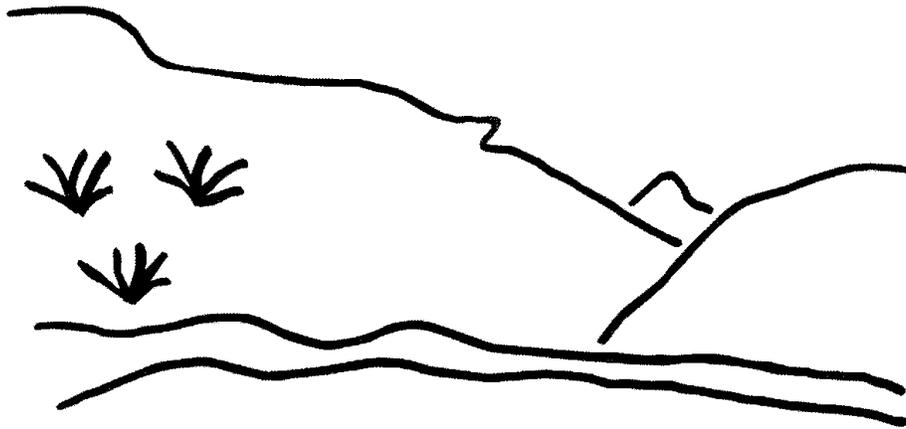


# State of Utah



## Utah Oil Gas and Mining

SUFCO Mine  
Canyon Fuel Company, LLC  
Technical Analysis  
December 16, 2005



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## TECHNICAL ANALYSIS DESCRIPTION

The Division ensures that coal mining and reclamation operations in the State of Utah are consistent with the Coal Mining Reclamation Act of 1979 (Utah Code Annotated 40-10) and the Surface Mining Control and Reclamation Act of 1977 (Public Law 95-87). The Utah R645 Coal Mining Rules are the procedures to implement the Act. The Division reviews each permit or application for permit change, renewal, transfer, assignment, or sale of permit right for conformance to the R645-Coal Mining Rules. The Applicant/Permittee must comply with all the regulatory requirements as established by the R645 Coal Mining Rules.

The regulatory requirements for obtaining a Utah Coal Mining Permit are included in the section headings of the Technical Analysis (TA) for reference. A complete and current copy of the coal rules can be found at <http://ogm.utah.gov>.

The Division writes a TA as part of the review process. The TA is organized into section headings following the organization of the R645-Coal Mining Rules. The Division analyzes each section and writes findings to indicate whether or not the application is in compliance with the requirements of that section of the R645-Coal Mining Rules.



**GENERAL CONTENTS**

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# **GENERAL CONTENTS**

## **IDENTIFICATION OF INTERESTS**

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

### **Analysis:**

The General Chapter 1 volume contains information on corporate ownership for SUFCO and affiliated Utah mines: Soldier Canyon Mine, Banning Loadout, and Dugout Canyon Mines. (Section 111 of the MRP). (At the Division, General Chapter 1 has been filed with the C/007/0018 Soldier Canyon Mine MRP.)

Section 112.400 of the MRP and Table 1-1 and Figure 1 of General Chapter 1 provide a listing of affiliated coal mining operations under the control Arch Coal Co. and subsidiaries. The affiliated Utah mines are Skyline Mine, Soldier Canyon Mine, Banning Loadout, Dugout Canyon Mine, and Gordon Creek No. 2, 7, and 8.

### **Findings**

The Identification of Interests information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **VIOLATION INFORMATION**

Regulatory Reference: 30 CFR 773.15(b); 30 CFR 773.23; 30 CFR 778.14; R645-300-132; R645-301-113

### **Analysis:**

Section 113 of the MRP indicates that a current listing of violation information is provided in the General Chapter 1 volume for all of Canyon Fuel Company, LLC affiliated Utah mines (filed at the Division with the Soldier Canyon Mine MRP, C/007/018).

### **Findings:**

The Violation information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **RIGHT OF ENTRY**

Regulatory Reference: 30 CFR 778.15; R645-301-114

### **Analysis:**

Lease agreement ML-49443 (SITLA Muddy Tract) between the State of Utah and Ark Land Coal Company and Arch Coal Co. is included in Appendix 1-2 and provides the right of entry for coal in the Upper Hiawatha coal zone within the Blackhawk formation.

The location of the SITLA Muddy Tract is shown on Plate 5-6, Land Ownership and Permit Area Map. Legal descriptions for ML-49443 are provided in Section 114 of the MRP.

### **Findings:**

The Right of Entry information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS**

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

### **Analysis:**

The land described by lease ML-49443 lies within the Manti-LaSal National Forest. Plate 5-6 shows the location of lease ML 49443, which includes land within Sections 4, 5, 7, 8, and 9 of T. 21 S., R.5 E. The coal identified in the lease lies beneath Big Ridge portrayed on the intersection of the following 7.5-minute quadrangle maps: Heliotrope Mountain, Flagstaff Peak, Acord Lakes, and Emery West. There are no cemeteries, occupied dwellings or maintained public roads within the lease. Section 4.1.1.1 describes previous study of the roadless Muddy Tract area for wilderness designation, but no wilderness designation was made. There are no lands currently under study or administrative proceedings for unsuitability claims.

### **Findings:**

The Legal Description and Status of Unsuitability Claims information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## GENERAL CONTENTS

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### **PERMIT TERM**

Regulatory References: 30 CFR 778.17; R645-301-116.

#### **Analysis:**

The most recent permit renewal for the SUFCO mine was issued on May 20, 2002 and will expire on May 20, 2007.

#### **Findings:**

The Permit Term information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

### **PUBLIC NOTICE AND COMMENT**

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

#### **Analysis:**

The SITLA Muddy Tract amendment is not considered a significant revision and therefore, no public notice was required.

#### **Findings:**

The Public Notice and Comment information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.



## ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

### GENERAL

Regulatory Reference: 30 CFR 783.12; R645-301-621, -301-721.

#### Analysis:

The SITLA Muddy Tract amendment to the MRP meets the General Environmental Resource Information as provided in R645-301-621 and -721. The Division finds that these standards are met because geologic and hydrologic environmental resource information for the SITLA Muddy Tract and adjacent areas has been included in Chapter 6, Geology, and Chapter 7, Hydrology, of the MRP. Additional geology and hydrology information is presented in the probable hydrologic consequence (PHC) determination for the additional lease area, in Appendix 7-20, Investigation of Surface and Groundwater Systems in the SITLA Muddy Tract Area, Sevier County, Utah: Probable Hydrologic Consequences of Coal Mining in the SITLA Muddy Tract and Recommendations for Surface and Groundwater Monitoring.

#### Findings:

The General Environmental Resource information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

### PERMIT AREA

Regulatory Requirements: 30 CFR 783.12; R645-301-521.

#### Analysis:

Lease ML-49443, referred to as the SITLA Muddy Tract, adds 2,134.19 acres to the existing, 24,632.95 acre permit area, making a new total of 26,767.14 acres in the permit area (Section 116 of the MRP).

The Permittee met the requirements for the R645 – Rules by a describing and identifying the lands subject to surface coal mining operations over the estimated life of mine. In Section 114 of the MRP, the Permittee lists the legal description for the permit. In Section 116 of the MRP, the Permittee lists the total acreage for the permit and disturbed areas.

#### Findings:

The Permit Area information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **CLIMATOLOGICAL RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.18; R645-301-724.

### **Analysis:**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for Climatological Resource Information as provided in R645-301-724.400. The Division finds that these standards are met because information on climatic resources representative of the SUFCO Mine region, including the SITLA Muddy Tract, is presented in the MRP in Section 7.2.4.4, Climatological Information. Some of the climatological information has been updated for the inclusion of the SITLA Muddy Tract in Appendix 7-20. Climatological data has been collected since 1986 at a weather station located at the mine surface facilities. Because of the localized nature of summer rainstorms in the area, a second weather station was added in 2004 to the Pines tract at the head of the East Fork of Box Canyon downstream of Joe's Mill Ponds. This station collects temperature and precipitation data and is operational from May through October. The Joe's Mill Pond weather station is located approximately one-mile east of the SITLA Muddy Tract. Yearly temperature and precipitation data is submitted with the mine's annual report.

Soil descriptions for Big Ridge in SITLA Muddy Tract indicate that the area receives between 20 – 30 inches of precipitation.

### **Findings:**

The Climatological Resource information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **VEGETATION RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.19; R645-301-320.

### **Analysis:**

Vegetation types specific to the SITLA Muddy Tract are listed on Plate 3-1, (Plant Communities and Sampling areas), of the application. The applicant has made a commitment in Chapter Three Section 3.2.1.1 to "upgrade and further improve the data displayed on Plate 3-1 before the end of 2006". The applicant has also committed to include a description of the vegetation types located within the proposed lease tract.

A discussion on the potential subsidence related impacts from mining is included in Chapter Three. The application includes a list of possible threatened, endangered and candidate plant species identified in the U. S. Fish and Wildlife Service current listing. Table 3-1 of the MRP provides a 2005 listing of the plant species. The application includes a reference to this table and the table has been updated to include the current 2005 plant listings.

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**ENVIRONMENTAL RESOURCES INFORMATION**

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**Findings:**

The Vegetation Resource information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

**FISH AND WILDLIFE RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 784.21; R645-301-322.

**Analysis:**

The fish and wildlife information is provided for in chapter three of the application. Included are Appendix 3-11, Muddy Creek Technical Wildlife report, Plate 3-1, Plant Communities and Sampling areas, Plate 3-2, Elk Range, and Plate 3-3 Deer Range and Raptor Nests, Appendix 3-12, Mexican Spotted Owl Survey and Table 3-2, Native Utah Wildlife Species of Special Interest. The application includes a description of the wildlife located within the proposed SITLA Muddy Tract and a discussion for minimizing impacts to wildlife and livestock as a result of anticipated effects of subsidence. A current list of threatened, endangered, and candidate fish and wildlife species is included in the application in Appendix 3-12, Table 10.

A current raptor survey is included in Appendix 3-4 of the SUFCO Mine MRP Confidential file. According to the information in the survey, the raptor nests are located outside the areas of planned subsidence. The applicant has committed to developing a mitigation plan with the DWR and USFWS, should a new nest have the potential of being disturbed by subsidence activities.

**Findings:**

The Fish and Wildlife Resource information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

**SOILS RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.21; 30 CFR 817.22; 30 CFR 817.200(c); 30 CFR 823; R645-301-220; R645-301-411.

**Analysis:**

There is no planned surface disturbance associated with the SITLA Lease ML-49443. An Order III level soil survey was included in the application to provide general reconnaissance information about the surface. Soil types are described in Appendix 2-10. The major soil taxonomic order is Mollisol, reflecting the rich, deep soils on pediment terraces.

Prior to any surface disturbing activity, an Order I soil survey must be conducted of the proposed disturbed area.

**Findings:**

The Soils Resource information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations, since there is no surface disturbance. However, should circumstances change, an Order I soil survey must be conducted prior to any surface disturbance.

**LAND-USE RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.22; R645-301-411.

**Analysis:**

Land use within the SITLA lease ML-49443 is described in Section 4.1.1.1 and illustrated on Plate 4-1b. The land is within the Manti-LaSal National Forest. The land is managed for big game range and forage. Other existing land uses are described in Section 4.1.1.1 as timber production, livestock grazing, wildlife habitat, recreation and associated travel on forest development roads. Existing forest development roads are single-lane, native surface, category 2 roads, recommended for high clearance vehicle traffic.

The SITLA Muddy Tract is within the Emery C & H grazing allotment, supporting 1,387 head of cattle. Stock is watered at springs, streams, and ponds (see State Appropriated Water Rights, Hydrologic Resource Information section of this TA for more discussion).

Forest users include recreational visitors and hunters with the highest use in the fall during the deer and elk hunts. Forest development roads provide access to the lease area for foot traffic, bicycle, horse, ATV and snowmobile, etc.

**Findings:**

The Land-Use Resource information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

**PRIME FARMLAND**

Regulatory Reference: 30 CFR 785.16, 823; R645-301-221, -302-270.

**Analysis:**

Section 2.2.1 discusses the prime farmland status of the permit area. The NRCS consultation letters are provided in Appendix 2-1.

Order III level soil survey information was included in the application to provide general reconnaissance information about the surface within SITLA lease ML-49443. Plate 2-3 Soil Types SITLA Muddy Tract shows four soils within the ML-49443 lease area, at elevations from

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**ENVIRONMENTAL RESOURCES INFORMATION**

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8400 to 9000 ft. Soil types are described in Appendix 2-10. The major soil taxonomic order is Mollisol, reflecting the rich, deep soils on pediment terraces. The temperature regime for all is frigid. There are no irrigated lands. Plate 4-1b indicates that the land is currently used as open range.

**Findings:**

The Prime Farmland information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

**GEOLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 784.22; R645-301-623, -301-724.

**Analysis:**

The Permittee has addressed the requirements for this section. Geological information is supplied in Chapter 6 of the MRP. Plate 6-1 illustrates the local geology in the vicinity of the SUFCO Mine. The information described below is sufficient to allow the Permittee to determine the probable hydrologic consequences from mining.

**Analysis:***Acid- and Toxic-forming Materials*

The Permittee submitted information to address this section. Additional information was submitted to the Division on November 14, 2005, from two drill holes on the SITLA Muddy Tract. Drill hole information is provided, along with coal seam, roof and floor samples for acid- and toxic-forming materials. The information is located in Chapter 6, and in Appendix 6-1 and 6-2 of the MRP (Confidential File). Most samples show no potential for acid- or toxic-forming materials, however two samples taken in 1991 show potentially high levels of toxic material. One sample in 1991 exceeds the boron value. Another sample shows a SAR of 19.3 from drill hole 89-20-2. The Permittee discounts the data, stating there is likely an error in the level reported. No current samples show high levels of acid- or toxic-forming material. The Permittee contends there are no acid- or toxic-forming materials going to the refuse pile. The refuse is sampled quarterly. The Permittee commits to sampling material going to the refuse pile. No offsite contamination is expected, because the refuse pile will be compacted in lifts then covered with topsoil to minimize contact between refuse and overland flow. Vegetation will be planted to stabilize the refuse at reclamation.

*Drill Holes*

The Permittee conducted drilling in the SITLA Muddy Tract area and the sites are shown on Plate 6-1. Plate 6-5 provides a geologic cross-section of the coal zone strata in the lease from west to east. Section 6.2.2 identifies the drill holes.

### *Stratigraphy*

All rock units within the SUFCO Mine permit area are sedimentary (Figure 6-1). The oldest unit is the Upper Cretaceous Masuk Member of the Mancos Shale, which is overlain in order of increasing younger rocks, by the Star Point Sandstone Member of the Blackhawk Formation, the upper Blackhawk Formation, the Castlegate Sandstone, the Price River Formation, and the overlying North Horn Formation. The Permittee describes the stratigraphy in Chapter 6. Plate 6-1 shows the attitude of the formations over the permit area. The strike of the formations on the lease is approximately N. 54° E. and the dip is about 2.5 degrees to the northwest. Plate 6-1 also shows the stratigraphy over the permit area. Each stratigraphic unit is described in Chapter 6.

Mining will take place in the Upper Hiawatha Coal seam. Strata overlying the coal seam ranges from about 1000 feet to over 1800 feet.

### *Structure*

From Plate 6-1 there appears to be one fault in the SITLA Muddy Tract, however it lies outside the area of proposed mining. The surface of the lease features a mountain oriented from southwest to northeast known as Big Ridge. The elevation over the lease ranges from about 8300 feet to over 9100 feet. The Cretaceous Price River Formation and Tertiary North Horn formations are exposed on the surface. The Castlegate Sandstone, which underlies the Price River Formation, forms vertical cliffs along Box Canyon to the east, Cowboy Canyon to the northwest and Green Canyon to the north. Joint patterns appear in the Castlegate Sandstone.

Several perched springs discharge from the North Horn Formation. The springs that discharge from the Price River Formation are found along Cowboy Canyon. Subsidence will take place over much of the lease, however the springs should not be impacted. The vertical distance from the coal seam to be mined and the spring should buffer fracturing impacts, especially in the North Horn Formation where shales and mudstone are more elastic and should not fracture. Local changes to the bedding plane may occur, but a loss of water is not expected.

Fracturing in the Blackhawk Formation and Castlegate sandstone could occur and groundwater stored in these formations could be intercepted. The Permittee has discussed how intercepted groundwater flows into the mine where active mining is taking place, then abates as mining progresses to another area.

It is expected that subsidence will be observed on the surface in some areas where the cover is shallow, as has occurred in the past in the Pines Tract.

### *Faults*

The area of the permit is not heavily faulted according to Plate 6-1. No groundwater should be intercepted from faults.

**Findings:**

The Geological Resource information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

**HYDROLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-724.

**Analysis:****Sampling and Analysis**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for Sampling and Analysis as provided in R645-301-723. The Division finds that these standards are met because, as stated in Section 7.2.3, Sampling and Analysis, of the mine's existing MRP, "all water samples collected for use in this MR&P have been analyzed according to the methods in either the "Standard Methods for the Examination of Water and Waste Water" or 40 CFR parts 136 and 434".

**Baseline Information**

The SITLA Muddy Tract amendemnt meets the hydrology Environmental Description for Baseline Information as provided in R645-301-724. Hydrologic baseline data for the SITLA Muddy Tract is presented in Appendix 7-20. The groundwater, surface water, and geologic information provided meets the standards of R645-724.100, .200, and .300, respectively. Furthermore, as required in R645-301-724.310 and .320, the baseline information was used to: 1) make a probable hydrologic consequences (PHC) determination for the new tract area; 2) make a determination of the viability of reclamation; and 3) make a determination of the potential for material damage outside of the permit area. These determinations are also provided in Appendix 7-20. A brief description of the baseline data collection for the tract is presented below.

Appendix 7-20 presents the seasonal field and laboratory data for spring, groundwater well, and stream monitoring sites within and adjacent to the SITLA Muddy Tract. The data was compiled from the Division electronic database (EDI) located at the internet site:

<http://ogm.utah.gov/coal/edi/wqdb.htm>. The Muddy Tract water monitoring data on the Division EDI was compiled from the report "Muddy Creek Tract: Surface and Groundwater Technical Report" (October 2004) prepared by Cirrus Ecological Solutions, LC, for the Manti-La Sal National Forest. The report is the result of 3.5 years of field data collection for the Muddy Tract, including the SITLA lease area, beginning in the fall of 2000. Baseline seasonal field and laboratory water monitoring data includes all of the recommended monitoring sites for the SITLA Muddy Tract.

### **Baseline Cumulative Impact Area Information**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for Baseline Cumulative Impact Area Information as provided in R645-301-725. The Division finds that these standards are met because the report prepared by Cirrus Ecological Solutions, LC, has been provided to the Division by the Manti-La Sal Forest Service. The report, in combination with Appendix 7-20, Investigation of Surface and Groundwater Systems in the SITLA Muddy Tract Area, Sevier County, Utah: Probable Hydrologic Consequences of Coal Mining in the SITLA Muddy Tract and Recommendations for Surface and Groundwater Monitoring, included with the SITLA Muddy Creek Tract amendment, adequately presents hydrologic and geologic information for the cumulative impact area needed by the Division to provide an assessment of the probable cumulative hydrologic impacts.

The MRP meets the hydrology Environmental Description for Baseline Cumulative Impact Area Information as provided in R645-301-725. The Division finds that these standards are met because Chapter 7 of the MRP and the PHC determinations located in Appendices 7-17, 7-18, and 7-20 adequately presents hydrologic and geologic information for the cumulative impact area needed by the Division to provide an assessment of the probable cumulative hydrologic impacts. Additional information is also in a report prepared by Cirrus Ecological Solutions, LC, that has been provided to the Division by the Manti-La Sal Forest Service.

### **Modeling**

No modeling has been included as part of the SITLA Muddy Tract amendment.

### **Probable Hydrologic Consequences Determination**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for Probable Hydrologic Consequences (PHC) Determination as provided in R645-301-728. The PHC determinations for the Quitchupah, Pines, and SITLA Muddy Tracts are provided in the MRP in Appendices 7-17, 7-18, and 7-20, respectively. The determinations of PHC are based on the baseline hydrologic information. The PHC determinations make findings on potential hydrologic impacts due to coal mining in the permit area as outlined in R645-301-728.300. The PHC determinations are accurate and complete and find that the coal mining activities proposed for the permit area will not result in the contamination, diminution, or interruption of State-appropriated water, or of surface water or groundwater within or adjacent to the permit area. The PHCs also recommend water monitoring plans for the Quitchupah, Pines, and SITLA Muddy Tracts to verify that mining-related activities do not adversely impact groundwater or surface-water resources.

### **Groundwater Monitoring Plan**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for Groundwater Monitoring Plan as provided in R645-301-724.100. The Division finds that these standards are met because the approved groundwater monitoring plan in the MRP was updated based on a PHC determination for the Muddy Creek Tract. The update to the monitoring plan

includes the addition of one spring monitoring site located within the SITLA Muddy Creek Tract (M-SP53), two spring monitoring sites located adjacent to the SITLA Muddy Creek Tract (M-SP08 and M-SP39), and one monitoring well site located within the SITLA Muddy Creek Tract (01-8-1). The spring monitoring sites are to be monitored quarterly for flow and field parameters and the groundwater monitoring well site is to be monitored quarterly for water levels. In addition, one spring monitoring site (GW-13) located within the SITLA Muddy Creek Tract is part of the existing SUFCO Mine groundwater monitoring plan. Following their review of the amendment and consultation with the Division, the Manti-La Sal Forest Service has requested the additional monitoring of springs located further downgradient of the proposed area to be mined. To comply with this request, the Permittee has included the monitoring of three springs located approximately 1 to 1.5 miles north of the SITLA Muddy Tract (M-SP18, M-SP01, and M-SP-02).

### **Surface-Water Monitoring Plan**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for Surface Water Monitoring Plan as provided in R645-301-724.200. The Division finds that these standards are met because the approved surface water monitoring plan in the MRP was updated based on a PHC determination for the Muddy Tract. The update to the monitoring plan includes the addition of one stream monitoring site (M-STR5) located downstream of the proposed permit boundary in Cowboy Creek. Cowboy Creek is a perennial stream that flows through a portion of the northwest corner of the SITLA Muddy Tract. There are no other perennial or intermittent streams to monitor within the proposed permit area. The SUFCO Mine has made a commitment in the MRP to submit a monitoring and mitigation plan prior to conducting full extraction mining beneath Cowboy Creek (p. 5-39c of the MRP).

### **State Appropriated Water Rights**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for State Appropriated Water Rights as provided in R645-301-724.100, -724.200. The Division finds that these standards are met because the water rights summary (Appendix 7-1, Water Rights Data) has been updated with water rights located within and adjacent to the SITLA Muddy Creek Tract. There are thirteen water rights listed by the Utah Division of Water Rights (DWR) within the SITLA Muddy Tract: five are for stockwatering directly on a spring; five are for stockwatering directly on a stream; and three are for stockwatering directly on a reservoir (stockwatering pond). The United States Forest Service owns all of the water rights listed.

### **Findings:**

The Hydrologic Resource information in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **MAPS, PLANS, AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

### **Analysis:**

#### **Affected Area Boundary Maps**

The Permittee met the requirements for showing the affected area boundaries. The Permittee is required to show the boundaries of all areas proposed to be affected over the estimated total life of the underground mining activities, with a description of size, sequence, and timing of the mining of subareas for which it is anticipated that additional permits will be sought. Plate 5-7, Land Ownership and Permit Area Map, shows the permit area.

#### **Coal Resource and Geologic Information Maps**

Map 6-1 identifies the general regional geology and shows the coal seam stratigraphy, which dips northeast at about 2.5 degrees and structure. Plates 6-3 and 6-4 (geologic cross-sections B-B' and C-C') have been added. The revised Plate 6-1, Geology and Drill hole Location Map, includes SITLA lease ML 44943 within the permit boundary and shows the locations of the two new cross-sections. Detailed geologic information is in the R2P2.

Revised Plate 5-11 shows overburden isopach thickness for the SUFCO mine area, including the SITLA Muddy Tract. Revised Plate 5-10A shows the limits of anticipated subsidence for the Quitcupah Tract, Plate 5-10- B show the anticipated limits of subsidence for the SITLA Muddy Tract.

Plate 5-7 shows projected mining for the SUFCO Mine through the year 2009. The plate indicates that the northern portion of the SITLA Muddy Tract will not be mined. The Permittee explains that the sand channel that prevented complete mining of the panels in the Pines Tract extends west into the SITLA Muddy Tract to prevent complete mining of the panels in the Upper Hiawatha coal seam. The Permittee also explains that the coal thins northward, which hinders coal recovery. Plate 5-11 shows the overburden isopach for the strata above the Upper Hiawatha coal seam.

#### **Mine Workings Maps**

The Permittee met the requirements for showing the mine workings. The Permittee is required to show the location and extent of known workings of active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas. Plate 5-1, Previously Mined Areas, shows the location of the previously mined areas.

#### **Monitoring and Sampling Location Maps**

The SITLA Muddy Tract amendment meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Monitoring and Sampling Location Maps as provided in R645-301-722.300. The Division finds that these standards are met because Plate 7-3, Hydrologic Monitoring Stations, has been updated to include the additional water monitoring and sampling sites proposed for the SITLA Muddy Tract. All sites on the plate are accompanied with an elevation identification.

### **Permit Area Boundary Maps**

The Permittee met the requirements for showing the permit area boundary. The Permittee is required to show the boundaries of land within the proposed permit area upon which the Permittee has the legal right to enter and begin underground mining activities. Plate 5-7, Land Ownership and Permit Area Map, shows the permit area.

### **Subsurface Water Resource Maps**

The SITLA Muddy Tract amendment meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Subsurface Water Resource Maps as provided in R645-301-722.100. The Division finds that these standards are met because Plate 7-1, Potentiometric Surface of the Blackhawk/Starpont Aquifer, shows the potentiometric surface of the regional aquifer for the SUFCO Mine area. The plate does not need to be updated to include the SITLA Muddy Tract because the plate shows groundwater elevations from 1989, prior to progression of mining that has caused several wells to be abandoned. One groundwater monitoring well (01-8-1) was added to the SITLA Muddy Tract in 2001. However, the inclusion of groundwater elevation data from this well would not provide a more complete potentiometric surface map of the regional aquifer than the 1989 data provides, given the fewer number of wells now available.

Plate 7-2B, Surface and Groundwater Rights, Pines and SITLA Muddy Tracts, has been updated to include the water right locations for the SITLA Muddy Tract and adjacent areas.

### **Surface Water Resource Maps**

The SITLA Muddy Tract amendment meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Surface Water Resource Maps as provided in R645-301-722.200. The Division finds that these standards are met because the location of surface-water bodies within and adjacent to the permit area is presented on Plate 7-2B, Surface and Groundwater Rights, Pines and SITLA Muddy Tract, and Plate 7-3, Hydrologic Monitoring Stations. Both plates have been updated to include the SITLA Muddy Tract and adjacent areas.

### **Vegetation Reference Area Maps**

Wildlife maps for the Biology section of the application include Plate 3-1, Plant Communities and Sampling areas, Plate 3-2, Elk Range, and Plate 3-3 Deer Range and Raptor Nests. The boundaries of the SITLA Muddy Tract have been clearly identified on Plates 3-1, 2, and 3. Plate 3-1, (Plant Communities and Sampling areas of the SITLA Muddy Tract), was used to ground truth the vegetation communities. Because there are many communities represented in such a small area on the map, it was very difficult to clearly identify the various communities in

the field. The Permittee has made a commitment in Chapter Three, Section 3.2.1.1, to “upgrade and further improve the data displayed on plate 3-1 before the end of 2006”. The land use designations for big game as shown on plate 4-1B, generally coincide with those designations shown on plates 3-2 and 3-3. The land use designations for big game on the plates do not precisely coincide because the plates are intended to depict different information for the MRP.

### **Well Maps**

No oil, gas or water production wells exist within the permit area, including the SITLA Muddy Tract addition. Groundwater monitoring wells located within the permit area, including the SITLA Muddy Tract are shown on Plate 7-3. Figure 8, Chapter 7, identifies the wells and drill holes on and adjacent to the permit area.

### **Findings:**

The Maps, Plans, and Cross Sections of Resource information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

# OPERATION PLAN

## COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

### **Analysis:**

The Permittee meets the requirements for the R645 – Rules. The Permittee showed how they would conduct underground mining activities to maximize the utilization and conservation of the coal, while utilizing the best technology currently available to maintain environmental integrity.

The Permittee explains in Chapter 6 of the MRP the reason for projections to mine only in the upper Hiawatha seam. This submittal also includes a report from Agapito Associates that provides a detailed description of the stratigraphy and lithology on and adjacent to the mined area. The Permittee submitted Plate 5-7 showing the mine projection in the upper Hiawatha coal seam. Map 6-3 shows the Upper Hiawatha isopachs.

Plate 5-7 shows SITLA Muddy Tract and the mine layout. The panels do not extend to the end of the permit boundary of the lease, because a sand channel cuts through the coal seam. It runs perpendicular to the mine panels, which blocks mine access. Also, a low seam height has been identified, which prevents further mining. The Permittee states that the information is in the Resource Recovery and Protection Plan (R2P2) on file with SITLA.

### *Type and Method of Mining Operations*

The permittee explains in Chapter 5 the planned mining method. Both continuous mining and longwall mining will be employed to maximize coal recovery. The Permittee has supplied maps and plans to show where mining will take place. Both room and pillar and longwall mining is planned to take as much coal as possible. The mining plan for maximum economic recovery has been developed by the U.S. Bureau of Land Management (BLM). The BLM provided the mining plans to SITLA, the owner of the mineral lease, and SITLA has accepted them.

The Permittee has submitted several maps showing the mine projection in the upper Hiawatha coal seam. Map 6-3 shows the upper Hiawatha isopachs.

Several plates, including Plate 5-10-B, show the panel layout for the SITLA Muddy Tract. The panels do not extend to the boundary of the lease, because a sand channel that cuts the coal seam runs perpendicular to the mine panels, which blocks mine access. Also, a low seam height has been identified, which prevents further mining.

### **Findings:**

The Coal Recovery information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **SUBSIDENCE CONTROL PLAN**

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

### **Analysis:**

#### **Renewable Resources Survey**

The Permittee meets the requirements of the R645 – Rules for this section. Those requirements are that the Permittee conduct a survey. The survey shall show whether structures or renewable resource lands exist within the proposed permit area and adjacent areas. It also shows whether subsidence, if it occurred, could cause material damage or diminution of reasonably foreseeable use of such structures or renewable resource lands. As part of the survey, the Permittee listed the quality and quantity of State appropriated water within the SITLA Muddy Tract in Appendix 7-20.

The Permittee determined that there are renewable resources within the subsidence zone. Therefore, the Permittee must implement a subsidence control plan.

#### **Subsidence Control Plan**

The subsidence control plan requirements were met by providing the following information:

- Stating in Section 5.2.5.1, Subsection Mining Methods, of the MRP that longwall, and room and pillars are the mining methods.
- Showing the subsidence area for the Muddy and Pine Tract on Plate 5-10B.
- Providing geological information in Chapter 6 of the MRP.
- In Section 5.2.5.1, Subsection Monitoring, of the MRP the Permittee states that control points for the aerial subsidence monitoring program are shown on Plate 5-10A and Plate 5-10B. The subsidence monitoring points are shown on Table 5-2.
- Providing the subsidence control plan. The Permittee will use full extraction methods in the SITLA Muddy Tract. The Permittee will protect areas from subsidence by leaving support pillars when needed.
- Describes the anticipated effects of subsidence in Section 5.2.5.1, Anticipated Effects of Subsidence in the MRP.
- Included a detailed description of methods that can be used to mitigate the loss of State-appropriated water in Section 7.31.8 of the MRP.

#### **Performance Standards For Subsidence Control**

The Permittee is required to comply with all subsidence performance standards. The Division will check to insure that the Permittee is in compliance with those standards during

## OPERATION PLAN

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regular inspections. The performance standards are stated in the mining and reclamation plan and the R645 rules.

### **Notification**

At least 6 months before mining, or within that period if approved by the Division, the Permittee will notify the water conservancy district and all owners and occupants of surface property and structures above the underground workings. The notification shall include, at a minimum, identification of specific areas in which mining will take place, dates that specific areas will be undermined, and the location or locations where the Permittee's subsidence control plan may be examined.

### **Findings:**

The Subsidence Control Plan information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **FISH AND WILDLIFE INFORMATION**

Regulatory Reference: 30 CFR Sec. 784.21, 817.97; R645-301-322, -301-333, -301-342, -301-358.

### **Analysis:**

#### **Protection and Enhancement Plan**

The application includes a description of the wildlife located within the SITLA Muddy Tract and a discussion for minimizing impacts to wildlife and livestock as a result of the anticipated effects of subsidence. The discussion is included in Chapter 3, Section 3.3.3.3.

#### **Endangered and Threatened Species**

Pages 3-40 and 3-40A address potential water depletions from mining operations that may have an affect on endangered fish species identified in pertinent fish recovery programs. Calculations of current water depletions from mining activities are included. Volumes of water consumed in mining processes in excess of 100 acre-feet/year require mitigation with the U. S. Fish and Wildlife Service. The water consumption from the mine results in a net gain of 5544.3 acre-feet/year.

#### **Bald and Golden Eagles**

Appendix 3-11 of the application includes the status of Bald and Golden Eagles up to 2005. Bald Eagles do not nest in the area but are typically inhabitants during migration. According to the Cirrus report provided as Appendix 3-11, five Bald Eagles have been seen along Cowboy Creek during the fall migration of 2003. As noted in the Fish and Wildlife Resource Information section, a current raptor survey has been included to update the status of Golden Eagles in the SITLA Muddy Tract area.

### **Wetlands and Habitats of Unusually High Value for Fish and Wildlife**

The application includes a description of these areas, including a discussion that addresses how impacts from subsidence during mining operations will be minimized. The information is provided in Chapter Three.

#### **Findings:**

The Fish and Wildlife information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

### **VEGETATION**

Regulatory Reference: R645-301-330, -301-331, -301-332.

#### **Analysis:**

The applicant has made a commitment in Chapter Three, Section 3.2.1.1, to “upgrade and further improve the data displayed on plate 3-1 before the end of 2006”. The applicant has also committed to include a description of the vegetation types located within the proposed lease tract.

#### **Findings:**

The Vegetation information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

### **SPOIL AND WASTE MATERIALS**

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

#### **Analysis:**

##### **Coal Mine Waste**

The application indicates in Section 5.2.2 that sand channels exist in the lease area. The amount of waste rock to be brought to the surface was not estimated.

##### **Refuse Piles**

Certification of the refuse piles is provided to the Division quarterly (not in the Annual Reports), but does not include the volume of refuse hauled to the site. In August 2005, the waste rock site was estimated to hold 163,748 tons of waste rock.

## OPERATION PLAN

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The MRP indicates the waste rock site will be contemporaneously reclaimed and that the initial cell will cover 4.5 acres (Section 3.4, Vol. 3). Map 4 of Volume 3, dated August 31, 2005, illustrates the status of reclaimed, active and topsoil salvage areas at the refuse site. The first three lifts have been reclaimed. At the current rate of transport (3,200 tons/yr), the waste rock site will reach design capacity in 2016.

### **Findings:**

The Spoil and Waste Material information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

### **Analysis:**

#### **Groundwater Monitoring**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for Groundwater Monitoring Plan as provided in R645-301-724.210. The Division finds that these standards are met because the approved groundwater monitoring plan in the MRP was updated based on a PHC determination for the SITLA Muddy Tract. The update to the monitoring plan includes the addition of one spring monitoring site located within the SITLA Muddy Tract (M-SP53), two spring monitoring sites located adjacent to the SITLA Muddy Tract (M-SP08 and M-SP39), and one monitoring well site located within the SITLA Muddy Tract (01-8-1). The spring monitoring sites are to be monitored quarterly for flow and field parameters and the groundwater monitoring well site is to be monitored quarterly for water levels. In addition, one spring monitoring site (GW-13) located within the SITLA Muddy Tract is part of the existing SUFCO Mine groundwater monitoring plan. Following their review of the amendment and consultation with the Division, the Manti-La Sal Forest Service has requested the additional monitoring of springs located further downgradient of the proposed area to be mined. To comply with this request, the Permittee has included the monitoring of three springs located approximately 1 to 1.5 miles north of the SITLA Muddy Tract (M-SP18, M-SP01, and M-SP-02).

#### **Surface Water Monitoring**

The SITLA Muddy Tract amendment meets the hydrology Environmental Description for Surface Water Monitoring Plan as provided in R645-301-724.220. The Division finds that these standards are met because the approved surface water monitoring plan in the MRP was updated based on a PHC determination for the SITLA Muddy Tract. The update to the monitoring plan includes the addition of one stream monitoring site (M-STR5) located downstream of the proposed permit boundary in Cowboy Creek. Cowboy Creek is a perennial stream that flows through a portion of the northwest corner of the SITLA Muddy Tract. There are no other

perennial or intermittent streams to monitor within the proposed permit area. The SUFCO Mine has made a commitment in the MRP to submit a mitigation plan prior to conducting full extraction mining beneath Cowboy Creek (p. 5-39c of the MRP).

### **Transfer of Wells**

Transfer of wells is not currently considered as part of the SUFCO MRP or the SITLA Muddy Tract amendment. Any future transfers will be in accordance with DOGM approval.

### **Discharges Into An Underground Mine**

The SUFCO Mine plan does not anticipate any discharges into underground mines for the existing permit area, or the inclusion of the SITLA Muddy Tract.

### **Gravity Discharges From Underground Mines**

There are no gravity discharges planned from the SUFCO Mine or from the addition of the SITLA Muddy Tract. Intercepted groundwater is used in the mining process and excess water is pumped from the mine to the North Fork of Quitchupah Creek UPDES mine discharge site (003A). The mine is currently discharging approximately 3000 gallons per minute from the Quitchupah and Pines Tracts through UPDES outfall 003A.

### **Water-Quality Standards And Effluent Limitations**

No changes to the SUFCO Mine's existing water quality standards and effluent limitations are anticipated with the addition of the SITLA Muddy Tract because there will be no new surface disturbance or changes to mine water discharge. The MRP meets the regulatory water-quality standards because sediment control measures have been designed to prevent, to the extent possible, additional contributions of sediment to stream flow or runoff outside the permit area, to meet effluent limitations and to minimize erosion. SUFCO plans to maintain water quality standards by employing sediment control structures on disturbed areas and settling in-mine waters prior to their discharge.

### **Diversions: General**

No diversions are anticipated due to the addition of the SITLA Muddy Tract. No new surface disturbance is planned.

### **Stream Buffer Zones**

As stated in Section 7.3.1.6, Stream Buffer Zones, of the MRP, all perennial and intermittent streams in the mine area are protected by 100-foot stream buffer zones on either side of these streams.

**OPERATION PLAN**

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**Sediment Control Measures**

No changes to the SUFCO Mine's existing sediment control measures are anticipated with the addition of the SITLA Muddy Tract. No new surface disturbance is planned.

**Alternative Sediment Control Areas (ASCAs)**

No changes to the SUFCO Mine's existing alternative sediment control areas (ASCAs) are anticipated with the addition of the SITLA Muddy Tract. No new surface disturbance is planned.

**Siltation Structures: General**

No changes to the SUFCO Mine's existing siltation structures are anticipated with the addition of the SITLA Muddy Tract. No new surface disturbance is planned.

**Discharge Structures**

No changes to the SUFCO Mine's existing discharge structures are anticipated with the addition of the SITLA Muddy Tract. No new surface disturbance is planned.

**Impoundments**

No changes to the SUFCO Mine's existing impoundments are anticipated with the addition of the SITLA Muddy Tract. No new surface disturbance is planned.

**Ponds, Impoundments, Banks, Dams, and Embankments**

No changes are anticipated with the addition of the SITLA Muddy Tract. No new surface disturbance is planned.

**Findings:**

The Operation Plan Hydrologic information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

### **Analysis:**

#### **Affected Area Maps**

The Permittee met the requirements for showing the affected area boundaries. The Permittee is required to show the boundaries of all areas proposed to be affected over the estimated total life of the underground mining activities, with a description of size, sequence, and timing of the mining of subareas for which it is anticipated that additional permits will be sought. Plate 5-7, Land Ownership and Permit Area Map, shows the permit area.

#### **Mine Workings Maps**

The Permittee met the requirements for showing the mine workings. The Permittee is required to show the location and extent of known workings of proposed, active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas. Plate 5-7, Upper Hiawatha Mine Plan 5-Year Projection shows the operational and projected mine workings associated with the SITLA Muddy Tract.

#### **Monitoring and Sampling Location Maps**

The SITLA Muddy Tract amendment meets the hydrology Maps, Plans, and Cross Sections of Resource Information for Monitoring and Sampling Location Maps as provided in R645-301-731.730. The Division finds that these standards are met because Plate 7-3, Hydrologic Monitoring Stations, has been updated to include the additional water monitoring and sampling sites proposed for the SITLA Muddy Tract. All sites on the plate are accompanied with an elevation identification.

#### **Certification Requirements**

The Permittee met the requirements for map certification. The Permittee is required to have cross sections, maps, and plans that are required to show the design, location, elevation, or horizontal or vertical extent of the land surface, or of a structure or facility used to conduct mining and reclamation operations. These cross sections, maps, and plans shall be prepared by, or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist. In any State which authorizes land surveyors to prepare and certify such cross sections, maps, and plans, a qualified, registered, professional land surveyor, with assistance from experts in related fields such as landscape architecture. All such maps associated with the SITLA Muddy Tract have been certified.

**OPERATION PLAN**

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**Findings:**

The Maps, Plans, and Cross Sections of Mining Operations information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.



## RECLAMATION PLAN

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# RECLAMATION PLAN

## GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

### Analysis:

No update to the existing reclamation plan was submitted because no new surface disturbance is planned for the SITLA Muddy Tract.

The applicant has provided information in the MRP to show they will conduct reclamation activities on the minesite at completion of mining. Drill holes will be plugged and abandoned following State approved methods.

Reclamation of the mine site following completion of the mining operations as required by state regulations R645-301 and R645-302 will be accomplished. The reclamation plan is discussed in detail in Chapter 3 of the MRP.

When no longer needed for monitoring, each well or boring will be capped, sealed, backfilled, or otherwise properly managed, as required by UDOGM. Permanent closure measures will be designed to prevent access to the borings or monitoring wells.

No oil and gas exploration or production wells are located in the permit area.

Subsidence of the sediments overlying the mining area will be monitored. A detailed description of the subsidence monitoring plan, including a map illustrating the location of monitoring stations, is presented in Section 3.4.8.

### Findings:

The Reclamation Plan General Requirements information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

### Analysis:

### **General**

No small depressions or impoundments of any kind will be retained after final reclamation.

## **BONDING AND INSURANCE REQUIREMENTS**

Regulatory Reference: 30 CFR Sec. 800; R645-301-800, et seq.

### **Analysis:**

#### **General**

Since the addition of the SITLA Muddy Tract does not involve any additional surface disturbance or surface facilities, the bond amount will not change. The Division calculated the bond as part of Task 2068, Midterm Review. The current reclamation estimate is for \$2,616,000 and the current bond amount is for \$4,439,000.

#### **Form of Bond**

The surety bond is through St. Paul Fire and Marine Insurance Company.

#### **Determination of Bond Amount**

Recently, the Division evaluated the reclamation costs for the SUFCO Mine in the event of bond forfeiture. Costs were estimated at \$2,616,000 in 2009 dollars (see 2278WHW.doc, July 13, 2005). The amount of bond in excess of the required amount is \$1,823,000.

#### **Terms and Conditions for Liability Insurance**

The most recent liability insurance information is found in Appendix 1-2 of the General Chapter 1 volume.

### **Findings:**

The Reclamation Plan Bonding and Insurance Requirements information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.

## **CUMULATIVE HYDROLOGIC IMPACT ASSESSMENT (CHIA)**

Regulatory Reference: 30 CFR Sec. 784.14; R645-301-730.

### **Analysis:**

The SITLA Muddy Tract amendment meets the requirements of the Cumulative Hydrologic Impact Assessment (CHIA) as provided in R645-301-729. The Division finds that these standards have been met because the hydrologic information provided in the application is adequate to update the Quitchupah-Muddy Creek CHIA. The Division will update the CHIA by incorporating the addition of the SITLA Muddy Tract.

### **Findings:**

The Cumulative Hydrologic Impact Assessment information provided in the SITLA Muddy Tract amendment meets the requirements of the State regulations.