

2001 ANNUAL REPORT

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

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

March 14, 2002

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

*Incoming
C/041/002*

Re: 2001 Annual Report for Canyon Fuel Company LLC, SUFCO Coal Mine
C/041/002, Sevier County, Utah

Dear Permit Supervisor:

Enclosed herewith are two copies of the annual report for the Canyon Fuel Company, SUFCO Mine for 2001. 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
Kenneth E. May
Mine Manager

Enclosures

KEM/MLD:kb

SUFPUB\GOVT2002\DOGMCORR\2001 Annual Report ltr.doc

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MAR 19 2002

DIVISION OF
OIL, GAS AND MINING

To enter text, click in the box and type your response. If a box already contains an entry select the entry and type the replacement. You can use the **tab** key to move from one field to the next. To select a check box, click in the box or type an x.

GENERAL INFORMATION

Permittee Name	Canyon Fuel Company, LLC
Mine Name	SUFCO Mine
Operator Name (If other than permittee)	
Permit Expiration Date	May 20, 2002
Permit Number	ACT/041/002
Authorized Representative Title	Kenneth E. May, Mine Manager
Phone Number	(435) 286-4880
Fax Number	(435) 286-4499
E-mail Address	mdavis@archcoal.com
Mailing Address	397 South 800 West, Salina, UT 84654
Resident Agent	C. T. Corporation
Resident Agent Mailing Address	Corporation Trust Center 1209 Orange Street, Wilmington, DE
Number of Binders Submitted	2

IDENTIFICATION OF OTHER PERMITS

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

Permit Type	ID Number	Description	Expiration Date
MSHA Mine ID(s)	4200089	Minesite	
	1211UT090008901	Waste Rock Disposal Site	
MSHA Impoundment(s)			
NPDES/UPDES Permit(s)	UT0022918	Minesite Sediment Pond Major Industrial	April 30, 2006
PSD Permit(s) (Air)	DAQE71498	Minesite Air Quality Approval Order	
	BAQE12688	Waste Rock Disposal Air Quality Approval Order	
Other			

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MAR 19 2002

DIV OF OIL GAS & MINING

CERTIFIED REPORTS

List the certified inspection reports as required by the rules and under the approved plan that must be periodically submitted to the Division. Specify whether the information is included as Appendix A to this report or currently on file with the Division.

Certified Reports:	Required		Included or on file with DOGM		Comments
	Yes	No	Included	On File	
Excess Spoil Piles	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Certified Reports previously submitted
Refuse Piles	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Impoundments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Certified Reports previously submitted
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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 report or currently on file with the Division.

Technical Data:	Required		Included or on file with DOGM		Comments
	Yes	No	Included	On file	
Climatological	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Included on disk in Appendix B
Subsidence Monitoring	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Included in Appendix B
Vegetation Monitoring	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Included in Appendix B
Raptor Survey	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Data previously submitted
Soils Monitoring	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Water Monitoring	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
First quarter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Data previously submitted
Second quarter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Data previously submitted
Third quarter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Data previously submitted
Fourth quarter	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Data previously submitted
Geological / Geophysical	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Engineering	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other Data					
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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 requirement of R645-310-130 and R645-301-140

CONTENTS

Climatological Data on Disk

Subsidence Report

Vegetation Monitoring-Waste Rock Disposal Site

Vegetation Monitoring-Pines Tract

2001 SUBSIDENCE REPORT

CANYON FUEL COMPANY, LLC

SUFCO MINE

by

JOHN M. BLACK

CHIEF SURVEYOR

INTRODUCTION

Canyon Fuel Company LLC, SUFCO Mine's 2001 subsidence report is an update of annual subsidence data that 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 around the end of August, 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 that cause surface subsidence in June, 1976. Continuous miners were used to extract coal from pillars that 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 5 feet in the center of the panels. The overburden thickness has been from 1,800 feet to 1,000 feet (except outside the escarpment where overburden rapidly decreases). The maximum measured subsidence caused by longwall mining is seven feet. This occurred in two cases; 1. An area outside the escarpment very similar to the one mentioned above for the continuous miner panel and 2. Down the center of panels that are under plateaus with 1,000 feet of overburden, but this is not typical.

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 can be obtained in the event that a need should arise for reevaluation. These areas may not be shown on the current 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.

2001 SUBSIDENCE

The 2000 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 that averaged 650 feet in width. Mining height averaged 11 feet with about an 80% extraction ratio.

Subsidence ranged from 4.5 feet to a maximum of 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 5

The four continuous miner panels that 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 that 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 that 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 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 that began in January 1992. Mining was completed in August 2001. The entire surface area above this block was digitized for base-line elevations during 1991. Maximum subsidence shown to date is seven feet. This area is still active and will be monitored until it has stabilized.

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 began in January 1999 with gateroad development. Longwall mining took place from May 2000 thru September 2000. Subsidence to date shows a maximum of six feet. Monitoring will continue as in area 10.

AREA 12

Area twelve is the first longwall mining block on the acquired lease UTU-76195. There are three longwall panels in this area. An elevation baseline was established in 1999. Gateroad development began in March 2000. Longwall mining began in September 2001. Subsidence photos for 2001 were taken before mining started.

AREA 13

Area thirteen is the second longwall mining block on the acquired lease UTU-76195. There are four longwall panels in this area. An elevation baseline was established in 1999.

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 hundredth 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 are all considered to be dormant. Photographic coverage can be obtained if circumstances deem it necessary. There was active longwall mining in areas 10 and 11 causing subsidence. Longwall mining of area 10 was completed in August 2001. Longwall mining started in area 12 in September 2001 after subsidence photos had been taken. Yearly monitoring of Areas 10, 11, and 12 will continue until it has been determined that subsidence has ceased (on an area-by-area basis).

JMB:kb

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ENDANGERED PLANT STUDIES, INC.

129 North 1000 East
Orem, Utah 84057
(801-225-7085)
SLSLWELSH@aol.com

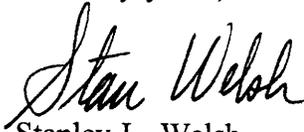
10 July 2001

Mr. Michael L. Davis
Canyon Fuel Company--Sufco Mine
397 S. 800 W.
Salina, Utah 84654

Dear Mike:

The report on the vegetative analysis of the three lifts of the waste rock site, and the demonstration site is enclosed. The current dry year is reflected in the somewhat lower total live cover percentages for the average over all of the years of measurement, but are up considerably from those of 2000. All lifts are, nevertheless, improving, and in good condition. There continues to be minor discrepancies due to rounding in some of the columns of numbers. The differences are slight, however. If you find errors please contact me. I will be available at the office or home all summer. It is a pleasure to do business with you. Both Ron and I want to thank you for your kindness during our visit.

Sincerely yours,



Stanley L. Welsh
President

Vegetation Monitoring
of the
Waste Rock Disposal

Prepared for:

Canyon Fuels Company -- Sufco Mine
397 S. 800 W.
Salina, Utah 84654

Attention: Mr. Michael L. Davis
(435) 286-4421

Prepared by:

Stanley L. Welsh and Ronald J. Kass
Endangered Plant Studies, Inc.
129 North, 1000 East
Orem, Utah 84057

10 July 2001

INTRODUCTION

This report describes the 26th of June 2001 sampling and monitoring of Canyon Fuels Company -- Sufco Mine (SUFCO) waste rock disposal (WRD) site and Demonstration Plot (DEM). The WRD site was sampled previously during 1992, 1994, 1995, 1996, 1998, and 2000. This year represents the seventh year of monitoring the WRD and the fourth year of sampling and monitoring the DEM plot.

The WRD site is composed of three parts; the smooth east side first lift, and a pitted second lift contiguous to the west, and a third pitted lift contiguous to the west, which was evidently treated to reseeded in 1999. A fourth lift is now being filled with waste rock and will be reclaimed subsequently and the status of the revegetation included in subsequent reports. The DEM plot is located immediately east of the SUFCO main office building at the Convulsion Canyon mine. The currently reclaimed lifts of the WRD represent two different treatments and at least three different seed mixtures. The lifts have been sampled separately and the results are compared below. The second, pitted lift was treated and reclaimed in 1994, the third lift in 1998. Comparison data for the three lifts are included in Table 1 and Table 2 respectively. Results of the DEM measurements are included in Table 3. Comparison data for 1992, 1994, 1995, 1996, 1998, 2000, and 2001 WRD, and the 1992 reference site are included in Table 4.

Vegetation was measured at or near the height of the growing season, following a year of abundant rainfall.

Methods

Sampling techniques complied with Division of Oil Gas and Mining (DOG M) vegetation guidelines (February 1992), and were discussed with Paul Baker (Reclamation Specialist DOGM) in 1992. Sampling was conducted by Drs. Stanley L. Welsh and Ronald J. Kass of Endangered Plant Studies.

Percent cover was estimated by the ocular method for all plots. A 75 m tape was stretched across the longest axis of each treatment type on the WRD and on the DEM. Random numbers were generated and the corresponding numbers were used to locate the 1m² quadrats along the 75 m transect. After sampling a minimum of 15 quadrats, sample adequacy was computed; minimal sample size for the each WRD treatment was N=15. A t-value=1.645 and d-value=0.1 were used as coefficients to calculate sample adequacy.

Results

WRD-First Lift--Treatment Smooth

Total mean plant cover was 64% (s = 7.63). Grasses accounted for 62% of the total vegetative cover, or 96.9% of the species composition. The remaining cover and composition was accounted for by forb species. Shrubs contributed nothing to the cover or composition (Table 1).

WRD-Second Lift--Treatment Pitted

Total mean plant cover was 65.9% ($s = 7.36$). Grasses accounted for 42.53% comprising 64.53% of the species composition. Forbs accounted for 15.72%, representing 23.9% of the species composition, and shrubs contributed 7.67%, or 8.6% of the species composition (Table 2).

WRD-Third Lift--Treatment Pitted

Total man plant cover was 65.14 ($s = 6.91$). Grasses accounted for 26.6 percent of the total live cover and 54.9 percent of the species composition. Forbs represented 21.3 percent of the cover and 43.9 percent of the species composition. Shrubs were negligible in both cover and composition, at 0.6 percent of cover and 1.2 percent in composition (Table 3).

DEM-Demonstration Plot

Total mean plant cover was 56.2% ($s = 11.37$). Grasses accounted for 50.8% of the cover, and represented 90.3% of the species composition. Forbs accounted for only 2.3% of the cover and 4% of the species composition. Shrubs accounted for 3.1% of the cover and 5.5% of the species composition (Table 4).

Table 1. Percent cover and species composition of WRD 1st lift, smooth.

	% cover	% composition
Bare ground	15.33	
Litter	20.67	
<u>Grasses</u>		
Elymus cinereus	8.33	13.0
Elymus lanceolatus	0.00	0.0
Elymus smithii	38.00	59.4
Elymus spicatus	15.67	24.5
Grass totals	62.00	96.9
<u>Forbs</u>		
Machaeranthera canescens	0.33	
Melilotus officinalis	0.67	
Penstemon strictus	0.33	
Sphaeralcea coccinea	0.33	
Viguiera multiflora	0.33	
Forb totals	1.99	3.1
<u>Shrubs</u>		
Rosa woodsii	0.00	0.0
Shrub totals	0.00	0.0
Live Cover Total	63.99	100.0

Table 2. Percent cover and species composition for WRD second lift, pitted.

	% cover	% composition
Bare ground	14.80	
Litter	19.27	
<u>Grasses</u>		
Dactylis glomerata	11.00	16.7
Elymus cinereus	10.00	15.1
Elymus smithii	14.53	22.0
Elymus spicatus	7.00	10.6
Grass totals	42.53	64.4
<u>Forbs</u>		
Achillea millefolium	6.46	9.8
Astragalus drummondii	0.33	>0.2
Cirsium vulgare	0.13	>0.1
Linum perenne	6.27	9.5
Viguiera multiflora	2.53	3.8
Forb totals	15.72	23.8
<u>Shrubs</u>		
Amelanchier utahensis	0.67	1.0
Artemisia tridentata	5.00	7.6
Chrysothamnus nauseosus	2.00	3.0
Shrub totals	7.67	11.6
Live Cover Totals	65.92	99.8

Table 3. Percent cover and species composition for WRD third lift, pitted.

	% cover	% composition
Bare ground	22.86	
Litter	12.00	
<u>Grasses</u>		
Agropyron cristatum	1.33	2.0
Bromus carinatus	6.20	9.4
Elymus lanceolatus	39.33	60.4
Elymus smithii	5.33	8.1
Elymus spicatus	2.47	3.8
Grass totals	54.66	83.9
<u>Forbs</u>		
Achillea millefolium	2.67	4.1
Linum perenne	1.20	1.8
Melilotus officinalis	1.67	2.5
Penstemon strictus	3.33	5.2
Forb totals	8.87	13.6
<u>Shrubs</u>		
Artemisia tridentata	0.13	>0.2
Chrysothamnus nauseosus	1.47	2.3
Shrub totals	1.60	2.5
Live Cover Totals	65.14	100

Table 4. Percent cover and species composition for DEM-Demonstration plot.

	% cover	% composition
Bare ground	15.00	
Litter	15.33	
<u>Grasses</u>		
Agropyron cristatum	11.33	16.2
Bromus inermis	1.33	1.9
Elymus cinereus	5.00	7.1
Elymus hispidus	10.33	14.8
Elymus junceus	21.67	31.1
Elymus lanceolatus	2.67	3.8
Elymus smithii	4.33	6.2
Stipa hymenoides	1.33	1.9
Grass totals	58.00	83.2
<u>Forbs</u>		
Linum perenne	3.00	4.3
Medicago sativa	2.00	2.8
Forb totals	5.00	7.1
<u>Shrubs</u>		
Chrysothamnus nauseosus	4.00	5.7
Eriogonum corymbosum	2.67	3.8
Shrub totals	6.67	9.5
Live Cover Totals	69.67	99.8

Table 5. Percent cover and species richness for 1st lift 1992-1998, 2nd lift 1995-1998, and 1992 reference site.

Years Variables	1992 1st li	1994 1st li	1995 2nd li	1995 1st li	1996 2nd li	1996 1st li	1998 2nd li	1998 1st li	Ref. site
Bare ground	35.4	28.6	31.8	16.7	26.7	21.0	20.3	14.5	8.8
Litter	8.3	12.2	8.3	12.3	20.4	32.9	8.7	8.0	24.0
Grasses	45.1	30.3	36.7	68.7	41.9	44.9	51.9	76.5	30.1
Forbs	11.2	27.0	20.9	1.1	8.1	0.8	8.3	0.0	0.2
Shrubs	0.0	2.0	2.3	1.0	2.9	0.4	10.8	0.5	36.8
Totals	56.3	59.4	59.7	71.0	52.9	46.1	71.0	77.1	67.2
Species richness	14	16	20	19	13	6	14	5	7

Table 6. Percent cover and species richness for 1st, 2nd, and 3rd lifts, 2000 and 2001.

Years Variables	2000 1st lift	2001 1st lift	2000 2nd lift	2001 2nd lift	2000 3rd lift	2001 3rd lift
Bare ground	10.7	15.33	24.6	14.80	41.0	22.86
Litter	27.4	20.67	16.0	19.27	10.6	12.00
Grasses	57.7	62.00	42.9	42.53	26.6	54.66
Forbs	3.9	1.99	12.1	15.72	21.3	8.87
Shrubs	1.0	0.00	4.3	7.67	0.6	1.6
Totals	61.9	63.99	59.4	65.92	48.5	65.14
Species richness	13	10	20	16	11	12

Table 7. Percent cover and species richness for Demonstration plot, 1996-2001.

Variables	1996	1998	2000	2001
Bare ground	15.0	15.4	26.1	15.00
Litter	36.0	12.8	17.7	15.33
Grasses	39.7	64.3	50.8	58.00
Forbs	4.5	3.7	2.3	5.00
Shrubs	4.3	3.7	3.1	2.67
Percent live cover	49.0	71.6	56.2	69.67

Discussion

The 26 June 2001 determinations of plant cover and species richness follows another exceptionally dry growing season. The vegetative cover reflects to a large extent the weather regime of the current year. The two different treatments, smooth for the 1st lift, and pitted for the 2nd and 3rd lifts have responded well in the reclamation attempt. Total live cover for the first lift vegetation continues at a high level, starting at 56.3% in 1992, 59.4% in 1994, 71.0% in 1995, falling to 46.1% in the drought year of 1996, and rising to 77.1% during the wet spring of 1998. Despite the dry spring of 2000 the percent live cover stood at 61.9 percent, and in a second dry year in 2001 stood at almost 64 percent. The trend over the seven measurements is upward, averaging at or near that of the reference site's 67.2%.

Total live cover for the second lift was 59.7% when first measured in 1995, dropped to 52.9% during the drought year of 1996, and responded at 71.0% during the wet spring of 1998. During 2000 and 2001, both years of dry spring weather, the second lift vegetative cover measured 59.4 and 65.92 respectively. This lift too averages near the reference site total live cover.

The east portion, i.e., Lift 1, was graded to a smooth surface prior to planting before 1992--that of Lifts 2 and 3, were treated to a basin-lifting technique that resulted in a dimpled surface. Effects of the 1996 drought were especially apparent on the smooth surface of Lift 1, but recovery during the wet year of 1998 was readily apparent, and the site has continued to gain or remain relatively stable during both 2000 and 2001. Both kinds of treatment have responded well in spite of the drought interludes of 1996, 2000, and 2001. Seed mixtures were evidently different for each of the lifts. Shrubs are doing better on the dimpled 2nd and 3rd lifts than on the smooth first lift treatment, on which grasses provide most of the live cover. Only the first lift treatment had lower species richness than for the reference site in 1998, but exceeds the reference site in richness in both 2000 and 2001.

A possible solution to increasing shrubs in the long term, as emphasized in the 1995 and 1996 reports, might involve harvesting of mature inflorescences of big sagebrush and perhaps rabbitbrush from below the reference site and broadcasting them on both lifts one and two. That should provide an abundant seed source on site. Substantial germination of sagebrush seeds might increase the potential for shrub intermix among the other grass and forb vegetation. Lack of forbs on the first lift quadrats is a result of sampling in large part, but represents the continued decline in forbs following their initial success. Such a decline is predictable.

The third lift, dimpled as was the second, evidently was reclaimed with a different seed mix than was utilized on either lifts one or two. Yellow sweet clover formed a large percentage of the total live cover on that lift in 2000, but was less important in 2001. This lift is recovering nicely, however.

The demonstration site, on a steep slope (58%) immediately east of the loadout area in Convulsion Canyon, was measured this year for the fourth time. Despite the steepness of the slope and the use of very raw substrate, the success of the revegetation attempt is readily apparent. Total live cover percentage was measured at 49.0 in 1996, 71.6 during the wetter than normal year 1998, 67.2 in the dry year of 2000, and 69.7 in the relatively dry year of 2001. Reclamation of this slope proceeds well. There is still evidence of creep of the soil mantle at the upper edge of the slope, but general stability of the remainder continues to be encouraging. Establishment of the native buckwheat, *Eriogonum corymbosum*, is of interest. This plant is evident as a dominant on the adjoining, untreated slope. It is a common component of vegetation along the coal measures in Utah.

PINES TRACT VEGETATION STUDY

For
CANYON FUEL COMPANY, LLC
SUFCO MINE

Prepared by
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Phone (801) 798-8926

July 21, 2001

PINES TRACT VEGETATION STUDY

Prepared by
Keith W. ZoBell
July 21, 2001

The main purpose of the "Pines Tract Vegetation Study" was to determine if coal mining had any affect on the "Link Canyon Trail Columbine" (*Aquilegia flavenscens* var. *rubicunda*) and riparian areas within the Pines Tract coal lease area.

On July 17, 2001 the Pines Tract area was visited by Keith ZoBell (Environmental Specialist), and Mike Davis (Mining Engineer for Canyon Fuel Company, LLC.- SUFCO Mine). The purpose of this trip was to revisit all ten of the photo points that have been established, and to retake photos at each site and to determine general plant growth and vigor conditions at each site.

The weather records showed that the Pines Tract Area continued to receive below average precipitation during the winter of 2000-2001. This below average precipitation continues to exhibited itself it reduced flows in the seeps, springs and streams in the area as well as a reduction in the vigor and growth of the vegetation of the general area. The water in the "Grotto" area where photo points 1, 2, 3, 8 & 9 are located is at its lowest level since water monitoring started in this area. Grazing had not occurred in this unit yet this year. Since this area had not been grazed the over-all vigor and growth was considerably better than last year when much of the area had received medium too heavy grazing pressure.

In the "Grotto" (photo points 1, 2, & 3), the growth of the Link Canyon Trail Columbine was fair to good with the foliage ranging from 8-12 inches in height with all plants having some inflorescence. The "Hanging Fern Gardens" area (photos points 8 & 9) received heavy grazing in 2000 and the area is still showing detrimental affects from this grazing as well as from the reduced moisture in the area. The rock faces at the "Hanging Fern Gardens" is moist with a few small drips in some areas. The ferns have diminished in numbers and in vigor. Some of the moss was eaten by cattle last year and has not re-grown.

In Box Canyon at photo point 6, the riparian area has responded to no grazing in the canyon. The Kentucky Blue grass has headed out. Several species are now apparent that were not observed last year, including Western Yarrow (*Achillea millefolium*), and

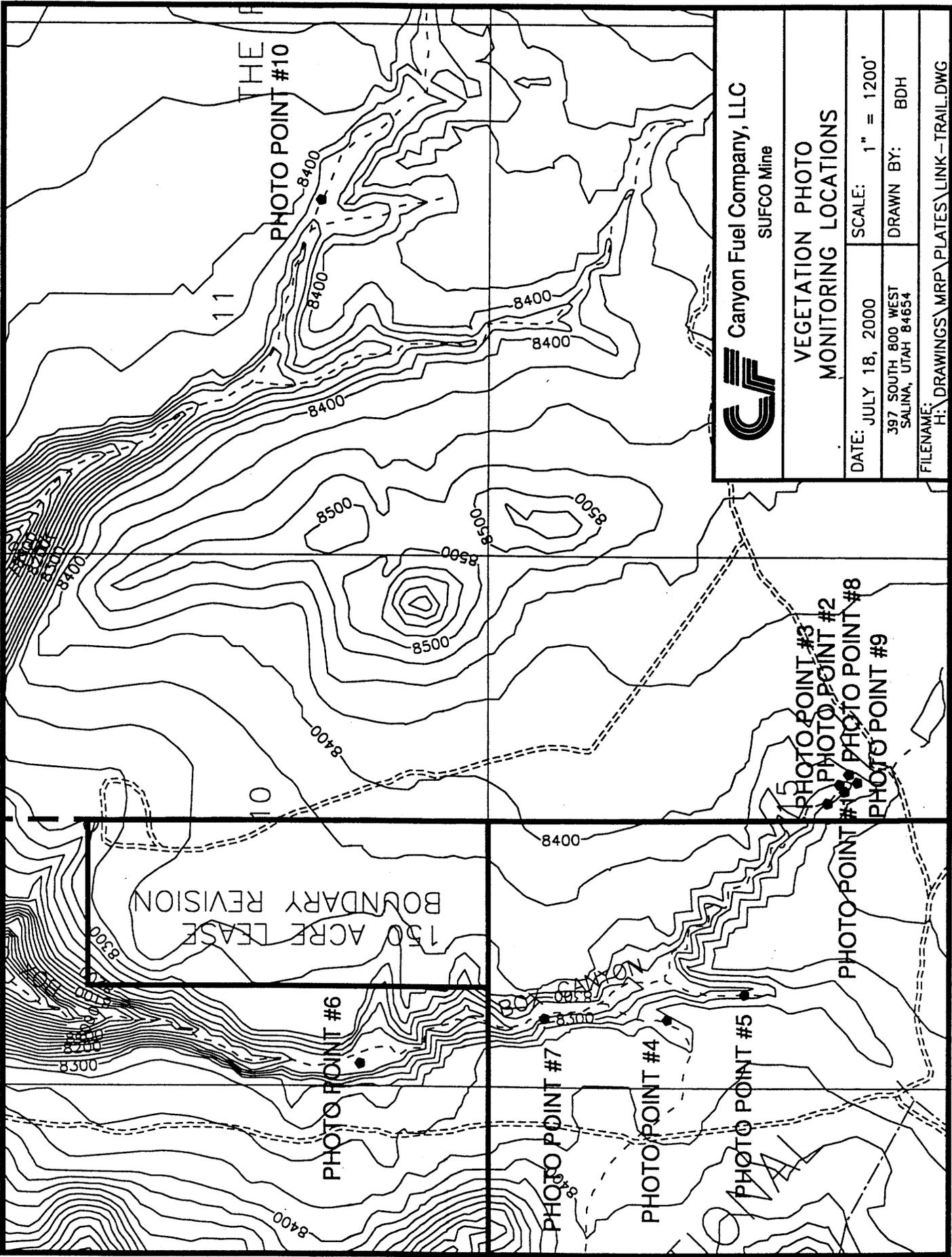
Aspen sprouts (*Populus tremuloides*).

At photo point 7 the "Link Canyon Trail Columbine" as well as other vegetation has been severely impacted by a recent hail storm and high run-off water in the creek. The hail storm and high run-off had occurred probably within the past two day. The Columbine plants only had two inflorescence stalks left on them with only one flowering head on each stock. Most of the foliage had either been removed by the hail or by high run-off water in the creek.

At photo points 4 & 5 the "Link Canyon Trail Columbine" plants had good inflorescence with several flowers on each stock. The foliage was 11-12 inches high.

At photo point 10 in the East Fork of Box Canyon the riparian area has responded good to no grazing in the area. Several additional species were observed which were not observed in 2000. These additional species were; Tufted Hairgrass (*Deschampsia caespitosa*), Red top (*Agrostis alba*), Aster (*Aster spp.*) and Western Yarrow (*Achillea millefolium*). The sagebrush plants adjacent to the riparian area had an average new growth of 7-9 inches.

Overall the vegetation in the study area has better vigor and growth this year than last. This is probably due to the lack of grazing. Below average moisture continues to affect the overall plant vigor and growth of the plant communities. No detrimental affects to the vegetation could be attributed to mining. These sites should be visited again next year at approximately the same time of year so as to duplicated the growth and vigor of the plants.



Canyon Fuel Company, LLC
 SUFCO Mine

VEGETATION PHOTO
 MONITORING LOCATIONS

DATE: JULY 18, 2000	SCALE: 1" = 1200'
397 SOUTH 800 WEST SALINA, UTAH 84654	DRAWN BY: BDH
FILENAME: H:\DRAWINGS\MRP\PLATES\LINK-TRAIL.DWG	



Photo Point #1a



Photo Point #1b



Photo Point #1c

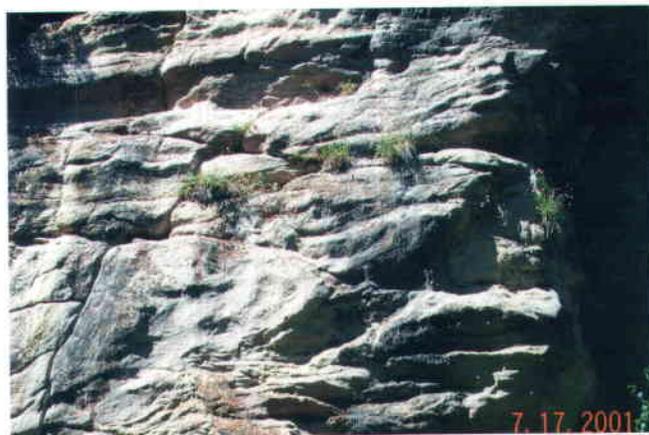


Photo Point #2



Photo Point #3

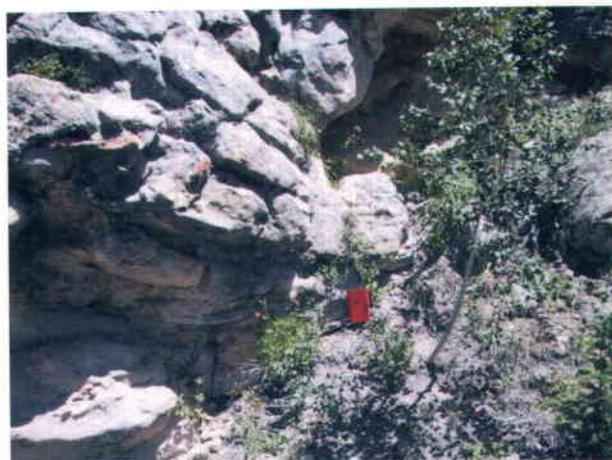


Photo Point #4



Photo Point #5w



Photo Point #5t



Photo Point #6w



Photo Point #6t



Photo Point #7



Photo Point #8



Photo Point #9a



Photo Point #9b



Photo Point #10w



Photo Point #10t

APPENDIX C

Legal Financial, Compliance and Related Information

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

Other change in ownership and control information
As required under R645-301-110

CONTENTS

Data sheet report of directors and officers.

REPORT OF OFFICERS AND DIRECTORS
RELOCATED TO CONFIDENTIAL FOLDER
AUGUST 2005

APPENDIX D

Mine Maps

As required under R645-302-525-270

CONTENTS

Mining Progress Map 2001

APPENDIX E

Other Information

In accordance with the requirements of R645-301 and R645-302

CONTENTS

None