ENVIRONMENTAL ASSESSMENT

O'NEILL OUTCROP COAL FIRE
ABANDONED MINE LANDS PROJECT
PRAIRIE COUNTY, MONTANA

Prepared By:
Montana Department of Environmental Quality
Mine Waste Cleanup Bureau
Abandoned Mine Lands Program

In Cooperation with

U.S. Department of the Interior
Office of Surface Mining Reclamation and Enforcement

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CHAPTER 1 – INTRODUCTION

A. PURPOSE AND NEED FOR THE ACTION

The Montana Department of Environmental Quality (DEQ), Mine Waste Cleanup Bureau, Abandoned Mines Section has elected to investigate and evaluate the need for extinguishing the O'Neill coal fires in Prairie County, Montana. The purpose of this project is to address the coal seam fires associated with the coal seam outcrops. These coal seam fires are as close as 750ft to a residence and therefore reclamation activities will eliminate a potential hazard to human health. The outcrop fire sites are located in:

Township 14N, Range 51E, NE quarter of Section 34 and NW quarter of the NW quarter of Section 35. The outcrop fire sites are located approximately 10 miles northeast of Terry, Montana.

Specific actions, which will take place as part of this reclamation project to control the most imminent threat from the outcrop fire, include:

a. Establishing access.

b. Excavating, extinguishing the burning coal seam, and replacing the overburden material.

c. Grading and Contouring disturbed areas

d. Revegetation

To fund the reclamation project above, the Montana DEQ Abandoned Mine Lands program has acquired OSM Coal Outcrop Fire Control Grants. Additional funding for the project will come out of the Abandoned Mine Lands Program general funds.

B. PROJECT BACKGROUND/GENERAL INFORMATION

The O'Neill Outcrop Fire sites are located in Prairie County, northeast of Terry in the NE quarter of section 34, and in the NW quarter of the NW quarter of Section 35, both in Township 14N, Range 51E. To access the site travel north from the town of Terry on Route 253, 5.5 miles to Bad Route Road, then continuing north on Bad Route Road a distance of 6.4 miles and then turning east on the O'Neill Road for 4.7 miles and then turning south on the two-track road shown on Figure 2 for 0.7 miles to the western site. The eastern site is an additional 2,200 feet past the western site on the O'Neill Road.

The coal seam fires are located in bluffs along Cottonwood Creek. The sites are located on private land. Access is through the adjoining O'Neill Ranch property.

Site Access – The site is accessible by vehicles via two-track road, which runs southeast from O'Neill Road at 4.7 miles where a fence crosses the road to the western project site.

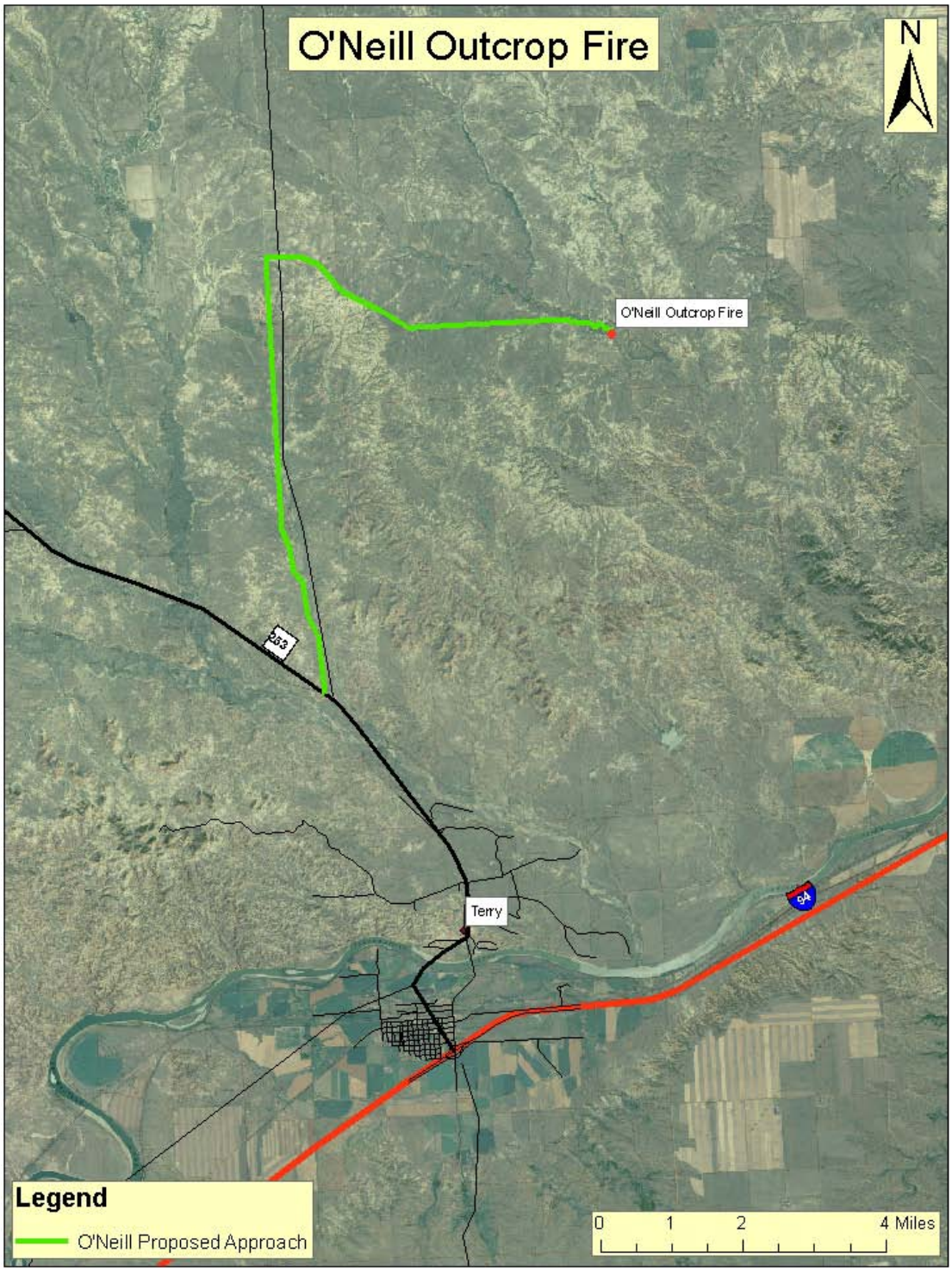
O'Neill Outcrop Fire
N
O'Neill Outcrop Fire
253
Terry
94
Legend
O'Neill Proposed Approach
0
1
2
4 Miles

Figure 1

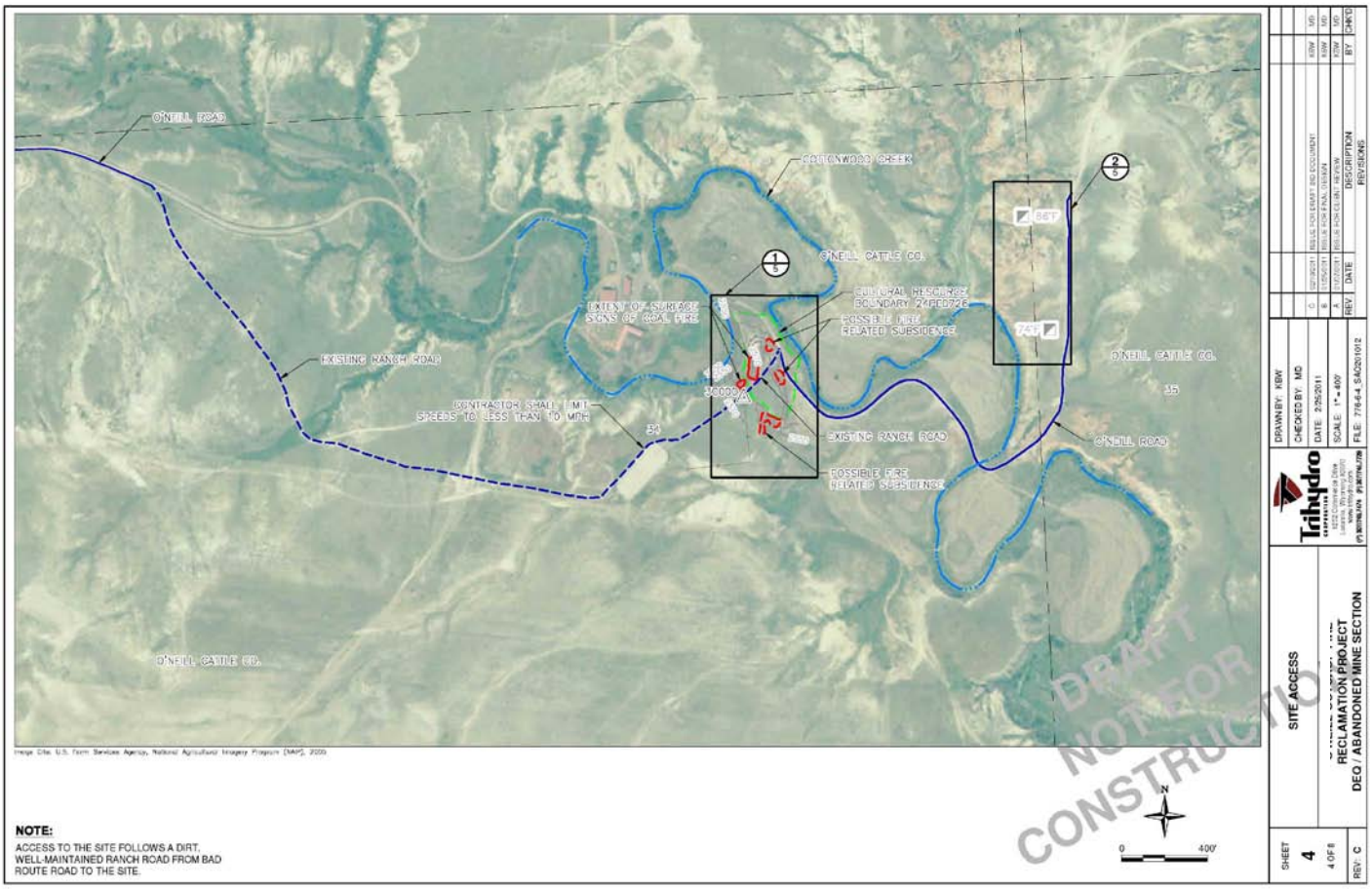

Figure 2

Site Dimensions – The site areas, including potential quench pit areas, encompass approximately 10 acres, although the actual disturbance area is less. The actual fire zone surface area mapped during the field investigations totals roughly 2.5 acres but the actual disturbance area is unknown due to the fact that it is underground. The mapped site area extends 300 feet west to east and 1600 feet north to south (including the quench pit) in Section 34 and 200 feet west to east and 350 feet north to south in section 35.

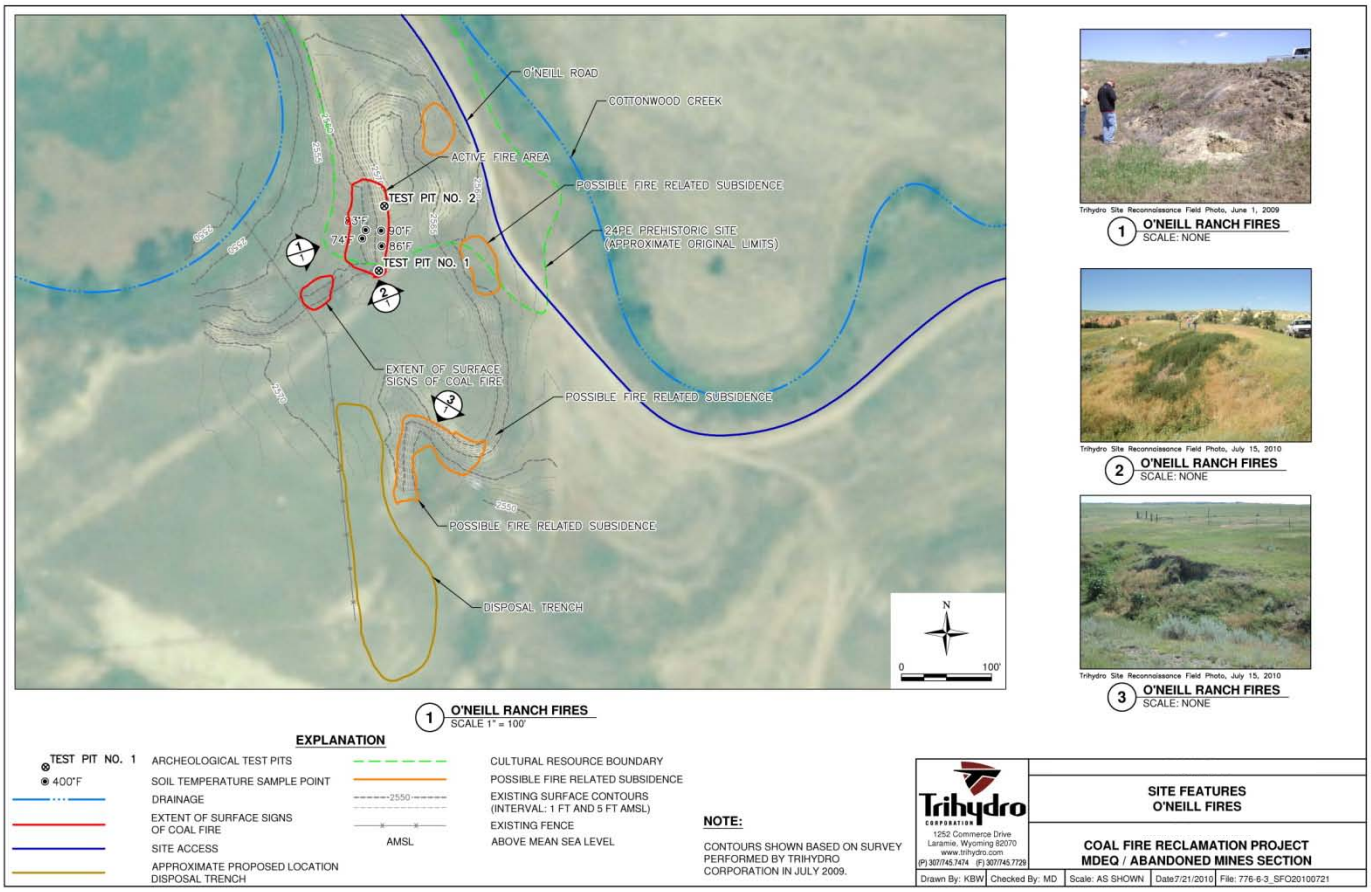

Figure 3

Potential Fire-Related Issues – The fire areas are located within bluffs and dissected areas forming the northwestern and western banks of Cottonwood Creek and tributaries to Cottonwood Creek. Direct evidence of active coal seam burning is present at these fires, and includes soil sloughing on outcrop features, cracks in soils above suspected fires, as well as subsidence features along the bluffs above and around the burning coal fires. Temperature readings at the fire sites were as high as 90° F at the surface.

Sparse vegetation was found adjacent to the fire sites during the July field visit of the O'Neill Outcrop Fires including weeds that were beginning to establish along the toe of the failed slopes and could establish adjacent to areas of elevated temperatures. These weeds, or vegetation sloughed into the fire area from the crest of the bluff, could provide fuel capable of igniting a rangeland fire as has happened at similar outcrop fires in eastern Montana.

In addition to the possibility of igniting future rangeland fires, the smoldering coal in the fire areas are likely to continue burning along the coal seam, increasing the area of disturbance and increasing physical and environmental hazards.

Physical Hazards – The burning coal within the fire areas is causing instability and failures within the overlying slopes. This results in cracking along the top of the bluff through which steam and combustion gases vent. These slopes, which are as high as 20 feet, are highly unstable.

The disturbed area presents a significant physical (falling) hazard to humans, wildlife, or livestock that may attempt to traverse the area or walk along the crest of the disturbance. While the height of the disturbed slopes are not generally more hazardous than the surrounding native terrain, the steepness resulting from the slope failures, as well as the instability of the slopes combined with likely elevated surface temperatures, increase the risks. With coal outcrop fires, surface temperatures are often indicative of warmer temperatures below the surface which can be exposed due to surface sloughing and cracking. The likely elevated surface temperatures present a physical hazard of severe burns to humans, wildlife, or livestock that wander through these areas.

Environmental Hazards – Coal seam fires are a significant source of greenhouse gases worldwide. It is estimated that three percent of CO_2 emissions worldwide are the result of burning coal seam fires (Kuenzer 2007). In addition to greenhouse gases, coal seam fires are unregulated discharges of carbon monoxide, benzene, toluene, and other organic compounds to the atmosphere and the soil (Strachner 2007, Strachner and Taylor 2006). Additional environmental hazards associated with coal fires include loss of vegetation, increased erosion, degradation of water quality, and the potential for future rangeland fires. The burning coal has reduced the structural stability of the slope and no longer supports the overburden materials. The intense heat from the burning coal at this site has killed vegetation and sterilized topsoil, further increasing the instability of the affected slopes as plant roots are no longer available to help hold together the overburden material. As a result, material from the slopes associated with the fire area is slumping and accumulating along the toe of the slope.

This material is then transported via erosion into Cottonwood Creek, a tributary to the Yellowstone River resulting in degraded water quality. This sediment degrades the water quality in the streams in the immediate site area and potentially in downstream receiving streams. Overland flow across the unprotected slopes and exposed coal, when present, alters water chemistry and increases pH. The degraded water quality and increased sediment deposition can harm stream habitats and affect fisheries or wildlife and livestock water sources.

C. EXISTING/RELATED ENVIRONMENTAL DOCUMENTS

1. Big Dry Resource Management Plan
   Final Environmental Impact Statement
   Record of Decision
   Miles City District
   February 1995

2. Final Environmental Impact Statement OSM-EIS-11
   Approval of State and Indian Reclamation Program Grants Under Title IV of the Surface Mining Control and Reclamation Act of 1977.United States Department of the Interior, Office of Surface Mining. November 1983

CHAPTER 2 – DESCRIPTION OF THE ALTERNATIVES

A. RECOMMENDED ALTERNATIVE

The recommended alternative for the O'Neill Outcrop Fire is removal of the hot coal and burial in a quench pit. This approach would proactively address the coal seam fires and effectively remove physical hazards, reduce the likelihood of the coal seam fire igniting additional range fires, and reduce environmental impacts. The approach would require a full-sized construction crew with appropriately sized equipment including, but not limited to, tracked excavators with hydraulic thumbs, dozers, articulated haul trucks, front end loaders, and support vehicles/equipment. Additional work includes:

1. Access. The sites are currently accessed via a two-track road. This portion of the site access would be improved to allow for equipment access and hauling of coal from the fire area to the quench pit. Topsoil would be removed and stockpiled for replacement following reclamation activities.
2. Best management practices. Erosion control measures such as earthen berms, straw bales, or silt fence would be constructed down gradient to reduce sediment runoff from the reclamation area.
3. Clear and grub the fire disturbance, quench pit footprint, and adjacent areas. Areas adjacent to the disturbance would be cleared and grubbed during construction as necessary to allow for borrow of additional overburden materials to be used to mix with burned coal and to create a soil barrier over exposed coal to limit contact with the surface conditions.
4. Remove cover soils for reuse following excavation and backfill. Cover soils along the immediate perimeter of the disturbances, from areas along the base of the disturbances, and from the quench pit footprint would be removed and stockpiled.
5. Construct equipment access route. An equipment access ramp would be constructed along the disturbance area from the end of the site access route to the top of the bluff.
6. Remove and stockpile overburden materials.
7. Excavate and stockpile overburden that has accumulated at the base of the disturbed slopes, as well as the layer of overburden over the face of the coal seams.
8. Construct a processing area. An area to spread excavated coal for application of water, if available, or to otherwise allow the coal to cool would be constructed in appropriate location near the excavation. This area would be bermed to reduce runoff from the staged coal.
9. Excavate and stockpile hot/smoldering coal. Smoldering coal would be excavated and placed in the processing area to allow for cooling, including the application of water and subsequent placement in the quench pit. The limits of the coal excavation would be based upon visual inspection and temperature readings. The excavation would cease when the engineer's representative determines that all burning coal has been excavated and unburned coal has been

exposed. Additional overburden would be removed and stockpiled as appropriate to maintain a safe excavation.

10. Excavate the quench pit. An on-site quench pit would be excavated for burial of hot materials. The proposed quench pit location is south of the larger fire to the west above the alluvial channels of Cottonwood Creek in Section 34. Material excavated from the quench pits would be stockpiled for use as coversoil.
11. Bury excavated hot materials. The burning coal and other hot materials excavated would be hauled to the quench pit. These materials would be mixed with material excavated from the quench pit and overburden at a 2 (coal) to 1 (excavated quench pit material and overburden) (2:1) ratio, or as directed by the engineer in the field based on field conditions and the availability of water. The coal mixture would be placed and compacted in the quench pit. An additional 3 feet of excavated quench pit material would be placed above the coal mixture and compacted.
12. Backfill the excavations. Remaining stockpiled material from the quench pit excavation would be hauled and placed as backfill for the fire excavation area. Stockpiled overburden materials would be used as backfill as well. Additional overburden would be borrowed from the perimeter of the disturbance as appropriate to complete the backfill. The eroded/subsidence features would be graded to conform to the surrounding area and to remove the erosional features. The remainder of the site would be graded to conform to the surrounding undisturbed ground surface.
13. Replace cover soils. Stockpiled cover soil would be spread evenly across the disturbed areas, including the quench pit footprints.
14. Stabilize the site. The disturbed area, including the quench pit, would be disked or hand-raked (as appropriate) and drill or broadcast (as appropriate) seeded with a native seed mix. Straw mulch would be spread across the seeded area and crimped. A small earth-lined diversion would be constructed above the reclaimed slopes to divert the majority of surface runoff around the reclaimed surface.
15. Reclaim the access route. Cover soil would be replaced along the access route. These areas would be disked and drill-seeded with a native seed mix. Straw mulch would be spread across the seeded area and crimped.
16. Fence reclaimed/revegetated areas. The reclaimed disturbance, including the quench pit areas would be fenced to prevent damage from livestock grazing until vegetation has had an opportunity to be re-established and will be monitored for three years.

B. NO ACTION ALTERNATIVE

No Action. Take no steps to control fire.

CHAPTER 3 – THE AFFECTED ENVIRONMENT

A. GENERAL SETTING

Physiography and Geology – The O'Neill Outcrop Fires occur in the southwestern portion of the Williston Basin in eastern Montana. The basins are bordered on the western side by the Porcupine Dome and Big Horn-Pryor Uplift. The eastern border is formed by the Cedar Creek anticline and Black Hills Uplift, and the northern border is comprised of the Bowdin Dome and the Weldon-Brockton-Froid Fault Zone. The basin is asymmetric with western portions being uplifted due to the Great Falls Tectonic Zone (Vuke et al., 2007). The Williston Basin is a larger, oval shaped basin and extends into North Dakota, South Dakota and Canada. The Williston Basin has an approximate length of 475 miles (north-south) and 300 miles (east-west). The Yellowstone River and Cottonwood Creek are located near the O'Neill Outcrop Fire area.

General Stratigraphy and Coal Bed Descriptions – The topography associated with the O'Neill Outcrop Fire has been shaped by fluvial erosion, exposing underlying bedrock and resulting in a dendritic pattern. Associated bedrock is sedimentary sandstones and shales from the Fort Union Formation, which is Tertiary in age. This formation has inter-bedded layers of fine grained sandstone, shale, mudstone and coal with less frequent deposits of non-swelling clays. Some irregularly distributed patches of Holocene-aged, weathering resistant, metamorphosed sandstone (clinker) can also be found near the fire site (Vuke et al., 2001a; and Vuke et al., 2001b).

The total thickness of all the Fort Union Formation in the vicinity of the fire site reaches approximately 1,400 feet (Vuke et al., 2001a; and Vuke et al., 2001b). The Fort Union Formation is comprised of the Tongue River Member, the Lebo Member and the Tullock Member. All members have some coal beds, but the coal beds of the Tongue River Member have been noted to be the most ubiquitous (Britton et al., 1989).

The coal beds in the Fort Union Formation tend to be near the surface and flat, not interrupted by folding or faulting. The thickness of these coal beds ranges from approximately 3 to 12 feet (Britton et al., 1989). The sulfur content of the coal in the Fort Union Formation being less than 3% (Britton et al., 1989).

Soils – Soil types were estimated for the site based on Natural Resource Conservation Service (NRCS) county-level Soil Survey Geographic (SSURGO) data and the Montana Natural Resource Information System. Descriptions for the site include the names of these soils, as well as classifications based on the Unified Soil Classification System (USCS). Soils found at this site include the Lonna and the Lonna-Havre-Glendive complex. These soils show a wide range of characteristics, including slightly sticky and slightly plastic soils; silty-loams and silty-clay loams; derived from weathered shale and siltstone; moderate blocky soil structure; rapid runoff with slow permeability.

Climate – The project area's average annual precipitation ranges between 11 to 14 inches. Precipitation can fluctuate widely from year to year. Most of the rainfall occurs early in the early in the growing season (May and June) as a result of frontal storms. Some high-intensity, convective thunderstorms occur in July and August, and some rain falls in autumn. Precipitation in winter generally occurs as snow. The average annual temperature is 41 to 49 ºF. The freeze-free period averages 121 days and ranges from 90 to 160 days, decreasing in length with elevation. Area-specific climatological summaries from recording sites in relatively close proximity to the project sites are listed below (WRCC 2010).

1. Terry, MT – Average maximum temperatures range from 26.2ºF for January to a high of 87.9ºF in July, with an average annual high temperature of 58.0ºF. Average minimum temperatures range from 1.0ºF in January to 56.3ºF in July, with an average annual low temperature of 29.6ºF. Average total precipitation ranges from 0.22 inches in December to 2.37 inches in June, with an average annual total precipitation of 11.63 inches.
2. Terry 21NNW, MT– Average maximum temperatures range from 26.0ºF for January to 83.3ºF in July, with an average annual high temperature of 54.8ºF. Average minimum temperatures range from 4.7ºF in January to 54.1ºF in July, with an average annual low temperature of 29.7ºF. Average total precipitation ranges from 0.26 inches in February to 2.85 inches in June, with an average annual total precipitation of 13.94 inches.

Threatened and Endangered Species – The Department of Environmental Quality requested information from the Montana Natural Heritage Program on potential threatened and endangered species that might reside in the vicinity of the outcrop fires on June 17, 2009. No threatened or endangered species were identified. The documentation with the Montana Natural Heritage Program is attached as Attachment A. DEQ consulted with USFWS on August 5th, 2009. A copy of USFWS documentation is attached as Attachment B.

Cultural Resource Inventories – Based on a cultural resource inventory conducted by Renewable Technologies Inc. (RTI), further investigation was needed prior to fire suppression activities. This archeological investigation was conducted on July 24th by a Department of Natural Resource Conservation (DNRC) archeologist with a finding that fire suppression activities will have no significant impact on paleontologically significant items. The State Historic Preservation Office (SHPO) officer for the state of Montana concurred with these findings on August 9th, 2010. A copy of SHPO documentation is attached as Attachment C. Based upon the archeological investigation by DNRC and the SHPO documentation, the project areas do not contain any paleontological significant items or areas and require no special treatment prior to fire suppression activities.

B. CRITICAL ELEMENTS

Cultural or Historic Resource Values – The project areas do not contain any paleontological significant items or areas and require no special treatment prior to fire suppression activities.

Hydrology – The site is located at an elevation of approximately 2,550 feet adjacent to the Terry Badlands. The fire areas are located adjacent to the main stem of Cottonwood Creek, an ephemeral stream that flows southeast 10.0 miles from the site area to its confluence with the Yellowstone River east of Terry, Montana.

Vegetation – The tall grass/mid-grass vegetation community of this site has developed under Northern Great Plains climatic conditions and has been historically influenced by large herbivore grazing and fire. The dominant native grass species on site include needle and thread

(Hesperostipa comata), western wheatgrass (Pascopyrum smithii), slender wheatgrass (Elymus trachycaulus), and blue grama (Bouteloua gracilis). Post fire disturbance has caused the invasion of introduced cheatgrass (Bromus techtorum) and Japanese brome (Bromus japonicas). A variety of forbs exist on site with the most common species being scarlet globemallow (Sphaeralcea coccinea), curlycup gumweed (Grindilla squarosa), and yarrow (Achillea millefolium). Sub-shrubs on site were prairie sagewort (Artemisia frigida). The shrub communities consisted of big sagebrush (Artemisia tridentata). Down slope from the upland vegetation an ephemeral meadow has aspects of riparian vegetation including smooth brome (Bromus inermis), foxtail barley (Hordeum jubatum) and sedge (Carex spp.). Subsidiary vegetation on site included sunflower (Helianthus spp.) and plains pricklypear (Opuntia polyacantha).

Fish and Wildlife – No threatened or endangered species were identified at the site. Within the area of the O'Neill Outcrop Fires, the diversity of wildlife habitat includes grasslands, grasslands-shrublands, badlands, riparian areas, and agricultural lands. Rivers, streams, potholes, cliffs, snags, springs, reservoirs, and islands provide food, nesting habitat, and cover for a variety of wildlife species. A variety of big game, small mammals, game birds, and song birds typical of undeveloped land throughout Prairie County potentially use this area. The existing land use is anticipated to continue and therefore, no direct or cumulative wildlife impacts are anticipated.

Recreational Resource Values – The O'Neill Outcrop Fire sites are located on private land and are surrounded by private access. No evidence of public use (campsites, walking trails, or litter) is evident. The site area is likely used by big game hunters and potentially upland bird hunters during the fall.

Air Quality – The current ambient air quality of the area of the O'Neill Outcrop Fire sites is good. This project is not located in any special air quality zones regulated by the State of Montana.

In addition to greenhouse gases, coal seam fires discharge carbon monoxide, benzene, toluene, and other organic compounds to the atmosphere and the soil.

Noise– This Site is situated in a quiet rural area. Ranching activity associated with the movement of livestock and hunting activities during the fall are the two sources of man-made noise at the site.

Topography – The topography is varied with alkali buttes, colored sandstone bluffs, and badland buttes and valleys. The topography of the O'Neill Outcrop Fire area is marked by instability and failures within the overlying slopes. This results in cracking along the top of the bluffs and along the sandstone caps occasionally directly above the coal seams, through which steam vents. Material from the bluff face is falling to the toe of the bluff. These slopes, which are as high as 20 feet, are highly unstable. This instability is exacerbated by the active coal fire and subsequent subsidence features present.

Social and Economic Values –The site has a social and economic value as a Montana ranch operation. The O'Neill Outcrop Fire area is used primarily as rangeland for cattle grazing. The site contributes social or economic value in this ranching context.

Conformance with Federal, State, Regional, and/or Local Land Use Plans, Programs and Policies – Reclamation construction activities associated with the Preferred Alternative would

comply with all Federal, State, regional and local land use plans, programs and policies. Extinguishing the coal seam fire would eliminate threats to public health and general welfare.

***Areas of Critical Environmental Concern (ACEC)* –** The O'Neill Outcrop Fire area and remediation plan presents no ACEC.

***Wilderness* –** No Wilderness exists in the vicinity of the project area.

***Environmental Justice* –** According to the U.S. Census Bureau, Prairie County has a total population of 1,199 people. While Prairie County has fewer minorities when compared to the state of Montana, the demographic trends follow similar patterns. This project was selected based on the need for reclamation of a coal seam fire. Demographics were not taken into account.

***Cumulative Impacts* –** There are no known "cumulative impacts" associated with this proposal.

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

A. RECOMMENDED ALTERNATIVE

Approval and implementation of the Recommended Alternative will result in the following site reclamation consequences:

1. Elimination of the coal seam fire.
2. Temporary Disturbance to the vegetation and wildlife during construction due to equipment access, construction noise and other associated activities.
3. Revegetation of the disturbed area to allow vegetation to be re-established.
4. Reduction of physical hazards and reduction of the likelihood of the coal seam fire igniting additional range fires.

a. CRITICAL ELEMENTS

***Cultural or Historic Resource Values* –** The project areas do not contain any paleontological significant items or areas and require no special treatment prior to fire suppression activities.

***Hydrology* –** Cottonwood Creek would be protected from erosion from sloughing of surface soils caused by the active coal fires after remediation. During construction, BMP's would be in place to prevent any surface deposition and transport to Cottonwood Creek.

Vegetation – The native plant communities that would be impacted are common in the sedimentary plains of Montana. Consultation with the Montana Natural Heritage Program indicates no plant species of concern occur within the project area. Reclamation of the site and reseeding of native plant species will limit impacts to the vegetative communities.

Fish and Wildlife Resources – The Department of Environmental Quality requested information from the Montana Natural Heritage Program on potential threatened and endangered species that might reside in the vicinity of the outcrop fires on June 17, 2009. No threatened or endangered species were identified. The documentation with the Montana Natural Heritage Program is attached as Attachment A. DEQ consulted with USFWS on August 5th, 2009. A copy of USFWS documentation is attached as Attachment B.

Soils – Currently, soils present at the O'Neill Outcrop Fire sites are unstable and erosive due to sloughing, heat, and baked soil conditions. The eroded/subsidence features at the site would be graded to conform to the surrounding area and to remove the erosional features.

Recreational Resource Values –The project area is situated in a quiet rural area. The Recommended Alternative would not impact recreational resource values.

Air Quality – The recommended alternative would have a negligible short-term impact to local air quality. This impact would be mitigated by the use of dust control measures as necessary and feasible.

Noise – The project area is situated in a quiet rural area. The nearest residence is located .15 miles west of the site. There is evidence of habitation within a 1-mile radius, and the nearest population center is the town of Terry, population 611 in 2000, located 10 miles to the southwest (US Census 2000). The Recommended Alternative would have negligible short-term impact to the local noise environment. Noise increase will be a result of heavy equipment operation.

Topography – The Recommended Alternative would blend the site with the natural topography.

Social and Economic Values – The Recommended Alternative would mitigate human health and safety hazards that potentially impact a local residential population. There are residents within .15 miles of this reclamation project and would benefit from reducing the physical hazards from the O'Neill Outcrop Fires. Reclamation of the site would improve environmental quality, visual aesthetics, and may provide a small economic boost to the local economy.

Conformance with Federal, State, Regional, and/or Local Land Use Plans, Programs and Policies– Reclamation construction activities associated with the preferred alternative would comply with all Federal, State, regional and local land use plans, programs and policies. Abatement of the coal seam fire would eliminate threats to public health and general welfare.

Areas of Critical Environmental Concern (ACEC) – No ACEC exists in the vicinity of the project area.

Wilderness – No Wilderness exists in the vicinity of the project area.

Environmental Justice – According to the U.S. Census Bureau, Prairie County has a total population of 1,199 people. While Prairie County has fewer minorities when compared to the state of Montana, the demographic trends follow similar patterns. This project was selected based on the need for reclamation of a coal seam fire. Demographics were not taken into account.

Cumulative Impacts – The Recommended Alternative actions impacts small, localized areas. There are no known "cumulative impacts" associated with this proposal.

B. NO ACTION ALTERNATIVE

This alternative will result in continued site degradation. All hazards will remain unabated

a. CRITICAL ELEMENTS

Cultural or Historic Resource Values – The project areas do not contain any paleontological significant items or areas and require no special treatment prior to fire suppression activities.

Hydrology – Wasting of bank material into the main stem of Cottonwood Creek and erosion of the disturbed areas would continue to impact water quality.

Vegetation – The potential would exist for the coal seam fire to ignite future range fires eliminating current vegetative cover.

Fish and Wildlife Resources – No threatened or endangered species were identified at the site. This area provides habitat for a variety of big game species, predators, game birds, other non-game mammals, raptors and various song birds. The potential would continue for the coal seam fire to ignite future range fires eliminating current habitat.

Soils – Soils present at the O'Neill Outcrop Fire sites are unstable and erosive due to sloughing, heat, and baked soil conditions The intense heat from the burning coal at this site has sterilized topsoil reducing vegetative growth, further increasing the instability of the affected slopes.

Recreational Resource Values – The project area is situated in a quiet rural area. However, the site area could be used by big game hunters and potentially upland bird hunters during the fall. The disturbed area presents a significant physical (falling) hazard to humans, wildlife, or livestock that may attempt to traverse the area or walk along the crest of the disturbance. Instituting the No Action Alternative could continue significant hazards to human health.

Air Quality – The No Action Alternative would allow the coal seam fire to continue to adversely affect air quality as a result of the coal combustion emissions generated. CO_2 emissions would continue to be generated and CO, benzene, toluene and other organic compounds would be released into the atmosphere.

Noise – The No Action Alternative would have no impact to noise values.

Topography – The No Action Alternative would continue excessive erosion to occur due to the overlying soils sloughing and eroding as the coal seam burns. The No Action Alternative would continue expedited soil erosion, thereby negatively impacting the area topography.

Social and Economic Values –The smoldering coal in the fire area is likely to continue burning along the coal seam, increasing the area of disturbance, resulting in a decrease of grazing land.

Conformance with Federal, State, Regional, and/or Local Land Use Plans, Programs and Policies– The No Action Alternative would not conform to Montana Approved Abandoned Mine Reclamation State Plan.

Areas of Critical Environmental Concern (ACEC) – No ACEC exists in the vicinity of the project area.

Wilderness – No Wilderness exists in the vicinity of the project area.

Environmental Justice – According to the U.S. Census Bureau, Prairie County has a total population of 1,199 people. While Prairie County has fewer minorities when compared to the state of Montana, the demographic trends follow similar patterns. This project was selected based on the need for reclamation of a coal seam fire. Demographics were not taken into account.

Cumulative Impacts – The No Action Alternative would allow continued site degradation. The smoldering coal in the fire area would likely continue burning along the coal seam, increasing the area of disturbance, resulting in increased physical and environmental hazards, and increasing the likelihood of igniting a range fire.

CHAPTER 5 – CONSULTATION AND COORDINATION

A. PERSONS, ORGANIZATIONS AND AGENCIES CONTACTED

State Historic Preservation Office
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R. Mark Wilson
Field Supervisor
Montana Field Office
USFWS Ecological Services
100 N. Park, Suite 320
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B. PREPARERS AND REVIEWERS

Montana Department of Environmental Quality
Mine Waste Cleanup Bureau
1100 N. Last Chance Gulch
P.O. Box 200901
Helena, MT. 59620

Michael Glenn, Project Manager
Date: 4/15/11

Reviewed by:

Montana Department of Environmental Quality
Mine Waste Cleanup Bureau
1100 N. Last Chance Gulch
P.O. Box 200901
Helena, MT. 59620

John Koerth, Program Supervisor
Date:

CHAPTER 6 – REFERENCES

Britton, L.J., Anderson, C.L., Goolsby, D.A. and Van Haveren, B.P. 1989. Summary of the U. S. Geological Survey and U. S. Bureau of Land Management National Coal-Hydrology Program, 1974-84. US Geological Survey Professional Paper 1464.

Kuenzer, C., Zhang, J., Tetzlaff, A., van Dijk, P., Voigt, S., Mehl, H., Wagner, W. Uncontrolled Coal Fires and Their Environmental Impacts: Investigating Two Arid Mining Regions in North-Central China. Applied Geography. Vol. 27, Issue 1, January 2007, Pages 42-62.

Stracher, G.B., Taylor, T.P. Coal Fires Burning Out of Control Around the World: Thermodynamic Recipe for Environmental Catastrophe. International Journal of Coal Geology Vol. 59. Issue 12. July 2004. Pages 7-17.

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CHAPTER 7– ATTACHMENTS

A. ATTACHMENT A: MONTANA NATURAL HERITAGE PROGRAM LETTER

B. ATTACHMENT B: USFWS CONSULTATION LETTER

C. ATTACHMENT C: SHPO CONCURRENCE LETTER

MONTANA
Natural Heritage
Program

The results of a data search by the Montana Natural Heritage Program reflect the current status of our data collection efforts. These results are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys, which may be required for environmental assessments. The information is intended for project screening only with respect to species of concern, and not as a determination of environmental impacts, which should be gained in consultation with appropriate agencies and authorities.

I hope the enclosed information is helpful to you. Let me know if you would prefer to receive digital PDF versions of these documents via email. Please feel free to contact me at (406) 444-3290 or via my e-mail address, below, should you have any questions or require additional information.

Sincerely,

Martin P. Miller
Montana Natural Heritage Program
martinm@mt.gov

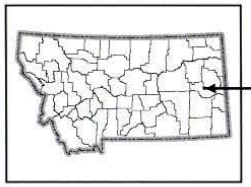
Montana Species of Concern
O'Neill Ranch Coal Fire

Species of Concern

- SO Mammals
- SO Birds
- SO Reptiles
- SO Fish
- SO Amphibians
- SO Invertebrates
- SO Vascular Plants
- SO NonVascular Plants

SPECIES OF CONCERN: A polygon feature representing only what is known from direct observation with a defined level of certainty regarding the spatial location of the feature.

SITES: Ecological information that may be useful in assessing biological values and interpreting Species of Concern data.



- County
- National Forest Boundary
- Conservation Easements
- Special Designations

Public Lands

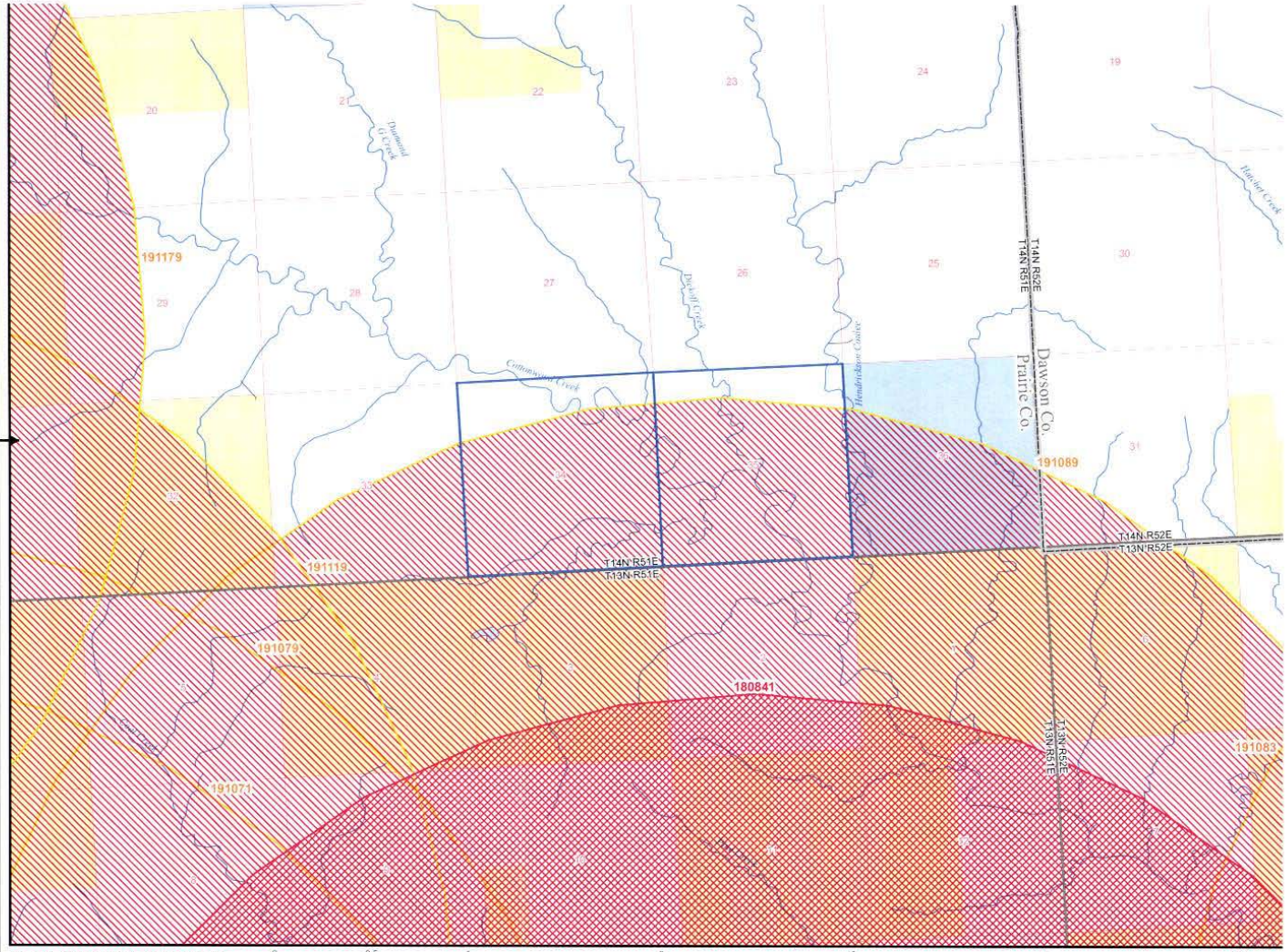
- US Bureau of Land Management
- US Bureau of Reclamation
- US Fish and Wildlife Service
- US National Park Service
- US Forest Service
- USDA (Ag Research Stations)
- US Army Corps of Engineers
- US Department of Defense - Other
- Montana State Trust Lands
- Montana Fish, Wildlife, and Parks
- Montana State Lands (University, Institutions, MDT, Other)
- Montana DNRC (Water Project Lands)
- Local Government
- US Bureau of Indian Affairs Trust Lands
- Tribal Lands
- Plum Creek Timber Company
- Private Land Trusts

Not all legend items may occur on the map.

Features shown on this map do not imply public access to any lands.

This map displays management status, which may vary from ownership.

Montana Natural Heritage Program



Natural Resource Information System, Montana State Library
1515 East Sixth Ave., Helena, MT 59620-1800
406 444-5354 http://mtnhp.org mtnhp@mt.gov

Map Document: (K:\Requests\09\DEQ\09deq0176\09deq0176.mxd) 6/17/2009

Natural Heritage Program

Natural Resource Information System
Montana State Library
PO Box 201800
Helena, MT 59620-1800
(406) 444-3009 mtnhp@state.mt.us

Species of Concern Data Report

Visit http://mtnhp.org for additional information.

Report Date: Wednesday, June 17, 2009

Centrocercus urophasianus

Common Name: Greater Sage-Grouse
Description: Vertebrate Animal

Natural Heritage Ranks:

State: S2
Global: G4

Federal Agency Status:

U.S. Fish & Wildlife Service:
U.S. Forest Service: SENSITIVE
U.S. Bureau of Land Management: SENSITIVE

FWP CFWCS Tier: 1

MT PIF Code:

Species Occurence Map Label: 191079
First Observation Date: 1997-04-01
Last Observation Date: 2006-05-15
SO Number: 725,559
Acreage: 31,636
SO Rank:

Species Occurence Map Label: 191089
First Observation Date: 1986-04-01
Last Observation Date: 1986-05-15
SO Number: 722,055
Acreage: 31,636
SO Rank:

Species Occurence Map Label: 191119
First Observation Date: 1986-04-01
Last Observation Date: 1986-05-15
SO Number: 723,681
Acreage: 31,636
SO Rank:

Heterodon nasicus

Common Name: Western Hog-nosed Snake
Description: Vertebrate Animal

Natural Heritage Ranks:

State: S2
Global: G5

Federal Agency Status:

U.S. Fish & Wildlife Service:
U.S. Forest Service: SENSITIVE
U.S. Bureau of Land Management: SENSITIVE

FWP CFWCS Tier: 1

MT PIF Code:

Species Occurence Map Label: 180841
First Observation Date: 1979-05-01
Last Observation Date: 1979-08-31
SO Number: 27,924
Acreage: 32,632
SO Rank:

Montana Department of
ENVIRONMENTAL QUALITY

Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

August 5, 2009

R. Mark Wilson, Field Supervisor
Montana Field Office
USFWS Ecological Services
585 Shepard Way
Helena, MT 59601

RE: Proposed Coal Outcrop Fire Mitigation Project
Musselshell and Yellowstone County, Township 06N, R28E, Sections 16-19 and Township 06N, R27E, Section 24
Custer County, Township 05N, R49E, Section 12 and Township 04N, R45E, Section 9
Prairie County, Township 14N, R51E, Sections 34 & 35 and Township 11N, R49E, Sections 9&16
Powder River County, Township 07S, R47E, Section 8

Dear Mr. Wilson:

As a condition of approval for Montana's Abandoned Mine Reclamation program by USDOI – Office of Surface Mining, Montana is required to consult with the USFWS during project planning to ensure that proposed reclamation actions will have no impact on federally listed threatened or endangered species. (See Federal Register, Vol. 60, No. 138, pages 36998-37002).

Montana's abandoned mine reclamation program is considering fire mitigation at six coal outcrop sites , located in Musselshell, Yellowstone, Custer, Prairie, and Powder River County, Montana. Proposed reclamation activities include excavation of burning coal outcrops, regrading and revegetation of disturbed areas.

DEQ has evaluated the site for potential impacts to any threatened or endangered plant and animal species listed by the USFWS. Based on habitat evaluation and geographic location it was determined that no threatened or endangered species are located within the project boundaries. However, sensitive species include:

Animal Species	Scientific Name	Potential at Site
Black-Tailed Prairie Dog	*Cynomys ludovicianus*	High likelihood of occurence

Greater Sage – Grouse	*Centrocercus urophasianus*	High likelihood of occurrence
Lark Bunting	*Calamospiza melanocorys*	High likelihood of occurrence
Common Sagebrush Lizard	*Sceloprus graciosus*	High likelihood of occurrence
New Jersey Tea	*Ceanothus herbaceous*	Possibly Extirpated. Outside of Disturbance area

Based on DEQ staff evaluation of the site and consultation with others, the Department has concluded that proposed mine reclamation actions are not likely to have any adverse effect on any federally listed threatened or endangered species or habitat necessary for their survival. Department of Environmental is requesting that USFWS concur with our determination.

The Department requests that USFWS review this determination and immediately notify me at (406) 841-5083 if there is any disagreement with this determination.

Sincerely,

Heather Luinstra
Project Manager
Abandoned Mine Section, Mine Waste Cleanup Bureau

Attachments: Site location maps

Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

2010080501

RECEIVED
AUG 05 2010
BY SHPO

• Stan
• DEQ/General
• O'Neill Coal Fire
PE Co.

August 5, 2010

Mr. Stan Wilmoth
State Historic Preservation Office
Montana Historical Society
P.O. Box 201202
Helena, MT 59620-1202

RE: Finding of No Effect
O'Neill Coal Fire
Prairie County, Montana

CONCUR
NO PROPERTIES ON OR ELIGIBLE
FOR NRHP APPEAR LIKELY TO
EXIST WITHIN PROJECT IMPACT AREA
MONTANA SHPO
DATE 08/09/2010 SIGNED Stan Wilmoth

Dear Mr. Wilmoth;

The Montana Department of Environmental Quality (DEQ) is currently investigating the O'Neill Coal Fire in Prairie County, Montana. The fire is located in the Yellowstone River basin. The O'Neill Fire is in Section 34, Township 14 North Range 51 East, Prairie County. The existing burning coal seam fire has the potential to ignite surface burning on private and adjacent State land.

Funding for extinguishing the fire will come from a grant issued by the Federal Office of Surface Mining Reclamation and Enforcement under the authority of the Surface Mining Control and Reclamation Act of 1977. DEQ is cooperating with the property owner on this project to control and abate the burning coal outcrop fire. This is a federal funded undertaking.

The DEQ contracted with Renewable Technologies, Incorporated (RTI) in August, 2009 to conduct a cultural resource inventory of the fire site. The survey area covered a total of 3.9 acres and .15 miles of access roads. A multiple-occupation campsite (24PE726) was identified at the O'Neill Ranch fire site. RTI concluded that surface data could not resolve the question of eligibility for listing in the National Register of Historic Places and recommended archaeological testing at the O'Neill Fire site.

Since DEQ fire mitigation activities would not allow for avoidance of site 24PE726 (See O'Neill Fires site access map, attached). Patrick Rennie, an archeologist with the Department of Natural Resources and Conservation (DNRC), was contracted to complete an evaluation of the O'Neill fire site. This evaluation included two test units where minimal lithic scatter was present. One piece of chipped stone debitage was recovered in each of the two pits and nothing was found below 10cm BS.

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AUG 2010
Montana Department of Environmental Quality
Remediation Division

It was determined that DEQ's proposed coal fire mitigation work would have No Effect to Historic Properties (See Archeological Evaluation of a Portion of Site 24PE726 attached).

The DEQ requests that SHPO concur with our finding of no effect for the O'Neill fire. Please do not hesitate to contact me if you have any questions.

Sincerely,

Mike Glenn
Reclamation Specialist
Department of Environmental Quality
406-841-5070
mglenn@mt.gov