



WESTERN ENERGY COMPANY - Rosebud Mine
A Subsidiary of WESTMORELAND COAL COMPANY

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December 6, 2017

Sent via ePermit system

Department of Environmental Quality
Coal and Opencut Mining Bureau
1218 E 6th Ave
PO Box 200901
Helena, MT 59620

Permit ID: C1984003B
Revision Type: Permit
Permitting Action: Deficiency Response
Subject: C1984003B; Round 1 Acceptability Deficiency Response

Dear Chris:

The purpose of this letter is to respond and address the deficiency comments on C1984003B:

ARM 17.24.302(1): The rule citation on the top of certain pages does not match the rule in which the narrative on that page is trying to address; for example, 17.24.304 is cited on top of the page addressing ARM 17.24.313(1)(b). As just "1(b)" is listed as the subcategory, it appears as though ARM 17.24.304(1)(b) is being addressed instead of 313. As the permit must be "presented clearly and concisely", the rule citation headings throughout the permit must be changed to match the rule being addressed on that page.

Cross-references to other sections of the permit do not provide sufficient information to locate the referenced section efficiently in the e-Permit system.

For example under "Operations" the "Diversions" page, "17-24-317 Diversions.pdf" states "stream channel diversions are discussed in Appendix J," however, no information is given on where in the ePermit system Appendix J is located. To locate Appendix J, a manual search through all of the ePermit's pages is necessary. A better cross-reference would state: "stream channel diversions are discussed in 'Appendix J - Protection of the Hydrologic Balance.pdf,' attached under Reclamation -> Plan for the Protection of the Hydrologic Balance."

Please revise all cross-references in the permit to guide the reader to the appropriate location in the e-Permit system.

Permit layers are not tagged in most maps. Many required permit layers are not tagged in any map (example, mineral ownership). This renders the function in the e-permit to search by map layers useless. Please tag all relevant layers in all map which contain them.

Response: The citation in 17.24.304(1)(b) has been corrected. Many references have been added to the narrative and reports that were not labeled with the correct Appendix are now

renamed and referenced to the appropriate locations.

ARM 17.24.303(1)(o): The application references Appendix A in this section, but it does not appear to be attached. Please identify where Appendix A is located.

Response: Please see ARM 17.24.303(1)(o) Legal Right to Enter. The reference from Appendix H was changed to “presented under the Admin tab, in the Status of Private Mineral/Surface Estate section”.

ARM 17.24.303(1)(s): The currently approved acres in Table 303-1 does not match what DEQ has in the database for Rosebud Mine Area B. DEQ has a total of 6,045 for the current acreage. Please provide an explanation for the 193-acre discrepancy.

Response: Please see ARM 17.24.303(1)(s). The permit acres’ table has been updated. The acres have been reduced by 186.0 acres approved in SL15 Final Bond Release as of December 2016. WECO is confident in the numbers included in (1)(s).

ARM 17.24.303(1)(t): Please provide the updated certificate of liability for Rosebud Mine Area B.

Response: Please see 17.24.303(1)(t). The current liability insurance (StateofMontana_W2872377 – Area B.pdf) has been update and expires 7/1/2018.

ARM 17.24.303(1)(x): Please update with the current Affidavit of Publication for Western Energy's Notice of Completeness Determination.

Response: Please see 17.24.303(1)(x) Newspaper Notification Attachments – Affidavit of Publication. The affidavit of publication has been updated with the completeness determination for AM5.

ARM 17.24.303(1)(y)(all rules associated) and (z): No map could be located containing this information.

Response: Please see the Annual Mining Report for SMP C1984003B. A map of the mine plan area showing the areas upon which strip and underground mining occurred is currently reported annually and has been since required. Providing an additional map that will be out-of-date upon submittal is unnecessary.

ARM 17.24.304(1)(b): Overall, an excellent report. Given the number of sites recorded, DEQ has a few comments and/or issues that need to be resolved prior to submitting the Class III survey to SHPO.

For future reference, DEQ policy will be that all site testing for evaluation of NRHP will be completed after the Class III report is reviewed and approved by DEQ and SHPO, and after a formal testing plan for the project is submitted and approved by DEQ and SHPO.

Any future “new” testing and evaluation to be conducted for this project must be done though the submittal and approval of a formal testing plan. I would have liked to see more systematic probing at some of the larger “not eligible” sites, while being enhanced by magnetic survey.

For future reference, shovel testing, or soil probe is required for evaluating soil deposition at potentially eligible sites. "pin flag" probing is not an acceptable method of soil evaluation across a site.

Site photos, in the form of Google Earth satellite imagery are not acceptable replacements for on the ground images.

Page 6-1

"Site and Isolate Find Definitions" – This language should reflect SHPO's current policies. Please see SHPO's Bulletin #3 updated 2015 for current definitions.

Response: Chapter 6 narrative was revised with reference to the updated 2015 SHPO bulletin. Please note, the site definitions themselves are essentially unchanged in the updated guidelines.

Page 6-2

RE: magnetometer use. I am greatly inclined to accept the methodology for this area, but the heavy reliance on putting probes in "mostly" where anomalies show seems to totally ignore all other potential non-hearth related activity areas across a site. Can you discuss in your methodology why this isn't an issue, or how it is dealt with? Also, would you mind sending me PDF's of the Munson (2007) and Meyer (2007) reports you referenced, if you have them available in PDF?

Response: Revised Chapter 6, to include additional narrative in response to this comment. Additional references were provided to better support the methodology. Also, the reference reports (and other supporting reports) are included on a disk for the reviewer as requested.

Page 8-67

Site header/identifier missing.

Response: The header was not missing but rather a section of narrative is repeated from the previous page. The narrative on pages 8-67 and 8-68 was edited.

Pages 8-70 – 8-71

There may have been some mixing of this description with another site? The paragraph prior to the NRHP recommendation contradicts the description as well as the recommendation. Also, amending the previous site description confuses the eligibility issue around what is still there vs what was present before. Based on just the photograph (with the road cut), it appears there is a high potential for additional buried materials here and should be eligible based on the presence of a hearth. I cannot agree with the current recommendation.

Response: The site was revisited and additional testing conducted in October 2017. The site narrative was revised and new testing results were incorporated. The site is still recommended as

not eligible under any criteria.

Page 8-78

Given the combination of site areas, the size of the revised area, and the presence of tools, a single shovel test is insufficient to warrant a designation of not eligible. Additional testing is needed.

Response: The site was revisited and additional testing conducted in October 2017. The site narrative was revised and new testing results were incorporated. The site is still recommended as not eligible under any criteria.

Pages 8-95 - 8-98

Given the combination of site areas, the size of the revised area, and the presence of tools, a single shovel test is insufficient to warrant a designation of not eligible. Additional testing is needed. Photos of the fire breaks could have helped provided evidence for lack of soil deposition.

Response: The site was revisited and additional testing conducted in October 2017. The site narrative was revised and new testing results were incorporated. The site is still recommended as not eligible under any criteria.

Pages 8-155 – 8-158

Given the combination of site areas and the presence of tools, additional shovel probe testing is needed to agree to the assessment of not eligible.

Response: The site was revisited and additional testing conducted in October 2017. The site narrative was revised and new testing results were incorporated. The site is still recommended as not eligible under any criteria.

Page 8-159

What is the current physical and political status of the human remains found at 24RB2505?

Response: The site narrative was updated with the following information:

This site, located on private land, was addressed through the Montana Burial Board. With approval from the board, the human remains were removed using archaeological methods with the assistance of the Northern Cheyenne elders and tribal archaeologists. The remains were reinterred in a private land location approved by all parties. The location is confidential. The record of the exhumation work is contained within the revised site form for 25RB2505, held in the State Historic Preservation Office's restricted files.

Pages 8-167 – 8-171

Additional shovel tests across a greater area are needed, especially around the potential hearth area. I have concern regarding the bone eroding from the stream bank. Why were these not

evaluated further? The tests (10-11) place there are on the depositional side of the stream, not the side the bone is eroding from? Additional effort is required for this site.

Response: The site was revisited and additional testing conducted in October 2017. The site narrative was revised and new testing results were incorporated. The site is now recommended as eligible under Criterion D based upon testing results (discovery of an apparent buried thermal feature in an area not previous covered by magnetic survey or shovel testing). Site has also been revised to "eligible" on Exhibit F.

Pages 8-205 – 8-207

Site is indicated as not eligible in the header, but eligible under D in the NRHP recommendation. Please insure it is consistent throughout the document.

Response: Edited header to "eligible"

Page 8-225

Mico flakes were observed in ant hills, yet no test units placed near them? Were any of the probes screened through 1/8 mesh because of this observation? Additionally, the obsidian presents a connection to temporal association and sourcing. Your argument that it is eroded and deflated contradicts some of your probe depths. I would argue this site is either eligible, or needs additional work.

Response: The site was revisited and additional testing was conducted in October 2017. The site narrative was revised and new testing results were incorporated. The site is still recommended as not eligible under any criteria.

Errata

In the course of revisiting this report as well as revisiting the resources in the field in October 2017, some other issues were identified and resolved in this revised report.

Response: Site 24RB2732 had been recommended in the draft report as NRHP eligible under Criterion D based upon an apparent subsurface hearth feature found in 2014. The site narrative was found not to include the results of additional testing information collected at the site in 2015. This additional testing demonstrated that the putative hearth was actually a root ball that had burned in a 2012 wildfire. The site was revisited in October 2017 and the spurious feature was inspected again by David Ferguson and Gene Munson. The site form and site narrative were changed and site 24RB2732 is now recommended as not eligible under any criteria.

Site 24RB2409 had been recommended in the draft report as unevaluated for the NRHP. The site narrative was found not to include the results of additional site description from a 2015 site visit. This additional information explained that the terrace portion of the site was subject to severe slope erosion and was not suitable for preservation of an intact subsurface deposit. The site area was revisited in October 2017 by David Ferguson and Gene Munson. The site form and site narrative were changed and site 24RB2409 is now recommended as not eligible under any criteria.

A second site narrative was found to contain a satellite image in place of a site overview photograph. Site photographs were on file and found in the Montana Cultural Records Inventory System (site) Form. A site photograph was inserted in the Chapter 8 narrative section.

A review of the site summary table (Table 7-1) revealed minor errors in the site count summary. These were corrected in the table and in the report.

An updated mine plan map provided by Western Energy Company was used to update the summary (Chapter 9) and Table 9-1 in regard to proposed effects to NRHP eligible sites and unevaluated sites. This information is included in the revised report.

ARM 17.24.304(1)(c): The application provides no explanation or evidence for the assertion that no unique scenic or geologic formations or sites are present in Area B, or that no special, exceptional, critical or unique characteristics are present in the permit area or surrounding area. Please include a narrative describing why the area does not contain these features or characteristics.

Response: Text has been added to the narrative in ARM 17.24.304(1)(c) which refers the reader to find culturally significant sites.

ARM 17.24.304(1)(d): The description of geology and landforms provided does not appear to include the AM5 area, as Lee and Richard Coulees are not mentioned. Please include the AM5 area in this description.

This description also does not describe why these landforms are not unique. Please include a discussion of the extent of similar geology and landforms in the region.

Response: The narrative was expanded to more thoroughly address the requirements of the rule.

ARM 17.24.304(1)(e) and (f): DEQ spot checked several baseline field observations in the data tables versus the corresponding field data sheets and inconsistencies were noted. For example:

SW-302 on 7/22/14: SC reported in data tables is 2620 uS/cm (04 Appendix B - Baseline Hydrology Data - Attachment C.pdf, Attachment C-1 page 9 of 12), field sheet reads 5.62 mS (03a Appendix B - Baseline Hydrology Data - Attachment B.pdf, page 109).

SP-301 on 5/22/14: Lab data exists for this date (07 Appendix B - Baseline Hydrology Data - Attachment F.pdf, page 57, and 06 Appendix B - Baseline Hydrology Data - Attachment E.pdf, page 347 and 348), however the field data table and field sheet state no sample was taken (04 Appendix B - Baseline Hydrology Data - Attachment C.pdf, Attachment C-2, page 4 of 12, and 03a Appendix B - Baseline Hydrology Data - Attachment B.pdf, page 87).

DEQ did not check all baseline field data, and it is likely other inconsistencies exist. Please review all baseline field data and ensure it is accurate and consistent.

Response: All baseline field data were reviewed and data entry errors were corrected as needed. In addition, a QA/QC review of WECO field data sheets was conducted and notes were added to the field data sheets to show corrected field data if needed.

ARM 17.24.304(1)(f)(ii)(B)(I): Instrumentation and equipment issues at SW-301 have resulted in poor data quality at this site. Poor data quality at SW-301 precludes description of the "minimum, maximum, and average discharge conditions...." Baseline data should continue to be collected until a sufficient and reliable record of data exists to meet the requirements of this rule.

Response: As additional data from SW-301 are now available, there is a sufficient data set to compile the statistics per the rule. The text and figures in the PHC were revised accordingly. The same statistics were also developed for SW-302. The MQAP has been updated to include a new SOP for surface water site calibrations and frequency of calibrations for surface water sites has been increased.

ARM 17.24.304(1)(f)(iii): "14.24.304(1)(f) Hydrologic Information.pdf" section 304(1)(f)(ii) refers to Appendix J Section 3.3, and Section 3.3 of "Appendix J - Protection of the Hydrologic Balance.pdf" on the Reclamation -> Plan for the Protection of the Hydrologic Balance page refers to Appendix B. "01 Appendix B - Baseline Hydrology Data.pdf" contains no description of alternative water supplies. Please include a description of alternative water supplies to satisfy this rule.

Response: Section 4.3.5 was added to the PHC to address this rule.

ARM 17.24.304(1)(g)(all): 17.24.304(1)(g) Geologic Information.pdf states a geologic inventory is presented in Appendix D, however no Appendix D could be located. Please correct this reference to refer to the appropriate attachment.

Response: The overburden baseline assessment report and the narrative interpretation of Rosebud and McKay Coal Seams report have been renamed and now include appendix D in the titles.

ARM 17.24.304(1)(k)(all): All the pieces of the soil survey need to be attached to this submittal. Currently there is a map that covers the entire Area B permit, and only new survey data covering the proposed amendment acres.

Response: The Soils Resource Volumes I and II have been included into Appendix G. These historical survey data is for the Rosebud Mine, which includes Area B.

ARM 17.24.304(1)(l)(ii)(D): The language associated with this permit material is merely the ARM spelled out. This portion of the permit requires a narrative that addresses which existing land uses are present and those land use classifications under local law, if any. This may be covered in other permit material, but is not referenced for this rule. Please update this permit material to meet the requirements of the ARM's.

Response: Please see ARM 17.24.304(1)(l)(ii)(D). The permit language has been revised.

ARM 17.24.305(1)(a): Exhibit L1 is missing surface ownership information for the following areas within 1/2 mile of the area of land affected:

*SE 1/4, Section 1, T1N R40E
SE 1/4, Section 33, T2N R41E*

S ½, Section 34, T2N R41E

Response: Please see Exhibit L1. The ownership information has been included within the 1/2 mile of the area of land affected.

ARM 17.24.305(1)(c): Please provide a map with the boundaries of land within the proposed permit area upon which the applicant has the legal right to enter and begin mining activities.

Response: Please see Exhibit L1 and L2 for boundaries of the land which WECO has the legal right to enter and begin mining activities.

ARM 17.24.305(1)(e): The names of Hwy 39 and Airport Road are not shown on the maps. There are farm buildings not shown on maps in the NE ¼, Section 14, T1N R40E and airport buildings not shown in Section 12, T1N R40E. If mobile homes are buildings, there are also buildings not shown in the NW ¼, Section 3, T1N R41E.

Response: Please see Exhibit A Approximate Mine Plan, The roads and facilities have been updated.

ARM 17.24.305(1)(u): Not all items shown on maps are depicted in the map legends. Examples are buildings on Exhibit A and elevation contours on all maps.

Response: Please see Exhibit A Approximate Mine Plan. The legend has been updated.

ARM 17.24.305(1)(z): The location and extent of subsurface water, and the names and locations of surface water bodies, including springs, constructed or natural drains, and irrigation ditches, with the proposed mine plan and adjacent areas are depicted on maps in Appendix O. However, the maps in Appendix O do not contain the required certification per ARM 17.24.305(2)(a) and (b). Please provide the map with the required certification.

Response: Exhibit H, included in the initial application and this response, contains all information required by the rule cited and H is certified per the rule.

ARM 17.24.312(1)(b): The statement associated with 312(1)(b) does not address the ARM's. Please move the paragraphs above that describe wildlife enhancement features to this portion of the permit

Response: Please see ARM 17.24.312(1)(b). The wildlife enhancement feature narrative has been moved to the correct location.

ARM 17.24.313(1)(c): Please provide an updated bond to include the first five year period associated with this revision.

Response: The bond calculation is a large endeavor that requires extensive work with the postmine topography (PMT). Once the PMT is concurred, WECO will submit an updated calculation.

ARM 17.24.313(1)(d)(iv): "Area B AM5 Exhibit B PMT Drainage Basins 2017-01 SP.pdf" on the Map Summary -> Maps page shows an increase in elevation in the area of the scoria pit in

Section 35. Please explain how this is possible if material is being removed from this area.

Additionally, the Disturbance Boundary shown on Exhibit B does not match the disturbance boundary shown on "Area B AM5 Exhibit A Approximate Mine Plan 2017-01 SP.pdf". Please correct this feature.

Response: Please see Exhibit B Approximate Postmine Topography. The PMT has been revised.

ARM 17.24.313(1)(e)(ii)(B): "17.24.313(e)&(f) Drainage Basin Reclamation Plan.pdf" section 17.24.313(1)(e)(ii)(B) states "In areas where the post-mining topography differs from pre-mining requirements..." This does not make sense as there are no "pre-mining requirements". Please change "requirements" to "topography."

Response: Please see ARM 17.24.313(1)(e)(ii)(B). The language has been updated.

ARM 17.24.313(1)(f)(i): The text of "17.24.313(e)&(f) Drainage Basin Reclamation Plan.pdf" section 17.24.313(1)(f)(i) is less stringent than the rule. The rule requires USGS named drainages have detailed designs, but these are not included the permit section text. Please change the text to match the requirements of this rule.

As required by ARM 17.24.313(1)(f)(i), detailed drainage designs must be submitted for Lee Coulee and Richard Coulee.

Response: Please see ARM 17.24.313(1)(f)(i). The narrative now updated. Also detailed drainage designs are provided as Exhibit V.

ARM 17.24.313(1)(f)(ii): The drainage channels shown on "Area B AM5 Exhibit B PMT Drainage Basins 2017-01 SP.pdf" lack diversity. The drainage pattern somewhat ladder-like in many locations, with evenly spaced side tributaries approximately perpendicular to main channels. Main channels and tributaries are more straight on the PMT than in premine. Please revise the PMT drainages to provide more diversity.

Additionally, please provide the CAD files for Appendix J, Exhibit J-1, Sheet 4-7.

Response: The drainage channels have been updated giving the PMT the diversity required per this deficiency. CAD files for this deficiency are included with this response.

ARM 17.24.313(1)(g)(i), (ii), (iii): These sections refer to Appendix G and Exhibit P for details on soil salvage and handling. These two documents are not available under these names in the submitted materials. Some of the information in the appendix and exhibit can be found under other headings; however, the information is only partially complete and only adds the data for the proposed amendment area.

Please update titles and include all pieces of the soil survey to complete the permit.

The final sentence of paragraph 2, says "in consideration of the history suitable conditions." It appears historic or history of... would make more sense.

Please review the statement and clarify.

In these sections soil redistribution is referenced to 17.24.702(6), which in turn references back to 17.24.313(h)(i). Please reference both in 17.24.313(1)(g)(i) and clarify where the actual target laydown depths are to be found.

Response: The permit text was revised to reference baseline surveys for salvage information. Historical surveys are now included in Appendix G (see response to the deficiency for ARM 17.24.304(1)(k)(all), above). Exhibit P (composite Area B baseline soil map) was included in the original submittal and the soil survey map attending the AM5 (B Extension South) Soil Survey also presents a composite soil survey map.

The text was revised to reference “historically-suitable conditions”.

Target laydown depths are presented in ARM 17.24.313(1)(h) as referenced in the revised text.

ARM 17.24.313(1)(h)(ii): The language associated with this header in the Revegetation Plan does not address the rule. Please update 313(1)(h)(ii) to adequately meet the requirements of the ARM's.

Response: Section 17.24.313(1)(h)(ii) has been revised as requested.

ARM 17.24.313(1)(h)(iv): The narrative for 313(1)(h)(iv) does not meet the definition of the rule. Please include a description of any introduced species intended to be used and justification for including this species for the intended land use.

Response: Section 17.24.313(1)(h)(iv) has been revised to identify introduced species to be used and their desirability.

ARM 17.24.313(1)(h)(viii): The language associated with this rule states that it is addressed in 313(1)(h)(iv). Soil tillage, amendments, and other techniques to assist in vegetation establishment are not presented with a discussion of introduced species. Please update the language to refer to the appropriate permit language.

Response: Section 17.24.313(1)(h)(viii) has been revised to reference the tillage methods described in Section 17.24.313(1)(h)(v).

ARM 17.24.313(1)(h)(x): Western Energy proposes to sample two of the last four years prior to bond release. This meets the previous version of the ARM 17.24.726 rules. Please update the ARM 17.24.313(1)(h)(x) language to say that Western Energy will sample in accordance with ARM 17.24.726. This will allow only having to change 726 information if there are future rule changes.

Response: Please see ARM 17.24.313(1)(h)(x). The permit language has been revised.

ARM 17.24.314(1): Highwall reduction in Richard Coulee in Section 29, T1N R40E disturbs wetland G500 outside the mine footprint area. Please evaluate if changes to the PMT could minimize the disturbance to this wetlands area.

Response: Highwall reduction in this area has been revised to be as minimal as possible, thus limiting disturbance to wetland G500. Please see Exhibits A, B, and U.

ARM 17.24.314(1)(c): "17.24.314 Hydrologic Balance.pdf" does not address all portions of this rule. Please include a statement that alternative sources of water will be provided if protection of quantity cannot be ensured.

Response: Please see ARM 17.24.314(1)(a-c). The permit language as been updated. Additional narrative was added to Section 3.3 of the Appendix J (PHB) to address this comment.

ARM 17.24.314(2)(b): In "Appendix J - Protection of the Hydrologic Balance.pdf" the second to last paragraph on page 6 states "Design details for sedimentation ponds and traps are presented in Appendix J." Please clarify this reference.

Response: Please see ARM 17.24.314(2)(b). The text has been updated to reference correct sections.

ARM 17.24.314(2)(d): The following deficiencies were identified in "Appendix P - Rosebud MQAP.pdf":

In the first line of Section 1.0 "Industrial and Energy Minerals Bureau" should be "Coal and Opencut Mining Bureau."

All references to "DEQ Coal Program" should be changed to "DEQ Coal Section."

Appendix P-2, Section 3.2.1, page 2, states AM5 disturbance only in Lee and Richard Coulee, there is also disturbance in EFAC drainage associated with the haul road.

Because SW-301 is intermittently influenced by groundwater, a crest gauge should be installed on Richard Coulee near the downstream permit boundary to measure purely ephemeral flows.

Monitoring should include quarterly flow and water quality for Rosebud Creek upstream from Richard Coulee and downstream from Lee Coulee.

Appendix P-2, Table 1, note (a) should be changed to match Appendix P-1, Table 1, note (a).

Springs which support stream reaches containing aquatic life should also be sampled for total nutrients and total metals for comparison to aquatic life standards.

Response: The narrative has been revised to address this comment.

The September 2016 MQAP was revised per the comment.

The proposed MQAP was revised to include a crest gauge near the permit boundary.

The MQAP was revised to include quarterly monitoring of two surface water monitoring sites on Rosebud Creek. Monitoring of these sites will be implemented in the last quarter of 2017.

Table 1 (Appendix P) was revised.

Based on aquatic life surveys performed by ERM and field data collected by WECO, the following springs were determined to have sufficient flow to support stream reaches containing aquatic life: SP-300, SP-302 and SP-305. Samples from these springs will be analyzed as requested.

ARM 17.24.314(3)(all): Groundwater Models

Because the groundwater models' primary function is to support the PHC, groundwater model attachments should be uploaded on the Reclamation -> Plan for the Protection of the Hydrologic Balance page under "Probable Hydrologic Consequences Attachments."

A complete review of the groundwater models could not be conducted because the MODFLOW files for the following simulations could not be located:

RB-Mine-2016-existing permit 2093.gwv

RB-Mine-2016-existing permit and AM5 2093.gwv

RB-Mine-2016-Steady-State-Final_01-05-2017.gwv

Initial comments based only on review of the model reports are included below.

Appendix I-A - Rosebud Mine Model Report.pdf

The report does not reference Table GM-5. Please reference this table in the appropriate location in the report.

Response: A reference to Table GM-5 was added to the report.

Table GM-8 is referenced in the report before Table GM-7. Please number tables in sequential order in the order the references appear in the text.

Response: The tables were renumbered to address this comment.

Recharge zone K is not labeled in Figure GM-15. Please include a label for the zone.

Response: Figure GM-15 was revised to address this comment.

The timing of mining at the Big Sky Mine included in the transient simulation is not shown in any figure. Please include the timing of mining at the Big Sky Mine on Figure GM-17 or a separate figure.

Response: The timing of mining at Big Sky Mine was added to Figure GM-17.

On Figure GM-18, page 2, the time series graphs for WM-168 and WM-153 are missing leader lines. Please include a leader line connecting these graphs to the appropriate well locations on the map.

Response: The figure was revised as requested

There appears to be a positive skew in the Layer 5 residuals for higher observed values (see

Figure GM-12, page 2). Additionally, positive residuals are clustered in the AM5 area in Layer 1 (see Figure GM-13, page 1). Please evaluate if any reasonable changes can be made to provide a more random distribution of residuals.

Appendix I-B - Area B AM5 Model Report.pdf

In Table IB-2, the “Recharge” line for Layers 4 and 5 refers to interburden. Please correct this to the McKay and sub-McKay as appropriate.

Response: The table was revised as requested.

The following deficiencies were identified in "Appendix O - Probable Hydrologic Consequences.pdf":

East Fork Armells Creek is sometimes listed as the East Fork of Armells Creek. Please be consistent in using the official name. In some cases the acronym, EFAC, is used. If this acronym is to be used, its usage should be consistent and the acronym should be defined in parentheses after the first use of the full name, e.g. East Fork Armells Creek (EFAC).

Response: The PHC was reviewed and revised per this comment.

Section 1.4.1.2, on page 8, states “Resaturation of backfill, primarily by lateral groundwater flow from the undisturbed coal and vertical recharge, can be expected to result in temporary increases in TDS...” Please delete “temporary” from this sentence. Increases in TDS are expected to persist for a significant period of time, such that they are effectively permanent on a timescale relevant to humans.

Response: The text was revised per this comment.

Section 3.2.5.5, on page 68, refers to delineation of extent of fires on Exhibit E, however this information does not appear to be contain in Exhibit E. Please provide a correct reference to the location of the delineation of the extent of the fires.

Response: The fire information has been included on Exhibit E.

Section 3.2.6.1 refers to Table 23A at the bottom of page 69. There is no Table 23A. Please correct this reference.

Response: The text was revised per this comment.

The bullets in Section 3.2.6.1.4, on page 70, refer to Tables 26A, 27B, and 28C. These tables do not have letters in their designations. Please correct these references.

Response: The references to these tables were revised.

Section 3.2.6.2.4 and Table 33 compare pond water quality for dissolved metals to water quality standards. According to DEQ-7, Human Health Standards for surface water, except for aluminum, are applicable to the total fraction. Please only use the total fraction for comparisons to DEQ-7 Human Health Standards for all metals except aluminum.

Response: The table and narrative were updated as requested.

Section 3.2.6.3 should be updated after the Army Corp of Engineers determination of jurisdiction for wetlands is finalized.

Response: Section 3.2.6.3 was updated to reflect the Army Corps determination of jurisdiction dated September 26, 2017.

Section 3.2.9 and Section 3.3.8 should be updated when DEQ finalizes the AVF determination for Richard Coulee.

Response: This comment was noted.

Section 3.3.2.2, on page 83, states: "Following active mining, the channels, including underlying alluvial substrate, will be reestablished in the postmine topography." DEQ cannot locate any provisions in the reclamation plan to segregate and replace the alluvial substrate after mining. Please correct or clarify this statement.

Response: The text had been edited per this comment.

Section 3.3.3.1 does not discuss potential changes to surface water quality in Lee and Richard coulees due to contributions from spoil groundwater. Please include a discussion of the probable impacts of migration of spoil groundwater on surface water resources in these areas.

Response: Additional narrative has been added to this section to address this comment.

Section 3.3.4.2 does not discuss all of the potential impacts of mining on some springs:

SP-307 is located in a highwall reduction area, and SP-306 is located in a boxcut reduction area, thus these springs will be physically disturbed by mining. Spring SP-77 and the seeps in the vicinity may be impacted by the haul road, which is constructed through the area of these springs and seeps Spring WR 42A 108402 is located within the 5-foot drawdown contour predicted by modeling, thus may be impacted by drawdown if it is sourced by the Rosebud Coal or overburden in connection with the Rosebud Coal. Please expand the discussion of probable impacts to springs to be more descriptive and include all probable impacts of mining.

Response: Section 3.3.4.2 was updated to reflect the potential impacts associated with an updated and more detailed mine plan.

Additional evaluations were conducted for the Rape Coulee tributary using exploratory coring data to determine the nature and probable lithology associated with Spring WR 41A 108402 (and another nearby spring, WR 41A 181540 00). Based upon coring log data near these springs it is likely that these springs are sourced by overburden sandstones and associated intervals of mudstones. The wet reach of this tributary exists starting about one-half mile upgradient of the projected Rosebud coal outcrop.

Given the history of limited responses of the overburden groundwater to coal mining, it is deemed unlikely that this wet reach and associated springs will be affected by mining of the Rosebud

coal.

Additional discussion and details are provided in Section 3.3.4.2 of the PHC.

Section 3.3.3.1, on page 86, states “Mitigation plans will be developed and implemented for all springs that are impacted by mining related activities.” DEQ is unaware of any mitigation plans for springs. Please clarify this statement.

Response: This statement is inaccurate and has been removed from the text.

Section 3.3.4.4, on page 86, states “The quantity of water and use of the down-gradient ponds (e.g. WR 42A 181544 00) may be impacted during mining due to reduced water supply resulting from the impoundment of tributary runoff.” Richard Coulee upstream from pond WR 42A 181544 00 will be impounded, not only tributaries. Please revise this section to accurately describe the nature of impacts to downstream ponds.

Response: Additional narrative has been added to this section to address this comment.

Section 3.3.4.5 does not discuss all of the potential impacts of mining on some wetlands: Wetland G44b is within the mine footprint and will be mined out. Most of wetland G500 is within a highwall reduction area and will be physically disturbed. Wetland G300 will be physically disturbed by haulroad construction. Parts of wetland G400 will be physical disturbed by haulroad construction and highwall reduction. Wetlands G013a and G013b are located in a boxcut reduction area and will be physically disturbed. Wetlands G011 and G012 are located in a topsoil storage area and will likely be disturbed. Please expand the discussion of probable impacts to wetlands to be more descriptive and include all probable impacts of mining.

Response: Section 3.3.4.5 was updated and expanded to reflect the potential impacts associated with an updated and more detailed mine plan.

The discussion of potential impacts to the Lee Coulee Reservoir is very brief. Please include an analysis which includes quantitative estimates of the changes in water quantity and quality in this reservoir both during and after mining and reclamation.

Response: Additional discussion was added to Section 3.3.5 of the PHC using the Rosebud Mine Model simulation results to address the potential for water quantity (water level) and quality changes at Lee Coulee Pond.

Section 3.3.6, on page 89, states “...land undisturbed by mining in the Richard Coulee drainage is estimated to supply about 346 acre-feet per year on average compared to the volume of use per the water right of 90 acre-feet per year.” It is unclear if this estimate includes undisturbed lands upstream from mining, which would be impounded, or only undisturbed land downstream from mining, which would not be impounded. Please clarify this statement.

Response: The calculation and text were revised to reflect that the water availability is from is from lands down-gradient from AM5.

Section 3.3.7 refers to an analysis of premine versus postmine runoff in the East Fork Armells Creek drainage, but no analysis of the Lee Coulee and Richard Coulee drainages were included.

Please include an analysis similar to Attachment H for the Lee Coulee and Richard Coulee drainages.

Response: Attachment H has been updated to include Lee Coulee, Fossil Fork, and Richard Coulee.

Section 4.4.3 does not discuss how the location of the drawdown changes as a result of AM5 mining, i.e. how drawdown expands southward. Please include a discussion of this effect.

Response: Additional discussion was added to this section.

Section 4.4.5, on page 132, states “By the time the groundwater reaches the permit boundary, SC values are expected to be within the range of natural variability and statistically indeterminate compared to premine conditions and uses should not be impacted.” While this may likely be the case, please provide additional analysis which demonstrates that this is the probable outcome of the proposed mining in AM5.

Response: The text in Section 4.4.5 has been revised and supplemented to address this comment.

In Table 8, footnote (a) refers to “Livestock standards.” Please avoid using the term “standards” when referring to livestock water quality guidelines. No numeric standards for livestock drinking water exist in Montana.

Response: The PHC has been revised per this comment.

In Table 10, notes use both letters and numbers. Please correct the notes to use only letters to match the references in the table.

Response: The table has been revised per this comment.

In Table 26, page 2 of 2, the end date for SP-310 is surrounded by a gray box. Please clarify the meaning of this box or remove it.

Response: The table has been revised per this comment.

DEQ will evaluate the conclusions of Anticipated Impact and Rationale columns in Table 36 and Table 51, and Comments and Potentially Impacted columns in Table 50 when all other deficiencies which may affect these conclusions are resolved.

Response: Comment noted.

In Table 51, if the completion unit of a well is unknown please describe all possible impacts including the worst case impact, i.e. if the well was completed in the Rosebud Coal.

Response: Table 51 has been revised to consider the impacts to private wells using the most probable scenario and/or stratum for each well.

Figures 3, 5, 64-66, and 75 do not show the same mineplan features as Exhibit A. These figures should be updated to match the most recent mine plan for AM5.

Response: These figures have been revised to depict the latest mine plan.

The last cut in C-West (CW-33) is not shown in Figure 4. Please include all permitted mine cuts in this figure.

Response: Figure 4 has been revised to include CW-33.

Figure 62 contains references to Figure 65A, B, C, and D for detail maps. These maps are contained in Figures 63A, B, C, and D. Please correct these references.

Response: Figure 62 has been revised per the comment.

ARM 17.24.314(4): See ARM 17.24.314(3).

Response: ARM 17.24.314(3) has been revised. Please review ARM 17.24.314(4)

ARM 17.24.315(1): No general plan was included for pond Lee-1. Please include the design plan for this proposed sedimentation pond.

Response: The design for pond Lee-1 has been included.

ARM 17.24.321(1)(a): No information regarding this rule was provided for the haul road which runs through Section 13, 24, and 25 leading to the mine area in the Fossil Fork tributary of Lee Coulee. Please provide a design for this haul road similar to the haul road leading to the Richard Coulee mine area.

Response: The road running through Sections 13, 24, and 25 leading to the mine area in the Fossil Fork tributary of Lee Coulee is a ramp that will be continuous with the mine passes.

ARM 17.24.325(2)(b)(all), (c)(all), (3)(all): DEQ has not yet made written findings concerning this rule. Further evaluation of the subsequent rules will be completed after DEQ's determination is complete.

Response: Comment noted. The AVF Determination Request for Richard Coulee and Rape Coulee were initially submitted to the Department for review through N2006005 on May 17, 2016.

ARM 17.24.501(3)(b): Please include at the bottom of 501 (3) (b); The method and design specifications for placing and compacting such materials must be approved by DEQ.

Response: Please see ARM 17.24.501(3)(b). The permit language has been revised.

ARM 17.24.501(4)(c): There is a lack of complexity in the slopes shown in "Area B AM5 Exhibit B PMT Drainage Basins 2017-01 SP.pdf" compared to the premine topography shown in "Area B AM5 EXHIBIT U Premine Topo with Drainage Basins 2017-01 SP.pdf". The PMT contains many long and wide even slopes. Try to include more concave slope profiles similar to the premine

slopes. More minor ridges/swales should also be added to reduce the wide even sloped hillsides.

Response: Please see Exhibit B Approximate Postmine Topography. The PMT has been revised.

ARM 17.24.634(1)(all), (2): Deficiencies in drainage basin reclamation have been identified in 17.24.313(e)&(f), 17.24.314(1)&(3), and 17.24.501(4).

Response: Please see the responses for ARM 17.24.313(e)&(f), 17.24.314(1)&(3), and 17.24.501(4).

ARM 17.24.703(1), (1)(a), (1)(b), and (2): These sections describe testing for a soil substitution site. Please remove the extra field testing, and reference the spoil sampling protocol, since soil substitution sites are spoil. Hand testing for coarse soil materials can still be utilized for specific planting sites; however, the planting surface will be tested and the texture is part of the lab result.

Response: Please see ARM 17.703. The permit language has been revised.

ARM 17.24.711(1): The MCA Rule no longer applies. It has been removed from the MCA. Please correct permit language.

Response: Please see ARM 17.24.711(1). The permit language has been revised.

ARM 17.24.723(1), (2), (3), and (4): Bottom ash use was approved for Area A and Area D through minor revision. The use of bottom ash has proven to be very minimal. Consider removing this language and not using the material to reduce the need for monitoring and tracking of the material.

Response: Please see ARM 17.24.723. The Monitoring Plan for Boron in Bottom Ash on Roads has been revised with the minewide minor revision number MR 98-03-03. This minor revision was approved for use of bottom ash for the Rosebud Mine. For the necessity of consistency, the monitoring plan will remain unchanged.

ARM 17.24.724(3): This aspect of 724 has not been included. The subsequent portions of this permit material do not make sense without this line included. Please include 724(3) to read "Technical standards may be derived from:".

Response: Please see ARM 17.24.724(3). The permit language has been revised.

ARM 17.24.725(1) and (2): These sections do no include language referencing MCA 82-4-235(3). Please update this language so areas that meet these exemptions may be applied for phase III bond release prior to the completion of the standard responsibility period.

Response: Please see ARM 17.24.725. The permit language has been revised with the appropriate references.

ARM 17.24.764(1)(all) and (2)(all): Please address this rule with the following: All areas within currently approved for cropland reclamation within the Area B permit area were approved prior to 2004, when this rule was initiated. There are no proposed cropland areas proposed within

AM5.

Response: Please see ARM 17.24.764. The permit language has been revised to address approved cropland initiated prior to 2004 rule making.

ARM 17.24.801(1), (2), and (3): The permit language associated with this rule indicates that Appendix Q has the appropriate material to meet the ARM's. This appendix has not been included as part of the application. Please submit Appendix Q with the Alluvial Valley Floor portions of the permit so it can be reviewed.

Response: Please see ARM 17.24.801 through 17.24.806. The AVF determination is now labeled "03 Appendix Q Complete AVF Baseline Richard and Rape Coulees Final 05-09-15.pdf" as opposed to the "03 Complete AVF Baseline Richard and Rape Coulees Final 05-09-15".

ARM 17.24.802(1)(all), (2), and (3): The permit language associated with this rule indicates that Appendix Q has the appropriate material to meet the ARM's. This appendix has not been included as part of the application. Please submit Appendix Q with the Alluvial Valley Floor portions of the permit so it can be reviewed.

Response: Please refer to ARM 17.24.801(1) response.

ARM 17.24.804(1)(all), (2), (3), and (4): The permit language associated with this rule indicates that Appendix Q has the appropriate material to meet the ARM's. This appendix has not been included as part of the application. Please submit Appendix Q with the Alluvial Valley Floor portions of the permit so it can be reviewed.

Response: Please refer to ARM 17.24.801(1) response

ARM 17.24.805(1): The permit language associated with this rule indicates that Appendix Q has the appropriate material to meet the ARM's. This appendix has not been included as part of the application. Please submit Appendix Q with the Alluvial Valley Floor portions of the permit so it can be reviewed.

Response: Please refer to ARM 17.24.801(1) response

ARM 17.24.806(1), (2), (3), (4), and (5): The permit language associated with this rule indicates that Appendix Q has the appropriate material to meet the ARM's. This appendix has not been included as part of the application. Please submit Appendix Q with the Alluvial Valley Floor portions of the permit so it can be reviewed.

Response: Please refer to ARM 17.24.801(1) response

ARM 17.24.1002(3): MCA 82-4-226(7) used in this sentence is incorrect. The correct MCA is 82-4-226(6). Please correct.

Response: Please see ARM 17.24.1002(3). The permit language has been revised.

ARM 17.24.1005(1)(b): The permit language does not match the language stated in ARM 17.24.1005 (1)(b). Please update permit language.

Response: Please see ARM 17.4.1005(1)(b). The permit language has been revised.

ARM 17.24.1005(3): The permit language is slightly confusing. Please insert (3) after Arm 17.24.1005.

Response: Please see ARM 17.24.1005(3). The permit language has been revised.

ARM 17.24.1011(1): Several ARM's are not included in the permit that are included in this rule. Please include ARM's that were excluded.

Response: Please see ARM 17.24.1011. The permit language has been revised.

ARM 17.24.1012(1): Please include the following sentence in permit language, "Additional measures may be specified by DEQ."

Response: Please see ARM 17.24.1012(1). The permit language has been revised.

Please note – as noted in an above response, WEC Co has reduced the permit acres by approximately 186.0 acres. These acres were approved through final bond released in December 2016 through bond release application SL 15.

If you have any questions, please contact me at (406) 748-5124.

Sincerely,



Dicki Peterson
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Rosebud Mine – Area B
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Enclosures: ePermitting Portal – Rosebud Mine – C1984003B

cc: Rusty Batie