

Master 620

**ROUTT AND MOFFAT COUNTIES, COLORADO,
COAL MINING HISTORIC CONTEXT**

**Submitted to
The Office of Archaeology and Historic Preservation
Colorado Historical Society
Denver, Colorado**

August 1, 1991

**Submitted by
Western Historical Studies, Inc.
1225 Atlantis Ave.
Lafayette, Colorado**

**Steven F. Mehls, Ph.D., Principal Investigator
Carol Drake Mehls, Ph.D., Project Manager and Historian**

LIST OF FIGURES AND ILLUSTRATIONS

Figure 1 - Project Locator Map 2

Figure 2 - Colorado Coal Fields and the Yampa Coal Field
of Routt and Moffat Counties 3

Figure 3 - Evolution of Colorado's Counties 9

Figure 4 - The Room and Pillar Mining Method 19

Figure 5 - Route of the Denver, Northwestern and Pacific
Railway (Moffat Road) 41

Figure 6 - Pinnacle and Curtis Coal Company Mine,
Routt County 74

Figure 7 - Two Wagon Mines, Moffat and Routt Counties 75

HISTORIC CONTEXT: COAL MINING
MOFFAT AND ROUTT COUNTIES, COLORADO

THE NATURAL ENVIRONMENT

Northwestern Colorado, as a term, includes a broader area than Moffat and Routt Counties (see Figures 1 and 2). The landmass west of the Continental Divide to the Utah-Colorado border and north of the Colorado (Grand) River basin to the Wyoming-Colorado border is generally referred to as northwestern Colorado. The area is broken by valleys, mountain peaks, canyons and river drainages.

The Yampa River, referred to by early explorers and residents as the Bear River, is the major watercourse of the region flowing north through southern Routt County and then turning generally west near Steamboat Springs. In neighboring Moffat County the Yampa bisects the County into northern and southern sections. The Yampa is fed by Oak Creek, the Little Snake and Elk Rivers and dozens of smaller creeks. The Yampa flows into the Green River at Echo Park in the Uinta Mountains of extreme western Moffat County.

The climate of the region is highly variable. During the summer, temperatures often reach the 100 degree mark. Winter months are characterized by cold and snow with temperatures often reaching well below zero. The mountain parks, snowed in during the winter, remain wet from May until July. Seasonal water sources, dependent upon snow run-off, vary greatly throughout the region.

Northwestern Colorado geologically is primarily pre-Cambrian granite that has eroded into sediments of various types and

Figure 1 -- Project Area Locator Map

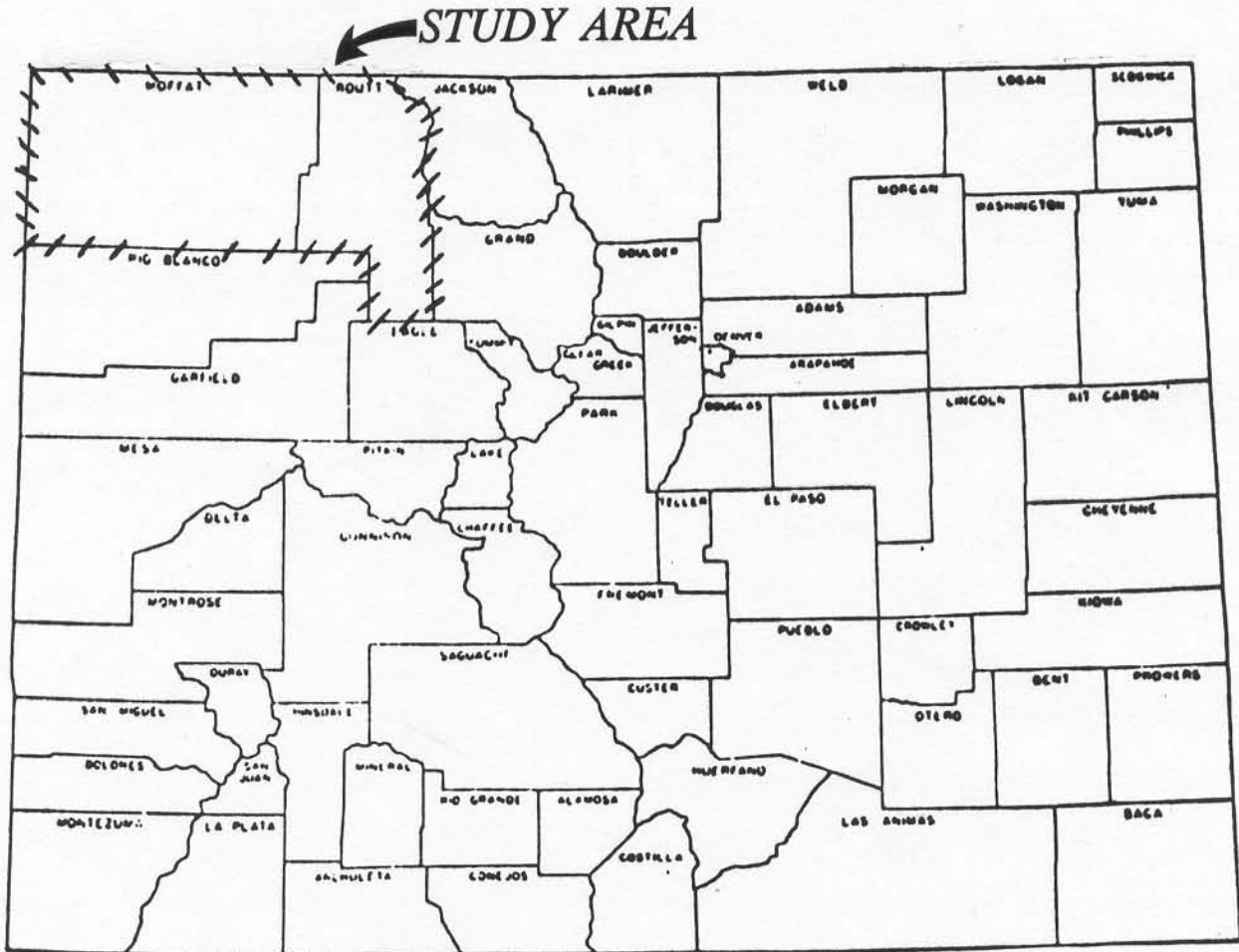
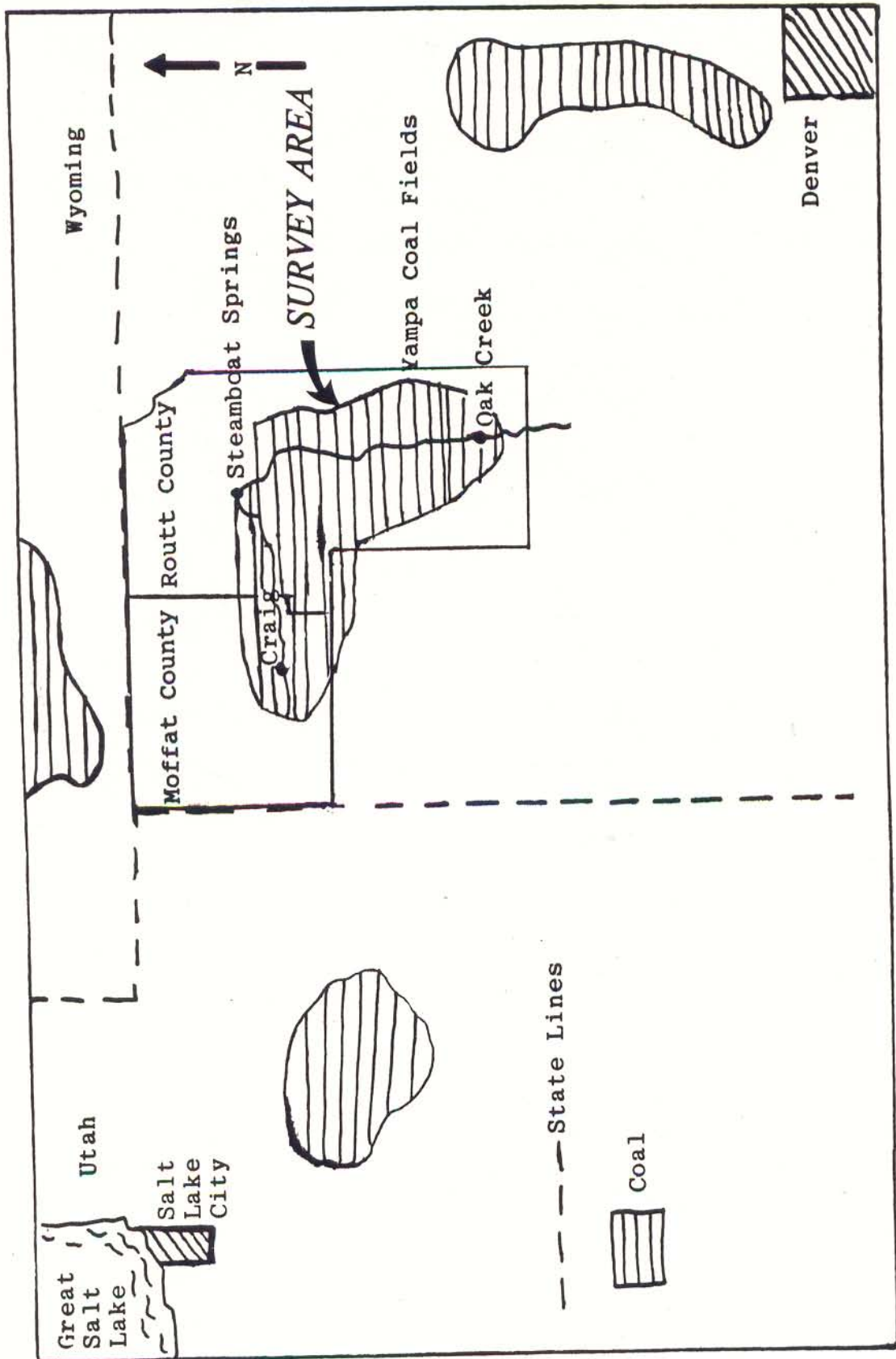


Figure 2 -- Colorado Coal Fields and the and The Yampa Coal Field of Routt and Moffat Counties.



thicknesses. These were later uplifted and subsequently eroded again resulting in more layered sediments over millions of years. Sandstone is also abundant and has preserved numerous fossil samples.¹

Later, during the Jurassic Period, the northwestern area of Colorado was submerged. The moist environment yielded rich plant and dinosaur life. As the plant and animal life died they provided the fossil remains that became the coal and oil deposits of the region. During the Cretaceous period the land uplifted. As a result of this geologic activity the Piceance and Axial basins were created. These basins are underlaid with extensive coal and oil deposits.

The Cenozoic Period is marked by extensive mountain building during which the Rocky Mountains were uplifted. As a result of the stresses and strains of this activity the mountains were cracked in various locations. Vulcanism and hydrothermal activity brought gold, silver, zinc, lead, copper and iron solutions to the surface.

As the Ice Age extended across the region the state became glaciated. The ice flows carved surface features that are presently recognizable. For example, glacial action gouged out Middle and North Parks, and other mountain ranges, valleys, lakes and canyons.²

The land of northwestern Colorado also has been transformed by recent geologic activity. Natural erosion from wind and water as well as sliding activity has changed the face of the land. Manmade disturbance, including coal mining, also has brought other,

numerous changes on the face of the land. Finally, man has set out boundaries and borders on the lands that represent a political geography as much as a topography.

INTRODUCTION

Mining constitutes an important portion of Colorado's Euro-American history. Mineral development, with its cycles of booms and busts, punctuates the state's experience through the late nineteenth and well into the twentieth centuries. Originally, gold and silver were the minerals most often sought. However, by the early twentieth century as United States' industrialization reached a crescendo, northwestern Colorado underwent a "coal boom." Cyclically, since then, coal and energy related industries have significantly affected this region of the state. After the turn of the century (1900) the boom began with new discoveries of commercial quantity and quality coal and a host of other, lesser finds marketable locally. A major reason for the renewed interest in the Yampa Valley coal came because rail transportation made the coal economically viable in a much larger marketplace. Conversely, the potential coal traffic gave rail promoters another argument to use in their financing campaigns.

Mining, an important economic factor in the growth and development of Western states during the nineteenth century, continued to support the region into the early twentieth century. Mining utilizes natural resources that are uniquely formed geologically and independently located geographically. Minerals,

whether precious metals or energy resources, tend to be difficult to obtain. Beyond that, the resources historically have suffered from periodic fluctuations in the market. To further complicate the situation, their recovery requires extensive technology for successful commercial operation and also an element of luck in terms of discovery. Because of these factors, mining camps and the mining industry are transitory; dependent on the nature of the technology, transportation systems and market prices at any given time. A mine may have great resources but if market prices are low, transportation is unavailable or there are limitations on recovery methods, a mineral deposit becomes uneconomic to mine. Frequently then, the result is a brief flurry of mining activity followed by long periods of inactivity. Another possibility was that the deposit would go unutilized altogether.

Mining along with its associated activities and industries, brought capital and money to the economy of northwestern Colorado. Mining companies provided jobs, investment options for the large or small investor and technical expertise. In addition, individuals had the opportunity to achieve wealth, fame and power. The overview, current research directions and property type discussion that follow present a synthesis of knowledge regarding northwestern Colorado coal mining within a general framework of Western mining. It is not intended to be a comprehensive history of either northwestern Colorado or coal mining.

When Congress established the Colorado Territory in 1861 Routt and Moffat Counties were part of Summit County. As the territory's

population grew new counties were formed including Grand County. In 1911 Moffat County was organized from the westernmost part of Routt County and named in honor of David Moffat, a railroad builder responsible for the economic development of the area through transportation connections. Moffat County constitutes the northernmost and westernmost county of the state, bordering Utah and Wyoming. The County is rectangular in shape and approximately 91 miles long and 55 miles wide. Its area is 3,033,600 acres and it is the second largest County in Colorado.

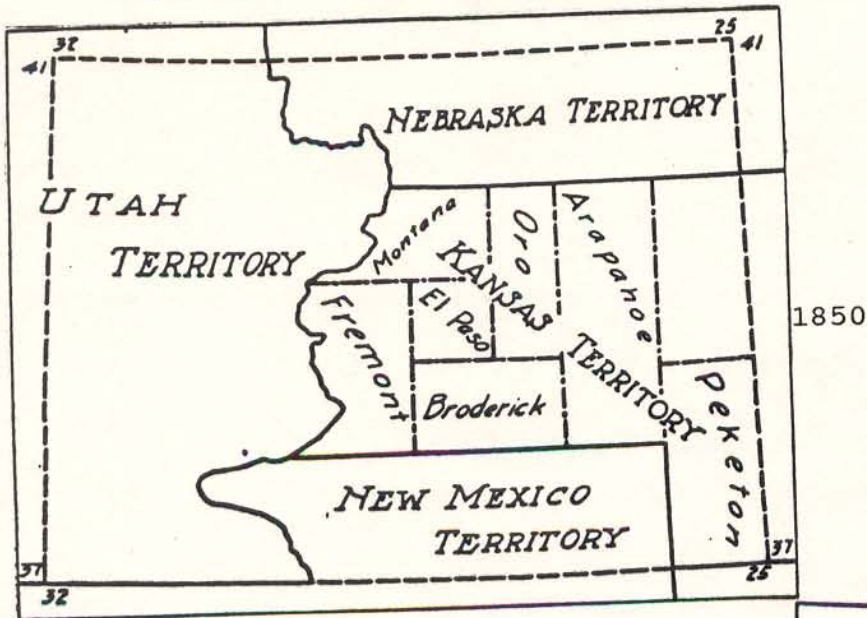
Routt County is to the east, bordering Wyoming and neighboring Jackson County. Routt County was formed in 1877 from the larger Grand County and named in honor of John L. Routt, last governor of the territory and first of the state of Colorado. At that time its area was 6,000 square miles. The 1890 census indicated 2,369 people resided in the County. This was an increase of 2,229 from the 1880 census. The 1910 census indicated a population of 7,561. By 1918 (after Moffat County was formed) Routt County was 75 miles long (north to south) and about 42 miles wide (east to west) containing 1,425,280 acres. The southern border of Moffat and part of Routt counties is Rio Blanco County (see Figure 3).³

Regional Historic Background

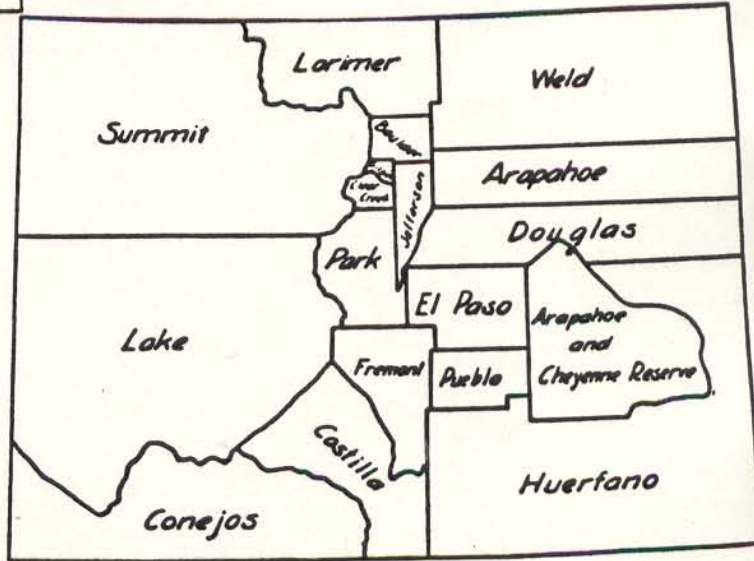
Prior to European occupation of the area it is theorized that humans used the land for approximately 10,000 years. Immediately prior to European occupation, in the historic period, the area was populated by the Ute, the Arapaho and the Shoshoni. Additionally,

the Cheyenne, the Navajo and Apache intermittently visited the region.⁴ The Indians had a reputation for being peaceful, often assisting the early explorers.

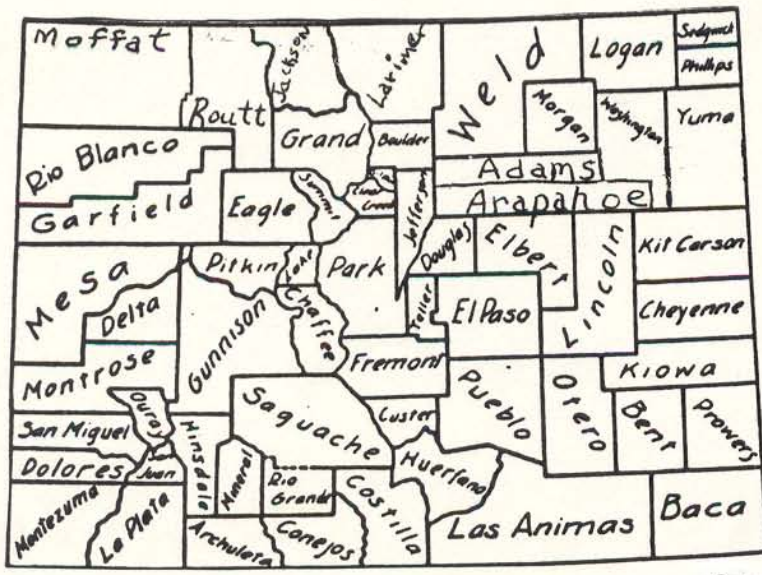
Figure 3 -- Evolution of Colorado's Counties



1850



1915



European history of the region dates to 1776. While the British government faced colonial problems leading to American independence, the Spanish attempted to establish control in western North America. Spanish authorities on the northern fringes of the empire in New Mexico hoped to find new overland routes from Santa Fe to California. Two friars, Dominguez and Escalante travelled north and west from New Mexico toward California. The expedition crossed the area and marked the beginning of interest in the region. Little came of that Spanish expedition, but in the 1820s Jean Baptiste Chalifoux (Baptiste Brown) was in the area. The long valley of the Green River located in Moffat County known as Brown's Hole is named for him. Other trappers visited the region intermittently until 1825 when William Ashley led a small trading party down the Green River. Fur trappers had some interest in the region as they searched the Rocky Mountain West for beaver pelts. As part of this trade Fort Davy Crockett, north of present day Dinosaur National Monument, was built and active as a trading post from 1834 to 1840.

With the end of trading at Fort Davy Crockett and changes in fashion, the local fur trade declined. However, other explorers had been in the region attempting to determine the usefulness of the land, and recording floral and faunal resources. Captain Benjamin L. E. Bonneville explored the Great Basin in 1826 and 1832. The Fremont expedition of 1843-1844 travelled throughout the region as did the Manly expedition on their way to California in 1849. Fremont noted the game, outcroppings of coal, mineral waters

and springs.⁵ However, he dismissed the area as not well suited for agriculture or other endeavors.

Gold discoveries in 1859 along Cherry Creek led to increased interest in Colorado throughout the nation. The Pikes Peak gold rush brought perhaps 100,000 people into Colorado. Prospectors quickly mined out the easy placer gold near Denver and then moved along the creeks of the Front Range. By 1861 settlement in the Middle Park region of the state was evident. The major difficulty both to and within the area was transportation. Denver boosters hired Edward L. Berthoud to locate and engineer a trail over the mountains into Middle Park. A crude wagon road was built but little development resulted. In the early 1860s Joseph Hahn, William Doyle and George Way explored the area that became known as Hahn's Peak. In the middle 1860s the Hahn's Peak area experienced a short-lived mining boom. The boom quickly ended and mining activity was limited until the 1870s when another boom took place. Miners were also active along the Rabbit Ears Range into Wyoming.

In addition to transportation systems needed to move the gold and silver, other problems faced these early miners. Chief amongst them was fuel. Fuel of some sort was necessary to power the boilers of the mines, mills, smelters, homes, railways and businesses. Lumber supplies were not numerous enough in most mining camps to provide the fuel necessary. Instead, coal became

the major source used to power these camps and thus the economic development of the West.

Despite the possibility of wealth from gold a major problem was lack of transportation. Western boosters proposed rail routes along the White and Green Rivers to Salt Lake City as early as 1869. The Union Pacific Railroad reached Rawlins, Wyoming during the late 1860s and Utah by 1869. Rail lines did not reach northwestern Colorado for another forty years. Instead, a series of wagon roads into northwestern Colorado from Wyoming were often the only way into the remote sections of the region. The railroad did bring some settlers and by the mid-1870s there were homesteads along the Yampa River Valley. In 1873 a mail route from the Little Snake River to Rawlins operated on a weekly basis. By the 1870s cattle grazed the region, taking advantage of the good grasses and transportation options of the Union Pacific.

During the 1870s Ferdinand V. Hayden, under the auspices of the United States Geological Survey, crossed northwestern Colorado. The survey results, published in 1876, detailed the potential of the grazing lands and noted the vast resources of coal which underlay the region. While cattlemen, and later sheepmen, recognized the potential of the area, the native American population objected to increased settlement. Gradually tensions rose as settlement grew. Despite that situation, families such as the James Crawford's settled the Steamboat Springs area by 1876. Within the next five years the following towns were listed for the Grand-Routt County region. Moffat County had not yet been formed.⁶

Routt County

Axial
Egeria
Edith
Hahn's Peak
Hayden
Lay
Maybell
Meeker
Middle Park
Rangeley
Slater
Steamboat Springs
Yampa

Grand County

Fraser
Hot Sulphur Springs
Lulu City
North Park
Teller City
Troublesome
Walden

As settlers found more uses for the lands, hostility between whites and native Americans increased. Four treaties were made with the Ute between 1860 and 1873 but Anglos honored none of them. The 1873 Brunot Treaty ceded most Ute land and established the White River Agency located approximately 25 miles from present day Meeker. It served the Uinta and Yampa Utes. A few years later, a series of unfortunate events resulted in the Meeker Massacre (1879). The Ute Scare, a military defeat for the Ute, and continuing threats from the few settlers intensified tensions between Utes and the government. The resulting pressures on the native Americans from Federal authorities resulted in the Ute treaty of 1880. This agreement resulted in Ute removal from northwestern Colorado to reservations in Utah.

COAL MINING IN NORTHWESTERN COLORADO

Preface

The history of late nineteenth and twentieth century coal mining in northwestern Colorado represents an important transition

15

phase in Colorado mining history and for the history of the region. Even a cursory examination of the mid to late nineteenth century reveals a set of shared patterns for Colorado coal mines. While obvious, a consistent factor is the merging of the frontier (pioneer) experience with the cultural traits, attitudes and institutions of the miners, other settlers, and mining companies. Many writers feel that while the frontier period of American history ended in 1885 or no later than 1890, variations of the frontier experience clearly continued. The concept of relatively virgin land newly utilized to provide a livelihood, the search for minable minerals, lack of a built environment, the importance of individual effort, and a constantly changing definition of "civilization" provide key elements of this experience.

The accepted wisdom of Western history implies that the later the time period and farther west geographically the area under discussion, the shorter the frontier experience. In the case of northwestern Colorado that was certainly true because the area was physically isolated and remained so well into the twentieth century, nearly thirty years after the Crawfords and others first settled the region.

In the case of northwestern Colorado the term frontier remained applicable after 1890. The area was somewhat removed from other communities, had a limited built environment and possessed unexploited mineral wealth. Transportation was a long standing problem in that it was difficult to move the coal or any other products out of the region to the markets. During the early

twentieth century miners came quickly after the initial discoveries and transportation became available. The mines and railroad ushered in the boom period. That era, while short-lived, brought about a rapid, large influx of people and establishment of "permanent" towns and villages.

The importance of coal has long been recognized and its significance continues to the present day. While often difficult to mine, expensive to transport and convert into energy, coal nevertheless remains a critical component of America's industrial development and strength. However, the mining of coal has been subject to a series of booms and busts. These cycles are related to a variety of factors including transportation, ease of mining and external pressures, such as oil availability. For Routt and Moffat Counties, Colorado, these booms or cyclical periods have occurred since the 1900s in direct relation to external events relevant to the larger energy industry. For example, in 1977 President Jimmy Carter, in his energy message, referred to coal as the "most formidable defense weapon in our arsenal." President Carter then called for doubling the national coal production by 1985. This call for coal production, tied to the effects of the "energy crisis" of the 1970s caused renewed interest in the coal reserves of the United States. Moffat and Routt Counties experienced another boom period as a result.⁷

Earlier, the coincidence of coal's widespread popularity as a fuel and the construction of the Denver, Northwestern and Pacific Railroad proved to be milestones in northwest Colorado's

development. Coal usage in 1900 was on the rise as the number one energy commodity in America because of its use in electrical generation. Beyond that, coal is used with iron ore in making almost all iron and steel. The United States has historically produced more coal than any other country except Russia. In the period 1861-1870 281,001,000 tons of coal were mined in the United States. By 1881-1890 that figure had jumped to 1,193,000,000 tons. By 1901-1910 the sum was 3,970,000,000 tons and the 1911-1920 period witnessed 5,777,000,000 tons mined. The next tens years witnessed a decline to 5,773,000,000 tons, a trend which continued between 1931-1940 when 4,371,000,000 were mined. Tonnage mined jumped to 6,162,000,000 tons in 1941-1950 and then a decline began again.⁸ Nationwide, and in northwestern Colorado, coal deposits vary in thickness from several inches to several hundred feet. Generally, most coal is mined from beds two and one half to ten feet or more thick. These beds are also known as seams. The coal is deposited or sandwiched between layers of rock and dirt which results in level, sloping, tipped or erratic deposits.

Coal often is divided into two main categories - anthracite or hard coal and bituminous or soft coal. Anthracite contains a higher percentage of carbon and a lower percentage of moisture. Anthracite makes up only a small part of the world's and nation's coal supply with isolated small beds located in Colorado. When burning, anthracite produces little smoke. Bituminous, the most plentiful grade of coal, serves as the chief industrial fuel. Subbituminous, a slightly lower grade of coal, contains about 25

percent moisture. It burns readily, but is a less efficient fuel source.

The coal of the North Park-Yampa formation is subbituminous. This meant that it is very vulnerable to weather exposure and subsequently breaks down (crumbles) relatively quickly when exposed to air and moisture. The coal needed to be transported in closed railroad cars. The combination of low quality coal plus the requirement of transporting in closed railroad cars were conditions which affected development of the resource. The coal at Twentymile Park (AKA Twenty Mile Park), near the Routt-Moffat County border, was considered good for domestic usage only if it could be transported cheaply in order to be competitive. The type of coal was but one consideration, the other and often more important, was the market for the coal once it was mined and how much it cost to mine. The cost of mining had a direct relationship to the technology available to the miners.⁹

The Coal Mining Processes and Background

Coal is mined using one of two methods. The first is strip or opencut mining and the second is deep or underground mining. Strip mining is effective when coal beds lie close to the surface. Power shovels or earth moving equipment remove the overburden layer of earth and rock and uncover the coal bed. Once the coal is exposed it is broken up and loaded for transporting. For the operator the problems of extracting this type of coal include arranging the capital necessary to initially fund the operation, locating and

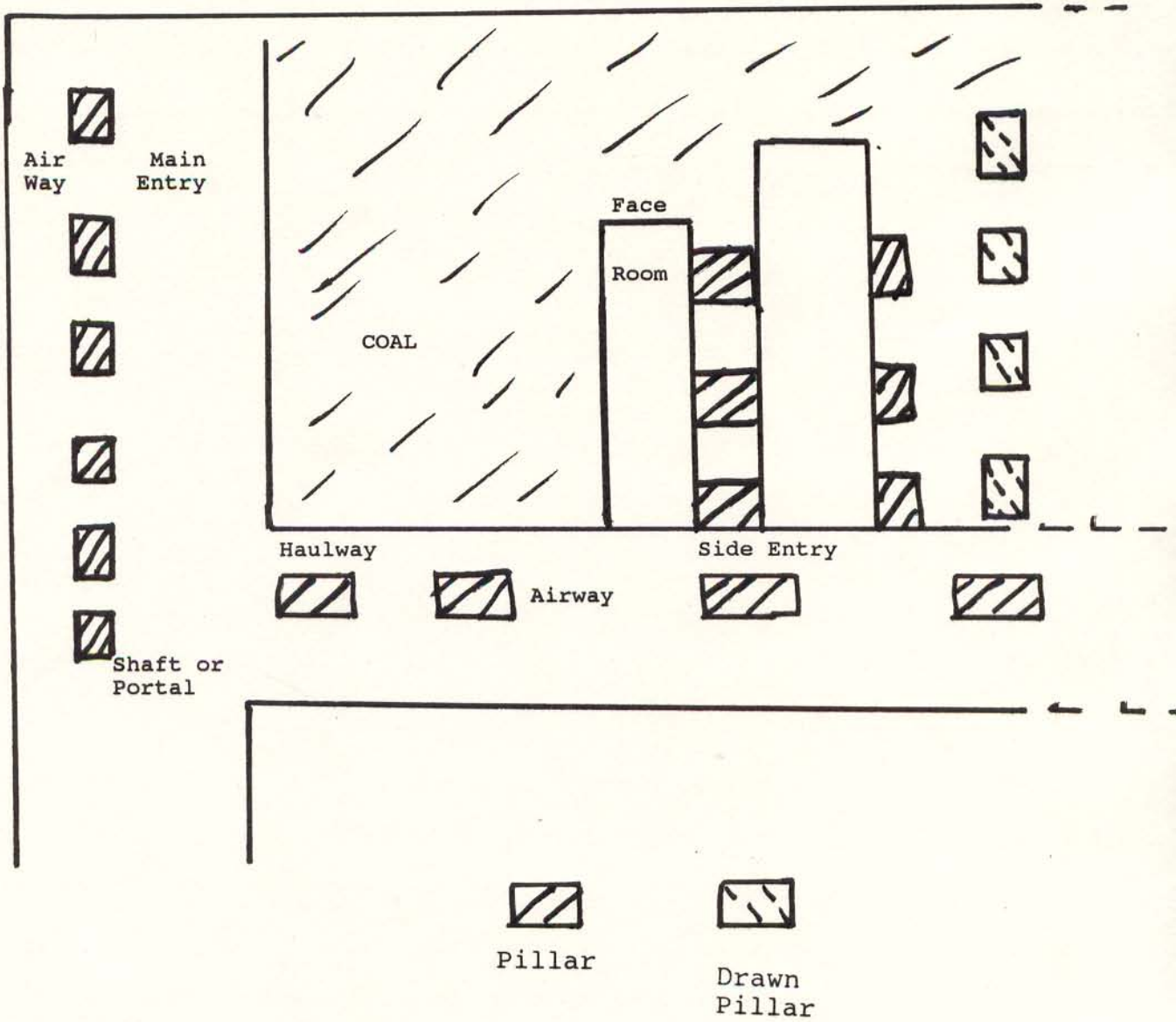
hiring miners, managers and others to mine and remove the coal, transportation and marketing and in modern society, reclamation.

Underground or deep mining includes several types of mines that tend to be variations of three predominant types: shaft, drift and slope. Underground mining predominated in northwestern Colorado until after World War II. Shaft mines are designed to reach coal beds lying far below the surface. The shafts are dug deep into the ground, usually 200 feet or more, to reach the coal beds. Drift mines are used to reach coal in hillsides. The mine entrance is located at the exposed site and the tunnel is dug farther and farther back into the bed of coal. Slope mines are designed to utilize coal reserves near the surface. The tunnel is sloped gradually down through the ground until it reaches the coal. While the tunnels are often several miles long, the angle of descent and distance to the coal tend to have been limited by the lifting technology available at the time the mine is developed.

In northwestern Colorado miners used two basic variations of underground mining techniques. The first, Room and Pillar mining, involves developing a series of rooms of varying sizes cut into the coal bed from a variety of entrances. The miners leave columns (pillars) of coal remaining to help support the roof until the room is mined out. As the miners move back to the primary entrance the pillars are removed and the roof falls. This system was used in many underground mines (see Figure 4).

The longwall mine involves mining the coal along a long front, known as a face. Artificial roof supports are installed, but are

Figure 4 -- The Room and Pillar Mining Method



generally very expensive and have resulted in few mines utilizing this system. The other problem with a longwall mine was that if it was not actively mined it became expensive for the owner to maintain the roof supports and tunnels.

In the pre-industrial days, the miner picked out the coal. The coal was then hand loaded into a cart to be brought to the surface. Aside from picking out the coal, it can also be blasted free with explosives. After the explosion the room was full of smoke and dust. Once the air cleared, the miner would return to the room and load the coal into cars. The cars went to the surface in several ways, in cages, on trolley tracks, or carts pulled by animals or pushed by hand. After reaching the surface the coal was weighed and the miner credited with the weight. The cars then went to a bin where the coal was dumped and run through a sorter to be classified by size. After sorting the coal proceeded into a tippie (bituminous) or breaker (anthracite) to be washed and further sorted. At this point impurities, such as waste rock, were removed. Often the coal was crushed into smaller sizes. After cleaning and sorting the coal is ready for shipment. Coal needs heavy transportation equipment because of its weight and bulk. Railroads presently transport over 70% of the coal produced in the United States. Barges are also used when a mine is located near a river or canal. For example, coal mined in Pennsylvania and West Virginia is often shipped by way of the Ohio River and its branches.

Mechanization came somewhat slowly to the coal mining industry. Cutting machines began to be used in the 1880s, but their introduction was limited by economic conditions and resistance on the part of miners. However, by 1930 machine cut coal was more common than hand picked coal. Mechanization also spread to haulage systems with electric or diesel engines replacing mules pulling the carts or lifting the buckets of coal out of the mine. That haulage change began during the late nineteenth century. However, small mines continued to use mules well into the twentieth century.¹⁰

One factor not to be overlooked is that coal mining is dangerous. Another by product of decomposition of organic matter, besides coal, is methane gas. Methane gas was often trapped in the coal. By opening the seam and subsequently mining it, the gas was released into the atmosphere. Because it is odorless and colorless methane is often difficult to discern. Miners used a safety lamp that would flare when methane was present. However, those were not always effective nor did they give enough warning. Methane explosions could result from a pick striking rock or by the sparks from the wheels of the cars hauling the coal to the surface. When methane explosions combined with coal dust large flames resulted and then a secondary explosion. Miners and others on the surface often felt the earth shudder when the mixture exploded. Inside the mine the explosion consumed the available oxygen and the miners trapped below often died of suffocation instead of from the flame. The blast left behind deadly carbon monoxide and carbon dioxide

gasses which resulted in the blast survivors often losing consciousness and dying.

Mine explosions have always drawn the attention of the press. However, deaths came from many other dangers including roof collapses, mine car accidents and runaways, fire, and carelessness.

Miners knew only too well the hazards of the mines but worked the seams anyway. Most regarded themselves as skilled workmen. Skill in placing charges and in undercutting served to enhance the prestige of the worker. Many miners worked in solitary settings, working a room alone until it was completely mined out. The miners appear to have had a sense of territoriality about their rooms and resented any attempts at encroachment. As independent workers miners often did not accept the criticism or supervision offered by mine operators.¹¹

In addition to labor difficulties, mine operators had a score of legal obstacles to overcome as well. Because coal seams are basically linear a variety of state, Federal or local laws could cover any one body of coal. Frequently conflicts arose when one claimant sued another about encroachment on a seam. Because so many levels of government were involved in coal rights it was not unusual for one competitor to sue in Federal court while his opponent did the same in a state court. Most coal mined in northwestern Colorado, and throughout the West, was mined on land owned by the Federal government and as a result the General Land Office (GLO) became the arbiter of many disputes. By the time

Routt and Moffat Counties developed, the GLO had many years experience in administering mining claims and coal lands.

Reservation of Federal mineral interests date to the Land Ordinance of 1785, however, the Federal government generally did little to regulate disposal of coal and other mineral lands. In 1807 lands were leased for lead in Indiana Territory and the government extended the leasing program throughout the Great Lakes region in 1816. Lead leasing ended in 1829, but by 1845 President Polk was calling for a new system of management for mineral lands. Instead of leasing, preemption and sale became the policy for lead, copper and iron deposits during the period 1846 to 1850. As this brief review indicates, Federal laws regarding mining had evolved slowly before 1848 when the discovery of gold in California found the Federal government without an overall policy toward mineral usage and development, a situation that continued for almost twenty years after the California rush.

In 1866 the first Federal mining law was introduced by Senator Stewart of Nevada. The Lode Mining Law of 1866 opened unclaimed mineral lands to exploitation under the customs and rules of local mining districts. The 1866 law recognized the role of the mining districts as legal entities. The law was modified by the Placer Mining Law of 1870 which defined placers and the patenting process. The policy was reiterated in 1872 with the General Mining Law. This law also recognized local mining districts and customs, discussed lode locations and the requirements for assessment work to hold a claim. These laws effectively allowed miners to become

legitimate occupants of public lands for the purpose of mining. Equally as important, mineral development was considered a priority use of Federal lands.

In 1873 the Coal Lands Law was passed providing for the sale of public lands that contained coal. This law remedied earlier, somewhat unclear statutes, and allowed for location, development and preemption of 160 acres (individual) and up to 640 acres of coal lands (associations) at a minimum price.

Another important act for coal mining related to public lands for colleges (The Morrill Act of 1862). Land grants to the states under the Morrill Act were intended to finance education but oftentimes, especially in the West, the lands were leased for mining. Thus began state leasing programs.¹²

At approximately the same time the Federal government made land grants to the transcontinental railroads. Those grants provided that alternate sections of public lands be given to the companies to aid construction of the railroads. Only a few exclusions were included with the grants including some lands reserved to the United States and reservation of mineral rights except those to iron and coal. Despite Federal generosity, ranchers, lumbermen, miners and others abused the laws and fraudulent claims abounded. A series of efforts in the 1890s attempted to deal with the fraud and re-define how Federal lands could be acquired and utilized. By 1891 the public domain had decreased drastically in size. Regarding that situation, conservation groups focused their efforts on public land policies.

As part of the conservation crusade Theodore Roosevelt was greatly concerned with coal reserves that he and others considered critical for the national economy and individual comfort.

Roosevelt's administration (1901-1909) recognized that fraud was prevalent on coal lands and his stated purpose was to withdraw all coal lands until the Geological Survey could determine the value of those lands. This was done in 1906. Approximately 66 million acres were effected and this action shocked many miners and operators. On March 3, 1909 President Roosevelt signed legislation which allowed patents to homesteaders who had settled lands which were previously unclassified as "coal lands" but required reservation of all other lands to the Federal government. In 1910 Congress extended legislation to homesteaders with known coal land claims.

Reservation of mineral rights became a cornerstone of Federal policy. Petroleum lands were reserved in 1912 and other minerals added to the reserve list in 1914. In 1920 the policy of leasing coal, as well as petroleum, natural gas, sodium, phosphate and oil shale was legalized under the Mineral Leasing Law. This allowed individuals and companies to prospect for and develop the listed minerals. Leases were issued for development and royalties paid to the United States government. The laws, with few modifications, have remained intact for coal to the present.¹³

The Coal Mines of Northwestern Colorado

The 1876 Hayden Survey Annual Report which included northwestern Colorado stated that "with the exception of coal, no mineral substances of practical value were discovered." The report further stated,

among the best exposures of coal that were observed during the progress of the survey are those of two principal beds, one of which is found in and near Canon Park and another in Danforth Hills. . . comparatively little search will doubtless fully reveal these and other beds of coal in those places, from which supplies may be obtained with comparatively little labor.¹⁴

Colorado Governor Pitkin, in 1881, stated that the vast coal reserves of Colorado would form the basis of the state's future industrial development and employment. Coal would provide the essential ingredient for an extensive manufacturing industry that would result in Colorado being as well known "for her manufactures as for her production of gold and silver."¹⁵

Coal production throughout the state reinforced Governor Pitkin's prophecy as Colorado became a production leader for the nation during the early twentieth century. The major producing fields are within three zones: eastern, park and western. The Northern or eastern field included the Denver basin area and extended from Weld and Larimer Counties south to El Paso County, including Boulder and Jefferson in the west and Arapahoe and Elbert Counties to the east. The coal produced from this area is subbituminous or black lignite, used primarily for domestic purposes. The Southern fields are the most well known in Colorado, covering Las Animas and Huerfano Counties, Raton Mesa and into New

Mexico. This area produces a high quality bituminous coal. To the west of the Northern fields in Grand and Jackson Counties and the South Park area of Park County are reserves which produce low grade bituminous and subbituminous coals. The western slope has coal deposits concentrated in three major regions: the Green River, the Uinta and the San Juan River. Moffat and Routt Counties are in the Green River region. The Uinta region is in Rio Blanco, Garfield, Mesa, Gunnison and Pitkin Counties. The San Juan River region begins south of Mesa County and extends southward through Delta, Montrose, Ouray and into Archuleta County. This area produces high grade bituminous coal.¹⁶

Coal mining growth was centered in the northeastern and southern areas of the state in the 1880s-1920s period. The coal produced was instrumental in the early economic development of Colorado. Extremely limited wood supplies led settlers and developers to adopt coal as a manufacturing and domestic fuel. Demand often outstripped supply in these early years. In 1881 the Denver Republican reflected area worries that the area was "in immediate danger of a coal famine."¹⁷

Despite this, as early as 1893 the Western Slope Congress complained about the vast resources of Routt County that were undeveloped and unexplored. The reason for this lack of usage was transportation - there was no efficient, economical way to move coal from Routt and Moffat Counties to the Denver metropolitan area or beyond. Routt County roads increased in number beginning in 1882 when a building program was initiated. The stage line from

Wolcott, on the Denver and Rio Grande Railroad to Routt County became operational in 1888. While providing some new transportation linkages, this did not effectively end the isolation of the region. E. E. Helm operated a freighting business from the Wolcott Station to Steamboat Springs in the 1890s. He reported that it took 8 days to travel from Wolcott to Steamboat Springs and back. The Denver Times for July 15, 1898 commented upon the Maybell Canal in the Yampa Valley as perfect for agricultural irrigation and for use in mining activities. At about the same time the Northwestern Promotion Co. was founded to promote and carry on business in Routt County. In particular this booster organization was to promote the coal fields of the region and work for rail connections with Denver and the rest of the United States.¹⁸

The Roach Brothers discovered outcroppings of coal near Coalmont, (Jackson County) Colorado in 1890. Large deposits also existed in North Park, but there was little interest in the coal until a way to transport it to distant markets could be found. The coal was used locally until the 1910s when the Laramie, Hahn's Peak and Pacific Railroad was built from Laramie, Wyoming, to Walden, Colorado. The railroad was planned to go over the Park Range, down the Elk River Valley, into Steamboat Springs and then on to Craig, Meeker and into Salt Lake City, Utah. The line reached Coalmont in 1911 and cheaper transportation was now available, even though the financiers ran out of money and the railroad never reached beyond Coalmont.

Despite the hopes pinned to the coal trade, most revenues for the railroad came from cattle and freight. Chronic financial problems resulted and the railroad changed names a number of times until purchased in 1951 by the Union Pacific.

Elsewhere in northwestern Colorado, coal was being mined for local use. Meeker residents used coal from Streeter Canyon (Moffat County) during the late 1890s and early 1900s. In 1892 Mr. R. C. Hills, a geologist from Denver, completed a more detailed survey the area of the Yampa Coal Field for the Colorado Fuel and Iron Company. He published his findings and shared the view of many that the land was richly underlaid with coal. In 1906 the first systematic study of the Yampa Coal Field began as part of the Presidential conservation program referred to earlier.

The United States Geological Survey found that major seams of coal were available at Oak Creek, Trout Creek, Twenty Mile Park (AKA Twentymile Park), Wolf Creek, Sage Creek, Dry Creek, Williams Fork, Wallihan, Pilot Knob and the Flat Top mountains. The surveyors recognized the limited agricultural potential of the area and recommended mining activity because it would not create tension with other industries. However, the problem remained transportation. There was simply no way to move the coal from the region. The surveyors found the Yampa coal beds covered approximately 828 square miles in three Colorado counties, Utah and Wyoming.

While the small mines the U.S.G.S. geologists observed were fairly typical of northwestern Colorado in the late nineteenth and

early twentieth centuries, they were not typical of Colorado coal mining generally. Railroads and railroad companies were a critical force in organizing mining, transportation of the resource and creation of markets. Domination of the industry by a few came relatively quickly to Colorado coal mining. As a result, the growing economic importance of coal was reflected throughout the state in all arenas - political, social and economic. Because of the coal companies' power over local affairs, relations were not always easy between the dominant corporations and the workers of the era. Furthermore, the vulnerability of the Colorado coal industry to outside forces created cycles of boom and bust.¹⁹

By the early 1880s railroads were Colorado's primary producers and consumers of coal. The Rio Grande Railway, for example, had affiliated companies that operated seven coal mines. The Santa Fe also operated a number of mines and the Union Pacific owned five mines. By the middle years of the 1880s "railroad-controlled mines accounted for about 85 percent of Colorado's coal production."²⁰

Shortly after that point in time, the railroads began a divestment process. However, the changes to be wrought by railroad control - particularly the end of small scale mines and the advent of large industrial corporate operations had begun. For the most part mining was to be industrial in scale in Colorado from the 1890s onward. For the state this highly structured and capitalized coal mining is epitomized by the Colorado Fuel and Iron Company (CF&I). That corporation resulted from the merger of the Colorado Coal and Iron Company and the Colorado Fuel Company in 1892. The

Colorado Coal and Iron Company had been the result of the merger of the Southern Colorado Coal and Town Company, the Colorado Coal and Steel Works Company and the Central Colorado Improvement Company. The 1892 CF&I merger brought under control of one company approximately 70,000 acres of coal land, fourteen mines, and four coking plants. CF&I remained the dominant force in Colorado's coal industry for many years. For example, the company produced approximately 75% of the coal mined in Colorado and by 1910 it was estimated that 10% of Colorado's wage earners worked for CF&I or an associated corporate entity.²¹

As the industrial power of coal operations such as CF&I grew, so did the public challenges. For example, the 1892 Populist Platform in Colorado called for state control of the coal mines. Federal reform efforts centered on studies of industrial consolidation and on mining conditions.

Others, however, were active in the coal arena besides CF&I. John Osgood organized the Victor Fuel Company and the American Fuel Company in 1900. The companies were merged in 1909 into the Victor-American Fuel Company which became a major competitor of CF&I and later a dominant power in northwestern Colorado coal mining.

As major operators, these large companies had immense control over workers' lives, especially considering that many of the mines were relatively isolated. Some operators built towns that were models of paternalistic interest such as John C. Osgood's Redstone located near Glenwood Springs, Colorado. Other camps were designed

environments, set up by coal operators who did little to encourage individualism. Oftentimes poor conditions were common with little water, rampant disease, poor housing, company stores and few, if any, non-company sanctioned activities.

As a result of these conditions miners faced few choices. Moving on was one opportunity, although evidence exists that miners, especially those with a reputation for being trouble makers, did not often move on successfully. In addition, another alternative for miners was to organize and the growing power of the union movement is one characteristic of this period of coal mining history.

The last 25 years of the nineteenth century and the first 30 years of the twentieth were marked by numerous coal miners' strikes in Colorado and other western states. The issues were often wage related, and frequently quite local. However, several strikes became large and well known. For example, a strike in Wyoming in 1885 by white miners who feared Asian competition was supported by Louisville, Colorado miners. The United Mine Workers of America came into the Colorado region about 1900 and began to actively organize. In 1901 miners in the town of Louisville, El Paso County and Fremont County struck for almost four months over the issue of increased wages and union recognition. Small mines quickly settled but larger mines held out and ultimately agreed only to workers' committees, not the union.²²

Strikes occurred again in 1903 over wages, conditions and union recognition. This effort failed when Governor James Peabody

declared a state of emergency, decreed martial law and ordered troops into the coal fields. Five years later some gains were made by unions when 17 Northern operators signed a UMWA contract recognizing the union, the 8 hour day and improved conditions. The two year contract was not renewed and a new wave of strikes began in 1910. To further escalate tensions, three major mine explosions resulted in the loss of 210 miners lives in southern Colorado. Eventually that strike covered the entire state by 1913.

Violence became the order of the day and Governor Elias Ammons responded by sending the National Guard to southern Colorado to maintain order. Martial law and harassment of strikers and union organizers was common. That situation resulted in deteriorating conditions throughout 1914. In April of that year violence erupted at Ludlow, a tent camp established by strikers and their families. Tensions between the opposing forces escalated until strikers and the National Guard started open fighting. The Colorado Guard utilized machineguns against the strikers and the result is known as the Ludlow Massacre. The Massacre resulted in more than a week of rioting and violence throughout southeastern Colorado. Ultimately President Woodrow Wilson responded by sending Federal troops to the area to quell the violence. Despite nation wide support, the strike collapsed when the union called it off in December of 1914.

In response to the violence, mining companies became more attuned to the needs of their workers. John D. Rockefeller of CF&I was instrumental in devising the Colorado Industrial Plan or "The

Rockefeller Plan," which allowed for worker committees, a reconsideration and eventually change in working conditions. However, the employees remained non-unionized.

The union movement itself had little success except at individual mines during the late 1910s and 1920s. World War I marked an end of labor disputes but the post War period witnessed a number of new conflicts. The Industrial Workers of the World (IWW or Wobblies) organized in Colorado during the 1920s and called a strike in 1927. Many miners in the Northern Colorado fields walked out and violence erupted in 1927. State policemen at the Rocky Mountain Fuel Company's Columbine Mine in Lafayette started firing on strikers and killed six. During the strike, John Roche, principal of Rocky Mountain Fuel, died and his daughter, Josephine took over. She was more inclined to deal with the miners. In 1928 she signed a contract with the UMWA. This was not a unanimous move throughout the industry and a number of other mine operators held out until the mid-1930s when the Federal government forced union recognition on them.

The national economic downturn of the 1930s, the Great Depression, effectively ended challenges to the union organizers. In 1933 the National Industrial Recovery Act, a key part of Franklin Roosevelt's New Deal, guaranteed the "right" to organize and collectively bargain. The UMWA enjoyed great success after this, in part aided by further New Deal legislation. The 1935 Guffey-Snyder Act and the 1937 Guffey-Vinson Act worked to stabilize coal prices and supplies through a system of quotas and

controls. As these changes took place in the Northern and Southern Colorado coal fields, the industrialization of coal mining was well on its way to completion.²³

The mines in northwestern Colorado that wanted to take advantage of the new opportunities of the early 1900s found a unique situation. They generally located their operations near coal seams accessible from the surface. Before the railroad arrived these mines, particularly at Oak Creek, met the needs of area residents. At one time it was estimated that more than 70 "wagon mines" were in production in the Yampa Coal Field. A wagon mine was a drift mine worked on a seam by one or two, perhaps three men. The coal was then transported by wagon to local users. These small mines were effective in meeting the needs of individual ranchers and even the small, but growing towns of the region. But the talk of and then arrival of the Moffat Road (Denver, Northwestern and Pacific, DNWP) altered the situation. For example, the deposits known as the Twentymile bank were owned by the Denver and Northwestern Fuel Company. That seam was estimated to be 11 feet thick.

In addition to expanding corporate involvement in mining, new towns started. The Steamboat Pilot, in a retrospective articles about Oak Creek stated, "Oak Creek, thought not a company town, incorporated in 1907 as a result of coal development in the area. Phippsburg, named for a stockholder in the Oak Hills Company, had been a ranch. It suddenly became a model town with electric lights and other modern improvements." ²⁴

While coal mining as a large scale enterprise came late to Routt and Moffat Counties, evolution elsewhere had been more rapid. Coal mine operators and miners faced tremendous problems throughout the industry. As James Whiteside, in his study of Colorado mine safety, stated,

Operators and miners alike worked in a setting conditioned by many factors: economic self-interest and fierce competition, whether by markets or for jobs; physical isolation; technological change affecting the nature and organization of work in the mines; evolving social and political attitudes; and racial and ethnic prejudice." ²⁵

In 1900, as the Yampa Coal Field awaited corporate industrial development, those issues appeared to be irrelevant for the Study Area. In 1900 a lack of transportation inhibited mining. But a transportation revolution took place within the next decade that dramatically altered the course of coal mining development and raise all the issues Whiteside identified.

David Moffat seemed the perfect person to take advantage of the opportunities in northwestern Colorado at the turn of the century. In 1902 his fortune was estimated at \$25,000,000. This money had been made from a variety of Colorado enterprises, including mining and railroading. However, local newspapers reported that his money and his projects, while benefitting himself, also helped the state to grow. It was commented upon by the Denver Times that Moffat was not a Rockefeller or Gould or another outsider attempting to come into Colorado and make money. Instead, he was viewed as a more benign character -- working for himself and the state of Colorado. In addition, Moffat wanted to

make a name for himself as a railroad builder and was not satisfied to sit back and "retire."²⁶

The announcement of the Moffat Road in 1902 was heralded as a great event for northwestern Colorado. The Commercial and Financial Chronicle for October 25, 1902 reported the construction of the railroad and also the remarks of David Moffat, its President.

The railway company is organized, not to invade the territory of any other railroad company, but to open to development and traffic a region in Northwestern Colorado and Eastern Utah larger than the State of Pennsylvania which is now without a single mile of railroad. This region is rich in deposits of gold, silver lead, copper, iron and coal.²⁷

Senator Henry M. Teller responded to the announcement by stating, "there is no section of the country that offers greater inducements for the building of a railroad than this." For example, the Yampa Coal Field was estimated to be as large as 1,200 square miles. The coal, in addition to its large quantity, was easily obtainable because much of it was located in seams at or near the surface. Some of the coal appeared to be of a higher grade, although higher grades were erratically located.²⁸

The announcement of the railroad resulted in an influx of settlers to Routt County. These settlers appeared convinced that wealth from coal and other pursuits was possible when the railroad opened the area by providing connections with the rest of the world. The settlers were not the only ones to recognize the potential of the area. David Moffat recognized the resources that would be opened by his railroad including traffic for the line (in both directions), tourists and other travellers. However, the

success of the railroad depended upon more than coal. Other resources such as oil, copper, gold, silver and agricultural products were key in his railroad plans.

The Denver Times of 1902 announced that the American Fuel and Iron Company (AF&I) was interested in the resources of the area and was exploring investment opportunities. The plan was for AF&I to mine in Routt County and build wagon roads to serve as feeders to the proposed Denver, Northwestern and Pacific. As interest continued more coal exploration was done. DNWP specialists surveyed the areas, for example, in 1903 William Weston headed a geologic survey team of the coal fields to attempt to accurately determine their potential. In 1906 surveys of the Oak Creek area commented upon the location of coal resources, existing coal operations and the difficulties of laying rails to the present operations. Transportation was a problem noted by the surveyors and that the irrigation ditches that crossed the area provided a much needed water supply for the coal mines and for the railroad.²⁹

Moffat encountered a number of problems in building his railroad. The most pressing was to secure funding. Other railroads, notably the Colorado and Southern, opposed the DNWP. The route was long and difficult and Moffat and his engineer's failed to accurately anticipate the problems of winter weather and steep grades associated with crossing the Continental Divide. In 1902 5.2 miles of track were laid to Leyden Junction. The next year saw 20.7 miles of track laid to Coal Creek Canyon. In 1904 8.5 miles of track from Clear Creek to Golden and from Coal Creek

to Rollins Pass (53.8 miles) opened for traffic. That year the Governor of Utah, Heber M. Wells wrote to Moffat and expressed his delight in the progress of the railroad. He wrote,

noting with pleasure the recent advanced steps in the construction of your railroad from Denver to Salt Lake City, I desire to express to you my appreciation of your enterprise and the hope that the road will be completed at an early date and that it may prove a great financial success.

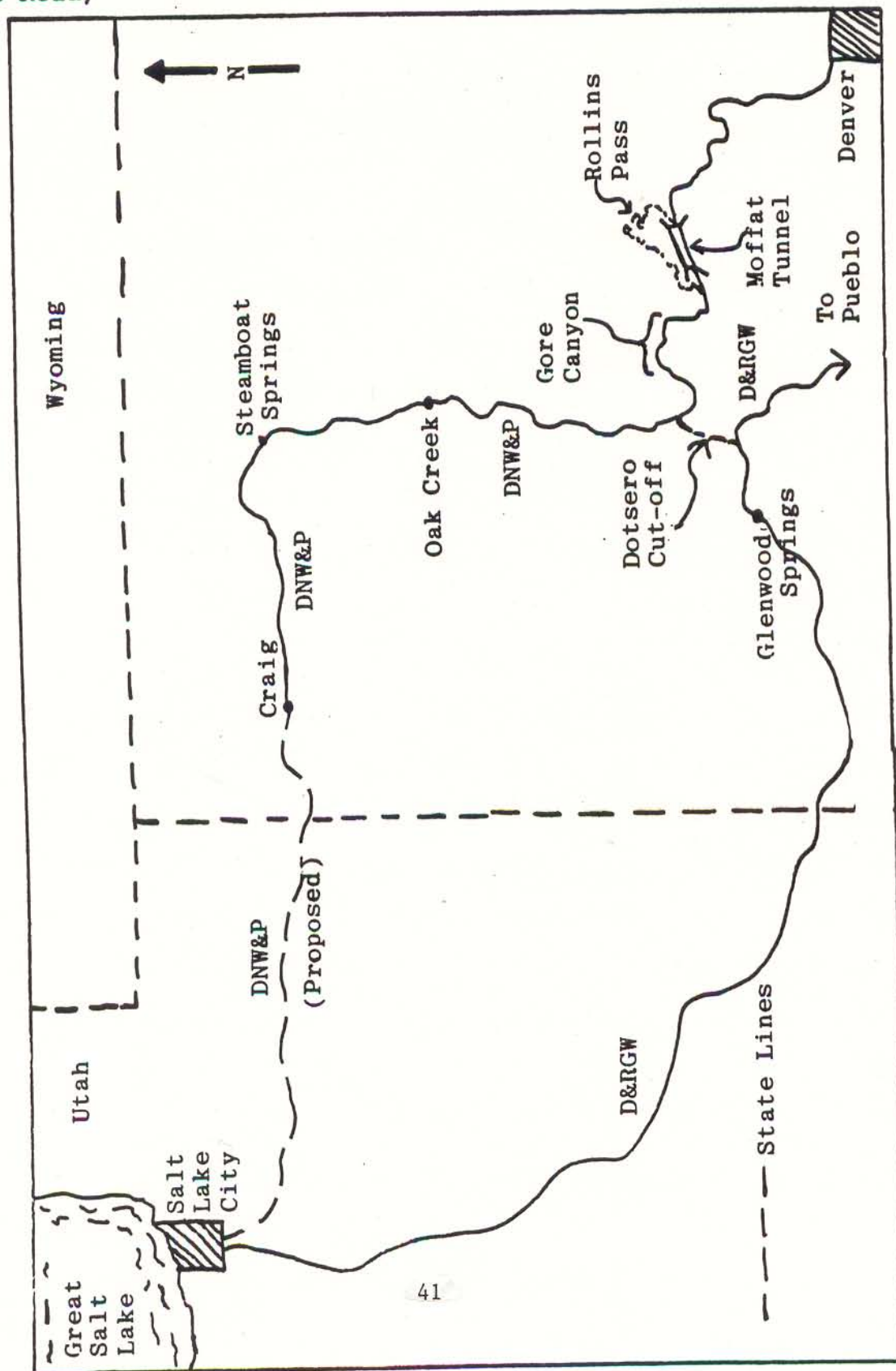
In addition, Governor Wells discussed the opportunities the railroad would offer to eastern Utah development.³⁰ In 1905 only 34 miles of track were laid but in 1906 trains finally reached Kremmling. In 1907 rails went to Yarmony and Gore Canyon and in 1908 rails began to pass through the Yampa Valley. Steamboat Springs was reached in 1909 and in 1913, two years after Moffat's death, Craig got rail service(see Figure 5).

When the railroad reached Steamboat Springs Moffat ran out of money. The developing Yampa Coal Field mines were significant potential sources of revenue for the railroad, but would not generate enough revenues to keep the railroad going. Continued demand for coal during World War I helped to keep the railroad functioning as it was "nationalized" and improved by the United States Railway Administration. By 1921 the railroad applied for permission to abandon but outcries from northwestern Colorado prevented that step. Recognizing the need to shorten the route to improve revenues a state financed Moffat Tunnel was suggested. Legislators from Pueblo led the opposition to the tunnel bill and the issue was defeated in 1919 in the Colorado General Assembly. The damage from the 1921 Pueblo flood resulted in a demand for

state funds for flood control on the Arkansas River by legislators from Pueblo and southern Colorado. Governor Oliver H. Shoup called a special session of the General Assembly for consideration of two items: Pueblo flood control and a Moffat Tunnel bill. Pueblo, the previous center of Tunnel opposition, realized it would have to support the Moffat Tunnel if it hoped to get state money for flood control. The legislature approved both measures and tunnel construction began in 1923.

In 1931 the Denver and Rio Grande Railroad built the Dotsero cutoff from Bond to Dotsero which eliminated 181 miles of the route and provided a more direct connection from Denver to Salt Lake. The line to Craig became a branch service line and in 1947 the Denver and Salt Lake was merged into the Denver and Rio Grande Western.³¹

Figure 5 -- Route of the Denver, Northwestern and Pacific Railway
(Moffat Road)



Regional Mines

When the Moffat Road finally reached Oak Creek, the railroad realized the first significant revenues from coal as the black diamonds began moving east toward Denver. Oak Creek also was one of the first areas to benefit from the new transportation system because the railroad reached there in 1909. In comparison, rails did not reach Mt. Harris west of Steamboat Springs until 1912. Small wagon mines had operated in the Oak Creek area as early as 1887. William Mahoney and John and Henry Meyers are credited with pioneering wagon mining at the future site of the town. By 1905 Sam Perry had a successful mine operable near the head of the canyon northwest of the townsite. As word spread about the Moffat Road and the coal potential, outsiders began to look at investment opportunities in Routt County.

In 1907 three businessmen from Cripple Creek, Sam Bell, John Sharpe and D. C. Williams, purchased the ranch at Oak Creek as a potential townsite. In April of that year they formed the Oak Creek Town, Land and Mining Company and filed a town plat, giving Bell Town a formal name and existence. The town was incorporated in December of that year. By 1908 over 50 people lived in town. The town was later renamed Oak Creek.

The town "boomed" after rails arrived in 1909. Soon over 200 people lived in town, a population that would grow 10 times by 1915. Production increased until the late 1910s and early 1920s when labor problems weakened the industry. Gradually, production declined until the middle years of the 1920s when a small boom

again occurred. For Oak Creek and other mining towns the new boom offered a welcome change as people and money moved to the region instead of away from it as had been the case from about 1921 to 1925. However, the onset of the Great Depression caused more hard times as the mines began to cut back their production and in some cases close. Mine closures continued during the 1930s and 1940s, especially after the end of World War II in 1945. By 1952 the Pittsburgh and Midway's Edna Mine was one of a handful still in operation in the Oak Creek part of the study area.

Attempts to unionize northwestern Colorado mines began in the early 1910s and the first strike occurred in 1913 over wages and working conditions. The strike of 1913 quickly spread to many of the region's mines. Estimates are that during 1913 425 miners were idled at Oak Creek alone. Sporadic vandalism at mine properties and beatings took place. By October of 1913 the coal district was under martial law in order to prevent further violence and the strike ended. However, periodic strikes continued into the 1920s.

Oak Creek had a number of coal mines that operated during the boom days. The Arrowhead mine operated in the 1920s and then the 1940s and 1950s. The owner was the Moffat Coal Company. The mines closed because of fire danger and some residents remember that the fires continued to burn for years afterwards.³²

The Haybro (Hayden brothers) mine was established in the early 1910s. Opened by Lew and William Hayden the mine shaft went down over 600 feet. The brothers operated the mine until they sold it in 1931 to the Harris Coal Company. A small company town was located

across from the mine. The mines and town officially closed in the early 1950s.

Another early mine was the Juniper which opened around 1910. The mine closed after about ten years of operation because of flooding.

Keystone, a small wagon mine in the 1920s, expanded in the 1930s and 1940s. The mine closed in the mid-1940s.

One of the largest mines was the Oak Hills Mine (also known as the Perry Mine). Located north of the town or Oak Creek this mine was very profitable. ³³

The Pinnacle Mine and camp dates to the early 1900s. Named for the high quality and high elevation of the coal seam, it was opened by James Walker and the Morrison Coal Company. Purchased in the 1910s by John C. Osgood's Victor American Coal company, the mines operated until 1946. The camp at one time had over 50 homes, a store, dance hall and school. Mining was quite successful at Pinnacle because the veins of coal were easily accessed. Once mined the coal was loaded into cars and an electric trolley pulled the cars to the east where they were lowered down the hillside by cable to the tipple on the railroad at Oak Creek.

Located near Pinnacle was White City. This was a small camp for miners employed at the McKindley Mine and the Pinnacle mine. Local informants maintain that the town had two boarding houses, one for Japanese miners and one for other workers. Although owned by the Oak Creek Recreational and Development Company, the town

46

does not appear to have been platted or incorporated. Part of White City has previously been inventoried.

The Osage mine was located at McGregor. The camp was founded by John McNeil and reportedly hired Greek miners. The mines closed in 1929 but the next year Bill and Kenneth Neish attempted to reopen them. The early 1920s witnessed the construction of the Colorado Utilities Company steam generated electric plant which eventually supplied electricity to most of Routt County. In 1941 the Yampa Valley Electric Association assumed control of the plan. The Osage operated from 1948 to 1962.

The Apex # 2 Mine, on Trout Creek west of Oak Creek, originally opened in 1933 by George Steele, replaced the earlier Apex # 1. The mine furnished heating coal for area residents until 1978. In 1945 the mine was purchased by the Routt Mining Corporation and then in 1976 Sunland Mining purchased the mine and began production.³⁴

Mt. Harris mines opened in June of 1914 in Bear River Canyon. George and Byron Harris, two brothers, founded the Colorado-Utah Coal Company to operate the mines. The town at Mt. Harris quickly grew and became a company owned town. By 1916 the town had company offices, a general store, post office, drug store, barbershop and pool hall. In addition boarding houses, a hotel, a church, medical facilities, a fire department and community center were available. The mines at Mt. Harris experienced a methane gas explosion in 1942 that killed 34 miners. By the end of the 1940s Mt. Harris production began to decline. The Mt. Harris Mine closed in 1958

and the town was dismantled in order to avoid taxes and liability.

The Victor American Fuel Company opened the second mine in the Mt. Harris vicinity. The mine was located north of the town and U.S. 40 on the Wadge homestead and is often known as the Wadge Mine. Wadge, in fact, mined coal as early as the middle 1880s for domestic purposes. While a separate community from Mt. Harris, it was so close that it was difficult to distinguish between Mt. Harris and the Victor American camp. In 1916 the two camps built a combination four room school. The Victor American Camp shut down in the early 1950s and the site was cleared.

Another mine in the area was the Pinnacle Kemmer Company, known as the P-K. The mine was small and never very successful, however, miners were brought from Wyoming to work the small mine located east of the Wadge homestead. The mine closed approximately 1940.

Another early mining camp was Bear River, established in 1915 by John Connell and P. M. Peltier. Located in Bear River Canyon, not far from Mt. Harris, the mine was in production until the early 1940s. As many as 150 families lived in Bear River between 1935 and 1940.³⁵

In the Hayden area the Coalview mine was located in Coalview Gulch. The town supported about 50 families during the 1910s but has been removed. An interesting note is that the present Milner store on Highway 40 came from Coalview.

Wagon mines operated throughout the region. For example, mines near Anthracite Ridge, in California Park, produced high

quality anthracite. However, only a small wagon mine operated to supply locals at Elkhead. In the 1920s Bob Perry opened a mine but the difficulties of transportation and mining the coal resulted in closure by 1930.

A number of mines were located in Twentymile Park. This is a triangular area created by Yampa, Hayden and Steamboat Springs. The value of the coal was recognized early in the late 1890s by Mrs. Hoskinson. She operated a profitable wagon mine until she sold it to Tom Chergo in 1901. Chergo continued and expanded the operation and became a principal supplier of coal to Steamboat Springs. The mine was eventually sold to Energy Fuels in 1962. Located nearby is Trout Creek. Locals remember that the name came from the locally available trout in the river. They also remember that during the summer or off season the banks would be almost shoulder to shoulder with miners attempting to feed their families by fishing.³⁶

The influence of the railroad and subsequent coal mining can be seen in the population figures for Moffat and Routt Counties. Moffat County population figure for 1900 is estimated at 1,300 (County established 1911, derivative number). By 1920, after the arrival of the railroad, the population was 5,129. The number remained relatively stable over the next twenty years with the 1940 figure of 5,086. Again population remained steady and in 1950 the population was 5,946. However, the energy boom of the late 1950s resulted in a 1960 population of 7,061.

Routt County shows a somewhat different population trend. The 1900 population was 2,400. Twenty years later the total had risen to 8,948 - clearly a reflection of the increased desirability of the area because of transportation. The upward trend continued until 1940 when the population was 10,525. In 1950 a decline was shown to 8,940 which continued until 1960, when the population dropped to 5,900. By 1964 a small increase had been posted to 6,050.

The population can be tied, somewhat loosely to the trends in coal production. Those production figures are:

Routt County

Moffat County

Year	Tonnage	Year	Tonnage
1887			
1888			
1889	1,491		
1890	705		
1891			
1892	330		
1893	816		
1894	2,710		
1895	2,767		
1896	1,832		
1897	945		
1898	1,339		
1899	1,211		
1900	1,375		
1901	1,558		
1902	3,180		
1903	2,775		
1904	5,568		
1905	3,643		
1906	5,297		
1907	5,690		
1908	13,005		
1909	92,439		
1910	258,452		
1911	317,791		
1912	448,261		
1913	334,961		
1914	666,384		
1915	852,315		
1916	915,028		
1917	1,074,103		
1918	941,355		
1919	1,181,332		
1920	964,342		
1921	889,015		
1922	432,198	4,875	(First Figures by County)
1923	803,455		
1924	911,643	6,963	
1925	1,009,703	7,188	
1926	929,567	4,950	
1927	925,633	3,913	
1928	929,190	4,896	
1929	1,006,157	5,853	
1930	838,828	7,637	

Production Figures Continued

Year	Routt	Moffat
1931	570,886	5,147
1932	576,458	3,798
1933	467,551	2,606
1934	485,311	2,945
1935	789,905	6,804
1936	987,338	6,871
1937	1,024,621	18,229
1938	741,431	35,205
1939	727,440	55,900
1940	909,942	48,162
1941	878,952	49,459
1942	1,231,608	65,817
1943	1,194,483	100,689
1944	1,187,237	138,394
1945	1,093,294	128,595
1946	896,303	142,923
1947	1,016,823	146,494
1948	939,875	144,288
1949	807,289	130,404
1950	832,928	125,743
1951	678,698	110,275
1952	688,486	90,590
1953	616,164	90,660
1954	450,146	85,556
1955	522,942	100,556
	37,081,502	1,882,512

Updated figures for the 1960s for Routt County reveal that in 1960 the value of the coal mined was \$1,884,594, while by 1963 the figure reached \$3,965,547. For Moffat County the income from coal was \$797,821 during 1963.³⁷

As the production numbers reveal, mining and demand are cyclical, thus resulting in a boom and bust economy. The early 1900s were years of great optimism based upon the ability to mine coal and then transport it cheaply from the region. Production in the state peaked in 1910 at 12,000,000 tons. A small decline was offset by World War I and the wartime needs. After the War demand fell off for almost two decades. This was a result of many factors

including lessening industrial activity and the new competition offered by petroleum, natural gas and hydro-electric power. By 1931 the Rocky Mountain News was proclaiming that Colorado coal faced a new era with declining demand for coal in the wake of the general industrial downturn of the nation. World War II resulted in a resurgence of interest in coal mining to fuel the needs of mobilization. The wartime demands increased the need for coal and coal reserve values grew quickly. For example, the Rocky Mountain News of September 14, 1941 stated that the value of coal exceeded that of gold within the state. By 1942 the same newspaper reported increased production as a result of wartime needs and stated that the production was the "best in years." However, the period was not without tragedy. In 1942 the Wadge mine at Mt. Harris had an explosion and 34 miners were killed. Three years later the Denver Post reported that the major detriment to increased production in Routt County was a lack of coal cars to transport the mined coal.³⁸

The post war years saw the advent of strip mining - a relatively new technique dependent on heavy earth-moving machinery that became widespread in northwestern Colorado. The number of underground mines generally declined while the number of strip mines increased. By 1964 most of Routt County's coal production came from two large strip mines. The coal was increasingly used for electric power generation. However, despite strip mining a "Safety Strike" shut down a number of mines in 1947 as miners were increasingly concerned about working conditions now that wartime needs had diminished. Production continued during the immediate

post war years and in 1949 the Rocky Mountain News reported that coal miners worked double shifts in Oak Creek and at the nearby Edna Mine in order to keep up with the demand. This certainly countered the national trend of declining coal production during the immediate post war years. However, by 1951 the Rocky Mountain News bemoaned that, "coal mining [was] a dying industry," with production levels at their lowest, statewide, since 1898. Obviously, the economics of coal mining worked against continued exploitation of the Moffat and Routt resources. However, by 1955 a plan was afoot that would transport coal as a slurry through pipelines to the rest of the nation, theoretically reducing transportation costs. Nothing came of this plan at that time.³⁹

The first strip mine in Routt County was the Edna Mine outside Oak Creek that became an operational strip mine in 1945. The Osage Mine followed in 1949. These two mines were the major producers of coal from Routt County into the early 1960s. The Edna Mine is in the canyon north of Oak Creek. It is reputed to be the highest strip mine (8,200 feet) in the United States. Opened in 1945 by the Smith and Swenson Coal company, it came under the ownership of L.M. and Cecil Cooley in 1946. In 1961 the Pittsburgh and Midway purchased the mine along with the Osage Mine. Both properties were sold in 1963 to the Gulf Oil Corporation. Most of the coal mined at the Edna is shipped to Colorado's eastern slope. In 1979 more than 100 men were employed at the plant. The coal has been plentiful and it is believed that mining can continue until the mid-1990s.

A new boom of the 1960s resulted from increasing industrial needs. In particular Colorado coal mines benefitted from the coal-fired electrical plants built throughout the northern plains and Four Corners area. This new boom began somewhat slowly as production figures inched upward. However, this expanded production continued into the 1970s with the energy crisis that resulted in many industries converting from fuel oil to coal. The nation searched for new energy sources given the high price and volatile nature of petroleum products supplies. By 1978 the Denver Post Empire Section headlined, "Coal Mining Brings Boom to Northwest Colorado." While the boom took place, new factors were at work. The mines were often corporate from the beginning with large oil companies such as Exxon or Atlantic Richfield and long-time coal companies such as Peabody engaging in exploration efforts throughout Colorado.

Another change had also taken place. The days of mining without concern for the environment were replaced with an environmental consciousness. The Rocky Mountain News for June 15, 1981 stated, "Digging a snap at Hayden Coal Mine; It's the reclamation that's hard." Underground mining, with comparatively small waste dumps and other above-ground features did not affect the landscape to the extent that strip mining did. As a result reclamation became an increasingly important consideration. Environmental concerns resulted in Federal and state inclusion of reclamation plans in overall mine operation plans. The reclamation activity included recontouring of the land and removal of other

evidences of the mine before a company's bond could be returned. For example, a proposed mine near Paonia, led to a three hour hearing on a coal lease. 1,200 people attended the hearing. The lease eventually was approved but only after the debate continued for over six months. Residents and others attempted to weigh the benefits of jobs to the local economy versus the environmental issues. The coal in question went to supply the Northern Indiana Public Service Company. The 1970s also witnessed other changes in the coal industry. Consolidation of resources under a few companies continued. Underground coal mining declined as efficient strip mining techniques evolved that removed the need to go underground to obtain the resources.

Also, the boom of the 1970s was unique in that the search for alternative energy sources included coal, oil and oil shale. This prospecting resulted in a diverse "energy boom" for northwestern Colorado. The Rangeley field dominated oil production in Colorado during the 1970s with an average of 76% of the state's production during those years. Oak Creek was prospected heavily for oil, but only coal was found.⁴⁰

DISCUSSION OF HISTORIC PROPERTY TYPES

INTRODUCTION

The framework for evaluating the significance of the historic coal mining resources within the Study Area began with the historic context developed in the previous pages. The historic context defined the place, time, and historical theme that unite the sites. In this case, the place is the Routt and Moffat Counties, Colorado. The time period spans 1876 to 1945. Two themes were defined: coal mining technology and coal mining community within the National Register area of significance of industry. The sites are linked to the historic context through the concept of "property type." As defined by the National Register, a property type is "a grouping of individual properties based on a set of shared physical or associative characteristics".⁴¹ Before property types can be defined, however, the concept of "property" as used in this document must be clarified. The physical remains in the extant Study Area are hierarchically classified into features, sites, and complexes or districts. Building sites, privy pits, and domestic trash scatters, for example, are features that are defined as properties linked to the contextual themes of coal mining technology or coal mining community associated with the main context of the coal mining in Routt and Moffat Counties. Other properties are defined at the level of the site linked to a place, time, or theme in the context. Site, as a term, encompasses both the archaeological remains and above ground remains including

buildings, structures and objects. An example is the site of a wagon mine, which is a geographically united cluster of features associated with the same mine. The complex or district as a property, is represented by the physical remains of a large scale technological system such as a large mine and loading plant that might be geographically dispersed over more than one site; the Pinnacle area is an example in this reconnaissance. Property types, then, are defined as groups of individual features, sites, or districts/complexes that share physical or associative characteristics and that are linked to the historic context. The significance of property types is then evaluated through their value under National Register Criteria A, B, C, or D.

PROPERTY TYPE ONE:

COAL MINING ASSOCIATED BUILDINGS, STRUCTURES, SITES AND COMPLEXES

Description

The specific properties associated with coal mining in Routt and Moffat Counties can occur as individual resources (i.e., prospect pit) or as part of a functionally based cluster of buildings (i.e., mine complex) associated with a mining based historic district. The category includes linear features such as roads, tramways, paths, canals, ditches or rights-of-way associated with access to or operation of a coal mine.

Descriptive Overview

Features associated with regional coal mining industrial process can include mines, offices, crushers, washing and/or sorting plants, sorting houses, tipples, boilers and smokestacks as well as ancillary structures such as storage sheds and water tanks. The structures will be made of brick, stone, iron, steel, wood/log and concrete. Construction methods would include stone or brick masonry, wood frame, poured or cast concrete, and iron or steel beams and trusses. Foundations may vary from earth, wood, and stone, to concrete. Building or structure sizes will vary from quite small to large, depending upon the scope and type of operation. Individual mining operations may have one or any combination of the listed buildings and structures. The individual buildings may exhibit evidence of modification and expansion over

time as the needs of the owner/operator changed. Generally the buildings are vernacular in style and exhibit no particular evidence of architectural expertise. Rather, they were built to meet specific needs and appear to be adaptations of commonly accepted late nineteenth to early twentieth century coal and general mining buildings.

Some evidence of planning and adaptation to the local topography will be present in areas because of the necessity of locating a mine near a coal deposit, or a water system near a spring or streambed. Topography, coal deposits, and water availability determined the spatial arrangement and location of individual mines and mills.

The condition of these resources varies from mostly intact mines to badly deteriorated, and abandoned mine buildings, their archaeological remains, or reclaimed sites. Documentary evidence indicates that at one time there were as many as 125 coal mines in the Study Area, at a ratio of about 3 to 1 of wagon mines to industrial mines.

Roads, paths, tramways and railroad rights-of-way or ditches all share certain characteristics that lend to a group discussion. They are all engineered structures. The resources tend to be long linear features and as such should exhibit some type of engineering feature(s) clearly associated with engineering and construction techniques that were in general use by engineers and builders during the period of significance for this context. The roads can have materials that include dirt, rock and/or gravel, and very

limited use of asphalt or concrete. Bridges on the roads and trails or tramways could have stone, steel, log, milled or treated timbers as part of their construction. Generally the planks on the bridge decks will be either surfaced with gravel or be bare. The paths can be made of either rock and/or soil with wood or rock used to help stabilize places subject to washouts and heavy traffic. The bridges also can be either wood or steel culverts or of wood and/or log construction. Railroad rights-of-way generally will exhibit some type of materials left from their use, such as ballast, spikes or tie remains. These mining sites may include associated water sources such as systems of earth-lined canals, flumes, wood pipelines, weirs and collection boxes.

Specific Types

The coal mining technology property types can be classified into groups related to two subthemes: mine exploration and mine development. For Criterion D each of the subthemes is linked to the research questions iterated below.

MINE EXPLORATION PROPERTIES

Prospect pits, exploratory adits and power shovel trenches are the properties most commonly associated with mine exploration. The property types illustrate two patterns of mine exploration in the Study Area: prospecting with hand tools and machine-assisted exploration. To some extent the patterns are reflective of changes in mining technology related to the mechanization of earth-moving.

Even after the end of the nineteenth century, for example, mine exploration was limited mostly to hand dug prospects pits and exploratory adits, Power shovel workings are associated with later periods and especially the introduction of strip mining after World War II.

Prospect Pits

For much of the period of significance, hand digging holes into the ground surface was the most common method of mine exploration. The resulting "prospect pits" typically are small and shallow circular holes associated with overburden dumps. The other typical pattern was to dig into a vertically exposed coal seam with a possible tongue-shaped dump in front of the excavation. These have been labelled exploratory adits.

Power Shovel Trenches (Machine-assisted Exploration)

In the 1920s and 1930s, the use of power shovels for mine exploration and the development of open pit mines greatly increased nationally. Power shovel trenches are wide trenches in the ground surface with overburden dumps at the sides rather than at the end. The trenches are associated with a common method of mine exploration from the late 1920s through the post-World War II years. After the Second World War, the use of bulldozers for mine exploration increased greatly. The properties making up the type are surface trenches or scrapes with overburden pushed to the end rather than dumped at the sides. Bulldozer cuts are associated

with a common method of mine exploration in the post-World War II period and are not of sufficient age to merit listing on the National Register because they are less than 50 years old in most cases.

MINE DEVELOPMENT PROPERTIES

Several property types in the Study Area are associated with the technological theme of mine development. The property types illustrate or contain information about two distinctive patterns of mine development: underground industrial mining and wagon mining.

Underground Industrial Mines

The most extensive pattern of mine development is illustrated by the underground industrial mine. The pattern is marked by the use of industrial technology and the logistical requirements of deep mining, which are reflected in the processes of mine excavation, haulage, ventilation, drainage, and mine maintenance. Underground industrial mines are most strongly associated with the period from 1900 to 1940, especially the 1920s & 1930s of mine development.

Industrial power plants are keys to identifying these mines. Most often, the mine power plant included a steam boiler and engine, an iron or wood water tank, plumbing, and a brick furnace in which coal was burned as a source of heat. The engine, tanks, and plumbing fixtures may have not survived, leaving the collapsed

brick furnace and a machine foundation as the most common record of steam engines and boilers. The power plants frequently were used to generate electricity, leaving behind transmission systems, electric generators and associated parts. The underground industrial mines will exhibit either a shaft and headframe incline or tramway haulage system associated with either room and pillar or long wall underground workings. The other characteristic of an industrial mine is the large-scale washing and sorting facilities, usually in association with a system of tipples and/or conveyors to transfer the coal to railroad cars for shipment to points outside the Study Area.

In addition to the distinctive haulage system, industrial mines also are associated with distinctive technologies for ventilation and drainage. Without question, mines were engineered to allow air to flow from the outside through the mine without mechanical equipment whenever possible. Air shafts or airways may be identified in future intensive surveys. Mine drainage is another technological process associated with underground mining. With increasing mine depth, water drainage emerged as a key problem. Two drainage patterns can be identified: gravity flow and the Cornish Pump. Deep underground industrial mines usually are associated with extensive facilities for mine maintenance. Buildings, housing, blacksmith shops, workshops, carpentry shops, and the like are required to service the expensive and large-scale equipment at the mine. Forges, slag dumps, scrap iron scatters,

tools, and other archaeological remains of blacksmith shops and workshops typically are associated with the property type.

Wagon Mines

The wagon mine is a property type strongly associated with the distinctive pattern of small-scale mine development. As a property type, the wagon mine is defined as a shallow, unsystematic, and small-scale underground mining operation that depended mostly upon hand power. The technological pattern that defines the wagon mine often is marked by the use of the hand-powered or animal powered haulage systems. The haulage systems associated with wagon mines often include narrow tracks or pathways along which carts were pushed or pulled by the miners. Ventilation and maintenance systems also are typically small-scale and low-powered; small blacksmith shops, for example, may or may not be associated, and ventilation usually is by siphon rather than by a forced air system.

Significance

The mining industrial resources, either individually or as part of a district in the Routt and Moffat Counties Coal Study Area, may be significant under Criteria A, B, C, or D in that these mines/resources reflect the establishment of a mining based economy and related industrial development of the area. The period of significance spans the period from 1876 to 1945. These years

represent the period from the beginning of interest in local coal resources through the comparatively large industrial mining period of the early twentieth century to the end of World War II and the associated movement in techniques toward large-scale strip mines. Within the period of significance there are three sub-periods: 1) the initial years or development prior to World War I; 2) World War I and the 1920s; and 3) the 1930s and World War II. The resources associated with this property type and the context are considered significant at the local and/or state level under the areas of significance of architecture, engineering or industry.

For a mining resource to be considered eligible under Criterion D it must be able to address research questions that utilize comparative data on the technology employed at the individual sites and differences in the degree of participation in local, regional, and national technology networks. Because the area was a member of a larger industry there will be evidences of technological sharing and importation into the Yampa Coal Field that address the industry's quasi-permanent nature. Specifically, the resources must contain chronological markers to associate the site to the period of significance. Further, the resources must offer data to address the research questions detailed below.

Road, path, and other linear resources are considered to be potentially significant under all four Criteria within the areas of significance of industry or engineering. They are discussed more fully under Mining Community Property Types below.

All resources discussed under this property type have the potential to be considered significant under Criterion B for associations with significant local personages such as the Hayden Brothers of Oak Creek. It is recognized that to a certain extent nearly all the major mines in the area have a connection to important personage David H. Moffat because of his role in building the Denver, Northwestern and Pacific Railway that opened the Yampa Coal Field to commercial exploitation, but it is felt that this connection does not offer an adequate filter and justification for all resources within this property type to be eligible. Similarly, other individuals, such as John C. Osgood, owned mines in the Study Area. But for a property to be significant under Criterion B it must be the place (office, mine, etc.) that can be documented in the historic record as the place where the individual worked when he made his contribution to the local coal mining industry.

Criterion D Considerations

For a resource to be considered eligible under the property type and Criterion D it must be among the most interpretable archaeologically and offer information pertinent to one of the following questions.

Question 1:

If the coal mines of Routt and Moffat Counties made use of various types of technology during the years of active production then that technology will reflect a number of circumstances including local applications and adaptations of "standard" methods

and technology as defined in trade journals and texts of the time.

Question 2:

Further, if the area became an industrialized mining area, then the boom of the early twentieth century period will exhibit rapid importation of mining technology and experts to Routt and Moffat Counties that represented "state of the mining art" at that time.

Question 3:

If the local geology and environment did influence the location and technology of the mines, then evidences of the adaptations made by the mines should be both identifiable and reflective of a pattern or patterns imposed by those natural conditions.

Question 4:

If connections between the Yampa Coal Field and the larger Colorado mining business community change over time, then they can be considered to reflect not only the relative success or failure of the local mines but moreover the investing public's perceptions of the potential of the mines as sound investments.

Registration Requirements

Resources associated with the coal mining property type must meet the requirements outlined below to be considered as eligible for inclusion in the National Register of Historic Places. The first requirement is that the property be historically associated

with the context, that it must have been either a mine, transportation system, or water system for coal mining during the period of significance. As well, an individual property or a district must have either been documentable as part of an important trend, such as the early industrialization phase or be associated with a mine that made a documentable, significant contribution to local mining development.

The second requirement is that the physical characteristics of a mine must be present, specifically that the mine and outbuildings be of vernacular style and be constructed of appropriate materials (wood, concrete, brick, steel, or similar materials). Those elements must be present to convey the historic feeling of a mine during the period of significance, including integrity elements of design and setting, thus making the function of the operation and its various components readily apparent and interpretable.

The individual buildings must be in their original location or their location during the period of significance to convey the historic feeling of the mining operation and reflect workplace organization as defined by the technology in use. Additions or modifications must not impair the quality of the historic fabric (design, materials, and workmanship) of the individual buildings. Buildings that help convey the effect of the industrial maturation process in local mining must have dates of construction during the period of significance. If the buildings or structures have lost their ability to convey either their design, materials, workmanship or character/function within the mining complex through natural

deterioration or the activities of man during or after the period of significance, then those specific resources and structures will be considered non-contributing. Resources that reveal attempts to recontour, fill in or otherwise obliterate any part of the feature shall be considered to have lost the design, setting, workmanship, and association, making that feature specifically not eligible.

Individual buildings may be considered eligible under Criterion C only if they were part of a mine/mining complex during the period of significance, are in their original location, can still convey the feeling of their mining heritage and meet the following requirements. The building must be representative of a documentable significant trend in vernacular mining architecture or engineering in regard to floorplan, materials, industrial process or building methods, especially as those may be reflective of clearly documentable ethnic style elements. Additions and/or modifications to the building must not alter any of the design elements of the building, must be of like materials to the historic portion of the building and not alter the feeling or character of the building's vernacular mining heritage. Different requirements apply to districts or complexes and resources may be eligible either on their merits as individual resources or as contributing elements to a district (see below).

Water delivery systems in the Study Area should be evaluated both as engineering features (Criterion C) and mining related (Criterion A). To be considered eligible as a part of this context the system had to have been built and used during the period of

significance and meet the following requirements: 1) it had to either be carrying or show evidence of having carried water during the period of significance; and 2) display unique examples of water engineering science or materials usage. The ability to carry water is viewed as a minimal level of integrity for these resources.

To be considered eligible as a linear resource, the eligible segments of the linear resource must: 1) show evidence of use during the period of significance; and 2) display examples of engineering and/or construction practices that both represent the period of significance and allow interpretation of the type of transportation technology represented by the resource. The ability to allow passage on foot is viewed as a minimal level of integrity for these resources.

For districts made up of mine(s) or a mining complex different registration requirements apply. The first requirement is that the district be historically associated with an important trend identified in the context, that is it must have contained a number of mining associated buildings, structures or other resources during the period of significance and been part of an identifiable technological or economic pattern. The second requirement is that the physical characteristics of a mine/mining complex must be present, specifically that setting and feeling as they were during the period of significance should still be conveyed by the district. The setting should show evidence of a land use scheme giving continuity to the district. The district also must convey the spatial association of the mine and any related buildings

within the district to each other and as part of a larger activity complex reflecting the industrial process that can be interpreted from the district. Resources that aid in the interpretation should be considered contributing.

Another element that distinguishes the overall design, setting, and feeling for the district is definable lines of communication/transportation that would have cemented the district together during the period of significance. The final elements that help define the setting and feeling are the discernable presence of mines, waste rock dumps, tailings, etc. that meet the requirements for those individual structures/sites. A distinction is made between waste rock dumps as a result of tunnel (underground) mining and overburden dumps as a result of an association with pit or strip mining. As a district is defined in terms of land use it is assumed that location, workmanship, and materials were limited by the nature of the property and are not an issue pertinent to the registration of districts.

For a resource or district to be considered eligible under Criterion D and this property type it must exhibit a significant subsurface component of materials, in situ and in an unmolested matrix, that through archaeological testing has been proven to contain information applicable to the interpretation of the research questions outlined above and chronological artifact indicators that date to the period of significance. If, due to the native surface conditions, a subsurface component likely would not be present, then the resource must be interpretable through

architectural or engineering remains as part of the mining industrial process and have significant concentrations of interpretable surface artifacts. Further, the resource must not show evidence of excessive vandalism.

PROPERTY TYPE TWO:

COAL COMMUNITY ASSOCIATED RESIDENTIAL AND SUPPORT BUILDINGS, FEATURES AND SITES

Description

The specific properties associated with residential and support buildings (mining associated) in the Study Area can occur as individual resources (i.e., boarding house) or as part of a functionally based cluster of buildings (i.e., settlement, mining camp or town). These resources individually or collectively had coal mining as an economic base. Coal mining towns or settlements generally contained a variety of residential and commercial buildings. The commercial areas typically included cafes, hotels, saloons or taverns, dance halls or theaters, stores, specialty shops, professional offices, public offices such as town halls, churches, hospitals and schools. Included in the property type are linear features such as railroads, roads, trails, ditches or rights-of-way.

Descriptive Overview

A variety of factors influenced the location, types and numbers of coal mining community-related resources. Reviews of the extant literature indicate that at one time probably there were nearly 5,000 resources associated with this property type. Most were concentrated in the Yampa Coal Field that included the area from Phippsburg north to Oak Creek, the Twentymile Park, northwest

of Oak Creek to Hayden, and west from Hayden to Craig. Others were located near the Moffat-Rio Blanco county line, south of Craig, and near Lay, west of Craig. The number of resources at a specific locale varied from a cabin and privy at a wagon mine to complete mining camps, such as Pinnacle, Mt. Harris or towns such as Oak Creek (see Figures 6 and 7).

Structures and buildings associated with coal mining communities include individual or multiple occupant residences, boarding houses, commercial and public buildings, privies, cooking sheds, etc. The structures will be made of soil, brick, stone, iron, steel, wood/log and concrete. Construction methods would include stone or brick masonry, timber or wood frame, poured or cast concrete, iron or steel trusses or beams, or other methods of construction. Foundations may vary from log or lumber, earth, stone, or perhaps concrete. The size of structures will vary from quite small to large, depending upon the scope and activity housed in it historically. The individual buildings may exhibit evidence of modification and expansion over time as the needs of the owner/operator changed. Generally, the buildings are vernacular in style and exhibit no particular evidence of use of architectural expertise, rather they were built to meet specific needs and appear to be adaptations of commonly accepted late nineteenth or early twentieth century buildings. In some cases use of commercially available plans or building parts may be in evidence. There also may be evidences of local adaptations or uses of state-wide styles

Figure 6 -- Pinnacle and Curtis Coal Company Mine, Routt County.



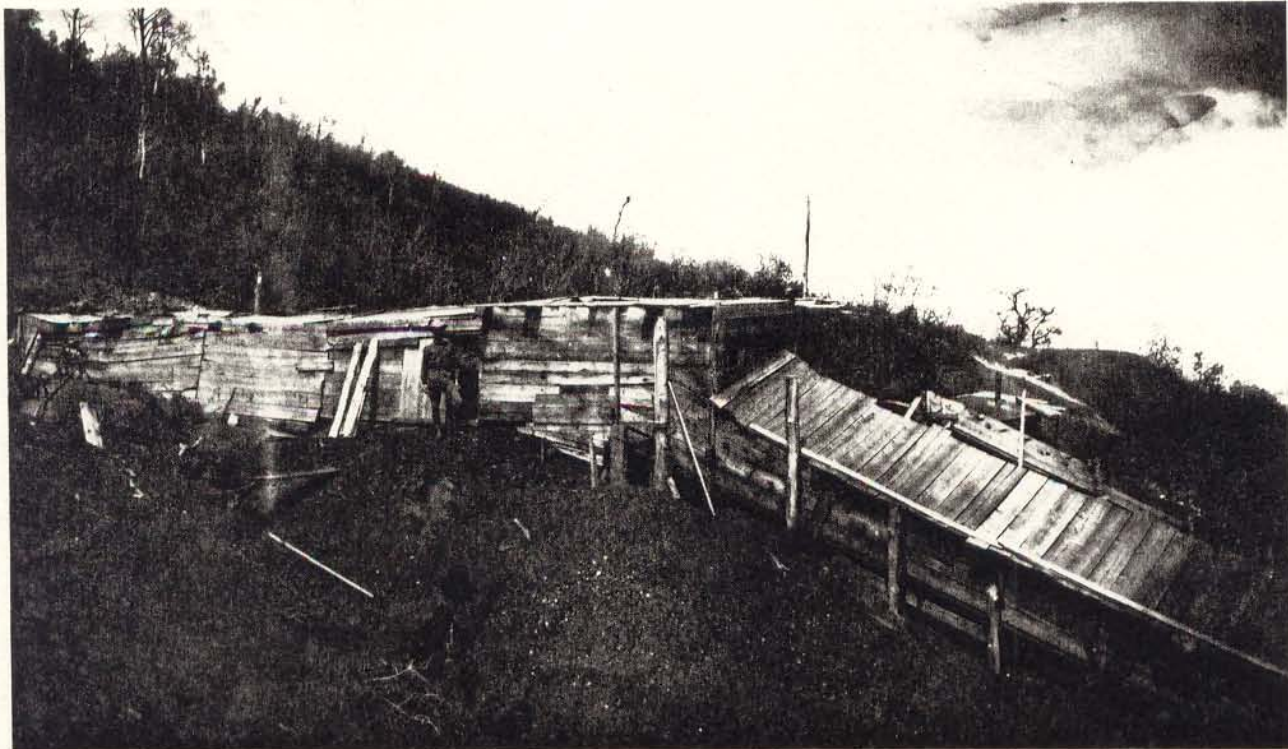
Pinnacle Townsite, 1925, Photo Courtesy U.S.G.S., M.R. Campbell



Curtis Coal Mine, Routt County, Photo Courtesy U.S.G.S., M.R. Campbell

76

Figure 7 -- Two Wagon Mines, Moffat and Routt Counties



Seymour Coal Mine, 1923, Photo Courtesy U.S.G.S., J.B. Eby



Blevins Coal Mine, Moffat County, Photo Courtesy U.S.G.S., E.T. Hancock

77

and construction techniques such as those found in the company towns of the Southern Colorado coal fields. These support properties may include associated water systems or sewage lines, either as flumes, earth-lined canals with wood or mortar headgates, or pipelines.

Some evidence of town planning and adaptations to the local topography will be present because of the necessity of locating support structures near mines or transportation systems. The nearness element is defined as a reasonable walking or commuting distance from the residential areas to the workplace (i.e. one-half hour or less). Topography, coal deposits, and water availability influenced the spatial arrangement and location of individual mines as well as these supporting resources.

The condition of these resources varies from recently active to badly deteriorated and abandoned structures or their archaeological image.

Roads, trails, bridges and rights-of-way associated with this property type all share certain characteristics that lend to a group discussion. First, they were the internal linkages that cemented the local mining community together and to the longer region and beyond. These linear resources may be unique in their association to the community or have been shared with local mines. They are all engineered structures. Bridges frequently are found as part of railroad, road or trail systems. Except for the bridges the resources tend to be long linear features and as such it was determined that to be considered eligible the road or trail had to

exhibit some type of engineering feature clearly associated with engineering and construction techniques that were in general use by road builders during the period of significance within northwestern Colorado. The roads can have materials that include dirt, stone and gravel, or very limited use of asphalt or concrete. Bridges on the roads and trails could be concrete, steel, log, or milled and treated timbers. Generally the planks on the decks will be either surfaced with gravel or the bare planks. The trails can be made of either rock and/or soil with wood, rock, or cement used to help stabilize places subject to washouts and heavy traffic. The trail bridges can be either wood or steel culverts or of wood and/or log construction. Rights-of-way generally will exhibit some type of materials left from their use, such as road surfacing materials or stumps of poles for power or communication.

Specific Types

Several property types are associated with the theme of the coal mining community. The property types illustrate or contain information about domestic households, architecture, refuse disposal, water engineering, ethnicity, residential settlements, spatial arrangement or transportation networks.

DOMESTIC HOUSEHOLDS

The most common property type that illustrates the northwestern Colorado coal mining community is the domestic household. Most typically, the individual household site is a geographical cluster of structural and archaeological features that include a building, one or more domestic trash scatters, and a privy pit all that came from the same time period and are assumed to have been occupied by the same group. In many cases, household properties are small geographical clusters of physical remains within the boundaries of a complex or district; however, in some cases household properties are isolated and found in close proximity to a wagon mine.

Donald Hardesty offers a scheme to interpret mining household properties that suggests three patterns of household organization: the family, the coresidential male group, and the boarding house. Family households are strongly associated with the gender, age, and class structure of the community. Most of the women but relatively few of the men on the mining frontier of the American West lived in family households; for this reason, the family household helps convey the gender structure of the mining community. In addition the family house tends to convey class distinctions within the mining community. The largest percentage of family households, for example, is found in the upper or middle classes of mine owners and managers, merchants, professionals, and artisans or skilled craftsmen (e.g., Mann, 1982; Hardesty, 1988). Working class

miners, and unskilled laborers typically are unmarried. Family house sites are associated with domestic trash scatters that include artifacts diagnostic not only of men, but also of women or children or both.

Another pattern of household organization is one or more male workers living together. Male worker households were no more than loose aggregates living together temporarily to share housing, for mutual protection in a very broad sense, for friendship, or to pool resources. The house sites are associated with domestic trash hot spots that include artifacts diagnostic only of men.

Finally, the third pattern of household organization suggested by many sources is the boarding house. According to Hardesty, the boarding house is a distinctive pattern of household organization that is not only commonly associated with mining communities in the American West but also with industrialism in general. Two key characteristics differentiate these household types, size expressed as square footage and artifact arrays, particularly the presence of larger whiteware platters and serving pieces indicating the "family style" eating situation of a boarding house. Boarding houses will have larger square footages, often more than 600 square feet, while smaller male households will tend toward a maximum size of 350 square feet and not be associated with many age or gender-specific artifacts.⁴²

WATER ENGINEERING AND DEVELOPMENT

Another group of properties associated with both coal mining technology and the coal mining community illustrates water engineering and the development of a water supply. The properties include reservoirs, cisterns, ditches, and water towers or tanks. Some of the properties are likely to be associated with the development of a domestic water supply.

TRANSPORTATION

Several property types are associated with coal mining communities or illustrate and contain information about transportation networks and activities. Among these are railroads, roads, or pathways for pedestrians, animals, wagons and motor vehicles. Most of the properties include only remnants of the road bed, grade, or path; however, some such as a railroad may include not only remnants of the grade but also related artifacts such as ties, rails, spikes or other equipment. Within the Study Area a railroad classification yard at Phippsburg and depots at other towns remain as part of the once larger rail network that served the Yampa Coal Field.

COMMERCIAL

Several building types associated with mining communities have been identified during the project research. These can be most clearly addressed through their function rather than architecture.

For example, along main street in Oak Creek about 1920 many buildings look very similar architecturally, but are differentiated by the signage that indicates their function. Two stories tended to be the maximum height. Wood, false-fronted buildings, stone and brick all were evident along the main streets. Stone and brick seem to have been reserved for the larger, more permanent towns rather than the mining camps. Some specialization in style was noted, such as distinctive school styles, that appear to have been related to function, at least to some degree.

THE MINING LANDSCAPE AS A PROPERTY TYPE

In addition to other property types, the mining landscape constitutes a distinct property type associated with both the theme of coal mining technology and coal mining community. The mining landscape is defined as a geographical region that has been transformed in a distinctive way by mining activities. Mining landscapes are vernacular rather than designed and are considered as a "rural historic landscape" for purposes of evaluation under National Register Criteria (see: NRB 30). The landscapes include a distinctive pattern of natural and human-created landforms, land use zones, circulation networks, boundary markers, buildings and structures, and settlements. Landforms making up the mining landscape include not only natural topographic features such as ravine and hills, but also "created" landforms resulting from mining activities. The mining-created landforms include "deposits"

such as mine waste rock dumps, a variety of surface mining indicators including adits, portals, mine pits, and buildings or their archaeological remains. In addition, mining landscapes associated with underground mining are three dimensional and include a created "underground landscape" consisting of excavated rooms, longwalls, crosscuts, winzes, and the like. Most typical are standing wooden frame buildings, rock buildings, dugouts, foundations and the remains of engines, machines, and buildings, industrial and domestic trash scatters, scattered pieces of mining equipment, and waste rock/spoilage dumps. Circulation networks include primary and secondary roads, railroads, foot paths, and tram cart roads. Settlement clusters include towns, satellite settlements, and other residential clusters, mine clusters, and transportation clusters such as the cluster of railroad buildings and yards at Phippsburg.

Significance

The coal mining community resources, either individually or as part of a district in the Routt and Moffat Counties Coal Study Area, are significant under Criteria A, B, C, or D in that these mining support resources reflect the establishment of quasi-permanent mining related settlement in the area. The period of significance spans the period from 1876 to 1945. These years represent the period from the beginning of settlement that utilized local coal deposits through the period of comparatively large

industrial mining to the end of World War II and the associated movement in techniques toward large-scale strip mines. Within the period of significance there are three sub-periods: 1) the initial years or development prior to World War I; 2) World War I and the 1920s; and 3) the 1930s and World War II. The resources associated with this property type and the context are considered significant at the local and/or state level under the areas of significance of architecture, engineering, exploration/settlement, or commerce.

Road, trail and right-of-way resources are considered to be potentially significant under either Criterion A or Criterion C with the areas of significance being transportation, exploration/settlement, or engineering.

Individual or district community related properties, including households, commercial resources and those associated with a public service function (i.e., school, town hall) can have significance under a variety of Criteria, or may be eligible under more than one Criteria. For example, some households illustrate and contain information about ethnicity or gender (D) and are representative of the built environment associated with the mining community (C). The properties making up the types include standing structures, the archaeological remains of structures and archaeological features such as trash dumps. Architectural property types may be significant under Criterion A because they are associated with and illustrate variability and change in housing conditions and styles of local mining community during the period of significance. The properties also may be significant under Criterion C as examples of

variability and change in architectural styles and construction methods within the Study Area. The property type is likely to represent construction methods and styles of vernacular architecture imported to the Study Area as described above. The property type also may reflect local considerations as to building layout, size and use. Finally, the property type may reflect geographical arrangement related to local topographic constraints.

Criterion D Considerations

For a mining related support resource to be considered eligible under Criterion D it must be an archaeologically interpretable resource in the Study Area and be able to offer significant information related to research questions explained below. Those questions are about the evolution of local communities, the geographical scale of the social and economic networks in which the mining community participated or offer comparative data on occupational and class differences in the degree of participation in local, regional, and national trade networks the occupants participated in. Because the support resources represent a community there will be households of various types in the Study Area that will be able to relate the community to the larger region and state. A number of questions can be examined that have been defined in previous studies of community and western mining. Some of these questions include:

Question 1:

If factors, including topography, minable coal deposit location, and land availability influenced the land use patterns of the Yampa Coal Field, then the relative importance of each land use value will be expressed in the types and complexity of sites throughout the area.

Question 2:

If the industrial mines and mills acted as centripetal forces on the organization of commercial business places in the coal camps of Routt and Moffat Counties, then an order to the commercial district, focussing on the major mines and transportation routes should be present.

Question 3:

If different types of households (i.e., single, coresidential, boarding) were present in the Study Area's coal camps over time, then the relative frequency of different types should reflect changes in the overall demographic composition of the community.

Question 4:

If the local population of miners and mine workers was composed of several distinct ethnic groups then there should be evidences of both common cultural traits linked to occupational endeavors and at least some evidences of cultural distinctions based on ethnicity. Segregation of the racial minority populations from the Euroamerican population may or may not have had an effect on the cultural sharing based on occupational endeavors.

Questions 5:

The choices made by household consumers in the coal mining camps are assumed to be influenced by social and cultural "demand." If such demands originate in class, ethnicity, household size and organization then a correlation between social status, economic status and types of goods consumed should be recognizable and reflective of the local economic order through time.

Question 6:

If boarding houses can be identified at larger communities such as Oak Creek and at company towns such as Pinnacle that correlate in time, then the materials at those sites should reflect both the "family style" environment of the boarding house and the male dominated population of the household. Further, the boarding houses should offer comparative data regarding the types and mix of households with in the community and the life styles of the various households.

Registration Requirements

Resources associated with the coal mining community property type must meet the requirements outlined below to be considered as eligible for inclusion in the National Register of Historic Places. The first requirement is that the property be historically associated with the context, that is it must have been a resource associated with coal mining community activity at the Routt-Moffat Counties Coal Mining Study Area during the period of significance. As well, an individual property or a district must have either been

documentable as part of an important trend, such as town building or be associated with a mine that made a significant contribution to local mining development. The second requirement is that the physical characteristics of a mining community related building or structure must be present, specifically that the resource and outbuildings be of an appropriate style and materials (wood, brick, or similar materials). These elements must be present to convey the historic feeling of the period of significance, including design and setting, thus making the function of the resource and its components readily apparent. The individual buildings must be in their original location or their location during the period of significance to convey the historic feeling. Additions or modifications must not impair the quality of the historic fabric (design, materials, and workmanship) of the individual buildings. Buildings that help convey the consequences of the maturation process in local settlement must have dates of construction during the period of significance. If the individual buildings or structures have lost their ability to convey either their design, materials, workmanship or character/function within the context through natural deterioration or the activities of man during or after the period of significance, then those specific resources shall be considered not eligible or non-contributing. Structures or features that reveal attempts to recontour, fill in or otherwise obliterate any part of the feature shall be considered to have lost their design, setting, workmanship, and association, making them specifically not eligible.

For districts made up of residences, boarding houses, and commercial shops and any other community resources further registration requirements must be met that are necessary to define the district as such. The first requirement is that the district be historically associated with an important trend identified in the context, that is it must contain a majority of resources from the period of significance and been part of an identifiable social or economic pattern. The second requirement is that the physical characteristics of a coal mining community must be present, specifically that setting and feeling remain as they were during the period of significance should still be conveyed by the district. The setting should show evidence of a settlement and land use scheme giving continuity to the district. The district also must convey the spatial association of the various resources within the district to each other. Another element that distinguishes the overall design, setting, and feeling for the district is definable lines of communication/transportation that would have cemented the community/district together during the period of significance. All these elements are needed to aid in the interpretability of the district. As a district is defined in terms of land use it is assumed that location, workmanship, and materials were limited by the nature of the topography and available land and are not issues pertinent to the registration of districts.

For a resource or district to be considered eligible under Criterion D and this property type it must exhibit the archaeologi-

cal remains of a building or complex of buildings and possess a significant subsurface component of materials, in situ and in an unmolested matrix, that through archaeological testing have been proven to contain significant interpretable information that addresses concerns about household or community development, or local social mores, or the local and regional commercial network as specified in the above outlined research questions. If, due to native surface conditions, a subsurface component is not likely to exist, then the surface artifact concentrations must be domestic in nature (i.e., cans, ceramics, glass or bone) and interpretable. The site must hold significant concentrations. Those artifacts must be able to exhibit a chronological element that dates to the period of significance and offer significant interpretable information for the research questions outlined above concerning community, household, social values or commercial networks.

ENDNOTES

1. Frederick J. Athearn, An Isolated Empire, A History of Northwestern Colorado, 3rd ed., (Denver: Bureau of Land Management, 1981), pp. 11-15.
2. William W. Mallory, Geologic Atlas of the Rocky Mountain Region, (Denver: Rocky Mountain Association of Petroleum Geologists, 1972) and Linda L. Duchrow, "Geologic History of Colorado," (Denver: M. A. Thesis, University of Colorado at Denver, 1974), pp. 5-10.
3. Frank Hall, History of the State of Colorado, (Chicago: Blakeley Printing, 1895), 4 vols, vol. 2.
4. Warren L. D'Avevedo, et al, ed., The Current Status of Anthropological Research in the Great Basin, (Reno, Nevada: Desert Research Institute, 1966), pp. 170-185.
5. Donald Jackson and Mary Lee Spence, The Expeditions of John Charles Fremont (Urbana: University of Illinois Press, 1970), 2 vols., pp. 400-480.
6. William H. Goetzmann, Exploration and Empire, The Explorer and Scientist in the Winning of the American West, (New York: Knopf, 1966), pp. 4-8, 14-19, 47-64; LeRoy R. Hafen, "Fort Davy Crockett," The Colorado Magazine, 24 (1952): 17-33; Ferdinand V. Hayden, United States Geologic and Geographic Survey of the Territories, 12 vols. (Washington: Government Printing Office, 1867-1879), 1876, pp. 340-355; Frances William Binkley, "The Hayden Survey," (M. A. Thesis, University of Colorado, 1945), pp. 25-75; and John Rolfe Burroughs, Where the Old West Stayed Young, (New York: William Morrow Co., 1962), pp. 30-45.
7. James Spencer Cannon, Mine Control: Western Coal Leasing and Development, (New York: Council on Economic Priorities, 1978), pp. 1-15; and Anna Johnson, Relentless Quest for Coal, (Glenwood Springs: p.p., 1983), pp. 20-25; and E. Hancock, Geologic and Coal Resources, Moffat County, Colorado, (Washington: Government Printing Office, 1925), various.
8. Albro Martin, Enterprise Denied: The Origins of the Decline of American Railroads, (New York: Columbia University Press, 1971), pp. 7-27; Marius R. Campbell, Contributions to Economic Geology, 1907, (Washington: United States Department of Interior, 1909), pp. 25-115; State Board of Immigration, Colorado Yearbook, 1910, (Denver, State Board of Immigration, 1911), various.
9. E. T. Hancock, Geology and Coal Resources of the Axial and Monument Butte Quadrangles, Moffat County, Colorado, (Washington: Government Printing Office, 1925), pp. 52-55; and Marius R.

Campbell, The Twenty Mile Park District of the Yampa Coal Field, Routt County, Colorado, (Washington: Government Printing Office, 1923), pp. 67-69.

10. Ibid.; James Whiteside, Regulating Danger, The Struggle for Mine Safety in the Rocky Mountain Coal Industry, (Lincoln: University of Nebraska Press, 1990), various; and especially good on the mechanization of coal mining is Keith Dix, What's A Miner To Do? The Mechanization of Coal Mining, (Pittsburgh: University of Pittsburgh Press, 1988).

11. Ibid.

12. James Muhn and Hanson Stuart, Opportunity and Challenge, the Story of BLM, (Washington: Bureau of Land Management, 1988), pp. 1-54.

13. Ibid., pp. 23-119.

14. 1876 Hayden Survey Annual Report, pp. 58, 59.

15. Second Inaugural Address of His Excellency, Frederick W. Pitkin to the Two Branches of the Legislature of Colorado, January 11, 1881.

16. Campbell, Contributions, pp. 25-54; and Hancock, Coal Resources, pp. 50-100.

17. Engineering and Mining Journal, 3 December 1881; Denver Republican, 2 December 1881.

18. Weston, Coal, p. 75; CWA Interviews, Routt County, E. E. Helm, 358; and Denver Times, 4 June 1899.

19. Fenneman and Gale, Coal, p. 85.

20. Whiteside, Regulating, p. 7.

21. Ibid.

22. Ibid., various.

23. Ibid, various.

24. Marie Emily Ottens, "An Economic Analysis of Resource and Development Potential for Moffat, Rio Blanco and Routt Counties, Colorado," (M.A. Thesis, University of Colorado, 1957), p. 100-102; and Jim Stanko, Historic Guide to Routt County, (Denver: Tread of Pioneers Museum, 1979), various; and Weston, Coal, p. 9.

25. Whiteside, Regulating, p. xiii.

26. Denver Times, 27 September 1902; and Steven F. Mehls, "Westward from Denver: The Obsession of David Moffat," Railroad History, 146 (Spring, 1982): 29-40.
27. Commercial and Financial Chronicle, 25 October 1902.
28. Denver, Northwestern and Pacific Collection, Box 5, Box 2, Colorado Historical Society; Fenneman and Gale, Coal, pp. 68-69; Denver Times, 17 August 1902, 24 June 1902, 23 December 1902.
29. Denver Times, 23 December 1902; Yampa Coal Fields, Denver, Northwestern and Pacific Collection, Box 5, Colorado Historical Society; Denver Northwestern and Pacific Survey Books, University of Colorado, Western History Collections, Box 2, Book 98, 99.
30. Irving Hale Papers, Denver Public Library, Western Historic Collections, Folder 818, 2 July 1904.
31. Steven F. Mehls, David H. Moffat, Jr.: Early Colorado Business Leader, (New York: Garland Press, 1989), see Chapters 1, 3, 4 and 5.
32. Stanko, Routt, various; Bureau of Land Management Files, Colorado State Office, Lakewood, Colorado.
33. Ibid.
34. Bureau of Land Management, Colorado State Office, Lakewood, Colorado.
35. "Mt. Harris: Once the Largest Town in Routt County, Mount Harris is now only a vivid Memory," Steamboat Pilot, no date,; personal communication, Steven Mehls with Marianne Kennerly, Planning Tech, Routt County Regional Planning Commission, October, 1990.
36. Ibid.; Stanko, Routt, various.
37. Coal Resources of Colorado, (Denver: Geological Survey Bulletin 1072), pp. 175-177; Colorado Yearbooks, various dates.
38. Rocky Mountain News, 3 January 1942, 1 March 1942; Denver Post, 13 July 1942, 11 October 1945.
39. Rocky Mountain News, 4 November 1947, 20 November 1949, 13 April 1951, 17 January 1955.
40. Bureau of Land Management, Colorado State Office, Lakewood, Colorado; Rocky Mountain News, 15 June 1981; Denver Post, 2 April 1978; Duane Vandebusch and Duane A. Smith, A Land Alone: Colorado's Western Slope, (Boulder: Pruett Publishing Co., 1981), pp. 231-308.

41. National Park Service, National Register Bulletin 16,
Washington, D.C.: National Park Service, 1986, p. 8.

42. see: Donald L. Hardesty, The Archaeology of Mines and Miners,
(Ann Arbor: Society for Historical Archaeology, 1988); and Ralph
Mann, After the Gold Rush, (Stanford: Stanford University Press,
1982).