CHECKLIST ENVIRONMENTAL ASSESSMENT

COMPANY NAME: Westmoreland-Savage **Project:** Savage Mine, Amendment Application 000185 – Increase in mine area

OPERATING PERMIT #: SMP84002

LOCATION: Savage, Montana **County:** Richland

PROPERTY OWNERSHIP: **[x] Federal [ ] State [x] Private**

TYPE AND PURPOSE OF ACTION:

On January 10, 2010, Westmoreland Savage Corporation, LLC (WSC) submitted Permit Amendment Application 00185 proposing to expand their open pit coal mine (Savage Mine) toward the west and north (Figure 1). The amendment, if approved, would increase the permitted acres by 399 acres, from 885 acres to 1284 acres, and extend the mine plan through 2026. The coal is mined with open pit strip mining methods and the additional acreage will allow for an additional fourteen mine passes. The additional acreage will allow the mine to continue production with no additional mine facilities being proposed.

Note: The application form makes application for an additional 408 acres. However, 9 of those proposed acres have been amended into the permit through Minor Revision 44 in the interim.

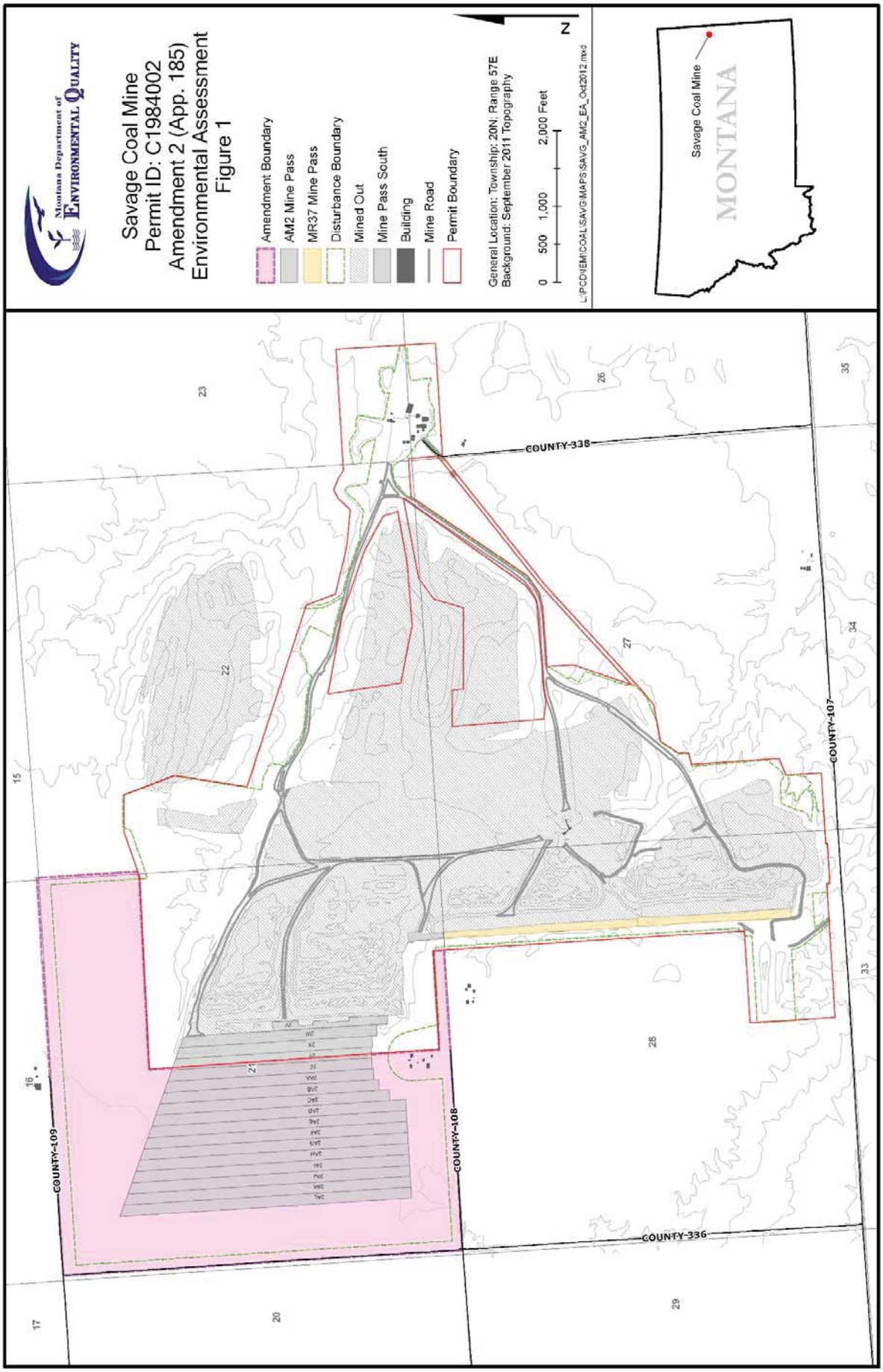
The Savage Mine produces coal from the Pust lignite seam which is part of the Tongue River Member of the Fort Union Formation. The coal generally lies in a fairly level bedded seam of approximately 20 feet in thickness with overburden ranging from seventy to one hundred feet. Annual coal production is approximately 350,000 tons per year. The coal produced is trucked to regional customers including a power plant and sugar beet processor near Sidney, MT.

The additional permit area contains approximately 12,462,948 tons of coal. Under the proposed mine plan 4,583,353 tons will be mined. Allowing for normal production losses, recovery of the mined coal is expected to be 90%. A portion of the total reserve will be unavailable for mining due to allowances for highwall reduction and other reclamation and permitting requirements.

All the additional acreage is located within Section 21 of Township 20 North, Range 57 of Richland County. The mine permit currently includes approximately 241 acres of the east half of Section 21. The additional acreage will incorporate the balance of Section 21 within the permit area. The surface and mineral rights for the additional acreage in Section 21 are privately owned.

Reclamation Plan:

Westmoreland Savage Corporation commits to reclaim all mining-related land disturbances to a use equal to or better than what existed prior to mining. The proposed post mine land uses are cropland and pastureland. The major reclamation steps that occur before and after mining include, but are not limited to, soil material salvage and redistribution, pit backfilling, regrading and contouring, drainage construction, re-vegetation, and post mine monitoring.


Montana Department of
Environmental Quality
Savage Coal Mine
Permit ID: C1984002
Amendment 2 (App. 185)
Environmental Assessment
Figure 1
Amendment Boundary
AM2 Mine Pass
MR37 Mine Pass
Disturbance Boundary
Mined Out
Mine Pass South
Building
Mine Road
Permit Boundary
General Location: Township: 20N; Range 57E
Background: September 2011 Topography
0 500 1,000 2,000 Feet
N
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Savage Coal Mine
MONTANA
COUNTY-338
COUNTY-109
COUNTY-108
COUNTY-107
COUNTY-336
15
16
17
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N = Not present or No Impact will occur.
Y = Impacts may occur (explain under Potential Impacts).

IMPACTS ON THE PHYSICAL ENVIRONMENT	
RESOURCE	[Y/N] POTENTIAL IMPACTS AND MITIGATION MEASURES
1. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE: Are soils present which are fragile, erosive, susceptible to compaction, or unstable? Are there unusual or unstable geologic features? Are there special reclamation considerations?	[N] Field inspection of the proposed amendment area by the Department during routine monthly inspections indicates that the proposed amendment area is primarily flat to gently rolling with subdued drainages. No unusual or unstable geologic features were observed by the Department. Soils associated with the proposed area are the same as in the permit area and are described in appendix H of the Permit: A soils survey was completed on September 24, 1973, covering the Knife River Coal Mining Company lands at the Savage Mine, Richland County, Montana. This survey included all lands presently leased by the Company in township 20 north, range 57 east, in sections 21, 22, 23, 26, 27, and 28. The soils of the entire area to be ultimately affected by mining in this mine were studied and the immediate permit area was sampled. Results indicate that the area is overlain by three basic soil types: the Williams loam, Vida clay loam, and Zahill soils.
2. WATER QUALITY, QUANTITY AND DISTRIBUTION: 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?	[Y] Surface water flow in the ephemeral drainages (Peabody Coulee and tributaries of Garden Coulee) downgradient of the mine has been reduced by currently permitted mining activity due to the interception of runoff by sediment ponds. This would continue to be the case with the proposed amendment. With approval of the amendment, the mine permit area in Peabody Coulee would increase from 11% to 16% of the drainage area. Similarly, the mine permit area in Garden Coulee would increase from 4% to 5%. Projected Life of Mine disturbance in Peabody Coulee would be 584 acres or 14% of the basin, and the disturbance in Garden Coulee would be 548 acres or 5% of the basin. As of 2010, the total disturbance in Peabody Coulee was 330 acres, and the total disturbance in Garden Coulee was 354 acres. The effects to the Yellowstone River due to the retention of runoff in these two drainages are negligible as the proposed expanded permit area would encompass only 0.003% of the drainage area of the river up to Sidney, MT. After reclamation is complete, removal of the ponds will restore the drainage system to function similarly to pre-mine. Since the amendment area is upstream of current mining activities and would not disturb new drainage basins, the amendment would not result in any further decrease in natural runoff to drainages downstream of the mine. Pre and proposed postmine drainage basin size, landuse, and vegetation are similar enough that no significant change in the quantity of runoff or peak discharge is expected. Downstream users would not see a change from premine water availability. Similarly, water quality from flows in well vegetated postmine channels is expected to be similar to premine runoff water quality. During mining and while vegetation is re-establishing, sediment ponds and other best management practices would treat or retain runoff preventing excess sediment from entering native drainages. Measured surface water quality in mine ponds is similar in water quality to regional stream water. Total suspended solids tends to be lower in the pond water quality samples than in the regional stream water quality samples, and this is likely due to sediment settling in the ponds. The addition of the amendment area would result in a greater area of disturbance above the pond system and potentially greater sediment in the mine ponds. However, three

additional sediment ponds are proposed to be constructed to retain water and sediment runoff.

The one spring near the mine is located in North Drainage, tributary to Peabody Coulee, upstream of North Pond 2 within the mine permit. There is no evidence that the water quality or quantity at the spring identified as 22DDA/SP has changed in response to permitted mining activity since 1977. As with the mine ponds, the spring's water quality is similar to regional stream water. The aquifer source of the spring water is unknown. Given that the proposed amendment is northwest of current mining and the spring, it is considered unlikely that the additional mining would cause changes to the flow or water quality of the spring.

All active surface water rights downstream of the mine in Peabody and Garden Coulee are for livestock use. Three rights are immediately downstream of the mine where sediment ponds block the normal flow within the drainages. ARM 17.24.648 requires operators to replace a water supply that has been affected by "contamination, diminution, or interruption" due to mining operations. WSC has committed to the replacement of any water supply that has been significantly impacted as a result of their mining operations. The replacement source would likely be groundwater. Since the proposed amendment area is entirely upstream of existing ponds within Peabody and Garden Coulees, the addition of the amendment area would not further reduce water quantity to downstream users.

Groundwater levels in the Pust coal immediately upgradient of the mine have experienced drawdown due to the removal of the coal by mining. The increase in mining associated with the proposed amendment area would increase the upgradient (west northwest of the mine) reach of drawdown. Downgradient effects are limited by the extent of the coal. Earlier mining to the south and east closely followed the coal crop. Currently within the mine pit area, drawdown is approximately 15 feet. A groundwater drawdown simulation model predicts that the maximum drawdown of past, current and future mining would be about 35 feet at the west margin of the amendment area. Drawdown a mile west of the mine would be approximately 10 feet. Recovery of groundwater to pre-mine levels is anticipated to take between 40 to 50 years after the completion of mining. Infiltration from the sediment ponds contributes locally to groundwater recharge and would continue to do so with the proposed mining.

The Pust coal is not a significant source of groundwater for private wells in the vicinity of the mine. Most wells are completed in the underburden which tends to be substantially below and isolated from the Pust coal.

Water in the resaturating pit backfill (spoil) is of poorer quality than that of the Pust coal due to increases in most major ionic components introduced by the freshly exposed, broken surfaces of minerals of overburden rock backfilled into the pit. Total dissolved solids (TDS) in the spoil are approximately 1,455 mg/L, more than twice that of background in the Pust coal at 653 mg/L. Water quality is expected to improve as the spoil becomes increasingly saturated by the upgradient Pust aquifer. Spoil water has not migrated, and would not be expected to migrate, beyond the permit boundary. Underburden aquifers are not expected to be affected by mining due to their depth and separation by tens of feet of low transmissivity shales and siltstones from disturbance by mining of shallower units.

Arsenic at concentrations up to ten times the human health criteria (0.01 mg/L, Circular DEQ-7) has been found in spoil monitoring wells located in the south part of the mine area. Arsenic concentrations below the human health criteria have also been detected in two overburden (above the coal) monitoring wells upgradient of the mine. Studies have been undertaken to investigate the

IMPACTS ON THE PHYSICAL ENVIRONMENT	
	source of the arsenic. Analyses of drill cuttings from depths between 72.5 – 77 feet in the spoil had elevated arsenic concentrations and are likely sources for the arsenic in groundwater, although the mineralogical or other origin of the arsenic has not been determined. Although not clearly established, the data suggest that arsenic in groundwater at the Savage Mine may be the result of iron oxide or arsenic-bearing sulfide desorption processes. Based on downgradient monitoring, the lateral extent of the elevated arsenic concentration in spoil water is interpreted to be approximately 150 feet. Arsenic has been below lab detection levels in water samples from monitoring wells completed in the underburden aquifer at the same location as the spoil wells with elevated arsenic concentrations. The amount of water in the spoil at this location is less than five feet and is near the coal outcrop, which is dry. The limited extent and lack of receptors at this and downgradient locations means there is little risk posed by the elevated arsenic levels. The operator will continue to monitor groundwater and will resolve this and any other water quality exceedance(s) prior to bond release. The increase of mine area proposed in the amendment application is not expected to cause an increase in arsenic concentration in groundwater. No arsenic has been found in water from any other backfilled areas of the pit.
3. AIR QUALITY: Will pollutants or particulate be produced? Is the project influenced by air quality regulations or zones (Class I airshed)?	[Y] Pollutants and particulates would be produced by the mining activities within the amendment area and expanded mine plan. The expected levels of these pollutants and particulates would be within the approved Air Quality Permit. The proposed project area is not directly influenced by other air quality regulations (i.e. Class I air shed).
4. VEGETATION COVER, QUANTITY AND QUALITY: Will vegetative communities be significantly impacted? Are any rare plants or cover types present?	[Y] Vegetation communities would be removed by mining, and vegetation resources would be impacted in the short term. Long term, however, reclamation measures incorporated into the permits is designed to mitigate the community loss, and provide for the approved post-mine land uses of cropland, pastureland, and wildlife habitat. There are no rare plants or cover types listed in the amendment that would be impacted by the proposed operations.
5. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS: Is there substantial use of the area by important wildlife, birds or fish?	[Y] Wildlife surveys have been conducted each year since 1973. Mining would affect existing terrestrial and avian species and their habitats; however, these resources are expected to be re-established following reclamation. Westmoreland Resources' annual wildlife reports have documented sixteen species of special concern. These species were observed within a much larger wildlife study area, not necessarily within this EA application area. Impacts are expected to be marginal as the majority of these species are transient individuals or do not reside within this application area. Species of special concern that have been documented in the area include: Baird's Sparrow, Black Tailed Praire Dog, Black Tern, Brewer's Sparrow, Bobolink, Burrowing Owl, Chesnut-collared Longspur, Ferruginous Hawk, Golden Eagle, Great Blue Heron, Loggerhead Shrike, Long-billed Curlew, Plains Spadefoot Toad, Sharp-tailed Grouse, Sprague's Pipit, Western Hog-nosed Snake. Reclamation plans are designed to incorporate soil substrates, landscape and topographic diversity as mitigation measures. Vegetative resources (terrestrial and avian) would be affected for the short term; however, reclamation measures are incorporated in the permits for long term mitigation that will allow species to continue using these areas.
6. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES: Are any federally listed threatened or endangered species or identified habitat present? Any	[N] There are no federally listed threatened or endangered species or identified habitat present.

IMPACTS ON THE PHYSICAL ENVIRONMENT	
wetlands? Species of special concern?	
7. HISTORICAL AND ARCHAEOLOGICAL SITES: Are any historical, archaeological or paleontological resources present?	[N] There are no public parks or historic places that will be adversely affected by the proposed operations. Cultural and historic resources surveys of the Savage Mine area were conducted in 1973, 1985, and 2007. No prehistoric cultural resource sites were found during either of the studies. Four historic cultural resource sites within the permit and adjacent areas were discovered during the 1985 survey; however, none of the sites are considered to be significant. During the 2007 survey, one historical cultural site (historic farmstead) was discovered and recommended as ineligible for the NRHP and no further work was recommended. Should any previously unrecorded cultural resource materials be discovered during mining, all further disturbance of the area will be halted pending consultation with the Montana DSL and SHPO. There are no public parks in the vicinity of the Savage Mine.
8. AESTHETICS: Is the project on a prominent topographic feature? Will it be visible from populated or scenic areas? Will there be excessive noise or light?	[N] The Savage Mine is located on a private road removed from any populated areas. The facilities area, and some of the mining activity, is visible from state highway 16. The normal noise associated with mining activity can be heard within the area surrounding the mine. Mining of the amendment area would result in continuation of these disturbances.
9. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY: Will the project use resources that are limited in the area? Are there other activities nearby that will affect the project?	[N]
10. IMPACTS ON OTHER ENVIRONMENTAL RESOURCES: Are there other activities nearby that will affect the project?	[N] There are no activities nearby that will affect the project.

IMPACTS ON THE HUMAN POPULATION	
11. HUMAN HEALTH AND SAFETY: Will this project add to health and safety risks in the area?	[N] Heavy equipment, trucks, and loaders 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. Additionally, public access would be controlled by the operator and limited to the facilities area unless accompanied by mine personnel. The proposed operation should not significantly affect human health or safety.
12. INDUSTRIAL, COMMERCIAL AND AGRICULTURAL ACTIVITIES AND PRODUCTION: Will the project add to or alter these activities?	[Y] Historically, the area within the proposed amendment and the expanded mine area 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 of the area.
13. QUANTITY AND DISTRIBUTION OF EMPLOYMENT: Will the project	[N] The proposal is not expected to create any new jobs; however, if permitted, the additional mining should further secure jobs presently in place.

IMPACTS ON THE HUMAN POPULATION	
create, move or eliminate jobs? If so, estimated number.	
14. LOCAL AND STATE TAX BASE AND TAX REVENUES: Will the project create or eliminate tax revenue?	[Y] The project would create added coal severance tax revenue due to additional coal recovery. The proposed project should not eliminate any tax revenues. It is expected that the mine would sustain production at current levels or at a somewhat increased level and not change the state or local tax base resulting from mine production.
15. DEMAND FOR GOVERNMENT SERVICES: Will substantial traffic be added to existing roads? Will other services (fire protection, police, schools, etc.) be needed?	[N] Traffic would not increase and demands on local and state services are projected to remain the same.
16. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS: Are there State, County, City, USFS, BLM, Tribal, etc. zoning or management plans in effect?	[N]
17. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES: Are wilderness or recreational areas nearby or accessed through this tract? Is there recreational potential within the tract?	[N] The proposed mine area is not located in or adjacent to any wilderness or recreational areas. Recreation potential within the site is primarily limited to hunting by permission and occasional wildlife viewing.
18. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING: Will the project add to the population and require additional housing?	[N] The project would not significantly affect any populated area. Neither population increase nor residential decrease would be incurred by approving the project.
19. SOCIAL STRUCTURES AND MORES: Is some disruption of native or traditional lifestyles or communities possible?	[N] Historic cultural references are fully covered under Item 7, Historic and Archeological Sites. There are no known native or traditional lifestyle issues in the area. While there are known to be species of plants with traditional Native American utilization, none of them are unique occurrences.
20. CULTURAL UNIQUENESS AND DIVERSITY: Will the action cause a shift in some unique quality of the area?	[N] No shift in a unique cultural quality would result from continued mining.
21. PRIVATE PROPERTY IMPACTS: 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 analysis is required.	[Y]
22. PRIVATE PROPERTY IMPACTS: Does the proposed regulatory action restrict the use of the regulated person□s private property? If not, no further analysis is required.	[N]
23. PRIVATE PROPERTY IMPACTS: Does the agency have legal discretion to	[N/A] The Department has a level of discretion in its permitting decision.

IMPACTS ON THE HUMAN POPULATION	
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.	
24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:	[N]

25. Alternatives Considered:

No Action: Under the "No Action" alternative, the Department would deny approval for increased mining and expanding the permit area. 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.

Approval: If approved, an estimated 4,583,353 tons of recoverable coal would be added to the mine plan, extending the life of the mine through the year 2026. An additional 399 acres would be affected by mining.

Approval with modification: There are no other alternatives under consideration at this time.

26. Public Involvement: Public Notice of the Amendment Application was published in the Sidney Herald on April 18th, 25th, May 2nd, and May 9th, 2010. The Notice of Acceptability of the amendment application and the availability of the Environmental Assessment will be published in the Sidney Herald on November 7, 2012 and November 14, 2012.

27. Other Governmental Agencies with Jurisdiction: U.S. Department of the Interior, Office of Surface Mining; Montana Department of Environmental Quality Water Protection Bureau and Air Resources Management Bureau; Mine Safety and Health Administration; U.S. Department of Interior, Bureau of Land Management

28. Magnitude and Significance of Potential Impacts: There would be a moderate level of increase in disturbance associated with the proposed additional mining.

29. Cumulative Effects: Additional impacts to surface and ground water resources would occur from the expanded mining – see Section 2. Additional acres of vegetation and wildlife habitat would be disturbed resulting in increased short-term impacts.

Recommendation for Further Environmental Analysis:

[ ] EIS [ ] More Detailed EA [X] No Further Analysis

EA Checklist Prepared By:

David Adair, PE, Civil Engineer
Emily Hinz, Hydrologist
Angela McDannel, PG, Groundwater Hydrologist
Mike Glen, Vegetation Ecologist
Robert Smith, Permit Coordinator

Approved By:

Robert Smith — November 2, 2012

Signature — Date