

ABANDONED UNDERGROUND COAL MINES OF DES MOINES, IOWA AND VICINITY

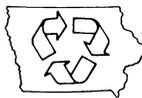
Technical Paper No. 8



Iowa Department of Natural Resources

Larry J. Wilson, Director

December 1989



Printed on Recycled Paper

ABANDONED UNDERGROUND COAL MINES OF DES MOINES, IOWA AND VICINITY

Technical Paper No. 8

Prepared by
Mary R. Howes
Matthew A. Culp
Helene Greenburg

Energy and Geological Resources Division
Geological Survey Bureau

December 1989

Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation
and the U.S. Department of Interior, Office of Mining and Land Reclamation
provided financial support for the research which is presented in this report.

**Iowa Department of Natural Resources
Larry J. Wilson, Director**

TABLE OF CONTENTS

	Page
PART I. COAL MINING AND COAL MINES IN THE DES MOINES, IOWA AREA	1
INTRODUCTION	3
SOURCES OF INFORMATION AND RELATED WORK.	4
COAL MINING IN THE DES MOINES AREA	4
Mining History.	4
Mining Methods	5
ABANDONED COAL MINES IN THE DES MOINES AREA	8
PART II. GEOLOGY OF THE DES MOINES AREA	11
INTRODUCTION	13
GEOLOGIC SETTING OF THE DES MOINES AREA	13
DEPOSITIONAL ENVIRONMENT OF THE CHEROKEE GROUP STRATA IN IOWA.	13
STRATIGRAPHY OF THE DES MOINES AREA PENNSYLVANIAN STRATA.	15
GEOLOGY OF THE NORTH DES MOINES DISTRICT	17
GEOLOGY OF SURFICIAL MATERIALS	19
ACKNOWLEDGEMENTS	21
GLOSSARY OF GEOLOGIC AND MINING TERMINOLOGY.	23
REFERENCES	25

LIST OF FIGURES

		Page
Figure 1.	Map showing study area included in this report	3
Figure 2.	Features of a room-and-pillar mine, the most common method of mining in the Des Moines area.	6
Figure 3.	Features of a longwall mine, a method used by a few mines in the Des Moines area where the coal was thin and the roof rock was stable.	7
Figure 4.	Bedrock geologic map of Iowa showing distribution of Pennsylvanian-age rocks	14
Figure 5.	Depositional model of a peat-forming environment on a river delta in a coastal region	15
Figure 6.	Generalized stratigraphic section of the Cherokee Group in Iowa. Laddsdale, Cliffland, and Blackoak coals were mined in the study area	16
Figure 7.	Composite geologic section prepared from nine cores drilled in southeast Des Moines	18
Figure 8.	Map of the North Des Moines District showing mines, locations of Pennsylvanian channels, and probable limits of coal deposits	20

LIST OF TABLES

Table 1.	Summary of mine site locations and extents	8
-----------------	--	---

LIST OF PLATES

Plate I.	Underground coal mines of Des Moines, Iowa and vicinity	pocket
-----------------	---	--------

LIST OF APPENDICES

		Page
APPENDIX I.	LIST OF MINES	27
APPENDIX II.	ALPHABETIC LIST OF MINE NAMES.	69
APPENDIX III.	UNLOCATED MINES IN POLK COUNTY.	77
APPENDIX IV.	PREPARATION OF UNDERGROUND COAL MINES OF DES MOINES, IOWA AND VICINITY	87
APPENDIX V.	SOURCES OF MINE DATA	89
	IOWA MINED LANDS DATA SYSTEM	91
	RESTORATION OF COAL MINE MAPS AND DATA COLLECTION	91
	STATE MINE INSPECTORS' MAPS AND FILES	91
	PUBLISHED DESCRIPTIONS OF COAL MINING AND GEOLOGY	92

PART I.

**Coal Mining and Coal Mines
in the Des Moines, Iowa Area**

INTRODUCTION

Des Moines, Iowa, the state's capital city, is situated within a portion of the state underlain by abundant coal resources. Early in the city's history, local deposits of coal were a readily available source of fuel for homes, industries, and railroads. Eventually, an underground mining industry arose in the Des Moines area and persisted for over 100 years (1840 to 1947). Recorded production totalled 50,965,427 tons from original reserves estimated at 750 million tons in Polk County (Landis and Van Eck, 1965).

Little direct evidence of the once thriving coal industry is visible in the present-day Des Moines area. However, the underground openings left by mining operations continue to cause problems long after mining ceased. Undermined areas remain subject to subsidence (collapse) of the land surface until the mining opening has become stable. Subsidence in an urban area poses varying degrees of risk to people and property affected by the collapse. Incidents of mine-related subsidence have occurred in the Des Moines area and will probably persist.

Documentation of the coal industry survives in the form of surveyed mine maps, published records, and files accumulated by agencies responsible for monitoring and regulating the industry. Although

these records are incomplete, partial delineation of the undermined areas and inferences about the local geology can be made from them.

The purpose of this study is to compile information on past coal-mining activity in the city of Des Moines and the surrounding urbanized area. Greatest emphasis is placed on delineating undermined areas and summarizing documentation from the available records. The limits of the study area encompass the most densely populated portion of the Des Moines area affected by undermining and includes all known underground mines in Polk County. Figure 1 shows the location of the study area and identifies the included communities. Surface mines, not included in the study area, were developed in the southeastern part of the county and produced a small amount of coal during the mid-1950s.

This report consists of five sections: 1) a discussion of coal mines and mining in the Des Moines area; 2) a map which shows locations and extents of identified mines superimposed on a map of Des Moines-area streets; 3) a discussion of local geology; 4) a glossary which explains geologic and mining terminology; 5) appendices which list data for each mine and describe sources and compilation of data.

This report comprises the best currently available information on underground coal mines in

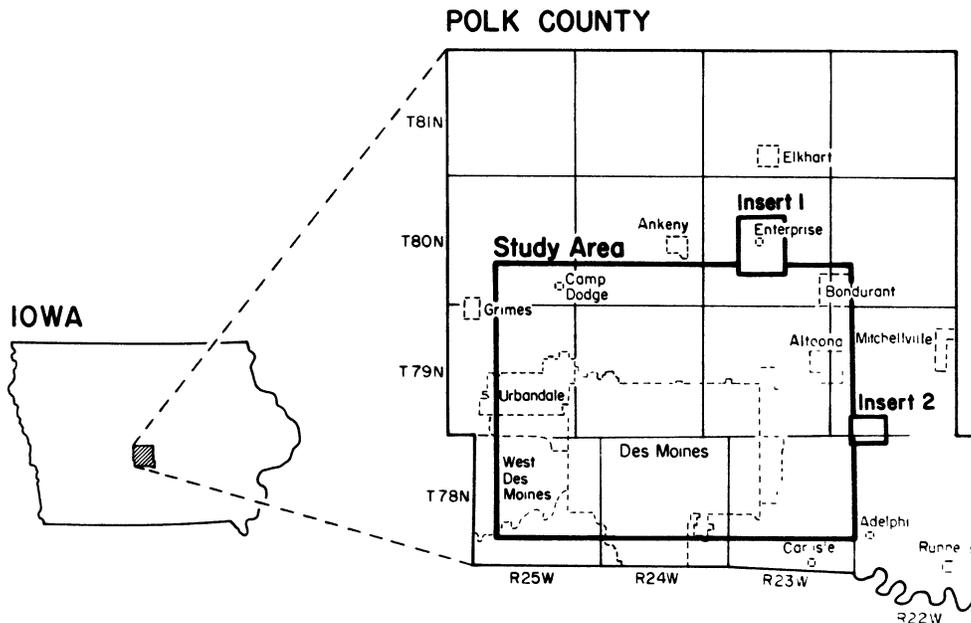


Figure 1. Map showing study area included in this report. Inserts 1 and 2 show the correct locations of portions of the area which were inset to make Plate 1.

the Des Moines area. It includes numerous revisions and additions to the report issued by the Iowa Geological Survey (IGS) in 1979. These refinements were achieved by careful study of a large number of restored mine maps including many which were not previously available. Additionally, use of computer-aided design techniques to prepare the map (Plate I) allowed more accurate transfer of information from mine maps. Caution is advised, however, in using the current report because part of the undermined area cannot yet be delineated due to incomplete or conflicting information.

Documentation of abandoned underground mines, especially in urban areas, is essential for evaluation of potential and existing mine subsidence problems. This report is meant to serve as a reference to known abandoned coal mines, but does not replace mine maps and detailed subsurface geologic data where more specific information is needed. This report serves, secondarily, as a historical reference for what was once an important industry in Des Moines.

SOURCES OF INFORMATION AND RELATED WORK

Preparation of this report was facilitated by results of a number of previous projects. The Des Moines area was included in an inventory of mine-related problems compiled by the Iowa Geological Survey (IGS) from 1979 through 1981 as part of the Abandoned Mine Lands Inventory under contract with the U. S. Department of Interior, Office of Surface Mining. Data for all mines which operated in Iowa were compiled as part of the Mineral Industry Location System under an Iowa Geological Survey contract with the U. S. Bureau of Mines in 1982. Coal mine names, locations, and dates of operation form a large portion of the data. Documentation of abandoned coal mines in Iowa was compiled and organized to create the Iowa Mined Lands Data System as part of a contract with the Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation, from 1986 to 1988. This compilation of mine-related data and maps provided the information presented in the appendices and Plate I. It is described in further detail in Appendix V.

Recent episodes of mine-related subsidence in southeastern Des Moines were reported by Avcin

(1978, 1979) which prompted renewed interest in the abandoned mines underlying the area. In response, Lancaster and Avcin (1979) prepared a map of the Des Moines area published on a limited basis showing outlines of abandoned mines and a compilation of related data. The Des Moines City Engineer's Office modified the map by adding a city street base map and released it in that form.

COAL MINING IN THE DES MOINES AREA

MINING HISTORY

Soldiers stationed at Fort Des Moines about 1840 were the first to mine coal in the area from outcrops along the Des Moines River valley. One of these early mines was located near the Center Street dam on the Des Moines River (Sec. 4, T78N, R24W). However, coal mining did not become an important industry until about 25 years later. The development of coal resources in Des Moines was slowed by an abundant wood supply, unavailability of effective mining techniques, and inadequate transportation (Lees, 1908).

The organization of the Des Moines Coal Company by Wesley Redhead in 1865 marked the beginning of coal mining on a commercial scale. He opened a slope mine north of the city on the west side of the Des Moines River named the Des Moines Coal Co. Mine, indicated as #50 on Plate I. The fledgling coal-mining industry grew steadily and by 1876, 500 men were employed in the mines producing 150,000 bushels (approximately 8,000 tons) of coal annually (Lees, 1908). In 1893, records show there were twenty-three mines operating in Polk County. Twenty supplied coal for the "shipping" market, which implies they were large mining operations. Eighteen were equipped with the latest (for the time) models of steam-powered hoisting engines (Lees, 1908). Most mining activity at this time centered around the community of Sevastapol immediately south of the confluence of the Des Moines and Raccoon rivers. The Pioneer (#92 on Plate I) and Eclipse (#97 on Plate I) mines were major producers at this time.

Des Moines benefitted from the growth of its mining industry. Coal mines provided employment as well as fuel for homes, industries, and railroads. The railroad system expanded in response to the increased availability of fuel and the demand for

transportation of the coal to other locations. Railroad spurs were commonly extended to the hoisting shafts of many of the larger mines so that coal could be loaded directly onto rail cars. These large "shipping" mines made Polk County a leading coal producer in Iowa.

Coal production continued to increase with the adoption of more efficient mining methods and the opening of new mines. From 1895 to 1905, over seven million tons were produced in Polk County. From 1906 to 1915, production doubled to over 14 million tons. Unfortunately, the rapid growth of the coal industry was accompanied by increasing numbers of mine-related injuries and fatalities. Early reports (until about 1915) of the State Mine Inspectors' Office include long lists of mining casualties.

Polk County ranked second (Monroe County ranked first) in total coal production during the height of the coal-mining industry. Coal production reached its peak in Polk County (and throughout Iowa) in 1917, when Polk County mines produced 1,880,812 tons of coal and employed nearly 3,000 mine workers. Total coal production for the state was 9,049,806 tons that year (State Mine Inspectors' Report, 1917). United States involvement in World War I was the primary cause for increased coal production. The coal mined in Iowa was shipped to Illinois and Kentucky to replace coal shipped from those states to industrial areas further east for the production of war materials.

Iowa coal production declined sharply with the loss of out-of-state markets after World War I. During World War II, labor shortages and development of new energy sources such as petroleum, hydroelectric, and nuclear power caused the further decline of the coal industry. By 1945, only four underground coal mines remained in operation in Polk County, employing 218 people and producing 128,311 tons of coal. The last underground coal mine in Polk County was the Central Service Mine No. 6 (#45 on Plate I) which closed in 1947.

Hinds (1908), Bain (1896), and Keyes (1894) used data collected from coal mines, coal exploration drilling, water wells, and outcrops to describe three coal seams which reached mineable thickness in the Des Moines area. They were referred to, in descending order, by the informal designations "first vein," "second vein," and "third vein." Some local names such as "Swanwood vein" or "Hastie vein" were used as well. Using this

terminology, the historical descriptions suggest that the "first vein" was the smallest producer, probably because it was thin or sporadic in occurrence. The bulk of coal was produced from the "second vein" and "third vein," with the latter most often identified as the mined seam. The informal stratigraphic nomenclature used at the time did not imply that the coal seams were continuous or could be traced across the Des Moines area.

Mining was complicated by discontinuities and irregularities ("faults" in miner's jargon) characteristic of coal seams in the Cherokee Group. "Faults" often limited the extent of mineable coal and contributed to poor roof conditions or intractable flooding problems in the mines. Notes about these problems were commonly added to the mine maps and records as they were prepared.

Multiple-level mining was a common practice where two coal seams in vertical succession reached mineable thicknesses. Upper and lower levels of the mine were usually connected by a shaft or slope, although in some cases they may not have been operated by the same mining company. The Norwood-White mines No. 4 and No. 5 (#8 and #7 respectively, on Plate I) each operated in a different coal seam. A connecting shaft is shown on the maps for these mines.

MINING METHODS

The earliest mines were small drift mines located along streams and river banks and consisted of tunnels dug into an outcropping coal seam. These mines were operated by a few individuals and production was generally low. They were eventually replaced by larger, more efficient operations.

Room-and-pillar mining was the most common method used in the Des Moines area (figure 2). In this method of coal mining, a series of elongate, rectangular rooms were created as the coal was mined. The rooms were separated by pillars of coal left behind to support the roof (overlying rock). Typically, the rooms were arranged at right angles to two parallel corridors which served as haulageways. The parallel haulageways were used to direct movement of miners and coal and as a ventilation system for the mine. This method allowed removal of 40 to 50% of the coal. It was common practice to mine ("rob") the pillars just prior to abandonment to extract the last available coal from the mine. Consequently, less than 50 to

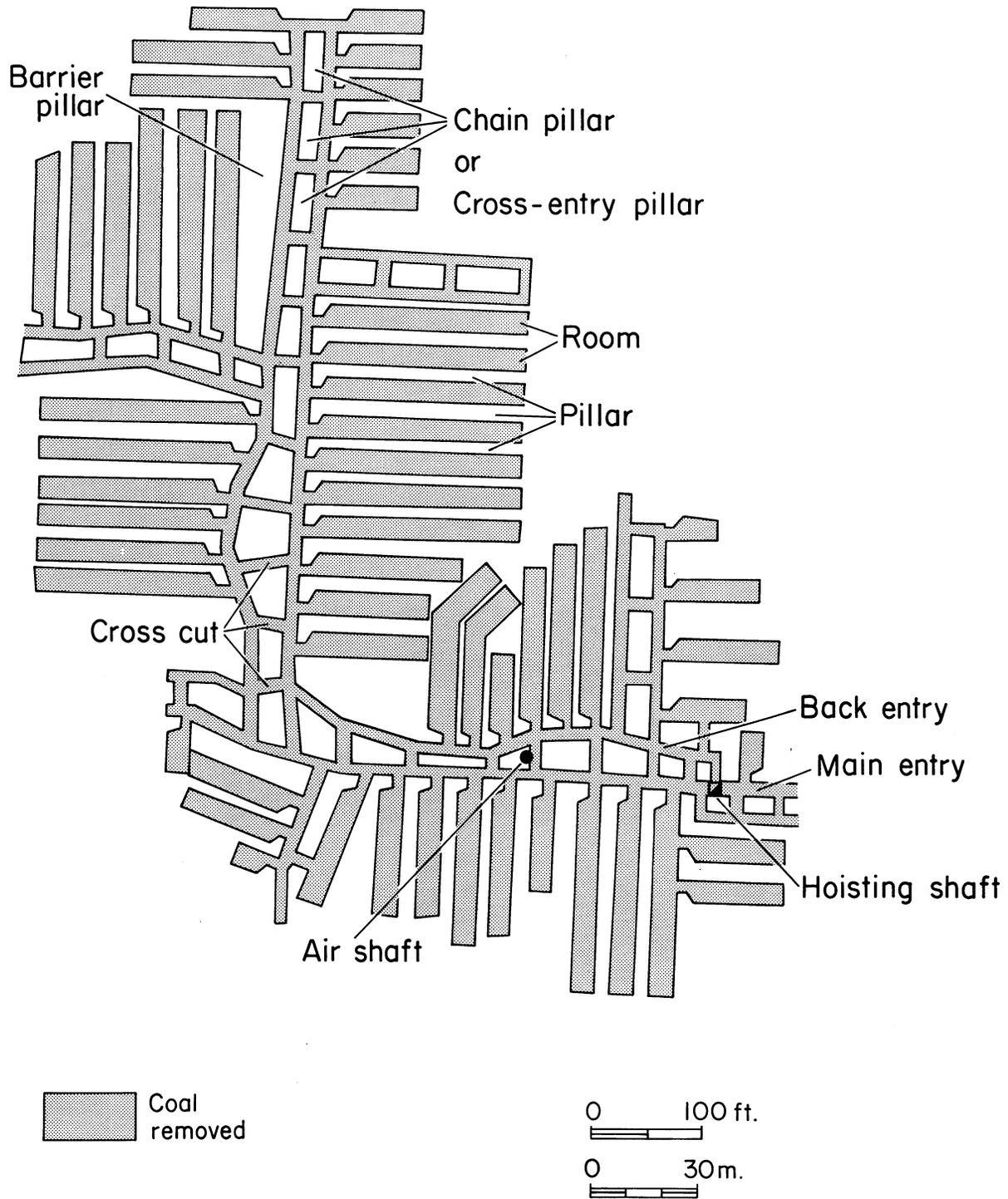


Figure 2. Features of a room-and-pillar mine, the most common method of mining in the Des Moines area. Fifty to sixty percent of the roof area is left supported by coal pillars, although pillar "robbing" decreased the percentage of roof support substantially in some mines.

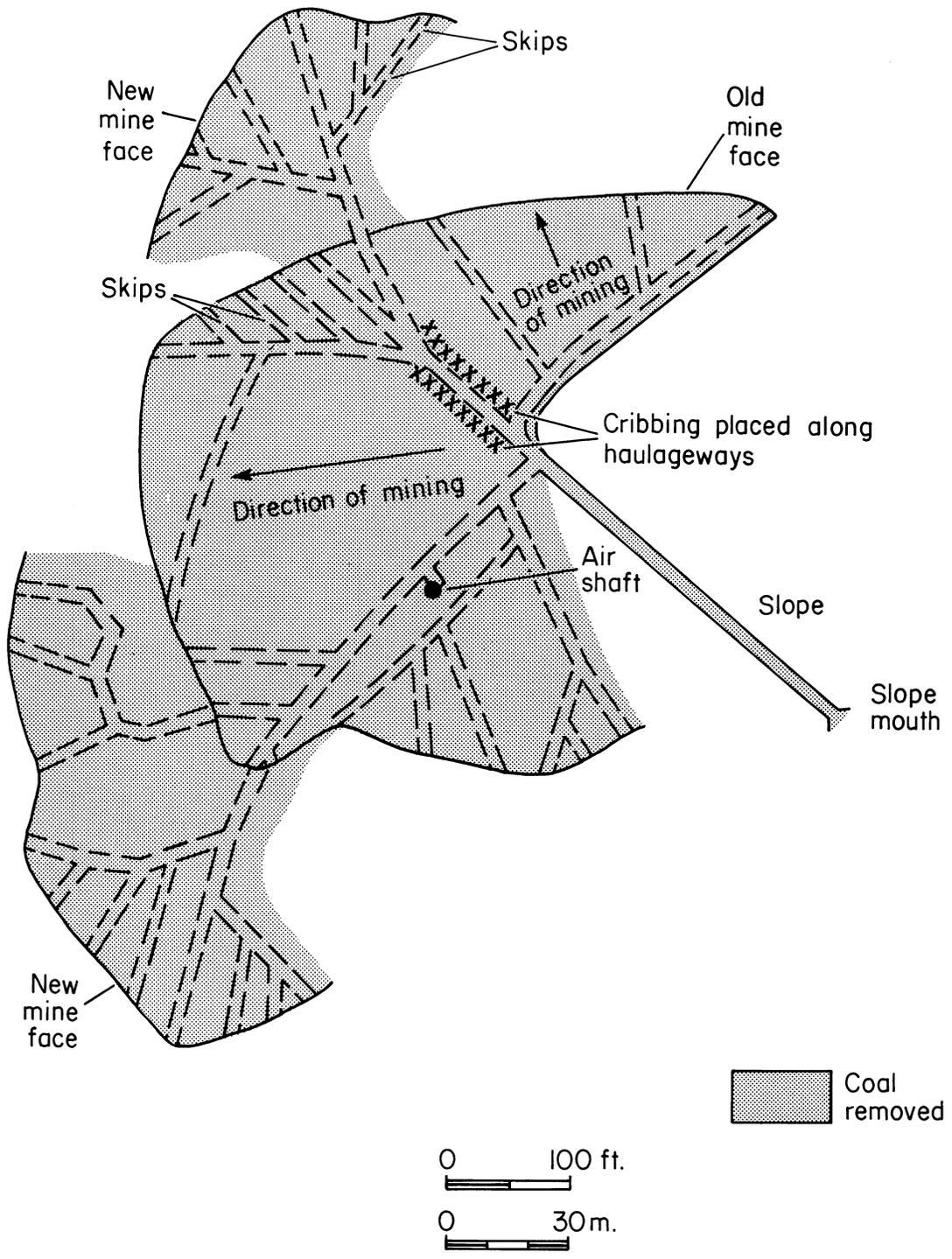


Figure 3. Features of a longwall mine, a method used by a few mines in the Des Moines area where the coal was thin and the roof rock was stable. Nearly 100% of the coal was removed allowing the mine roof to collapse soon after mining. Cribbing (artificial roof support) was installed along the main haulageways to keep them open.

Table 1. Summary of mine site locations and extents.

Type of Information	Number of Mines	Located on Plate I
Mines with known extents	126	
Source of information		
Mine maps	101	yes
State Mine Inspectors' Maps	15	yes
Lease blocks from Annual Reports	10	yes
Mines with unknown extents	96	
Source of information		
Various, location known, extent unknown	34	yes
State Mine Inspector's files, locations, extents unknown	62	no
TOTAL NUMBER OF MINES, ALL TYPES	222	

60% of the roof area was supported when the mine was abandoned, increasing the possibility of roof collapse (Olin, 1965).

Longwall mining was used less often in the Des Moines area, usually as an adjunct to room-and-pillar mining. This method was typically resorted to where the coal seam was too thin to be economically mined by room-and-pillar methods or where the roof rock was exceptionally competent and immediate collapse was unlikely. Longwall mining was much more common in other areas of Iowa such as Centerville in Appanoose County (Howes et al., 1986). In longwall mining, entries were dug outward in a branching pattern into the coal seam and artificial support (usually wood), called "cribbing," was installed along the entries. Then the coal was mined outward from the entries in a fan-shaped pattern (figure 3). Longwall mining allowed removal of 90% or more of the coal.

Most of the mine entrances in the Des Moines area were vertical hoisting shafts, though a few slope entries were dug for shallow coal seams or coal outcrops along the river-valley bluffs. Air shafts were dug in most mines for air circulation and emergency exits.

Coal was mined largely by hand labor when the industry flourished in the Des Moines area. At the working face the coal seam was drilled and the

holes were loaded with blasting powder to produce a controlled "shot" (a blast to fracture and loosen the coal). It was then further broken-up using picks and other hand tools. Small coal cars which were pulled by ponies or pushed by men ("pushers") over tracks that ran along the haulageways carried the coal to a central shaft. From there it was hoisted to the surface where it was loaded onto railroad cars or piled for storage. The hoists were powered by steam engines or "horse gins" (Jervis et al., 1951).

ABANDONED COAL MINES IN THE DES MOINES AREA

A total of 222 coal mines operated in the Des Moines area during the period of active coal production. The data available for each mine vary greatly in both quantity and accuracy (Table 1). This study located 160 (shown on Plate I) of the 222 mines and delineated the mined-out extents for 126. Detailed surveyors' mine maps are available for 101 of the locatable mines and are considered the most accurate source of mine locations and extents. Where more than one mine map was available for a mine, the most recent or most extensive was used for mapping. Ideally, this map was drafted after the mine was abandoned, insuring that the outline

on Plate I represents the maximum extent of the mine. When these maps were not available, the most recent revisions were used to obtain the mine outline. Measurements from mine maps showed that an area totalling 12,366 acres (19.3 sq. mi.) is undermined by these well-documented mines.

Approximate extents for fifteen mines were obtained from State Mine Inspectors' maps. Comparisons of outlines on these maps with detailed mine maps show that some of the State Mine Inspectors' maps are inaccurate. Therefore, the outlines (Plate I) for these fifteen mines should be viewed as approximate and for this reason they are not included in the total acreage of undermined area. The Western Coal Co. Saylor Mine (#10) is notable because part of its outline was taken from a mine map and part from the State Mine Inspectors' maps. The portion outlined from the mine map was included in the total acreage of undermined land, but the portion obtained from the State Mine Inspectors' maps was not.

The tracts leased by coal companies (lease blocks) outlined in some IGS Annual Reports (e.g., Hinds, 1908; Lees, 1908) were used to show the approximate extents of ten mines. It was not possible to determine how closely the mined areas agreed with the lease blocks; therefore, these outlines should also be viewed as approximations of the actual undermined areas and are not included in the total acreage affected by underground mines.

Thirty-four mines were located for which no extent could be determined. The sources for these included IGS Annual Reports, State Mine Inspectors' Reports, and other unpublished documents. These mines are shown on Plate I as numbered triangles and are included in Appendices I and II. Many of these mines operated before reporting requirements were implemented so it is probable that no maps were filed with the State Mine Inspectors' office. Some of these mines may have been quite large, but their impact on the Des Moines area is difficult to assess because so little is known about them.

Sixty-two additional mines which could not be located were documented for Polk County (Appendix III). The records for these mines lacked location data or contained only vague references such as a post office address. Some of these may represent alternate names for mines which have already been located. Because little is known about them, any assessment of the area they undermined is presently impossible.

As the preceding discussion indicates, the undermined area shown on Plate I is known to be incomplete. The number of mines comprising the well-documented undermined area is 44% of the total number of mines known to have operated in the Des Moines area. The remaining 56% of the total number includes all mines with poorly documented or unknown extents. The total acreage affected by these poorly documented mines is potentially large and their impacts are difficult to assess because so little is known about them.

PART II.
Geology of the Des Moines Area

INTRODUCTION

The geologic setting dictates the location of coal mines, the methods used in mining, and the impact of coal mines on the environment. The following discussion of coal geology is included to further explain the distribution of mining and consequent potential problems related to abandoned mines. An understanding of geologic conditions and processes is not essential to using the abandoned mine map and related information, but is included to provide further information about the area and the mines. A glossary of geologic and mining terms is included at the end of this report to aid the reader.

An economically mineable coal deposit results from a favorable sequence of geologic environments and processes: production and accumulation of peat, burial of the peat to sufficient depth for an adequate period of time to convert it to coal, and uplift of the coal and erosional downcutting of overlying materials bringing it close enough to the surface to be reached by current mining techniques.

Geologic conditions can also affect environmental problems caused by coal mining either during mining or for a period of time following completion of mining. Mine-related subsidence can be delayed or aggravated by physical characteristics of the overburden. Properties of consolidated and nonconsolidated overburden such as permeability, water-table elevation, crushing and shear properties, are complexly interrelated making mine subsidence difficult to characterize. Settling of structures caused by inappropriate construction techniques or instability of surficial material may mimic the subtler effects of mine subsidence in unmined areas or aggravate damage caused by mine subsidence. Under these circumstances, it is often virtually impossible to determine the cause of settling.

GEOLOGIC SETTING OF THE DES MOINES AREA

The bedrock over most of the Des Moines area is assigned to the Cherokee Group of the Pennsylvanian System (figure 4). Small areas of younger Marmaton Group strata are present in the southern and southwestern parts of Polk County (figure 4). In the study area the Pennsylvanian-age

strata are separated from underlying Mississippian-age carbonate rocks (e.g. limestone, dolomite) by a major unconformity (Ravn et al., 1984). The Pennsylvanian-age rocks are overlain by Pleistocene glacial tills, loess, and alluvium.

Des Moines and the surrounding area are situated near the northern edge of the Forest City Basin, a shallow Pennsylvanian-age structural basin centered in northwestern Missouri. The result is a gentle regional dip in the strata southwestward toward the center of the basin with gradual thickening of the Pennsylvanian-age rocks to a maximum of approximately 1700 ft. in the southwestern part of Iowa. The maximum thickness of Pennsylvanian-age rocks in the Des Moines area is approximately 450 ft. with the greatest thickness present in the southwestern corner of the county.

DEPOSITIONAL ENVIRONMENT OF THE CHEROKEE GROUP STRATA IN IOWA

The Cherokee Group strata of Iowa were deposited on the shoreline of an ancient sea situated near the equator during Pennsylvanian time (280-310 million years ago). In general terms, deposition occurred on large river-delta complexes. The dominant process in this environment is transport and deposition of sediment by fresh-water streams draining from the continental landmass into relatively shallow seas creating an environment favorable for establishment of coastal swamps. Deposits formed in this fluvial-deltaic environment are typically nonmarine clastic sediments (e.g. mud, sand) derived from the landmass. The deposits are usually lenticular and exhibit rapid lateral variations both in lithology and thickness. The nonmarine deposits are interbedded with sparse, lenticular marginal marine sediments, deposited in brackish water, gradational to marine shales and limestones, deposited in seawater. A tropical climate provided an ideal environment for lush plant growth while the depositional environment determined the type and amount of peat which accumulated as well as the impurities incorporated with the plant matter. Topographic relief was very low and the water table was at or near the land surface during deposition. Eustatic (region-wide) sea level changes exerted a strong influence on deposition in this environment by raising and lowering stream base levels and the

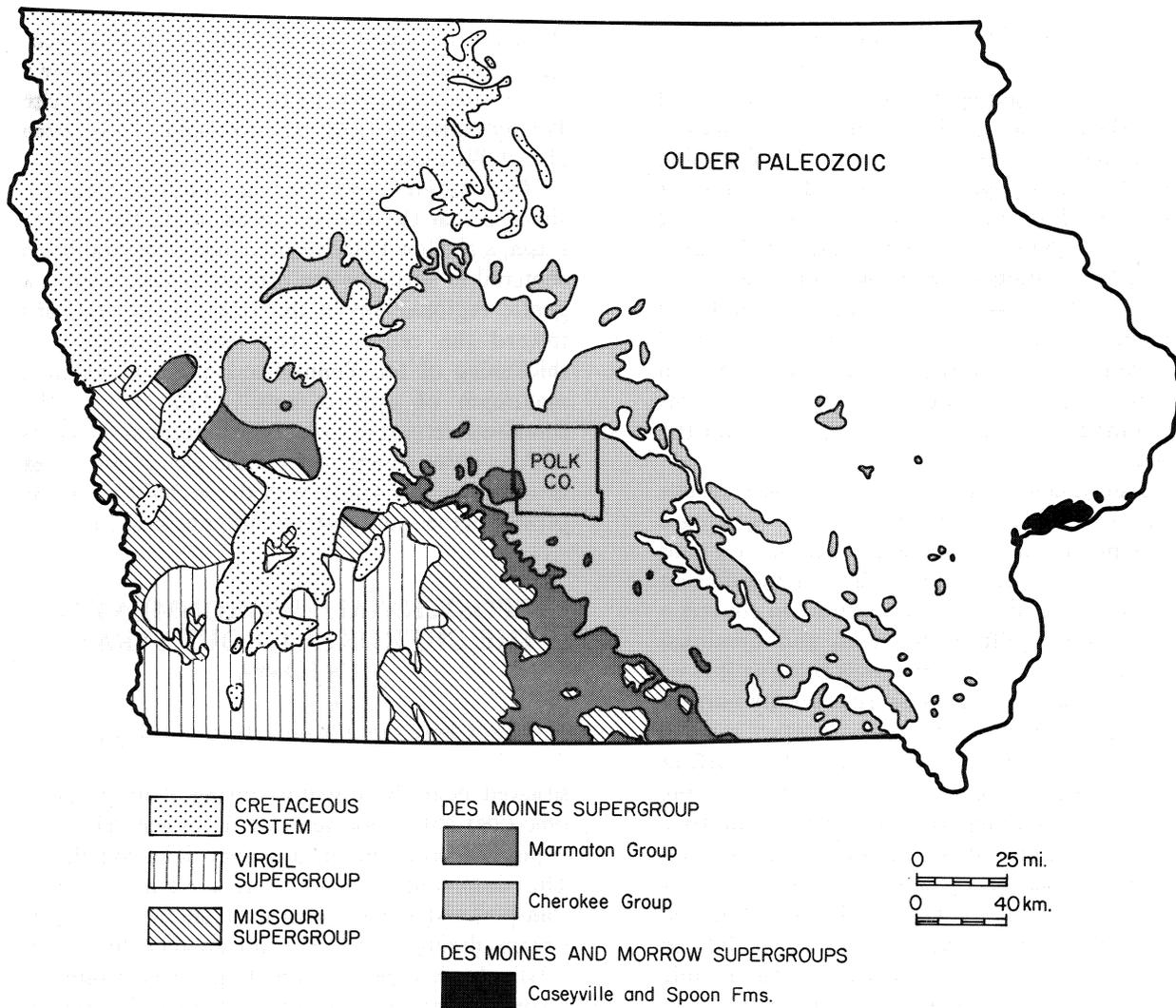


Figure 4. Bedrock geologic map of Iowa showing distribution of Pennsylvanian-age rocks. Pennsylvanian strata are absent in the area marked "Older Paleozoics" which combines all older strata. The Cretaceous overlies and obscures the Pennsylvanian in western and northwestern Iowa. Unconsolidated Pleistocene deposits cover the bedrock throughout the state.

water table. The high water table and poor water circulation provided favorable conditions for the preservation and conversion of the plant material to peat. Later a large influx of sediment buried the peat initiating the changes that ultimately produce coal. Conversion to coal proceeded over a period of time as depth of burial increased. The cumulative effects of burial depth and time determined the coal rank. Circulating groundwater precipitated additional impurities in coal fractures during burial including pyrite, sphalerite, calcite, quartz, and clay.

Horne et al. (1978) suggested a model for depositional environments of coal in fluvial-deltaic settings based on extensive studies of drill hole data and outcrops in the eastern United States. Figure 5, adapted from that work, illustrates the type of setting which may have produced many of the Cherokee Group coals. Note the lenticular coal beds which are limited in extent by channels filled with clastic sediments (mud, silt, and sand). The small embayments between the channels would allow the development of small amounts of

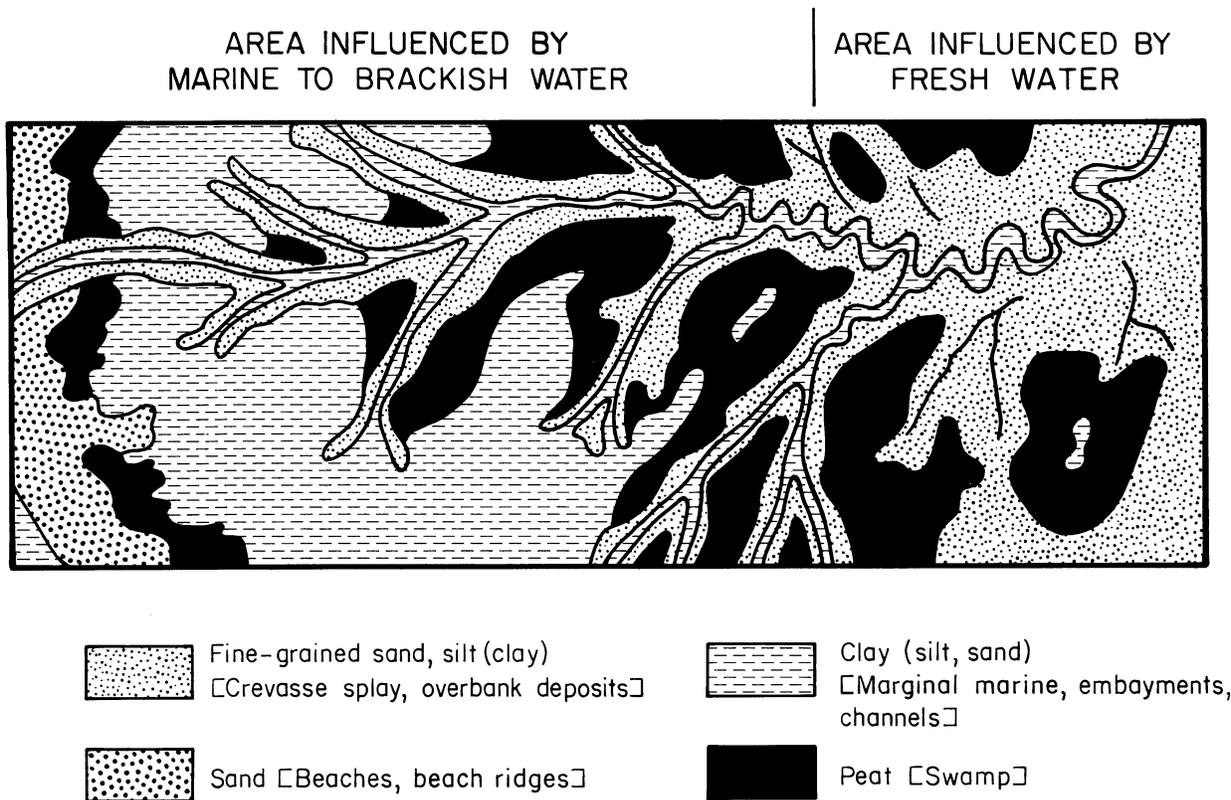


Figure 5. Depositional model of a peat-forming environment on a river delta in a coastal region. Sediments are predominantly nonmarine clastics, although small deposits of impure marine limestone may form in areas away from stream mouths (after Horne et al., 1978). Iowa coal deposits formed in similar environments.

marginal marine grading to marine sediments. Evidence of marine deposition in the Des Moines area is preserved as fossiliferous shales and limestone in outcrop and other subsurface.

STRATIGRAPHY OF THE DES MOINES AREA PENNSYLVANIAN STRATA

Comparisons of the descriptions in Hinds (1908), Bain (1896), and Keyes (1894) with recently obtained geologic and palynologic evidence suggest possible equivalences between the informal designations used in the past and currently accepted stratigraphic nomenclature. All coal seams known to occur in the Des Moines area can be assigned to the Cherokee Group of the Pennsylvanian System (figure 6). In the Des Moines area, and over most of the Midcontinent

Region, the Cherokee Group consists predominantly of nonmarine shales, siltstones, and sandstones interbedded with coal seams and thin, discontinuous marine shales and limestones. The marine strata form a progressively larger, although still minor, component of the Cherokee Group strata from base to top. The coals typically become thinner upward and also become more persistent laterally and more uniform both in thickness and quality. Marmaton Group strata, which overlie the Cherokee Group, have been identified in western Polk County. These younger strata include a larger marine component than the Cherokee Group and elsewhere in Iowa include significant coal resources (the Mystic Coal). No significant reserves of this coal have been identified in Polk County. Ravn et al. (1984) and Ravn (1986) provided detailed discussions of Pennsylvanian stratigraphy and geology in Iowa. Swade (1985) discussed the geology and depositional environments of upper

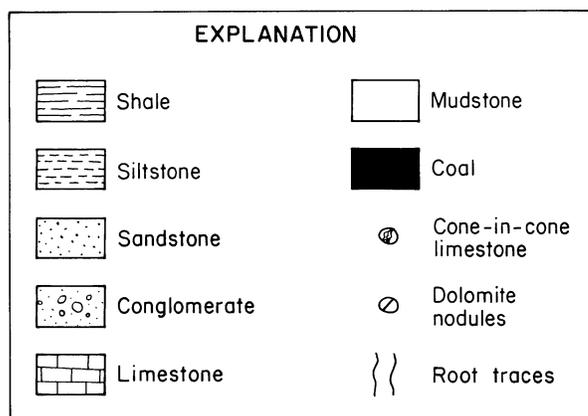
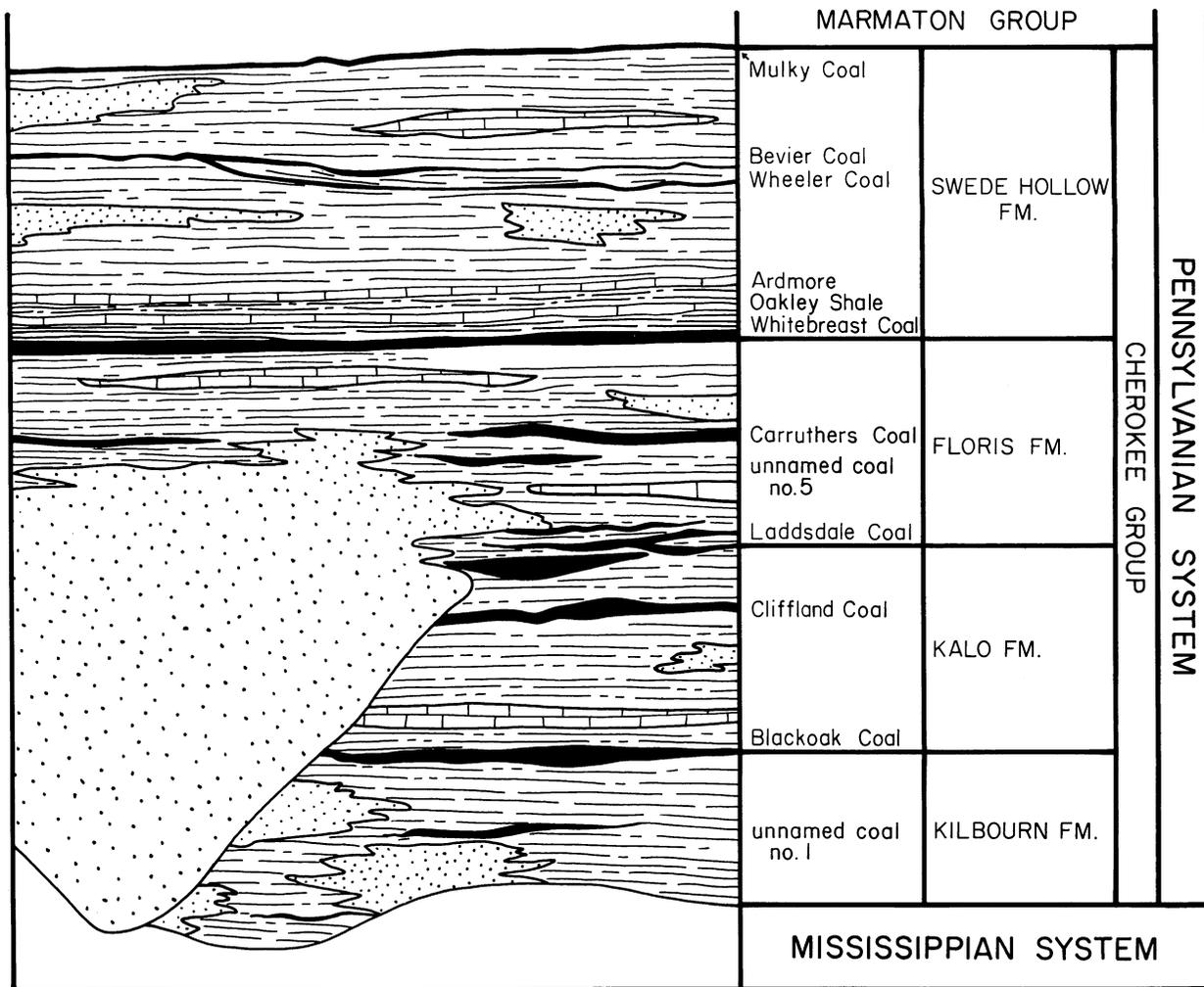


Figure 6. Generalized stratigraphic section of the Cherokee Group in Iowa. Laddsdale, Cliffland, Blackoak coals were mined in the study area. The complexity of the Cherokee Group strata cannot be adequately shown at this scale.

Cherokee and Marmaton for more details on Pennsylvanian geology of the Group strata. The reader is referred to these works state.

A series of cores were drilled in southeast Des Moines to investigate mine subsidence which occurred in 1978 and 1979 (Avcin, 1978, 1979). The geologic descriptions from these cores were combined to produce the composite geologic section for the study area shown in figure 7. Palynological analysis of coals obtained from these cores was used to assign current stratigraphic designations to the coal beds (Ravn, pers. comm., 1987). The "first vein" is probably equivalent to the coal which has now been identified as Laddsdale. Little coal was produced from this seam within the Des Moines area. It was probably much more productive immediately to the southeast in Marion and Warren counties. The mines in the area where the cores were drilled were believed to have operated in the "second vein" and "third vein" (Avcin, 1978, 1979). The "second vein" is probably equivalent to the Cliffland Coal and the "third vein" is probably equivalent to the Blackoak Coal. Based on this analysis, the major coal-producing seams in the Des Moines area were the Cliffland and Blackoak. The coal seam shown below the Blackoak seam in figure 7 is tentatively correlated with the unnamed coal beds of the Kilbourn Formation. Thin coal seams, also assumed to correlate with the unnamed coal beds in the Kilbourn Formation, were noted elsewhere in Des Moines below the "third vein" by Hinds (1908), Bain (1896), and Keyes (1894). These beds apparently did not reach mineable thickness within the area and therefore were not included in the informal stratigraphic designations of the time.

Palynological data are sparse outside of southeast Des Moines making area-wide correlations difficult. Lithologic correlations are problematic at best, but the available data suggest that the equivalencies between the old, informal nomenclature and current stratigraphic nomenclature determined for the southeast Des Moines remain valid over the rest of the study area. Research on regional coal stratigraphy in central Iowa suggests that the Cliffland and Blackoak coals were the most likely to have reached mineable thicknesses, with the Laddsdale reaching mineable thickness locally (Geological Survey Bureau, Iowa Department of Natural Resources, unpub. files).

GEOLOGY OF THE NORTH DES MOINES DISTRICT

A portion of the North Des Moines District (as it was called ca. 1900) provides an interesting illustration of the relationship between the distribution of coal mines and ancient depositional environments. This area, shown in figure 8, is located along the Des Moines River and Harding Road and extends south from Interstate 80 to about 1/2 mile south of Hickman Road. The outlined mines were all in the "third vein" (probably equivalent to the Blackoak Coal) and are well documented by maps and descriptions. The triangles indicate mines which could be located but not outlined, since no mine maps are known to exist for them.

Notations on mine maps and descriptions of the mines for the area were used to map the original areal extent of workable coal (figure 8). Hinds (1908) described features which limited the extent of the coal as "faults" and identified them as two distinct types of channels. Contemporaneous channels (i.e., those which existed at the same time peat deposition occurred) were the most common and are marked by rapid thinning of the coal from several feet to a few inches where it pinches out against the edge of the channel deposit. The coal is commonly interbedded with clastic rocks (e.g. sandstone, shale) at the thinned edges suggesting overbank or crevasse splay deposits. In this situation the extent of the mine would be limited by the original depositional extent of the peat body. Post-depositional erosional channels (i.e., those which formed after peat deposition ended) which cut out the coal seam are less common. The channel cut-outs are also filled with clastic sediments, but the coal seam terminates abruptly against the channel-filling deposits without any change in thickness. The channel-filling sediment in this case is likely to include fragments of coal and other strata older than the channel. Hinds (1908) believed these to be at least pre-Pleistocene, and possibly as early as Pennsylvanian, in age.

Mine maps and descriptions include numerous references to channels which limit the extent of workable coal (figure 8). The eastern edge of the Flint Brick Company Shaft No. 2 and No. 3, the southern margins of the Madison Coal Company and Eagle No. 2 mines, and the northeastern

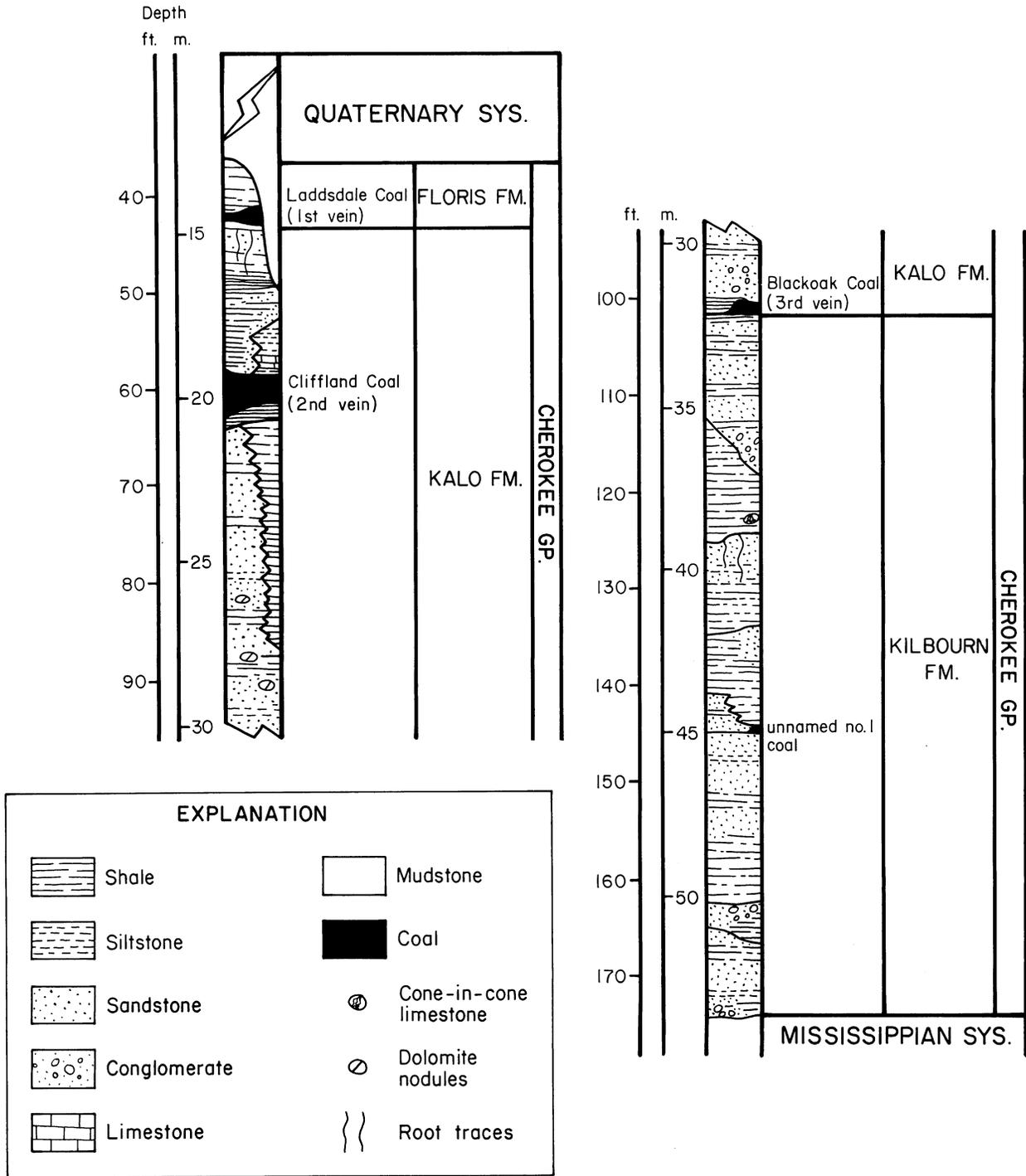


Figure 7. Composite geologic section prepared from cores drilled in southeast Des Moines. Informal stratigraphic designation used by Hinds (1908), Bain (1892), and Keyes (1894) are in brackets following the current coal bed names. The Cliffland Coal was mined in the area where the cores were drilled.

margin of the O.K. Coal Company mine were limited by thinning of the coal seam. The thinning probably occurred adjacent to a contemporaneous stream channel. Erosional channel cut-outs are described between the West Riverside and Flint Brick No. 2 and No. 3 mines and across the Blount and Evans mine and east of the Eagle No. 2 mine. Hinds (1908) suggested that these might be portions of a continuous channel and described it as 400 to 500 feet wide and filled with sandstone, "slate," and "fireclay" based on exposures in the haulageway across it in the Blount and Evans mine. The West Riverside mine also has a haulageway across the channel.

Additional channels were inferred from indirect evidence (figure 8). Maps of the American Coal Company and Eagle No. 2 mines note rapid thinning of the coal along their southern limits. The thinning of the coal appears to represent the edge of a contemporaneous channel. Long haulageways with no attached rooms may represent an attempt to cross a "fault" in the hope of reaching mineable coal on the other side (e.g., the West Riverside Mine). This pattern of mine development is seen on the southwest side of the Bloomfield No. 2 mine where a channel has been described (Hinds, 1908). A "fault" or channel is inferred between the Blount and Evans Mine and the Flint Brick No. 1 mine where a similar pattern is visible.

Figure 8 shows the positions of the channels as pairs of lines if both sides of the feature could be located or as a single line if only one side could be located. The locations of the channels were then used to delineate the possible extents of the bodies of coal in the area, shown as stippled areas. Thus, figure 8 is a geologic map assembled from historic records of coal mining using a current model of depositional processes in a coal-producing environment. The resemblance to the sketch in figure 5 is striking, suggesting that deposition occurred in similar environments by similar processes.

GEOLOGY OF SURFICIAL MATERIALS

Pleistocene-age sediments, overlying the Pennsylvanian-age rocks, comprise the surficial materials in the study area. They consist predominantly of glacial till and loess, and alluvium which range from a few feet to nearly 300 feet in

total thickness. The till is typically somewhat sandy and includes lenses of gravel locally at the contact with the underlying Pennsylvanian-age rock.

Characteristic of the Pleistocene deposits are a number of large river-channel systems which resemble those of the Pennsylvanian. These channels also probably account for the greatest thickness of Pleistocene deposits in some areas. Although these channels developed long after coal formation was complete, they restrict the distribution and extents of coal mines in the study area. The channels locally cut out the coal or leave it too weathered near the channel edge to be usable. For example, the Beaver Channel is mapped by GSB (Bettis, pers. comm., 1989) in northeast Des Moines. The Des Moines Coal Co. Marquisville Mine (#11, Plate I), Norwood-White Coal Co. Mine No. 3 (#18), and Western Coal Co. (#29) lie northeast of the northwest-southeast trending channel and were apparently prevented from further development to the southwest by this feature.

Physical characteristics of the Pleistocene-age materials, such as permeability and structural competence, affected the coal mines during their operation and influence the effects of the mined-out areas on the land surface. For example, localized gravel deposits probably contributed to flooding problems which some of the mines experienced. Coal mines with thin roof rock overlain by thick Pleistocene deposits were more prone to roof collapses and required more roof support to be operated safely. Following mining, these same characteristics probably contribute to subsidence problems. Avcin (1979) noted an episode of subsidence which was probably exacerbated by water-saturated gravel lenses at the contact between Pleistocene and Pennsylvanian strata.

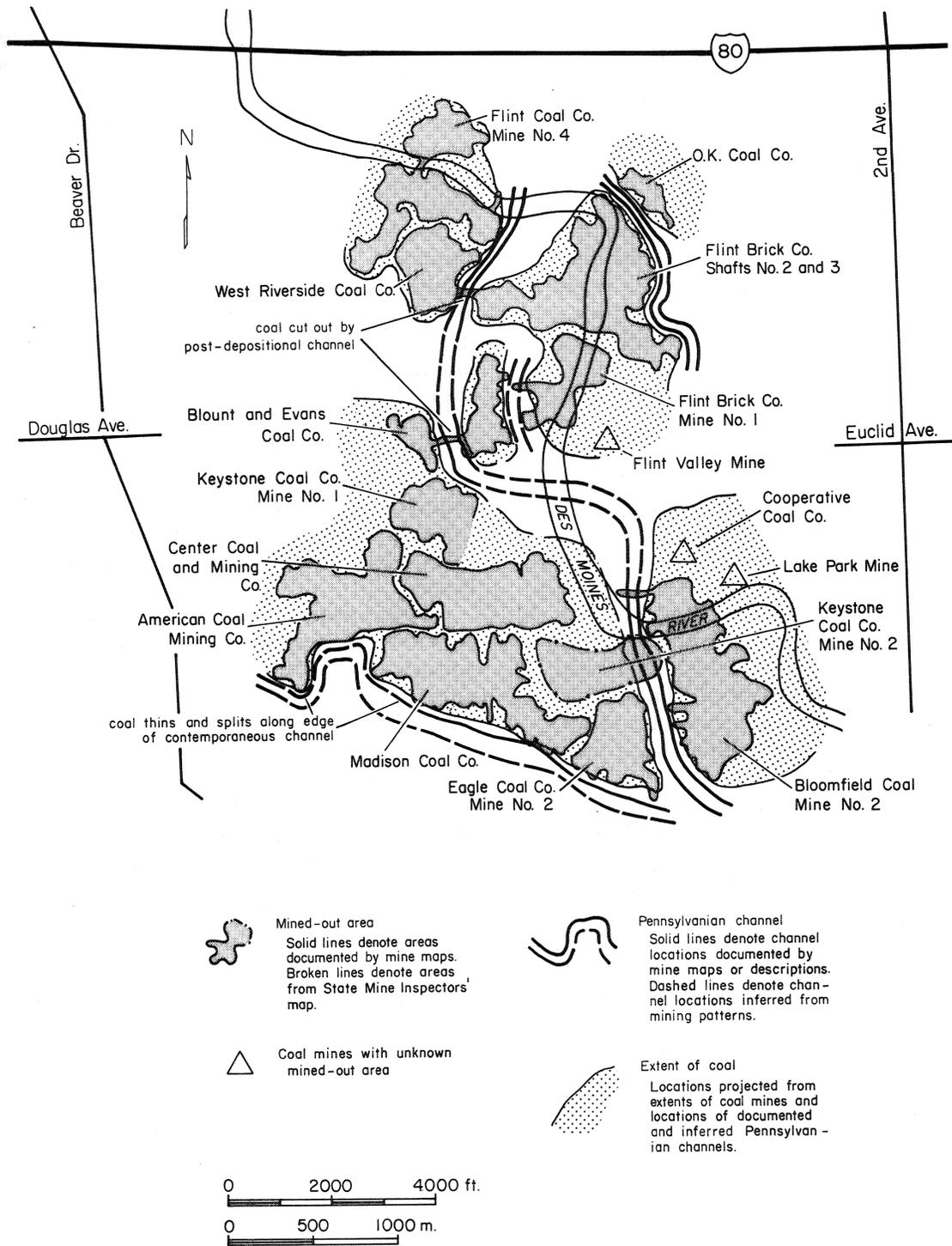


Figure 8. Map of the North Des Moines District showing mines, locations of Pennsylvanian channels, and probable limits of coal deposits. Some major streets are shown for geographic reference. The distribution of coal and documented and inferred channels suggest deposition in an environment like that proposed for the depositional model in figure 5.

ACKNOWLEDGEMENTS

We would like to express our sincerest gratitude to the Des Moines Historical Society for the loan of their collection of Des Moines-area mine maps. These maps were extremely valuable in the preparation of this report as they provided mine locations and mined-out areas that were previously unknown. This information will continue to be of great value to the community. In addition, we extend thanks to Mr. James Gulliford, Mr. Kenneth Tow, and Ms. Erica Berrier of the Department of Agriculture and Land Stewardship, Division of Soil Conservation, for their interest in, support of, and funding for this project. We also extend thanks to Tim Kemmis, Brian Witzke, Eve Watson, and Bernie Hoyer for editorial review and to graphics artists Pat Lohmann and Kay Irelan for preparing the illustrations, and to Mary Pat Heitman for her patient work on formatting this document for publication.

GLOSSARY OF GEOLOGIC AND MINING TERMINOLOGY

Alluvium, alluvial--general term for detrital deposits made by streams; process of deposition by streams.

Base level--lowest potential level of erosion. This is the lowest elevation which a stream may reach. As a stream approaches this level its rate of flow and hence erosive and sediment-carrying power decrease.

Basin--circular or elliptical sediment-filled depression in the earth's crust characteristic of continental interiors.

Boulder--(var. of boulder) in coal mining, a mass of rock within a coal seam typically composed of partly decomposed peat which has been permineralized or impregnated with calcite and some pyrite. Fragments of plants are visible in some of these.

Brackish--water whose salinity is intermediate between seawater and streams.

Clastic--refers to particulate sediment without reference to particle size or origin (e.g. quartz sand, clay, etc.)

Consolidated--loose earth materials which have become firm and coherent.

Cretaceous--the span of geologic time from 135 to 65 million years ago and the rocks deposited during that time.

Crevasse splay--a deposit of sediment which forms when a stream breaches its levee due to flooding.

Delta, deltaic--accumulation of sediment at a river mouth, or referring to the delta or processes related to delta formation. Deltas may form wherever a stream empties into another body of water.

Dip--the angle, measured from horizontal, of rock strata which may be described on a regional or local scale.

Eustatic--pertaining to worldwide sea-level changes that affect all oceans, believed to be caused by addition or removal of water from continental icecaps.

Fault--a fracture in rock strata along which there has been displacement ranging from inches to miles.

Fault--(miner's term; see Boulder) any defect in the coal seam which hinders mining. Faults, in this sense may include actual structural faults (see previous definition), folds, boulders, channel cut-outs, etc.

Fireclay--(var. of underclay) clay found below coal seams. Fireclays are refractory (ceramic), underclays are not necessarily so.

Fluvial--pertaining to rivers or geologic processes related to rivers.

Fold--bend in rock strata produced by deformation of rock strata.

Formation--a subdivision used in classifying rock units by their composition, characterized by some degree of compositional homogeneity.

Group--a subdivision used in classifying rock units by their composition, i.e., a rock-stratigraphic unit, made up of two or more formations.

Holocene--the period of geologic time from approximately 8,000 years ago to the present. The Holocene is classified as a Stage within the Pleistocene Series in Iowa.

Horse "gin"--a machine powered by draft horses or mules, commonly used to power the hoisting gear in a coal mine.

Lithology--the description of the physical characteristics of a rock.

Loess--wind-deposited silt derived from Pleistocene river valleys.

Marginal marine--refers to deposits or processes which occur at the shoreline or in shallow water near the shore. Conditions such as salinity and temperature are variable and influenced by open ocean and on-shore processes.

Marine--refers to open ocean, with normal salinity, stable temperature, and oxygenation.

Member--stratigraphic subdivision of group, see stratigraphy.

Mississippian--a period of geologic time spanning the interval from 345 to 320 million years ago and the rocks which formed within this time. Mississippian is at the System level in the stratigraphic classification.

Nonconsolidated--any loose earth materials.

Nonmarine--refers to deposits or processes which occur in fresh water bodies such as streams or lakes.

Overbank deposit--fine-grained sediment deposited from suspension on a flood plain by floodwaters that cannot be contained within the stream channel.

Overburden--consolidated or nonconsolidated material which overlies a coal seam.

Palynology, palynostratigraphy--study of fossil spores and pollen and their use in determining correlation and subdivision of lithologic units.

Pennsylvanian--a period of geologic time thought to have covered the span of time from 280 to 320 million years ago. Also refers to the rocks formed during this period. The Pennsylvanian is at System level in the stratigraphic classification.

Pleistocene--the period of geologic time ranging from two to three million years to eight thousand years ago and the deposits formed during this period. The Pleistocene occupies the rank of Series within the Quaternary System. Several periods of continental glaciation during the Pleistocene prompted the informal name "ice age" for this period of time.

Quaternary--the period of geologic time

spanning two to three million years ago to the present time and the rocks and nonconsolidated deposited formed during that time. The Quaternary is at the rank of System in the stratigraphic classification in use in Iowa.

Rank--measure of the thermal maturation or degree of metamorphism of coal.

Series--see stratigraphy.

Shipping mine--a coal mine with railroad connections, usually a spur or siding. Shipping mines usually produced more coal than those which produced coal for local markets.

Strata--layers of rock.

Stratigraphy--the study of the arrangement of rock strata, especially geographic position and chronological order of sequence. A hierarchical system of nomenclature is used to describe rock strata. Rock stratigraphic classifications are based on similarities in physical characteristics of the rock layers. Rock stratigraphic terms used in this report are (in ascending order) bed, member, formation, group, supergroup, series, and system. Time stratigraphic classifications are based on time indicators, such as fossils, found in the rocks. Time stratigraphic terms, in ascending order, are era, period, system, series, stage, age, and epoch. The rock stratigraphic terms system and series are approximately equivalent to the time stratigraphic terms period and epoch, respectively.

Subsidence--sinking of land surface, in the context of this report, caused by collapse into an underlying opening such as a mine.

System--see stratigraphy.

Till--unsorted and unstratified mixture of clay, sand, gravel, and boulders deposited directly by a glacier.

Unconformity--a break in the orderly chronological succession of rock strata. An unconformity represents a period of erosion or non-deposition and delimits stratigraphic units.

REFERENCES

- Abandoned Mine Lands Inventory: Geological Survey Bureau, Iowa Department of Natural Resources, open file.
- Avcin, M. J., 1978, Report of investigations on land subsidence in east Des Moines: Iowa Geological Survey unpub. man., 33 pp.
- Avcin, M. J., 1979, Report of investigations on land subsidence in east Des Moines No. 2: Iowa Geological Survey unpub. man., 25 pp.
- Bain, H. F., 1896, Geology of Polk County: Iowa Geological Survey Annual Report Vol. VII, p. 361-438.
- Hinds, H., 1908, Coal deposits of Iowa: Iowa Geological Survey Annual Report Vol. XIX., p. 21-396.
- Horne, J. L., Ferm, J. C., Caruccio, F. T. and Baganz, B. P., 1978, Depositional models in coal exploration and mine planning in Appalachian Region: American Association of Petroleum Geologists Bulletin, v. 62, p. 2379-2411.
- Howes, M. R., Culp, M. A., Greenberg, H., and VanDorpe, P. E., 1986, Underground coal mines of Centerville, Iowa and vicinity: Iowa Department of Natural Resources Geological Survey Bureau Open File Report 86-2, 93 pp.
- Jervis, W., Chapman, T. C., and Jensen, A., 1951, Report for biennial period ending December 31, 1951: State Mine Inspector, 72 pp.
- Lancaster, R. P. and Avcin, M. J., 1979, Underground mines of metropolitan Des Moines: Iowa Geological Survey unpub. man., 29 pp.
- Keyes, C. R., 1894, Coal deposits of Iowa: Iowa Geological Survey Annual Report Vol. II, p. 406-424.
- Landis, E. R. and Van Eck, O. J., 1965, Coal resources of Iowa: Iowa Geological Survey Technical Paper No. 4, 141 pp.
- Lees, J. H., 1908, History of coal mining in Iowa: Iowa Geological Survey Annual Report Vol. XIX, p. 521-588.
- Olin, H. L., 1965, Coal mining in Iowa: State Mining Board, Iowa Department of Mines and Minerals, 96 pp.
- Owen, D. D., 1852, Description of the Carboniferous rocks of Iowa in Report of a geological survey of Wisconsin, Iowa and Minnesota and incidentally a portion of Nebraska Territory: Lippincott, Brambo and Co., Philadelphia, p. 90-140.
- Ravn, R. L., Swade, J. W., Howes, M. R., Gregory, J. L., Anderson, R. R., and VanDorpe, P. E., 1984, Stratigraphy of the Cherokee Group and revision of Pennsylvanian stratigraphic nomenclature in Iowa: Iowa Geological Survey Technical Information Series No. 12, 76 pp.
- Ravn, R. L., 1986, Palynostratigraphy of the lower and middle Pennsylvanian Coals of Iowa: Iowa Geological Survey Technical Paper No. 7, 245 pp.
- Swade, J. W., ed. Heckel, P. H., 1985, Conodont distribution, paleoecology, and preliminary biostratigraphy of the upper Cherokee and Marmaton Groups (Upper Desmoinesian, Middle Pennsylvanian) from two cores in south-central Iowa: Iowa Geological Survey Technical Information Series No. 14, 71 pp.
- VanDorpe, P. E., Howes, M. R., Miller, M. J., and Lenker, S. J., 1984, Underground mines and related subsidence potential, What Cheer, Iowa: Iowa Geological Survey Open File Report 84-3, 62 pp.
- White, C. A., 1870, Report on the Geological Survey of the State of Iowa, to the 13th General Assembly, January 1870, Vol. I, 381 pp.

APPENDIX I.

List of Mines

Appendix I lists the mines shown on Plate I. It is arranged in order by map number. The list of mine names for each site includes all known names used for a mine and the years of operation under that name. They are arranged in chronological order with the most recent listed first. This years-of-operation column is blank where this information is not available.

Entries in the "Map Date" column indicate the availability of mine maps. A year or "unkn" is entered if a mine map is available. The year indicates the date of last revision of the mine map. If this couldn't be determined "unkn" appears in this column. "None" appears in the "Map Date" column if no mine map is available. Outlines on Plate I for some of these unmapped mines were obtained from sources other than mine maps. For these mines, the source is noted in the Comments section.

The list of mine names given in Appendix I is arranged in Appendix II in alphabetical order with the corresponding map number and dates of operation. It is intended to be a cross-reference to Appendix I so that a mine may be located by name.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Enterprise Coal Mining Co. Mine No. 1 1903-1917 1917
1 **LOCATION:** **TOPOGRAPHIC MAP:**
NW SE NE 16 T80N R23W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
607 vertical/r & p 212 ft.
COMMENTS FOR MINE Enterprise Coal Mining Co. Mine No. 1:
This mine was opened by the Des Moines Coal and Mining Co. in 1903. It was
connected underground to the Enterprise Mine No. 2 and mined the "2nd vein" which
is probably equivalent to the Cliffland Coal.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Enterprise Coal Mining Co. Mine No. 2 1907-1917 1917
2 **LOCATION:** **TOPOGRAPHIC MAP:**
NE NW SE 21 T80N R23W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
406 vertical/r & p 210 ft.
COMMENTS FOR MINE Enterprise Coal Mining Co. Mine No. 2:
The Des Moines Coal and Mining Co. opened this mine in 1907. It was connected
underground to the Enterprise Mine No. 1 and mined the "2nd vein" which is probably
equivalent to the Cliffland Coal. The map for this mine includes some geological
information.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Wright Coal Co. 1910-1924 1924
3 **LOCATION:** **TOPOGRAPHIC MAP:**
SW SE NE 25 T80N R24W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
708 vertical/r & p unkn
COMMENTS FOR MINE Wright Coal Co.:
This mine operated in the "3rd vein" which is probably equivalent to the Blackoak
Coal.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Anderson Coal Co. 1907- none
4 **LOCATION:** **TOPOGRAPHIC MAP:**
NE 25 T80N R24W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
unkn vertical/unknown 285 ft.
COMMENTS FOR MINE Anderson Coal Co.:
No map is available for this mine so the exact extent is unknown. The extent which is
shown was obtained from maps maintained by the State Mine Inspectors' Office. The
mining company had 700 acres leased and this was a shipping mine suggesting that a
large area may have been undermined by it. Four coal seams ranging from 6 to 18 in.
thick were described above the seam which was mined.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Norwood-White Coal Co. Mine No. 8 1922-1943 1942
5 **LOCATION:** **TOPOGRAPHIC MAP:**
SW NW SW 27 T80N R25W Grimes
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
770 vertical/r & p 210 ft.
COMMENTS FOR MINE Norwood-White Coal Co. Mine No. 8:
Coal thicknesses in the vicinity range from 1 to 3 ft. at elevations ranging from 660 to 690 ft. The "vein" mined was not recorded.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Saylor Coal Co. Mine No. 2 1906-1928 1928
6 **LOCATION:** **TOPOGRAPHIC MAP:**
NE SW SW 36 T80N R24W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
872 vertical/r & p 232 ft.
COMMENTS FOR MINE Saylor Coal Co. Mine No. 2:
The map shows old works west of this mine which may be part of this mine or part of the Saylor No. 1 Mine. This mine operated in the "3rd vein" or Blackoak Coal.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Norwood-White Coal Co. Mine No. 5 1914-1920 1920
7 **LOCATION:** **TOPOGRAPHIC MAP:**
NW SE SW 5 T79N R23W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
230 vertical/r & p unkn
COMMENTS FOR MINE Norwood-White Coal Co. Mine No. 5:
The workings of this mine overlap those of the Norwood-White Mine No. 4 indicating that mining occurred on more than one level at this site. This mine operated in the "2nd vein" which is probably equivalent to the Cliffland Coal.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Norwood-White Coal Co. Mine No. 4 1911-1918 1918
8 Delaware Coal Co. 1906-1911 unkn
LOCATION: **TOPOGRAPHIC MAP:**
NE SW SW SW 5 T79N R23W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
490 vertical/r & p 170 ft.
COMMENTS FOR MINE Norwood-White Coal Co. Mine No. 4:
Another coal seam, with poor roof rock, was identified 18 ft. above the coal seam worked in this mine. The coal was correlated with the fourth seam found in the Swanwood Mine shaft and with one of the seams mined at Marquisville. The coal was correlated with the "3rd vein" or Blackoak Coal. This was a shipping mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Bloomfield Coal Co. Marquisville Mine 1914-1927 1927
9 Bloomfield Coal Co. Marquisville Mine 1906- 1927
Bloomfield Coal Co. Marquisville Mine - 1927

Bloomfield Coal Co. Marquisville Mine	-	1927
Bloomfield Coal Co. Marquisville Mine	1914-1922	1922
Bloomfield Coal Co. Marquisville Mine	-	unkn
Bloomfield Coal Co. Marquisville Mine	-	1914
Bloomfield Coal Co. Marquisville Mine	-	unkn
Bloomfield Coal Co. Marquisville Mine	-	unkn
Bloomfield Coal Co. Marquisville Mine	-	unkn

LOCATION: TOPOGRAPHIC MAP:

SE SW SW 1 T79N R24W Des Moines NE

ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
383	vertical/lw & r&p	271 ft.

COMMENTS FOR MINE Bloomfield Coal Co. Marquisville Mine:
 The mine map is in several sections which were combined. Maps of this mine indicate that it was worked on two levels. A slope existed from the upper to the lower vein. The upper, "2nd vein" (Cliffland Coal), was 4 to 4.5 ft. thick at a depth of 271 ft. The lower, "3rd vein" (Blackoak Coal) was 4 to 5 ft. thick at a depth of 286 ft. The slope between the levels was located in the NW, SW, SW, Sec. 1, T79N, R24W. This mine may have also been known as the Marquisville Mine. Additional mine workings labelled Marquisville Mine 3rd Vein and Saylor Coal Co. Mine No. 1 are shown on the map.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
10	Western Coal Co. Saylor Mine	1898-1910	1927
	Saylor Coal Co. Mine No.1	-1898	none

LOCATION: TOPOGRAPHIC MAP:

NW SW 11 T79N R24W Des Moines NE

ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
90	vertical/r & p	216 ft.

COMMENTS FOR MINE Western Coal Co. Saylor Mine:
 The extent of this mine is from two sources. The eastern part is from a mine map and the western part is from the State Mines Inspectors' maps. Part of the pillars were removed in 1908. A partial outline is shown on the Bloomfield Coal Co. map (#9).

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
11	Des Moines Coal Co. Marquisville Mine	1894-1907	1907
	Des Moines Coal Co. Marquisville Mine	-	1907
	Des Moines Coal Co. Marquisville Mine	-	1907

LOCATION: TOPOGRAPHIC MAP:

NW SE NW NW 13 T79N R24W Des Moines NE

ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
506	vertical/r & p	180 ft.

COMMENTS FOR MINE Des Moines Coal Co. Marquisville Mine:
 The map for this mine is in sections which were combined for Plate I. This mine underlies the county home. It operated in the "3rd vein" which is probably equivalent to the Blackoak Coal.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Swanwood Coal Co. 1908-1910 1918
12 **LOCATION:** **TOPOGRAPHIC MAP:**
SE SE 12 T79N R24W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
43 vertical/r & p unkn
COMMENTS FOR MINE Swanwood Coal Co.:
A partial extent only was available for the Swanwood Mine. It is shown on the Norwood-White No. 4 map. The Swanwood shaft section shows that the mine worked the fourth seam from the surface. This seam was correlated with the "3rd vein" in the terminology in use at the time. It probably mined the Blackoak Coal.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Norwood Coal and Mining Co. No.1 1901-1903 none
13 Evans Brothers Coal Co. none
LOCATION: **TOPOGRAPHIC MAP:**
8 T79N R23W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
unkn vertical/r & p unkn
COMMENTS FOR MINE Norwood Coal and Mining Co. No.1:
No map is available for this mine. It was located six miles northeast of Des Moines on the Chicago & Northwestern Railroad. The location was obtained from IGS Annual Report V. 19.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Altoona Mine - none
14 **LOCATION:** **TOPOGRAPHIC MAP:**
SE 13 T79N R23W Altoona
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
unkn slope/unknown 215 ft.
COMMENTS FOR MINE Altoona Mine:
The only know year of operation for this mine is 1894. Its extent was obtained from the State Mine Inspectors' maps.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Interurban Coal Co. 1919-1920 1920
15 **LOCATION:** **TOPOGRAPHIC MAP:**
SE NE SE SE 16 T79N R23W Des Moines NE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
3 vertical/r & p unkn
COMMENTS FOR MINE Interurban Coal Co.:
This mine may have also been known as Des Moines Ice and Fuel Co., Interurban Mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Norwood-White Coal Co. Mine No. 2 1908-1912 1912
16 **LOCATION:** **TOPOGRAPHIC MAP:**
SW SE NW 17 T79N R23W Des Moines NE

have also been known as the Riverside Coal Co. The mine map shows other mined areas labelled "Old Oak Park workings" and "Old Flint workings".

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
24	Blount and Evans Coal Co.	1908-1913	1913
	Blount and Evans Coal Co.	-	1912
	Blount and Evans Coal Co.	-	1912
	LOCATION:	TOPOGRAPHIC MAP:	
	NE NW NE NW 28 T79N R24W	Des Moines NW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	45	vertical/r & p	135 ft.
	COMMENTS FOR MINE Blount and Evans Coal Co. The mine map (1913) shows old works for Keystone Mine No. 1 and Flint Brick Coal Co. This mine operated in the "3rd vein" or Blackoak Coal. The "2nd vein" or Cliffland Coal was noted approximately 110 ft. from the surface.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
25	Flint Brick Co. Mine No. 1	1894-1901	unkn
	Flint Brick Co. Mine No.1	-	unkn
	Flint Brick Co. Mine Shaft No. 1	-	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	SW NE SE SE 21 T79N R24W	Des Moines NW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	40	vertical/r & p	122 ft.
	COMMENTS FOR MINE Flint Brick Co. Mine No. 1: Three thin coal seams occurred above the mined seam which was correlated with the "3rd vein" or Blackoak Coal.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
26	Flint Brick Co. Mine Shafts No. 2 and 3	-	unkn
	Flint Brick Co. Mine Shafts No. 2 and 3	-	unkn
	Flint Brick Co. Mine Shafts No. 2 and 3	-	unkn
	Flint Brick Co. Mine Shafts No. 2 and 3	-	unkn
	Flint Brick Co. Mine Shafts No. 2 and 3	-	unkn
	Flint Brick Co. Mine Shafts No. 2 and 3	-	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	SE SE NE SE 21 T79N R24W	Des Moines NW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	104	vertical/r & p	180 ft.
	COMMENTS FOR MINE Flint Brick Co. Mine Shafts No. 2 and 3: The Flint Brick Co. mine, also known as the Oak Park Mine, used shafts no. 2 and no. 3. The mine maps show a connection with the Flint Brick No. 1 mine. The coal from this mine was used in the company brick kilns or sold locally. The mine is bordered on the east and west by apparent erosion channels which intersected just north of the mine. The result was that the coal was limited to the area south of the intersection of the channels. The "3rd vein" was mined which is probably equivalent to the Blackoak Coal of current nomenclature.		

COMMENTS FOR MINE Maple Grove Mine Shaft No. 2:
The mine shaft was located near the present Interstate 235 interchange with Douglas Avenue. The map for this mine is in two sections.

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Maple Grove Mine Shaft No. 1	1891-1903	unkn
36	Maple Grove Mine Shaft No. 1	-	unkn
	Maple Grove Mine Shaft No. 1	-	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	NW SW 30 T79N R23W	Des Moines NE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	28	vertical/r & p	105 ft.
	COMMENTS FOR MINE Maple Grove Mine Shaft No. 1		
	The mine map shows the Maple Grove No. 2 shaft.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Eagle Mine No. 3	1910-1919	1919
37	Eagle Mine No. 3	-	1917
	LOCATION:	TOPOGRAPHIC MAP:	
	NW NE SW 26 T79N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	83	vertical/r & p	unkn

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Lake Park Mine	1895-	none
38	LOCATION:	TOPOGRAPHIC MAP:	
	NW SW 27 T79N R24W	Des Moines SW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	unkn	unknown/unknown	unkn
	COMMENTS FOR MINE Lake Park Mine:		
	The Lake Park mine may have also been known as the Lake Forest or the Lake Front mine. No map is available for this mine.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Cooperative Coal Co.	1901-1903	none
39	LOCATION:	TOPOGRAPHIC MAP:	
	NW 27 T79N R24W	Des Moines SW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	unkn	vertical/unknown	unkn
	COMMENTS FOR MINE Cooperative Coal Co.:		
	No map was available for this mine. The location was described as 3.5 miles north of Des Moines on the Des Moines Street Railroad. It was probably a room & pillar mine.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Flint Valley Mine	-	none
40	LOCATION:	TOPOGRAPHIC MAP:	
	NE NE 28 T79N R24W	Des Moines NW	

ACREAGE: unkn **ENTRANCE TYPE/MINING TYPE:** unknown/unknown **SHAFT DEPTH:** unkn
COMMENTS FOR MINE Flint Valley Mine:
This mine was located very near the Flint Brick Coal Company and may have been part of the same operation. No map is available.

NO. ON PLATE I: 41 **MINE NAME(S):** Keystone Coal Co. Mine No. 2 **YEARS OF OPERATION:** 1894-1908 **MAP DATE:** none
LOCATION: SE 28 T79N R24W Des Moines NW **TOPOGRAPHIC MAP:**
ACREAGE: unkn **ENTRANCE TYPE/MINING TYPE:** unknown/unknown **SHAFT DEPTH:** unkn
COMMENTS FOR MINE Keystone Coal Co. Mine No. 2:
No map is available for this mine. The location and extent are from maps prepared by the State Mine Inspectors' office. This mine probably mined the "3rd vein" or Blackoak Coal. This was the same coal mined in adjacent mines.

NO. ON PLATE I: 42 **MINE NAME(S):** Center Coal and Mining Co. **YEARS OF OPERATION:** 1903-1908 **MAP DATE:** 1908
LOCATION: SW NE SW 28 T79N R24W Des Moines SW **TOPOGRAPHIC MAP:**
ACREAGE: 80 **ENTRANCE TYPE/MINING TYPE:** vertical/r & p **SHAFT DEPTH:** unkn
COMMENTS FOR MINE Center Coal and Mining Co.:
This mine operated in the "3rd vein" which can probably be assigned to the Blackoak Coal of current nomenclature.

NO. ON PLATE I: 43 **MINE NAME(S):** Keystone Coal Co. Mine No. 1 **YEARS OF OPERATION:** 1894-1908 **MAP DATE:** 1902
LOCATION: SE SW NW 28 T79N R24W Des Moines NW **TOPOGRAPHIC MAP:**
ACREAGE: 40 **ENTRANCE TYPE/MINING TYPE:** vertical/r & p **SHAFT DEPTH:** 142 ft.
COMMENTS FOR MINE Keystone Coal Co. Mine No. 1:
The map for this mine is incomplete showing only a partial outline for the mine. This mine was in the "3rd vein" or Blackoak Coal of current nomenclature.

NO. ON PLATE I: 44 **MINE NAME(S):** American Coal Mining Co. **YEARS OF OPERATION:** 1912-1919 **MAP DATE:** 1919
American Coal Mining Co. - 1919
American Coal Mining Co. - 1917
LOCATION: SW SW NE SE 29 T79N R24W Des Moines SW **TOPOGRAPHIC MAP:**
ACREAGE: 90 **ENTRANCE TYPE/MINING TYPE:** vertical/r & p **SHAFT DEPTH:** unkn
COMMENTS FOR MINE American Coal Mining Co.:
The "3rd vein" which is probably equivalent to the Blackoak Coal was mined at this site. The name of the Blount & Evans Coal Co. appears on the back of one of the

maps for this mine suggesting that the mines may have been associated. Portions of Keystone and Center mines are also shown.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
45	Central Service Coal Co. Mine No. 6	1930-1947	1947
	Central Service Coal Co. Mine No. 6	-	1942
	Central Service Coal Co. Mine No. 6	-	1941
	Central Service Coal Co. Mine No. 6	-	1941
	Central Service Coal Co. Mine No. 6	-	1939
	Central Service Coal Co. Mine No. 6	-	1938
	Central Service Coal Co. Mine No. 6	-	1937
	Central Service Coal Co. Mine No. 6	-	1936
	Central Service Coal Co. Mine No. 6	-	1936
	Central Service Coal Co. Mine No. 6	-	1935
	Central Service Coal Co. Mine No. 6	-	1934
	Central Service Coal Co. Mine No. 6	-	1933
	Central Service Coal Co. Mine No. 6	-	1932
	Central Service Coal Co. Mine No. 6	-	1931

LOCATION: SE NW NE 26 T79N R25W
TOPOGRAPHIC MAP: Des Moines NW
ACREAGE: 263
ENTRANCE TYPE/MINING TYPE: vertical/lw & r&p
SHAFT DEPTH: 225 ft.
COMMENTS FOR MINE Central Service Coal Co. Mine No. 6:
 This was the last underground mine to operate in Polk Co. The Blackoak Coal was mined. The 1947 map shows abandoned works of the Urbandale mine.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
46	Urbandale Coal Co.	1920-1942	1942
	Urbandale Coal Co.	-	1941

LOCATION: SW SE 26 T79N R25W
TOPOGRAPHIC MAP: Des Moines SW
ACREAGE: 122
ENTRANCE TYPE/MINING TYPE: vertical/r & p
SHAFT DEPTH: 180 ft.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
47	Madison Coal Co.	1908-1916	1916

LOCATION: NW SE SW 33 T79N R24W
TOPOGRAPHIC MAP: Des Moines SW
ACREAGE: 112
ENTRANCE TYPE/MINING TYPE: vertical/r & p
SHAFT DEPTH: 165 ft.

COMMENTS FOR MINE Madison Coal Co.:
 This mine was in the same coal seam as the Blount and Evans mine, probably the "3rd vein" or Blackoak Coal. The coal seam thinned rapidly toward the south and was undulatory at this site with as much as a 4 ft. vertical distance between the troughs and crests. Several thin seams were present above the mine. Attempts to mine one of them showed it was too variable in thickness to be economically producible.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Eagle Coal Co. Mine No. 2 1908-1915 1915
 48 Eagle Coal Co. Mine No. 2 - 1915
LOCATION: **TOPOGRAPHIC MAP:**
 SE NE NE 33 T79N R24W Des Moines SW
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 45 vertical/r & p 170 ft.
COMMENTS FOR MINE Eagle Coal Co. Mine No. 2
 The "3rd vein" or Blackoak Coal was mine. It varied from 4.0 to 7.0 ft. thick. Also described are the "1st vein" or Laddsdale Coal 69 ft. below the surface and the "2nd vein" or Cliffland Coal 149 ft. below the surface.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Bloomfield Coal Co. Mine No. 2 1896-1905 1905
 49 **LOCATION:** **TOPOGRAPHIC MAP:**
 SW 27 T79N R24W Des Moines SW
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 115 vertical/r & p 102 ft.
COMMENTS FOR MINE Bloomfield Coal Co. Mine No. 2:
 The "3rd vein", which is believed to be equivalent to the Blackoak Coal, was mined here. No location references were given on the map. It was located by comparing streets shown on the mine map with present-day streets.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Des Moines Coal Co. 1865-1873 none
 50 **LOCATION:** **TOPOGRAPHIC MAP:**
 SW 35 T79N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn unknown/unknown unkn
COMMENTS FOR MINE Des Moines Coal Co.:
 The first commercial mine in the Des Moines area, opened by Wesley Redhead. No map is available for this mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Dahl Mine - none
 51 **LOCATION:** **TOPOGRAPHIC MAP:**
 35 T79N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn unknown/unknown unkn
COMMENTS FOR MINE Dahl Mine:
 Located 1.5 mi. north of the Watson Mine on the Des Moines River at "Thompson's Bend." No map is available for this mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Miller Mine 1882-1883 none
 52 **LOCATION:** **TOPOGRAPHIC MAP:**
 SE SW 25 T79N R24W Des Moines SE

ACREAGE: unkn **ENTRANCE TYPE/MINING TYPE:** unknown/unknown **SHAFT DEPTH:** unkn
COMMENTS FOR MINE Miller Mine:
This mine operated for only eight months. The only known map is for the land leased for this mine; no mine map is available.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Eureka Coal Co. Mine No. 2 1896- none
53 **LOCATION:** **TOPOGRAPHIC MAP:**
 NW 36 T79N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn vertical/r & p 107 ft.
COMMENTS FOR MINE Eureka Coal Co. Mine No. 2:
This mine was also known as Eureka Coal & Mining. The shaft was located 2.5 mi. north of the State Capitol building. Two coal seams are described from the mine shaft. The first averaged 4.5 ft. thick at 54 ft. below the surface and the second was 3.5 ft. thick at 71 ft. below the surface. The coal which was mined was probably the "3rd vein" or Blackoak. It was known to thicken and dip toward the east from this site. No map is available for this mine; the only known extent was for the leased area.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Diamond Mine -1884 none
54 **LOCATION:** **TOPOGRAPHIC MAP:**
 SE NW 36 T79N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn unknown/unknown unkn
COMMENTS FOR MINE Diamond Mine:
The only known location and extent for this mine is from a lease block map. No mine map is available. A small area was mined out before the Eureka No. 2 opened.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Atlas Mine - none
55 Atlas Mine - none
 Standard Coal Co. - none
LOCATION: **TOPOGRAPHIC MAP:**
 NE 36 T79N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn shaft/unknown 100 ft.
COMMENTS FOR MINE Atlas Mine:
The Atlas Coal Co. formed in 1887 by reorganization of the Standard Coal Co. In 1887 the company employed 53 suggesting a large operation. No mine map is available; the only information known about the extent of the mine is from a lease block map. The mine worked two coal seams with the upper seam reached from the lower by a slope. Only a small block of coal was available in the upper seam and the lower seam thinned to the east.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Extra Mine 1884- none
56 **LOCATION:** 36 T79N R24W Des Moines SE **TOPOGRAPHIC MAP:**
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn unknown/unknown unkn

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Campfield Coal Co. -1895 none
57 Garver Mine - none
LOCATION: NE SW 36 T79N R24W Des Moines SE **TOPOGRAPHIC MAP:**
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn unknown/unknown 118 ft.

COMMENTS FOR MINE Campfield Coal Co.:
 The extent of this mine is unknown; the outline shown is for a block of land leased to it. No mine map is available. The coal thickness varied from 4.0 to 6.0 ft.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Standard Coal Co. - none
58 **LOCATION:** SE 36 T79N R24W Des Moines SE **TOPOGRAPHIC MAP:**
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn unknown/unknown unkn

COMMENTS FOR MINE Standard Coal Co.:
 The only known extent for this mine is for the block of leased land. No mine map is available.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Giant Coal Co. Mine No. 1 -1894 none
59 **LOCATION:** SW SE 36 T79N R24W Des Moines SE **TOPOGRAPHIC MAP:**
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn vertical/r & p 125 ft.

COMMENTS FOR MINE Giant Coal Co. Mine No. 1:
 The extent of this mine was available as a lease block only. No mine map is available. The mine was opened by Garver and Walters and was abandoned before 1908. A description of the mine shaft shows 4.0 ft. "1st vein" or Laddsdale Coal at 56 ft. depth, 4.5 ft. "2nd vein" or Cliffland Coal at 79.5 ft. depth, and 6.0 ft. "3rd vein" or Blackoak Coal at 118 ft. depth. The "3rd vein" was mined.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Glenwood Coal Co. Mine No. 2 1901-1914 1913
60 **LOCATION:** NE SW SE SW 32 T79N R23W Des Moines SE **TOPOGRAPHIC MAP:**
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 54 vertical/r & p unkn

COMMENTS FOR MINE Glenwood Coal Co. Mine No. 2
 Portions of this mine are also shown on the Economy No. 1, 2, and 3 maps.

NO. ON PLATE I: 61	MINE NAME(S): Glenwood Coal Co. Mine No. 3	YEARS OF OPERATION: -	MAP DATE: none
	LOCATION: SW SE 32 T79N R23W	TOPOGRAPHIC MAP: Des Moines SE	
	ACREAGE: unkn	ENTRANCE TYPE/MINING TYPE: vertical/r & p	SHAFT DEPTH: 110 ft.

COMMENTS FOR MINE Glenwood Coal Co. Mine No. 3:
 The only known operating date for this mine is 1908. It was located on the north side of the fairgrounds, but the exact location and extent are unknown since no map is available. By 1908 200 acres were leased but only 15 acres had been worked out. The 3.5 to 5.5 ft. coal seam was believed to be the "3rd vein" or Blackoak. It was correlated with the seam mined in the Giant Mine No.1.

NO. ON PLATE I: 62	MINE NAME(S): Caleb Johns Mine	YEARS OF OPERATION: -	MAP DATE: none
	LOCATION: SW 32 T79N R23W	TOPOGRAPHIC MAP: Des Moines SE	
	ACREAGE: unkn	ENTRANCE TYPE/MINING TYPE: unknown/unknown	SHAFT DEPTH: unkn

COMMENTS FOR MINE Caleb Johns Mine
 No mine map is available.

NO. ON PLATE I: 63	MINE NAME(S): Economy Coal Co. Mine No. 1 Economy Coal Co. Mine No. 1	YEARS OF OPERATION: - -	MAP DATE: 1913 1913
	LOCATION: SW SW NE SE 33 T79N R23W	TOPOGRAPHIC MAP: Des Moines SE	
	ACREAGE: 234	ENTRANCE TYPE/MINING TYPE: vertical/r & p	SHAFT DEPTH: 110 ft.

COMMENTS FOR MINE Economy Coal Co. Mine No. 1:
 The only known year of operation was 1908. A portion of the mine map has been lost so the outline shown is a partial extent only. The coal was at approximately the same elevation as the coal in the nearby Maple Block Mine and was probably the "3rd vein" or Blackoak Coal. Another coal seam was known to occur about 20 ft. above the mined horizon. The coal was apparently absent in a northeast-southwest trending zone between the two mines. The company had leased 1,000 acres.

NO. ON PLATE I: 64	MINE NAME(S): Four Mile Coal Co. Des Moines Ice and Fuel Co. Mine No. 5 Central Service Coal Co. Mine No. 5 Des Moines Ice and Fuel Co. Mine No.5 Sprague Coal Co. Sprague Coal Co.	YEARS OF OPERATION: 1928-1931 1922-1927 - - - -	MAP DATE: 1931 1931 1928 1926 1923 1923
-----------------------------------	--	--	--

LOCATION: SW NW NW 35 T79N R23W **TOPOGRAPHIC MAP:** Des Moines SE
ACREAGE: 104 **ENTRANCE TYPE/MINING TYPE:** vertical/r & p **SHAFT DEPTH:** unkn
COMMENTS FOR MINE Four Mile Coal Co.:
The name Four Mile Coal Co. comes from a handwritten note on the Des Moines Ice and Fuel Co. Mine No. 5 (1931) original map.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Economy Coal Co. Mine No. 3 1932-1945 1944
65 Economy Coal Co. Mine No. 3 - 1944
Economy Coal Co. Mine No. 3 - 1941
LOCATION: **TOPOGRAPHIC MAP:**
SE SW SE 32 T79N R22W Rising Sun
ACREAGE: 278 **ENTRANCE TYPE/MINING TYPE:** vertical/r & p **SHAFT DEPTH:** 220 ft.
COMMENTS FOR MINE Economy Coal Co. Mine No. 3
This mine probably mined the "3rd vein" or Blackoak Coal.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Carbon Mining Co. Mine No. 9 1929-1941 1941
66 Carbon Mining Co. Mine No. 9 - 1940
Carbon Mining Co. Mine No. 9 - 1939
LOCATION: **TOPOGRAPHIC MAP:**
SW SW NW 3 T78N R23W Rising Sun
ACREAGE: 100 **ENTRANCE TYPE/MINING TYPE:** vertical/r & p **SHAFT DEPTH:** 212 ft.
COMMENTS FOR MINE Carbon Mining Co. Mine No. 9:
This mine may have been associated with the Norwood-White Coal Co. The coal mined was correlated with the "3rd vein" which is probably equivalent to the currently used name Blackoak. The mine map shows old works labelled "Carbon No. 3 mine" to the west.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Smith and Lowe Coal Co. Mine No. 3 1902-1908 1940
67 Carbondale Mine No. 3 - 1940
LOCATION: **TOPOGRAPHIC MAP:**
NE NW 9 T78N R23W Des Moines SE
ACREAGE: 20 **ENTRANCE TYPE/MINING TYPE:** vertical/r & p **SHAFT DEPTH:** unkn
COMMENTS FOR MINE Smith and Lowe Coal Co. Mine No. 3:
This was a shipping mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Christy Coal Co. Mine No. 2 1892-1901 1901
68 Christy Coal Co. Mine No. 2 - 1901
LOCATION: **TOPOGRAPHIC MAP:**
SW NW SE NE 5 T78N R23W Des Moines SE

Cliffland Coal and the lower level was probably in the "3rd vein" or Blackoak Coal. Old works of Glenwood Mine No. 2 are shown on the map (1909 -1911) to the west.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Giant Coal Co. Mine No. 2 - none
72 **LOCATION:** **TOPOGRAPHIC MAP:**
 NE 2 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn vertical/unknown 145 ft.
COMMENTS FOR MINE Coal Co. Mine No. 2:
 The only known extent of this mine is from a lease block map. No mine map is available.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Giant Coal Co. Mine No. 3 1885- none
73 **LOCATION:** **TOPOGRAPHIC MAP:**
 SW 2 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn vertical/unknown unkn
COMMENTS FOR MINE Giant Coal Co. Mine No. 3:
 The only known extent of this mine is from a lease block map. No mine map is available.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Caleb Johns Mine - none
74 **LOCATION:** **TOPOGRAPHIC MAP:**
 NW NE 2 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn unknown/unknown unkn
COMMENTS FOR MINE Caleb Johns Mine:
 No map is available for this mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Gibson Mine No. 3 1901-1903 none
75 **LOCATION:** **TOPOGRAPHIC MAP:**
 SW NW 2 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn vertical/r & p unkn
COMMENTS FOR MINE Gibson Mine No. 3:
 This mine was located at East 17th St. and Capitol Ave. No map is available.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Watson Mine 1866-1876 none
76 **LOCATION:** **TOPOGRAPHIC MAP:**
 SW SW 2 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn vertical/unknown 40 ft.

COMMENTS FOR MINE Watson Mine:
This mine supplied coal for the railroad. No map is available.

NO. ON PLATE I: 77	MINE NAME(S): Reese Mine	YEARS OF OPERATION: -	MAP DATE: none
	LOCATION: SW SE SE 3 T78N R24W	TOPOGRAPHIC MAP: Des Moines SE	
	ACREAGE: unkn	ENTRANCE TYPE/MINING TYPE: slope/unknown	SHAFT DEPTH: unkn

COMMENTS FOR MINE Reese Mine:
No map is available for this mine.

NO. ON PLATE I: 78	MINE NAME(S): Rawson Mine	YEARS OF OPERATION: -	MAP DATE: none
	LOCATION: SW NE 4 T78N R24W	TOPOGRAPHIC MAP: Des Moines SW	
	ACREAGE: unkn	ENTRANCE TYPE/MINING TYPE: unknown/unknown	SHAFT DEPTH: unkn

COMMENTS FOR MINE Rawson Mine:
This mine was located at the corner of Sixth and School streets. The location and extent were obtained from maps maintained by the State Mine Inspectors' Office.

NO. ON PLATE I: 79	MINE NAME(S): Iowa Central Mine	YEARS OF OPERATION: 1896-	MAP DATE: none
	LOCATION: NW NW SW 4 T78N R24W	TOPOGRAPHIC MAP: Des Moines SW	
	ACREAGE: unkn	ENTRANCE TYPE/MINING TYPE: vertical/unknown	SHAFT DEPTH: unkn

COMMENTS FOR MINE Iowa Central Mine:
This mine was located near School Street between 5th and 6th streets. The only known date of operation is 1896. No map is available.

NO. ON PLATE I: 80	MINE NAME(S): Gibson Coal Mining Co. Mine No. 5 Gibson Coal Mining Co. Mine No. 5	YEARS OF OPERATION: 1908-1918 -	MAP DATE: 1917 1917
	LOCATION: NE SE SE 35 T79N R25W	TOPOGRAPHIC MAP: Des Moines SW	
	ACREAGE: 123	ENTRANCE TYPE/MINING TYPE: vertical/r & p	SHAFT DEPTH: 160 ft.

COMMENTS FOR MINE Gibson Coal Mining Co. Mine No. 5:
Coal prospect holes in the area showed that the depth to the coal increased west of the shaft. It also indicated that three coal seams were present east of the shaft and that there may have been as many as four seams south of the shaft. The coal mined here averaged 4.0 ft. thick.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Des Moines Ice and Fuel Co. 1917-1925 1925
 81 West Side Coal Co. -1917 unkn
LOCATION: **TOPOGRAPHIC MAP:**
 NW NW NW 2 T78N R25W Des Moines SW
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 85 vertical/r & p unkn
COMMENTS FOR MINE Des Moines Ice and Fuel Co.
 This mine was also known as the West Side Mine of the Des Moines Ice and Fuel Co.
 The mine shows a portion of the Keystone No. 2 mine to the south.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Keystone Coal Co. Mine 1908-1922 1922
 82 **LOCATION:** **TOPOGRAPHIC MAP:**
 NE NW 11 T78N R25W Des Moines SW
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 195 vertical/r & p 165 ft.
COMMENTS FOR MINE Keystone Coal Co. Mine:
 Three coal seams were encountered in the Keystone shaft above the seam worked.
 They were: a 7 in. coal at 44 ft., a 3 ft. coal at 77 ft. and a 4 ft. 4 in. coal at 121 ft. below
 the surface. The coal mined was 147 ft. below the surface. It was restricted in extent,
 thinning to approximately 18 in. thick 1 mile west of the shaft. This was a shipping
 mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Coaldale Fuel Co. 1904-1910 1912
 83 Norwood Coal Co. Mine No. 2 1903-1904 unkn
 Norwood Coal Co. Mine No. 2 - unkn
 Norwood Coal Co. Mine No. 2 - unkn
 Norwood Coal Co. Mine No. 2 - unkn
LOCATION: **TOPOGRAPHIC MAP:**
 NW NW NE 13 T78N R25W Des Moines SW
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 180 vertical/r & p unkn
COMMENTS FOR MINE Coaldale Fuel Co.
 This mine worked two levels. The lower coal ranged from 3.5 to 5.5 ft. and the upper
 coal averaged 5.2 ft. They were separated by 14 ft. They were probably the "3rd vein"
 or Blackoak Coal and the "2nd vein" or Cliffland Coal, respectively.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Walnut Creek Coal Co. 1905-1910 unkn
 84 Walnut Creek Coal Co. - unkn
LOCATION: **TOPOGRAPHIC MAP:**
 SW NW SW SE 12 T78N R25W Des Moines SW
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 4 vertical/r & p 150 ft.
COMMENTS FOR MINE Walnut Creek Coal Co.:
 This mine was located at South Greenwood Park. The coal thins toward the north and
 northeast. This mine was probably in the "3rd vein" or Blackoak Coal which averaged

4.0 ft. thick. It was described as the same coal seam mined by the Coaldale Fuel Co. Mine.

NO. ON PLATE I: 85
MINE NAME(S): Walnut Creek Coal Mine
YEARS OF OPERATION: 1885-1894
MAP DATE: unkn
LOCATION: SE SE 12 T78N R25W Des Moines SW
TOPOGRAPHIC MAP:
ACREAGE: 18
ENTRANCE TYPE/MINING TYPE: vertical/lw & r&p
SHAFT DEPTH: 140 ft.
COMMENTS FOR MINE Walnut Creek Coal Mine:
 The coal worked in this mine thinned rapidly to the northwest and thickened to the south. Longwall mining was used in the northern part of the mine where the coal was thinner and room and pillar mining was used in the southern part where the coal was thicker. The intent was to maximize production.

NO. ON PLATE I: 86
MINE NAME(S): Two Rivers Coal Co.
YEARS OF OPERATION: -
MAP DATE: none
LOCATION: SE NE SW 7 T78N R24W Des Moines SW
TOPOGRAPHIC MAP:
ACREAGE: unkn
ENTRANCE TYPE/MINING TYPE: vertical/unknown
SHAFT DEPTH: unkn
COMMENTS FOR MINE Two Rivers Coal Co.:
 The location and extent of this mine was obtained from maps prepared by the Office of the State Mine Inspectors.

NO. ON PLATE I: 87
MINE NAME(S): University Coal Co.
YEARS OF OPERATION: -
MAP DATE: none
LOCATION: NW NE 18 T78N R24W Des Moines SW
TOPOGRAPHIC MAP:
ACREAGE: unkn
ENTRANCE TYPE/MINING TYPE: unknown/r & p
SHAFT DEPTH: unkn
COMMENTS FOR MINE University Coal Co.:
 The location and extent of this mine was obtained from maps prepared by the Office of the State Mine Inspectors. No map is available for this mine.

NO. ON PLATE I: 88
MINE NAME(S): Rose Hill Mine
YEARS OF OPERATION: 1889-1896
MAP DATE: none
LOCATION: NW SE 18 T74N R24W Des Moines SW
TOPOGRAPHIC MAP:
ACREAGE: unkn
ENTRANCE TYPE/MINING TYPE: vertical/unknown
SHAFT DEPTH: 90 ft.
COMMENTS FOR MINE Rose Hill Mine:
 This mine was located three miles west of Des Moines on the Raccoon River. The location and extent were obtained from maps prepared by the Office of the State Mine Inspectors. The coal ranged from 2.0 to 4.0 ft. thick.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
89	Union Mine	1894-	unkn
	Great Western Mine	-1894	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	SW SW NE 17 T78N R24W	Des Moines SW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	18	vertical/r & p	unkn
	COMMENTS FOR MINE Union Mine: This mine was located on the Chicago-Great Western Railroad near Sevastapol. No location is given on the map for this mine.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
90	Clifton Heights Coal Co.	1895-	none
	Coon Valley Coal Mine	1885-1895	unkn
	Coon Valley Coal Mine	-	1885
	LOCATION:	TOPOGRAPHIC MAP:	
	SW NW NW 16 T78N R24W	Des Moines SW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	60	vertical/r & p	120 ft.
	COMMENTS FOR MINE Clifton Heights Coal Co. Three coal seams were described in the mine shaft: the 4.0 ft. "1st vein" or Laddsdale Coal at 30 ft. depth, 4.0 ft. "2nd vein" or Cliffland Coal at 80 ft., and 4.0 to 7.0 ft. "3rd vein" or Blackoak Coal at 110 ft. Mining may have occurred on more than one level.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
91	Johns Coal Co.	1907-1913	1913
	Johns Coal Co.	-	1912
	Johns Coal Co.	-	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	NW NE NE NW 16 T78N R24W	Des Moines SW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	21	vertical/r & p	unkn
	COMMENTS FOR MINE Johns Coal Co.: This mine underlies McRae Park. This mine operated in the same coal seam as the Bennet Mine to the northeast. The coal is correlated with the "3rd vein" which is probably equivalent to the Blackoak Coal. The coal averages 4.0 ft. thick. Map (1912) shows portions of the Coon Valley and Pioneer mines.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
92	Pioneer Coal Co.	1876-1896	1881
	Pioneer Coal Co.	-	1881
	Redhead Shaft	-	none
	LOCATION:	TOPOGRAPHIC MAP:	
	SE NW SE 9 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	147	vrt&slp /r & p	150 ft.
	COMMENTS FOR MINE Pioneer Coal Co.: This mine operated in the "3rd vein" which is probably equivalent to the Blackoak Coal. This was one of the earliest mines to open in the Des Moines area. It was		

located at the community known as Sevastapol. This mine was also known as the Redhead Shaft after Wesley Redhead who was president of the mining company which owned the mine.

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Capital Coal Co. Mine No. 1	1903-1908	1908
93	Capital Coal Co. Mine No. 1	-	1908
	Capitol Coal Co. Mine No. 1	-	1908
	LOCATION:	TOPOGRAPHIC MAP:	
	SE NE NE 16 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	15	vertical/r & p	unkn

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Eureka Coal Co. Mine No. 1	1874-1894	none
94	LOCATION:	TOPOGRAPHIC MAP:	
	NE SW 15 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	unkn	vertical/r & p	160 ft.

COMMENTS FOR MINE Eureka Coal Co. Mine No. 1:
This mine produced from the "2nd vein" and "3rd vein" which are probably equivalent to the Cliffland and Blackoak coals, respectively. The location and extent of this mine were obtained from maps prepared by the Office of the State Mine Inspectors. The mine operated in the Sevastapol area.

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Union Mine (3rd Vein)	1887-1894	unkn
95	LOCATION:	TOPOGRAPHIC MAP:	
	SE NW NE 15 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	30	vertical/r & p	150 ft.

COMMENTS FOR MINE Union Mine (3rd vein):
This mine operated in the "2nd vein" and "3rd vein" probably equivalent to the Cliffland and Blackoak coals, respectively. The Blackoak Coal averaged 4.0 ft. thick. The same shaft was used for both levels.

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Gibson Coal Co. Mine No.1	1889-1895	none
96	Polk County Mine No. 1	1874-1889	none
	Sypher Mine	-	none
	LOCATION:	TOPOGRAPHIC MAP:	
	10 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	unkn	vertical/unknown	105 ft.

COMMENTS FOR MINE Gibson Coal Co. Mine No. 1
The "2nd vein" or Cliffland Coal and "3rd vein" or Blackoak Coal were mined. Thicknesses averaged 4.0 to 4.5 ft.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Eclipse Coal Co. 1873-1885 1918
97 **LOCATION:** **TOPOGRAPHIC MAP:**
 NW NE NW 14 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 50 vertical/r & p unkn
COMMENTS FOR MINE Eclipse Coal Co.:
 This mine is shown on the map of the Elko Coal Co. mine. The "2nd vein", probably equivalent to the Cliffland Coal, was mined. A small amount of coal was mined from the "3rd vein" or Blackoak Coal.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Charles Reilley Mine - 1918
98 **LOCATION:** **TOPOGRAPHIC MAP:**
 SE SE SW 11 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 5 vertical/r & p unkn
COMMENTS FOR MINE Charles Reilley Mine:
 This mine is shown on the map of the Elko Coal Co. mine. It also may have been known as the Charles Riley Mine. The only known year of operation is 1918.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: small unnamed mine - 1918
99 **LOCATION:** **TOPOGRAPHIC MAP:**
 NE NE NW 14 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 5 slope/unknown unkn
COMMENTS FOR MINE small unnamed mine:
 This mine is shown on the map of the Eclipse Coal Co. mine which is dated 1918. It probably operated in the "1st vein" which is thought to be equivalent to the Ladddale Coal of current usage.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Clover Leaf Mine Shaft 1911-1913 none
100 **LOCATION:** **TOPOGRAPHIC MAP:**
 SE SE SE SW 11 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 unkn vertical/unknown unkn
COMMENTS FOR MINE Clover Leaf Mine Shaft:
 The extent of mining is unknown. The shaft location only is shown on the map of the Elko Coal Co. mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Fuller and Cogshell Coal Co. 1882-1885 1885
101 **LOCATION:** **TOPOGRAPHIC MAP:**
 SW SE 11 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
 17 slope/r & p unkn

COMMENTS FOR MINE Fuller and Cogshell Coal Co.:
 This mine may have formerly been called an Eclipse Coal Co. mine.

NO. ON PLATE I: 102
MINE NAME(S): Wild Rose Mine
YEARS OF OPERATION: 1899-1899
MAP DATE: 1918
LOCATION: SE SW SW SE 11 T78N R24W
TOPOGRAPHIC MAP: Des Moines SE
ACREAGE: 20
ENTRANCE TYPE/MINING TYPE: vertical/r & p
SHAFT DEPTH: unkn
COMMENTS FOR MINE Wild Rose Mine:
 This mine is shown on the mine map of the Elko Coal Co. It produced from the "2nd vein" which is probably equivalent to the Cliffland Coal of currently accepted nomenclature.

NO. ON PLATE I: 103
MINE NAME(S): Elko Coal Co.
YEARS OF OPERATION: 1901-1907
MAP DATE: 1918
LOCATION: NE NW NE NE 14 T78N R24W
TOPOGRAPHIC MAP: Des Moines SE
ACREAGE: 40
ENTRANCE TYPE/MINING TYPE: vertical/r & p
SHAFT DEPTH: unkn
COMMENTS FOR MINE Elko Coal Co.:
 The map for this mine includes the outlines of several other mines which operated in the area. It reportedly operated in the "2nd vein" coal, the probable equivalent of the Blackoak Coal. The surface area above this mine later was quarried for sand and gravel. Several others mines are shown on this map including Eclipse Coal Co., Charles Reilly Mine, a small unnamed mine, Clover Leaf Shaft, Wild Rose Mine, and Beck Coal Co. (3rd vein).

NO. ON PLATE I: 104
MINE NAME(S): Scott Mine
YEARS OF OPERATION: 1908-
MAP DATE: none
LOCATION: NE NE 14 T78N R24W
TOPOGRAPHIC MAP: Des Moines SE
ACREAGE: unkn
ENTRANCE TYPE/MINING TYPE: slope/unknown
SHAFT DEPTH: unkn
COMMENTS FOR MINE Scott Mine:
 No mine map is available for this mine and the extent is unknown. May have remined a previously mined area.

NO. ON PLATE I: 105
MINE NAME(S): Pennsylvania Mine
YEARS OF OPERATION: 1869-1896
MAP DATE: none
LOCATION: NE 14 T78N R24W
TOPOGRAPHIC MAP: Des Moines SE
ACREAGE: unkn
ENTRANCE TYPE/MINING TYPE: vertical/r & p
SHAFT DEPTH: unkn
COMMENTS FOR MINE Pennsylvania Mine:
 No mine map is available. The extent is unknown.

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Beck Coal Co. (2nd vein)	1908-1942	1917
106	Beck Coal Co. 2nd Vein	-	1918
	Beck Coal Co. 2nd Vein	1908-1922	1918
	Beck Coal Co.	-	1912
	LOCATION:	TOPOGRAPHIC MAP:	
	SW SW NE 14 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	76	vertical/r & p	unkn
	COMMENTS FOR MINE Beck Coal Co. (2nd vein):		
	This mine produced from the "2nd vein" or Cliffland Coal. It is also shown on the Elko Coal Co. map. Beck Coal Co. map shows outline of old works of the Wild Rose Coal Co. 2nd vein mine, the Eclipse Mine (second vein) and the second vein workings of the Elko Coal Co. and Glenwood mines.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Beck Coal Co. (3rd vein)	1908-1922	1918
107	LOCATION:	TOPOGRAPHIC MAP:	
	SE SE NW 14 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	27	unknown/unknown	unkn
	COMMENTS FOR MINE Beck Coal Co. (3rd vein):		
	The outline for this mine was obtained from the map of the Elko Coal Co. mine. It operated in the "3rd vein" which is believed to be equivalent to the Blackoak Coal.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Carbondale Coal Co. Mine No. 1	1896-1897	unkn
108	Iowa Fuel Co.	1893-1896	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	SW NE NW 9 T78N R23W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	30	vertical/r & p	108 ft.
	COMMENTS FOR MINE Carbondale Coal Co. Mine No. 1		
	The coal averaged 4.0 ft. thick.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Smith and Lowe Coal Co. Mine No. 2	1902-1908	1938
109	Carbondale Mine No. 2	-1902	none
	LOCATION:	TOPOGRAPHIC MAP:	
	SW SW SE NW 9 T78N R23W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	5	vertical/r & p	110 ft.
	COMMENTS FOR MINE Smith and Lowe Coal Co. Mine No. 2		
	The coal ranges from 3.5 to 4.5 ft. thick. This mine is shown on the map of the Keating-Stanford mine. Only a partial extent is shown.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Smith And Lowe Coal Co. Mine No. 4	1903-1905	none
110	LOCATION:	TOPOGRAPHIC MAP	
	10 T78N R23W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	unkn	vertical/r & p	unkn
	COMMENTS FOR MINE Smith And Lowe Coal Co. Mine No. 4: This mine may have also been known as Carbondale No.4. No map is available for this mine and the extent is unknown.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Keating - Stanford Coal Co.	1934-1938	1938
111	Keating - Stanford Coal Co.	-	1937
	Keating - Stanford Coal Co.	-	1936
	Keating - Stanford Coal Co.	-	1935
	Keating - Stanford Coal Co.	-	1934
	LOCATION:	TOPOGRAPHIC MAP:	
	NW SW NE 10 T78N R23W	Rising Sun	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	26	vertical/r & p	unkn
	COMMENTS FOR MINE Keating - Stanford Coal Co. The mine map shows a partial extent for Smith and Lowe Coal Co. Mine No. 2. The coal thickness varies from 4.8 to 5.3 ft.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Pioneer Coal Co.	1940-1941	1941
112	Pioneer Coal Co.	-	1941
	Pioneer Coal Co.	-	1941
	Wolf Creek Mining Co.	1938-1939	1938
	Wolf Creek Mining Co.	-	1937
	Wolf Creek Mining Co.	-	1937
	Griffith Coal Co.	1934-1938	1935
	LOCATION:	TOPOGRAPHIC MAP:	
	SW NW SE 10 T78N R23W	Rising Sun	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	40	vertical/r & p	100 ft.

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Capital City Coal Co. Mine No. 1	1930-1936	1934
113	Capital City Coal Co. Mine No. 1	-	1932
	Capital City Coal Co. Mine No. 1	-	1931
	LOCATION:	TOPOGRAPHIC MAP:	
	SW SW SE SE 13 T78N R23W	Rising Sun	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	41	vertical/r & p	unkn

Preston Coal Co. - 1928
Preston Coal Co. -
LOCATION: **TOPOGRAPHIC MAP:**
SE NW 28 T78N R23W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
11 slope/r & p unkn
COMMENTS FOR MINE Preston Coal Co.:
Maps for this mine indicate that it may have operated in two coal seams.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Standard Coal Co. Mines 1933-1936 1933
124 **LOCATION:** **TOPOGRAPHIC MAP:**
NW NW 28 T78N R23W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
5 vertical/r & p unkn
COMMENTS FOR MINE Standard Coal Co. Mines:
This mine is shown on the map with the Standard Coal Co. which operated from 1929 to 1933 (#125).

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Standard Coal Co. Mines 1929-1933 1931
125 **LOCATION:** **TOPOGRAPHIC MAP:**
NW NW 28 T78N R23W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
5 slope/r & p unkn
COMMENTS FOR MINE Standard Coal Co. Mines:
This mine is shown on the map with the Standard Coal Co. mine which operated from 1933-1936 (#124).

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Levey Coal Co. 1936-1941 1936
126 **LOCATION:** **TOPOGRAPHIC MAP:**
NE NW 28 T78N R23W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
5 vertical/r & p 90 ft.
COMMENTS FOR MINE Levey Coal Co.
The mine map also shows old works labelled "Moore" and "Standard" mines.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Avon Coal Co. - none
127 **LOCATION:** **TOPOGRAPHIC MAP:**
NE NE 29 T78N R23W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
unkn vertical/unknown 34 ft.
COMMENTS FOR MINE Avon Coal Co.:
The coal is correlated with the coal seam mined at the Coal Hill mine. The coal thickness averaged 4.6 ft.

COMMENTS FOR MINE Old Clover Leaf Mine:

This mine was shown as the Old Clover Leaf Mine on Clover Leaf Mine map (1934 revision, #131).

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
133	Coal Hill Coal And Mining Co.	1901-	none
	Coal Valley Coal Co.	1896-1901	none
	Manbeck Coal Co. Mine	1889-1893	unkn
	Manbeck Mine	-	unkn
	Coon Valley Coal Co. Mine No. 2	1887-1890	none
	LOCATION:	TOPOGRAPHIC MAP:	
	NE SE 19 T78N R23W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	60	vert & sl/r & p	45 ft.

COMMENTS FOR MINE Coal Hill Coal And Mining Co.:

This mine may have worked "2nd vein" or Cliffland Coal which averaged 3.5 ft. thick.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
134	Beck Mine	-	none
	LOCATION:	TOPOGRAPHIC MAP:	
	19 T78N R23W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	unkn	unknown/unknown	unkn

COMMENTS FOR MINE Beck Mine:

No map was available for this mine. It was located on a map showing coal leases along with the X-L mine.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
135	Independant Coal Co.	1927-1945	1945
	Independant Coal Co.	-	1945
	Independent Coal Co.	-	1945
	Independent Coal Co.	-	1939
	Independent Coal Co.	-	1937
	Independent Coal Co.	-	1937
	Independent Coal Co.	-	1935
	Independant Coal Co.	-	1934
	Independent Coal Co.	-	1933
	Independent Coal Co.	-	1932
	Independent Coal Co.	-	1931
	X-L Coal Co.	1918-1927	none
	LOCATION:	TOPOGRAPHIC MAP:	
	NE SE NW 30 T78N R23W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	90	vertical/r & p	60 ft.

COMMENTS FOR MINE Independant Coal Co.:

The mine map (1945) is in three sections. This mine underlies Lake Easter.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Evergreen Coal Co. 1934-1936 1936
136 **LOCATION:** **TOPOGRAPHIC MAP:**
SE NW SE 25 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
6 vertical/r & p unkn

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Glenwood Mine 1899-1901 1917
137 **LOCATION:** **TOPOGRAPHIC MAP:**
SW NE 14 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
11 vertical/r & p unkn
COMMENTS FOR MINE Glenwood Mine:
Mine is identified on Beck Coal Co. (1917 revision) map which shows some details of the mine.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Pleasant Hill Coal Co. - none
138 **LOCATION:** **TOPOGRAPHIC MAP:**
SW 14 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
unkn vertical/unknown 68 ft.
COMMENTS FOR MINE Pleasant Hill Coal Co.:
This was a small shaft mine in the bluff. No map is available for this mine. The location was obtained from the Report of the State Mine Inspector for 1887.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Des Moines Coal Co. Mine No. 1. -1895 none
139 **LOCATION:** **TOPOGRAPHIC MAP:**
NW 14 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
unkn vertical/unknown 105 ft.
COMMENTS FOR MINE Des Moines Coal Co. Mine No. 1:
No map is available for this mine and the extent is unknown.

NO. ON **MINE NAME(S):** **YEARS OF OPERATION:** **MAP DATE:**
PLATE I: Pittsburg Mine -1885 none
140 **LOCATION:** **TOPOGRAPHIC MAP:**
SE SE 15 T78N R24W Des Moines SE
ACREAGE: **ENTRANCE TYPE/MINING TYPE:** **SHAFT DEPTH:**
unkn vertical/unknown unkn
COMMENTS FOR MINE Pittsburg Mine:
No map is available for this mine and the extent is unknown.

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Cooperative Coal Co. Mine No. 1	-	none
141	LOCATION:	TOPOGRAPHIC MAP:	
	SE SE 15 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	unkn	vertical/unknown	125 ft.
	COMMENTS FOR MINE Cooperative Coal Co. Mine No. 1: No map is available for this mine and the extent is unknown. This mine operated in the "1st vein" or Laddsdale Coal.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Van Ginkel Mine (2nd vein)	1885-1897	unkn
142	Van Ginkel Mine (2nd vein)	-	unkn
	Van Ginkel Mine (2nd vein)	-	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	NW SE SE 15 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	30	vertical/r & p	75 ft.
	COMMENTS FOR MINE Van Ginkel Mine (2nd vein): This mine used a second shaft located in NE, SW, SE, Sec. 15, T78N, R24W. The mined coal was correlated to the "2nd vein" or what is now known as Cliffland Coal and averaged 4.5 ft. thick. The mine map is in sections which are not dated.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	Blount and Evans Coal Co.	1908-	none
143	LOCATION:	TOPOGRAPHIC MAP:	
	NE 27 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	unkn	vertical/unknown	218 ft.
	COMMENTS FOR MINE Blount and Evans Coal Co.: The location and extent of this mine were obtained from maps prepared by the Office of the State Mine Inspectors. The coal averaged 4.5 ft. thick.		

NO. ON	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
PLATE I:	South Des Moines Coal Co.	1912-1922	1922
144	South Des Moines Coal Co.	-	1917
	South Des Moines Coal Co.	-	1917
	South Des Moines Coal Co.	-	1917
	South Des Moines Coal Co.	-	unkn
	South Des Moines Coal Co.	-	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	NE SE NW SE 21 T78N R24W	Des Moines SE	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	223	vertical/lw & r&p	unkn

NO. ON PLATE I: 145
MINE NAME(S): Fort Des Moines Mine
LOCATION: SE NW 21 T78N R24W
ACREAGE: unkn
YEARS OF OPERATION: -
TOPOGRAPHIC MAP: Des Moines SW
ENTRANCE TYPE/MINING TYPE: unknown/r & p
SHAFT DEPTH: unkn
MAP DATE: none
COMMENTS FOR MINE Fort Des Moines Mine:
 The extent and location of this mine were obtained from maps prepared by the Office of the State Mine Inspectors.

NO. ON PLATE I: 146
MINE NAME(S): Proctor Coal Company
LOCATION: SW SE 16 T78N R24W
ACREAGE: unkn
YEARS OF OPERATION: -
TOPOGRAPHIC MAP: Des Moines SW
ENTRANCE TYPE/MINING TYPE: vertical/unknown
SHAFT DEPTH: 197 ft.
MAP DATE: none
COMMENTS FOR MINE Proctor Coal Company:
 The location and extent of this mine were obtained from maps of lease properties. This was probably and a room and pillar mine.

NO. ON PLATE I: 147
MINE NAME(S): Bloomfield Coal Co. Mine No. 6
 Bloomfield Coal Co. Mine No. 6
 Bloomfield Coal Co. Mine No. 6
 Carlston And Lund Mine
LOCATION: NE SW 16 T78N R24W
ACREAGE: 58
YEARS OF OPERATION: 1889-1895
 -
 -
 1887-1889
TOPOGRAPHIC MAP: Des Moines SW
ENTRANCE TYPE/MINING TYPE: vertical/r & p
SHAFT DEPTH: 181 ft.
MAP DATE: unkn
 unkn
 unkn
 unkn
COMMENTS FOR MINE Bloomfield Coal Co. Mine No. 6:
 The Carlston and Lund Mine which operated from 1887 to 1889 mined "1st vein" coal which is probably equivalent to the Laddsdale Coal at a depth of 65 ft. The Bloomfield Coal Co. deepened the shaft to reach the "3rd vein" which is probably equivalent to the Blackoak Coal at 181 ft.

NO. ON PLATE I: 148
MINE NAME(S): Bennett Brothers Coal Co. Mine No. 1
 Bennett Brothers Coal Co. Mine No. 1
LOCATION: SW NE NW SE 17 T78N R24W
ACREAGE: 71
YEARS OF OPERATION: 1903-1916
 -
TOPOGRAPHIC MAP: Des Moines SW
ENTRANCE TYPE/MINING TYPE: vertical/r & p
SHAFT DEPTH: 125 ft.
MAP DATE: 1916
 1916
COMMENTS FOR MINE Bennett Brothers Coal Co. Mine No. 1:
 The "3rd vein" or Blackoak Coal was mined. This mine was connected with the Bennett Bros. Mine No. 2 underground.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
149	Bennett Brothers Coal Co. Mine No. 2	1917-1936	1936
	Bennett Brothers Coal Co. Mine No. 2	-	1924
	Bennett Brothers Coal Co. Mine No. 2	-	1917
	Bennett Brothers Coal Co. Mine No. 2	-	unkn
	LOCATION: SW SE SW 17 T78N R24W	TOPOGRAPHIC MAP: Des Moines SW	
	ACREAGE: 132	ENTRANCE TYPE/MINING TYPE: vertical/r & p	SHAFT DEPTH: 125 ft.
	COMMENTS FOR MINE Bennett Brothers Coal Co. Mine No. 2: This mine was in the "3rd vein" or Blackoak Coal. It was connected to the Bennett Bros. No. 1 (#148) underground.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
150	Midway Coal Co. Shaw Mine	-	none
	LOCATION: NE NE 19 T78N R24W	TOPOGRAPHIC MAP: Des Moines SW	
	ACREAGE: unkn	ENTRANCE TYPE/MINING TYPE: vertical/unknown	SHAFT DEPTH: 140 ft.
	COMMENTS FOR MINE Midway Coal Co. Shaw Mine: No map is available for this mine and the extent is unknown. The mine produced for local sales only so it was probably small. It was probably a room and pillar mine.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
151	Acme Coal Mine	1918-1926	1926
	LOCATION: NE SW NE NE 19 T78N R24W	TOPOGRAPHIC MAP: Des Moines SW	
	ACREAGE: 40	ENTRANCE TYPE/MINING TYPE: vertical/r & p	SHAFT DEPTH: unkn
	COMMENTS FOR MINE Acme Coal Mine: The coal seam worked at this mine was at a higher level than the coal at the Bennett Brothers mine (map #152). The coal was correlated with the "2nd vein" which is probably equivalent to the Cliffland Coal.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
152	Bennett Brothers Coal Co. (3rd vein)	1908-1914	unkn
	Bennett Brothers Coal Co. (3rd vein)	-	unkn
	Bennett Brothers Coal Co. (3rd vein)	-	unkn
	Bennett Brothers Coal Co. (3rd vein)	-	1916
	Bennett Brothers Coal Co. (3rd vein)	-	1916
	Bennett Brothers Coal Co. (3rd vein)	-	1916
	Bennett Brothers Coal Co. (3rd vein)	-	1916
	LOCATION: NE NE 19 T78N R24W	TOPOGRAPHIC MAP: Des Moines SW	
	ACREAGE: 43	ENTRANCE TYPE/MINING TYPE: vertical/r & p	SHAFT DEPTH: unkn
	COMMENTS FOR MINE Bennett Brothers Coal Co. (3rd vein): This mine was known primarily was the Ray Mine (operated by Bennett Brothers Coal Co.) The name used here appears on the 1936 revision of the mine map for Bennett		

Brothers Coal Co. Mine No. 2. The coal mined was correlated with the "3rd vein" or Blackoak Coal. Some maps are partial views only.

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
153	Des Moines Coal Co. Mine No. 4	1920-1936	1936
	Des Moines Coal Co. Mine No. 4	-	1936
	Des Moines Coal Co. Mine No. 4	-	1935
	Des Moines Coal Co. Mine No. 4	-	1924
	LOCATION:	TOPOGRAPHIC MAP:	
	NE NE NE NW 19 T78N R24W	Des Moines SW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	109	vertical/r & p	unkn
	COMMENTS FOR MINE Des Moines Coal Co. Mine No. 4 Mine map (1936) shows old ovrks of Des Moines Coal Co. Mine No. 5 (#154).		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
154	Stanford Coal Co. Mine No. 1	1931-1932	unkn
	Des Moines Coal Co Mine No. 5	1924-1931	1931
	Des Moines Coal Co. Mine No. 5	-	1924
	LOCATION:	TOPOGRAPHIC MAP:	
	NW NE NE 24 T78N R25W	Des Moines SW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	40	vertical/r & p	unkn
	COMMENTS FOR MINE Stanford Coal Co. Mine No. 1: Maps for this mine show workings on two levels and an apparent connection. Some old works of the Des Moines Coal Co. Iowa Mine are also shown.		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
155	Des Moines Coal Co. Iowa Mine	1913-1916	1916
	Des Moines Coal Co. Iowa Mine	-	1913
	LOCATION:	TOPOGRAPHIC MAP:	
	NE SW NE NW 24 T78N R25W	Des Moines SW	
	ACREAGE:	ENTRANCE TYPE/MINING TYPE:	SHAFT DEPTH:
	210	vertical/r & p	150 ft.
	COMMENTS FOR MINE Des Moines Coal Co. Iowa Mine: This mine worked an upper and lower seam. It may have been known as the Iowa Coal Co. mine prior to 1913. Some old works of the Des Moines Coal Co. Mine No. 5 are shown (#154).		

NO. ON PLATE I:	MINE NAME(S):	YEARS OF OPERATION:	MAP DATE:
156	Hollingsworth Coal Co.	1905-1912	unkn
	Hollingsworth Coal Co.	-	unkn
	Hollingsworth Coal Co.	-	unkn
	Hollingsworth Coal Co.	-	unkn
	Hollingsworth Coal Co.	-	unkn
	LOCATION:	TOPOGRAPHIC MAP:	
	SW SW SW 13 T78N R25W	Des Moines SW	

of the State Mine Inspectors. No mine map is available. Forty acres were leased by the company.

APPENDIX II.
Alphabetical List of Mines

Appendix II is an alphabetical listing of mine names used for the mines on Plate I and in Appendix I. Map numbers and dates of operation are included. Appendix II is intended as a cross-reference to use with Appendix I.

MINE NAME	MAP NO.	YEARS OF OPERATIONS	
Acme Coal Mine	151	1918	1926
Adams and Hastie Mine	118	----	----
Altoona Mine	14	----	----
American Coal Mining Co.	44	1912	1919
Anderson Coal Co.	4	1907	----
Anderson Mine	119	----	----
Atlas Mine	55	----	----
Avon Coal Co.	127	----	----
Beck Brothers Coal Co.	21	1937	1940
Beck Coal Co.	106	----	----
Beck Coal Co. (2nd vein)	106	1908	1942
Beck Coal Co. (3rd vein)	107	1908	1922
Beck Coal Co. 2nd Vein	106	1908	1922
Beck Coal Co. Mine	21	1940	1942
Beck Mine	134	----	----
Bennett Brothers Coal Co. (3rd vein)	152	1908	1914
Bennett Brothers Coal Co. Mine No. 1	148	1903	1916
Bennett Brothers Coal Co. Mine No. 2	149	1917	1936
Bloomfield Coal Co. Marquisville Mine	9	1914	1922
Bloomfield Coal Co. Marquisville Mine	9	1906	----
Bloomfield Coal Co. Marquisville Mine	9	1914	1927
Bloomfield Coal Co. Mine No. 2	49	1896	1905
Bloomfield Coal Co. Mine No. 6	147	1889	1895
Blount and Evans Coal Co.	24	1908	1913
Blount and Evans Coal Co.	143	1908	----
Caleb Johns Mine	74	----	----
Caleb Johns Mine	62	----	----
Campfield Coal Co.	57	----	1895
Capital City Coal Co. Mine No. 1	113	1930	1936
Capital Coal Co. Mine No. 1	93	1903	1908
Carbon Mining Co. Mine No. 9	66	1929	1941
Carbondale Coal Co. Mine No. 1	108	1896	1897
Carbondale Mine No. 2	109	----	1902
Carbondale Mine No. 3	67	----	----
Carlston And Lund Mine	147	1887	1889
Center Coal and Mining Co.	42	1903	1908
Central Service Coal Co. Mine No. 5	64	----	----
Central Service Coal Co. Mine No. 6	45	1930	1947
Charles Reilley Mine	98	----	----
Christy Coal Co. Mine No. 2	68	1892	1901
Cliffton Heights Coal Co.	90	1895	----
Clover Leaf Mine	131	1929	1934
Clover Leaf Mine Shaft	100	1911	1913
Coal Hill Coal And Mining Co.	133	1901	----
Coal Valley Coal Co.	133	1896	1901
Coaldale Fuel Co.	83	1904	1910
Coon Valley Coal Co. Mine No. 2	133	1887	1890
Coon Valley Coal Mine	90	1885	1895
Cooperative Coal Co.	39	1901	1903

MINE NAME	MAP NO.	YEARS OF OPERATIONS	
Cooperative Coal Co. Mine No. 1	141	----	----
Dahl Mine	51	----	----
Delaware Coal Co.	8	1906	1911
Des Moines Coal Co Mine No. 5	154	1924	1931
Des Moines Coal Co.	50	1865	1873
Des Moines Coal Co. Iowa Mine	155	1913	1916
Des Moines Coal Co. Marquisville Mine	11	1894	1907
Des Moines Coal Co. Mine No. 1	139	----	1895
Des Moines Coal Co. Mine No. 4	153	1920	1936
Des Moines Coal Co. Mine No. 5	154	----	----
Des Moines Ice and Fuel Co.	81	1917	1925
Des Moines Ice and Fuel Co. Mine No. 5	64	1922	1927
Diamond Mine	54	----	1884
Eagle Coal Co. Mine No. 2	48	1908	1915
Eagle Mine No. 3	37	1910	1919
Eclipse Coal Co.	97	1873	1885
Economy Coal Co.	71	----	----
Economy Coal Co. Mine No. 1	63	----	----
Economy Coal Co. Mine No. 2	71	1924	1935
Economy Coal Co. Mine No. 2 (lower vein)	71	----	----
Economy Coal Co. Mine No. 3	65	1932	1945
Elko Coal Co.	103	1901	1907
Enterprise Coal Mining Co. Mine No. 1	1	1903	1917
Enterprise Coal Mining Co. Mine No. 2	2	1907	1917
Eureka Coal Co. Mine No. 1	94	1874	1894
Eureka Coal Co. Mine No. 2	53	1896	----
Evans Brothers Coal Co.	13	----	----
Evergreen Coal Co.	136	1934	1936
Extra Mine	56	1884	----
Flint Brick Co. Mine No. 1	25	1894	1901
Flint Brick Co. Mine Shafts No. 2 and 3	26	----	----
Flint Coal Co. Mine No. 4	22	1920	1927
Flint Coal Co. Mine No. 4	22	1927	1928
Flint Valley Mine	40	----	----
Fort Des Moines Mine	145	----	----
Four Mile Coal Co.	64	1928	1931
Fuller and Coggshell Coal Co.	101	1882	1885
Garver Mine	57	----	----
Giant Coal Co. Mine No. 1	59	----	1894
Giant Coal Co. Mine No. 2	72	----	----
Giant Coal Co. Mine No. 3	73	1885	----
Gibson Coal Co. (Mine No.1)	19	1925	1929
Gibson Coal Co. Mine No. 4	31	1903	1909
Gibson Coal Co. Mine No.1	96	1889	1895
Gibson Coal Mining Co. Mine No. 2	69	1895	1899
Gibson Coal Mining Co. Mine No. 5	80	1908	1918
Gibson Mine No. 3	75	1901	1903
Glenwood Coal Co. Mine No. 2	60	1901	1914
Glenwood Coal Co. Mine No. 3	61	----	----

MINE NAME	MAP NO.	YEARS OF OPERATIONS	
Glenwood Mine	137	1899	1901
Great Western Mine	89	----	1894
Griffith Coal Co.	112	1934	1938
Gross Coal Mine	129	1928	1936
Hastie Mine	118	1889	----
Highland Park Mine	28	----	----
Hollingsworth Coal Co.	156	1905	1912
Hulme Mine	158	----	----
Independant Coal Co.	135	1927	1945
Interurban Coal Co.	15	1919	1920
Iowa Central Mine	79	----	----
Iowa Coal and Mining Co.	117	----	----
Iowa Fuel Co.	108	1893	1896
J. M. Christy Mine	114	----	----
Johns Coal Co.	91	1907	1913
Jonkers Mine	20	----	----
Keating - Stanford Coal Co.	111	1934	1938
Keystone Coal Co. Mine	82	1908	1922
Keystone Coal Co. Mine No. 1	43	1894	1908
Keystone Coal Co. Mine No. 2	41	1894	1908
Kring Coal Co.	122	1937	1943
Lake Park Mine	38	1895	----
Levey Coal Co.	126	1936	1941
Levey Coal Co.	128	1941	1941
Liberty Coal and Mining Co.	22	----	----
M. Quinn Mine	115	1893	----
Madison Coal Co.	47	1908	1916
Manbeck Coal Co. Mine	133	1889	1893
Manbeck Mine	133	----	----
Maple Block Coal Co. Mine No. 1	32	1906	1917
Maple Block Coal Co. Mine No. 2	33	1905	1922
Maple Grove Mine Shaft No. 1	36	1891	1903
Maple Grove Mine Shaft No. 2	35	1891	1903
Merchants Mine	160	----	----
Merle Hay Coal Co.	21	1942	1947
Midway Coal Co. Shaw Mine	150	----	----
Miller Mine	52	1882	1883
Moore Coal Co.	130	----	1926
Norwood Coal Co. Mine No. 2	83	1903	1904
Norwood Coal and Mining Co. No. 1	13	1901	1903
Norwood-White Coal Co. Mine No. 1	17	1908	1911
Norwood-White Coal Co. Mine No. 2	16	1908	1912
Norwood-White Coal Co. Mine No. 3	18	1919	1926
Norwood-White Coal Co. Mine No. 4	8	1911	1918
Norwood-White Coal Co. Mine No. 5	7	1914	1920
Norwood-White Coal Co. Mine No. 6	30	1919	1924
Norwood-White Coal Co. Mine No. 8	5	1922	1943
O. K. Coal Co.	27	1903	1906
Old Clover Leaf Mine	132	1923	1925

MINE NAME	MAP NO.	YEARS OF OPERATIONS	
Pennsylvania Mine	105	1869	1896
Pioneer Coal Co.	92	1876	1896
Pioneer Coal Co.	112	1940	1941
Pittsburg Mine	140	----	1885
Pleasant Hill Coal Co.	138	----	----
Polk County Mine No. 1	96	1874	1889
Preston Coal Co.	123	1926	1929
Proctor Coal Company	146	----	----
Ramsey Mine No. 2	70	----	----
Rawson Mine	78	----	----
Redhead Shaft	92	----	----
Reese Mine	77	----	----
Rider Cooperative Coal Co.	19	1931	1939
Rider-Heim Coal Co.	19	1929	1931
Rose Hill Mine	88	1889	1896
Samuel Dale Mine	159	1889	1893
Sayer Coal Co.	19	----	----
Saylor Coal Co. Mine No. 2	6	1906	1928
Saylor Coal Co. Mine No.	10	----	1898
Scott Mine	104	1908	----
small unnamed mine	99	----	----
Smith And Lowe Coal Co. Mine No. 2	109	1902	1908
Smith And Lowe Coal Co. Mine No. 4	110	1903	1905
Smith and Lowe Coal Co. Mine No. 3	67	1902	1908
South Des Moines Coal Co.	144	1912	1922
Sprague Coal Co.	64	----	----
Standard Coal Co.	55	----	----
Standard Coal Co.	58	----	----
Standard Coal Co. Mines	124	1933	1936
Standard Coal Co. Mines	125	1929	1933
Stanford Coal Co. Mine No. 1	154	1931	1932
Swanwood Coal Co.	12	1908	1910
Sypher Mine	96	----	----
Two Rivers Coal Co.	86	----	----
Union Mine	89	1894	----
Union Mine	34	----	----
Union Mine (3rd vein)	95	1887	1894
University Coal Co.	87	----	----
Urbandale Coal Co.	46	1920	1942
Valley-Union Coal Co.	157	1906	1912
Van Ginkel Mine (2nd vein)	142	1885	1897
Wabash Mine No. 1	121	----	----
Wabash Mine No. 2	120	1886	----
Walnut Creek Coal Co.	84	1905	1910
Walnut Creek Coal Mine	85	1885	1894
Watson Mine	76	1866	1876
West Riverside Coal Co.	23	1894	1911
West Side Coal Co.	81	----	1917
Western Coal Co.	29	1896	1902

MINE NAME	MAP NO.	YEARS OF OPERATIONS	
Western Coal Co. Saylor Mine	10	189	1910
Wild Rose Mine	102	1899	1899
Wolf Creek Mining Co.	112	1938	1939
Woodlawn Mine	116	----	----
Wright Coal Co.	3	1910	1924
X-L Coal Co.	135	1918	1927

APPENDIX III.
Unlocated Mines in Polk County

Appendix III is a list of coal mines from Polk County which could not be located due to inadequate information. Most of the locations are given only as post office addresses. It is probable that some of these names refer to the mines listed in Appendices I and II but cannot be traced back to the mine site with any certainty. Year of operation and any additional information has been included.

- | | | | |
|-----|---|--|--------------------------------|
| 1) | MINE NAME:
A. McKinney Slope Mine
LOCATION:
P.O. Runnells | MINE TYPE:
unkn
YEARS OF OPERATION:
1901-1903 | ENTRANCE TYPE:
slope |
| 2) | MINE NAME:
Aetna Coal Co. Mine No. 1
LOCATION:
P.O. Des Moines
OTHER INFORMATION:
May have been known as Etna | MINE TYPE:
unkn
YEARS OF OPERATION:
1885 | ENTRANCE TYPE:
unkn |
| 3) | MINE NAME:
Avon Coal Co.
LOCATION:
5 miles east of Capitol
OTHER INFORMATION:
Coal production 961 tons | MINE TYPE:
r&p
YEARS OF OPERATION:
1938-1940 | ENTRANCE TYPE:
shaft |
| 4) | MINE NAME:
Balzar Coal Co.
LOCATION:
P.O. Des Moines | MINE TYPE:
unkn
YEARS OF OPERATION:
1901 | ENTRANCE TYPE:
shaft |
| 5) | MINE NAME:
Beck Coal & Mining Co.
LOCATION:
3.5 miles sw Des Moines on C.R.I.P. R.R. | MINE TYPE:
unkn
YEARS OF OPERATION:
1899-1901 | ENTRANCE TYPE:
shaft |
| 6) | MINE NAME:
Bee Coal Co.
LOCATION:
P.O. East Des Moines | MINE TYPE:
unkn
YEARS OF OPERATION:
1934 | ENTRANCE TYPE:
slope |
| 7) | MINE NAME:
Bertands & Tilton Coal Co.
LOCATION:
P.O. Commerce | MINE TYPE:
unkn
YEARS OF OPERATION:
1903 | ENTRANCE TYPE:
shaft |
| 8) | MINE NAME:
Bloomfield Coal Co. No. 3
LOCATION:
none given | MINE TYPE:
unkn
YEARS OF OPERATION:
1904-1906 | ENTRANCE TYPE:
unkn |
| 9) | MINE NAME:
Bloomfield Coal Mining Co. No. 4
LOCATION:
Northeast of Des Moines on C. & N.W. R.R. | MINE TYPE:
unkn
YEARS OF OPERATION:
1906-1924 | ENTRANCE TYPE:
unkn |
| 10) | MINE NAME:
Blount & Evans Mine | MINE TYPE:
unkn | ENTRANCE TYPE:
unkn |

	LOCATION: West Schoolhouse and Lone Tree	YEARS OF OPERATION: unkn	
11)	MINE NAME: Capitol City Coal Co. LOCATION: South Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1903-1908	ENTRANCE TYPE: shaft
12)	MINE NAME: Caponegro Mine LOCATION: Same district as the Independent Mine	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
13)	MINE NAME: Carney Mine LOCATION: East 14th St.& north limits of Carney	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
14)	MINE NAME: Carpenter Coal Co. No. 1 LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1910	ENTRANCE TYPE: shaft
15)	MINE NAME: Coalfield Fuel Co. LOCATION: P.O. Coalfield, Iowa	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
16)	MINE NAME: Commerce Coal Co. LOCATION: P.O. Commerce OTHER INFORMATION: There may have been more than one Commerce Coal Co. mine, also known as the Commerce Mine.	MINE TYPE: unkn YEARS OF OPERATION: 1908	ENTRANCE TYPE: unkn
17)	MINE NAME: Cruikshank Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1936	ENTRANCE TYPE: slope
18)	MINE NAME: Deer Creek Coal Co. LOCATION: 1.5 Miles From Enterprise Mine	MINE TYPE: unkn YEARS OF OPERATION: 1905-1906	ENTRANCE TYPE: shaft
19)	MINE NAME: Des Moines Coal Co. LOCATION: North Of Acme Mine By 1/2 Mile	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn

20)	MINE NAME: Des Moines Coal Co. No. 3 LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1914, 1915, 1922	ENTRANCE TYPE: shaft
21)	MINE NAME: Diamond Block Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1924-1926	ENTRANCE TYPE: shaft
22)	MINE NAME: Etna Mine LOCATION: East Of Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1883	ENTRANCE TYPE: unkn
23)	MINE NAME: Evans Coal & Mining Co. LOCATION: East of Saylorville OTHER INFORMATION: Also known as Evans Coal Mine.	MINE TYPE: unkn YEARS OF OPERATION: 1898-1899	ENTRANCE TYPE: shaft
24)	MINE NAME: Fudge Coal Co. LOCATION: P.O. East Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1934	ENTRANCE TYPE: slope
25)	MINE NAME: Gibson Coal Co. No. 1 LOCATION: P.O. Des Moines	MINE TYPE: r&p YEARS OF OPERATION: 1928-1930	ENTRANCE TYPE: shaft
26)	MINE NAME: Gibsons Mine LOCATION: 13th & R Street	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
27)	MINE NAME: Gibson's Mine LOCATION: 1/2 mile west of Youngstown bridge	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
28)	MINE NAME: Great Western Coal & Mining Co. LOCATION: On the Interurban Line	MINE TYPE: unkn YEARS OF OPERATION: 1924	ENTRANCE TYPE: shaft
29)	MINE NAME: Hastie Coal Co. LOCATION: P.O. Runnells, R.F.D.	MINE TYPE: unkn YEARS OF OPERATION: 1932-1936	ENTRANCE TYPE: slope

30)	MINE NAME: Hendrickson Coal Co. LOCATION: P.O. Runnells	MINE TYPE: unkn YEARS OF OPERATION: 1936	ENTRANCE TYPE: shaft
31)	MINE NAME: Hillside Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1934	ENTRANCE TYPE: shaft
32)	MINE NAME: Holland Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1936	ENTRANCE TYPE: slope
33)	MINE NAME: Homestead Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1934	ENTRANCE TYPE: shaft
34)	MINE NAME: Indian Bloss Mine LOCATION: West and north of Hartford	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
35)	MINE NAME: Iowa Cooperative Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1938	ENTRANCE TYPE: shaft
36)	MINE NAME: James Stiles Commerce Mine LOCATION: P.O. Commerce	MINE TYPE: unkn YEARS OF OPERATION: 1897	ENTRANCE TYPE: shaft
37)	MINE NAME: Joseph Raplinger Coal Co. LOCATION: P.O. Runnells	MINE TYPE: unkn YEARS OF OPERATION: 1915	ENTRANCE TYPE: shaft
38)	MINE NAME: Joshua Chambers Mine No. 1 LOCATION: Avon	MINE TYPE: unkn YEARS OF OPERATION: 1885	ENTRANCE TYPE: slope
39)	MINE NAME: L. D. Lang Mine No. 1 LOCATION: P.O. Avon	MINE TYPE: unkn YEARS OF OPERATION: 1885	ENTRANCE TYPE: slope
40)	MINE NAME:	MINE TYPE:	ENTRANCE TYPE:

	Likes Brick & Coal Co. LOCATION: P.O. Des Moines	unkn YEARS OF OPERATION: 1901	slope
41)	MINE NAME: McCall & Joplin Coal Co. LOCATION: P.O. Runnells OTHER INFORMATION: Name may have been McCall and Jopling Coal Co.	MINE TYPE: unkn YEARS OF OPERATION: 1920	ENTRANCE TYPE: shaft
42)	MINE NAME: Midwest Coal Co. LOCATION: P.O. 1102 12th Street, Des Moines OTHER INFORMATION: Coal production: 2,142 tons in 1939	MINE TYPE: unkn YEARS OF OPERATION: 1938-1940	ENTRANCE TYPE: shaft
43)	MINE NAME: N Riverside Coal & Mng Co. Ramsey Mine LOCATION: 2 miles northwest of Des Moines River OTHER INFORMATION: Also known as Ramsey Mine	MINE TYPE: unkn YEARS OF OPERATION: 1893-1897	ENTRANCE TYPE: shaft
44)	MINE NAME: Newman Coal & Brick Co. LOCATION: P.O. Hastie	MINE TYPE: unkn YEARS OF OPERATION: 1901-1903	ENTRANCE TYPE: slope
45)	MINE NAME: Oralabor Mine LOCATION: 2 miles southeast of Ankeny	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
46)	MINE NAME: R. Dale Coal Co. LOCATION: P.O. Commerce	MINE TYPE: unkn YEARS OF OPERATION: 1895	ENTRANCE TYPE: shaft
47)	MINE NAME: Rees Griffith's Mine LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1895-1897	ENTRANCE TYPE: shaft
48)	MINE NAME: Ridgeway Mine LOCATION: Hastie Area	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
49)	MINE NAME:	MINE TYPE:	ENTRANCE TYPE:

Runnells Coop Coal Co. LOCATION: P.O. Runnells	unkn YEARS OF OPERATION: 1936-1938	shaft
50) MINE NAME: S & N Mine LOCATION: Southwest of Iowa Power & Light 1.5 mi.	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
51) MINE NAME: Schultz Coal Co. LOCATION: P.O. East Grand Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1926-1928	ENTRANCE TYPE: slope
52) MINE NAME: Scotch Ridge Mines LOCATION: Two miles from Bennett	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
53) MINE NAME: Simpson Mine LOCATION: Southwest of Des Moines Coal Co.	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
54) MINE NAME: South Park Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1901	ENTRANCE TYPE: shaft
55) MINE NAME: Spring Creek Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1932	ENTRANCE TYPE: shaft
56) MINE NAME: Spring Valley Coal Co. LOCATION: P.O. Des Moines	MINE TYPE: unkn YEARS OF OPERATION: 1926-1932	ENTRANCE TYPE: shaft
57) MINE NAME: Standard Mine LOCATION: East of Beck Mine, close to Iowa Power OTHER INFORMATION: Also located southeast of Rock Island R.R. on Hwy. 60.	MINE TYPE: unkn YEARS OF OPERATION: unkn	ENTRANCE TYPE: unkn
58) MINE NAME: Stanford Brothers Coal Co. LOCATION: 3 miles east of McCoy farm OTHER INFORMATION:	MINE TYPE: unkn YEARS OF OPERATION: 1939	ENTRANCE TYPE: shaft

- Coal production 267 tons
- | | | |
|--|---|--|
| <p>59) MINE NAME:
Van Pit Mine
LOCATION:
South Of Raccoon River
OTHER INFORMATION:
Located near the Sypher-Polk County mine</p> | <p>MINE TYPE:
unkn
YEARS OF OPERATION:
1894</p> | <p>ENTRANCE TYPE:
unkn</p> |
| <p>60) MINE NAME:
White Hollow Coal Co.
LOCATION:
P.O. Adelphi</p> | <p>MINE TYPE:
unkn
YEARS OF OPERATION:
1934</p> | <p>ENTRANCE TYPE:
shaft</p> |
| <p>61) MINE NAME:
William Dawson Mine No. 1
LOCATION:
Rising Sun</p> | <p>MINE TYPE:
unkn
YEARS OF OPERATION:
1885</p> | <p>ENTRANCE TYPE:
slope</p> |
| <p>62) MINE NAME:
William Leid Mine No. 1
LOCATION:
P.O. Avon</p> | <p>MINE TYPE:
unkn
YEARS OF OPERATION:
1885</p> | <p>ENTRANCE TYPE:
shalt</p> |

APPENDIX IV.

Preparation of Underground Coal Mines of Des Moines, Iowa and Vicinity

Preparation of the map (Plate I) required rescaling the mine maps to the scale of the (Des Moines) base map, locating the mine on the base map, and combining the outlines and the base map.

Outlines of mined areas were digitized from photographs of the mine maps using computer aided design software (AutoCAD). Shaft or slope locations were digitized when available and references for scaling, location, and orientation were also digitized. Digitized base maps were prepared from eight 7.5' U.S. Geological Survey topographic quadrangle maps. The mine outline drawings were added to the topographic base map using reference data collected with the outlines. Placement and scale changes were accomplished with CAD software.

The resulting maps were composited with a 1:100,000 scale base map which shows streets, rivers, and Public Land system grids of Polk County. Plate I is reproduced at approximately 65% of the base map.

APPENDIX V.
Sources of Mine Data

IOWA MINED LANDS DATA SYSTEM

Preparation of this report was greatly aided by the Iowa Mined Lands Data System (IMLDS) created to organize and manage the large, diverse collection of abandoned mine data for Iowa. IMLDS was created as part of a contract with the Department of Agriculture and Land Stewardship, Division of Soil Conservation, funded by the U.S. Department of Interior Office of Surface Mining under the Abandoned Mine Lands program.

IMLDS consists of a computerized database and the collection of documents which contributed to it. The computerized database includes records for 2,967 mine sites from thirty-two Iowa counties. The documents include mine maps for 860 mine sites, published descriptions of mines and local geology, and other related data on file at the Geological Survey Bureau. The database was prepared by analyzing the information from these materials including names under which the mines operated, locations, dates of operation, availability of mine maps, type of entrance, and method of mining. Depth, coal thickness, and coal bed name were added if possible. All mines which could be located with some degree of accuracy were included. A second database was created to store information for mines with inadequate location information. Typically, the only location given for these was a county name and post office address.

The mine-related data for the Des Moines area used in the text of this report and the list of data included as appendices I, II, and III were obtained from the Iowa Mined Lands Data System. Reporting formats were designed within the system to produce the appendices from the database.

RESTORATION OF COAL MINE MAPS AND DATA COLLECTION

The Geological Survey Bureau (GSB) is the repository for coal mine maps which were in the State Mine Inspectors' Office when it closed in 1972. Most of the maps are in the form of blueprint copies. The condition of the maps varied from very good to severely deteriorating (the blueprint process produces chemical residues which render the paper unstable over time.) In 1986, GSB (then Iowa Geological Survey) and the Department of Agriculture and Land Stewardship, Division of Soil Conservation, initiated a project to preserve the coal mine maps in 1986. The restoration project was part of a contract funded by the U.S. Department of Interior Office of Surface Mining. Its primary goals were to slow the deterioration of the maps, repair the most severely damaged maps, and preserve the maps in such a way that they could be handled for study with little risk of damage. The State Historical Department carried out the restoration project under contract with GSB during 1986, 1987, and 1988. The restoration project included cleaning to remove soil, cellophane tape, and acid residue, repair of torn maps, and encapsulation in polyester film. Following restoration, the maps were photographed, catalogued, and placed in storage at GSB.

The restored maps were studied in detail to collect data including mine names, locations, extents, types of mining, and locations of mine entrances. Some maps also included information about coal thickness, defects in the coal seam, and outlines of adjacent mines or surface features. Published and file data were used to corroborate and supplement the information gathered from the mine maps. Information obtained from mine maps was given precedence where conflicts between the mine maps and other data arose.

STATE MINE INSPECTORS' MAPS AND FILES

The earliest mining records, kept beginning about 1865, were too general and incomplete

to be very useful. With the creation of the State Mine Inspectors' Office in 1880, reporting requirements were increased and the quantity and quality of available data improved. Surveyed mine maps were periodically filed with the Office during the operating life of a mine and at the time of abandonment to meet part of the requirements. The State Mine Inspectors' Office also maintained extensive data files and published biennial reports of its activities from 1880 to 1972. The reports include county-by-county lists of mines operating during the reporting period and serve as important sources for documenting dates of mine operation. Summaries of inspections in these reports often provide information about physical characteristics of the mines. The State Mine Inspectors' files include township maps for each coal-producing county that outlined coal mine areas. These maps supply locations and extents of mines for which no surveyors' maps are available.

PUBLISHED DESCRIPTIONS OF COAL MINING AND GEOLOGY

The Iowa Geological Survey Annual Reports include accounts of the geology and mineral production of most Iowa counties. A few of the county reports include outlines of coal mine lease properties for which no maps could be found. Although these did not represent the actual extent of mining activity, they did provide location data and probable maximum extents of mining. In addition, reports by Keyes (1894), Hinds (1908), and Lees (1908) included extensive descriptions of coal mining in Iowa. The descriptions of individual mines in these reports proved to be important sources for supplementing data obtained from maps and files as well as providing general information about the local coal industry and geology. Discussions of coal geology are found in earlier works including White (1870) and Owens (1852).

Iowa Department of Natural Resources

Geological Survey

109 Trowbridge Hall

Iowa City, Iowa 52242-1319

(319) 335-1575

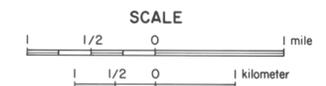
UNDERGROUND COAL MINES OF DES MOINES, IOWA AND VICINITY

Caution: Mine records are often incomplete and contradictory. Inaccurate mine placement is possible. This map is not a replacement for site-specific investigations.

- Mines of known location and known extent; based on mine maps
 - Vertical coal mine entrance
 - Slope coal mine entrance
 - Air shaft
- Mines of known location but approximate extent; based on mine inspectors' files
- Mines of known location but approximate extent; based on lease blocks indicated in Iowa Geological Survey Annual Reports
- Mines with approximate locations and unknown extent; based on reports in geological literature

Areas with multi-level mining
 note: Overlying relationships of mines 91, 92, and 93 are unclear.

Numbered labels refer to List of Mines, Appendix I.
 Unlocated mines are listed in Appendix III.



TOWNSHIP					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

