



Montana Department of
ENVIRONMENTAL QUALITY

"Healthy environment, healthy people"

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June 9, 2014

Dicki Peterson
Western Energy Company
Rosebud Coal Mine Area F
P.O. Box 99
138 Rosebud Lane
Colstrip, MT 59323

Permit ID: C2011003F
Revision Type: N/A
Permitting Action: Deficiency
Subject: Second Round Acceptability Deficiency

Dear Dicki:

The Department of Environmental Quality (DEQ) has completed its acceptability review regarding Western Energy Company's (Western) application for SMP C2011003F. The following deficiencies must be adequately addressed before DEQ can determine the application acceptable:

82-4-222(1), MCA: The applicant added adequate labeling on ramps, stockpiles, roads, and mine passes and met the intent of DEQ's deficiency. In order to adequately review the post-mine topography, Western must now add polygons, depicting the extent of the proposed mine areas (individual mine passes are not needed), to the post- and premine topography maps. In addition, the haul road and ramp locations could be added to the post-mine map. A fine line type should be used.

ARM 17.24.303(1)(a) and (w): Since the last review of this permit application, Jesse Noel is no longer working for Western Energy, please update the resident agent (17.24.303(1)(w)) information as well as where the inquiries should be addressed (17.24.303(1)(a)).

ARM 17.24.303(1)(g): Western has made changes to their ownership and control. It has been updated in the AVS database. Please provide the current revised tables to update the permit.

ARM 17.24.303(1)(r) and 304: The disturbed acres noted on Table 303-1, page 303-17 do not add up. Table 303-1 must be corrected.

ARM 17.24.304(1)(e): DEQ awaits the aquifer test data from Area F wells that Western committed to collecting.

Appendix B:

p. 6: "...USGS gauging stations near Colstrip having similar drainage basin characteristics". List the stations used and compare the basin characteristics.

p.7: Groundwater Recharge: This section is somewhat repeated in Section 5.2.5. Please identify (including a map) specific areas in and around Area F that have a high potential to be contributing to enhanced recharge of the aquifer. Refer to the Groundwater Model (Appendix I) so that the assumptions used in the groundwater model agree with baseline hydrology descriptions.

p.9: Section 3.1: The second paragraph under this section is repeated from a previous section on page 3. Please remove redundant information and statements.

p.11: Section 4.0: Local surface water hydrology is not discussed in sufficient detail. The following baseline surface water questions need to be addressed:

- The baseline contribution of tributaries that will be blocked with sediment ponds and mined through needs to be quantified. This should be done for all major drainage basins whose main channels will not be disturbed by mining.
- Aquatic and vegetative assemblages in the spring-fed wetlands must be cataloged so that potential impacts to wildlife uses can be tracked with changes in postmine water quantity and quality. Appendix F notes that no aquatic species surveys were conducted, but the presence or absence of aquatic communities needs to be established. Please refer to DEQ's Water Quality Protection Bureau SOP WQPBWQM-009 (<http://www.deq.mt.gov/wqinfo/qaprogram/sops.mcp>) for acceptable procedures for conducting an aquatic life survey.
- In the last round of deficiencies, there were multiple deficiency comments for Western to address regarding how baseflow and wetlands affect vegetative and aquatic communities. DEQ comments in the round 1 deficiency stated that "more elaboration is needed as to the length of base flow in streams, which drainages these reaches are in, and how these reaches affect vegetative communities and aquatic life." In another comment, DEQ asked for Western to "explain how much water [the ponds] typically hold, how long they stay full, if they contribute to wildlife habitat, if they peak or provide prolonged base flow downstream, and quality". These were not addressed sufficiently in the deficiency response and must be reconsidered and adequately addressed.

Section 4.0: Please list surface water (stream) users per ARM 17.24.304(1)(f)(ii)(A). DEQ identified numerous owners with surface water rights for livestock to use water downstream of Area F.

p. 17: "in many cases baseline averages are lower". It is unclear which stream this statement refers to; is it EFAC or a stream in Area F?

p. 17: "major ion concentrations... are higher in Area F samples compared to other drainages". Reference the data used to make this conclusion.

p. 17: "...discharges meet the standards set forth in the MPDES permit". Discuss how these discharges compare with the range of 'natural' water quality. Most discharges are pit water which has different variability in water quality compared to the natural range of water quality that can be found in the creek water.

p.21: In Section 5.2.3.1, it is stated that "major changes in groundwater storage in the alluvial aquifers are not anticipated". Water level measurements and water quality samples from alluvium in East Fork Armells Creek seem to indicate that sediment ponds can have a large impact on the quantity and quality of water in the alluvium, and leakage from sediment ponds can increase saturation in alluvium. This statement should be reassessed or clarified based on the experiences from other parts of the mine and on the Area F mine plan.

p. 33: The text states: "Review of the data shows that the groundwater quality varies significantly depending on geologic stratum". Based on the tables and discussion in the section on water quality, it would be more accurate to state that water quality varies in the geologic stratum "depending on" permit area or location, since water quality in different geologic stratum shows considerable overlap rather than distinction.

Table B-8, Table B-10A, Table B-28: Flow is listed at some sites (e.g. CG-100 and many of the spring sites) as greater than 1 gpm. This is not a sufficient description of flow and requires further qualification or quantification. Flows greater than 1 gpm must be quantitatively measured unless circumstances (such as flow over a flume) prevent a measurement. Please provide quantitative data for all sites that have a flow greater than 1 gpm to meet the requirements of quantifying baseline flow.

Due to problems with the sediment sample bottles collecting rain water as well as flows, all data collected with the bottles while the lids had open holes (i.e. in the condition sold) must be rejected by DEQ and cannot be included in the baseline data.

Table B-20A, Baseline Groundwater Statistics - Major Parameters, Area F and Area 49: Two reported values need to be verified. The maximum Rosebud coal TDS is 106,000 mg/L. Conductivity, generally linearly correlated to TDS, of the Rosebud coal does not reflect the same extreme value for water quality. The extremely high TDS for the Rosebud coal is likely an error. The unusually high sulfate concentration of 14,890 mg/L is reported as a maximum concentration for the sub-McKay is also questionable in its accuracy. These extremely high concentrations are most likely reporting errors made by the lab. Please check the lab sheets to confirm the reported concentration. If the lab reported these concentrations, please check with the lab and get a confirmation from the lab of their accuracy. If either or both are in error, please consider flagging them as an error with confirmation from the lab; if possible correct the database and please eliminate these erroneous concentrations from the statistics in Table B-20A. It is misleading to report these concentrations as representative of baseline if they are not accurate. Depending on the outcome of this investigation, please make appropriate changes to the discussion on pages 31 and 33 regarding Area F groundwater quality and comparison with areas A, B, and C.

Table B-10B: This table lists a maximum fluoride concentration of less than 20 mg/L. This is a typo. Please correct.

Table B-20A, Table B-20B, Table B-29A, Table B-29B: Although water level statistics are a way of summarizing data and are useful for a general comparison between units, all original water level, flow, and quality data from Area F must be included with the application. Tables of water levels and flows based on field records are acceptable. Please include the lab sheets for all water quality baseline data.

Table B-25: Please project the aquifer of completion where depth and/or other data are sufficient to do so. Also, the text should discuss which aquifers the majority of the private wells are completed in.

Also in Table B-25, please change "Source Name" to "Owner". If the owner is unknown, please indicate "unknown" rather than "groundwater".

Appendix C:

Tables C-2 and C-4: These tables should be updated so that the Colstrip, MT station has a record of data inclusive of the same time frame as the Rosebud mine rain gauges.

Appendix E:

p. 6: Site assessment forms and pictures for all of the sites visited should be included for baseline documentation. Currently only sites deemed to be a wetland by the consultant are included.

ARM 17.24.304(1)(e) and ARM 17.24.305(2)(c): - Exhibit H, Surface and Groundwater Monitoring sites - The site locations and identification numbers are frequently obscured and difficult to identify due to the dark color and thickness of the topographic lines. Please change the font color of the monitoring sites or lighten the topographic lines to make the sites more visible.

ARM 17.24.304(1)(f)(ii)(A) and (B): The application states: "A narrative and graphic account of surface water hydrology within the mine plan area and adjacent areas including is presented in Appendix B and premining drainages are shown in Exhibit U." Please alter the sentence to include additional text or remove the word "including".

ARM17.24.304(1)(i): Table 16 of Appendix B of the Baseline Vegetation Survey has a Total per Acre value listed as "#####." This value is not clear; please amend this table to provide clarity.

Table 24 of Appendix B of the Baseline Vegetation Survey has a Variance value listed as "#####" and an Annual Grasses value listed as "####." These values are not clear; please amend this table to provide clarity.

There are now two wetland delineation reports included in Appendix E, one from 2009 and one from 2013. These have differing conclusions as to the potential jurisdictional nature of some of the wetland features and varied data presented; please clarify the differences.

ARM17.24.304(1)(i)(i): Map 1 is said to include a reference area for the Woody Draw community types according to the results section of the Baseline Vegetation Survey. This reference area is not included on the map. Please update Map 1 to include this reference area if it has been established as stated.

ARM 17.24.305(1)(h) Maps: Please provide one map, separate from the attached reports, including associated CAD data. The map must include the boundaries of any public parks and locations of any cultural or historical resources listed or eligible for listing in the national register of historic places and known archeological sites within the mine plan or adjacent areas. The map must be certified as required in ARM 17.24.305 (2)(a). This map must be submitted as confidential.

ARM 17.24.305(1)(w): Exhibits B & B1: RCT-4 no longer has drainage lines on the postmine map. Exhibits U & U1: DCT-5 no longer have drainage lines on the premine map. Please include the drainage lines in the noted exhibits.

ARM 17.24.305(2)(c): Exhibit A is not legible: different shading must be applied. In addition, the contour elevation annotation on the first round of pre-mine maps (Exhibit U and U1) was more legible than Western's February 2014 deficiency response.

ARM 17.24.305(2)(c) Exhibit N: The general slope percentages have been removed from these exhibits. Please add these back onto the exhibit. Also, labels for the dams, as requested, were not included. The new disturbance boundary and permit boundary labels are very difficult to see.

ARM 17.24.306: The legend / tables attached in the Prime Farmland Determination are still illegible and cannot be matched to the supplied legend.

ARM 17.24.308(1)(a) and 313(1)(d)(i) and 313(1)(d)(v): It appears as though two individual mine areas will be opened in the first five years of mining. A mining method must be committed to through completion of mining these two areas. Range diagrams, through completion of mining in both areas, must be submitted. The range diagrams must identify the placement of spoil in each area where mine passes are extending so the placement of box cut material can be determined. If truck/shovel is anticipated, the volume of associated overburden must be calculated and the "final location" of truck/shovel spoil identified. If temporary stockpiles are used, the amount of spoil going to each pile must be specified. The proceeding information is necessary for determination of compliance with performance standards in the placement of stockpiles, PMT plans, disturbance area, drainage control, reclamation sequence, and other matters where permit commitments are required.

ARM 17.24.308(1)(b)(v) and 609(2): Operations affect numerous power lines. DEQ and owners of these facilities must approve destruction or disruption of services. Western reported its' effort to obtain proper documentation. Please provide this documentation.

ARM 17.24.312(1)(d): DEQ must have more specific commitments for reclamation of wetlands that may be directly or indirectly adversely affected by mining.

ARM 17.24.313(1)(b): Narrative was added referring to different sections in the permit for detailed reclamation timetables. The sections referred to in the permit application do not appear to contain any detailed time commitments. This rule has not been addressed. Furthermore, it appears that the “Approximate Reclamation Map”, Exhibit J, is being removed from the application. In the absence of Exhibit J, the cross sections in Exhibit I and II depict a scenario where very little reclamation can be completed until the coal in the final pass of each mining block is removed. This is a divergence from ARM 17.24.501(6): see new comment below.

ARM 17.24.313(1)(c): As proposed, please submit the bond calculation after the PMT is acceptable.

ARM 17.24.313(1)(d)(iv): Exhibit J: An updated Exhibit J, Reclamation Plan, was not provided.

The response states that aerial surveys were used, but there is no mention of aerial surveys in Appendix J. The permit application should include an explanation as to how the premine and postmine channels were determined / drawn to allow for them to be compared.

ARM 17.24.313(1)(d)(v): Western’s response to information in support of a spoil balance was not adequate. The cross sections on Exhibit II depict a deficiency of fill for backfilling the final mine passes: some cross sections depict a gross deficiency of fill. Thus, it appears that the PMT cannot be achieved. A new PMT plan must be submitted or justification for the proposed PMT in the form of electronic data files for the following three surfaces: premine, postmine, and the mine void surrounded by the premine surface.

ARM 17.24.313(1)(e): The drainage areas represented in Tables J-2 through J-6 must be depicted on Exhibit B1 or some explanation must be added to the permit. An example of discrepancies is Blank Hank drainage: Tables have information for sub-drainage BHCT 1 through 9 where Exhibit B1 depicts only sub-drainages 5 through 9.

ARM 17.24.313(1)(e-f)(i-ii): Exhibit V: The deficiency response stated that this exhibit was revised, but an updated exhibit was not included with the submission. Please include the updated material for review.

ARM 17.24.313(1)(e)(i): Western incorrectly states the premine and postmine hydrology and geomorphology comparisons are in Appendix B. The data now appears to be in Appendix J.

ARM 17.24.313(1)(e)(ii)(A): A more detailed plan for drainage reclamation must be provided. The permit states that “the postmine drainage basin plan will be based on premine drainage characteristics...”, but there is no detail on which characteristics will be used and how they will be used. Also see the comment for 17.24.313(1)(f).

ARM 17.24.313: (1)(f): This section incorrectly refers to Appendix B. The modeled surface water flows are in Appendix J.

DEQ must see that the permit incorporates a plan for reclaiming the minor tributaries following the DEQ channel reclamation guidelines or other similarly appropriate method. For instance the plan must outline how drainage bottoms will be created (e.g. will only the floodplain, the

channel, or both be created and how will the appropriate dimensions be calculated). Examples of approved plans from other mines can be provided by DEQ upon request.

ARM 17.24.313(1)(f)(i): This section incorrectly refers to Appendix B. The geomorphic characteristics are in Appendix J.

ARM 17.24.313 1 (g)(ii): Using the soil survey information (see ARM 17.24.304 (1)(k)), the applicant shall propose estimated salvage depths for each lift of each soil component (series or phase) of each soil mapping unit.

The permit application language states:

“(1)(g)(ii) Soil materials will be salvaged with mobile equipment in advance of overburden blasting and pit excavation. The extent and depth of salvaged soils will be based on the premine soil surveys (*appendix G*) and the past intensive Western pre-salvage soil-sampling program. Soil materials will be salvaged in the disturbance areas as specified in 17.24.701(2). To the maximum extent possible salvaged soil materials will be immediately redistributed. Soil redistribution will be on the contour except as noted in 17.24.702(6). Salvaged soil materials will be stockpiled in segregated storage areas. All stockpiles will be seeded with either the pasture mix (Table 313-5A) or other surplus reclamation seed mix(es) during the first appropriate period favorable for planting to minimize erosion losses. Appropriate soil identification signs will be placed at all stockpiles.”

Soil is replaced on disturbed ground as presented in permit 17.24.702 (6). Except as noted in 17.24.313(5h)(ai), no special handling of overburden is anticipated to achieve reclamation goals due to favorable quality of overburden. Any areas of suspect overburden or coal evident at the surface of 17.24.313 (C2011003F 313 – 9 12/2013) regraded spoils will be sampled as per 17.24.723. No other characteristics of coal are utilized in developing reclamation plans.

Please add the bold and italicized text. Additionally, the underlined text is out of place for this rule. Evaluate the necessity of the soil laydown language for this rule.

ARM 17.24.313 1 (g)(iii)(A&B):

The permit application language of ARM 17.24.313 1 (g)(iii) states:

(1) (g) (iii) (A) total acreages and volumes of salvageable soil of each lift from each soil component of each soil mapping unit are outlined in Appendix G, Section 3.0, 3.6 Soil Suitability Evaluation and Recommended Salvage Depths; and

(1) (g) (iii) (B) the anticipated thickness(es) of soil redistribution for each lift, and in total, on the area of land affected after regrading are outlined in Appendix G, Section 3.0, 3.6 Soil Suitability Evaluation and Recommended Salvage Depths, the land affected is presented in Appendix G Table 1 Soils Map Unit Legend, Description & Sample Sites, and Acreage;

This permit section indicates that Appendix G contains all the information required by these rule sections. This is true; however, by using the Appendix G language and depths indicate in 701(2) you are committing to multiple soil lift strategies. This will force you to add the step to soil

salvage of marking polygons for the 12 and 12 inch lift, the 7 and 10 inch lift, as well as the tree soil lifts. This in turn creates a change in laydown depths. The thicknesses targeted in the revegetation plan 17.24.313 1 (h)(i) (postmine Reclamation types) discussion will all need evaluation and adjustment. Additionally, the salvage depths will not fulfill all soil balance requirements.

The soil survey in Appendix G explains the 12 inch lift 1 and 12 inch lift 2 methods and suggests a second method that would improve soil quality by salvaging a 7 inch lift 1 and 10 inch lift 2. This strategy would reduce the amount of CaCO₃ in the subsoil materials for better reclamation subsoil. This is acceptable and a valid point, but the rest of the permit application needs to be adjusted accordingly. This requires the following adjustments throughout the permit:

Soil salvage considerations:

- All salvage depths noted in 17.24.313 (1)(g)(ii) and 701(2) need to have the same salvage strategy. It would be best stated in section 313 only with 701 referenced so that all salvage and redistribution is in the same permit section with the mine reclamation plan.
- Appendix G table PRE-MINE AGREEMENTS, SALVAGE DEPTHS, AND VOLUMES FOR AREA F needs updating to reflect the salvage depth of choice for each soil type.
- The soils map APP G Figure 1 SOILS 20111030.pdf contains soil types that need clarification. Paragraph 3, page 13 starting with "Therefore..." discusses the soil types that would use the alternate salvage depths. Map units 490 and 590 are not represented on any table or map. Were these supposed to be 49D and 59D?
- If you want to use the multiple soil salvage depth strategies you should mark the soil polygons into their respective salvage depths, overlay the mine plan and see how your salvage strategy will work out. One method might be to designate the salvage strategies in blocks based on how the pits impact the soil polygons.
- The salvage depth reference in 313 (1) (h)(i) pg. 313-9 will need updating with any of the above changes.

Soil laydown considerations:

- Soil laydown depths will need reevaluation and adjustment for section 17.24.313 (1)(h)(i) postmining land use types. This must be done to adjust for the difference in soil balance.
- Rule 702 (6) references the Appendix G laydown and will need to reference the laydown depths that will actually be used (i.e. postmine land use types or appendix G)

Appendix G

The Selenium discussion is inadequate. The entire set of sample results for all 32 survey pits at all depths exceeds the Montana standard of .1 ppm.

- Western must demonstrate that the sample results are not the result of a lab error and that there is a general elevated level of Selenium in the Area F permit application

area. Also, that the elevated Selenium level is not affecting the native Flora and Fauna of the area. Thus, the levels of elevated Selenium are acceptable.

- Look into the labs results and determine if the instrumentation was working correctly. The lab results in Appendix G did not include the recovery percentages for the standards sample runs.
- Can you show that other areas of the mine had the same Selenium content?
- DEQ will not accept Wyoming's guidelines standard as the only reason we can accept this level of Selenium.

ARM 17.24.313(1)(h)(i): There are three revegetation types (Lowland Grassland, Lowland Shrub Grassland, and Lowland Shrub Complex) included in this portion which are not included in the reclamation. ARM 17.24.313 (1)(h) requires a narrative for revegetation including the types and acreage for each. Exhibit C (Revegetation Map) has no account of these revegetation types. Table 313-1 (Pre-Mine and Post-Mine Vegetation Type Acres) has no account of these revegetation types.

As these revegetation types are not included in the final revegetation, they can be removed from the application. Since these would need to be approved by DEQ prior to implementation, please remove them until they become part of the reclamation plan. Also, please remove any seed mixes specific to these revegetation types.

ARM 17.24.313(1)(h)(ii): Table 313-1 has more Premine Disturbed Acres listed than there are Premine Permit Acres for the Lowland Deciduous tree/shrub vegetation type. Please check the acreages listed as these values are either inaccurate, or it is unclear how there can be more acres of this vegetation type disturbed than there are acres within the proposed permit area.

In Table 313-1 the values for totals of acreage of Premine Disturbed Acres and Postmine Revegetation Target Acres are not consistent with the sum of the parts those totals are meant to include. It is unclear if there are acreages missing or inaccurately included in the table. These values are also referenced elsewhere in this application; therefore, please ensure all appropriate corrections are made.

Please amend Table 313-1 to include correct values. Please also ensure that where these values are cited elsewhere in the permit that the corrected numbers are used in those locations.

ARM 17.24.314(1): While there is now a section on springs in Appendixes B and O, the analysis is insufficient. Although Springs 3 and 9 will not be mined through, there is a reasonable likelihood that these springs may experience drawdown as their source aquifers are mined through and then diminished water quality as spoils replace the source aquifer. No statements or analysis was done to determine the potential impacts to the springs and the wetlands associated with them. Spring 2 is identified as potentially being impacted, but the type of impact is not stated. Spring 8 may be inferred from the statements in the PHC to be similarly impacted, but no statements are made concerning this spring.

p. 314-12, Permit application language addresses cuts adjacent to alluvium and the potential consequence of reduction to groundwater flow from bedrock units to alluvium. More detail is needed in the discussion of impacts to alluvium.

p. 314-1, The permit application text incorrectly refers to 17.24.304. This should be 17.24.314.

ARM 17.24.314(1): The narrative in the 4th paragraph on page 6 of Appendix J describes traps on each side of ephemeral drainages to “collect runoff from road embankment”. Pursuant to this regulation, the narrative must be “supported by appropriate maps”. Please show all trap locations on the appropriate exhibits.

ARM 17.24.314(2)(b) and (c): The permit application does not adequately commit to the requirement of 17.24.314(2)(b) and (2)(c). Please address these rules in the permit application.

ARM 17.24.314(2)(a) and 639(28)(a): Water entering Pond 9 may be concentrated into a smaller area and at a greater velocity due to culvert HR-5. The application must indicate how the side slope of the pond will be protected against erosion.

ARM 17.24.314(3):

Appendix I-A - Rosebud Mine Model Report

As this is a submittal for the Area F permit application, the proposed Area F permit boundary is an important point of reference. Please include the proposed Area F permit boundary on all Appendix I-A figures.

The locations of drain boundary conditions in the model is not adequately described or illustrated. In Section 2.5 under Boundary Conditions, Appendix I-A refers to a “cross-reference to drain assignments” at the end of Attachment GM-C and each figure in Attachment GM-C showing drain reach sensitivity analyses also refers to a cross-reference at the end of the attachment, but there is no cross-reference included. Additionally, the locations of the drain cells used in the model are not shown on any figure. Please include a figure showing the locations of each drain boundary condition used in the model, or include this information on an existing figure.

Section 3.2: The discussion of model parameter zonation in Section 3.2 of Appendix I-A does not include sufficient detail on the justification for the selected transmissivity and leakance zones. Zones representing alluvium (C, D, F, H, I, N, O, P, and Q), the Lebo Shale (M), thick overburden (B), and reduced McKay transmissivity (K) should be explained. Please provide a discussion of the justification for transmissivity and leakance zonation in Section 3.2 which contains similar detail as the discussion of recharge zonation.

Mine pits at the Rosebud mine are frequently open for longer than the one year period simulated by the model. The hydrologic properties of an open pit containing standing water (100% storage and infinite permeability) are different than the simulated condition of spoil replacement after one year, and mine water management may produce artificially high or low water levels in inactive pits. Please provide additional discussion of the impact of open pits, both active and inactive, in Appendix I-A.

Appendix I-B: Area F Model Report

The information provided in Appendix I-B does not allow DEQ to adequately analyze the modeled changes in drawdown, both spatially and temporally over the life of mine and during the postmining recovery period. The drawdown presented in Figures I-5 and I-6 only represents the maximum drawdown for the final mine cut (labeled 2034 in Figure I-3). The drawdown shown in other areas of Figures I-5 and I-6 represent an intermediate stage of recovery depending on the time since mining of each final pit. For example in the case of the area between Robbie and Donley Creeks, recovery has been occurring for seven years by 2034, which could result in a significantly smaller area and magnitude of drawdown presented in these figures than occurred during the maximum drawdown impacts in this area in 2027. Please provide DEQ the drawdown resulting from the model for each year during the mining phase and every five years during the recovery phase. This information can be provided either as additional figures showing modeled drawdown and/or by submitting digital files for head and drawdown.

Section 2.0 of Appendix I-B does not discuss the impacts of mining on the overall model mass balance or on specific boundary conditions which represent potential receptors of mining related water quantity reductions, such as the drains which represent ephemeral streams. Please include transient model mass balance data and a discussion of the changes in water fluxes to relevant boundary conditions during the transient mining and the postmining simulations.

Appendix J:

p. 1: The first bullet is a repeat of the third bullet.

p. 6: The second sentence refers to the Area F PHC as Appendix J, but the Area F PHC is Appendix O. Please correct this sentence.

p. 8: "... premining channel morphology and gradient will be documented by longitudinal and cross sectional channel profiles in advance of mining". These surveys must be done before the permit is approved and included in the baseline information.

p. 14: The permit application states that "When computing the runoff volume to a sediment pond, the storage volume contained in traps within the same drainage cannot be accounted for in sizing the pond." Looking at the Drainage Control Plan (Exhibit D) and the Pond Designs, it appears that the area drained into traps is not included in the calculations for downstream pond area. Please reconcile this discrepancy.

p. 21: The text states "As discussed in Appendix B, replacement water is available in the coal aquifers." Please include the availability of the sub-McKay aquifer as a "reliable resource", as stated in Appendix B, for replacement water.

No standard trap designs were submitted with the permit. These must be included.

Table J-2: Please include, on a map or in a table, the curve numbers and any other relevant model parameters (e.g. travel time, soil group, etc.) that were used in the calculations of the runoff for each basin.

Table J-7: Please note how the cross-sectional area was obtained (from topo map, surveyed, etc.).

Table J-8: The permit application must contain the baseline survey information. This information is needed for writing the CHIA by DEQ and for evaluation of geomorphic and hydrologic features in the proposed Area F. DEQ will not accept commitments to collect the data at a future date.

Exhibit D:

The small area that drains to Sarpy Creek drainage does not have any sediment control structures. Please include an appropriate structure for this drainage area.

Appendix O:

The PHC is qualitative and general in the discussion of impacts. There is a lack of discussion regarding quantification of the impacts from reduced surface water flows and changes to surface water hydrology from impacts to springs. For instance, spring impacts were identified very briefly. There is no analysis as to how mining will impact them and if these impacts can be mitigated. There is no analysis as to what impacts, if any, the blocking of small ephemeral flows will have on downstream users of the major creeks. There should also be more discussion on the impact to wetlands.

p.13: The text states that “Some stock ponds will be lost due to mining.” A previous section states that no stock ponds are within the Area F mine disturbance boundary. Please correct this statement.

p. 17: The text states that “the impacts of mining may result in the deterioration of groundwater quality at some specific wells...”. Please identify the wells likely to experience this impact.

p. 14: “...spoils probably have a higher vertical percolation rate...” This should be vertical *permeability*, not vertical percolation rate.

p. 16: If bench scale tests have been done to determine overburden quality, the results should be used instead of or in conjunction with the Van Voast study to estimate spoil water quality. Measured spoil water quality from other areas of the mine compared with baseline should be discussed as well as the Van Voast study as a way of estimating postmining spoil water quality.

p. 19: 4.0 Alluvial Valley Floor Probable Hydrologic Consequences: Please review the comment and remove the highlight on the text. Please consider the comments regarding Appendix Q, Alluvial Valley Floors when revising the text.

Appendix P:

Due to the potential impact to some of the springs as identified in the PHC, the springs warrant extra water quantity monitoring when mining commences upgradient of their location. Please work with DEQ to develop a plan for additional monitoring.

A full MQAP is needed for the monitoring plan, including a narrative on sampling methodologies. Please follow DEQ's MQAP guidelines (<http://deq.mt.gov/CoalUranium/guidelines.mcp>). The analytical suite for surface and groundwater does not meet the requirements of analytes listed in the MQAP guidelines.

ARM 17.24.315: Appendix J, page 14 limits the use of traps, for final sediment control, to 10 acres of disturbance. Exhibit D and Table J-10 depict drainage areas greater than 10 acres of disturbance with only traps being used as final sediment control (Traps 4, 5, 12, 15, 18, and 20). One or the other must be changed. It seems this would be a good place to add standardized trap designs to the application which appears to allow up to 40 acres of disturbance. If Western decides to update the application and use a standardize trap design approach, it should also considered changing Pond 7 to a trap.

ARM 17.24.321(1)(a) and 605(2): The hydrologic control plan remains under review until the deficiencies in the spoil balance and PMT plan are resolved.

ARM 17.24.321(1)(c): As depicted on Exhibit O, the placement of culverts F-HR-2, F-HR-4, F-HR-8, and F-HR-14 indicate an alteration or relocation of the natural drainage way is needed. Any alteration or relocation of the natural drainage way must be approved prior to construction through the submittal of detailed plans. Detailed plans must, at a minimum, include a plan view of alterations, cross sections, complete hydraulic calculations for the altered channel, and erosion control if needed.

ARM 17.24.325: Alluvial Valley Floors: The material submitted is not adequate to make an AVF determination. Please refer to and address all parts of 17.24.325.

Appendix Q: One water level from December is not sufficient for an AVF determination. Please include all water levels taken from the alluvial wells.

ARM 17.24.322(2)(b): Western must reference Exhibit M somewhere in the coal conservation plan section of the permit.

ARM 17.24.501(4): Western must provide a steep slope inventory to allow DEQ to evaluate that the approximate original contour is achieved. Please include the steep slope inventory within the baseline studies located in ARM 17.24.304.

ARM 17.24.501(4)(c): This section needs to be revised to commit Western to add more diversity to the postmine topography. This should also be illustrated on the PMT map.

ARM 17.24.501(6): Exhibit I1 depicts a scenario where very little reclamation can be completed until the coal in the final pass of each mining block is removed. This is a divergence

from ARM 17.24.501(6). Adequate written justification and documentation for a divergence from this rule must be submitted to DEQ with a revised Exhibit J.

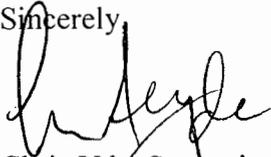
ARM 17.24.633(1) and 82-4-231(1), MCA: Surface drainage “must be treated by BTCA”. In addition, land affected by mining must be reclaimed “As rapidly, completely, and effectively as the most modern technology” allows. DEQ has determined these requirements are best accomplished through the Final Effluent Limitations Guidelines and Standards for the Western Alkaline Coal Mining Subcategory. A description of the transition from ponds and large traps to BTCA must be added to the permit incorporating the Western Alkaline Coal Mining Subcategory from the MPDES permit. Additional narrative should be added to Appendix J.

ARM 17.24.645: Appendix P: Surface Water and Groundwater Monitoring Plan, Table P-4: Well WA-219 does not monitor only alluvium as it is drilled into coal, a likely source of water. Please indicate that this well measures alluvium/coal. Well WA-224 measures water level in the overburden as well as the alluvium. Please indicate this in the table. Please also change the strata designations in Table B-17 for WA-219 and WA-224.

General Comment: Please confirm the accuracy of all entries that have yellow highlighted text and remove the highlights in the final draft of all hydrologic appendices.

Upon receipt of satisfactory responses to these deficiencies, DEQ will determine the application to be acceptable. Please feel free to contact Robert D. Smith at 406-444-7444 with questions regarding this letter.

Sincerely,



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Lauren Mitchell, Office of Surface Mining

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