Department of Environmental Quality

To protect, conserve, and enhance the quality of Wyoming's environment for the benefit of current and future generations

Matthew H. Mead, Governor

Todd Parfitt, Director

August 12, 2015

Mr. Randall Atkins
c/o WWC Engineering
1849 Terra Ave.
Sheridan, WY 82801

RE: Round 2 Technical Review, Brook Mine Coal Mine Permit Application, TFN 6 2/025

Dear : Mr. Atkins

The Land Quality Division received your Round 1 comment responses from your application for a Permit to Mine Coal on July 10, 2015. The statutory requirement for LQD to respond to the first round responses is 30 days from date of receipt, which is August 9, 2015. LQD was granted a three day extension by your representative to insure that all Comments could be published, generating a completion date for the comments on August 12, 2015. The responses from your consultants have been reviewed in their entirety and comments, questions, noteworthy deficiencies, and requests for additional information were generated for Round 2. These have been gathered by the permit coordinator and are presented as attachments to this letter.

Please review the Second Round evaluation comments and prepare your replies accordingly. When you have completed the Round 2 assessment of our commentaries, send your responses to the LQD office in Sheridan to begin the Round 3 Technical Evaluation. Contact Bj Kristiansen or Mark Rogaczewski with questions or requests for clarification of the Round I materials. We will be happy to assist you in this process.

Sincerely,

Bjarne Kristiansen, PG
Natural Resources Program Principal
WDEQ-LQD District III

Cc: Cheyenne LQD files w/attachments

Brook 42

2100 West 5th Street · Sheridan, WY 82801
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Coal Mine Permit Application, RAMACO Brook Mine, TFN 6 2/025
Round 2 Comments -

Andrew J. Kuhlmann
Senior Assistant Attorney General
Water & Natural Resources Division
Wyoming Attorney General's Office

ADJUDICATION – SURFACE OWNER CONSENT in Lieu of LQD FORM 8

In response to the Division's previous comments, the Applicant described its interpretation of the 1954 Deed that governs the property rights of the Applicant, Padlock Ranch Company, and Big Horn Coal Company on the lands subject to that deed. The Applicant also discussed its ongoing litigation with Big Horn Coal (Civil Action No. CV 2014-372), and provided case law and two pleadings related to its motion for summary judgment in that case. The Applicant asserted that based on the 1954 Deed, it has the "sole dominant surface ownership and use interest" for the purposes of W.S. 35-11-406(b)(xi)-(xii).

The Land Quality Division has reviewed the Applicant's responses and determined that, at this time, the Application is still deficient and is not yet technically adequate and suitable for publication with regard to the requirements of Wyoming Statutes §§ 35-11-406(a)(ii) and -406(b)(xi)-(xii), and Chapter 2, Section 2 of the Division's rules and regulations for coal operations. The Division requests the Applicant to address the following issues:

1. Please provide copies of the following documents related to the state district court litigation between the Applicant/Ramaco and Big Horn Coal Company:

- The complaint and answer filed in the case (if either has been amended, only the most recent amended version needs to be provided).
- For the Applicant's summary judgment motion: Big Horn Coal's response to the motion.
- For Big Horn Coal's motion for summary judgment: the memo supporting that motion, the Applicant's response to the motion, and Big Horn Coal's reply memorandum.
- The "Section 5" of the "May 6, 1983, Release Agreement" that the Applicant mentioned in its reply in support of its summary judgment motion.
- When it is available, the district court's order deciding the Applicant's and Big Horn Coal's summary judgment motions.

2. Please also provide sufficient information and supporting documents for the Division to determine whether Padlock Ranch or Big Horn Coal qualify as a "resident or agricultural landowner," as defined in W.S. § 35-11-406(b)(xi). The statutory requirements for a permit application differ depending on whether that status exists, and the Division must determine which set of requirements (W.S. § 35-11-406(b)(xi) or -406(b)(xii)) may apply to this Application.

MEMORANDUM

TO: File, Brook Mine Coal Mine Permit Application, TFN 6 2/025

FROM: Bj Kristiansen, PG, Natural Resources Program Principal

DATE: July 30, 2015

RE: Brook Mine application review of Round 1 Comments and Responses covering Adjudication, Land Use, History, Climatology, Topography, Geology, Overburden Assessment, Hydrology, Alluvial Valley Floors, Mine Plan, and Reclamation Plan

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My review of the Brook Mine Coal Mine Permit Application, Round 1 Responses is complete. My comments, critique, and perceived deficiencies for Round 2 are as follows:

Round 1 Comment	**Round 1 Response / Round 2 comment**
Comment BJ 26	Appendix D11, Alluvial Valley Floor, Section D11.1, RAMACO has requested LQD to make a determination on the nature of the drainages as potential AVF within the permit boundary as well as within ½ mile of the permit boundary. This would then entail analysis of the following drainages (distances are approximations): *A list of Drainages and lengths follows...*
Response BJ 26	Revised D11 text throughout to expand discussion on the drainages mentioned above. Incorporated previous AVF studies into Appendix D11. Information satisfying each statement can be found in the following locations as well as many other locations throughout the document*: A list of document locations follows...*
Comment BJ 26, round 2	The response to the Round 1 comment is adequate. The original comment from round 1 was intended to create dialogue between Brook Mine Brook Mine and LQD: a) The first goal was to engender further discussion in the permit document covering baseline information regarding the nature of all potential AVFs within the permit boundary. The Round 1 Response effectively established a starting point for both LQD and Brook Mine. b) Now that there is a common foundation for all parties, field analysis and data studies can be initiated. This work needs to be scheduled. c) Brook Mine must provide written surface owner consent enabling LQD staff access to all acreages covered in the AVF determination analysis. This includes lands defined in Round 1, BJ comment 26, itemized stream lengths by stream name and distance.

Comment BJ 60	EXHIBITS, Addendum D5-4, Exhibit 8, The name of the PDF file for this exhibit indicates that this is an isopach map of the Masters Lower coal bed. The title in the map indicates that this is the contour of the base of the Masters coal seam. Please correct the title of the PDF file.
Response BJ 60	The title of Exhibit 8 of Addendum D5-4 has been revised in the electronic copy, as requested.
Comment BJ 60, round 2	The title of Exhibit 8 in Addendum D5-4 remains unchanged. This appears to be an inadvertent oversight on the part of WWC. The Current PDF file name is: ADD_D5_4_EX_8_MASTERS_ISO-MASTERS_LOWER_R1. The Title of the map in the Title Block is: BOTTOM ELEVATION OF MASTERS COAL SEAM. Please correct the name on the PDF file to better represent the contents of the exhibit.

ROUND 2, NEW COMMENTS

Comment BJ 67	Mine Plan, Table MP.4-5., Overburden Stockpile Design – The Estimated Capacity volumetrics for the Overburden stockpiles appear to be low. Based on a recalculation of the volumes given the acreage and average heights, each stockpile has a higher volume of capacity than which is shown in the table. A recalculated table would look like this:

TABLE ON FOLLOWING PAGE

Table MP.4-5. Overburden Stockpile Design

Stockpile Designation	Estimated Capacity **E** (cy)	Approximate Basal Area **A** (ac)	Average Height **H** (ft.)	Calculated Capacity **C** (cy)[1]	Difference[2]
OB-1	300,000	4.7	55	417,047	117,047
OB-2	500,000	9.4	55	834,093	334,093
OB-3	950,000	13.4	95	1,189,027	239,027
OB-4	1,000,000	21.4	85	1,898,893	898,893
OB-5	730,000	9.2	70	816,347	86,347
OB-6	400,000	8.3	55	736,487	336,487
OB-7	400,000	8.9	70	789,727	389,727
OB-8	1,100,000	14.2	75	1,260,013	160,013
OB-9	510,000	8.7	55	771,980	261,980
OB-10	260,000	5.6	45	496,907	236,907
OB-11	100,000	4.1	50	363,807	263,807
OB-12	1,200,000	14	95	1,242,267	42,267
OB-13	165,000	4.2	45	372,680	207,680
OB-14	122,000	5.6	55	496,907	374,907
OB-15	76,000	3.2	30	283,947	207,947
OB-16	104,000	3.6	20	319,440	215,440
	7,917,000			12,289,567	4,372,567

[1] Calculated Capacity C = ((A*43560)*H)/27

[2] Difference = C-E

Based on the Recreated Table, Volumes derived from acreage and average height formulas give values that are approximately 35% too low. Please reevaluate the table in light of the mathematical calculations. Or, if there are extenuating circumstances that help create the overburden volumes in column B, please explain the seeming inconsistency.

End of Round 2 comments from Bj Kristiansen.

MEMORANDUM

To: File, RAMACO Brook Mine Permit Application, TFN 6 2/025

Thru: BJ Kristiansen

From: Dave Schellinger, Soils Specialist, LQD District 3

Date: August 3, 2015

Subject: Revised Round 2 Review Comment

As per your request for review dated July 15, 2015, I have completed a review of Appendix D1-Land Use, Appendix D5-Overburden Assessment, Appendix D7-Soil Resource Assessment, Appendix D11-Mine Plan and Appendix D12-Reclamation Plan and offer the following comments.

32) Round 2 New Comment. The LQD requests that RAMACO provide pit identification number/names for all proposed initial box cut locations which will reduce confusion for identification of incident locations or for descriptions during inspections. (DS)

Appendix D5

1) The Coal Rules and Regulations, Chapter 7, Section 1(a)(i)(A) states that information required for the geological description pursuant to Chapter 2 shall be as follows: for areas where surface operations and facilities will cause removal of overburden down to a level of the coal seam, all information outlined in Chapter 2. Overburden sampling has not been performed in many of the locations where overburden will be removed during the mining operations. Additional sampling will be required to assess overburden chemistry in all areas where overburden removal will occur. The intensity of sampling should be 1 core per 160 acres (per quarter section). The LQD requests sampling every 1,900 linear feet on longer proposed disturbance areas or, at minimum, two cores within shorter disturbances separated sufficiently to provide a representative characterization of the proposed disturbance.

    a. Not all overburden has been characterized during analysis. Several lenses of shallow coal mixed with partings or narrow coal seams that will not be mined were not characterized. Because all overburden must be handled so as not to negatively affect surface water, groundwater or vegetation, all overburden must be adequately characterized. Therefore, the LQD requests additional characterization of all overburden that will be backfilled into disturbed areas. It must also be stated that special handling and/or identification and use of topsoil/subsoil replacement may be required if unsuitable backfill or soil is

placed within 4 feet of the surface on upland areas or within 10 feet of the surface in stream channels.

Response is not adequate. The LQD requires additional overburden suitability analysis to be included for all areas to be disturbed during mining. No additional baseline overburden suitability assessment laboratory data was provided for holes BH 166-78 and BE 326-78. Please provide the raw data. Also, provide a commitment to sample overburden from areas to be disturbed by mining (specifically identify the pit sequence) where overburden baseline was not provided during baseline sampling. Sample every 1,300 feet in the sequence prior to overburden removal. Report the analytical results in the annual report for the year of initial disturbance for the pit sequence. Also, since RAMACO is reluctant to provide a special handling commitment, sampling must be performed at 500 ft. spacing on backfilled and rough graded pits (4 ft. depth on upland areas and 8 ft. depth under stream channel or permanent impoundments) to assure quality of surface materials. Also, if groundwater is expected in the pits, unsuitable materials must not be placed in the groundwater zone. Of the backfilled pit. (DS)

4) The permit application provided to LQD staff for review has duplicated data provided after the map identified as Exhibit 1 which should be deleted. The exhibit should also be better identified as Exhibit D5-1 or something similar to clarify placement in the permit application should it become separated from the document in the future.

   Response is not adequate. This issue was not addressed in the Round 1 comment response package. Duplicate data in the hard copy should be deleted.

5) Appendix D5, Comparisons were made between Exhibit 1, the soils map and the Mine Plan map. Distinct differences in the affected area and permit boundaries were observed. Please be sure that correct boundaries for the proposed affected area and permit area are provided on all maps. Please also provide the contour interval on this exhibit.

   Response is not adequate. All exhibits presented in this permit must show the correct permit boundary and affected area boundaries, or, if the boundaries are removed, must reference a map of the same scale that contains the correct boundaries. Please correct the permit boundaries and affected area boundaries on all exhibits in this permit application.

Appendix D7

6) Appendix D7, Exhibit D7.3.-1 was compared with Exhibit MP.1-1. As required, it appears that the soil sampling was concentrated in areas where surface disturbance is to be expected. Please provide the contour interval on

the soils map. For ease of review and to prevent misinterpretation, however, the map showing sampling locations should also clearly show the locations of proposed surface disturbances instead of providing these details on separate maps which may or may not present differing scale distances.

Response is not adequate. Please show the proposed surface disturbance locations on Exhibit D7.3.-1.

31) New Round 2 Comment: Section D7-2, Page D7-3 – A quotation and reference related to Schellinger, 2014, must be removed from the permit document as must all other quotations not supported by LQD documentation.

Mine Plan

11) Depending upon the outcome of required overburden sampling, commitment for special handling of unsuitable overburden will be required to assure that placement of unsuitable materials so as not to hinder plant growth or to adversely affect surface or groundwater quality will be required in the Mine Plan.

Response is not adequate. Section MP.4.1.6 does not discuss placement of unsuitable materials above groundwater sources which will undoubtedly be encountered in early mining progressions at this mine. Unsuitable materials taken from above the groundwater level cannot be placed within the groundwater zone. Please address this and describe how the mine plan pit sequence of removal and backfill will be altered to accommodate placement of suitable materials near the surface or in the aquifer zone during mining. This may require stockpiling of materials to assure the best quality materials will be used.

12) Does RAMACO provide a better detailed description of the topsoil salvage and handling process than that discussed in section MP.4.2.1? The description provided is not detailed so as to provide a description of the equipment used, the methods for assuring adequate soil salvage, or whether topsoil and subsoil salvage will follow the recommendations in Appendix D7 for stockpiling topsoil separate from subsoil. Please understand that topsoil and subsoil may only be mixed if both meet Guideline 1 suitability criteria. Please include more detail for topsoil salvage and handling or let the LQD know where the information may be accessed.

Response is not adequate. Details of your topsoil salvage operation have not been adequately provided in the Mine Plan. Please provide the requested details of the topsoil salvage operation as stated above.

14) Section MP.4.2.1 does not discuss topsoil salvage during winter months. Salvage during the winter months, especially of shallow soil profiles, is discouraged by the

LQD due to a lack of depth control caused by varying depths of permafrost. Please provide discussion concerning this subject.

a. Even short term and temporary topsoil stockpiles must be identified on maps and the volumes accounted for in annual reports. Several criteria that must be considered are well established for placement of topsoil stockpiles and include:
   iii. Stockpiles will not be constructed on unsuitable backfill locations
   v. Stockpiles will not be constructed at locations of known cultural or wildlife resources for which protection or mitigation is required.

   Responses to the above items were not adequate. Please provide the required permit commitments.

16) Section MP.4.2.8. Please provide a detailed description for the disposal of empty drums, not just a citation of the EPA Rule which is probably not know by most readers of this public document.

Response is not adequate. The Round 1 review comment was not addressed. Please provide the required detail in the drum disposal discussion. The general public may or may not have access to the Federal Register, but must provide a public document which stands alone, without need to reference other documents to provide the information required to explain the commitments made. Therefore, RAMACO must expand on what the EPA Rule requires for the readers of this permit.

18) Section MP.4.3.4. The volumetric analysis shown in Table MP.4-4 and MP.4-5 may change depending on results of required additional overburden sampling and volumetric analysis. If the overburden depth overlying coal changes as a result of additional sampling, the volumetric analysis will also change. If post mining contour changes are necessary due to adjusted swell factors permit revision will probably not be required until the changed PMT exceeds plus or minus 20 feet of the approved at which time a Reclamation Plan revision will be required. This kind of detail should be included in the permit commitments.

Response is not adequate. Does the volumetrics of stockpiles include the coal partings and heavily oxidized coal seams that will not be mined for sale and have not been included in overburden quality assessment data? Will swell factors be adequate to meet PMT requirements after mining of coal from box cuts? What steps will be taken, such as borrow areas not currently shown on any maps, would be used to mitigate inadequate backfill, keeping in mind that contouring must provide reestablishment of drainage patterns on the mine.

20) Section MP.4.3.5. A statement was made in this section that "Overburden stockpiles will only block ephemeral drainages if runoff control and sediment control measures are made and approved by WDEQ/LQD." Placement of overburden in ephemeral drainages will require a discussion of how water will be diverted around the overburden stockpile to prevent impoundment of water in addition of a discussion of sediment control measures for the stockpile to prevent of-site impacts of erosion down-slope from the stockpile. The LQD recommends that no overburden stockpiles be placed in ephemeral drainages.

Response is not adequate. No response was provided. Please make necessary changes to the Mine Plan language concerning placement of overburden stockpiles.

22) Tables MP.4-3 and MP.4-5. Topsoil volumes appear to be underestimated in TS- 2, TS-6, TS-10 and TS-11 while underestimating the proposed volume in TS-1. Also overburden volumes appear to be underestimated in OB-4, OB-7, OB-11, OB-14 and OB-15, and overestimated in OB-16, which may affect estimates presented in TableMP.4-4 as well.

Response is not adequate. Several discrepancies have been discovered during the review. TS-1 capacity according to Table MP.4-3 is 89,600 cubic yards, but Table MP.4-1 shows 120,200 cubic yards added to the stockpile. Our estimate are significantly different from yours based on the footprint and average height.

Stockpile	Basal Area (Acres)	Average Height (Ft.)	Volume Estimate (Cubic Yds.)	RAMACO's Volume Estimate
TS1	1.4	20	22,587	89,600
TS2	3.5	45	127,051	85,100
TS3	1.5	30	36,300	70,300
TS4	1.1	25	22,183	26,600
TS5	3	55	133,101	98,400
TS6	4.5	45	163,351	150,800
TS7	0.7	20	11,293	13,800
TS8	0.9	25	18,150	19,300
TS9	0.8	20	12,907	15,900
TS10	2	50	80,667	70,300
TS11	0.9	20	14,520	12,000

The volume of topsoil in stockpiles by year presented in Table MP.4-1 appears to be based on a six-inch salvage depth as shown below. Perhaps the salvage depth was intended to be 2 ft. but the volumes would have to increase by a factor of 4.

Stockpile	Acres Salvaged	Volume Salvaged	Depth (Ft.) (volume (cu.ft.)/area (sq.ft.))
TS1	80	64500	0.50
TS1	43	34700	0.50
TS1	23	18600	0.50
TS1	13	10500	0.50
TS1	19	15300	0.50
TS1	5	4000	0.50
TS1	9	7300	0.50

The LQD requires RAMACO to evaluate topsoil stockpile volumes and depths of soil salvage expressed on specific areas of disturbance since each disturbance will undoubtedly result in different salvage and replacement depths.

All volumetric data in tables presented in the Mine Plan and in the reclamation bond estimate must be must be correct, so the LQD requires that:

a) All topsoil salvage and bond estimates must be based on depth estimates provided in Appendix D7 and the approximate acreage of each soil series disturbed. Therefore, the soil salvage depth and topsoil volumes expressed in table MP.4-3 must be linked to site-specific soil depths. Table MP.4-1 must also include salvage depths for each calculation.
b) All following topsoil salvage and volumetric tables must be corrected based on volumes for TableMP.4-1.
c) All reclamation performance bond estimates must be changed to reflect corrected topsoil volumes.
d) An average depth of topsoil to be salvaged for the entire mining operation must be provided in the Mine Plan text.
e) Topsoil stockpile footprints and heights will need to be corrected on tables and figures.

Reclamation Plan

27) Section RP.5.6. Sediment control measures will be required to prevent untreated runoff from exiting reclaimed lands onto adjacent native lands. Please provide a discussion of the sediment control measures to be used.

Response is not adequate. Use of ASCMs during mining and following reclamation as sediment control must follow the requirements of Guideline 15. Brook Mine must provide some detail about how the ASCMs will be sized, certified, permitted and terminated. ASCMs may not be used within ½ mile of the Tongue River. Please provide requested information in the Mine Plan.

32) **New Comment**: Reevaluate the average topsoil replacement depth based on salvage depth estimates shown in Appendix D7 and expected disturbance of each soil series during mining. 18 inches may not be adequate.

DS/

xc: Cheyenne file

MEMORANDUM

TO: Bj Kristiansen, LQD-DIII Assistant Supervisor

FROM: Doug Emme, Blasting Program Principal

DATE: August 4, 2015

SUBJECT: RAMACO Brook Mining Co., LLC; Brook Mine Coal Permit Application; TFN 6 2/025

I have completed my review of RAMACO responses to the 1st round comments on the Mine and Reclamation Plans for this permit application and there are several responses that were not adequately addressed. There still has been no Reclamation Bond Estimate submitted at this time so there is nothing to review. The following items from my 1st round review still need to be adequately addressed before this permit can be approved:

Mine Plan

1. **Section MP.2.3, page MP-9 (DE comment #3)** – The third sentence in the 2nd paragraph needs to be corrected. It states one magazine will contain cast boosters and the other magazine will contain detonating cod and boosters. Boosters cannot be stored with detonating cord or detonators. I believe the text should say, "…the other magazine …will contain detonating cord, detonators and other initiation products. Please correct.
2. **Section MP.6.1, page MP-42 (DE comment #5)** – The 1st sentence of the 1st full paragraph still needs to be improved so it makes sense. The current version says "… Hidden Water Creek watershed will occur…" It doesn't make sense as it is written. Please correct.
3. **Section MP.14.3.2, page MP-60 (DE comment #8)** – RAMACO kept the powder factor range of 0.2-0.7 pounds per ton in the text. As stated in the 1st round review the high end of the range is extremely high for coal. I would recommend that the text simply state that the powder factors will be adequate to effectively fragment the coal and overburden. Please correct.
4. **Section MP.14.8.1, page MP-64 (DE comment #13)** – RAMACO continues to discuss a "typical" pattern size and stemming amount. Given the bench height, pattern size, stemming height, hole diameter listed it would be nearly impossible to get powder factors high enough to adequately fragment the overburden. The large burdens and spacings in a 50' high bench would likely leave hard zones between the holes. The large amount of stemming compared to powder column height gives poor powder distribution in the holes which will likely lead to hard zones in the upper portions of the bench. This discussion needs to be improved.
5. **Section MP.14.8.2, page MP-65 (DE comment #16)** – RAMACO lists a pattern Drilling size of 35' x 35' and then in the text states the burden and spacing will 17.4' and 35.4'.

> As stated in the round 1 review comments, this pattern size in a 15' thick coal seam with a 7.875" drill hole will probably result in excessive flyrock, airblast and leave behind hard zones between the holes. The 2nd paragraph discuses using slurry and water gel and it is likely that an emulsion/ANFO blend with high water resistance would be used. RAMACO needs to revise the text in this section because this plan will not be effective.

All of my other comments on the Mine and Reclamation Plans were adequately addressed.

I would not recommend approving this permit application until these comments have been adequately addressed and a bond has been submitted and approved. If you have any questions please let me know.

/de

MEMO

To: File, Brook Mining Co., LLC, Brook Mine, TFN 6 2/025

From: Jaime J. Jakes

Date: July 22, 2015

Subject: Round II Review of Permit Application for Brook Mine, TFN 6 2/025

Appendix D8

1. Please update the permit boundaries so that they are the same on Exhibit D8. 2-1 and Addendum D8 Map 1. I note specifically that lands should not be included within the permit boundary south of the interstate and that Section 10 TWN57N RNG85W displays different boundaries along the far west edge of the permit; it appears that the section lines are skewed between the two maps. The Addendum D8 Map 1 also is missing a sizeable amount of lands located in Section 21 TWN54N RNG84W which are included within the permit boundary of the Adjudication Exhibit 1 map. While comparing the maps I find that the maps display the same information in slightly different formats, please explain the necessity for two individual maps and at a minimum make them consistent against one another.

   The response is acceptable. The DEQ now understands the two separate maps and the boundaries now match.

2. Why does the study area not include all lands within the proposed permit boundary?

   The DEQ rules and regulations require vegetative characterization and baseline data for the entire permit area. Therefore, the lands located in Section 21, 22, and 15 that had not been previously included in the 2013 vegetation study area will require further attention. Please contact the DEQ to discuss the required baseline vegetation surveys. Due to the nature of the missing baseline vegetation data more comments may occur once all the data is submitted and applicable tables are updated.

3. The acreage displayed on Table D8.2-1 should equal that of the land permitted on the Form 11. The Form 11 displays 4,548.8 acres while the table shows 4,581.7 acres a difference of 32.9 acres. Please update either the Form 11 or Table D8.2-1 to show the true permit acreage as it relates to the vegetation communities. Upon further review I find that Table D8-2 located on

page Addendum D8-1-41 exhibits the proper acreages in relation to the Form 11, thus the values represented there may be more accurately displayed in Table D8.2-1.

The response is acceptable.

4. Table D8.2-1 states there are 56 acres of agricultural lands; however, I am unable to locate Agricultural lands north of the interstate. Please, discuss and edit the values to display true acreages in relation to the proposed permit boundary. (See comment 3 for more clarification and another table for utilization to update values.)

   The response is acceptable.

Reclamation Plan

5. Exhibit RP 6-1 also displays permit boundary discrepancies in regards to the section lines on it and those located on the Adjudication Exhibit 1. Please update accordingly.

   The response is acceptable.

6. Table RP 6-1 states that there are 11.6 acres of wetlands and other aquatic resources. Please discuss where these acres are to be reclaimed and show them on the Exhibit RP. 6-1 which displays the reclaimed vegetation communities and their locations.

   The response is acceptable.

MEMORANDUM

TO: Bj Kristiansen, Permit Coordinator

FROM: Kim Medina, Project Geologist

DATE: July 23, 2015

SUBJECT: Technical Review, Responses to Round 1 Technical Review
Brook Mine, TFN 6 4/125

I have reviewed the subject report and have the following comments or questions concerning the submittals of the subject report:

1) LQD recommends that sequence maps be revised to include **only** yearly backfilling and/or replacement, monthly backfilling and/or replacement areas may not be achievable as a permit commitment.

2) Exhibit MP.1-1 shows surface disturbance beginning in 2017. However, other maps show disturbance beginning in Year "0", which according to the maps is Year 2016. Please be consistent.

3) Exhibits MP.4-2 and RP.5-1 use the same symbol for all years of activities; only color designates different years. Some of the color variations denoting years are not easily discernible from the legend to the map.

4) Do the slot openings include truck ramps? How will truck ramps be constructed in each slot?

5) Please confirm the volume of the overburden stockpiles. For example, based on LQD's review of the mine plan and the spoil backfilling sequence maps, it appears that OB-3 will be used to contain all overburden removed from the first slot opening.

6) LQD recommends using a swell factor of 11 to 13%, based on our experience in the area.

7) Based on LQD's review of the well logs for Wells 578409-CRN-OB and 578409-MST-OB, the wells were screened in a coal seam, not in overburden. Please address all hydrologic information discussing overburden which was based on these wells and which may be in error.

8) The well logs for 578409-CRN and 578409-CRN-OB show the wells are screened in a coal seam labeled "Masters", not Carney. This appears to be a typographical error on the well log. Please correct.

9) Page MP-8 states that the "approved Spill Prevention, Control, and Countermeasure (SPCC) plan will be on file with WDEQ and available at the Brook Mine. Who is responsible for approving the plan? WDEQ does not require a SPCC plan to be filed with the agency. SPCC plans is a federal requirement.

10) Page MP-8 states that the leachfield(s) will accept water from the change house and equipment service shop. Discharge of industrial wastewater from the equipment service shop into a leachfield may be subject to Chapter 16,Wyoming Water Quality Rules and Regulations.

11) Page MP-8 states that wash down water will be sent to a wastewater impoundment. However Section MP5.2 (page MP-26) state that no wastewater impoundments are currently planned for the Brook Mine. Please discuss.

12) Groundwater from dewatering pumps is to be pumped to sumps or NPDES treatment for use in road dust control. What kind of "NPDES" treatment is proposed?

13) The State of Wyoming has primacy for the National Pollutant Discharge Elimination System and issues permits under the Wyoming Pollutant Discharge Elimination System (WYPDES). Please change all references to NPDES to WYPDES to accurately reflect the current regulatory situation.

/km

xc: Cheyenne

MEMORANDUM

TO: File: TFN 6 2/025
FROM: David J. Myers – LQD DIII Natural Resources Analyst
DATE: April 3, 2015
SUBJECT: First Round Review of Brook Mine New Permit Application

As requested I have reviewed the new Brook Mine permit application (TFN 6 2/025). I have reviewed Adjudication, Appendix D1 (Land Use), Appendix D4 (Climatology), Appendix D5 (Topography), Appendix D6 (Hydrology - Surface), Appendix D9 (Wildlife), Appendix D10 (Wetlands), Appendix D11 (AVF), the Mine Plan, and the Reclamation Plan. As we discussed in the March 12, 2015 phone call with Matt Kunze, LQD Hydrologist, I agree with Matt's comments and will not duplicate them here. My observations are below.

Adjudication – Appendix B2 – Groundwater Rights – There is a groundwater well that is missing in this volume. The listing is as follows:

Barbula #2
Permit No. 85631W
Location: SW NW Section 21, T57N R84W

Please add this entry to the table and to any corresponding maps.

Appendix D1-Land Use

I have no comments on this Appendix

Appendix D4-Climatology

I have no comment on this Appendix

Appendix D5-Topography (introduction, topography, and slope assessment only)

I have no comments on this Appendix

Appendix D6-Hydrology

D6.1x – The drainage basin description and surface water quantity sections are lacking detail. As mentioned in M. Kunze's comments, the data from the terminated Slater Creek USGS gauge, and historical monitoring data from Big Horn Mine (permit no. 213) should be included.

The data collected at the monitoring stations that is presented in Addendum D6-4 does not appear to agree with the statement that Slater Creek is a "predominantly ephemeral" stream. Please reconcile the text with the data.

D6.2.4 States that Groundwater Rights are in Appendix E2 of the Adjudication Volume. Groundwater Rights are actually listed in Appendix B2. Please Correct.

Appendix D9-Wildlife

Page D9-3 states that when a sage grouse confirmation letter is provided by WG&F, it will be provided to DEQ. It appears that the confirmation letter is already part of the package (Page D9-E3). Please reference the location of the letter.

Appendix D10-Wetlands

D10-1.4 – Please include a copy of the letter requesting concurrence and jurisdictional determination sent to the ACOE At the end of the text, and reference the letter in the text.

Appendix D11-AVF

I have no comments to add, but agree with M. Kunze's concerns related to this section.

Mine Plan

MP.3.1.3 – A primary haul road appears to cross the Tongue River using the bridge that is currently in place from previous mine usage. Please discuss any updates needed for that bridge to be adequate for the intended usage.

Exhibit MP4-3 shows Overburden Stockpiles OB-12 and OB-13, and Topsoil Stockpile TS-6 being located directly in the Slater Creek channel, without any mention of redirecting slater creek, or otherwise preventing the hydrologic consequences of damming up the creek with Overburden and Topsoil stockpiles. Please correct.

MP.7 – Because of the proximity of the planned facilities primarily in T57, R84 Sec.15 to the Tongue River and Goose Creek, I would like to see surface water monitoring upstream of these facilities on Goose Creek and Tongue River, and downstream of these facilities on Tongue River. Please discuss the feasibility of fulfilling this request, with reasoning.

Reclamation Plan

I have no comments to add, but agree with M. Kunze's concerns related to this section.

MEMORANDUM

TO: Bjarne Kristiansen, LQD District III

CC: TFN 6 2/025

FROM: Matt Kunze, LQD Division Services

DATE: August 3, 2015

SUBJECT: Second Round Comments on Brook Mine New Permit Application (TFN 6 2/025)

Responses to first round comments on the Brook Mine permit application (TFN 6 2/025) were received by the Cheyenne LQD on July 20, 2015. The following is a review of the responses to my first round comments on the application.

Appendix D6-Hydrology

Section D6.1.2 Drainage Basin Description
Comment MK 29. Response not accepted. Please include additional discussion on the hydrology of Slater Creek to include what was added to Page D11-8 in Appendix D-11 in response to Comment MK 8: *Infiltration of precipitation into the burn and then slow release of the stored water acts as a water source for the subirrigation and surface flow of Slater Creek.*

In addition, a comparison of the 2014 observed flows between the upstream and downstream stations on Slater Creek shows that flows were higher at the upstream station for the majority of the period. This may suggest Slater Creek is a losing stream. Please discuss this further in the description of the hydrology of Slater Creek. (MDK)

Comment MK 31. Response not accepted. The citation (U.S. Army Corps of Engineers, 2001) on Page D6-3 still does not appear in the reference list. Please add this to the Reference Section (Section D6.3). (MDK)

Section D6.1.5.1 Monitoring Stations
Comment MK 35. Response not accepted. The location coordinates are needed for plotting the locations of the stations; the quarter-quarter does not provide the needed level of accuracy for this. Reporting the northing/easting State Plane coordinates for monitoring locations is standard practice in other LQD coal permits and would be required when reporting station information in the Annual Report as part of the LQD Coal Annual Report Format (CARF). Please add the northing/easting State Plane coordinates for the four Brook Mine surface water monitoring stations to Table D6.1-11. (MDK)

Section D6.1.5.2 Surface Water Quantity
Comment MK 39. Response not accepted. The response referenced Comments DM 2 and MK 30, which refer to Slater Creek, not Hidden Water Creek. The LQD emailed the Hidden Water Creek data to WWC Engineering on July 8, 2015. Please incorporate and discuss the data to

strengthen the baseline water quantity characterization of Hidden Water Creek in the Brook Mine permit application. (MDK)

Comment MK 41. Response to the comment is pending. As discussed in the review of the response to Comment MK 39, the LQD emailed the Hidden Water Creek data to WWC Engineering on July 8, 2015. Please incorporate and discuss the data to strengthen the baseline water quality characterization of Hidden Water Creek in the Brook Mine permit application. (MDK)

Addendum D6-5 – Rating Curves

Comment MK 43. Response not accepted. Developing a rating curve for an open channel using only Manning's equation and no direct measurements is not a standard practice. If a direct discharge measurement is not occasionally taken, the accuracy of the modelled rating curve will never be known. Please commit to periodically taking a direct measurement to evaluate the rating curves. (MDK)

Appendix D11-AVF

Section D11.1 Introduction

Comment MK 1. Response not accepted. Mine Plan Section MP.6 does not explicitly mention or discuss the Tongue River AVF, or AVFs in general. Please provide a more thorough discussion in MP.6 on the possible effects of mining on the AVFs, particularly the Tongue River AVF with respect to drawdown in the Tongue River alluvium. Please also see the review of the response to Comment MK 21 below. (MDK)

Comment MK 9. Response not accepted. The cross-sections were updated as requested but it is not clear if the materials from the borehole logs truly represent the active stream channel, as many of the borehole logs are shown to be tens to hundreds of feet away from the active channel. Please provide a description of the materials in the active channel bottom of both Hidden Water Creek and Slater Creek. (MDK)

Section D11.4.5 Agricultural Practices

Comment MK 12. Response not accepted. Please also add to the text any history available on the Early Creek Ditch No. 1 water right and the irrigation associated with the water right. I looked at several years of aerial imagery and it does not appear that any areas have been irrigated under this water right in recent times. I am able to view what appears to be the headgate and two ditches. It is possible that irrigation was abandoned long ago, which would support the contention that there is not sufficient water supply for consistent agricultural practices. Nonetheless, the water right remains fully adjudicated according to the SEO water rights database, so more discussion of this area is warranted in the text. (MDK)

Section D11.6 Extent of Alluvial Valley Floor

Comment MK 17. Response not accepted. Additional discussion was added for East Fork Earley Creek, but not Earley Creek. However, it is unclear from Comment BJ 26 if the LQD intends to make an AVF determination for Earley Creek. Additional response to this comment

may be needed after checking with other LQD staff on whether or not a determination will be made for Earley Creek. (MDK)

Section D11.7 Mining of Alluvial Valley Floor
Comment MK 21. Response not accepted. Please see the review of the response to Comment MK 1. Please provide a more specific reference to the section of the Mine Plan (MP.6) that discusses the probable hydrologic impacts to the Tongue River and Goose Creek AVFs. Please also prove a more specific reference to the appropriate portion of the Mine Plan or Reclamation Plan that provides further details on the AVF monitoring plan. (MDK)

Comment MK 22. Response not accepted. The essential hydrologic functions of the Goose Creek AVF are listed, but the text does not explicitly address a monitoring system for the Goose Creek AVF, only the Tongue River AVF. Please commit to a similar monitoring system for the Goose Creek AVF to demonstrate that the essential hydrologic functions will be maintained. The text should also reference the appropriate portion of the Mine Plan or Reclamation Plan that provides further details on the AVF monitoring plan. (MDK)

Mine Plan

Section MP.5.2 Sedimentation and Wastewater Impoundments
Comment MK 49. Response accepted. The text states that there are no currently planned sedimentation impoundments planned at the Brook Mine. Please see new Mine Plan and Reclamation Plan comments below that request this clarification elsewhere in the permit. (MDK)

Comment MK 57. Response not accepted. Exhibit MP.1-1 does show trenches in the east portion of the mine, but not the western portion. For example, in the first full paragraph on Page MP-42, it discusses trenches being constructed perpendicular to the flow path of the minor Tongue River drainages. On Page MP-43, several trenches are discussed: one trench constructed parallel to Slater Creek's flow in Section 18, a trench in associated with the surface mine to the west of Slater Creek, and a trench parallel to Slater Creek in Sections 11, 12, and 13. On Page MP-43, a trench is discussed along the "TRD5" channel. Please add all of these trench locations to Exhibit MP.1-1. Also, please use a different color other than grey for the trenches, as this color tends to blend with the topographic line color. (MDK)

Comment MK 61. Response not accepted. The text clarified that the only direct disturbance to the Slater Creek channel is where the channel will be redirected through a culvert under a proposed haul road. However, the sentence: "The surface disturbance activities will have temporary impacts on Slater Creek geomorphology including ground cover and soil erodibility" is still unclear. This statement implies that the channel stability of Slater Creek will be affected, and that bed and banks could experience excessive erosion. Please provide more discussion on what is meant by impacts to Slater Creek channel geomorphology. (MDK)

Comment MK 63. Response not accepted. The text speaks to impacts to existing reservoirs/water rights on the permit boundary but does not provide a statement as to possible

impacts to water rights off or downstream of the permit boundary. Please provide this discussion in the text. (MDK)

Section MP.7.1 Surface Water Monitoring
Comment MK 66. Response not accepted. Any reservoir potentially disturbed by mining activities should have a baseline water quality sampled collected with the information presented in Appendix D6. Section MP.6.1 states that Big Horn No. 2 Reservoir, Big Horn No. 14 Reservoir, Permanent Impoundment #1 Reservoir, and Legerski #1 Reservoir will be impacted by mining activities and will be reclaimed. At a minimum, the baseline water quality should be provided for these reservoirs in Appendix D6. RAMACO may also wish to expand the list of reservoirs sampled for baseline water quality to match those listed in Table RP.8-9. (MDK)

Also, there is now a statement on Page MP-49: *All existing reservoirs, stockponds, and proposed reservoirs that will be disturbed by surface mining activities as discussed in Section MP.6.1 will be monitored for relevant discharge through grab samples to ensure that any water released from these reservoirs meets the WDEQ/LQD guidelines discussed above.* It is unclear which WDEQ/LQD guidelines are being referred to. Also, if these reservoirs are going to be discharging, a WYPDES permit would likely be required. Please clarify these items in the text (MDK).

Comment MK 68. Response not accepted. The coordinates were not added to the Table. Please see response to Comment MK 35. Please add the northing/easting State Plane coordinates for the surface water monitoring stations to Table MP.7.1. (MDK)

Comment MK 71. Response not accepted. The response states that the text was revised but the same statement remains without any additional explanation. If surface and groundwater interactions are expected to exist then these should have already been discussed in the baseline characterization of the hydrologic system. It does not appear that the permit application discusses surface/groundwater interactions. Please provide more explanation on this in the text. (MDK)

Reclamation Plan

Section RP.10 Reestablishment of Essential Hydrologic Functions and Agricultural Utility on Alluvial Valley Floors
Comment MK 24. Response not accepted. Please provide a more thorough discussion for each identified essential hydrologic function to demonstrate that the functions will be maintained throughout the mining operation. In particular, since mining is predicted to cause some amount drawdown in the Tongue River alluvium (Mine Plan Addendum MP-3), this needs specific discussion to demonstrate that the essential hydrologic functions will be maintained and/or reestablished.

Please also provide more detail on the plan and frequency of analyzing the aerial imagery. In addition, please note that given that Mine Plan Addendum MP-3 predicts some amount of drawdown in the alluvium of the Tongue River, installation of alluvial monitoring wells would be required to monitor the AVF. Otherwise there will be no way to assess the validity of the

predicted drawdowns. Please provide a more detailed plan for installing the alluvial monitoring well(s). (MDK)

Comment MK 25. Response not accepted. Please revise the discussion on the Goose Creek AVF monitoring system as per the response to Comment MK 24. (MDK)

Reclamation Plan

Comment MK 92. Response not accepted. The response referenced Comment DS 28, which did not mention consulting with the SEO about the Yellowstone Compact. As indicated in the response to Comment MK 73, RAMACO is aware of the Yellowstone Compact and will act in accordance with the guidelines outlined. Please add a similar statement to Section RP.8.2. (MDK)

Section RP.14 Bond Release

Comment MK 103. Response accepted. However please note that RAMACO may wish to also cite LQD Guidelines No. 20, 21, 22, 23, and 25, as these are key documents for assisting operators with bond release procedures. (MDK)

Other Comments

Items Requested in Electronic Format for Preparation of CHIA

Comment MK 27. Response to the comment is pending. Review of the response to this comment will be completed when the information is received. (MDK)

Comment MK 28. Response to the comment is pending. Review of the response to this comment will be completed when the information is received. (MDK)

NEW COMMENTS

Appendix D-11

1. The permit application suggests that the Tongue River and Goose Creek contain AVFs. Appendix D-11 must therefore also include a discussion of the importance of these AVFs to farming, as discussed in LQD Guideline No. 9 (see Part IV, Section C). (MDK)

2. Appendix D-11 (or perhaps Mine Plan MP.6) should also include a discussion of whether the proposed operation would interrupt, discontinue, or preclude agriculture use of the Tongue River and Goose Creek AVFs. This discussion should evaluate if the predicted drawdown in the Tongue River alluvium (Mine Plan Addendum MP-3) would result in any loss of agricultural use of the AVF. (MDK)

Mine Plan

1. In Section MP.2.1.2 Change House and Equipment Service Shop, on Page MP-8, it states that wash down water will be routed to wastewater impoundment. As stated on Page MP-26, wastewater reservoirs are not currently planned as part of the mining operation.

The text in this section should also clarify that wastewater reservoirs are not planned. (MDK)

2. In Section MP.5.2.1 General Design Criteria, there is a sentence: *A discussion regarding the USLE method is provided in Section MP.6.1.1*. As per to the response to Comment MK 65, Section MP.6.1.1 has been removed. Please remove the sentence that references Section MP.6.1.1. (MDK)

3. In Section MP.6.1 Surface Water, there is a sentence on Page MP-42: *Any surface runoff to come in contact with mining disturbance will be treated in the pits or retained in sedimentation control structures in the vicinity of Hidden Water Creek to meet water quality standards before being discharged from the Permit Area*. As noted in the response to Comment MK 49, sedimentation impoundments are not currently planned as part of the mining operation. The text in this section should also clarify that sedimentation impoundments are not planned. (MDK)

4. In Section MP.6.1 Surface Water, there is a sentence on Page MP-42: *As previously discussed, any runoff coming into contact with mining activities will be captured in a sedimentation impoundment or ASCM to meet water quality standards prior to discharge from the Permit Area*. As noted in the response to Comment MK 49, sedimentation impoundments are not currently planned as part of the mining operation. The text in this section should also clarify that sedimentation impoundments are not planned. (MDK)

5. In Section MP.6.1 Surface Water, there is a sentence on Page MP-43: *Sedimentation impoundments will capture runoff that has come in contact with mining activities, and will treat the water to meet water quality standards before discharge*. As noted in the response to Comment MK 49, sedimentation impoundments are not currently planned as part of the mining operation. The text in this section should also clarify that sedimentation impoundments are not planned. (MDK)

6. In Section MP.6.1 Surface Water, there is a sentence on Page MP-44: *Any runoff that does enter disturbed areas will be captured in a sedimentation pond or treated in the trenches to meet water quality requirements before being discharged from the Permit Area.* As noted in the response to Comment MK 49, sedimentation impoundments are not currently planned as part of the mining operation. The text in this section should also clarify that sedimentation impoundments are not planned. (MDK)

7. In Section MP.12.5 Mine Facilities, the first bullet is for a Sedimentation Pond. As noted in the response to Comment MK 49, sedimentation impoundments are not currently planned as part of the mining operation. The text in this section should also clarify that sedimentation impoundments are not planned. (MDK)

8. In Section MP.12.5 Mine Facilities, the second bullet is for a Wastewater Reservoir. As stated on Page MP-26, wastewater reservoirs are not currently planned as part of the mining operation. The text in this section should also clarify that wastewater reservoirs are not planned. (MDK)

9. In Section MP.12.5 Mine Facilities, the third bullet is for a Flood Control Reservoir. As stated on Page MP-29, flood control reservoirs are not currently planned as part of the mining operation. The text in this section should also clarify that flood control reservoirs are not planned. (MDK)

10. Mine Plan Addendum MP-1 commits to getting LQD approval and doing further sediment yield analysis for ASCMs that drain larger than 30 acres, as per LQD Guideline No. 15. It isn't clear from the Hydrologic Control Plan in Exhibit MP 5-1 if any of the currently proposed ASCMs drain more than 30 acres. Please indicate if any of the ASCMs shown in Exhibit MP 5-1 drain more than 30 acres. (MDK)

11. LQD Guideline No. 15 states that ASCMs should not be used for disturbed or reclaimed areas that are within one-half mile (channel distance) of Class 1 or Class 2 streams. Since the Tongue River and Goose Creek are Class 2 streams, please provide an analysis of the distance of the currently proposed ASCMs on Exhibit MP 5-1 to the Tongue River and Goose Creek. In accordance with LQD Guideline No. 15, more traditional sediment control methods (i.e., sedimentation impoundments) may be needed for disturbed areas that are close to the Tongue River and Goose Creek. (MDK)

12. LQD Guideline No. 15 provides monitoring guidance for ASCMs based on the drainage area upstream of the ASCM. For large receiving streams (drainage area greater than 1.0 square mile), monitoring should include repeated surveys of channel cross-sections and/or upstream and downstream sediment yield stations. Please provide a commitment to conduct this monitoring to evaluate the performance of the proposed ASCMs that drain to large receiving streams. (MDK)

Reclamation Plan

1. In Section RP.3.4 Erosion and Sedimentation Control Practices, the first sentence on Page RP-4 references sedimentation impoundments. As noted in the response to Comment MK 49, sedimentation impoundments are not currently planned as part of the mining operation. The text in this section should also clarify that sedimentation impoundments are not planned. (MDK)

2. In Section RP.8.5.2 Surface Water, the third sentence of the last paragraph on Page RP-46 references sedimentation reservoirs. As noted in the response to Comment MK 49, sedimentation reservoirs are not currently planned as part of the mining operation. The text in this section should also clarify that sedimentation reservoirs are not planned. (MDK)

MEMORANDUM

TO: Bjarne Kristiansen, LQD District III

CC: TFN 6 2/025

FROM: Muthu Kuchanur, LQD Division Services

DATE: August 4, 2015

SUBJECT: Second Round Comments on Brook Mine New Permit Application (TFN 6 2/025)

As requested by your July 15, 2015 memorandum, I have performed a review of the responses to my first round comments.

Appendix D5

Section D5.3.3.2 Overburden and Interburden

1. Response not accepted. In addition to the reference to Addendum D5-3 cross section figures, please provide a textual interpretation on the overburden thickness. Please refer to D53.3.2 interburden thickness description as an example for the requested description. (MK)

Section D5.3.3.3 Coal

2. Response not accepted. In addition to the reference to Addendum D5-3 cross section figures, please provide a textual description/interpretation on the depth from land surface to the different coal seams targeted by the mine plan. (MK)

Section D5.3.3.3 Coal

3. Response not accepted. It is acknowledged and accepted that Table 5.3-2 is updated with coal quality characteristics of Monarch coal seam. In addition to the reference to Addendum D5-3 cross section figures, provide a textual interpretation of thickness and depth from land surface for the Monarch coal seam. (MK)

Section D5.3 Geology of Mine Area

4. Response not accepted. Please expand the discussion in the newly added Section D5.3.3.4 to include a textual interpretation of the underburden thickness. (MK)

Addendum D5-3 Geologic Cross Sections

5. Response not accepted. In addition to the reference to cross section figures, please provide a textual description on the variability, interpreted thicknesses of these stringers. (MK)

Addendum D5-4 Isopachs

6. Response not accepted. It is acknowledged and accepted that the labels for all the control point names were included. However, thickness (or elevation, as appropriate) labels are

not included as requested. Is it relatively easy for the software that was used for isopach elevation contours to label the thickness (or elevation)? The intent of this comment is to increase the robustness of the review of the interpreted contours by having appropriate point control data plotted in the same map. This comment is applicable to Addendum D5-4, Exhibits 1 through 8. (MK)

Appendix D6

Section D6.2.1 Regional Hydrogeology

7. Response not accepted. In addition to a reference to Addendum D5-2, please provide a description/interpretation on the aerial and vertical extent of dry zones. (MK)

Section D6.2.2.2 Aquifer Tests

8. Response not accepted. The updated text just notes that there were three alluvial wells completed in Slater Creek. The original comment remains to be addressed. (MK)

9. Response conditionally accepted. Please incorporate the response into the permit application. (MK)

10. Response conditionally accepted. Please incorporate the response into the permit application. (MK)

11. Response conditionally accepted. Please incorporate the response into the permit application. (MK)

12. Response conditionally accepted. Please incorporate the response into the permit application. (MK)

Section D6.2.2.4 Premining Potentiometric Surface

13. Response not accepted. The revised text states, "Groundwater gradients are low ranging from approximately 2 – 4 ft/year in the Masters Coal and 1 to 2.5 ft/year in the Carney Coal." Please correct the sentence to reflect velocities. (MK)

Section D6.2.2.5 Recharge and Discharge Areas

14. Response conditionally accepted. Please incorporate the response into the permit application to document the justification for not including additional analysis on infiltration. (MK)

Section D6.2.4 Groundwater Rights

15. Response not accepted. The response indicates Appendix B and the updated text indicated Appendix B2. Please clarify if that is Appendix B or Appendix B2. (MK)

16. Response not accepted. It is acknowledged and noted that water rights vary with time. The intent of this comment is to request a summary of the raw data on the water rights

presented in Appendix B, which is a snapshot in time before the approval of the proposed operations. It will enable the reviewers to get a clear understanding of the existing groundwater water uses and if there is a significant dependence on the affected aquifers. In addition, it is very useful information for the CHIA to provide a summary on the groundwater hydrologic concerns within the impact area. Please summarize (i) total number of water rights, (ii) number of wells (iii) wells grouped by aquifer and (iv) permitted water use. Example: Sum the total number of wells, provide a description on the percent of different types of uses. (MK)

17. Response not accepted. In addition to the reference to Appendix B, please include a textual description and summary of the premine groundwater use within the permit boundary and adjacent areas. (MK)

Mine Plan

18. Response conditionally accepted. Because of a version compatibility issue between the software used by the LQD and the mine, the LQD was not able to review the model files. The LQD has contacted Office of Surface Mining (OSM) to explore the options (if any) to update the Groundwater Vistas software to the latest version. OSM is looking into this issue and has not responded during the completion of the review. The LQD would also welcome any suggestions from the mine to resolve this issue. (MK)

MP.5.8 Mine Pit Dewatering Plan

19. Response not accepted. Please provide a range of estimates of the expected groundwater inflows to the pit. The intent of this comment is to understand the volume/rate of water that will be dewatered to facilitate mine operations. In addition, please clarify if the groundwater model provides an estimate of this inflow to the pit. (MK)

20. Response not accepted. It is acknowledged that the water will be collected in a sump. The intent of the comment is to get an understanding on the effects of faults on the inflows to the pit. For example, are the pit inflow rates sensitive to the location and permeability of the faults within the permit boundary? If yes, please provide a range of estimates to account for this sensitivity. (MK)

MP.5.9 Dewatering Wells

21. Response not accepted. In addition to the reference to Appendix D6, please provide a description of any expected variability or trends in water quality of the groundwater removed as different coal seams are mined. Are there any expected groundwater constituents of concern based on Appendix D6? (MK)

MP.6.2.Groundwater

22. Response not accepted. Not able to locate the revision made. Typically, the revisions from other operators are highlighted with bolded text or a different color to enable the reviewer to efficiently review the changes made. Without that tracking mechanism, it is difficult to review the exact revisions. Please consider using a distinct tracking mechanism in the future submittals. (MK)

MP.7.2 Groundwater Monitoring

23. Response not accepted. Please provide a more detailed plan for installing the proposed alluvial monitoring well(s). (MK)

MP.8 Water use

24. Response not accepted. Please provide additional description on the source aquifer for the proposed industrial supply wells. (MK)

25. Response not accepted. The SEO requires a submittal of the water use by the other mines. In addition, the coal review reports by the BLM also provide a summary of water use. Example: AECOM, Inc., 2014, Update of the Task 1B Report for the Powder River Basin Coal Review – Current Water Resources Conditions, prepared for Bureau of Land Management High Plans District Office and Wyoming State Office, http://www.blm.gov/pgdata/etc/medialib/blm/wy/programs/energy/coal/prb/coalreview/phase2/Task1B.Par.91805.File.dat/Task1B.pdf.

26. Response not accepted. The information will be reviewed as soon as it is made available to the LQD. (MK)

27. Response not accepted. The text indicates that the total water use will be approximately 400 million gallons per year. Please provide at least a range of expected variability in this projected annual water use. (MK)

Addendum MP-3 Groundwater Model

28. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

29. Response not accepted. It is appreciated and acknowledged the note of lithologic logs. In addition, please clarify or substantiate if there is any hydrologic evidence to support the interpretation that the faults are no flow boundaries (Example: water levels, water quality or other hydrologic evidence). This will increase the validity of the no-flow assumption. (MK)

30. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

31. Response conditionally accepted. Please include the discussion on CIR into the permit application (MK)

32. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

33. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

34. Response not accepted. It is acknowledged that Section 4.2.1 provides the thickness of the model layers. *Also, the response states, "Addendum MP-3 Section 2.5 describes the thickness of the various coal seams."* Addendum MP-3, Section 2.5 does not describe the thickness but it is a section on hydraulic properties. Please clarify. (MK)

35. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

36. Response not accepted. It is acknowledged and noted that GW Vistas handles it in an automated mode. Please provide a description on if there were any additional checks conducted on the results from the groundwater model to verify if the aquifer type used by GW Vistas is consistent with the conceptual model and field data. Example discussion: Are the deeper layers confined for the entire simulation or do they change from confined to unconfined due to mine operations? (MK)

37. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

38. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

39. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

40. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

41. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

42. Response conditionally accepted. Please incorporate the tables into the permit application. (MK)

43. Response conditionally accepted. Please incorporate the context of the response into the permit application. In addition, clarify the reason for increased recharge from the steady state to transient models (5,138 vs 5,434 cu.ft/day).

44. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

45. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

46. Response not accepted. Appendix A is missing with the electronic files provided to the Cheyenne Office. The hydrographs will be reviewed after the receipt of this Appendix A. (MK)

47. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

48. Response conditionally accepted. Please incorporate the context of the response into the permit application. (MK)

49. Response conditionally accepted. Please incorporate the context of the response into the permit application. The comment will be reviewed after the receipt of Appendix A. (MK)

50. Response conditionally accepted. Please incorporate the context of the response into the permit application. The comment will be reviewed after the receipt of Appendix A. (MK)

51. Response conditionally accepted. Please incorporate the context of the response into the permit application. The comment will be reviewed after the receipt of Appendix A. (MK)
52. Response accepted. (MK)

53. Response not accepted. Appendix A is missing with the electronic files provided to the Cheyenne Office. The hydrographs will be reviewed after the receipt of this Appendix A. (MK)

54. Response conditionally accepted. Please incorporate the context of the response into the permit application

New Comment

55. In the next submittal, please consider providing a text tracking mechanism that will highlight the changes that are made in response to the comments. Typically, it can be a **bolded font** for all the text that is revised. This will help the reviewer to review the appropriate revised text. Without this bold font or some distinct highlight for the revised text, the reviewer has to compare against the initial submittal to get a handle on the changes that were made in response to the LQD comments.