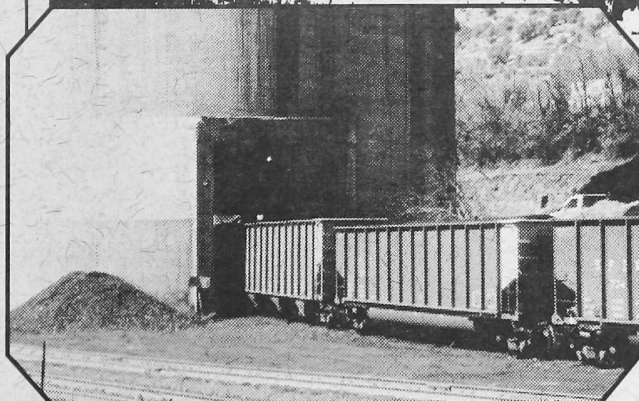
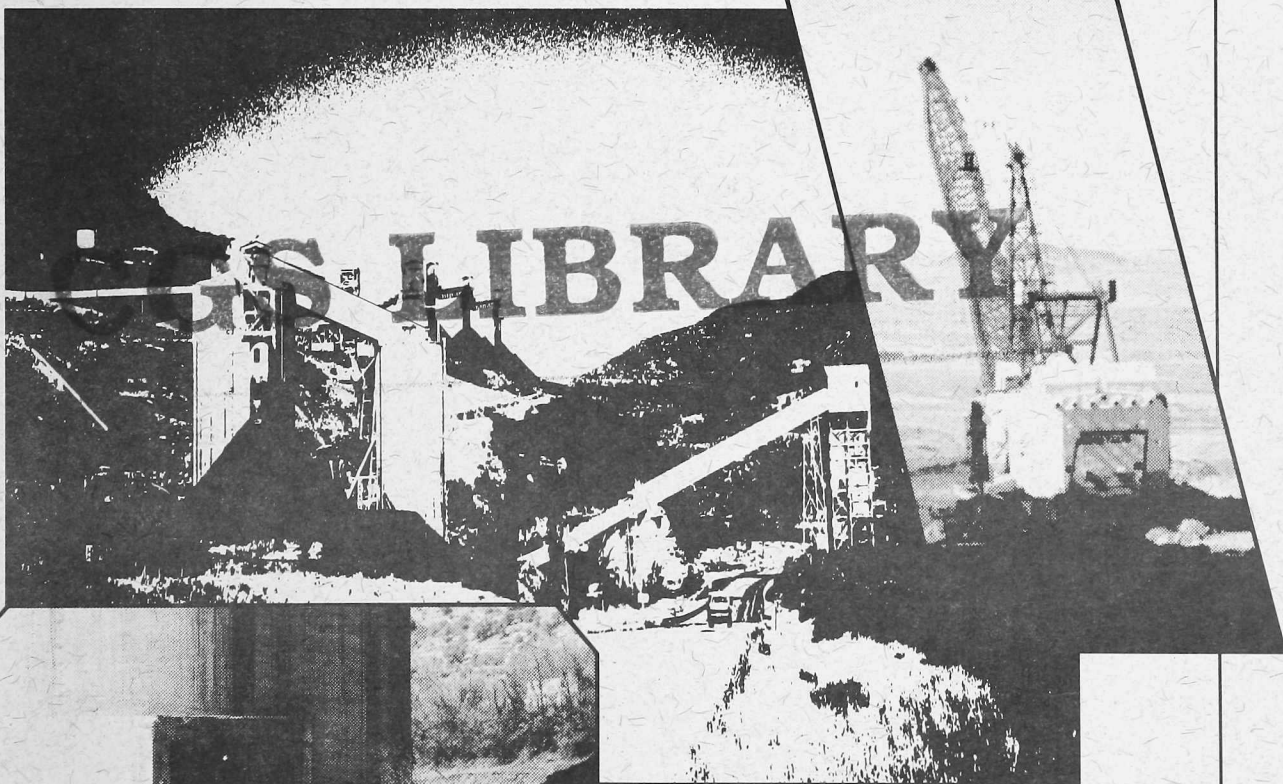


Resource Series 32

# Directory and Statistics of Colorado Coal Mines with Distribution and Electric Generation Map, 1995-96

Jonathan M. Zook and Carol M. Tremain



Colorado Geological Survey  
Department of Natural Resources  
Denver, Colorado/1997

Resource Series 32

**Directory and Statistics of Colorado Coal  
Mines with Distribution and Electric  
Generation Map, 1995–96**

By  
Jonathan M. Zook and Carol M. Tremain

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Colorado Geological Survey  
Department of Natural Resources  
Denver, Colorado  
1997

# PREFACE

This directory is an update and revision of Resource Series 29 published in 1990. The purpose of the publication is to provide insight into the Colorado coal industry. The directory includes geologic, production and location data on coal mines that were operating in 1996 and two planned mines in the permitting stage. The map contains coal production, distribution, and electric generation information for 1995.

Data were compiled from previous Colorado Geological Survey publications and the following sources:

- Office of Surface Mining, U.S. Department of the Interior
- Division of Minerals & Geology, Colorado Department of Natural Resources
- State Board of Land Commissioners, Colorado Department of Natural Resources
- *1997 Keystone Coal Industry Manual*
- Colorado Public Utilities Commission
- Department of Energy/Energy Information Administration, U.S. Department of the Interior

Additional information was obtained by contacting individual coal mine and power plant operators via mail, telephone and fax. The accompanying map locates mines and lists them by county and coal mine name.

Production data is tabulated by the Colorado Division of Minerals and Geology. Permit areas are shown on the individual maps accompanying the text.

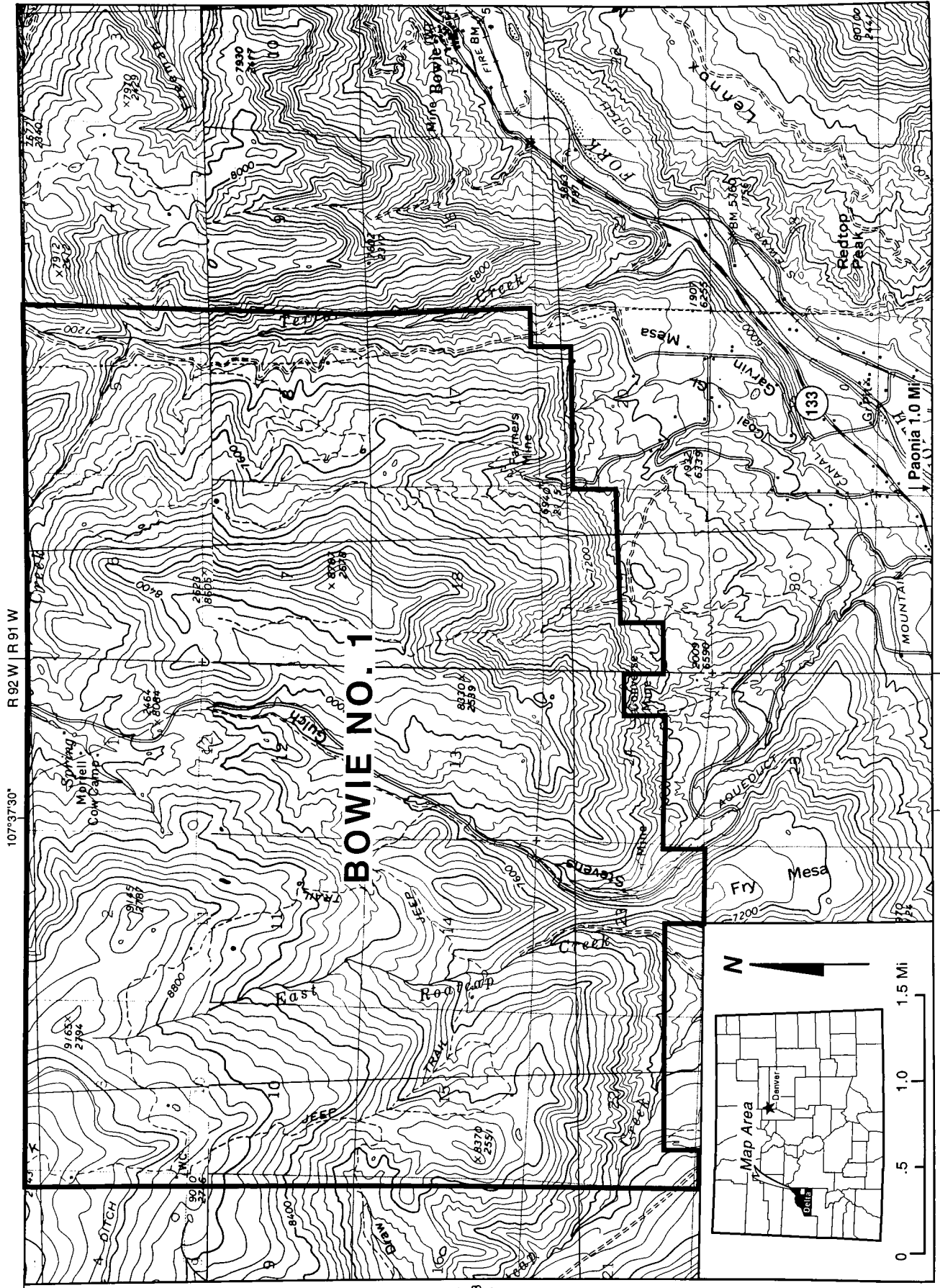
The information contained in this report is the best available at the time of writing, June 1, 1997. Accuracy and completeness cannot be guaranteed. Neither the Colorado Geological Survey nor the authors assume responsibility for incidental or consequential damages arising from use of information from this report.

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5	Sanborn Creek	Oxbow Carbon & Minerals, Inc.	Gunnison	Uinta	14
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## PLATE

1	Coal production and distribution and electric generation map of Colorado	<b>In Pocket</b>
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# BOWIE NO. 1 MINE

Map No. 1 M.L.R.D. Permit No. C-81-038  
Previous Mine Names Orchard Valley (Colorado Westmoreland, Inc.)

## LOCATION INFORMATION

County Delta  
Permit Location (Sec., T., R.,) Sec. 5-8, 17-20, , T. 13 S., R. 91 W. and Sec. 1,2,3,10-15, 22-24, T. 13 S.,  
R. 92 W.  
Coal Region Uinta Field Somerset  
Topographic Quadrangle Gray Reservoir, Bowie

## COMPANY INFORMATION

Mine Operator Bowie Resources, Ltd.  
Address P. O. Box 1488, Paonia, CO 81428-1488  
Contacts Bill Bear, Jr. Telephone (970) 527-4135  
Parent Company Bowie Resources, Ltd.  
Address 1500 North Big Run Road, Ashland, KY 41102  
Contacts Al Perry, President, Bowie Coal Sales Telephone (812) 867-7727

## GENERAL INFORMATION

Mine Type Underground Mining Method Continuous miners  
Mine Status Producing Start-Up Date November 1976  
No. of Employees 53 Union Affiliation Non-union  
No. of Acres in Permit 1,240  
Surface: Federal X State \_\_\_\_\_ Private X  
Mineral: Federal X State \_\_\_\_\_ Private X

## GEOLOGIC INFORMATION

Geologic Unit Mesaverde Group Geologic Age Cretaceous  
Coal Zone(s) or Bed(s) D

Coal Thickness(es) 10-20 ft  
Cleat Orientation and Spacing \_\_\_\_\_  
Dip of Bedding 2-5° NNE Strike of Bedding \_\_\_\_\_  
Overburden Thickness(es) 450-1800 ft

Interburden Thickness \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	D			
Rank				
Moisture (%)	12.50			
Ash (%)	7.50			
Fixed Carbon (%)	47.0			
Volatile Matter (%)	34.6			
Sulfur (%)	0.45			
Heating Value (Btu/lb.)	11,400			
Free Swelling Index				
Hardgrove Grindability	45			
Ash-Softening Temperature (°F)	2,500			
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

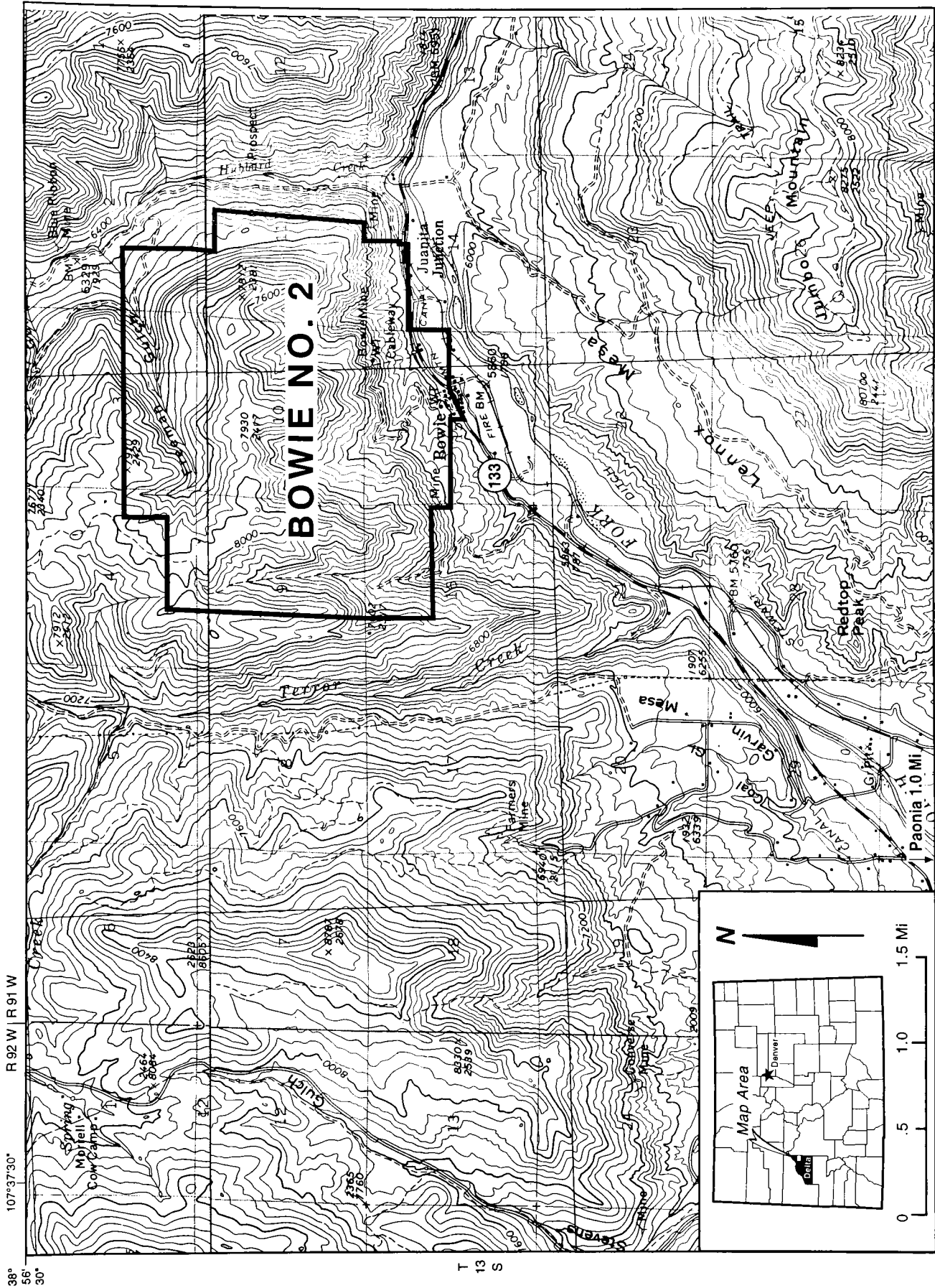
1995 Production	<u>522,384 tons</u>	1996 Production	<u>605,657 tons</u>
Cumulative Production Through 1996	<u>15,301,655 tons</u>		
Projected Production (tpy) 1997	<u></u>		
Remaining Reserves/Life of Mine	<u>80 million tons/2010</u>		
Shifts Per Day	<u>3—8 hrs</u>		
Production Per Shift	<u></u>		
Equipment	<u>Continuous miners, shuttle cars, roof bolters</u>		
Haulage	<u>Conveyors</u>		
Preparation Plant	<u>Crusher breaker</u>	Tipple	<u>Converse</u>

**SALES DATA**

Percent In-State	<u>50</u>	Destination	<u>Industrial</u>	Use	<u></u>
Percent Out-of-State	<u>50</u>	Destination	<u>Utility</u>	Use	<u></u>
Percent Export	<u></u>	Destination	<u></u>	Use	<u></u>
Transportation Mode/Mixed Modes	<u>Rail</u>				

**ADDITIONAL INFORMATION AND COMMENTS**

Geologic Reference Map: Dunrud, Richard C., 1989, Geologic Map and Coal Stratigraphic Framework of the Paonia Area, Delta and Gunnison Counties, Colorado: U.S. Geological Survey Map C-115, scale 1:50,000





## BOWIE NO. 2 MINE

Map No. 2 M.L.R.D. Permit No. Applied for  
Previous Mine Names Orchard Valley Mine

### LOCATION INFORMATION

County Delta  
Permit Location (Sec., T., R.,) Sec. 2-4,9-11,14-16, T. 13 S., R. 91 W.

Coal Region Uinta Field Somerset  
Topographic Quadrangle Bowie

### COMPANY INFORMATION

Mine Operator Bowie Resources, Ltd.  
Address P.O. Box 1488, Paonia, CO 81428-1488  
Contacts Bill Bear, Jr. Telephone (970) 527-4135  
Parent Company Bowie Resources, Ltd.  
Address 1500 North Big Run Road, Ashland, KY 41102  
Contacts Al Perry, President—Bowie Coal Sales Telephone (812) 867-7727

### GENERAL INFORMATION

Mine Type Underground Mining Method Continuous miners  
Mine Status New operation Start-Up Date Anticipated 1997  
No. of Employees \_\_\_\_\_ Union Affiliation Non-union  
No. of Acres in Permit 1496  
Surface: Federal X State \_\_\_\_\_ Private X  
Mineral: Federal X State \_\_\_\_\_ Private X

### GEOLOGIC INFORMATION

Geologic Unit Mesaverde Group Geologic Age Cretaceous  
Coal Zone(s) or Bed(s) B & D  
Coal Thickness(es) 10-20 ft  
Cleat Orientation and Spacing \_\_\_\_\_  
Dip of Bedding 2-5° NNE Strike of Bedding \_\_\_\_\_  
Overburden Thickness(es) 450-1800 ft  
Interburden Thickness \_\_\_\_\_

## COAL QUALITY

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>D</i>	<i>B</i>		
Rank				
Moisture (%)	12.5	7.0		
Ash (%)	7.5	7.5		
Fixed Carbon (%)	47.0	49.0		
Volatile Matter (%)	34.6	36.5		
Sulfur (%)	0.45	0.50		
Heating Value (Btu/lb.)	11,400	12,300		
Free Swelling Index				
Hardgrove Grindability	45	58		
Ash-Softening Temperature (°F)	2,500	2,480		
Methane Characteristics				
Reflectance Data				

## COAL PRODUCTION

1995 Production     *New operation opening in 1997*      
Cumulative Production Through 1996 \_\_\_\_\_  
Projected Production (tpy) 1997 \_\_\_\_\_  
Remaining Reserves/Life of Mine     *83 million tons, 2010*      
Shifts Per Day \_\_\_\_\_  
Production Per Shift \_\_\_\_\_  
Equipment     *Continuous miners, shuttle cars, roof bolters*      
Haulage     *Conveyers*      
Preparation Plant     *Crusher breaker*     Tipple     *Converse*    

## SALES DATA

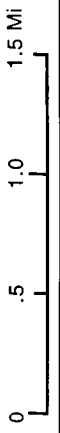
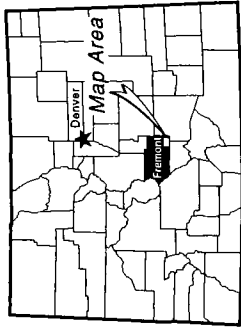
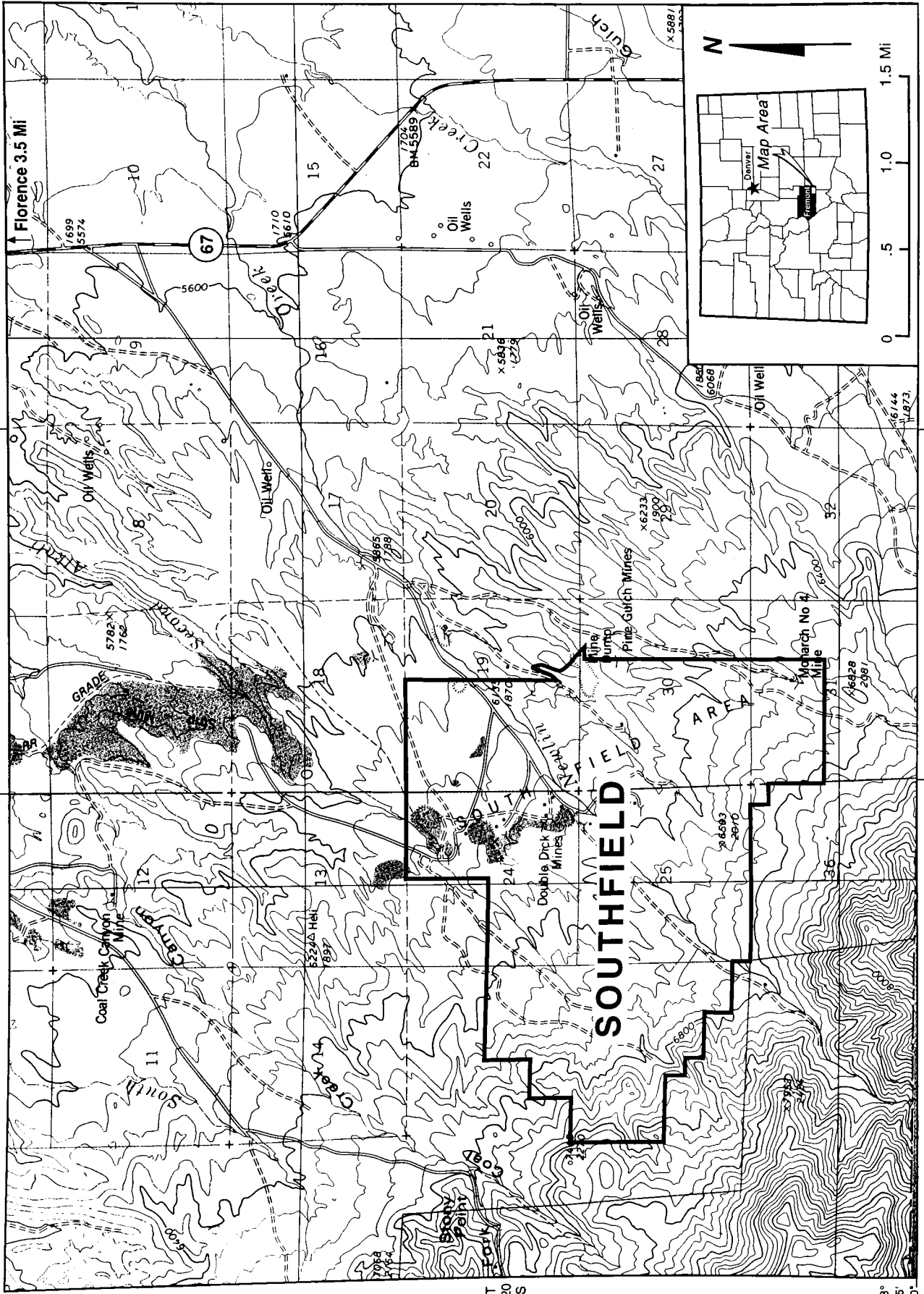
Percent In-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
Percent Out-of-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
Percent Export \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
Transportation Mode/Mixed Modes     *Truck/rail*    

## ADDITIONAL INFORMATION AND COMMENTS

*Geologic Reference Map: See Bowie No. 1*

105°07'30"

R 70 W R 69 W



T 20 S

38° 15' 30"

## SOUTHFIELD MINE

Map No. 3 M.L.R.D. Permit No. C-81-014  
Previous Mine Names Dorchester No. 1 (Dorchester Gas)

### LOCATION INFORMATION

County Fremont  
Permit Location (Sec., T., R.) Secs. 19,30,31, T. 20 S., R. 69 W. and Secs. 23-26,36 T. 20 S., R. 70 W.  
Coal Region Canon City Field Canon City  
Topographic Quadrangle Rockvale

### COMPANY INFORMATION

Mine Operator Energy Fuels Coal, Inc.—Southfield Mine  
Address P. O. Box 459, Florence, CO 81226  
Contacts George Patterson Telephone (719) 784-6395  
Parent Company Energy Fuels Coal, Inc.  
Address 1200 17th St., Ste. 1000, Denver, Co 80202  
Contacts Rich A. Munson Telephone (303) 893-6996

### GENERAL INFORMATION

Mine Type Underground Mining Method Continuous miners  
Mine Status Producing Start-Up Date March 1985  
No. of Employees 40 Union Affiliation Non-union  
No. of Acres in Permit 1,496  
Surface: Federal \_\_\_\_\_ State \_\_\_\_\_ Private X  
Mineral: Federal \_\_\_\_\_ State \_\_\_\_\_ Private X

### GEOLOGIC INFORMATION

Geologic Unit Vermejo Formation Geologic Age Cretaceous  
Coal Zone(s) or Bed(s) Dirty Jack O' Lantern, Red Arrow  
Coal Thickness(es) Dirty Jack O' Lantern—1-6 ft, Red Arrow—3-7 ft  
Cleat Orientation and Spacing In SESW Sec. 19, 20 S. 69 W. the face cleat strike is 285°  
Dip of Bedding 6° Strike of Bedding N to N 40 E  
Overburden Thickness(es) 0-1300 ft  
Interburden Thickness Dirty Jack O' Lantern-Red Arrow: 29 ft

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>Dirty Jack</i>			
Rank	<i>Bituminous</i>			
Moisture (%)	10.0	11.0		
Ash (%)	10.0	9.0		
Fixed Carbon (%)	35.0	46.0		
Volatile Matter (%)	44.0	34.0		
Sulfur (%)	0.6	0.6		
Heating Value (Btu/lb.)	11,000	11,100		
Free Swelling Index	0.5			
Hardgrove Grindability	45			
Ash-Softening Temperature (°F)	2,650			
Methane Characteristics	<i>Minimal</i>			
Reflectance Data				

**COAL PRODUCTION**

1995 Production	1995—302,233 tons	1996 Production	170,387 tons
Cumulative Production Through 1996	5,476,051 tons		
Projected Production (tpy) 1997	224,000		
Remaining Reserves/Life of Mine	10 years		
Shifts Per Day	2—8 hrs		
Production Per Shift			
Equipment	<i>Continuous miners</i>		
Haulage	<i>Electric shuttle cars</i>		
Preparation Plant	<i>Wash</i>	Tipple	

**SALES DATA**

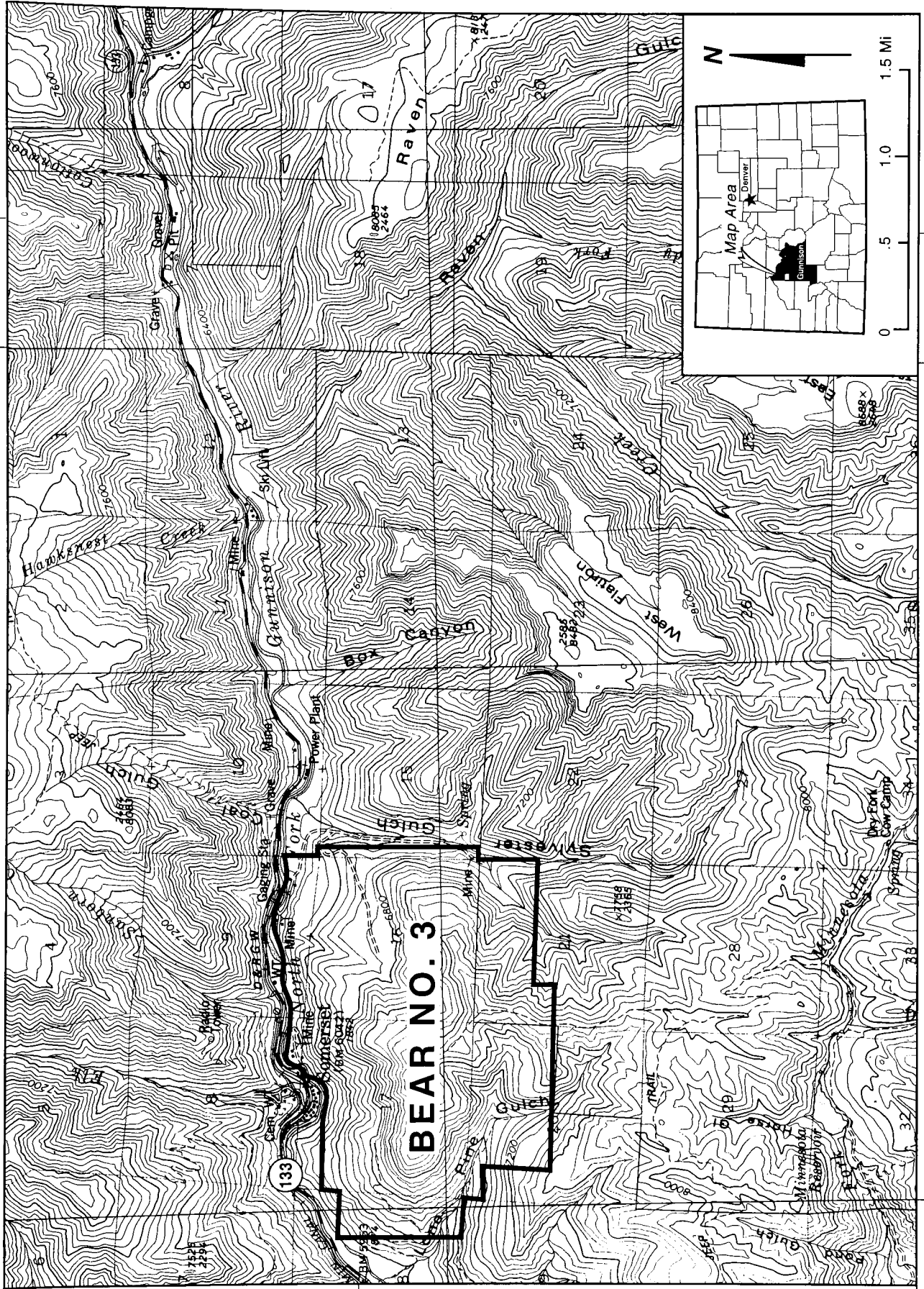
Percent In-State	89	Destination	<i>Canon City, Florence</i>	Use	<i>Steam</i>
Percent Out-of-State	11	Destination	<i>New Mexico</i>	Use	<i>Steam</i>
Percent Export		Destination		Use	
Transportation Mode/Mixed Modes	<i>Truck</i>				

**ADDITIONAL INFORMATION AND COMMENTS**

*Geologic Map Reference: Scott, G.R., 1974, Reconnaissance Geologic Map of the Rockvale Quadrangle, Custer and Fremont Counties, Colorado, U.S. Geological Survey Map MF-562, scale 1:24,000*

R 90 W R 89 W

107°22'30"



38° 52' 30"

Paonia 8.5 Mi

S 13 T

# BEAR MINE NO. 3

Map No. 4 M.L.R.D. Permit No. C-81-033  
Previous Mine Names Bear No. 1 and Bear No. 2

## LOCATION INFORMATION

County Gunnison  
Permit Location (Sec., T., R.,) Sec. 8,9,16-21, T. 13 S., R. 90 W.  
Coal Region Uinta Field Somerset  
Topographic Quadrangle Somerset

## COMPANY INFORMATION

Mine Operator Bear Coal Co., Inc.  
Address P.O. Box 518, Somerset, CO 814334  
Contacts Daniel E. Bear or David J. Hurr Telephone (970) 929-5775  
Parent Company \_\_\_\_\_  
Address \_\_\_\_\_  
Contacts \_\_\_\_\_ Telephone \_\_\_\_\_

## GENERAL INFORMATION

Mine Type Underground Mining Method Continuous miners  
Mine Status Producing Start-Up Date 1934  
No. of Employees 54 Union Affiliation UMWA No. 6417, Dist. 22  
No. of Acres in Permit 1652  
Surface: Federal \_\_\_\_\_ State \_\_\_\_\_ Private X  
Mineral: Federal X State \_\_\_\_\_ Private \_\_\_\_\_

## GEOLOGIC INFORMATION

Geologic Unit Mesaverde Group Geologic Age Upper Cretaceous  
Coal Zone(s) or Bed(s) B  
Coal Thickness(es) B: 8-10 ft  
Cleat Orientation and Spacing \_\_\_\_\_  
Dip of Bedding 3.5-6.25° NE Strike of Bedding \_\_\_\_\_  
Overburden Thickness(es) 100-1400 ft  
Interburden Thickness \_\_\_\_\_

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>B</i>			
Rank				
Moisture (%)	<i>8.5</i>			
Ash (%)	<i>8.0</i>			
Fixed Carbon (%)	<i>52.0</i>			
Volatile Matter (%)	<i>41.0</i>			
Sulfur (%)	<i>0.5</i>			
Heating Value (Btu/lb.)	<i>12,200</i>			
Free Swelling Index				
Hardgrove Grindability	<i>46</i>			
Ash-Softening Temperature (°F)	<i>2,550</i>			
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

1995 Production	<i>468,002 tons</i>	1996 Production	<i>335,763 tons</i>
Cumulative Production Through 1996	<i>9,107,275 tons</i>		
Projected Production (tpy) 1997	<i>None—closed 11/11/96</i>		
Remaining Reserves/Life of Mine			
Shifts Per Day	<i>3—8 hrs</i>		
Production Per Shift	<i>1000 tons</i>		
Equipment	<i>Continuous miner, roof bolters, shuttle cars</i>		
Haulage	<i>Belt</i>		
Preparation Plant	<i>N/A</i>	Tipple	<i>N/A</i>

**SALES DATA**

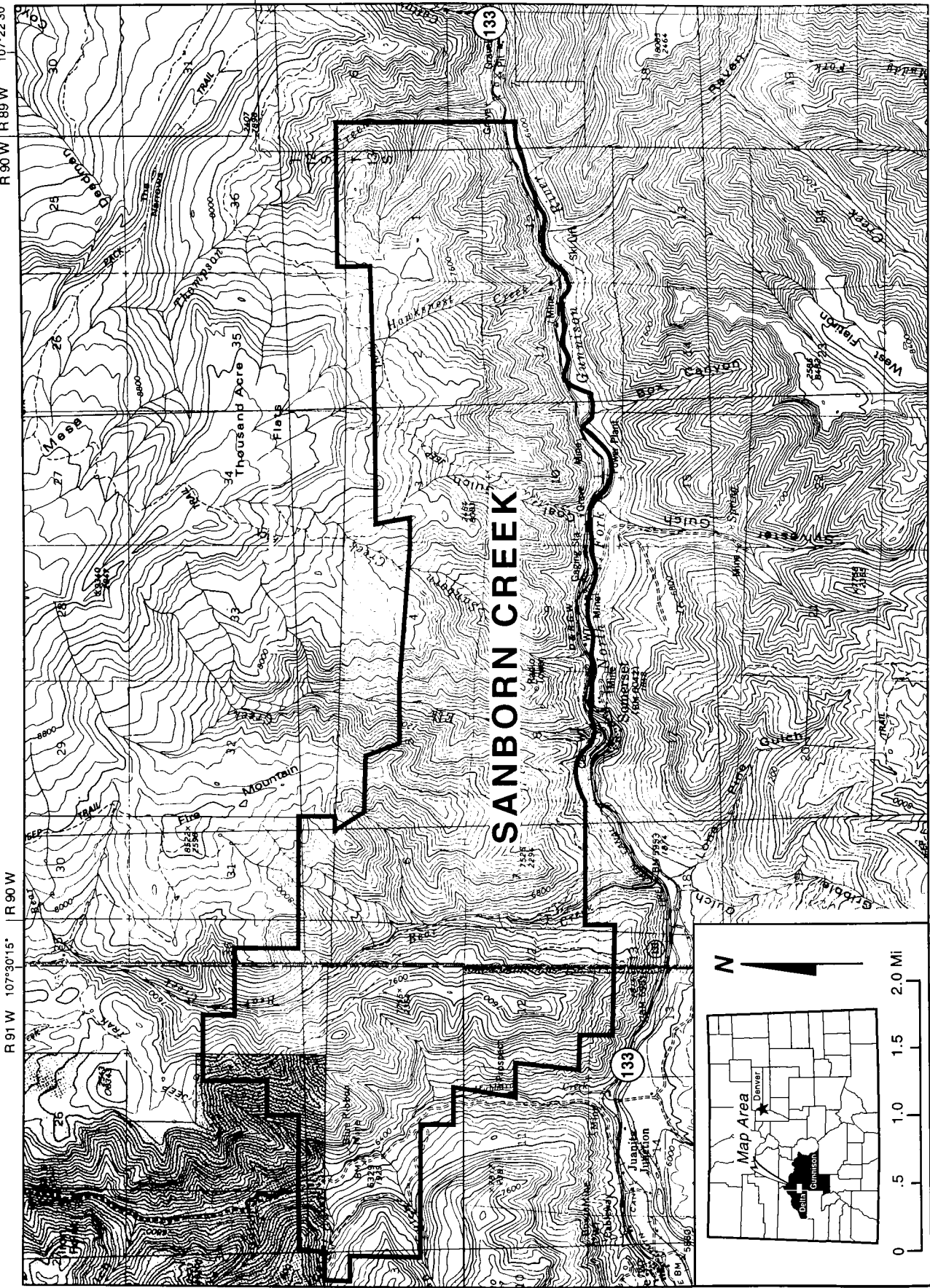
Percent In-State	<i>100</i>	Destination	<i>Colorado</i>	Use	<i>Steam</i>
Percent Out-of-State		Destination		Use	
Percent Export		Destination		Use	
Transportation Mode/Mixed Modes	<i>Rail—D&amp;RGW (Southern Pacific)</i>				

**ADDITIONAL INFORMATION AND COMMENTS**

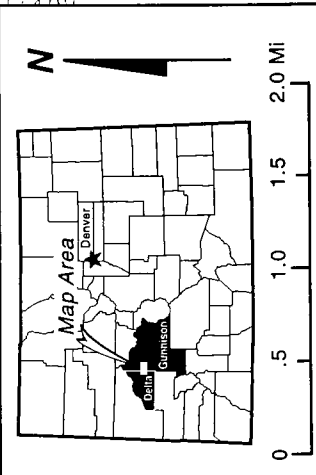
*All coal is sold through an exclusive sales agreement with Pacific Basin Resources for resale*

*Geologic Map Reference: See Bowie No. 1*





↑ Paonia 4.5 Mi  
 38° 56' 30"



# SANBORN CREEK MINE

Map No. 5 M.L.R.D. Permit No. C-81-022

Previous Mine Names \_\_\_\_\_

## LOCATION INFORMATION

County Gunnison

Permit Location (Sec., T., R.) Sec. 6,7, T. 13 S, R. 89 W.; Sec. 31, T. 12 S. R. 90 W.; Sec. 34-36, T. 12 S., R. 91 W., Sec. 1-12, T 13 S., R. 90 W.; Sec 1-3, 11-13, T. 13 S., R. 91 W.

Coal Region Uinta Field Somerset

Topographic Quadrangle Somerset, Bowie

## COMPANY INFORMATION

Mine Operator Oxbow Carbon and Minerals, Inc.

Address P.O. Box 535, Somerset, CO 81434

Contacts Walter Wright Telephone (970) 929-5122

Parent Company Oxbow Carbon and Minerals

Address 7901 S. Park Plaza, Suite 202, Littleton, CO 80120

Contacts Paul Fritzler Telephone (303) 795-0413

## GENERAL INFORMATION

Mine Type Underground Mining Method Continuous

Mine Status Producing Start-Up Date 1991

No. of Employees 107 Union Affiliation N/A

No. of Acres in Permit 9,047

Surface: Federal 5,494 State \_\_\_\_\_ Private 3,553

Mineral: Federal 5,777 State \_\_\_\_\_ Private 3,270

## GEOLOGIC INFORMATION

Geologic Unit Williams Fork Geologic Age Upper Cretaceous

Coal Zone(s) or Bed(s) B, C

Coal Thickness(es) 18 ft

Cleat Orientation and Spacing \_\_\_\_\_

Dip of Bedding 5% Strike of Bedding S 27° E

Overburden Thickness(es) 500-2,500 ft

Interburden Thickness 40-60 ft

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	B			
Rank				
Moisture (%)	6.25			
Ash (%)	8.59			
Fixed Carbon (%)	47.25			
Volatile Matter (%)	38			
Sulfur (%)	0.55			
Heating Value (Btu/lb.)	12,375			
Free Swelling Index	2.5			
Hardgrove Grindability	48			
Ash-Softening Temperature (°F)	2,470			
Methane Characteristics				
Reflectance Data	0.74			

**COAL PRODUCTION**

1995 Production 1,057,996 tons 1996 Production 1,157,121 tons  
 Cumulative Production Through 1996 4,587,374 tons  
 Projected Production (tpy) 1997 \_\_\_\_\_  
 Remaining Reserves/Life of Mine 12 million tons  
 Shifts Per Day 3—8 hrs  
 Production Per Shift 4,400 tons per day  
 Equipment Continuous miners  
 Haulage Belt  
 Preparation Plant \_\_\_\_\_ Tipple \_\_\_\_\_

**SALES DATA**

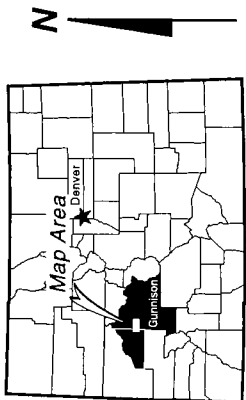
Percent In-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
 Percent Out-of-State 100 Destination Various Use Stm & metallurg.  
 Percent Export \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
 Transportaton Mode/Mixed Modes Rail—Southern Pacific

**ADDITIONAL INFORMATION AND COMMENTS**

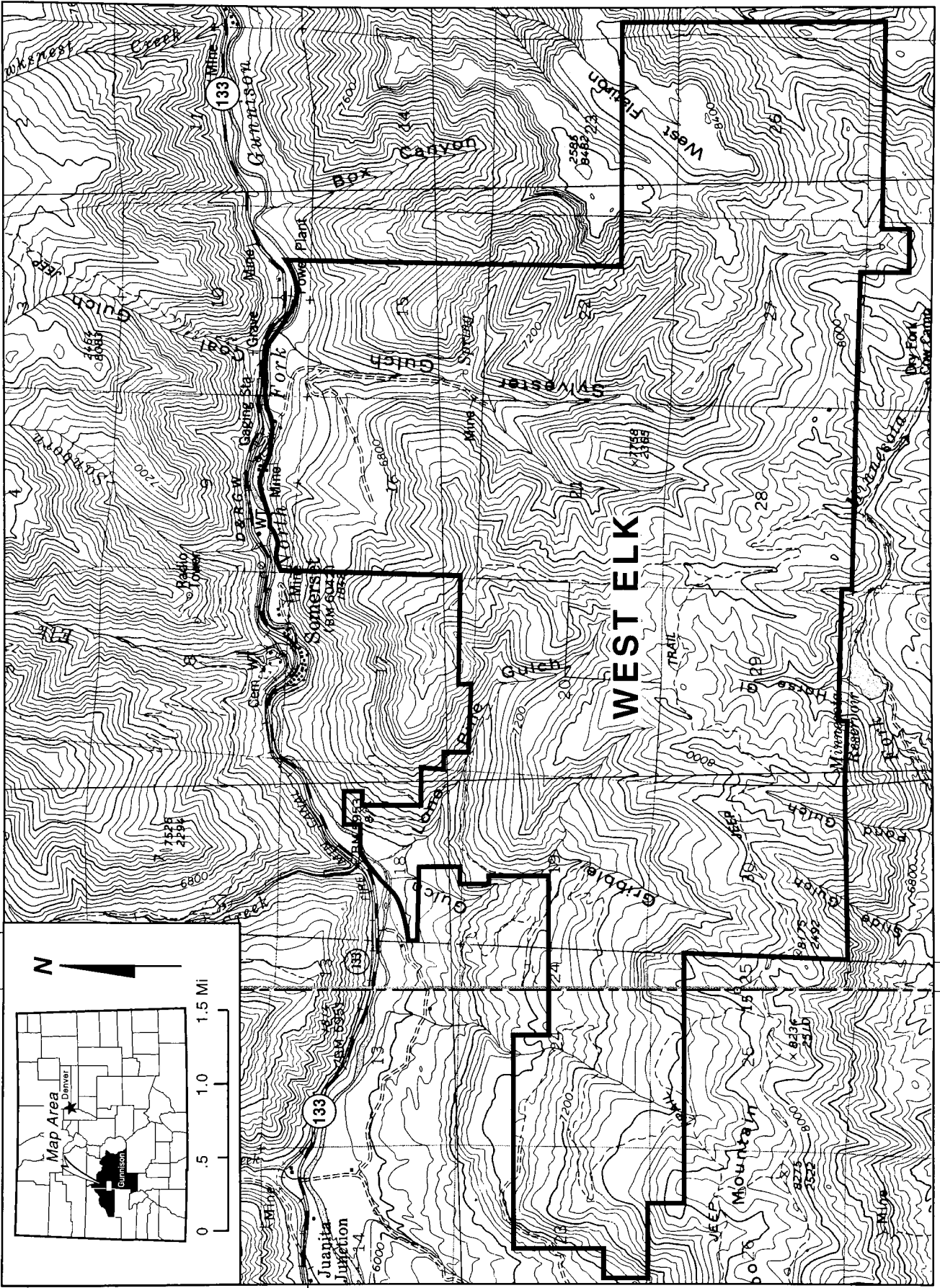
Geologic Map Reference: See Bowie No. 1

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

R 91 W 107°30'15" R 90 W



0 .5 1.0 1.5 Mi



Paonia 5.5 Mi

T 13 S

## WEST ELK MINE

Map No. 6 M.L.R.D. Permit No. C-80-007

Previous Mine Names Mt. Gunnison

### LOCATION INFORMATION

County Gunnison

Permit Location (Sec., T., R.) Sec. 9,10,15,16,18-30,34-36, T. 13 S., R. 90 W. and Sec. 23-26, T. 13 S., R. 91 W.

Coal Region Uinta Field Somerset

Topographic Quadrangle Somerset, Minnesota Pass, Bowie

### COMPANY INFORMATION

Mine Operator Mountain Coal Company, Inc.

Address P. O. Box 591, Somerset, CO 81434

Contacts Gene Di Claudio/ Dan Meadors Telephone (970) 929-5015

Parent Company Arco Coal Co.

Address 555 Seventeenth St., Denver, CO 80202

Contacts Terry O'Connor Telephone (303) 293-4000

### GENERAL INFORMATION

Mine Type Underground Mining Method Continuous miners, longwall

Mine Status Producing Start-Up Date March 29, 1980

No. of Employees 275 Union Affiliation None

No. of Acres in Permit 14,590

Surface: Federal X State \_\_\_\_\_ Private X

Mineral: Federal X State \_\_\_\_\_ Private X

### GEOLOGIC INFORMATION

Geologic Unit Mesaverde Group Geologic Age Cretaceous

Coal Zone(s) or Bed(s) B Seam (mined 1994-present), E Seam (unmined), F seam (mined 1982-1991)

Coal Thickness(es) B: 14 ft

Cleat Orientation and Spacing N 65 E-N 70 E

Dip of Bedding 3-5° SW-NE Strike of Bedding \_\_\_\_\_

Overburden Thickness(es) B: 0-2300 ft, avg. 1200 ft; E: 0-1700 ft, avg. 800 ft; F: 0-1500 ft, avg. 700 ft

Interburden Thickness B-E: 170-300 ft; E-F: 60-190 ft; avg. 120-130 ft

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>E</i>	<i>B (as shipped)</i>		
Rank	<i>Sub B</i>	<i>Sub B</i>		
Moisture (%)	<i>11.0</i>	<i>9.1</i>		
Ash (%)	<i>6.5</i>	<i>9.4</i>		
Fixed Carbon (%)		<i>46.5</i>		
Volatile Matter (%)		<i>35.0</i>		
Sulfur (%)	<i>0.4</i>	<i>0.46</i>		
Heating Value (Btu/lb.)	<i>11,600</i>	<i>11,700</i>		
Free Swelling Index				
Hardgrove Grindability		<i>41-49</i>		
Ash-Softening Temperature (°F)		<i>2,500</i>		
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

1995 Production	<i>5,318,650 tons</i>	1996 Production	<i>5,948,912 tons</i>
Cumulative Production Through 1996	<i>24,858,495 tons</i>		
Projected Production (tpy) 1997	<i>6 million tons</i>		
Remaining Reserves/Life of Mine	<i>164.6 million tons/2020</i>		
Shifts Per Day	<i>3</i>		
Production Per Shift			
Equipment	<i>Longwall, continuous miners, diesel mobile equipment</i>		
Haulage	<i>Belt haulage out of mine</i>		
Preparation Plant	<i>Sizing only</i>	Tipple	<i>Silos &amp; bath weigh</i>

**SALES DATA**

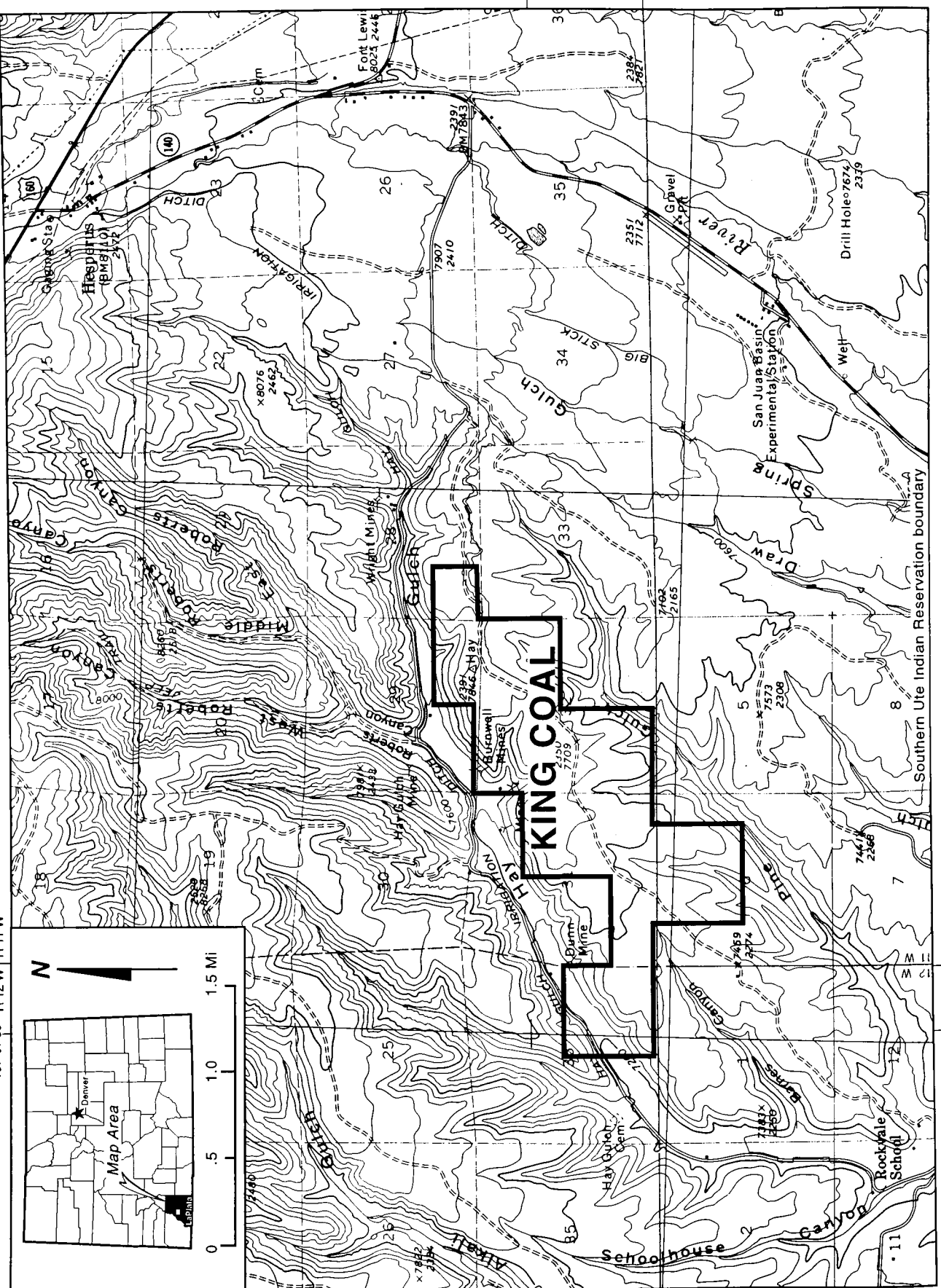
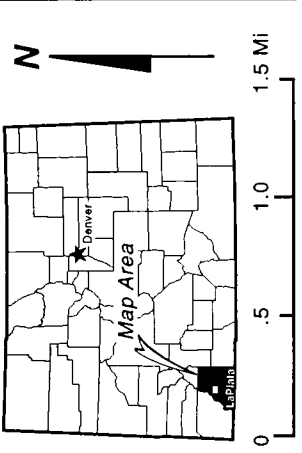
Percent In-State	<i>20</i>	Destination	<i>Colorado</i>	Use	<i>Steam</i>
Percent Out-of-State	<i>70</i>	Destination	<i>IL, IA, TN, TX, NV</i>	Use	<i>Steam</i>
Percent Export	<i>10</i>	Destination	<i>*</i>	Use	<i>Steam</i>
Transportation Mode/Mixed Modes	<i>Railroad—Union Pacific</i>				

**ADDITIONAL INFORMATION AND COMMENTS**

*\*Export destinations: Japan, Korea, Europe*

*Geologic Reference Map: See Bowie No. 1*

107°07'30" R.12 W | R.11 W



T 35 N | T 34 N

# KING COAL MINE

Map No. 7 M.L.R.D. Permit No. C-81-035

Previous Mine Names National King Coal, Inc.

## LOCATION INFORMATION

County La Plata

Permit Location (Sec., T., R.,) Sec. 28,29,31,32, T. 35 N., R. 11 W.; Sec. 6, T. 34 N., R. 11 W.; Sec. 36, T. 35. N., R. 12 W.

Coal Region San Juan River Field Durango

Topographic Quadrangle Kline, Hesperus

## COMPANY INFORMATION

Mine Operator Natinal King Coal, LLC

Address 4424 County Rd. 120, Hesperus, CO 81326

Contacts Tom Bird Telephone (970) 385-4606

Parent Company AMCI Colorado; N.S. Resources

Address P.O. Box 2905, Durango, CO 81301

Contacts Brad Gosche Telephone (970) 259-2416

## GENERAL INFORMATION

Mine Type Underground Mining Method Continuous miner

Mine Status Producing Start-Up Date 1936

No. of Employees 56 Union Affiliation Non-union

No. of Acres in Permit 1,433

Surface: Federal \_\_\_\_\_ State X Private X

Mineral: Federal X State X Private X

## GEOLOGIC INFORMATION

Geologic Unit Upper Menefee Geologic Age Cretaceous

Coal Zone(s) or Bed(s) Upper

Coal Thickness(es) 52—72 in.

Cleat Orientation and Spacing N51W, dip 90°face, Sec. 32, T. 35 N., R. 11 W.

Dip of Bedding 3°S-SW Strike of Bedding \_\_\_\_\_

Overburden Thickness(es) 0-300 ft

Interburden Thickness \_\_\_\_\_



**COAL QUALITY****Sample 1****Sample 2****Sample 3****Sample 4**

Seam \_\_\_\_\_

Rank \_\_\_\_\_

Moisture (%) \_\_\_\_\_

Ash (%) \_\_\_\_\_

Fixed Carbon (%) \_\_\_\_\_

Volatile Matter (%) \_\_\_\_\_

Sulfur (%) \_\_\_\_\_

Heating Value (Btu/lb.) \_\_\_\_\_

Free Swelling Index \_\_\_\_\_

Hardgrove Grindability \_\_\_\_\_

Ash-Softening Temperature (°F) \_\_\_\_\_

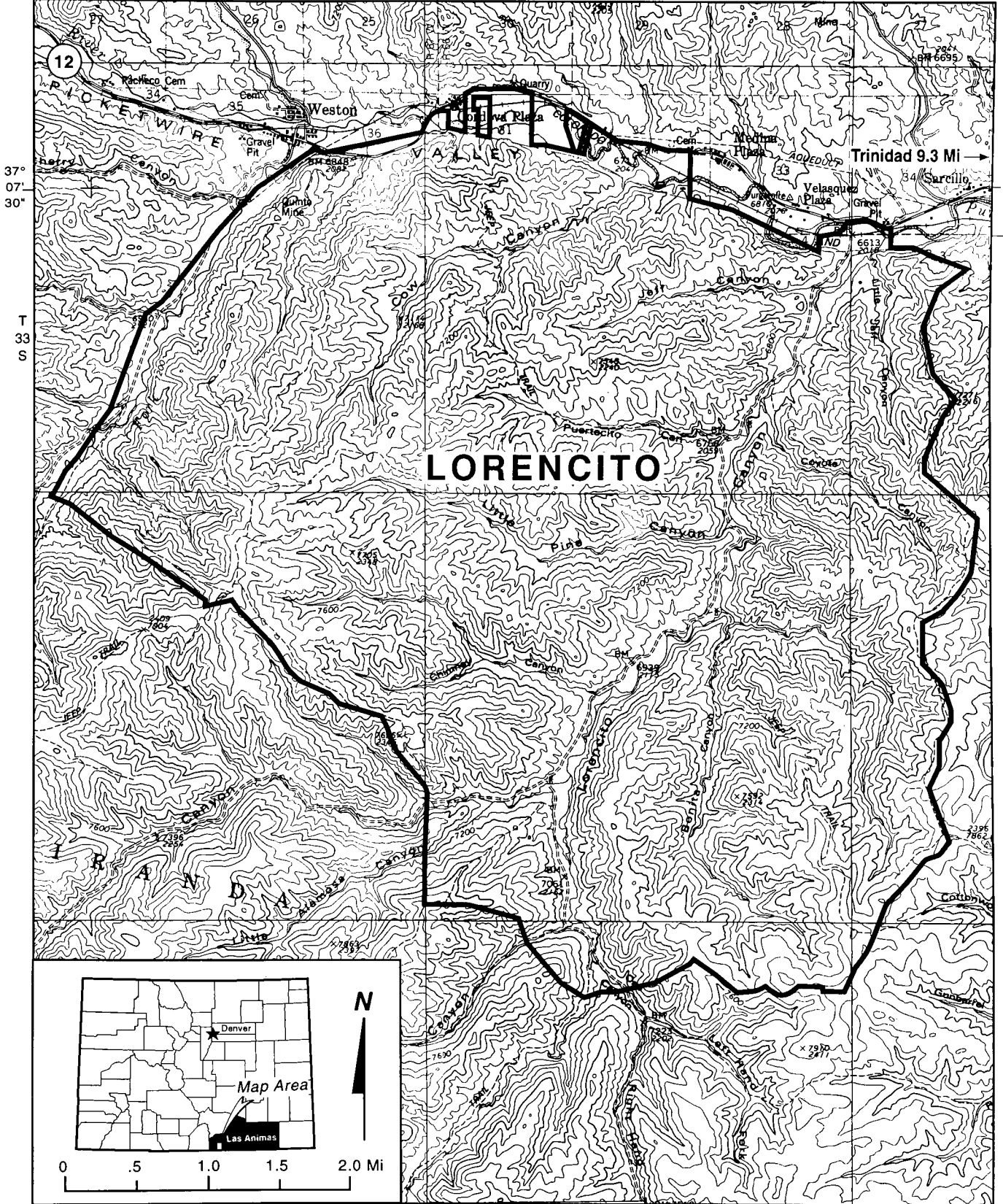
Methane Characteristics \_\_\_\_\_

Reflectance Data \_\_\_\_\_

**COAL PRODUCTION**1995 Production 208,642 tons 1996 Production 190,613 tonsCumulative Production Through 1996 2,808,963 tonsProjected Production (tpy) 1997 254,000Remaining Reserves/Life of Mine 3,200,000 tonsShifts Per Day 1—10 hrsProduction Per Shift 1,000 tons/dayEquipment Continuous miner sectionsHaulage Shuttle car to beltPreparation Plant Operational 1997, 4th quarter Tipple \_\_\_\_\_**SALES DATA**Percent In-State 10 Destination CO Use Domestic/Ind.Percent Out-of-State 79 Destination AZ,NM,UT Use IndustrialPercent Export 11 Destination Japan Use SteamTransportation Mode/Mixed Modes Truck**ADDITIONAL INFORMATION AND COMMENTS**Geologic Map Reference: Zapp, A.D., 1949, Geology and coal resources of the Durango area, La Plata and Montezuma Counties, Colorado: U.S. Geological Survey Oil Invest. Map No. 109, scale 1:126,720

104°52'30"

R 67 W | R 66 W



## LORENCITO MINE

Map No. 8 M.L.R.D. Permit No. C-96-084  
Previous Mine Names \_\_\_\_\_

### LOCATION INFORMATION

County Las Animas  
Permit Location (Sec., T., R.,) Lorencito Canyon area (no survey)

Coal Region Raton Mesa Field Trinidad  
Topographic Quadrangle Weston

### COMPANY INFORMATION

Mine Operator Lorencito Coal Company, LLC.  
Address 1311 Bentwood Drive, Evansville, IN 47711  
Contacts Al Perry Telephone (812) 867-7727  
Parent Company \_\_\_\_\_  
Address \_\_\_\_\_  
Contacts \_\_\_\_\_ Telephone \_\_\_\_\_

### GENERAL INFORMATION

Mine Type Surface and underground Mining Method \*  
Mine Status Permit submitted 1997 Start-Up Date \*\*  
No. of Employees \_\_\_\_\_ Union Affiliation Non-union  
No. of Acres in Permit 18,000  
Surface: Federal \_\_\_\_\_ State \_\_\_\_\_ Private 100  
Mineral: Federal \_\_\_\_\_ State \_\_\_\_\_ Private 100

### GEOLOGIC INFORMATION

Geologic Unit Raton Formation Geologic Age Paleocene  
Coal Zone(s) or Bed(s) Primero seam, Weston seam, and Ciruela seam

Coal Thickness(es) 3-9 ft  
Cleat Orientation and Spacing \_\_\_\_\_  
Dip of Bedding 1% NE Strike of Bedding \_\_\_\_\_  
Overburden Thickness(es) 0-350 ft Curuela, 200 ft Weston, 250 ft Primero  
Interburden Thickness \_\_\_\_\_

**COAL QUALITY****Sample 1****Sample 2****Sample 3****Sample 4**

Seam \_\_\_\_\_

Rank \_\_\_\_\_

Moisture (%) \_\_\_\_\_

7.00

Ash (%) \_\_\_\_\_

10.00–12.00

Fixed Carbon (%) \_\_\_\_\_

57.00

Volatile Matter (%) \_\_\_\_\_

31.00

Sulfur (%) \_\_\_\_\_

0.60

Heating Value (Btu/lb.) \_\_\_\_\_

12,500–13,000

Free Swelling Index \_\_\_\_\_

7.5–9

Hardgrove Grindability \_\_\_\_\_

65

Ash-Softening Temperature (°F) \_\_\_\_\_

2,000–2,300

Methane Characteristics \_\_\_\_\_

Reflectance Data \_\_\_\_\_

**COAL PRODUCTION**

1995 Production \_\_\_\_\_ 1996 Production \_\_\_\_\_

Cumulative Production Through 1996 \_\_\_\_\_

Projected Production (tpy) 1997 \_\_\_\_\_

Remaining Reserves/Life of Mine \_\_\_\_\_

Shifts Per Day \_\_\_\_\_

Production Per Shift \_\_\_\_\_

Equipment \_\_\_\_\_

Haulage \_\_\_\_\_

Preparation Plant \_\_\_\_\_ Tipple \_\_\_\_\_

**SALES DATA**

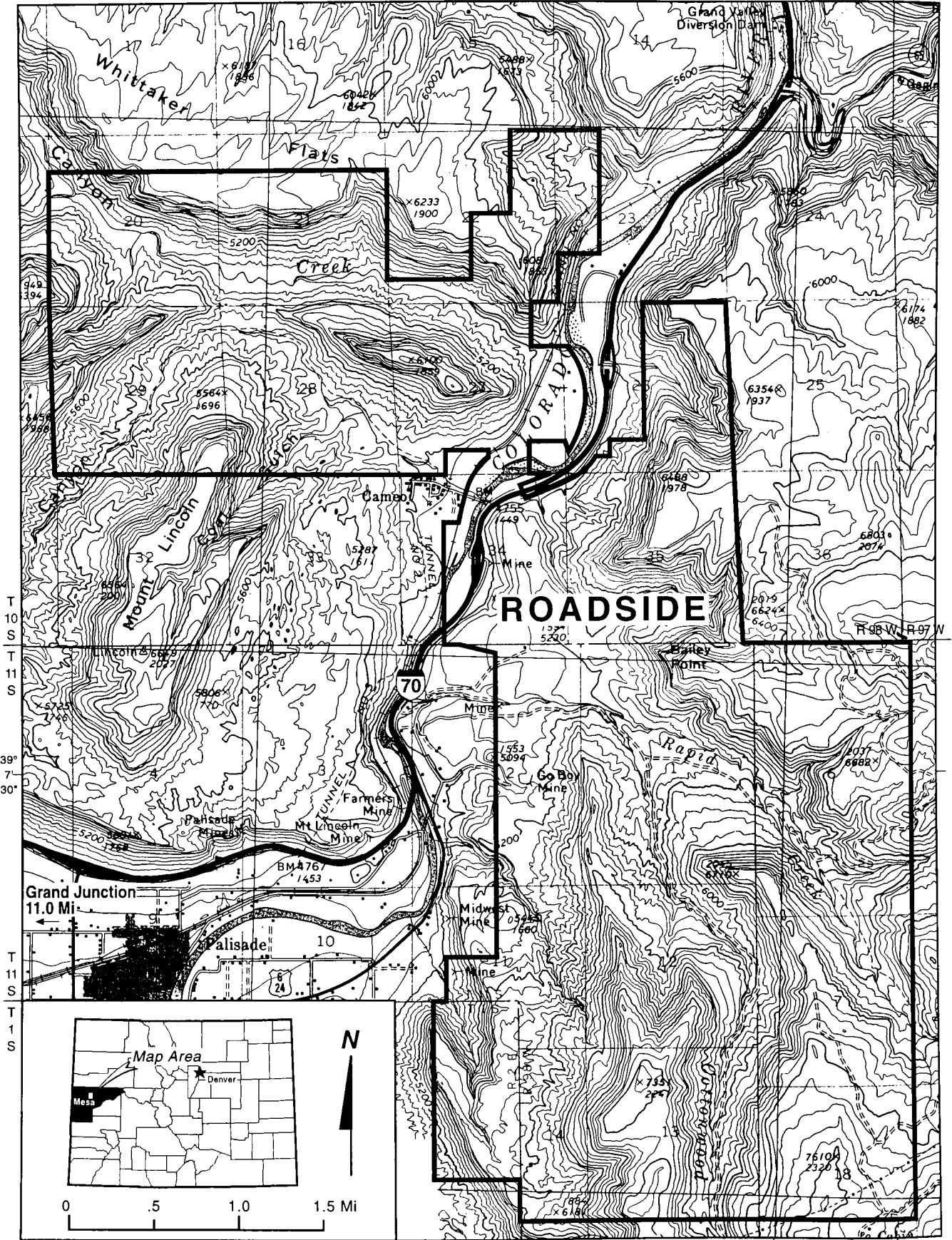
Percent In-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_

Percent Out-of-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_

Percent Export \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_

Transportation Mode/Mixed Modes \_\_\_\_\_

**ADDITIONAL INFORMATION AND COMMENTS***\*Surface—contour and mountaintop removal, Underground—longwall and room and pillar**\*\*Anticipated late 1997 or early 1998**Geologic Map Reference: Johnson, R.B., 1969, Geologic Map of the Trinidad Quadrangle, South-Central**Colorado: U.S. Geological Survey Misc. Invest. Map I-558, scale 1:250,000*



## ROADSIDE MINE, North and South Portals

Map No. 9 M.L.R.D. Permit No. C-81-041  
Previous Mine Names Cameo Mine and Roadside Mine

### LOCATION INFORMATION

County Mesa  
Permit Location (Sec., T., R.) Sec. 20-23, 26-29, 34-35, T. 10 S., R. 98 W.; Sec. 1-2, 11-14, T. 11 S., R. 98 W.; Sec. 6,7,18, T. 11 S., R. 97 W.; Sec. 1, T. 1. S., R. 2 E., UTE P.M.  
Coal Region Uinta Field Grand Mesa  
Topographic Quadrangle Cameo, Palisade

### COMPANY INFORMATION

Mine Operator Powderhorn Coal Company  
Address P.O. Box 1430, Palisade, CO 81526  
Contacts Larry Reschke Telephone (970) 464-7951  
Parent Company Peabody Holding Company  
Address 301 N. Memorial Drive, P.O. Box 373, St. Louis, MO 63166  
Contacts James Campbell Telephone (314) 342-3400

### GENERAL INFORMATION

Mine Type Underground Mining Method Continuous miners  
Mine Status Producing Start-Up Date 1977  
No. of Employees 75 Union Affiliation Non-union  
No. of Acres in Permit 10,170  
Surface: Federal X State \_\_\_\_\_ Private X  
Mineral: Federal X State \_\_\_\_\_ Private X

### GEOLOGIC INFORMATION

Geologic Unit Mt. Garfield Formation Geologic Age Cretaceous  
Coal Zone(s) or Bed(s) Cameo B seam  
Coal Thickness(es) 4.4-9.4 ft  
Cleat Orientation and Spacing 37° face, 307° butt, varied spacing, cleat dip 90°  
Dip of Bedding 5% Strike of Bedding N 65 W  
Overburden Thickness(es) 0-2,000 ft  
Interburden Thickness Cameo B seam lies 400-450 ft above the Palisade seam, which occurs at the base of the Mt. Garfield Formation and 35-90 ft below the Carbonera seam

**COAL QUALITY**

	<b>Sample 1</b>	<b>Sample 2</b>
Seam	<i>Cameo B (blend base)</i>	<i>Cameo B (100% washed)</i>
Rank		
Moisture (%)	8.0	9.3
Ash (%)	16.0	9.1
Fixed Carbon (%)	43.4	47
Volatile Matter (%)	32.6	35
Sulfur (%)	0.5	0.5
Heating Value (Btu/lb.)	10,800	11,800
Free Swelling Index	1.5	0.5
Hardgrove Grindability	48	
Ash-Softening Temperature (°F)		
Methane Characteristics		
Reflectance Data		

**COAL PRODUCTION**

1995 Production	<u>589,064 tons</u>	1996 Production	<u>625,885 tons</u>
Cumulative Production Through 1996	<u>9,063,923 tons</u>		
Projected Production (tpy) 1997	_____		
Remaining Reserves/Life of Mine	<u>35 million tons/17+ years</u>		
Shifts Per Day	<u>3</u>		
Production Per Shift	_____		
Equipment	<u>continuous miners (remote with scrubbers) and shuttle cars</u>		
Haulage	<u>belt</u>		
Preparation Plant	<u>heavy media</u>	Tipple	_____

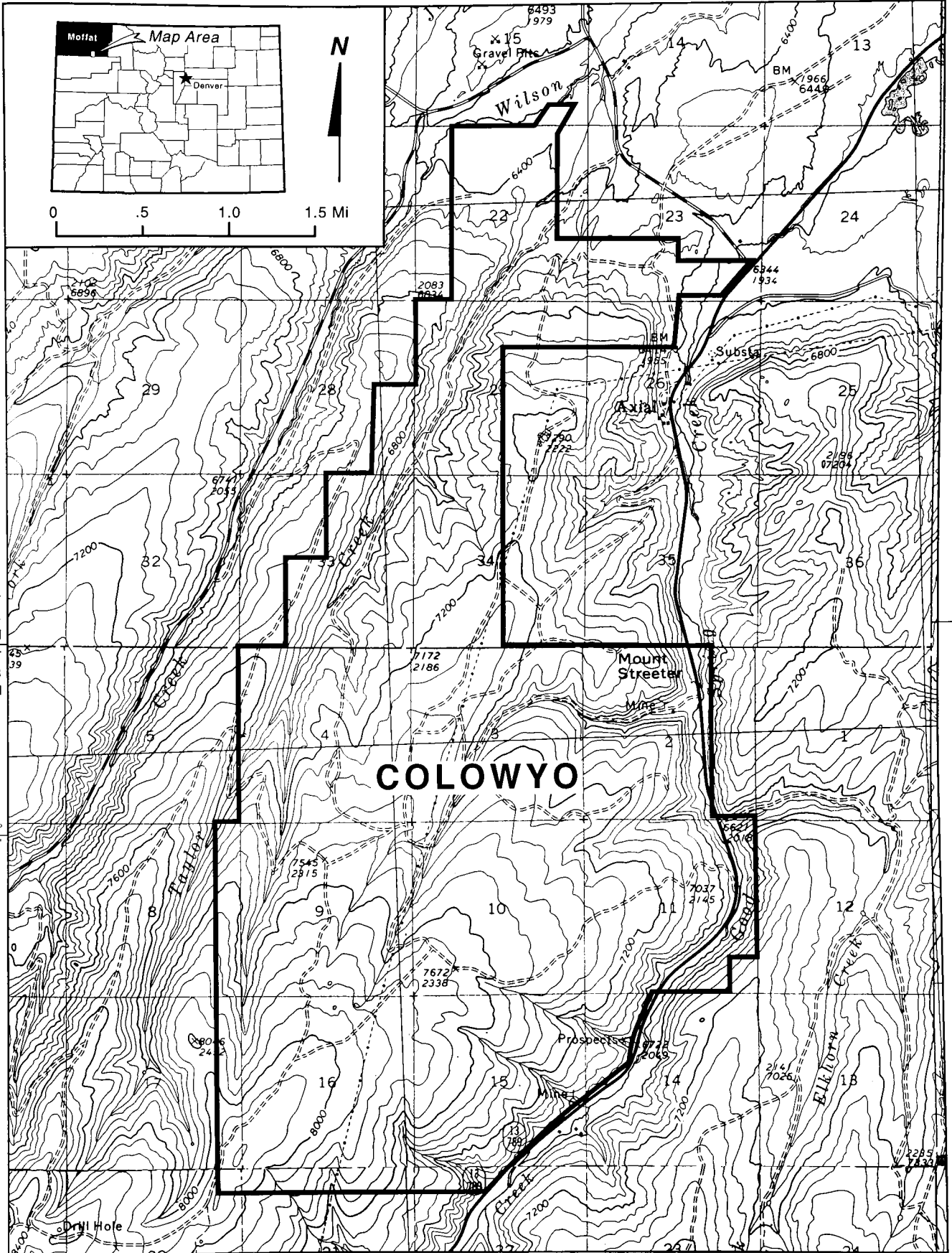
**SALES DATA**

Percent In-State	<u>33</u>	Destination	<u>Palisade</u>	Use	<u>Steam</u>
Percent Out-of-State	<u>67</u>	Destination	<u>Iowa</u>	Use	<u>Steam</u>
Percent Export	_____	Destination	_____	Use	_____
Transportation Mode/Mixed Modes	<u>Railroad—D&amp;RGW (Southern Pacific)</u>				

**ADDITIONAL INFORMATION AND COMMENTS**

Washed quality and blended quality mixed per customer request.

Geologic Map Reference: Ellis, M.S. and Gabaldo V., 1989, Geologic Map and Cross Sections of Parts of the Grand Junction and Delta 30' x 60' Quadrangles, West-Central Colorado: U.S. Geological Survey Map C-124, scale 1:100,000.





# COLOWYO MINE

Map No. 10 M.L.R.D. Permit No. C-81-019

Previous Mine Names \_\_\_\_\_

## LOCATION INFORMATION

County Moffat

Permit Location (Sec., T., R.) Sec. 15,22,23,26-28,33,34, T. 4 N., R. 93 W. and Sec. 2-4, 8-11, 14-17, 20-22, T. 3 N., R. 93 W.

Coal Region Uinta Field Danforth Hills

Topographic Quadrangle Ninemile Gap, Axial

## COMPANY INFORMATION

Mine Operator Colowyo Coal Company L.P.

Address 5731 State Highway 13, Meeker, CO 81641

Contacts John Harmon, G.M. Telephone (970) 824-1501

Parent Company Kennecott Energy

Address Gillette, WY

Contacts Greg Boyce Telephone (307) 687-6000

## GENERAL INFORMATION

Mine Type Surface Mining Method Dragline, truck, & shovel

Mine Status Producing Start-Up Date 1976

No. of Employees 316 Union Affiliation Non-union

No. of Acres in Permit 7,402

Surface: Federal X State X Private X

Mineral: Federal X State X Private X

## GEOLOGIC INFORMATION

Geologic Unit Williams Fork Formation Geologic Age Upper Cretaceous

Coal Zone(s) or Bed(s) 8 seams: Y3+Y2, X, A2+A3, B, C, D, E, F

Coal Thickness(es) 57.9 ft total; Y3+Y2—6.8 ft, X—12.3 ft, A2+A3—6.7 ft, B—5.3 ft \*

Cleat Orientation and Spacing 132°

Dip of Bedding 0-20° N Strike of Bedding E-W

Overburden Thickness(es) 450 ft total overburden and interburden

Interburden Thickness \_\_\_\_\_

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>Composite</i>			
Rank	<i>Sub B</i>			
Moisture (%)	16.72			
Ash (%)	5.76			
Fixed Carbon (%)	44.80			
Volatile Matter (%)	32.77			
Sulfur (%)	0.38			
Heating Value (Btu/lb.)	10,461			
Free Swelling Index	N/A			
Hardgrove Grindability	49			
Ash-Softening Temperature (°F)	2,300			
Methane Characteristics	N/A			
Reflectance Data	N/A			

**COAL PRODUCTION**

1995 Production	<u>4,395,865 tons</u>	1996 Production	<u>5,713,564 tons</u>
Cumulative Production Through 1996	<u>68,297,127 tons</u>		
Projected Production (tpy) 1997	<u>6,000,000</u>		
Remaining Reserves/Life of Mine	<u>100 million tons</u>		
Shifts Per Day	<u>2—12 hrs in 1996, 7 days/week</u>		
Production Per Shift	<u></u>		
Equipment	<u>Shovels, draglines, overburden drills, bulldozers, front-end loaders</u>		
Haulage	<u>Haulage trucks out of pit to crusher and screens</u>		
Preparation Plant	<u>Crusher and screens</u>	Tipple	<u>Yes</u>

**SALES DATA**

Percent In-State	<u>40</u>	Destination	<u>**</u>	Use	<u>Steam, industrial</u>
Percent Out-of-State	<u>60</u>	Destination	<u>***</u>	Use	<u>Steam, industrial</u>
Percent Export	<u>0</u>	Destination	<u></u>	Use	<u></u>
Transportation Mode/Mixed Modes	<u>Union Pacific Railroad</u>				

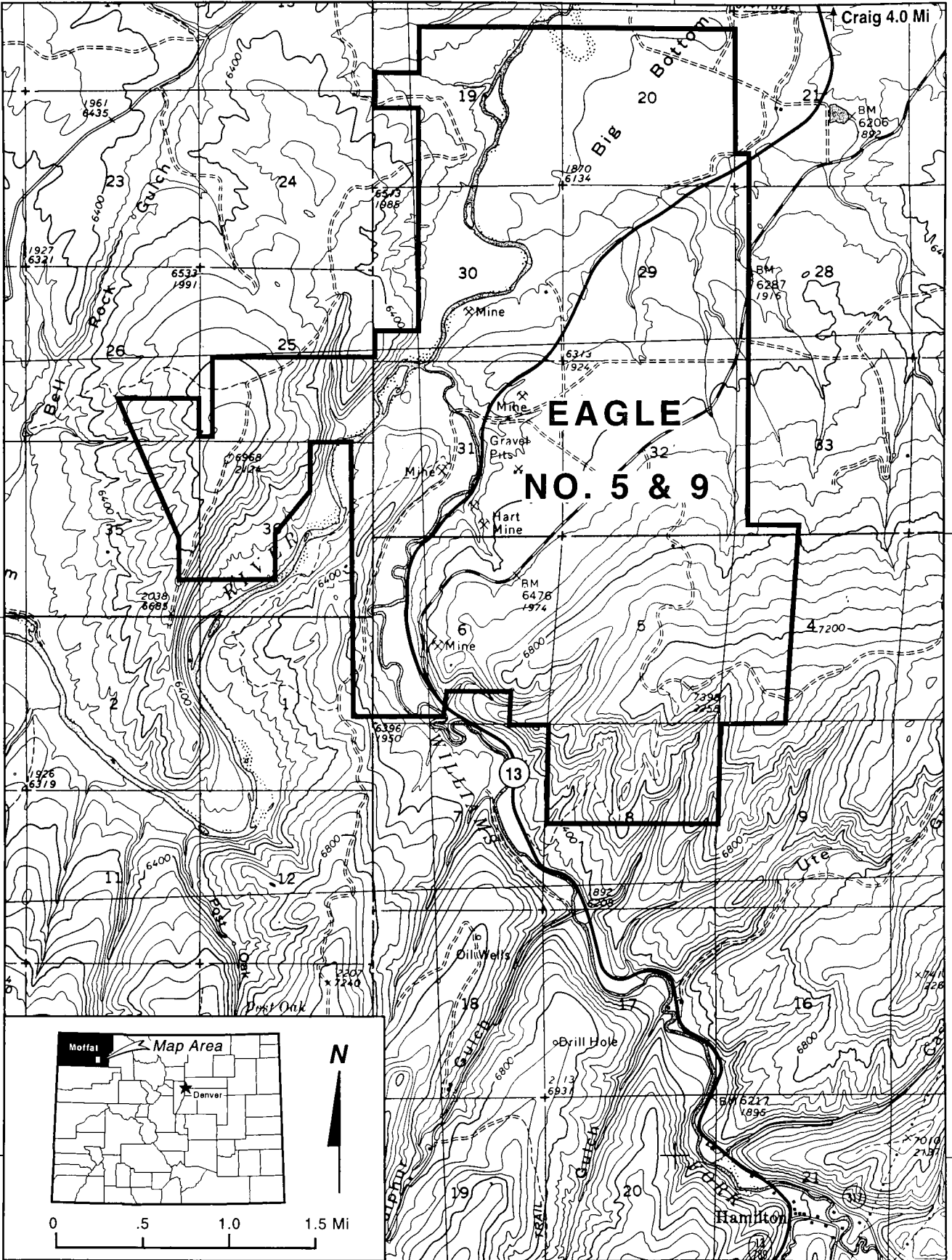
**ADDITIONAL INFORMATION AND COMMENTS**

\*C—6.0 ft, D—10.1 ft, E—6.8 ft, F—5.4 ft

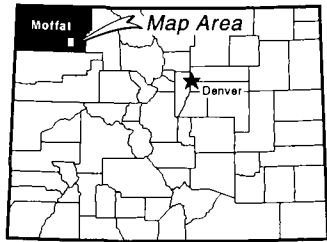
\*\*Colorado Springs; Public Service Co. of Colorado, Cherokee Plant; Craig

\*\*\*NB, TX, IL, IA, UT, TN, KN, AZ

Geologic Map Reference: Hardy, John and Zook, Jon, 1997, Geologic Map and Cross Sections of the Axial Quadrangle, Moffat County, Colorado: Colo. Geological Survey Open File Report 97-5, scale 1:24,000



T 6 N  
T 5 N



N

0 .5 1.0 1.5 Mi

40°  
22'  
30"

# EAGLE MINE No. 5 & 9

Map No. 11 M.L.R.D. Permit No. C-81-044  
Previous Mine Names \_\_\_\_\_

## LOCATION INFORMATION

County Moffat  
Permit Location (Sec., T., R.,) Secs. 19,20,21,28-33, T. 6 N., R. 91 W. and Secs. 4-6, 8, T. 5 N., R. 91 W.,  
and Secs. 25,26,35,36, T. 6 N., R. 92 W.  
Coal Region Green River Field Yampa  
Topographic Quadrangle Round Bottom, Castor Gulch

## COMPANY INFORMATION

Mine Operator Cyprus Empire Corporation  
Address P.O. Box 68, Craig, CO 81626  
Contacts Rick Mills Telephone (970) 879-8050  
Parent Company Cyprus Coal Company  
Address 9100 E. Mineral Circle, Englewood, CO 80112  
Contacts Garold R. Spindler, President Telephone (303) 643-5000

## GENERAL INFORMATION

Mine Type Underground Mining Method Longwall/continuous  
Mine Status Idle Start-Up Date Early 1970s  
No. of Employees 8 Union Affiliation UMWA  
No. of Acres in Permit 6,387  
Surface: Federal X State X Private X  
Mineral: Federal X State X Private X

## GEOLOGIC INFORMATION

Geologic Unit Williams Fork Formation Geologic Age Cretaceous  
Coal Zone(s) or Bed(s) F

Coal Thickness(es) 10.5 ft  
Cleat Orientation and Spacing 320-314° face cleat fairly well developed in NWSW 31, 6N, 91W  
Dip of Bedding 12-15° Strike of Bedding NW  
Overburden Thickness(es) 0-900 ft

Interburden Thickness \_\_\_\_\_

**COAL QUALITY****Sample 1****Sample 2**

Seam	F	
Rank	Sub B	
Moisture (%)	8.93-12.84	7.00
Ash (%)	4.99-10.36	10.00
Fixed Carbon (%)	41.75-52.85	49.37
Volatile Matter (%)	35.43-38.83	37.88
Sulfur (%)	0.46-0.57	0.58
Heating Value (Btu/lb.)	10,377-11,567	10,500
Free Swelling Index		
Hardgrove Grindability		
Ash-Softening Temperature (°F)	2,700	
Methane Characteristics		
Reflectance Data		

**COAL PRODUCTION**

1995 Production 745,074 tons (Eagle No. 5) 1996 Production \_\_\_\_\_  
 Cumulative Production Through 1996 19,719,949 tons  
 Projected Production (tpy) 1997 Idle, standby  
 Remaining Reserves/Life of Mine 25 years  
 Shifts Per Day 1-8 hrs  
 Production Per Shift Hemscheidt shields, Anderson 1250 shearer  
 Equipment Anderson Mavor, Kloeckner Becroit face conveyor  
 Haulage \_\_\_\_\_  
 Preparation Plant \_\_\_\_\_ Tipple Yes

**SALES DATA**

Percent In-State 93 Destination \* Use Steam  
 Percent Out-of-State 7 Destination TX, MS, IL Use Steam  
 Percent Export \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
 Transportaton Mode/Mixed Modes Union Pacific Railroad

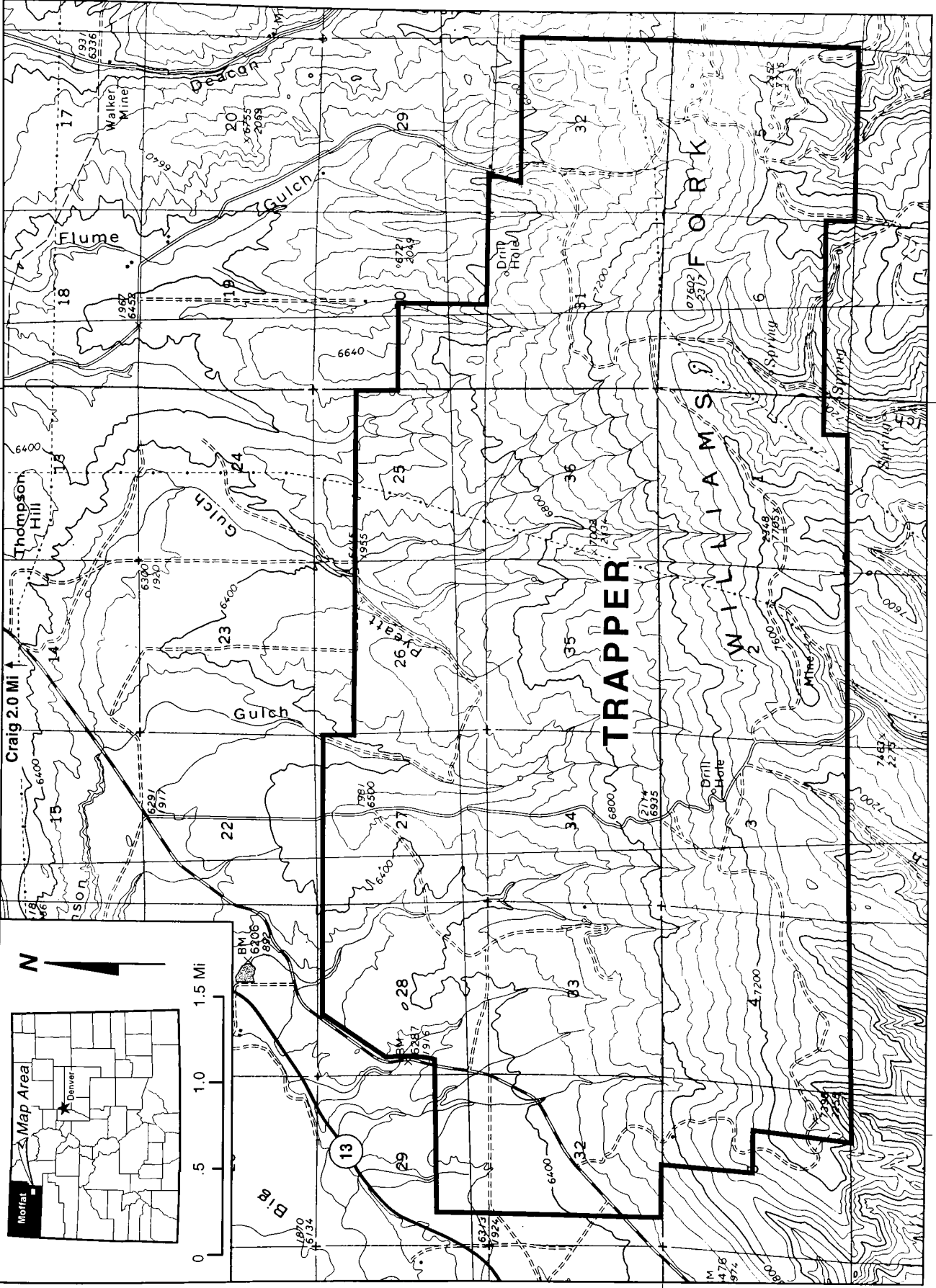
**ADDITIONAL INFORMATION AND COMMENTS**

\*Boulder, Colorado Springs, Craig, Denver

Geologic Map Reference: See Seneca II

107°37'30"

R 91 W R 90 W



T 6 N T 5 N

## TRAPPER MINE

Map No. 12 M.L.R.D. Permit No. C-81-010

Previous Mine Names \_\_\_\_\_

### LOCATION INFORMATION

County Moffat

Permit Location (Sec., T., R.,) Secs. 5,6, T. 5 N., R. 90 W.; Secs. 1-5, T. 5 N., R. 91 W.; Sec. 30-32, T. 6 N., R. 90 W.; Secs. 25-29, 32-36, T. 6 N., R. 91 W.

Coal Region Green River Field Yampa

Topographic Quadrangle Castor Gulch

### COMPANY INFORMATION

Mine Operator Trapper Mining Inc.

Address P.O. Box 187, Craig, CO 81626

Contacts Alan Rowley Telephone (970) 824-4401

Parent Company Saltriver, Tri-State, & Platte River Power Authority, Pacificorp

Address P.O. Box 1149, Montrose, CO 81402

Contacts W. Gordon Peters Telephone (303) 249-4501

### GENERAL INFORMATION

Mine Type Surface Mining Method Dragline

Mine Status Producing Start-Up Date 1977

No. of Employees 147 Union Affiliation Operating Engineers

No. of Acres in Permit 10,382

Surface: Federal \_\_\_\_\_ State 45% Private 55%

Mineral: Federal 75% State 22% Private 3%

### GEOLOGIC INFORMATION

Geologic Unit Upper Williams Fork Formation Geologic Age Cretaceous

Coal Zone(s) or Bed(s) G, H, I, Q, R

Coal Thickness(es) G—4 ft, H—6 ft, I—5 ft, Q—13 ft, R—4 ft

Cleat Orientation and Spacing 327° face, 40° butt; primary 0.5-2 inch spacing

Dip of Bedding 16% Strike of Bedding SE

Overburden Thickness(es) 30-140 ft

Interburden Thickness 2-50 ft

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>Average</i>			
Rank	<i>Sub B</i>			
Moisture (%)	16	17.5		
Ash (%)	8	7.5		
Fixed Carbon (%)	48	44.4		
Volatile Matter (%)	33	30.20		
Sulfur (%)	0.45	0.4		
Heating Value (Btu/lb.)	9,800	9,900		
Free Swelling Index				
Hardgrove Grindability				
Ash-Softening Temperature (°F)	2,120	2,242		
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

1995 Production	<u>2,024,186 tons</u>	1996 Production	<u>1,974,410 tons</u>
Cumulative Production Through 1996	<u>40,642,754 tons</u>		
Projected Production (tpy) 1997	<u></u>		
Remaining Reserves/Life of Mine	<u>Surface—36.6 mil tons, Underground—200 mil tons</u>		
Shifts Per Day	<u>1 (4—10 hrs/wk)</u>		
Production Per Shift	<u>55 tons/man shift, 10,500 tons total</u>		
Equipment	<u>3 draglines, 2 drills, 8 bulldozers, front-end loaders, 2 hydraulic excavators</u>		
Haulage	<u>5 haul trucks from pit to power plant</u>		
Preparation Plant	<u>None</u>	Tipple	<u></u>

**SALES DATA**

Percent In-State	<u>100</u>	Destination	<u>Craig Units 1 &amp; 2</u>	Use	<u>Steam</u>
Percent Out-of-State	<u></u>	Destination	<u></u>	Use	<u></u>
Percent Export	<u></u>	Destination	<u></u>	Use	<u></u>
Transportation Mode/Mixed Modes	<u>Truck</u>				

**ADDITIONAL INFORMATION AND COMMENTS**

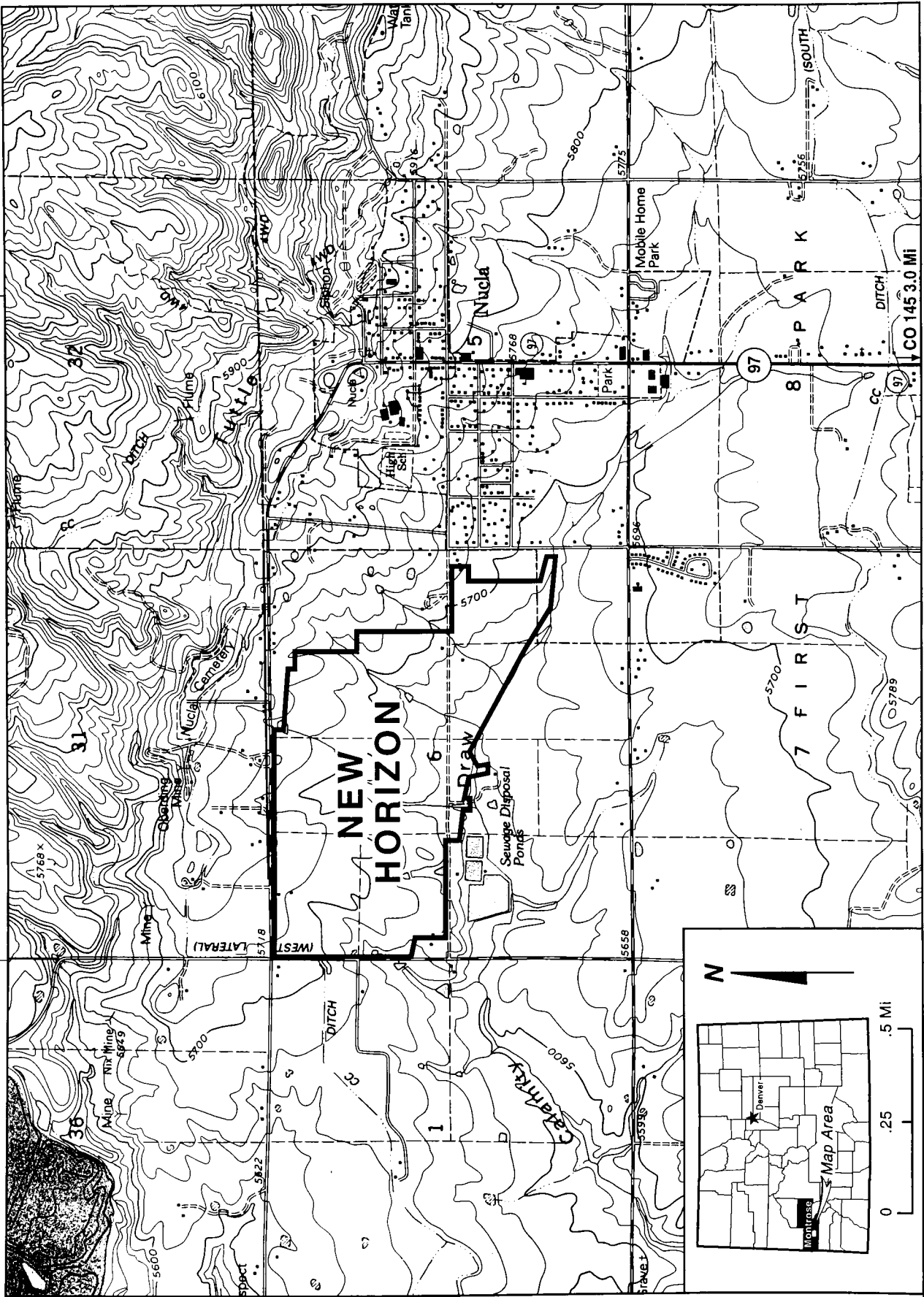
All coal is burned at the Colorado Ute Craig Generating Station Units 1 & 2

Geologic Map Reference: See Seneca II



R 16 W R 15 W

108°32'30"



T 47 N  
T 46 N

38° 15'

# NEW HORIZON MINE

Map No. 13 M.L.R.D. Permit No. C-81-008  
Previous Mine Names Nucla and Nucla East (2)

## LOCATION INFORMATION

County Montrose  
Permit Location (Sec., T., R.,) Mining—Sec. 6, T. 46 N., R. 15 W.; Reclaiming—Sec. 25, 36, T. 47 N.,  
R. 16 W.; Sec. 31, T. 47 N., R. 15 W.  
Coal Region San Juan River Field Nucla-Naturita  
Topographic Quadrangle Nucla

## COMPANY INFORMATION

Mine Operator Western Fuels Colorado-New Horizon Mine  
Address P.O. Box 628, Nucla, CO 81424  
Contacts R. Lance Wade Telephone (970) 864-2165  
Parent Company Western Fuels Colorado, LLC  
Address 405 Urban Street, Suite 305, Lakewood, CO 80228  
Contacts Raja Upadhyay Telephone (303) 988-9626

## GENERAL INFORMATION

Mine Type Surface Mining Method Shovel, truck  
Mine Status Producing Start-Up Date 1993  
No. of Employees 25 Union Affiliation UMWA Local 1281  
No. of Acres in Permit 659  
Surface: Federal \_\_\_\_\_ State \_\_\_\_\_ Private X  
Mineral: Federal \_\_\_\_\_ State \_\_\_\_\_ Private X

## GEOLOGIC INFORMATION

Geologic Unit Dakota Formation Geologic Age Cretaceous  
Coal Zone(s) or Bed(s) 1 & 2  
Coal Thickness(es) 1—1.6–3.3 ft, 2—5.9–7.9 ft  
Cleat Orientation and Spacing 63° face, 308° butt, 0.08–3 ft spacing  
Dip of Bedding 1–2°SW Strike of Bedding N 25° W. to N 45° W  
Overburden Thickness(es) 0–100 ft  
Interburden Thickness 6–10 ft

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>Dakota</i>			
Rank				
Moisture (%)	6.7			
Ash (%)	15.1	18%		
Fixed Carbon (%)	47.0			
Volatile Matter (%)	30.7			
Sulfur (%)	0.81			
Heating Value (Btu/lb.)	11,680	10,000-10,300		
Free Swelling Index				
Hardgrove Grindability				
Ash-Softening Temperature (°F)	2,750			
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

1995 Production	374,266 tons	1996 Production	361,667 tons
Cumulative Production Through 1996	1,219,979 tons		
Projected Production (tpy) 1997			
Remaining Reserves/Life of Mine	20-25 years		
Shifts Per Day	2		
Production Per Shift	850 tons		
Equipment	<i>Shovels, dozers, trucks, overburden drill</i>		
Haulage			
Preparation Plant	N/A	Tipple	N/A

**SALES DATA**

Percent In-State	100	Destination	<i>Nucla Power Plant*</i>	Use	<i>Steam</i>
Percent Out-of-State		Destination		Use	
Percent Export		Destination		Use	
Transportation Mode/Mixed Modes	<i>Trucks haul from pit to the power plant</i>				

**ADDITIONAL INFORMATION AND COMMENTS**

*\*Fluidized bed combustion unit*

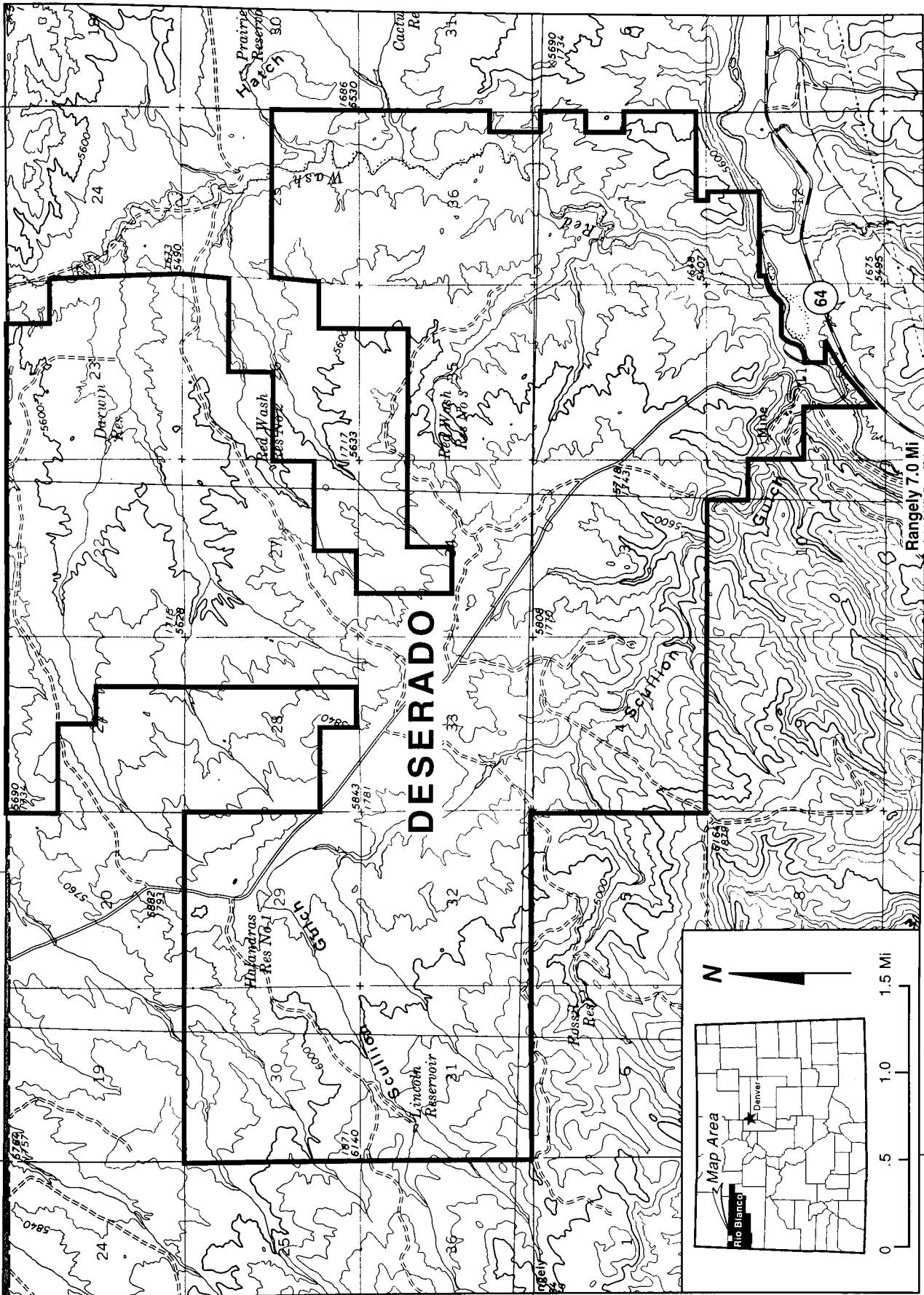
*Geologic Map Reference: Williams, P.L., 1964, Geology, Structure and Uranium Deposits of the Moab Quadrangle; Colorado and Utah: U.S. Geological Survey Map I-360, 1: 250,000*

40°  
13'  
30"

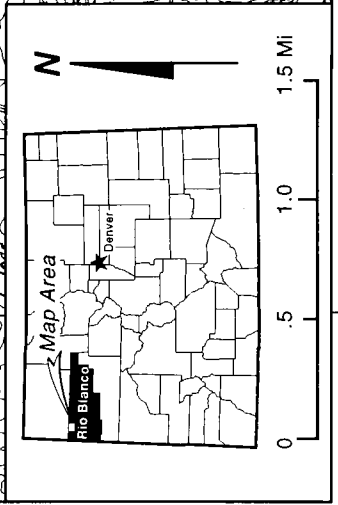
R 102 W | R 101 W

108°45'00"

R 101 W | R 100 W



Rangely 7.0 Mi



# DESERADO MINE

Map No. 14 M.L.R.D. Permit No. C-81-018

Previous Mine Names \_\_\_\_\_

## LOCATION INFORMATION

County Rio Blanco

Permit Location (Sec., T., R.) Sec. 1-4,10-12, T. 2 N., R. 101 W. and Sec. 21-23, 25-36, T. 3 N., R. 101 W.

Coal Region Uinta Field Lower White River

Topographic Quadrangle Rangley NE, Cactus Reservoir

## COMPANY INFORMATION

Mine Operator Western Fuels-Utah, Inc.

Address P.O. Box 1067, Rangely, CO 81648

Contacts Alan Hillard, Mine Manager Telephone (970) 675-8431

Parent Company Deseret Generation and Transmission Coop.

Address 8722 S. 300 W., Sandy, UT 84070

Contacts Edward Thatcher Telephone (801) 566-1238

## GENERAL INFORMATION

Mine Type Underground Mining Method Longwall

Mine Status Producing Start-Up Date 1982

No. of Employees 252 Union Affiliation UMWA No. 1984

No. of Acres in Permit 9,496.7

Surface: Federal X State \_\_\_\_\_ Private X

Mineral: Federal X State \_\_\_\_\_ Private \_\_\_\_\_

## GEOLOGIC INFORMATION

Geologic Unit Williams Fork Formation Geologic Age Upper Cretaceous

Coal Zone(s) or Bed(s) D

Coal Thickness(es) D—8-9 ft

Cleat Orientation and Spacing 84-89° face, 170-175° butt

Dip of Bedding 3-7° Strike of Bedding N 46 W

Overburden Thickness(es) 1,600-2,100 ft

Interburden Thickness 10-50 ft

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	A/B/C	D		
Rank	Sub A	Sub A		
Moisture (%)	12.0	11.3	11.0	
Ash (%)	16.1	13.1	8.0	
Fixed Carbon (%)				
Volatile Matter (%)				
Sulfur (%)	0.41	0.44	0.41	
Heating Value (Btu/lb.)	9,400	10,000	10,930	
Free Swelling Index				
Hardgrove Grindability				
Ash-Softening Temperature (°F)	2,550	2,600		
Methane Characteristics	Low	Low		
Reflectance Data				

**COAL PRODUCTION**

1995 Production 760,255 tons 1996 Production 530,454 tons  
 Cumulative Production Through 1996 13,625,668 tons  
 Projected Production (tpy) 1997 \_\_\_\_\_  
 Remaining Reserves/Life of Mine Year 2033  
 Shifts Per Day 3—8 hrs  
 Production Per Shift \_\_\_\_\_  
 Equipment \_\_\_\_\_  
 Haulage \_\_\_\_\_  
 Preparation Plant \_\_\_\_\_ Tipple \_\_\_\_\_

**SALES DATA**

Percent In-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
 Percent Out-of-State 100 Destination Utah (Bonanza Station) Use Steam  
 Percent Export \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
 Transportaton Mode/Mixed Modes Electric unit train

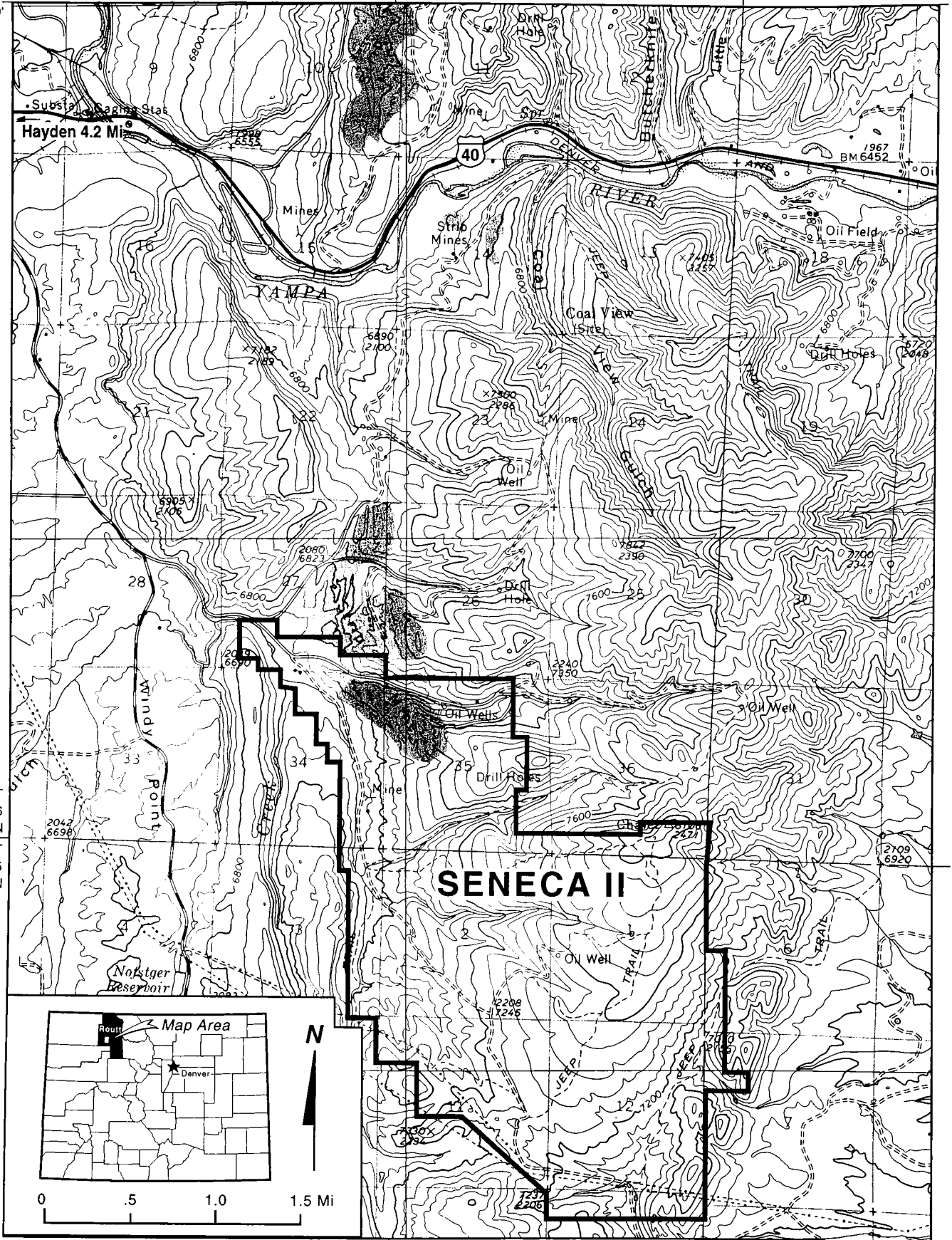
**ADDITIONAL INFORMATION AND COMMENTS**

Captive fuel supply for the Bonanza Power Plant in Utah. Coal is delivered by an electric railroad to the power plant. The "D" seam is currently being mined.  
Geologic Map Reference: Barnum, B.E., and Garrigues, R.S., 1980, Geologic Map and Coal Sections of the Cactus Reservoir Quadrangle, Rio Blanco and Moffat Counties, Colorado: U.S. Geological Survey Map MF-1179, scale 1:24,000.

40°  
30'

106°07'30"

R 87 W R 86 W



# SENECA II MINE

Map No. 15 M.L.R.D. Permit No. C-80-005  
Previous Mine Names \_\_\_\_\_

## LOCATION INFORMATION

County Routt  
Permit Location (Sec., T., R.,) Sec. 27,34-36, T. 6 N., R. 87 W., Sec. 1-3, 11-13, T. 5 N., R. 87 W.; Sec. 6,7, T. 5 N., R. 86 W.  
Coal Region Green River Field Yampa  
Topographic Quadrangle Milner, Mt. Harris

## COMPANY INFORMATION

Mine Operator Seneca Coal Company  
Address P.O. Box Drawer D., Hayden CO 81639  
Contacts G. Brad Brown Telephone (970) 276-3707  
Parent Company Peabody Coal Company  
Address 1300 South Yale, Flagstaff, AZ 86001  
Contacts Gary L. Melvin Telephone (520) 714-5253

## GENERAL INFORMATION

Mine Type Surface Mining Method Dragline  
Mine Status Producing Start-Up Date 1968  
No. of Employees 82\* Union Affiliation UMWA  
No. of Acres in Permit 3,457  
Surface: Federal \_\_\_\_\_ State X Private X  
Mineral: Federal X State X Private X

## GEOLOGIC INFORMATION

Geologic Unit Lower Williams Fork Formation Geologic Age Late Cretaceous  
Coal Zone(s) or Bed(s) Wolf Creek, Wadge  
Coal Thickness(es) Wolf Creek—average 15.0 ft; Wadge—9.0-10.0 ft, average 9.8 ft  
Cleat Orientation and Spacing \_\_\_\_\_  
Dip of Bedding 6-20° Strike of Bedding \_\_\_\_\_  
Overburden Thickness(es) Wolf Creek average 111.3 ft, Wadge average 36.8 ft, range 0-120 ft  
Interburden Thickness \_\_\_\_\_



**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	Wolf Creek	Wadge		
Rank				
Moisture (%)	12.00	12.00		
Ash (%)	10.79	7.74		
Fixed Carbon (%)				
Volatile Matter (%)				
Sulfur (%)				
Heating Value (Btu/lb.)	0.54	0.49		
Free Swelling Index	12,137	12,581		
Hardgrove Grindability				
Ash-Softening Temperature (°F)				
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

1995 Production 738,424 tons 1996 Production \_\_\_\_\_

Cumulative Production Through 1995 30,805,180 tons

Projected Production (tpy) 1997 \_\_\_\_\_

Remaining Reserves/Life of Mine 0

Shifts Per Day 2—8 hrs

Production Per Shift 3,000–3,500 tons

Equipment Draglines, overburden drills, coal drills, loaders, haul trucks

Haulage \_\_\_\_\_

Preparation Plant \_\_\_\_\_ Tipple \_\_\_\_\_

**SALES DATA**

Percent In-State 100 Destination Hayden Power Plant Use Steam

Percent Out-of-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_

Percent Export \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_

Transportation Mode/Mixed Modes Haulage trucks from mine to power plant

**ADDITIONAL INFORMATION AND COMMENTS**

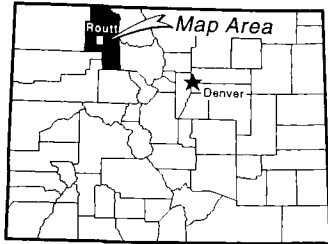
*\*Total for Seneca Coal Company—all mines*

*Surface reserves were stripped out in October 1996. The 650 dragline moved to the Yoast Mine.*

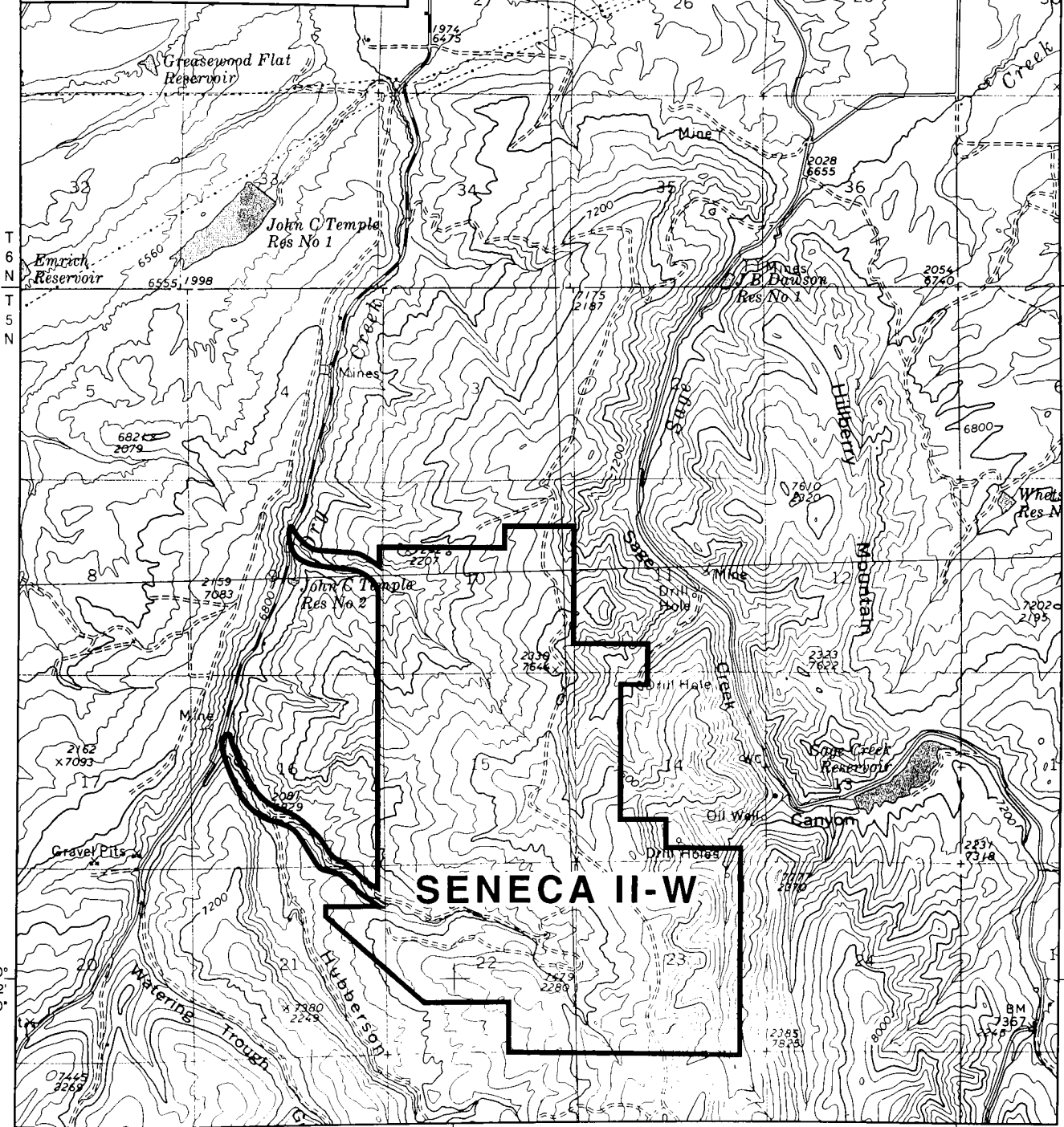
*Geologic Map Reference: Tweto, Ogden, 1976, Geologic Map of the Craig 1° x 2° Quadrangle, Northwestern Colorado: U.S. Geological Survey Misc. Invest. Series I-972, scale 1:250,000.*

107°15'

R 88 W R 87 W



Hayden 2.0 Mi



## SENECA II-W MINE

Map No. 16 M.L.R.D. Permit No. C-82-057

Previous Mine Names \_\_\_\_\_

### LOCATION INFORMATION

County Routt

Permit Location (Sec., T., R.) Sec. 9-11, 14-16, 21-23, T. 5 N., R. 88 W.

Coal Region Green River Field Yampa

Topographic Quadrangle Dunckley, Hayden, Hayden Gulch, Mt. Harris

### COMPANY INFORMATION

Mine Operator Seneca Coal Company

Address P.O. Box Drawer D, Hayden, CO 81659

Contacts G. Brad Brown Telephone (970) 276-3707

Parent Company Peabody Western Coal Company

Address 1300 South Yale, Flagstaff, AZ 86001

Contacts Gary L. Melvin Telephone (520) 774-5253

### GENERAL INFORMATION

Mine Type Surface Mining Method Dragline

Mine Status Producing Start-Up Date 1990

No. of Employees See Seneca II Union Affiliation UMWA

No. of Acres in Permit 2,676.6

Surface: Federal X State X Private X

Mineral: Federal X State \_\_\_\_\_ Private \_\_\_\_\_

### GEOLOGIC INFORMATION

Geologic Unit Lower Williams Fork Formation Geologic Age Late Cretaceous

Coal Zone(s) or Bed(s) Wadge, Wolf Creek, Sage Creek

Coal Thickness(es) Wadge—8.9-12.2 ft, average 11.7 ft; Wolf Creek—average 20.4 ft;

Sage Creek—3.4-5.4 ft, average 4.6 ft

Cleat Orientation and Spacing \_\_\_\_\_

Dip of Bedding 8-14° Strike of Bedding \_\_\_\_\_

Overburden Thickness(es) Wadge—average 60.8 ft, Wolf Creek—average 95.7 ft, Sage

Creek—average 42.0 ft, range 0-100 ft

Interburden Thickness \_\_\_\_\_

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>Wadge</i>	<i>Wolf Creek</i>	<i>Sage Creek</i>	
Rank				
Moisture (%)	13.63	13.33	13.94	
Ash (%)	7.84	11.11	6.46	
Fixed Carbon (%)				
Volatile Matter (%)				
Sulfur (%)	0.48	0.61	0.68	
Heating Value (Btu/lb.)	12,322	11,908	12,325	
Free Swelling Index				
Hardgrove Grindability				
Ash-Softening Temperature (°F)				
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

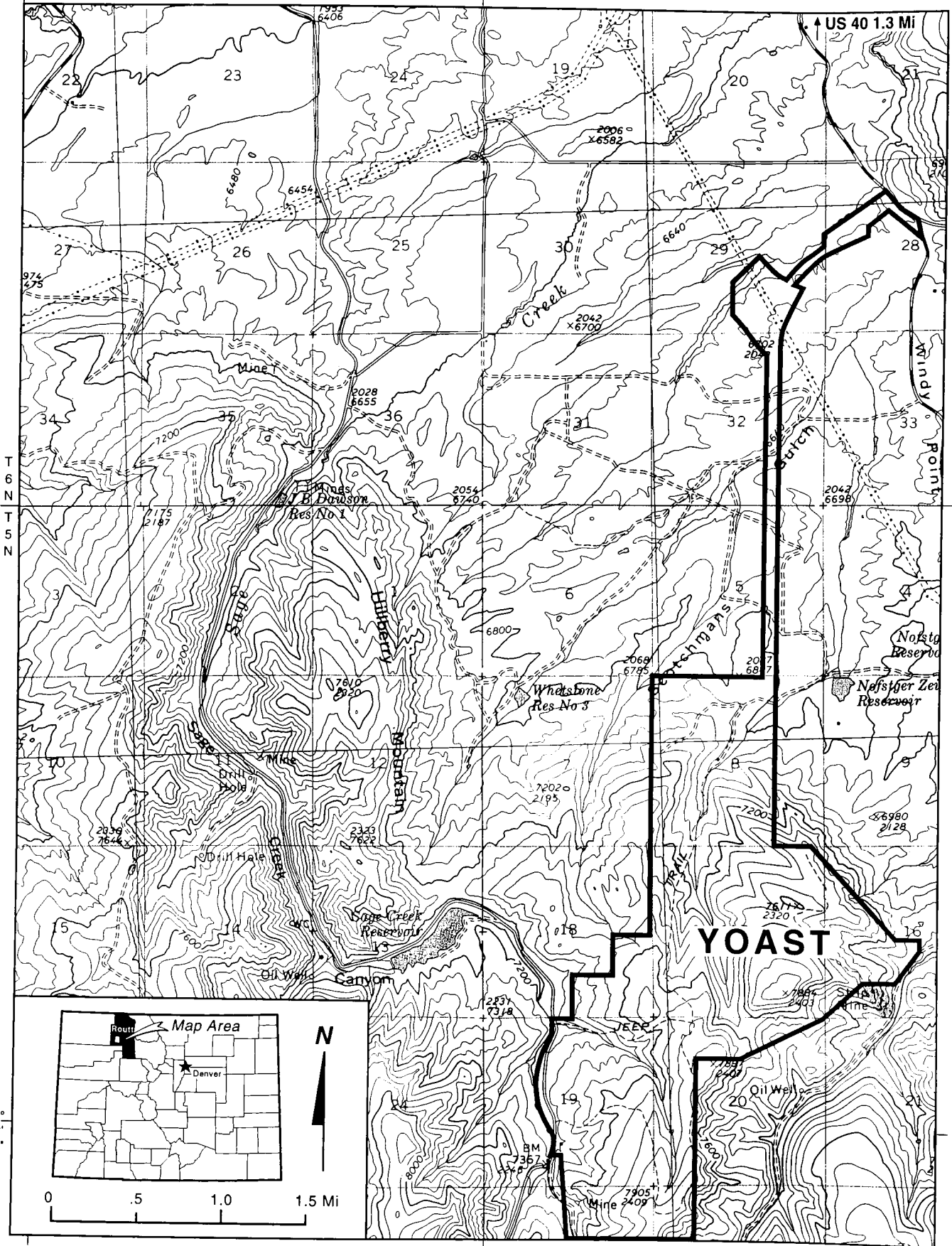
1995 Production 1,005,358 tons 1996 Production \_\_\_\_\_  
 Cumulative Production Through 1995 4,682,261 tons  
 Projected Production (tpy) 1997 \_\_\_\_\_  
 Remaining Reserves/Life of Mine 8 years  
 Shifts Per Day 2—8 hr  
 Production Per Shift See Seneca II  
 Equipment Dragline, overburden drills, coal drills, loaders, haul trucks  
 Haulage \_\_\_\_\_  
 Preparation Plant \_\_\_\_\_ Tipple \_\_\_\_\_

**SALES DATA**

Percent In-State 100 Destination Hayden Power Plant Use Steam  
 Percent Out-of-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
 Percent Export \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_  
 Transportaton Mode/Mixed Modes Haulage trucks from mine to power plant

**ADDITIONAL INFORMATION AND COMMENTS**

Geologic Map Reference: See Seneca II



## YOAST MINE

Map No. 17 M.L.R.D. Permit No. C-94-082

Previous Mine Names \_\_\_\_\_

### LOCATION INFORMATION

County Routt

Permit Location (Sec., T., R.,) Sec. 5,8,16-20, 29,30, T. 5 N. R. 87 W.; Sec. 28,29,32, T. 6 N., R. 87 W.

Coal Region Green River Field Yampa

Topographic Quadrangle Dunckley, Mt. Harris

### COMPANY INFORMATION

Mine Operator Seneca Coal Company

Address P.O. Box Drawer D, Hayden, CO 81639

Contacts G. Brad Brown Telephone (970) 276-3707

Parent Company Peabody Western Coal Company

Address 1300 South Yale, Flagstaff, AZ 86001

Contacts Gary L. Melvin Telephone (520) 774-5253

### GENERAL INFORMATION

Mine Type Surface Mining Method Dragline

Mine Status Producing in 1996 Start-Up Date 1996

No. of Employees See Seneca II Union Affiliation UMWA

No. of Acres in Permit 2,318.3

Surface: Federal X State X Private X

Mineral: Federal X State \_\_\_\_\_ Private X

### GEOLOGIC INFORMATION

Geologic Unit Lower Williams Fork Formation Geologic Age Late Creteacous

Coal Zone(s) or Bed(s) Wadge, Wolf Creek

Coal Thickness(es) Wadge—9.3–14.2 ft, avg 12.2 ft; Wolf Creek—15.8–16.7 ft, avg 16.0 ft

Cleat Orientation and Spacing \_\_\_\_\_

Dip of Bedding 8–20° Strike of Bedding \_\_\_\_\_

Overburden Thickness(es) Wadge—average 55.0 ft, Wolf Creek—average 76.0 ft, range 0–120 ft

Interburden Thickness \_\_\_\_\_

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>Wadge</i>	<i>Wolf Creek</i>		
Rank				
Moisture (%)	12.66	12.42		
Ash (%)	7.62	13.21		
Fixed Carbon (%)				
Volatile Matter (%)				
Sulfur (%)	0.50	0.54		
Heating Value (Btu/lb.)	12,426	11,645		
Free Swelling Index				
Hardgrove Grindability				
Ash-Softening Temperature (°F)				
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

1995 Production \_\_\_\_\_ 1996 Production \_\_\_\_\_

Cumulative Production Through 1996 \_\_\_\_\_

Projected Production (tpy) 1997 *See Seneca II*

Remaining Reserves/Life of Mine *10 years*

Shifts Per Day *2—8 hrs*

Production Per Shift *See Seneca II*

Equipment *Draglines, overburden drills, coal drills, loaders, haul trucks*

Haulage \_\_\_\_\_

Preparation Plant \_\_\_\_\_ Tipple \_\_\_\_\_

**SALES DATA**

Percent In-State *100* Destination *Hayden Power Plant* Use *Steam*

Percent Out-of-State \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_

Percent Export \_\_\_\_\_ Destination \_\_\_\_\_ Use \_\_\_\_\_

Transportation Mode/Mixed Modes *Haulage trucks from mine to power plant*

**ADDITIONAL INFORMATION AND COMMENTS**

*Stripping of the first pit started in October 1996.*

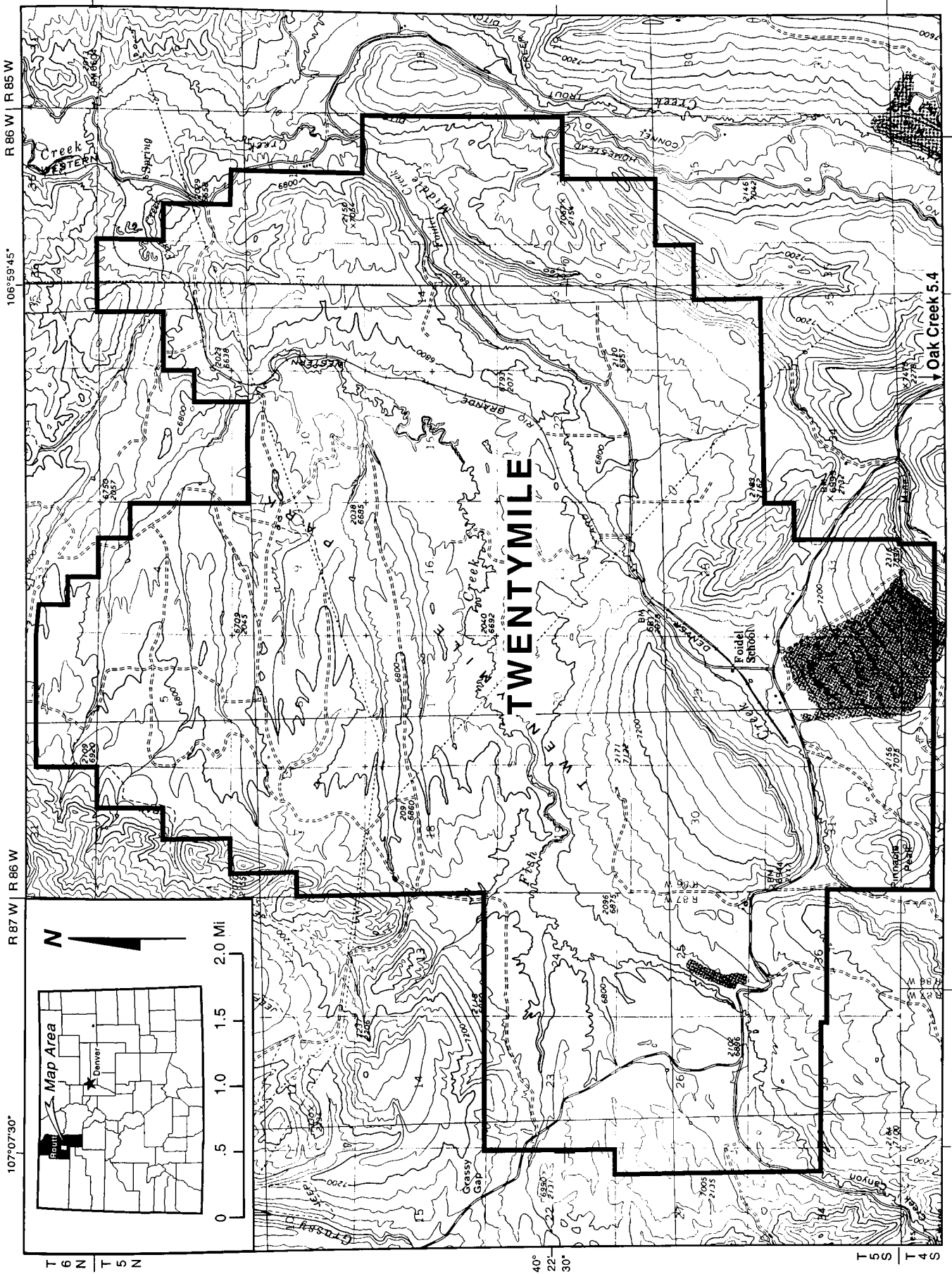
*Geologic Map Reference: See Seneca II*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_





## TWENTYMILE MINE

Map No. 18 M.L.R.D. Permit No. C-82-056  
Previous Mine Names Main, Foidel Creek

### LOCATION INFORMATION

County Routt  
Permit Location (Sec., T., R.,) Sec. 1-33, T. 5 N., R. 86 W.; Sec. 32,33, T. 6 N., R. 86 W., Secs. 23-27,34-36, T. 5 N., R. 87 W.; Sec. 7-9, T. 4 N., R. 86 W.  
Coal Region Green River Field Yampa  
Topographic Quadrangle Rattlesnake Butte, Milner

### COMPANY INFORMATION

Mine Operator Cyprus Twentymile Coal Company  
Address 29515 Routt County Rd No. 27, Oak Creek, CO 80457  
Contacts Ron Spangler Telephone (970) 879-3800  
Parent Company Cyprus Coal Company  
Address 9100 E. Mineral Circle, Englewood, CO 80112  
Contacts Garold R. Spindler Telephone (303) 643-5000

### GENERAL INFORMATION

Mine Type Underground Mining Method Longwall/continuous miners  
Mine Status Producing Start-Up Date April 1983  
No. of Employees 306 Union Affiliation None  
No. of Acres in Permit Approx. 22,000  
Surface: Federal X State X Private X  
Mineral: Federal X State X Private X

### GEOLOGIC INFORMATION

Geologic Unit Williams Fork Formation Geologic Age Cretaceous  
Coal Zone(s) or Bed(s) Wadge  
Coal Thickness(es) 7-11 ft  
Cleat Orientation and Spacing N 40° W.  
Dip of Bedding 5-10°, max 15° Strike of Bedding N 25° E to N 50° W  
Overburden Thickness(es) 500-1,700 ft, average 1,100 ft  
Interburden Thickness N/A

**COAL QUALITY**

	Sample 1	Sample 2	Sample 3	Sample 4
Seam	<i>Wadge</i>	<i>Wadge</i>		
Rank	<i>Bit B</i>	<i>Bit C</i>		
Moisture (%)	9.0	10.30		
Ash (%)	7.1	9.8		
Fixed Carbon (%)	46.5	44.5		
Volatile Matter (%)	37.2	35.50		
Sulfur (%)	0.41	0.41		
Heating Value (Btu/lb.)	11,321	11,200		
Free Swelling Index				
Hardgrove Grindability				
Ash-Softening Temperature (°F)	2,700	2,515		
Methane Characteristics				
Reflectance Data				

**COAL PRODUCTION**

1995 Production	<u>5,846,803 tons</u>	1996 Production	<u>5,844,262 tons</u>
Cumulative Production Through 1996	<u>31,992,214 tons</u>		
Projected Production (tpy) 1997	<u>8,000,000 tons</u>		
Remaining Reserves/Life of Mine	<u>to year 2023</u>		
Shifts Per Day	<u>2—10 hrs</u>		
Production Per Shift	<u>14,000 tons</u>		
Equipment	<u>MTA shields, Anderson EL 3000 shearer, MTA face conveyor</u>		
Haulage	<u></u>		
Preparation Plant	<u>Tipple</u>		

**SALES DATA**

Percent In-State	<u>25</u>	Destination	<u>Colo. Springs, Denver</u>	Use	<u>Steam</u>
Percent Out-of-State	<u>75</u>	Destination	<u>IL, IN, TX, MS, KS</u>	Use	<u>Steam, ind.</u>
Percent Export	<u></u>	Destination	<u></u>	Use	<u></u>
Transportation Mode/Mixed Modes	<u>Union Pacific Railroad</u>				

**ADDITIONAL INFORMATION AND COMMENTS**

<u>This longwall mining operation went in from the highwall of the Energy No. 1 surface mine.</u>	
<u>Geologic Map References: Tweto, Ogden, 1976 (see Seneca II); Dames &amp; Moore, 1979, Coal Resource</u>	
<u>Occurrence and Coal Development Potential Maps of the Milner Quadrangle, Routt Co., Colo., scale</u>	
<u>1:24,000: U.S.G.S. OF Report 79-815; Dames &amp; Moore, 1979, Coal Resource Occurrence and Coal</u>	
<u>Development Potential Maps of the Rattlesnake Butte Quadrangle, Routt Co., Colo., 1:24,000: U.S.G.S.</u>	
<u>OF Report 1396</u>	

