

# 1999 ANNUAL REPORT

## CANYON FUEL COMPANY, LLC SUFCO MINE ACT/041/002

File in:

Confidential

Shelf

Expandable

Refer to Record No.

Date

In C

For additional information

0025 Date 03/24/2000  
In C 0410002 2000. J. L. Smith

0025



Canyon Fuel Company, LLC  
SUFCO Mine  
397 South 800 West  
Salina, Utah 84654  
(435) 286-4880 Fax: (435) 286-4499

**COPY**

March 24, 2000

Utah Coal Regulatory Program  
1594 West North Temple, Suite 1210  
P. O. Box 145801  
Salt Lake City, UT 84114-5801

Re: 1999 Annual Report for Canyon Fuel Company LLC, SUFCO Coal Mine  
ACT/041/002, Sevier County, Utah

Dear Permit Supervisor:

Enclosed herewith is a copy of the annual report for the Canyon Fuel Company, SUFCO Mine for 1999. The information included is thought to be complete as requested. Questions should be referred to Mike Davis at (435) 286-4421.

Sincerely,  
CANYON FUEL COMPANY, LLC  
SUFCO Mine

Kenneth E. May  
General Manager

Enclosures

KEM/MLD:kb

**RECEIVED**  
APR 03 2000  
DIVISION OF  
OIL, GAS AND MINING

P:\GOVT\2000\DOGMCORR\99ANNUAL.LTR

File in: 041/0002 2000 Incoming  
Refer to:  
 Confidential  
 Shelf  
 Expandable  
Date: 03/24/00 for additional information

**GENERAL INFORMATION**

1. Permit Number	ACT/041/002
2. Mine Name	SUFCO Mine
3. Permittee Name	Canyon Fuel Company, LLC
4. Operator Name (if other than Permittee)	
5. Permit Expiration Date	May 20, 2002
6. Company Representative, Title	Kenneth E. May, General Manager
7. Phone Number	(435) 286-4880
8. Fax Number	(435) 286-4499
9. Mailing Address	Canyon Fuel Company, LLC
	SUFCO Mine
	397 South 800 West
	Salina, UT 84654
10. Resident Agent, Title	The Corporation Trust Company
Mailing Address	Corporation Trust Center
	1209 Orange Street
	Wilmington, DE

**IDENTIFICATION OF OTHER PERMITS**

Identify other permits which are required in conjunction with mining and reclamation activities.

Permit Type	ID Number	Description	Expires on
1. MSHA Mine ID(s)	4200089	Minesite	
	1211UT090 008901	Waste Rock Disposal Site	
2. MSHA Impoundment(s)			
3. NPDES/UPDES Permit(s) (water)	UT0022918	Minesite Sediment Pond Major Industrial	April 30, 2001
4. PSD (Air ) Permit(s)	DAQE71498	Minesite Air Quality Approval Order	
	BAQE12688	Waste Rock Disposal Air Quality Approval Order	
5.			

### CERTIFIED REPORTS

List the certified inspection reports as required by the rules and under the approved plan which must be periodically submitted to the Division. Specify whether the information is included as APPENDIX A to this Annual Report or currently ON FILE with the Division.

Certified Reports:	Reports Required?		INCLUDED or ON FILE w/DOGM?			Comments
	YES	NO	YES	NO	ON FILE	
1. Excess Spoil Piles		X				
2. Refuse Piles	X				X	Certified Reports previously submitted
3. Impoundments	X				X	Certified Reports previously submitted
4.						
5.						

### REPORTING OF OTHER TECHNICAL DATA

List other technical data and information as required under the approved plan which must be periodically submitted to the Division. Specify whether the information is included as APPENDIX B to this Annual Report or currently ON FILE with the Division.

Technical Data:	Reports Required?		INCLUDED or ON FILE w/DOGM?			Comments
	YES	NO	YES	NO	ON FILE	
1. Climatological Data	X		X			Included on disk in Appendix B
2. Subsidence Monitoring Data	X		X			Included in Appendix B
3. Vegetation Monitoring Data	X		X			Included in Appendix B
4. Raptor Data	X				X	Data Previously Submitted
5. Soils Monitoring Data		X				
6. Water Monitoring Data						
First Quarter Report	X				X	Data Previously Submitted
Second Quarter Report	X				X	Data Previously Submitted
Third Quarter Report	X				X	Data Previously Submitted
Fourth Quarter Report	X				X	Data Previously Submitted
7. Geological/Geophysical Data		X				
8. Engineering Data		X				
9. Other Data						
<i>waste rock analyses</i>	X		X			



# APPENDIX A

## Certified Reports

Excess Spoil Piles  
Refuse Piles  
Impoundments

as required under R645-301-514

### CONTENTS

None - Certified Reports previously submitted.

## **APPENDIX B**

### Reporting of Technical Data

including monitoring data, reports, maps, and other information  
as required under the approved plan  
or as required by the Division

in accordance with the requirements of R645-301-130 and R645-301-140.

### **CONTENTS**

Climatological Data on Disk  
Subsidence Report  
Vegetation Monitoring Report

**1999 SUBSIDENCE REPORT**

**CANYON FUEL COMPANY, LLC**

**SUFCO MINE**

by

JOHN M. BLACK

CHIEF SURVEYOR

## INTRODUCTION

Canyon Fuel Company LLC, SUFCO Mine's 1999 subsidence report is an update of annual subsidence data which has been accumulated since 1976 as the former Southern Utah Fuel Company. Prior to 1985, the data was derived from conventional survey methods. Since then, photogrammetric surveys have been employed to monitor the ground movement.

During 1985, the entire SUFCO Mine property was flown to establish a set of baseline photography and a grid of surface elevations. Where possible, an elevation was photogrammetrically determined on an approximate 200 foot grid. These original x, y and z locations serve as a comparative base for determining ground movement in the succeeding years. Other lease holdings that are acquired are flown for similar baseline information. Lease U-63214 was flown in 1991 and the 150 acre modification to lease U-63214 and lease UTU-76195 were flown in 1999.

Once each year, another set of aerial photography is obtained. A new elevation is then found at the same x and y coordinates as all the originals within all areas considered to be active. The new, or current, elevations are compared to the originals and the difference between the two is used to generate a contour map. The result is the subsidence contour map included with each annual subsidence report.

The mine subsidence map accompanying this report shows surface control monuments, overburden contours, subsidence contours, surface tension cracks, a current outline of the mine, a one year mining projection and other miscellaneous items as explained in the legend.

## SUBSIDENCE HISTORY

SUFCO Mine began operations which cause surface subsidence in June, 1976. Continuous miners were used to extract coal from pillars which were developed as part of a retreating panel. The panels were approximately 650 feet wide and varied in length up to 2,500 feet. The average mining height approached 11 feet and the extraction ratio averaged about 80%.

The resulting subsidence from these continuous miner panels averaged 4 feet in the plateau areas where overburden was 900 feet thick. In areas where panel boundaries were outside the escarpment and beyond the Castlegate Sandstone, subsidence increased with decreasing overburden thickness. The maximum subsidence measured to date, 8.5 feet, occurred in one of these areas. The overburden was only 600 feet thick.

Retreat mining continued in this manner until October, 1985, when a retreating longwall system was added. Longwall panels have ranged from 550 feet to 930 feet wide and up to 18,500 feet in length. Mining heights have varied from 8.5 feet to 12 feet.

Subsidence above the longwall panels has averaged 4 feet. The overburden thickness has been as much as 1,800 feet. The Maximum measured subsidence caused by longwall mining is seven feet. This occurred in an area outside the escarpment very similar to the one mentioned above for the continuous miner panel.

## DORMANT AND ACTIVE AREAS

Dormant areas are those areas that have shown no movement for several consecutive years. Yearly digitizing of these areas will not be done, but photographic coverage will be maintained in the event that a need should arise for reevaluation. These areas may not be shown on the subsidence map.

Active areas are currently being mined or that have evidence of movement within a reasonable time period. Active areas are digitized and evaluated for subsidence yearly, until they meet the parameters of a dormant area.

## 1999 SUBSIDENCE

The 1997 subsidence map (Map 1) was updated using data from current photogrammetric monitoring. Each subsidence area is labeled as an independent block. A brief description of each follows:

### AREA 1

This was SUFCO Mine's first subsidence area. Undermining began in June, 1976, and continued into 1979. The area is composed of five continuous miner panels which averaged 650 feet in width. Mining height averaged 11 feet with about an 80% extraction ratio.

Maximum subsidence ranged from 4.5 feet to 8.5 feet. It was first detected in 1976 and continued until 1985. No surface movement was detected in this entire area from 1986 to 1989. Area 1 was not digitized for the 1990 subsidence report and is considered dormant.

### AREA 2

This is another continuous miner area. The panels here were irregular shaped and the extraction ratio was modest. Undermining ceased in 1984.

Maximum subsidence has been measured at 2 feet. The area has been stable since 1985 and has not been monitored since 1989. This area is dormant.

### AREA 3

This area is another continuous miner section, but the extracted area is a portion of mains with protective barriers instead of a panel. Coal recovery was moderate with mined areas which were subcritical. Undermining ceased in 1983.

Maximum subsidence was measured at 2 feet. Because of the limited extraction and subcritical areas, the subsidence occurred slowly with small changes noticeable until 1987. The area appeared stable in 1988 and 1989. It has not been monitored since 1989 and is considered dormant.

### AREA 4

This subsidence area is comprised of three continuous miner panels. The mining height averaged 11 feet with a good extraction ratio. Undermining ceased in 1985.

Maximum subsidence was 5 feet with no detectable change in 1989. This area was monitored again in 1993, 1994 and 1995 with no detectable changes. This area was monitored for ten years after undermining ceased. The last detectable subsidence was in 1988. Therefore, this area will be considered dormant.

## AREA 5

The four continuous miner panels which make up this area were mined from September, 1978, to November, 1981. Mining height averaged 11 feet with an 80% extraction ratio.

Maximum subsidence was 5 feet with no detectable changes from 1985 through 1991. This area has not been monitored since 1991, and will also remain dormant.

## AREA 6

Area 6 is SUFCO Mine's first longwall induced subsidence area. It is comprised of nine longwall panels varying from 540 feet to 700 feet in width and 1,700 feet to 3,900 feet in length. Also, there is a section of recovered mains between two of the longwall blocks. Undermining began in Area 6 during October, 1985, and continued through the mains recovery in March, 1990.

Maximum subsidence measured in areas bounded by the plateau is five feet. There is a location on the map which shows seven feet; but this area is outside the escarpment where the overburden is only 600 feet thick. The subsided escarpment is intentional and is part of a study agreed upon by SUFCO Mine, the Division of Oil, Gas and Mining, the Bureau of Land Management and the U. S. Forest Service. This particular section of escarpment was removed from the "no subsidence zone" to study the effects of longwall mining on the escarpment.

Area 6 has shown no significant changes since 1992. It has been determined that this area is dormant.

## AREA 7

Area 7 was originally planned for no subsidence. Pillars were made to support the overburden but began to fail in the north end in 1984 when the underground workings were flooded. The failures progressed towards the south and by 1986, subsidence was detected over the area.

The map shows up to seven feet of subsidence. There was no additional subsidence movement detected from 1988 to 1994. Therefore, this area will also be considered dormant.

## AREA 8

Undermining this area began in June, 1983, and was sporadic until 1992. Continuous miners were used with extraction ratios over 80% and average mining heights of 10 feet. This area stayed active longer than most due to its proximity to an adjacent active longwall block.

Maximum subsidence is five feet. No noticeable vertical movement has been detected since 1993. This area is dormant.

#### AREA 9

This area is a longwall mining area which is composed of four panels. The first began in June, 1989 and the block was finished in January 1992. The mining height averaged about 11 feet and the maximum subsidence shown to date is five feet. There has been no indication of movement since 1996. This area is determined to be dormant.

#### AREA 10

Area ten is a longwall mining block which began in January 1992 and is presently being mined. The entire surface area above this block was digitized for base-line elevations during 1991. Maximum subsidence shown to date is six feet. This area will be active for several more years.

The experimental mining practice area discussed under "Area 6" was extended, with regulatory approval, to the east side of the canyon under the Southwest corner of "Area 10". An extensive pre-mining survey of this location was conducted late in 1992. A detailed survey of the post-mining subsidence effects was provided in the 1993 report.

#### AREA 11

Area eleven is an extension of the last longwall panel in area ten. It extends into a 150 acre modification to lease U-63214. An elevation baseline was established in 1999. Mining under this area will be in the year 2000.

#### AREA 12

Area twelve is the first longwall mining block on the acquired lease UTU-76195. There are three longwall panels in this area.

#### AREA 13

Area thirteen is the second longwall mining block on the acquired lease UTU-76195. There are four longwall panels in this area.

## DRAW ANGLE SURVEYS

Several draw angle surveys have been performed during the past years. Completed surveys have been over continuous miner areas and have been oriented both parallel and perpendicular to the long axis of the panel. The average of all measurements is 15°. Individual measurements ranged from 10° to 21°.

New longwall draw angle data was obtained in 1995. Draw angle points were installed in May 1986, on the southern end of the first panel in "Area 6". As shown on the subsidence map, survey lines were placed parallel and perpendicular to the axis of the panel. Undermining of this panel was completed in June 1986. Measurements were taken in 1995 and indicate an angle 15.25° for the perpendicular line. An angle for the parallel line was not obtained because the mains underlying the survey line were partially extracted. These findings coincide with the average of 15° as stated above.

## SUBSIDENCE TENSION CRACKS

Tension cracks have occurred above most of the subsidence areas. Most have been located by survey and are shown on the map. Their lengths vary from a few feet to five hundred feet. Most are oriented either parallel to the natural jointing pattern or to the boundaries of the underground excavation. Vertical displacement along the cracks is uncommon and horizontal displacement varies from hairline to several inches in width.

The U. S. Forest Service completed a tension crack study in 1978. They monitored twenty-two different cracks (located in Area 1) with widths varying from 1/8 inch to six inches. Results show that most cracks self-heal, or close, from 13% to 100% of their original width.

## DETAILED LONGWALL SUBSIDENCE PROFILE

In 1998 a project was initiated to monitor longwall subsidence in relation to the advancing face. Preparation consisted of first installing two monitoring points outside the subsidence area. Then two base lines were established one 3000 feet long running parallel down the center and the second 1300 feet long perpendicular across the 967 feet wide panel. Markers were installed along these lines on 100 feet spacing using approximately 2.5 feet long rebar with an aluminum cap or a hardened nail drilled into the exposed rock. Initial horizontal and vertical readings were obtained by shooting each marker with a Topcon GTS-3 distance meter from the monitoring points.

Monitoring was done weekly to gather new readings on markers behind and up to 500 feet ahead of the advancing face. The data collected reveals that vertical movement starts approximately 150 feet ahead of the face with 15 hundredths of a foot of subsidence at the face. Then drops off quickly to 4 feet at 600 feet behind the face and gradually levels off at 4 to 5 feet. Horizontal readings indicate the ground initially moves about 30 hundredths of a foot away from the face, then back toward the face 80 hundredths of a foot.

## CONCLUSION

Areas 1, 2, 3, 4, 5, 6, 7, 8, 9 (9 was added this year) are all considered to be dormant. Photographic coverage will be maintained but yearly digitizing will not be done unless necessary. Yearly monitoring of Area 10 will continue until subsidence has been determined to have ceased on an area by area basis.

Three areas were added to the subsidence map this year. Area 11 is a 150 acre modification to lease U-63214. Areas 12 and 13 are longwall mining blocks on the newly acquired lease UTU-76195. Photogrammetric elevation baseline data was obtained on these areas in 1999.

JMB:kb

SUFSRV1\SUF\GOVT1999\BLM\SUBSID99.DOC

# **LINK TRAIL COLUMBINE**

**For  
CANYON FUEL COMPANY, LLC  
SUFCO MINE**

**Prepared by  
Keith W. Zobell  
8684 South 400 West  
Spanish Fork, Utah 84660  
Phone (801)798-8926**

**July 22, 1999**

## LINK TRAIL COLUMBINE

Prepared by Keith W. ZoBell

July 22, 1999

In the data adequacy document prepared for the Pines Tract it stated that " the species Aquilegia flavenscens var. rubicunda has been listed on the USDA-FS Region 4 Sensitive Species List and is found at Link canyon springs and occupies an area of less than one acre. It has not been found at any other location within the delineated Pines tract area".

After this document was prepared a field survey by the U.S. Forest service found the Link Trail Columbine (Aquilegia flavenscens var. rubicunda) growing in the Grotto area in the upper end of the main fork of Box Canyon.

In the permitting document issued by the Utah Division of Oil, Gas and Mining the requirement was made that Canyon Fuel Company be required to do a field search in the Grotto area and stake the location of some of these plants and make a photographic record of this species. These "plots" are to be revisited annually until the area has been subsided to determine if mining has had any affect on the plants.

On July 15, 1999 the area was surveyed by: Keith ZoBell-Environmental Specialist consultant, Chris Hansen-Environmental Coordinator for Canyon Fuel Company, Mike Davis-Mining Engineer for Canyon Fuel Company-SUFCO Mine, and Pete Hess, Inspector for the Utah Division of Oil, Gas and Mining. The group first stopped at Link Canyon Spring where Keith ZoBell conducted a short training session on the identification of the Link Trail Columbine (Aquilegia flavenscens var. rubicunda). The species was in full bloom which made identification rather easy.

The group then traveled to the Grotto area (SW1/4,NW1/4,SE1/4, Section 15, R5E. T21S.) at the head of Box Canyon. The Link Trail Columbine was almost immediately found at the top of the rock

ledge above the small pool below the rock ledge. The plants seem to be growing in the cracks in the Castlegate formation where water would drain from within the formation to the surface. We then hiked down below the rock cliffs and found the Link Trail Columbine growing on both sides of the Canyon. The majority of the plants seemed to be growing in the cracks in the Castlegate formation as before but some of them were also growing at the base of the rock cliffs. A photo point was established in this area (see Photos 1a, 1b, and 1c). Two more photo points were established in this area. Photo point two was of the Columbine growing in rock cracks, (see photo 2), and the other photo point was of the Columbine growing at the base of the cliffs, (see photo 3a and 3b).

After finding the species in this area it was felt that we should look further down in Box Canyon to see if the plant extended further down the Canyon. Keith ZoBell and Chris Hansen walked down the trail that starts just below well 89-16-1 (NE1/4, SE1/4, NE1/4, Section 16, R5E. T21S.) About half way down to the bottom of Box Canyon along this trail we found the Link Trail Columbine growing along the trail and in the cracks in the adjacent Castlegate rock cliffs. The plants in this area were not associated with water draining from within the strata. The cracks were down dip so that any surface water would drain into the strata not out of it. A photo point was established at this location, (see photo 4). We hiked on down into the bottom of Box Canyon and found the Link Trail Columbine growing in the bottom of the Canyon in the riparian zone. The plants were growing adjacent to a large boulder from the Castlegate formation. We established another photo point at this location, (see photo 5). As we hiked down Box Canyon we observed the Link Trail Columbine growing periodically in the cliff areas of the Castlegate formation. We found another location where the species was growing adjacent to a boulder from the Castlegate formation. We established another photo point, (see photo 7). (note we skipped plot 6 accidentally so there is no photo 6 site).

We hiked approximately one mile down Box Canyon and found the Link Trail Columbine growing periodically in the cracks in the Castlegate formation. The location of the plants did not seem to be associated with moisture draining to the surface. The plants do seem to be associated with: 1) growing in or adjacent to the Castlegate formation, 2) generally are not growing in close association with other plants, which suggest that they don't compete well in the establishment phase of the

growth cycle, even those plants found growing in the riparian zone were established in well drained sandy soil within the flood plain and may have become established after a flood event, 3) do not necessarily have to have moist soil climate for survival, many plants were found growing in very dry conditions surviving only on the moisture that the small accumulation of soil can retain before it drains away or evaporates, and 4) seems to grow in areas that are protected from grazing from both wildlife and domestic animals as the majority of the plants were found in protected locations.

It appears that the Link Trail Columbine is much more wide spread than originally thought. It might be worth while to search out the other areas where the Castlegate formation is exposed at similar elevations.

The location of the photo points are shown on the attached map.

150 ACRE LEASE  
BOUNDARY REVISION

LINK TRAIL COL. #7

LINK TRAIL COL. #4

LINK TRAIL COL. #5

LINK TRAIL COL. #3

LINK TRAIL COL. #2

LINK TRAIL COL. #1



Canyon Fuel Company, LLC  
SUFCO Mine

LINK TRAIL COLUMBINE  
PHOTO MONITORING SITES

DATE: FEB. 09, 2000

SCALE: 1" = 1000'

397 SOUTH 800 WEST  
SALINA, UTAH 84654

DRAWN BY: BDH

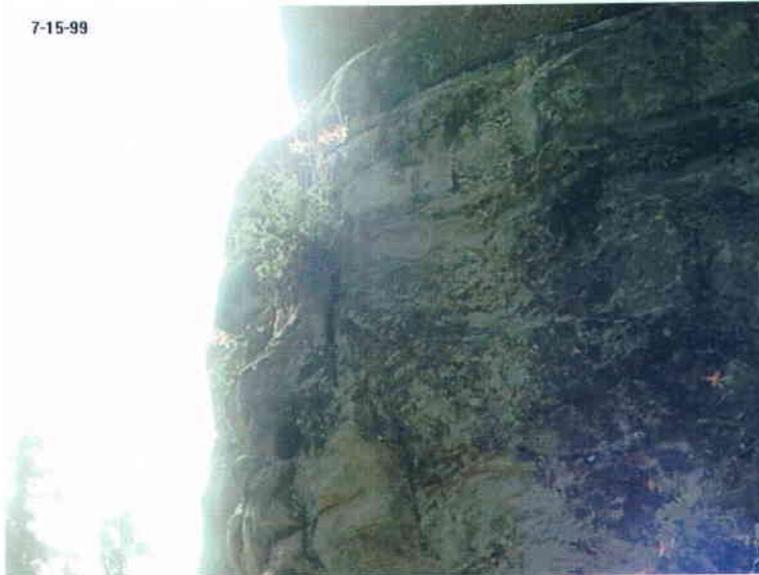
FILENAME:  
H:\DRAWINGS\MRP\PLATES\LINK-TRAIL.DWG



Link Trail Columbine Photo Point #1a



Link Trail Columbine Photo Point #1b



Link Trail Columbine Photo Point #1c



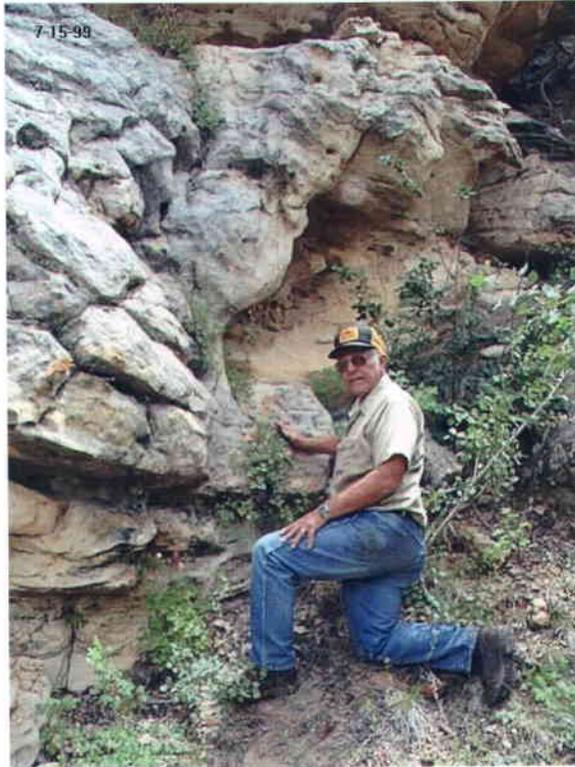
Link Trail Columbine Photo Point #2



Link Trail Columbine Photo Point #3a



Link Trail Columbine Photo Point #3b



Link Trail Columbine Photo Point #4



Link Trail Columbine Photo Point #5



Link Trail Columbine Photo Point #7

## APPENDIX C

Legal, Financial, Compliance and Related Information

Annual Report of Officers  
as submitted to the Utah Department of Commerce

and other changes in ownership and control information  
as required under R645-301-110.

### CONTENTS

Data sheet reports of directors and officers.

**Data Sheet Report**

**March 24, 2000**

**Canyon Fuel Company, LLC**

Status: Active  
Formation: Delaware  
  
Federal ID #: 87-0567183

**Primary Address**

CityPlace One  
Suite 300  
St. Louis, MO 63141

**Registered Address**

The Corporation Trust Company  
Corporation Trust Center  
1209 Orange Street  
Wilmington, DE

**DIRECTORS**

Yuzo Hirono  
Steven F. Leer  
Robert W. Shanks  
Akio Shigetomi

**Title**  
Director  
Director  
Director  
Director

**OFFICERS**

Richard D. Pick  
John W. Eaves  
James E. Florczak  
William H. Rose  
Rosemary L. Klein

**Title**  
President, Chief Executive Officer and General Manager  
Vice President - Marketing  
Vice President - Finance  
Assistant Secretary  
Secretary

**INCORPORATION/QUALIFICATIONS**

**Jurisdiction**      **Inc/Qual**  
Delaware              Formation

**Tax ID No.**

**Duration**

**Data Sheet Report**

March 1, 2000

**Arch Coal, Inc.**

Status: Active  
 Incorporation: Delaware  
 Entity Type: Corporation  
 Federal ID #: 43-0921172

**Primary Address**

CityPlace One  
 Suite 300  
 St. Louis, MO 63141-7056

**Registered Address**

The Corporation Trust Company  
 Corporation Trust Center  
 1209 Orange Street  
 Wilmington, DE 19801

**Former Name (s)**

Arch Mineral Corporation

**From Date**

June 20, 1969

**Through Date**

June 30, 1997

Comment: Changed name to Arch Coal, Inc. upon merger with Ashland Coal, Inc.

**DIRECTORS**

	<b>Title</b>
Philip W. Block	Director
James R. Boyd	Director
Paul W. Chellgren	Director
Thomas L. Feazell	Director
Robert L. Hintz	Director
Douglas H. Hunt	Director
Steven F. Leer	Director
James L. Parker	Director
A. Michael Perry	Director
J. Marvin Quin	Director
Theodore D. Sands	Director
Ignacio Dominguez Urquijo	Director

**OFFICERS**

	<b>Title</b>
James R. Boyd	Chairman of the Board
Steven F. Leer	President & Chief Executive Officer
Kenneth G. Woodring	Executive Vice President - Mining Operations
John W. Eaves	Senior Vice President - Marketing
C. Henry Besten, Jr.	Vice President - Strategic Marketing
Robert W. Shanks	Vice President - Operations
David B. Peugh	Vice President - Business Development
Terry O'Connor	Vice President - External Affairs
Larry R. Brown	Vice President & Chief Information Officer
William H. Rose	Vice President - Tax Planning
Bradley M. Allbritten	Vice President - Human Resources
Robert G. Jones	Vice President - Law, General Counsel and Assistant Secretary
James E. Florczak	Treasurer

John W. Lorson  
Rosemary L. Klein  
Charles David Steele

Controller  
Secretary  
Internal Auditor

### **DIRECT SUBSIDIARIES**

Arch Australia Pty Limited  
Arch Energy Resources, Inc.  
Arch Reclamation Services, Inc.  
Arch Western Acquisition Corporation  
Ark Land Company  
Allegheny Land Company  
Apogee Coal Company  
Arch Coal International, Ltd.  
Arch Coal Sales Company, Inc.  
Arch Coal Terminal, Inc.  
Ashland Terminal, Inc.  
Catenary Coal Holdings, Inc.  
Coal-Mac, Inc.  
Energy Development Co.  
Mingo Logan Coal Company  
Mountain Gem Land, Inc.  
Mountain Mining, Inc.  
Mountaineer Land Company  
P. C. Holding, Inc.  
Paint Creek Terminals, Inc.

**Incorp/Formed in**  
New South Wales, Australia  
Delaware  
Delaware  
Delaware  
Delaware  
Delaware  
Delaware  
Barbados  
Delaware  
Delaware  
Delaware  
Delaware  
Delaware  
Kentucky  
Iowa  
Delaware  
West Virginia  
Delaware  
Delaware  
Delaware  
Delaware

### **INCORPORATION/QUALIFICATIONS**

<b>Jurisdiction</b>	<b>Inc/Qual</b>
<b>Delaware</b>	Incorporation
<b>Alabama</b>	Qualification
<b>Colorado</b>	Qualification
<b>Illinois</b>	Qualification
<b>Kentucky</b>	Qualification
<b>Missouri</b>	Qualification
<b>Montana</b>	Qualification
<b>New Mexico</b>	Qualification
<b>Virginia</b>	Qualification
<b>West Virginia</b>	Qualification
<b>Wyoming</b>	Qualification

## APPENDIX D

Mine Maps

as required under R645-301-525.270.

### CONTENTS

Mining Progress Map 1999

## **APPENDIX E**

Other Information

in accordance with the requirements of R645-301 and R645-302.

### **CONTENTS**

None

Southern Utah Fuel Co

Salina, UT

Set #0199S14435

Report Date: 10/22/99

Client Project ID: OVERBURDEN

Date Received: 10/04/99

Lab Id	Sample Id	pH s.u.	Saturation %	EC		Calcium meq/L	Magnesium meq/L	Sodium meq/L	SAR	Alkalinity	
				@25°C mmhos/cm	PE					meq/L	meq/L
0199S14435	WRDS 3 QTR 99	7.2	45.3	3.64		22.2	10.2	12.4	3.08	1.79	

**Received**

OCT 28 1999

Canyon Fuel Company  
SUNCO Mine

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S. = Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PysS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot. = Neutralization Potential  
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed By:

ey Sheeley  
Soils Lab Supervisor



**Received**

1633 Terra Avenue  
Sheridan, WY 82801

JUL 28 1999

Canyon Fuel Company  
SUFCO Mine

Page 1 of 2

Southern Utah Fuel Co  
Salina, UT

Client Project ID: OVERBURDEN  
Date Received: 07/12/99

Set #0199S08495  
Report Date: 07/23/99

Lab Id	Sample Id	pH		EC		Calcium	Magnesium	Sodium	SAR	Alkalinity	
		s.u.	%	@25°C	mmhos/cm					meq/L	meq/L
199S08495	WRDS 2ND QTR 99	7.4	40.6	7.45	35.8	22.0	32.2	5.98	1.43		

Abbreviations for extractants: PE= Saturated Paste Extract, H2O Sol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate  
 Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut Pot = Neutralization Potential  
 Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage  
 Reviewed By: \_\_\_\_\_

**Received**

JUL 28 1999

Client Project ID: OVERBURDEN  
Date Received: 07/12/99

Southern Utah Fuel Co  
Salina, UT

Canyon Fuel Company  
SUFCO Mine

Set #0199S08495  
Report Date: 07/23/99

Lab Id	Sample Id	Total Sulfur %	T.S. AB V/1000t	Neutral Pot. V/1000t	T.S. ABP V/1000t	Boron ppm	Selenium ppm
J199S08495	WRDS 2ND QTR 99	0.42	13.1	130	117	4.52	0.02

Abbreviations for extractants: PE= Saturated Paste Extract, H2OSol= water soluble, AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate

Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neut. Pot = Neutralization Potential

Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage  
Reviewed By: \_\_\_\_\_

**Received**

APR 26 1999

Client Project ID: OVERBURDEN  
Date Received: 04/08/99

Southern Utah Fuel Co  
Salina, UT

Canyon Fuel Company  
SUFCO Mine

Set #0199S02411  
Report Date: 04/20/99

Lab Id	Sample Id	Depth (Feet)	pH s.u.	Saturation %	EC @25°C mmhos/cm	Calcium meq/L	Magnesium meq/L	Sodium meq/L	SAR	Alkalinity PE meq/L
0199S02411	WRDS 1QTR 99	N/A	7.1	46.5	6.84	22.0	10.5	45.3	11.2	2.1

Reviewed By:

Joey Sheeley  
Soils Lab Supervisor

**Received**

APR 26 1999

Southern Utah Fuel Co  
Salina, UT

Canyon Fuel Company  
SUFCO Mine

Report Date: 04/20/99

Client Project ID: OVERBURDEN

Date Received: 04/08/99

Page 2 of 2

Set #0199S02411

Lab Id	Sample Id	Depths (Feet)	Total Sulfur %	T.S. AB /1000t	Neutral Pol. /1000t	T.S. ABP /1000t	Boron ppm	Selenium ppm
0199S02411	WRDS 1QTR 99	N/A	0.44	13.7	68.1	54.3	3.27	<0.02

Reviewed By:

Joey Sheeley

Soils Lab Supervisor

**Received**

FEB 17 1999

Page 1 of 2

Southern Utah Fuel Co  
Salina, UT

Canyon Fuel Company  
SUFCO Mine

Set #0199S00368

Client Project ID: OVERBURDEN  
Date Received: 01/28/99

Report Date: 02/10/99

Lab Id	Sample Id	Depths (Feet)	pH s.u.	Saturation %	EC @25°C mmhos/cm	Ca meq/L	Mg meq/L	Na meq/L	SAR	Alkalinity PE meq/L
0199S00368	WRDS 4QTR 98	N/A	7.1	42.6	5.20	12.3	9.20	32.7	9.96	4.4

Reviewed By:

**Received**

FEB 17 1999

Client Project ID: OVERBURDEN

Southern Utah Fuel Co  
Salina, UT

Canyon Fuel Company  
SUNCOO Mine

Set #0199S00368

Date Received: 01/28/99

Report Date: 02/10/99

Lab Id	Sample Id	Depths (Feet)	Total Sulfur		T.S.		Neutral.		T.S.		Boron ppm	Selenium ppm
			%	AB	ABP	Pot.	ABP					
0199S00368	WRDS 4QTR 98	N/A	0.32	U/1000t	72.0	82.0	U/1000t	72.0	2.38	<0.02		