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Technical Analysis and Findings
Utah Coal Regulatory Program

June 13, 2017

PID: C0410002
TaskID: 5459
Mine Name: SUFCO MINE
Title: MITIGATION AND BOND FOR 2RWL SINKHOLE

Summary

This is a revision to the previous task 5397 which was a revision to task 5313.

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 2016. 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. The size of the sinkhole increases the Permit Area by 0.45 acres and Disturbed Area 0.351 acres.

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, 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.

Deficiencies Details:

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General Contents

Legal Description

Analysis:

The amendment meets 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 of the sink hole has been added to page 1-16 of Ch.1. The disturbed acreage (permit area) has been adjusted to account for the additional 0.45 acres. (The Waste Rock Site was also adjusted concurrently with Task# 5372 and added additional acreage as well. See Task 5372)

Plate 5-6 is a map of the permit area and this map has been updated to include the sinkhole.

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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 BLM's 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 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 with the sinkhole area.

Tetra Tech completed a cultural resource review 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 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 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 Affected Area Boundary Maps

Analysis:

The amendment meets the State of Utah R645-301-323 requirements for maps and aerial photographs.

The maps have been updated to include the sinkhole as part of the permit area.

Plate 3-1 indicates the location of reference areas for measuring reclamation success.

Plates 4-1A and 4-1B show land use of the Quitcupah and SITLA Muddy Tracts.

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 therefore does not require an update.

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Operation Plan

Air Pollution Control Plan

Analysis:

The amendment meets the State of Utah R645-301-422 requirements for 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 falls under this category of 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 seasons. (Due to the emergency nature of the sinkhole, reclamation occurred prior to incorporation into the MRP.)

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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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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 meets the State of Utah R645-301-356 requirements for revegetation standards for success.

On page 3-50 of the amendment, the reference area is identified as an undisturbed 100' square area immediately adjacent to the reclaimed sink hole and within the same ecological site.

Pursuant to R645-301-356.231 minimum stocking and planting arrangements must be coordinated with the Division and the land management agency. Since reclamation has already occurred, the Permittee coordinated with the Division after consultation with the Forest. The minimum stocking rate for this very small area has been set at zero since the Forest Service did not request any shrubs in the seedmix. Natural succession will allow for the invasion of shrubs and trees within the area. The Success Standards for this area will consist of production, cover, and adequate diversity.

Plate 3-1 has been updated to include the location of the new reference site. Both the sink hole and reference site are located within plant community identified on the map.

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