. In any case, vesicular texture does not promote water capacity, as vesicles are not connected. "Fractured" is a better term in this context.

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In Section 2.5.1 and on Table 5-6, would it be possible to show T values in $\text{ft}^3/\text{day}/\text{ft}$ (ft^2/day) rather than $\text{gal}/\text{day}/\text{ft}$? This would be much more consistent, since K values are given in ft/day .

In Section 2.6.1 and thereafter, specific conductance is by definition at 25°C , so adding "at 25°C " to it is redundant.

Section 2.7.2, page 45. Galyardt and Murray do not show the Carney as equivalent to the Wall.

ARM 17.24.304(1)(f)(i)(C): The listing of known wells and springs provided in Attachment I Vol. 5-8 does not include the Montana Bureau of Mines and Geology, Groundwater Information Center (GWIC) database as a source. GWIC often contains records of wells and springs for which no DNRC water rights have been obtained, thus it is likely that the listing in Attachment I Vol. 5-8 is incomplete. Please use GWIC as an additional source for readily discoverable wells and springs.

Exhibit I Vol. 5-4 depicts a spring associated water right WR 42B 112098 00. This spring water right is not listed in Attachment I Vol. 5-8 nor is its condition discussed in Appendix I, Vol. 5 - Pre-mine Hydrology for Arrowhead Amendment. This spring is of note because of its location in a Dry Creek tributary downstream of a sediment pond and outfall. From Exhibit I Vol. 5-4, it is not clear whether this is the same spring as CX Ranch Spring, which is reported as dry by the MBMG but also identified in the alluvial valley floor study. Include this water right in Attachment I Vol. 5-8 and clarify the condition of this spring and its relation, if any, to the CX Ranch Spring. If unrelated, CX Ranch Spring would also require further information, as it is not in Attachment I Vol. 5-8 either. Lastly, given this spring location in relation to sediment control structures, monitoring at this location is required (See ARM 17.24.314(2)(d)).

ARM 17.24.304(1)(f)(iii): The updated Section 2.7.2 in Appendix I, Vol.5 - Pre-mine Hydrology for Arrowhead Amendment addresses this deficiency. However, language in the Alternative Water Supplies section in 17.24.304 Baseline Information: Environmental Resources (17.24.304.e-f_Hydrologic) still needs to be updated. This section is lacking a reference that alternative water supplies do exist for the Arrowhead Amendment, as discussed in Appendix I, Vol. 5, Section 2.7.2.

ARM 17.24.304(1)(g): In the topological, geological, stratigraphic, and mineral descriptions (Appendix N), Section 2.3. Galyardt and Murray do not show the Carney as equivalent to the Wall.

ARM 17.24.305(1)(a): The proposed disturbance boundary appears to encompass areas outside of what would be absolutely necessary to disturb with road construction and operational activities. Please describe if any limits to disturbance will be imposed within the proposed disturbance boundary.

ARM 17.24.305(2)(a): The map affidavits need to be consistent with the maps submitted

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including their location within the E-permit. The locations of several maps are referenced incorrectly in the affidavits. Please ensure that all maps that were submitted with AM5 are listed correctly on the Map Affidavits.

ARM 17.24.308(1)(f): The dwg file for the noxious weed map has not been updated with the amendment boundary. The ortho boundary has not yet been attached. Please update the CAD files for the noxious weed map.

ARM 17.24.313(1): Methods indicated in the reclamation plan use Geosynthetic fabric as a separator of the road base and remaining alluvial materials at creek crossings. A supporting layer of geogrid material would be incorporated for areas of softer alluvium. These products address degradation of alluvial material remaining in place through separation via the fabric and stability with the geogrid.

Compressive forces are not addressed with these materials. Some amount of compressive force will impact the alluvial layers that remain in place following soil salvage. This impact was discussed with the Hydrology and Engineering disciplines.

We expect the alluvial layer to sustain some sort of compression from the activity involved with construction and reclamation of the road. Compressive properties of the alluvium are reported to be high in the clay based near surface strata and low in the gravel based deep strata. This indicates the road project will compact clay of the upper portion of the alluvium to some extent.

Literature on compaction suggests soils are affected in the top 20 inches or less. Following road removal ripping will be implemented to relieve the compacted layers before soil redistribution. The ripping will help relieve compaction. Another step that can be used to reduce compaction is to avoid construction when the subsurface material is wet. Alluvial areas should not sustain road construction during wet periods.

Please add discussion of compaction in relation to geotextile use. Second, add a commitment to conduct road construction during periods of low soil moisture.

ARM 17.24.313(1)(h)(x): Deficiencies relating to ARM 17.24.724 need to be addressed to satisfy this rule.

ARM 17.24.314(2)(d): Exhibit K-1 Hydrologic Control Plan (During Mining) includes storm water sediment pond #76 and outfall. This storm water structure is located up-gradient of spring water right 42B 112098 00 in a tributary of Dry Creek. The condition of this spring is unclear (See ARM 17.24.304(1)(f)(i)(C)) and is not included in the proposed Arrowhead MQAP (MQAP Table 2-2). Regardless, this spring location should be included in the Arrowhead MQAP, as an up-gradient, unlined sediment pond and discharge could modify the water quality and quantity of this spring.

ARM 17.24.317(1): The proposed Youngs Creek diversion has no narrative explaining how it will be compliant with ARM 17.24.751. As this will be diverting an active channel

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with fish species present, please address fish passage for this diversion.

ARM 17.24.321(1) and (1)(a): Please change rule citation on Plate 18A to ARM 17.24.321.

Please add road gradients to Plate 18A.

Please include technical information to support the proposed design of the articulated concrete block (i.e. dimensions, anchoring, etc.).

The haul road sections for AM5 and the current permit are not consistent. Please revise as necessary and include a typical berm on the AM5 and showing height, position and how it will relate to fill and cut slopes. Please include all applicable dimensioning including depth of scoria.

ARM 17.24.324(1)(a)(ii): Appendix A3 has been located in baseline information. The root types are explained in this Appendix; however, the tables in the Prime Farmlands special application remain as in previous comments. Change the footnote in the Prime Farmlands special application pages 324-3&4 to match the soil baseline information.

ARM 17.24.324(1)(b): See deficiency under 313(1). The Geotextile concept needs additional information.

ARM 17.24.324(1)(h): Three reference area locations are now shown on Plate 23, Sheet 2. They are all upgradient of the haul road as requested during the previous deficiency. The legend for this map states there are four reference areas when there are only three. Please update the legend to accurately reflect what is on the map.

ARM 17.24.605(2): Please address planned erosion prevention methods at proposed haul road drainage crossings before, during and after vegetation establishment. Will erosion control fabric, or similar measures be utilized?

ARM 17.24.633(1): The permit states that sediment ponds will be maintained until revegetation requirements have been met. Per Western Alkaline standards at 40 CFR 434 Subpart H, all drainages associated with MPDES outfalls can be permitted under an approved Sediment Control Plan. Therefore, ponds may be removed prior to meeting all vegetation requirements.

ARM 17.24.633(5)(a): The statement, "There have been no unplanned discharges from the sediment control ponds except as a result of storms in excess of 10-year, 24-hour events," is no longer applicable and should be removed. Discharges occurred in 2014 as the result of spillway leaks following a snowmelt event.

ARM 17.24.724(3): Technical standards regarding ARM 17.24.724 were generated and are included in the application under Addendum 313B. The Appendices are called out on the Table of Contents, but were not included in the submittal. Please submit the

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Appendices to Addendum 313B.

ARM 17.24.801(1),(2) and (3): There are four additional drainages that have not been addressed in the permit material submitted for ARM 17.24.801. Please include Squirrel Creek, Dry Creek, Youngs Creek, and Little Youngs Creek when addressing alluvial valley floors.

ARM 17.24.802(1) and (2): The four drainages intersected by AM5, Squirrel Creek, Dry Creek, Youngs Creek, and Little Youngs Creek, must also be addressed in 802(1) and (2) permit material.

ARM 17.24.804(1): The four drainages intersected by AM5, Squirrel Creek, Dry Creek, Youngs Creek, and Little Youngs Creek, must also be addressed in 804(1) permit material.

ARM 17.24.805(1): The four drainages intersected by AM5, Squirrel Creek, Dry Creek, Youngs Creek, and Little Youngs Creek, must also be addressed in 805(1) permit material.

ARM 17.24.806(1): The four drainages intersected by AM5, Squirrel Creek, Dry Creek, Youngs Creek, and Little Youngs Creek, must also be addressed in 806(1) permit material.

Upon receipt of satisfactory responses to these deficiencies, DEQ will determine the application to be acceptable.

Please feel free to contact Robert D. Smith at 406-444-7444 with questions regarding this letter.

Sincerely,



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FC: 620.403 (AM5)

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Subject: Acceptability Review Deficiency for Spring Creek Mine: APPAM5

Deficiencies were identified for Permit: C1979012, Application Number: APPAM5 during the Acceptability Review. Please log into the ePermitting system to view the deficiency letter.