

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY COAL AND URANIUM PROGRAM CHECKLIST  
DRAFT ENVIRONMENTAL ASSESSMENT  
FOR SURFACE AND UNDERGROUND MINING PERMIT**

**DATE:** November 2, 2015

**SITE:** Rosebud Coal Mine Area B

**PERMITTEE:** Western Energy Company

**CITY/TOWN:** Colstrip

**PERMIT ID:** C1984003B

**COUNTY:** Rosebud

**PROJECT:** 2015 Renewal RN6

**LOCATION:** Area B is located in the following:

T1N, R40E; Sections 8, 9, 11, 12, 13, 14, 15, 16 and 17

T1N, R41E; Sections 2, 3, 4, 5, 7, 8, 9, 10, 11, 17 and 18

**MINERAL PROPERTY OWNERSHIP (Area B):**

Federal  State  Private  County  Tribal

**SURFACE PROPERTY OWNERSHIP (Area B):**

Federal  State  Private  County  Tribal

**BACKGROUND:** Rosebud Mine Area B was originally permitted on January 18, 1978. Several amendments to the original permit area have been previously approved. Additionally, the permit area has been adjusted with a couple of incidental boundary changes (surface disturbance only – no additional mining).

**TYPE AND PURPOSE OF ACTION:** On April 8, 2015, Western Energy Company submitted an application for renewal for Area B Permit. No additional mining, disturbance, or change to mining and reclamation plans are proposed; therefore, environmental impacts would remain constant and are summarized below.

Several EIS's and EA's have been completed in the past for Area B that form the basis for this EA. They include the following:

- Proposed Expansion of Western Energy Company's Rosebud Mine Into Area B, Montana Department of State Lands, Helena, Montana, April 9, 1976
- Technical Examination and Environmental Assessment, Final Western Energy Areas B & E Coal Lease Application, Colstrip, Montana Miles City District Office, January 4, 1978
- Technical Analysis and Environmental Assessment, Proposed Permit Amendment Western Energy Co. Area B, Rosebud County, Montana, 1980
- Final Environmental Impact Statement, Western Energy Company's Rosebud Mine Area B Extension, November 18, 1980
- Final Environmental Impact Statement, Western Energy Company's Rosebud Mine, Area B, Second Extension, August 2, 1983

- Preliminary Environmental Review/Environmental Assessment, Western Energy Company's Rosebud Mine, Area B 1986 Amendment, Rosebud County, December 1986
- Montana Department of Environmental Quality Coal and Uranium Program Checklist Environmental Assessment for Surface and Underground Mining Permit, August 24, 2015

N= No Present or No Impact will occur.

Y= Impacts may occur (explain under Potential Impacts).

<b>IMPACTS ON THE PHYSICAL ENVIRONMENT</b>	
<b>RESOURCE</b>	<b>POTENTIAL IMPACTS AND MITIGATION MEASURES</b>
<p><b>1. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:</b> Are soils present which are fragile, erosive, susceptible to compaction, or unstable? Are there unusual or unstable geologic features? Are there special reclamation considerations?</p>	<p>[N] There are no soils identified as fragile, erosive, susceptible to compaction, or unsuitable in the premine soil survey. The area was previously disturbed through agricultural practices, and the remaining areas are contiguous gently sloping rangeland. No special features or reclamation considerations are present.</p> <p>Soils for reclamation will be handled following currently established practices as designated in permit C1984003B. Two 12 inch soil lifts will be salvaged and used directly on reclamation or stockpiled separately for later use when there are no areas ready for resoiling.</p> <p>Stockpiled soils will be protected from degradation and loss with standard best management practices and seeding with non-noxious species. Prior to redistribution the spoil surface is evaluated for suitability per the DEQ soil and spoil quality guideline. This process aims to ensure there is an adequate rooting zone for targeted species, and aims to leave a useful topography with substrates for establishing diverse and effective vegetation.</p>
<p><b>2. WATER QUALITY, QUANTITY AND DISTRIBUTION:</b> Are important surface or groundwater resources present? Is there potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality?</p>	<p>[Y] <u>Groundwater Hydrology</u></p> <p>Mining has caused and will continue to cause changes to both the quantity and the quality of the groundwater in the mine area. Recharge to bedrock units and spoil in the east end of Area B appears to be facilitated by the hydrologic connection between Rosebud coal and East Fork Armells Creek alluvium. The cuts in sections 9 and 10 (T1N, R41E) will create spoil that also will likely receive some recharge from the alluvium via the existing spoil (north of the proposed cuts). Existing cuts and spoil to the southwest (sections 7 and 8, T1N, R41E) are largely dry, thus the proposed mining in sections 17 and 18 (T1N, R41E) are not expected to receive recharge from the alluvium. Flow in the intermittent reach of East Fork Armells Creek between Area B and Area A is not expected to be significantly affected, but baseflow to the stream may be</p>

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temporarily diminished.

Head decline in the Rosebud coal aquifer, the aquifer removed by mining, would increase in depth and extent with mining. Modeled head decline in the east pits of Area B at the end mining (2026) is predicted to be 110 feet. The steepest decline in head takes places within the permit boundary, with head decline dropping to 5 feet approximately two miles south of the permit boundary.

During mining, overburden from each successive pass is cast into the previous pass and then slowly saturates, mainly from lateral Rosebud coal groundwater moving into the groundwater depression created by the mining, although surface water may also contribute locally. Total dissolved solids (TDS) concentrations in backfill (spoil) aquifers are, on average, greater than that of the Rosebud coal aquifers they replace. The increase is driven by increases in sulfate, calcium, and magnesium dissolved from overburden minerals. Comparisons among the latest samples (2012-2014, one sample from each currently monitored well) show spoil TDS concentrations ranging from 1,830 mg/L to 7,690 mg/L (median = 3,690 mg/L; average = 3,963 mg/L). Current Rosebud coal TDS concentrations range from 594 mg/L to 6,460 mg/L (median = 2,620 mg/L; average = 2,674 mg/L); overburden ranges from 359 mg/L to 7,720 mg/L (median = 3,610 mg/L; average = 3,799 mg/L). Currently, spoil TDS concentration represents an increase of 2% of the median and 4% of the average TDS concentration in overburden water, and an increase of 41% of the median and 48% of the average TDS concentration in the Rosebud coal aquifer at the Rosebud Mine. Given the fact that overburden composes the spoil, spoil water quality most closely resembles that of overburden.

The average TDS concentration of the wells in spoil with current water quality analyses is 3,686 mg/L, with the average TDS of individual wells ranging from 1,827 mg/L to 7,332 mg/L. TDS concentrations of the most recent samples range from 2,350 mg/L to 8,030 mg/L. Based on bench tests and paste extract modeling, spoil water quality is expected to improve as upgradient water moves through the spoil and returns to concentrations closer to those of the Rosebud coal, although the time required depends upon the local hydrology. At a minimum saturation of spoil in most permit areas is expected to take decades.

Based on the flow direction of groundwater, spoil water in the east part of Area B is expected to move east and southeast toward the Rosebud

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coal crop in Rosebud Mine Area E and unmined Rosebud coal between Area B and Big Sky Mine Area A. Saturated thickness of the Rosebud coal seam typically thins toward and becomes dry at the coal crop, lessening the lateral extent and area of impact of poor quality spoil water. Deeper units are protected from vertical leakage by mudstones and silty sandstones with low conductivity.

Although it could take considerable time, the premine groundwater flow gradient is expected to recover because recharge and discharge areas for the Rosebud coal aquifer will not be affected by mining. The hydraulic characteristics of the spoils are similar to that of the Rosebud coal and will facilitate storage and transmission of groundwater between the undisturbed up-gradient and down-gradient coal aquifers.

Present and anticipated groundwater uses outside the permit area include wildlife and livestock drinking water and domestic supply; these uses are expected to be preserved during and after mining. Domestic supply is almost uniformly from deeper, underburden aquifers which have a more reliable supply and due to their depth are generally protected from mining impacts. Shallow wells, often completed in alluvium, serve the use of livestock drinking water. Although no impacts due to mining are anticipated to private wells, a well that may be affected is required to be replaced by the operator. No numeric water quality standards are expected to be exceeded, although, locally, groundwater class may change, typically from Class II to Class III (e.g. some parts of East Fork Armells Creek and in unmined Rosebud Coal existing between Area B and the Big Sky Mine) due to changes in water level and/or mixing with other water sources including ambient groundwater, sediment pond discharges, or spoil. The quality of groundwater in mined and unmined areas likely to be affected by movement of spoil water is locally and seasonally highly variable. The impact of saline constituents on stock and wildlife watering is not well known. At this time, it is not anticipated that an increase in TDS or other water quality parameter in water outside the permit area would render groundwater harmful, detrimental or injurious to a listed beneficial use for the class.

[Y] Surface Water Hydrology The drainage system of the greater Colstrip, MT area consists of mainly ephemeral streams which feed into Armells Creek or Rosebud Creek. These two main creeks in turn are minor tributaries to the Yellowstone River. Both Armells Creek and Rosebud Creek have ephemeral, intermittent, and occasional perennial stretches. All of the drainages within the Rosebud Mine permit areas are

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	<p>classified as C-3 with a majority considered C-3 ephemeral.</p> <p>The permitted mine cuts are in small tributaries of East Fork Armells Creek and head waters of Rosebud Creek. These tributaries have already been partially mined through, and many of the lower reaches of the tributary drainages have already been reclaimed. The existing haul roads that would be used to access the mining areas have been built along the premine drainage channels, and these roads are proposed to be reclaimed as the postmine tributary channels.</p> <p>The renewal would not increase anticipated hydrologic impacts to surface water resources that have not been addressed in previous EA's. Potential impacts to surface water are not expected to result in a violation of the MPDES permit for the Rosebud Mine.</p> <p>The operator would continue to monitor surface water resources surrounding mining to determine quantity and quality characteristics during and after mining. If needed, the operator would be required to provide alternate water supplies to replace water supplies diminished in quantity or quality by mining activities.</p>
<p><b>3. AIR QUALITY:</b> Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)?</p>	<p>[N] The renewal would not affect conditions anticipated in previous assessments and as observed during operation of the mine. Dust would be generated during the mining and reclamation operations; however, Western Energy must operate within the confines of the approved Air Quality Permit. The permit area is not directly influenced by the more stringent air quality requirements of a Class 1 air shed. The mined coal is destined to be combusted at a nearby power generation facility. Emissions from the coal combustion are regulated by that power generation facility's air quality permits which contain enforceable conditions for maintaining compliance with the Federal and State Clean Air Acts. Greenhouse gas emissions from that facility are regulated in accordance with current federal and state laws.</p>
<p><b>4. VEGETATION COVER, QUANTITY AND QUALITY:</b> Will vegetative communities be significantly impacted? Are any rare plants or cover types present?</p>	<p>[Y] Reclamation commitments in the permit are designed to mitigate the vegetative community loss and provide for the approved postmine land uses of grazing and wildlife habitat. One reclamation commitment is for a PMT that approximates the premine condition. Changes proposed to the PMT would help mitigate impacts to vegetation because the changes would better approximate premine conditions.</p> <p>No threatened plants or vascular species of concern are known to inhabit</p>

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	the area.
<p><b>5. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:</b> Is there substantial use of the area by important wildlife, birds or fish?</p>	<p>[N] No impacts above those addressed in previous environmental assessments would be expected.</p>
<p><b>6. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:</b> Are any federally listed threatened or endangered species or identified habitat present? Any wetlands? Species of special concern?</p>	<p>[N] No known listed, threatened or endangered species or important habitat would be impacted by the proposed activities. Six species (Interior least tern, greater sage-grouse, red knot, black-footed ferret and pallid sturgeon) are federally listed threatened, endangered, or candidate species in Rosebud County. The greater sage grouse has been observed during two years during the annual wildlife monitoring at the Rosebud Mine. Both observations were at Sharp-tailed Grouse Lek 20 and consisted of one male each year. The proposed mine expansion would have insignificant impact on sage-grouse as the area contains grasslands and mixed grass/shrublands. No extensive areas of sagebrush habitat is found within the proposed mine expansion. No impacts to the other five listed species are expected as the area does not contain the appropriate habitats (e.g. river habitat for pallid sturgeon) or the habitats are considered marginal for a particular species (e.g. marginal grassland habitat for the Sprague's pipit).</p> <p>Bald eagles may use the area for hunting and during migration; however, no concentration/roosting habitats or breeding territories have been identified within the Rosebud Mine area. Golden eagles are found throughout the year in the area of the Rosebud Mine; however, no nesting territories are located in or adjacent to the proposed expansion.</p>
<p><b>7. HISTORICAL AND ARCHAEOLOGICAL SITES:</b> Are any historical, archaeological or paleontological resources present?</p>	<p>[N] The renewal would result in no adverse effect upon the known cultural, archeological and paleontological resources, and the operator's approved cultural resource memorandum of agreement (MOA) for Area B protects incidental discoveries. No changes in the Area B MOA are necessary and Western Energy accordingly remains in Section 106 compliance for Area B.</p>
<p><b>8. AESTHETICS:</b> Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light?</p>	<p>[N] The project area would not be visible from any designated scenic areas. The nearest community, Colstrip, Montana, is located approximately 1.5 air miles from the project area. No noise above that associated with ongoing operations would occur.</p>
<p><b>9. DEMANDS ON</b></p>	<p>[N] The project is not expected to create demands on limited resources.</p>

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<p><b>ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:</b> Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project?</p>	<p>Coal from this mine area is used to fuel two of the four coal-fired power plants located in Colstrip. Lower quality coal from this mine area is also used to fuel a smaller coal-fired power plant north of Colstrip.</p>
<p><b>10. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES:</b> Are there other activities nearby that will affect the project?</p>	<p>[N] Other impacts to environmental resources are not anticipated.</p>

**IMPACTS ON THE HUMAN POPULATION**

<b>RESOURCE</b>	<b>POTENTIAL IMPACTS AND MITIGATION MEASURES</b>
<p><b>11. HUMAN HEALTH AND SAFETY:</b> Will this project add to health and safety risks in the area?</p>	<p>[N] Heavy equipment, trucks, loaders, and blasting would create hazards; however, the operator must comply with all MSHA and OSHA regulations. The operator currently utilizes proper precautions to enhance safety and would continue in the best interest of its employees. Public access would be controlled by the operator. The proposed operation would not add or reduce the affects to human health or safety.</p>
<p><b>12. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION:</b> Will the project add to or alter these activities?</p>	<p>[N] Historically, the area within the permit was pastureland, grazing land, and wildlife habitat. The final reclamation plan is designed to return the area to its previous use, with equal to or greater vegetation production than pre-mining. There would, however, be a short-term loss of vegetative production during mining and reclamation.</p>
<p><b>13. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:</b> Will the project create, move or eliminate jobs? If so, estimated number.</p>	<p>[N] The renewal is not expected to create new jobs.</p>
<p><b>14. LOCAL AND STATE TAX BASE AND TAX REVENUES:</b> Will the project create or eliminate tax revenue?</p>	<p>[Y] The renewal should not eliminate any tax revenues. It is expected that the mine would sustain production at current levels and not change the state or local tax base resulting from mine production.</p>
<p><b>15. DEMAND FOR GOVERNMENT SERVICES:</b> Will substantial traffic</p>	<p>[N] No changes would occur as a result of the renewal.</p>

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be added to existing roads? Will other services (fire protection, police, schools, etc.) be needed?	
<b>16. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:</b> Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?	[N] No locally adopted environmental plans and goals would change as a result of the renewal.
<b>17. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:</b> Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract?	[N] The mine area is not located in or adjacent to any wilderness or recreational areas. Recreation potential within the permit is limited due to current operations.
<b>18. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:</b> Will the project add to the population and require additional housing?	[N] The renewal is not expected to significantly affect local populations. Neither population increase nor residential decrease would be incurred by approving the renewal.
<b>19. SOCIAL STRUCTURES AND MORES:</b> Is some disruption of native or traditional lifestyles or communities possible?	[N] Disruption of lifestyles is not expected since there is minimal human activity within or near the proposed project area. State Highway #39 passes within visual observation of the mining. No changes from currently approved operations would occur.
<b>20. CULTURAL UNIQUENESS AND DIVERSITY:</b> Will the action cause a shift in some unique quality of the area?	[N]
<b>21. PRIVATE PROPERTY IMPACTS:</b> Are we regulating the use of private property under a regulatory statute adopted pursuant to the police power of the state? (Property management, grants of financial assistance, and the exercise of the power of eminent domain are not within this category.) If not, no further	[N]

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analysis is required.	
<b>22. PRIVATE PROPERTY IMPACTS:</b> Does the proposed regulatory action restrict the use of the regulated person's private property? If not, no further analysis is required.	[N]
<b>23. PRIVATE PROPERTY IMPACTS:</b> Does the agency have legal discretion to impose or not impose the proposed restriction or discretion as to how the restriction will be imposed? If not, no further analysis is required. If so, the agency must determine if there are alternatives that would reduce, minimize or eliminate the restriction on the use of private property, and analyze such alternatives.	[Y] DEQ has a level of discretion in its permitting decisions.
<b>24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:</b>	[N] No other social and economic circumstances would be expected.

**25. Alternatives Considered:**

- a) No Action: Under the "No Action" alternative, DEQ would deny approval of the renewal. This alternative would decrease the amount of disturbance, decrease the amount of coal produced and thereby, shorten the potential life of the mine by limiting development to the currently approved mine area. Additional mining would not be conducted. The mineral owners and mine operator would not utilize the resource. The potential use of this coal reserve would not be realized.
- b) Approval: Western Energy Company would continue with the current mine plan.
- c) Approval with Modification: DEQ found no need to modify the renewal application.

**26. Public Involvement: Availability of this Environmental Assessment was published in:**

The availability of the EA was included in the Acceptability Notice, anticipated to be published in the Billings Gazette on November 6 and 13, 2015.

**27. Other Governmental Agencies with Jurisdiction:** Other agencies with jurisdiction include Office of Surface Mining Reclamation and Enforcement, Bureau of Land Management, US Fish and Wildlife Service, Montana Fish, Wildlife and Parks, Montana Department of Natural Resources, and Rosebud County.

**28. Magnitude and Significance of Potential Impacts:** Based on information available including records and periodic inspections and reports and the updated probable hydrologic conditions determination, the reviewing agency is not aware of any uncorrectable violations applicable to environmental laws of the State of Montana or any changes to mining operations that would proximately cause significant impacts for the renewal period that were not previously addressed in the EIS or subsequent EA's prepared for this operation.

**29. Cumulative Effects:** No other new activities have been identified in the area.

**Recommendation for Further Environmental Analysis:**

- EIS**
- More Detailed EA**
- No Further Analysis**

**EA Checklist Prepared By:** Emily Hinz-Surface Water Hydrologist, Chris Yde-Program Supervisor, Bob Smith-Permit Coordinator, Peter Mahrt-Engineer