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DEPARTMENT OF NATURAL RESOURCES
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Technical Analysis and Findings

Utah Coal Regulatory Program

January 20, 2017

PID: C0410002
TaskID: 5313
Mine Name: SUFCO MINE
Title: MITIGATION AND BOND FOR 2RWL SINKHOLE

Summary

In April 2016, Canyon Fuel Co. discovered a sinkhole on the surface above the 2RWL panel of the Sufco Mine. It is located near mid-panel in an area mined in December 2015. The sinkhole measures roughly 40 ft. wide X 50 ft. long X 40 ft. deep and is located along a fault zone that was crossed in that area at depth.

Subsidence features are known to occur naturally in the Castlegate Sandstone along the Mud Springs Hollow fault zone nearby to the east. It is suspected that mining-related subsidence triggered the collapse into some sort of cavity within the fault zone. Exploration drilling over the years in this area has encountered voids on occasion but such voids have always been interpreted as limited zones of open fractures. In this case there may have been a large open fracture that allowed accommodation space for the sinkhole to develop.

In October 2016, Canyon Fuel Co. notified the Division the sinkhole has been repaired and reclamation was complete.

This amendment incorporates the sinkhole into the MRP as part of the permit area with associated reclamation and bonding.

Deficiencies Details:

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General Contents

Legal Description

Analysis:

The amendment does not meet the State of Utah R645-301-121.120 and/or R645-301-141 requirements for providing a legal description that identifies the land (on a map) subject to coal mining (and reclamation).
The legal description must be added to the Sufco Mine Permit Area on page 1-9/1-10. Accordingly, the C1 form must show the permit area is increasing in size. Furthermore, all maps must be updated to show the permit area.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-121.120 and/or R645-301-141 requirements for providing a legal description that identifies the land (on a map) subject to coal mining (and reclamation).

The following deficiency must be addressed prior to final approval

R645-301-121.120 and/or R645-301-141 The Permittee must provide an accurate legal description of all lands subject to coal mining and reclamation in Chapter 1.

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Maps and Plans

Analysis:

The amendment does not meet the State of Utah R645-301-140 requirements for providing maps with the updated legal description that identifies the land (on a map) subject to coal mining (and reclamation).

The amendment does not update any maps.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-140 requirements for providing maps with the updated legal description that identifies the land (on a map) subject to coal mining (and reclamation).

Prior to approval, the Permittee must update all maps in the MRP with the permit boundary to include the sinkhole in the SWNE, Section 2, T.22 S., R.4E.

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Environmental Resource Information

General

Analysis:

The amendment meets the State of Utah R645-301-300 requirements for a description of the vegetative, fish, and wildlife resources of the permit area and adjacent areas.

Volume 1, Chapter 3 contains the Biology information. The Environmental Description is provided on page 3-3. The sinkhole is located within the lease boundary of U-47080 which is described on pages 3-3 through 3-5 and shown on plate 3-1v8.

Appendix 3-13 of the MRP is the BLMs EA, West Coal Lease Modification, and provides descriptions of the vegetation, fish, and wildlife resources of the permit area. Potential impacts to those resources are discussed in Section 4.0 of the EA (Environmental Impacts).

The Division determined that approval of this amendment would not affect a listed species or designated critical habitat and therefore did not initiate informal consultation with U.S. Fish and Wildlife Service.

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Historic and Archeological Resource Information

Analysis:

The amendment meets the State of Utah R645-301-411.140 requirements for cultural and historic resources information.

Appendix 4-2 and Confidential Volume 1 provide a narrative that describes the nature of cultural and historic resources listed or eligible for listing in the National Register of Historic Places and known sites within the sinkhole area. Tetra Tech completed a cultural resource survey for the sinkhole area and found that no cultural resources were impacted. USFS is the lead agency and conducted SHPO consultation at the time of leasing. Reference: A Cultural Resource Inventory of the Proposed West Tract Modifications Coal Lease, Old Woman Plateau Area, Fishlake National Forest, Sevier County, ET Cultural Resource Report 08-16, Utah State Project Authorization Number (SHPO) U-08-EP00722f.

A map pursuant to R645-301-411.141 is provided in the confidential folder Appendix 4-2 of the amendment. The map shows

locations of sites identified in the Class 3 survey.

There are no public parks or cemeteries within 100 feet of the permit area. Utah has approximately 169.3 miles of designated Wild and Scenic River, all of which are tributaries of the Virgin River in southwest Utah and outside the permit or adjacent area. National System of Trails in Utah are inclusive of the Pony Express, California National Historic Trail, Mormon Pioneer Trail, and Old Spanish National Historic Trail. None of the trail systems are within the permit or adjacent area.

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Land Use Resource Information

Analysis:

The amendment meets the State of Utah R645-301-411 requirements for land use information.

Volume 1, Chapter 4, Section 4.10, pages 4-1 through 4-12A provide information on premining land use.

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Maps Permit Area Boundary

Analysis:

The amendment does not meet the State of Utah R645-301-323 requirements for maps and aerial photographs.

The maps must be updated to include the sinkhole as part of the permit area.

Volume 1, Chapter 3, Section 3.2.3, page 3-27 discusses maps and aerial photographs.
Plate 3-1v8 shows plant communities within the permit area and associated reference areas to be used for reclamation success standards. This plate must be updated to include the location of the sinkhole and the location of the vegetation sample site to be used as a reclamation success standard.

Plates 4-1A and 4-1B show land use of the Quitchupah and SITLA Muddy Tracts. This map must be updated to show the location of the sinkhole as part of the disturbed area boundary.

Plate 3-2v6, Elk Range does not show the disturbed boundary and therefore does not require an update.

Plate 3-3 shows deer range and raptor nests and does not require an update.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-323 requirements for maps and photographical information. The following deficiency must be addressed prior to final approval:

R645-301-323: The Permittee must update maps showing the location and boundary of disturbed areas to include the sinkhole.

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Operation Plan

Air Pollution Control Plan

Analysis:

The amendment meets the State of Utah R645-301-422 requirements for an air pollution control plan.

Volume 1, Chapter 4, Section 4.2 pages 4-18 through 4-20 discusses air quality and compliance information. The sinkhole does not require any changes to the air quality program.

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Subsidence Control Plan Renewable Resource

Analysis:

The amendment meets the State of Utah R645-301-332 requirements for describing impacts of subsidence to fish, wildlife, and vegetative resources.

Volume 1, Chapter 3, Section 3.3.1 page 3-37 provides protection measures for vegetation. As discussed in Section 3.30, surface subsidence was a potential result of underground mining. The sinkhole was unplanned surface disturbance. Upon discovery of the sinkhole, Canyon Fuel Co. promptly reclaimed the site using deep gouging and the seed mix requested by the USFS (landowner). Reclamation work was quickly conducted during the summer/fall which minimized any negative impacts to wildlife breeding. (Due to the emergency nature of the sinkhole, reclamation occurred prior to incorporation into the MRP in coordination with the USFS who is the land management agency.)

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Vegetation

Analysis:

The amendment meets the State of Utah R645-301-331 requirements for protection of vegetation. Volume 1, Chapter 3, Section 3.3.1 page 3-37 provides protection measures for vegetation.

As discussed in Section 3.30, surface subsidence was a potential result of underground mining. The sinkhole falls under this category of unplanned surface disturbance. Upon discovery of the sinkhole, Canyon Fuel Co. promptly reclaimed the site using deep gouging techniques and the seed mix requested by the USFS (landowner).

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Reclamation Plan

PostMining Land Use

Analysis:

The amendment meets the State of Utah R645-301-412 requirements for postmining land use. The existing MRP covers the sinkhole area in Volume 1, Chapter 4, Section 4.10.

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WildLife Protection

Analysis:

The amendment meets the State of Utah R645-301-342 requirements for a fish and wildlife plan for the reclamation and postmining phase of operation.

The existing MRP adequately addresses wildlife protection measures in Volume 1, Chapter 3, Section 3.4.2 page 3-50 through 3-51 provides. The seedmix used at the sinkhole should result in vegetation for wildlife food and cover.

Table 3-1 (pg. 3-15) provides information on federally protected threatened, endangered, and listed species.
Table 3-2 (pg. 3-28) provides a list of Utah species that are protected.
Table 3-3 (pg. 3-33) provides a list of USDA-FS Region 4 Sensitive species.

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Topsoil and Subsoil

Analysis:

Analysis:
Appendix 5-13 is recommended for approval. Chapter 2, p 2-18 and Appendix 5-13 received on November 16, 2016 decribes completed reclamation of a sinkhole discovered during the summer 2016. The sinkhole was above the 2RWL panel in SW1/4 NE1/4, Sec. 2, T.22S., R.4.E. The area was reshaped, covered with 6-8 inches of topsoil salvaged from the perimeter, pocked, gouged and seeded. The reclamation work and seed mix was approved by the land managing agency, the United States Forest Service.

pburton

Revegetation General Requirements

Analysis:

The amendment meets the State of Utah R645-301-341 requirements for a revegetation plan.

Volume 1, Chapter 3, Section 3.40 pages 3-46 through 3-49 provide the revegetation plan for other disturbed areas and page 3-48A provides a description of reclamation techniques and the seedmix used for the sinkhole.

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Revegetation Standards for Success

Analysis:

The amendment does not meet the State of Utah R645-301-356 requirements for revegetation standards for success.

Volume 1, Chapter 3, Section 3.5.6, 3.4.1 .2 and Appendix 2-2 contains the Standards for Success. The amendment does not amend the MRP to account for Standards for Success at the sinkhole.

The sinkhole lies within the Fishlake National Forest and is subject to their Land and Resource Management plan. The plan identifies the principle use of the leased area as rangeland with small areas set aside for timber harvesting and as general big game range. Recreation in the lease areas includes camping, firewood gathering, hunting, some snowmobiling, and sight seeing from late spring to late fall. Yearly recreation use is light, but during deer and elk hunts, use is extremely heavy.

Therefore, pursuant to R645-301-356, the success standards will be based on a post mining land use of grazing land (cover and production) and fish and wildlife habitat, recreation, and forest products (cover, production, and a tree/shrub stocking density).

Pursuant to 356.231 minimum stocking and planting arrangements must be coordinated with the Division and the land management agency. This information should be added to page 3-48 for consistency.

Deficiencies Details:

The amendment does not meet the State of Utah R645-301-356 requirements for revegetation standards for success. The following deficiency must be addressed prior to final approval:

R645-301-356: The Permittee must coordinate with the Division and Fishlake National Forest to determine shrub stocking density standards for the reclaimed sinkhole. This information must be incorporated into the MRP.

The Permittee must identify an approved reference area or propose other success standards to compare the reclaimed sinkhole against for bond release purposes.

R645-301-323: The location and boundary the proposed reference area must be provided on a map. The Division recommends the Permittee provide a new map that clearly identifies all reference sites with associated vegetation communities.

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