Coal Resources of Colorado

GEOLOGICAL SURVEY BULLETIN 1072-C

ERRATA, BULLETIN 1072–C

Insert on page 204, table 12.—*Measured and indicated original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Township totals
Mesa County																
T. 12S., R. 97W.	4.56	8.99	------	13.55	0.78	5.56	------	6.34	------	------	------	------	5.34	14.55	------	19.89
County Total	4.56	8.99	------	13.55	0.78	5.56	------	6.34	------	------	------	------	5.34	14.55	------	19.89

Insert on page 210, table 13.—*Inferred original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*

Mesa County

T. 11S., R. 97W.	------	2.23	------	2.23	------	5.12	------	5.12	------	4.68	------	4.68	------	12.03	------	12.03
T. 12S., R. 96W.	------	.75	------	.75	------	6.24	------	6.24	------	3.34	------	3.34	------	10.33	------	10.33
T. 12S., R. 97W.	------	17.26	------	17.26	------	25.41	------	25.41	------	30.04	------	30.04	------	72.71	------	72.71
T. 13S., R. 97W.	------	7.14	------	7.14	------	1.51	------	1.51	------	------	------	------	------	8.65	------	8.65
County Total	------	27.28	------	27.38	------	38.28	------	38.28	------	38.06	------	38.06	------	103.72	------	103.72

Insert on page 226, table 16.—*Original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*

Mesa County

T. 11S., R. 97W.	------	2.23	------	2.23	------	5.12	------	5.12	------	4.68	------	4.68	------	12.03	------	12.03
T. 12S., R. 96W.	------	.75	------	.75	------	6.24	------	6.24	------	3.34	------	3.34	------	10.33	------	10.33
T. 12S., R. 97W.	4.56	26.25	------	30.81	0.78	30.97	------	31.75	------	30.04	------	30.04	5.34	87.26	------	92.60
T. 13S., R. 97W.	------	7.14	------	7.14	------	1.51	------	1.51	------	------	------	------	------	8.65	------	8.65
County total	4.56	36.37	------	40.93	0.78	43.84	------	44.62	------	38.06	------	38.06	5.34	118.27	------	123.61

Coal Resources of Colorado

By E. R. LANDIS

CONTRIBUTIONS TO ECONOMIC GEOLOGY

GEOLOGICAL SURVEY BULLETIN 1072-C

A highly detailed estimate of the reserves in coal-bearing rocks, which underlie a quarter of the State

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1959

UNITED STATES DEPARTMENT OF THE INTERIOR

FRED A. SEATON, *Secretary*

GEOLOGICAL SURVEY

Thomas B. Nolan, *Director*

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C.

CONTENTS

ILLUSTRATIONS

[Plates 2 and 3 are in pocket]

TABLES

CONTRIBUTIONS TO ECONOMIC GEOLOGY

COAL RESOURCES OF COLORADO

By E. R. Landis

ABSTRACT

Previous estimates of the coal reserves of Colorado were made on a regional basis and included large tonnages of coal which are too deeply buried to be considered minable. They also included reserve estimates for areas in which available information will not allow a detailed estimate to be made. The coal reserves of Colorado, as presented in this report, were estimated on an individual-bed basis in all parts of the State where it was feasible; and they are classified according to the abundance and reliability of the available data and according to the characteristics of the coal.

About 28 percent of the area of Colorado, or about 29,600 square miles, is underlain by coal-bearing rocks. Of this area, about 20,600 square miles may contain minable reserves of coal at depths less than 3,000 feet. However, available data allow a detailed estimate to be made for only 5,276 square miles of the State. In that area, which is about 18 percent of the total area underlain by coal-bearing rocks, a total of about 81,785 million tons of coal is estimated to have been originally present. Of the total, 0.11 percent, or about 90 million tons, is anthracite and semianthracite; 77.28 percent, or about 63,203 million tons, is classed as bituminous; and 22.61 percent, or about 18,492 million tons, is subbituminous coal.

Before January 1, 1956, about 493 million tons of coal had been mined in Colorado. Applying a 50-percent recoverability factor, about 80,799 million tons of coal is still available for mining, and about 40,399 million tons of recoverable coal is estimated to be present in Colorado in the 5,276 square miles for which information is adequate.

INTRODUCTION

Colorado ranked 9th in the United States in total recorded production of bituminous coal and lignite from the earliest record through 1955, and ranked 11th in production during 1955. Its location in the center of the Rocky Mountains region near main lines of transcontinental transporation makes the coal resources of Colorado of vital interest to the nation.

A preliminary report summarizing available information about the coal resources of Colorado was written by Spencer and Erwin (1953).

All data used in the preparation of that report, and additional information, are included in this investigation.

SOURCES OF INFORMATION

Published reports and unpublished records in the files of the U. S. Geological Survey were used to estimate the coal resources of Colorado. Much additional data were obtained from agencies of the State of Colorado, other Federal agencies, mining companies, oil companies, and individuals who made their files available to the Geological Survey.

ACKNOWLEDGMENTS

The author is indebted to many individuals and organizations, too numerous to permit individual listing, for cooperation, information, and assistance. However, special thanks are due my colleague, F. D. Spencer, for advice and technical assistance. K. V. Cammack and C. M. McConnell of the Geological Survey, and Thomas Allen of the Colorado State Coal Mine Inspection Department, provided helpful information and cooperation.

METHODS OF PREPARING RESERVE ESTIMATES

Coal reserve estimates of the Geological Survey are made by following certain principles and definitions that have been established to standardize, insofar as it is possible, the reappraisal of the coal resources of the United States. The reserve estimates are classified according to the characteristics of the coal and according to the abundance and reliability of data.

CLASSIFICATION ACCORDING TO CHARACTERISTICS OF THE COAL

The rank of the coal, the thickness of the beds, and the thickness of the overburden are the characteristics that are used in classifying coal reserves.

RANK OF COAL

The rank of the coal is determined in accordance with the specifications of the American Society for Testing Materials (1954) which are reproduced in table 1.

The coal of Colorado ranges in rank from subbituminous to anthracite, with the greatest amount, about 77 percent, being bituminous. (See fig. 5.) Subbituminous coal makes up almost 23 percent of the total and anthracite less than 1 percent. Bituminous coal is present in the Raton Mesa, Uinta, Green River, and San Juan River regions, in the Dakota sandstone of southwestern Colorado, and in the Canon City, Pagosa Springs, and South Park fields. Most of the bituminous

TABLE 1.—*Classification of coals by rank* [1]

[Legend: FC = Fixed carbon. VM = Volatile Matter. Btu = British thermal units]

Class	Group	Limits of fixed carbon or Btu mineral-matter-free basis	Requisite physical properties
I. Anthracitic	1. Meta-anthracite	Dry FC, 98 percent or more (Dry VM, 2 percent or less.)	
	2. Anthracite	Dry FC, 92 percent or more and less than 98 percent (Dry VM, 8 percent or less and more than 2 percent).	
	3. Semianthracite	Dry FC, 86 percent or more and less than 92 percent (Dry VM, 14 percent or less and more than 8 percent).	Nonagglomerating.[2]
II. Bituminous [3]	1. Low-volatile bituminous coal.	Dry FC, 78 percent or more and less than 86 percent (Dry VM, 22 percent or less and more than 14 percent).	
	2. Medium-volatile bituminous coal.	Dry FC, 69 percent or more and less than 78 percent (Dry VM, 31 percent or less and more than 22 percent).	
	3. High-volatile A bituminous coal.	Dry FC, less than 69 percent (Dry VM, more than 31 percent); and moist [4] Btu 14,000 [5] or more.	
	4. High-volatile B bituminous coal.	Moist Btu, 13,000 or more and less than 14,000.	
	5. High-volatile C bituminous coal.	Moist Btu, 11,000 or more and less than 13,000.	Either agglomerating or nonweathering.[6]
III. Subbituminous	1. Subbituminous A coal.	Moist Btu, 11,000 or more and less than 13,000.	Both weathering and nonagglomerating.
	2. Subbituminous B coal.	Moist Btu, 9500 or more and less than 11,000.	
	3. Subbituminous C coal.	Moist Btu, 8300 or more and less than 9500.	
IV. Lignitic	1. Lignite	Moist Btu, less than 8300	Consolidated.
	2. Brown coal	Moist Btu, less than 8300	Unconsolidated.

[1] This classification does not include a few coals which have unusual physical and chemical properties and which come within the limits of fixed carbon or Btu of the high-volatile bituminous and subbituminous ranks. All these coals either contain less than 48 percent dry, mineral-matter-free fixed carbon or have more than 15,500 moist, mineral-matter-free Btu.

[2] If agglomerating, classify in low-volatile group of the bituminous class.

[3] It is recognized that there may be noncaking varieties in each group of the bituminous class.

[4] Moist Btu refers to coal containing its natural bed moisture but not including visible water on the surface of the coal.

[5] Coals having 69 percent or more fixed carbon on the dry, mineral-matter-free basis shall be classified according to fixed carbon, regardless of Btu.

[6] There are three varieties of coal in the high-volatile C bituminous coal group: Variety 1, agglomerating and nonweathering; Variety 2, agglomerating and weathering; Variety 3, nonagglomerating and nonweathering.

coal in the State is high-volatile C in rank, but all ranks of bituminous coal are present. Subbituminous coal is present in the Denver, Green River, and Uinta regions, and in the North Park and Tongue Mesa fields. Anthracite and semianthracite are present in the Crested Butte and Carbondale fields of the Uinta region. A small tonnage of anthracite in the Green River region is included with the bituminous coal in the tables of reserves.

Coking coal was not segregated in the tables of reserves, but it is discussed in the individual field descriptions. It is present in the Durango, Trinidad, Crested Butte, Somerset, and Carbondale fields. The coal analyses from which determinations of rank were made in this report were obtained mainly from U. S. Bureau of Mines Technical Paper 574 (1937).

467521—59——2

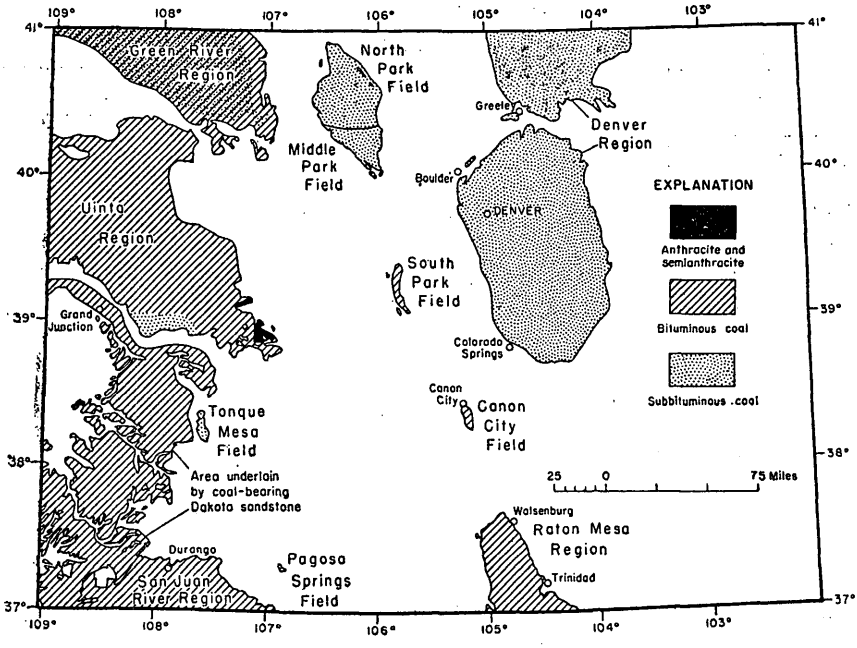

FIGURE 5.—Index map of coal regions and miscellaneous fields.

As precise specific-gravity determinations are not available for most of the coal in Colorado, the average values assigned by the Geological Survey for the weights of the many ranks of coal were used in the calculation of the coal reserves of Colorado. Anthracitic coal (includes anthracite and semianthracite) was assumed to have a weight of 2,000 tons per acre-foot, bituminous coal 1,800 tons per acre-foot, and subbituminous coal 1,770 tons per acre-foot. Although the specific gravity of coals ranges widely, these rounded figures are thought to be suitable for use in a general report of this type.

THICKNESS OF BEDS

In accordance with the procedure of the Geological Survey, the thickness categories used in the calculation of coal reserves in Colorado are as follows:

Anthracitic and bituminous coal	*Subbituminous coal*
> 42 inches	> 10 feet
28–42 inches	5–10 feet
14–28 inches	2½–5 feet

Subbituminous coal beds less than 2½ feet thick, and anthracite and bituminous coal beds less than 14 inches thick, were not included in the reserve estimates.

Coal beds in Colorado exhibit extreme lateral variation in thickness,

and for the purpose of calculation an average for a bed in any one area must be determined. Where the amount and type of data allowed, isopach maps were drawn. Generally, the data were insufficient for drawing isopach lines, and a weighted average was determined by weighting each thickness according to the approximate area of bed represented by that observation. This average figure was used to represent the thickness of the coal bed in the area under consideration.

Partings of more than three-eighths of an inch were omitted in determining the thickness of individual beds. Beds and parts of beds made up of alternating layers of thin coal and partings were omitted if the partings made up more than one-half the total thickness of the bed. Benches of coal less than minimum thickness, which lie above or below thick partings and which normally would not be mined, were also omitted. Coal beds that are split by a parting were omitted if neither bench of coal is above minimum thickness and if the parting is as thick or thicker than the smaller of the two benches, unless it was known that local practice is to consider such beds minable.

THICKNESS OF OVERBURDEN

In this report most of the coal reserves were estimated and calculated in the standard thickness-of-overburden categories, 0–1,000 feet, 1,000–2,000 feet, and 2,000–3,000 feet. Areas of the State where it was not feasible to use these categories are indicated by footnotes in the tables of reserves.

No attempt was made to differentiate strippable coal from coal which will have to be mined by underground methods. Stripping operations have been carried on at various times in scattered parts of the State, notably in the North Park field, the eastern part of the Yampa field, and several fields of the Denver region. In 1955 about 10 percent of the total coal production of the State was produced by 7 strip mines, and about 90 percent was produced by 143 underground mines. However, the amount of coal that can be mined by surface methods is believed to be very small compared with the total amount of coal in the State.

CLASSIFICATION ACCORDING TO ABUNDANCE AND RELIABILITY OF DATA

In this report coal reserves are estimated in two classes according to the abundance and reliability of data: measured and indicated, and inferred.

MEASURED AND INDICATED RESERVES

Coal reserves in the measured and indicated class are contained in bodies whose outer limit is generally about three-quarters of a mile

from the outcrop or other observation point. In a few localities the outer limit of these bodies is greater or lesser depending on the available information as to the continuity of the coal.

INFERRED RESERVES

Inferred reserves lie outside areas of measured and indicated reserves and are usually more than three-quarters of a mile from the outcrop, drill hole, or mine working that supplied the closest direct measurement. The outer limit of a body of inferred coal is usually from 1 to 2 miles from points of observation. The distance to the outer limit of these bodies varies because this class comprises coal for which the estimates are based largely on knowledge of the habit of coal beds within the area under consideration and the projection of distant information into the area on the basis of geologic evidence. Except for a few special cases, all reserves estimated on a coal-zone basis are included in this class.

DISTINCTION BETWEEN ORIGINAL, REMAINING, AND RECOVERABLE RESERVES

The estimated coal reserves of Colorado are presented in the tables as original reserves; that is, coal originally present in the ground before mining. It includes coal that has been mined or lost in mining, coal under dense population areas, roads, pipe lines, railroads, oil and gas fields, and in the weathered zone near the outcrop. As maps showing mined-out areas are unavailable for many parts of the State, cultural features are transient, and coal is mined and lost in mining every year, the estimation of original reserves is the most logical and permanent approach to a coal inventory because it provides the basis from which remaining and recoverable reserves can be calculated. Therefore, unless otherwise specifically stated, all coal-reserve estimates in this report are original reserves.

For every ton of coal produced in mining, a certain amount of coal is left in pillars, discarded as undersize, left unmined in roof or floor, lost in washing, or is unrecoverable due to cultural features, other mining in the area, or oil, gas, or water wells. The ratio of the coal actually produced to the sum of the coal actually produced and the coal lost in mining or unrecoverable is expressed in percentage as the recoverability factor. For areas such as Colorado, where precise information is inadequate or unavailable, the Geological Survey has adopted a standard recoverability factor of 50 percent. This factor is believed to adequately compensate for the coal lost directly in mining and indirectly due to unrecoverability and to be representative for Colorado as a whole. Therefore, the remaining reserves of an area are the original reserves minus twice the reported amount of coal

mined in the area. Assuming that the 50-percent recoverability factor will apply in the future, the recoverable reserves of an area are one-half the remaining reserves.

METHODS OF RECORDING DATA AND MAKING CALCULATIONS

In making a reserve estimate for an area, the best base map available, preferably a geologic map of large scale showing the coal-bed outcrops, the structure of the coal-bearing strata, and the topography of the area underlain by coal beds, was used to make bed maps of individual coal beds. All the information pertaining to an individual coal bed was compiled on the bed map, lines of equal overburden were drawn, and the areas of measured and indicated reserves and inferred reserves were delineated in accordance with the principles previously summarized. Areas were measured by polar planimeter and, where the beds were steeply dipping, the area measured on the map was corrected to true area by dividing the measured area by the cosine of the angle of dip of the bed under consideration. The product of true area, the weighted average thickness of coal in the area, and the weight of the rank of coal involved, expressed as short tons per acre-foot, was then recorded in tables in millions of short tons. The figures thus obtained were then consolidated into township totals.

In this report the reserves were estimated by individual bed where data were sufficient. In some areas, however, the data did not permit individual-bed estimation, and estimates were made on a coal-zone basis. This means that the coal thickness figure used for calculation represented the total thickness of coal, within a certain stratigraphic range, in beds thicker than the minimum for the rank of coal under consideration. Areas in which the coal-zone basis was used are discussed in the text and indicated by footnotes on the tables. On an individual-bed basis the final estimated tonnage is mainly dependent on what is known, or can be assumed, about the relation of individual coal beds at one locality to individual beds at another locality. An estimate on a coal-zone basis is mainly independent of the correlation of individual coal beds and is used in areas where the lateral relation of individual coal beds is not known. An estimate on a coal-zone basis will usually indicate a larger tonnage to be present than if more precise information was available. In this report, except for a few special cases, estimates on a coal-zone basis are classed as inferred reserves.

AREAS CONSIDERED AND OMITTED IN RESERVE ESTIMATES

The area underlain by the coal for which estimates have been made in this report totals only 5,276 square miles, whereas it is estimated

that a total of about 20,600 square miles in Colorado may contain minable reserves of coal with less than 3,000 feet of overburden. No reserve estimates have been made in this report for the remaining 15,000+ square miles because of lack of information on the thickness and continuity of the coal beds (fig. 6). Some authors have at-

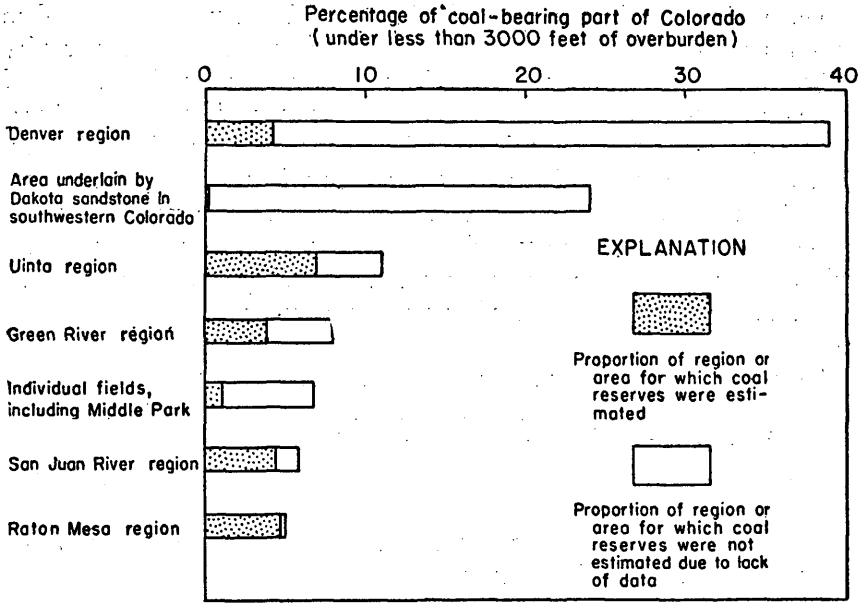

FIGURE 6.—Graph showing percentage distribution by regions of the coal-bearing part of Colorado (under less than 3,000 feet of overburden) and proportion of each region for which availability of data has allowed preparation of reserve estimates.

tempted to estimate the reserves of these areas on a regional rather than a bed-by-bed basis, but in this report it was not considered desirable to do so because of the extreme lenticularity and variation in thickness exhibited by the coal beds in areas immediately adjacent to the omitted areas. Some of the omitted areas, such as the area underlain by the Dakota sandstone in southwestern Colorado, may contain only meager reserves; whereas other areas, as yet unexplored at depths, may contain larger reserves.

In addition to the areas mentioned above, about 9,000 square miles of the State is probably underlain by coal-bearing rocks, most of which are at depths greater than 3,000 feet.

LIMITATION OF ESTIMATES

This report takes cognizance of all known available information pertaining to coal in Colorado, but it must be considered provisional

as there are large coal-bearing areas of the State for which information is meager or absent. Geologic studies and mining and drilling activities of all types constantly reveal additional data, which when used to revise this report will modify the present coal resource estimates.

ESTIMATES OF COAL RESERVES

Present estimated original reserves of coal, by township and county and by rank, are shown in tables which follow the discussions of Colorado coal regions and fields and are summarized in tables 2, 3, and 7 (see pp. 139–140, 182). Measured and indicated reserves of anthracite and semianthracite and bituminous and subbituminous coal are shown on tables 8, 10, and 12 (see pp. 183, 184, 202). Inferred reserves of anthracite and semianthracite, and bituminous and subbituminous coal are shown on tables 9, 11, and 13 (see pp. 177, 192, 207).

TABLE 2.—*Original coal reserves (in millions of short tons) of Colorado, by county, and by rank, under less than 3,000 feet of overburden*

County	Square miles included in estimate	Rank of coal		County total
		Subbituminous	Bituminous	
Adams	26	335. 28	----------	335. 28
Arapahoe	40	271. 69	----------	271. 69
Archuleta	47	----------	455. 30	455. 30
Boulder	58	465. 14	----------	465. 14
Delta	86	1, 306. 35	362. 48	1, 668. 83
Douglas	12	186. 73	----------	186. 73
Elbert	152	787. 75	----------	787. 75
El Paso	123	571. 96	----------	571. 96
Fremont	36	----------	295. 34	295. 34
Garfield	151	----------	2, 267. 65	2, 267. 65
Gunnison [1]	162	306. 88	3, 201. 53	3, 598. 79
Huerfano	172	----------	1, 190. 44	1, 190. 44
Jackson	102	3, 735. 13	----------	3, 735. 13
Jefferson	78	806. 62	----------	806. 62
La Plata	608	----------	7, 912. 94	7, 912. 94
Larimer	12	78. 16	----------	78. 16
Las Animas	872	----------	11, 483. 97	11, 483. 97
Mesa	187	123. 61	1, 300. 33	1, 423. 94
Moffat	511	4, 391. 11	15, 780. 90	20, 172. 01
Montezuma	293	----------	1, 277. 91	1, 277. 91
Montrose	40	1, 029. 26	114. 34	1, 143. 60
Ouray	22	1, 018. 80	----------	1, 018. 80
Park	8	----------	92. 25	92. 25
Pitkin	17	----------	412. 52	412. 52
Rio Blanco	711	----------	9, 852. 90	9, 852. 90
Routt	415	1, 320. 38	7, 201. 85	8, 522. 23
Weld	335	1, 756. 75	----------	1, 756. 75
Total	5, 276	18, 491. 60	63, 202. 65	81, 784. 63

[1] Gunnison County had original reserves of 90.38 millions of short tons of anthracite coal.

Original reserves (the sum of the measured and indicated and inferred reserves) of anthracite and semianthracite, and bituminous and subbituminous coal are shown on tables 14, 15, and 16 (see pp. 112, 113, 223).

TABLE 3.—*Original coal reserves of Colorado, by region or field and by rank, under less than 3,000 feet of overburden (in millions of short tons)*

Region or field	Square miles included in estimate	Rank of coal		Region or field total
		Subbituminous	Bituminous	
Green River region	828	5, 711. 49	17, 896. 07	23, 607. 56
Uinta region [1]	1, 401	1, 429. 96	22, 484. 09	24, 004. 43
San Juan River region	946	----------	9, 633. 85	9, 633. 85
Raton Mesa region	1, 044	----------	12, 674. 41	12, 674. 41
Denver region	836	5, 260. 08	----------	5, 260. 08
Canon City field	36	----------	295. 34	295. 34
Pagosa Springs field	1	----------	10. 10	10. 10
Tongue Mesa field	58	2, 354. 94	----------	2, 354. 94
North Park field	102	3, 735. 13	----------	3, 735. 13
South Park field	8	----------	92. 25	92. 25
Cortez area	1	----------	2. 20	2. 20
Nucla-Naturita field	15	----------	114. 34	114. 34
Total	5, 276	18, 491. 60	63, 202. 65	81, 784. 63

[1] The Uinta region had original reserves of 90.38 millions of short tons of anthracitic coal.

COMPARISON OF PAST AND PRESENT ESTIMATES

The coal reserves of Colorado were previously estimated by Hills (1893), Campbell (1913), Vanderwilt (1947), and Spencer and Erwin (1953). Hills (1893) estimated that the total area of Colorado coal fields was 18,100 square miles, that in 2,913 square miles the coal was accessible to mining, and that in the accessible area a total of 45,197.7 million tons of coal was present. Campbell (1913) estimated that 317,996 million tons of coal was present in an area of 14,341 square miles. Vanderwilt (1947) estimated that 20,295 square miles of the State was underlain by coal, and that 174,208 million tons of coal was present in an unspecified part of the total area. Spencer and Erwin (1953) estimated that 100,408 million tons of coal was present in an area of 5,277 square miles.

In this report the reserves were estimated mainly on an individual-bed basis, which previous estimators could not do with the information and time available for the task. A more detailed and restrictive study naturally yields a more conservative estimate.

Table 4 shows a comparison of past and present estimates of coal reserves of Colorado by regions and fields, insofar as it is possible to compare them. The present estimate shows a smaller tonnage of coal for the area concerned than any previous estimates, except Hills

467521—59——3

TABLE 4.—*Comparison of past and present estimates of Colorado coal reserves (in millions of short tons)*

Region or field	Estimates adapted from—								This report (1959)	
	Hills (1892)		Campbell (1913)		Vanderwilt (1947)		Spencer and Erwin (1953)		Square miles	Tonnage
	Square miles	Tonnage	Square miles	Tonnage	Square miles	Tonnage	Square miles	Tonnage		
Denver	405	2, 568. 60	5, 380	40, 018	[1] 7, 600	14, 000	535	3, 662	836	5, 260. 08
Raton Mesa	473	4, 490. 20	1, 035	24, 473	1, 035	22, 000	1, 023	12, 167	1, 044	12, 674. 41
Green River	440	5, 961. 50	3, 130	[2] 135, 607	[1] 3, 100	[2] 40, 000	793	25, 541	828	23, 607. 56
Uinta	1, 116	26, 384. 80	2, 780	84, 102	[1] 6, 000	75, 000	2, 510	52, 510	1, 401	24, 004. 43
San Juan River	300	3, 387. 20	1, 876	[2] 28, 965	[1 3] 1, 900	[2] 21, 000	286	3, 431	946	9, 633. 85
Canon City	49	429. 00	40	1, 028	40	900	35	466	36	295. 34
North Park	80	1, 806. 50	57	2, 854	500	450	60	2, 074	102	3, 735. 13
South Park	([4])		3	20	[1] 80	18	3	20	8	92. 25
Tongue Mesa	([4])		40	929	40	840	32	537	58	2, 354. 94
Pagosa Springs							([5])		1	10. 10
Nucla-Naturita	[6] 50	169. 30					([5])		15	114. 34
Cortez area				([7])	([5])		([5])		1	2. 20
Total	2, 913	45, 197. 10	14, 341	317, 996	20, 295	174, 208	5, 277	100, 408	5, 276	81, 784. 63

[1] Includes whole basin area; reserves probably calculated for part of the area.
[2] Includes coal under more than 3,000 feet of overburden.
[3] Includes coal in the Dakota sandstone in southwestern Colorado.
[4] Included with totals for Canon City field.
[5] Included with San Juan River region.
[6] Includes all coal in the Dakota sandstone in southwestern Colorado.
[7] Possibly included with San Juan River region.

(1893). The differences between the present estimate and those of Campbell (1913), Vanderwilt (1947), and Spencer and Erwin (1953) result principally from the fact that the earlier estimates were all made on a coal-zone basis and included estimates for areas in which information for an estimation on a bed basis is meager or entirely lacking. Hills (1893) estimated reserves on a coal-zone basis, but he had less information than later authors and more conservative ideas on economic mining limits and thicknesses of minable coal beds.

COLORADO COAL FIELDS

The coal fields of Colorado (pl. 2 and fig. 5) occur in diverse structural and physiographic environments. The coal fields of the Denver, Raton Mesa, San Juan River, Uinta, and Green River regions occur in broad structurally simple basins, which are locally complex because of igneous intrusions, faults, and folds. The Canon City field occurs in an asymmetrical syncline which is bounded on its southwest flank by a thrust fault. The South Park and North Park fields occur in intermontane basins which locally have very complex structure. The area underlain by the Dakota sandstone in southwestern Colorado is mainly of simple homoclinal structure with some faulting and folding. The Tongue Mesa field is probably an erosional outlier, but its lateral extent and stratigraphic and structural relation are not well understood. Information about the geologic and structural relation of the Pagosa Springs field is absent. Physiographically, the coal fields occur in the Great Plains, Southern Rocky Mountains, Wyoming Basin, and the Colorado Plateaus provinces (Fenneman, 1946).

Coal-bearing formations of Colorado range in age from Early Cretaceous (Aptian) (Cobban and Reeside, 1952, pl. 1) to Paleocene (Cobban and Reeside, 1952, pl. 1; and Brown, 1949). In approximate ascending stratigraphic order they are the Dakota sandstone, Mesaverde group, Fruitland, Lance, Laramie, Vermejo, Raton, Fort Union, Denver, and Coalmont formations, and the Dawson arkose. The approximate stratigraphic position of these formations is shown on plate 3.

The rank of Colorado coals is closely related to the age of the coal-bearing formation. The older coal beds have, in general, been subjected to a greater amount of crustal deformation and a greater weight of overlying strata than have the younger coals and consequently are generally of higher rank. Folding, faulting, and igneous intrusion may, however, locally have raised the rank considerably higher than that of coals of equal or greater age elsewhere.

GREEN RIVER REGION

The Colorado part of the Green River region, in Moffat Routt and Rio Blanco Counties, is the southern extension of the Washakie basin of Wyoming and Colorado. The Washakie basin is considered by many to be a segment of the larger Green River basin of Wyoming, Colorado, Utah, and Idaho. All the coal reserves estimated for the Colorado part of the region lie within the Yampa coal field, though coal may underlie the whole area. The Yampa River, a tributary of the Green River, drains a major part of the area. Craig is the largest city in the sparsely populated region and has an altitude of 6,185 feet and a precipitation of 13.52 inches per year. A branch line of the Denver & Rio Grande Western Railroad, terminating at Craig, serves the southeastern part of the region. A Federal highway, a State highway, and several county roads traverse the region. Structurally, the region is a broad southeastward-trending syncline with steep dips at the outcrop of the coal-bearing rocks and a gradual flattening of dip toward the center of the syncline. At the southeast edge of the area, folding, faulting, and small igneous intrusions have locally metamorphosed the coal to higher ranks than are present in the western part.

YAMPA FIELD

The Yampa field occupies the southern and eastern part of the Green River region. The coal occurs in the Iles and Williams Fork formations of the Mesaverde group and in the Lance and Fort Union formations. The coal of the Mesaverde group crops out in steep hogbacks on the edges of the regional syncline and ranges in rank from subbituminous to anthracitic. Most of the coal is of high-volatile C bituminous rank, with the coal in the extreme east edge of the field being of higher rank, locally anthracitic. The small tonnage of anthracitic coal in the eastern part of the field is included with the reserves of bituminous coal because it has been metamorphosed only locally near sills of basalt, and an accurate delineation of these small areas was not feasible. The subbituminous coal occurs in the upper part of the Williams Fork formation and in the Lance and Fort Union formations. In general, the outcrops of the Lance and Fort Union formations do not form as rugged a topography as does the Mesaverde group, and the coal beds are more likely to be concealed at the surface.

The part of the field east of longitude 107° 30′ W. is described in a report by Bass, Eby, and Campbell (1956) in which the coal reserves for the area were estimated by F. D. Spencer. Estimates of the reserves in the western part of the field are based on information contained in reports by Gale (1907, 1909, 1910), Hancock (1925),

and the U. S. Bureau of Mines (1937). The coal reserves of the field were estimated by individual bed, except the inferred coal west of longitude 107° 30′ W. and south of latitude 40° 30′ N., and a small area in northern Routt County, in both of which reserves were estimated on a coal-zone basis by Spencer and Erwin (1953). A total of about 23,607 million tons of coal, 76 percent of which is bituminous in rank and 24 percent of which is subbituminous, is estimated to have been originally present in an area of 828 square miles. An additional area of 852 square miles may contain minable reserves of coal with less than 3,000 feet of overburden.

UINTA REGION

The coal fields of the Colorado portion of the Uinta region occupy the moderately to steeply dipping edges of the Piceance Creek basin, a broad synclinal depression in the western part of the State that is considered by some authors to be the eastern part of the larger Uinta basin of Utah and Colorado. The simple regional structure, a syncline with low dips in the center and moderate to steep dips on the edges, is modified by faults, folds, and intrusions which have created local areas of structural complexity.

Physiographically, the region is part of the Colorado Plateaus province (Fenneman, 1946). The Colorado River traverses the center of the region; the Yampa and White Rivers drain the northern part; and the Gunnison River drains the southern part. Away from the main rivers grazing is the principal industry in the rolling to rugged topography, whereas farming is the predominant activity in the irrigated river valleys.

Climatic differences are extreme. Grand Junnction, the largest city in western Colorado, is representative of one extreme with an altitude of 4,586 feet and an average annual precipitation of 8.86 inches; while Crested Butte, at the extreme southeast end of the region, is at an altitude of 8,885 feet and has an average annual precipitation of 27.28 inches. Annual precipitation for the region ranges from less than 10 inches to 50 inches, probably averaging 15–20 inches per year over most of the area, with scanty vegetation in the drier parts and thick timber growth in the areas of heavier rainfall. The Denver & Rio Grande Western Railroad main line parallels the Colorado River through the area, and branch lines serve the coal fields at the south edge of the region. The remainder of the area is accessible by Federal and State highways and county roads.

The coal of the region occurs in the Mesaverde group of Late Cretaceous age and ranges in rank from subbituminous in the Grand Mesa field to anthractic in the Crested Butte Carbondale fields.

A total of about 24,004 million tons of coal is estimated to have been originally present in the region; 94 percent was bituminous in rank, mainly high-voltaile C. Coking coal is present in the Carbondale, Somerset, and Crested Butte fields. Reserves were estimated in an area of 1,401 square miles, but an additional area of 869 square miles may contain minable reserves of coal with less than 3,000 feet of overburden.

BOOK CLIFFS FIELD

The coal-bearing rocks of the Mesaverde group crop out from the Colorado–Utah State line almost continuously around the edge of the Piceance Creek Basin and the Colorado part of the Uinta basin. The Book Cliffs coal field includes that part of the outcrop from the Colorado–Utah State line to the Colorado River. Information on the field is contained in reports by Richardson (1907 and 1909) and Erdmann (1934). Coal is found in the Mount Garfield formation of the Mesaverde group and in the Anchor mine tongue of the underlying Mancos shale, which lies between the upper and lower members of the Sego sandstone of the Mesaverde group (Erdmann, 1934, p. 36). The coal in the Mount Garfield formation occurs in lenticular beds within 3 coal-bearing zones: the Palisade coal zone, which lies immediately above the Sego sandstone; the Cameo coal zone, 200–450 feet above the top of the Sego sandstone; and the Carbonera zone, about 260 feet above the Sego sandstone. The coal in the Anchor mine tongue of the Mancos shale occurs a short distance below the base of the upper member of the Sego sandstone and is of local importance. The Palisade coal zone crops out throughout the field but is of most importance in the eastern half. Although the Cameo zone is of importance only in the eastern half of the field, nearly twice as much coal has been mined from it as from all other beds combined (Erdmann, 1934, p. 83). The Carbonera zone crops out in the western half of the field and has not been mined as extensively as the Cameo and Palisade zones.

Reserves were estimated on a bed basis where feasible, but in some parts of the field a coal-zone basis was used because the individual beds are very lenticular. The coal is mainly high-volatile C bituminous, but some high-volatile B is also present.

A total of about 2,293 million tons of bituminous coal is estimated to have been originally present in 255 square miles of the field. An additional area of 145 square miles may contain minable reserves of coal with less than 3,000 feet of overburden.

GRAND MESA FIELD

The Grand Mesa field lies along the west and south edges of Grand Mesa, a high plateau in the southern part of the Piceance Creek

basin. The field comprises the part of the outcrop of the coal-bearing rocks of the Mesaverde formation that lies between the Colorado River and the eastern half of T. 13 S., R. 92 W.

The coal near the west edges of the Grand Mesa field, from the Colorado River to the northern half of T. 13 S., R. 97 W., is bituminous in rank, mainly high-volatile C. Chemical and physical data on the coal in the remainder of the field indicate that it is largely subbituminous A in rank, (U. S. Bureau of Mines, 1937, p. 56–58; Lee, 1912, p. 81–94; and Aresco and Haller, 1953, p. 9).

The coal in the field occurs in 6 to 8 fairly persistent zones. The lowermost zone is the most persistent, or at least the most mined and prospected. In the eastern half of T. 13 S., R. 93 W., 5 coal beds of minable thickness are present, but in general the information available indicates that there are usually no more than 3 beds of minable thickness present in any one locality. The geology and coal resources of the field have been discussed by Lee (1909 and 1912).

A total of about 1,569 million tons of coal, of which about 1,430 million tons is subbituminous in rank and the remainder bituminous, is estimated to have been originally present in 96 square miles of the field. An additional area of 184 square miles may contain minable reserves of coal with less than 3,000 feet of overburden.

SOMERSET FIELD

The Somerset field of Delta and Gunnison Counties extends from the eastern half of T. 13 S., R. 92 W. to the western part of T. 13 S., R. 88 W., and in this report includes the coal present in the valley of Coal Creek, east of Mount Gunnison. The coal is high-volatile C and high-volatile B bituminous, and in the eastern half it is moderately to strongly coking (Johnson, 1948; and Toenges and others, 1949, p. 21–22, and 1952, p. 2). The coal occurs in the upper and lower coal members of the Mesaverde formation as subdivided by Johnson (1948); these members correspond to the Paonia and Bowie shale members of Lee (1912). In the western part of the field, the lower coal has 3 and locally 4 thick coal beds, and the upper coal member has 2 to 4 thick beds. In the eastern part of the field, the coal beds in the upper coal member are thin and bony, but the lower coal member has 2 persistent beds that are of minable thickness and quality at almost all localities at which they have been prospected (Johnson, 1948). In several places in the southeastern part of the field, igneous intrusions have metamorphosed the coal to semianthracite; however, the tonnage involved is probably small and is included with bituminous coal in the reserve totals.

A total of about 3,348 million tons of bituminous coal is estimated to have been orginally present in 133 square miles of the field. An

additional area of 87 square miles may contain minable reserves of coal with less than 3,000 feet of overburden.

CRESTED BUTTE FIELD

The Crested Butte field in Gunnison County occupies the southeast end of the Piceance Creek basin. The coal-bearing rocks have been folded, faulted, and intruded by igneous rocks, and the area is one of considerable structural complexity. As is to be expected under such conditions, the coal ranges widely in rank, but in general the coal north and west of the town of Crested Butte is semianthracite and anthracite, and the coal south of Crested Butte is high-volatile B and C bituminous coal that is suitable for making coke (Dapples, 1939, p. 378–382). A small amount of subbituminous A coal may be present in the southwestern part of the field (Dapples, 1939, p. 379), but it is included with the bituminous coal reserves in this report.

Coal occurs throughout the field in the lower part of the Paonia shale member of the Mesaverde formation, which in the northern and eastern parts of the field rests directly upon the Rollins sandstone member of the Mesaverde formation. Lee (1912, p. 144) states that in the southern part of the field the coal-bearing Bowie shale member of the Mesaverde formation is present between the Rollins sandstone member and the Paonia shale member. However, Dapples (1939, p. 371) believes that the strata assigned to the Bowie by Lee (1912, p. 144) are below the Rollins. The number of coal beds ranges from 1 in the Floresta area to a possible 5 in the Crested Butte area; however, lateral correlation and relations of beds are not fully known. The geology of the area has also been discussed by Emmons (1894).

A total of about 244 million tons of coal, of which 15 percent is anthracite or semianthracite and the remainder bituminous with coking properties, is estimated to have been originally present in 35 square miles of the field. An additional area of 155 square miles may have minable reserves of coal with less than 3,000 feet of overburden.

CARBONDALE FIELD

The Carbondale field occupies the area extending northward from the drainage divide between the Crystal River and the Slate River in northern Gunnison County to the place near Glenwood Springs in eastern Garfield County where the predominantly north-trending outcrop of the coal-bearing beds abruptly swings northwestward. Structurally, the Carbondale field is transitional between the highly faulted and folded south end of the Elk Mountains and the simple monoclinal fold of the Grand Hogback north of the Colorado River.

The lower part of the Mesaverde formation has the thickest and most persistent coal beds, but thin, bony coal beds and carbonaceous

shale are present in the upper part of the formation. The coal ranges in rank from high-volatile C bituminous coal to anthracite. In the northern part of the field, the coal is mainly high-volatile B bituminous; and in the southern part it is mainly high-volatile A and medium-volatile bituminous. Most of the bituminous coal in the Pitkin and Gunnison County portions of the field is moderately to strongly coking; but the coal in the Garfield County portion of the field is mainly noncoking. The number of minable and fairly persistent coal beds ranges from 2 to 9, with the lower beds generally being of higher rank and having more pronounced coking qualities.

The geology and coal resources of parts of the area were discussed by Gale (1907 and 1910), and much additional information has been furnished by J. R. Donnell (oral communication, 1953).

A total of about 798 million tons of coal is estimated to have been originally present in 34 square miles of the field. At least 50 percent is bituminous coal with moderate to strong coking properties, and about 7 percent is anthracite or semianthracite. An additional area of 56 square miles may have minable reserves of coal with less than 3,000 feet of overburden.

GRAND HOGBACK FIELD

A monoclinal fold on the east border of the Piceance Creek basin is expressed as a topographically prominent ridge called the Grand Hogback, formed by steeply dipping beds of the Mesaverde group. In this report the Grand Hogback field of Garfield and Rio Blanco Counties includes the area between the Colorado River and the land survey baseline at about 40° north latitude; and also the part of the Mesaverde outcrop, known as Coal Ridge, which extends from the Colorado River eastward to the vicinity of Glenwood Springs.

The Mesaverde group in this area has been divided into the Iles formation below and the Williams Fork formation above. The most persistent and thickest coal beds occur in the Williams Fork formation. The Keystone group of coal beds occurs between 2,000 and 3,600 feet above the base of the Williams Fork formation and generally consists of 4 or more beds. The middle coal group occurs in the lower 2,500 feet of the Williams Fork formation and consists of 9 or more beds. The Iles formation contains the lower coal group, which is of little importance in this field because the beds are usually thin, bony, and nonpersistent. The Trout Creek sandstone member, which is the uppermost unit of the Iles formation (Hancock, 1925, p. 14), is a conspicuous marker bed in the Mesaverde group in the area to the north and has been traced through the Grand Hogback field by Gale who called it the "white rock" (1907, p. 267; 1910, p. 67).

The coal in the southern part of the field is mainly of high-volatile B bituminous rank and is noncoking. The coal in the northern part of the field is mainly high-volatile C bituminous, but it is possible that some of it, especially the upper coal beds, may in places be subbituminous in rank.

A total of about 885 million tons of bituminous coal is estimated to have been originally present in 43 square miles of the field. An additional area of 37 square miles may have minable reserves of coal with less than 3,000 feet of overburden.

DANFORTH HILLS FIELD

The Danforth Hills field comprises the area of outcrop of the coal-bearing Mesaverde group on the northeast flank of the Piceance Creek basin. The regional dip is southwestward, but the regional structure is locally interrupted by several anticlines and synclines. The geology and coal resources of the field have been reported by Gale (1907 and 1910), Hancock (1925), and Hancock and Eby (1929).

As in the Grand Hogback field, the Mesaverde group consists of the Iles formation at the base and the Williams Fork formation at the top. The Trout Creek sandstone is the uppermost member of the Iles formation and is a conspicuous marker bed in the field. Three coal groups occur in the Williams Fork formation: the Fairfield group, which occupies the basal 1,300 feet of the formation; the Goff group, which occurs from 2,300 to 3,000 feet above the Trout Creek sandstone member; and the Lion Canyon group, which occupies the interval of rock from 3,000 to 4,000 feet above the Trout Creek sandstone member (Hancock and Eby, 1929, p. 200–206). The Iles formation has 2 coal groups: the Black Diamond group, which occupies the interval of rock from 150 to 350 feet below the top of the Trout Creek sandstone member; and the Lower coal group, which occurs from 150 to 250 feet above the base of the Iles formation. In general, the individual coal beds within the coal groups are discontinuous and are difficult to correlate laterally. Hancock (1925, p. 40–41) and Hancock and Eby (1929, p. 191) were seldom able to correlate individual beds over an area greater than one township. In this report the reserves were estimated by bed except in the northern port of the field where inferred coal reserves were estimated on a group basis, and in the part of the field west of longitude 108° W., where reserves were estimated on a coal-zone basis by Spencer and Erwin (1953).

The coal is mainly high-volatile C bituminous in rank, though some of the upper coal beds in the northern part of the field may be subbituminous.

A total of about 7,854 million tons of bituminous coal is estimated

to have been originally present in 252 square miles of the field. An additional area of 18 square miles may contain minable reserves of coal with less than 3,000 feet of overburden.

LOWER WHITE RIVER FIELD

The Lower White River field includes the area underlain by coal-bearing rocks of the Mesaverde group, which lies between the Danforth Hills field and the Colorado–Utah State line. Gale (1909, 1910), who originally defined the field, included T. 5 N., R. 96 W., and this report follows that precedent.

The Williams Fork formation of the Mesaverde group has all the coal reserves that were estimated for the field. Coal may occur in the Iles formation, as is does in the adjoining Danforth Hills field, but information on which to base a reserve estimate is unobtainable. Reserves were estimated by the author on a bed basis for all measured and indicated reserves in the field, but all inferred reserves were estimated on a coal-zone basis by Spencer and Erwin (1953). Available information indicates that the coal is of high-volatile C bituminous rank and is noncoking. However, detailed information is lacking on the rank of the coal and on the thickness, persistency, and lateral correlation of the coal beds.

A total of about 7,012 million tons of bituminous coal is estimated to have been originally present in 553 square miles of the field. An additional area of 177 square miles may have minable reserves of coal with less than 3,000 feet of overburden.

SAN JUAN RIVER REGION

The San Juan River region comprises the Colorado portion of the San Juan basin of New Mexico and Colorado. The region belongs to the Navajo section of the Colorado Plateaus physiographic province (Fenneman, 1946) and is a dissected plateau with strong to high relief. The region is drained by the San Juan River and its tributaries.

Structurally the region is a broad syncline, with steeper dips on the edges than in the center. However, folding and faulting introduce some local complexities in the regional structure.

Durango, the largest town in the region, is at an altitude of 6,512 feet and has an average annual precipitation of 19.6 inches. Average annual precipitation in the region ranges from about 10 inches in the southern part to about 20 inches along the north edge. The eastern and northern parts of the region are served by branch lines of the Denver & Rio Grande Western Railroad. Two Federal highways and several State highways traverse the region.

The coal occurs principally in the Fruitland formation and in the Menefee formation of the Mesaverde group. The Fruitland formation

has minable reserves of coal throughout its area of occurrence in the region, but the Menefee formation has no minable reserves of coal east of the Florida River. Some coal is present in the Dakota sandstone; but in general the beds are thin and discontinuous, and reserves were estimated only in part of the Durango field.

The coal in the region is of high-volatile bituminous rank, with coal of the Menefee formation generally having a lower ash content than the coal of the Fruitland formation (Zapp, 1949) and Dakota sandstone. Some of the coal in the Menefee formation possesses coking properties (Hills, 1893, p. 341–342).

A total of about 9,634 million tons of bituminous coal is estimated to have been originally present in 946 square miles of the region. Minable reserves of coal with an overburden of less than 3,000 feet may be present in a total of 1,240 square miles of the region. This latter figure does not include the area in Montezuma County that is underlain by the Dakota sandstone but does include the areas in La Plata and Archuleta Counties that are underlain by the Dakota sandstone with less than 3,000 feet of overburden.

PAGOSA JUNCTION DISTRICT

In this report the area north and east of the town of Pagosa Junction in Archuleta County is designated the Pagosa Junction district. The coal occurs in the Fruitland formation and is probably mainly of high-volatile A and B bituminous rank, similar to the coal in the Fruitland formation in surrounding areas. The basal strata of the Fruitland formation have the largest and most persistent coal beds, but lenticular beds of coal may be locally present throughout the formation. The coal beds in the western part of the district are thicker and more numerous than in the eastern part (Wood, Kelley, and MacAlpin, 1948). The geology and coal resources of the area have also been discussed by Storrs (1902), Schrader (1906), and Gardner (1909).

The coal reserves in the district were estimated on an individual-bed basis. A total of about 184 million tons of bituminous coal is estimated to have been originally present in 24 square miles of the district. An additional area of 56 square miles may have minable reserves of coal with less than 3,000 feet of overburden.

BAYFIELD-YELLOWJACKET PASS DISTRICT

The Bayfield-Yellowjacket Pass district in Archuleta and La Plata Counties includes the part of the San Juan River region from the drainage divide between the Piedra River and Cat Creek westward to the west line of R. 7 W., and includes South T. 34 N., R. 8 W.

The coal in the district occurs in the Fruitland formation and Dakota sandstone, but no reserves were estimated for coal in the Dakota sand-

stone. The coal in the Fruitland formation is of high-volatile bituminous rank, mainly high-volatile A (U. S. Bureau of Mines, 1937, p. 88; Aresco, Haller, and Abernethy, 1955, p. 7). Coal beds of minable thickness are present almost everywhere in the basal strata of the Fruitland formation, but owing to lenticularity, correlation of individual beds between exposures is difficult. However, a coal bed about 130 feet above the base of the Fruitland has been traced for at least 2½ miles parallel to the strike of the beds (Barnes, 1953). The geology and coal resources of the district have also been discussed by Storrs (1902), Schrader (1906), Shaler (1907), Gardner (1909), and Wood, Kelly, and MacAlpin (1948).

In the part of the district southeast of the south line of T. 35 N., R. 5 W., reserves were estimated by individual beds. In the remainder of the district the reserves were estimated on an individual-bed basis and also on a coal-zone basis by Barnes (1953) and Barnes, Baltz, and Hayes (1954). The coal beds in the Dakota sandstone are discontinuous, and available information was not sufficient to make a reserves estimate feasible.

A total of about 1,256 million tons of bituminous coal is estimated to have been originally present in 123 square miles of the district. An additional area of about 87 square miles may have minable reserves of coal with less than 3,000 feet of overburden. This estimate includes about 70 square miles underlain by the Dakota sandstone.

DURANGO FIELD

The Durango field of La Plata and Montezuma Counties, as defined in this report, includes the area underlain by the Mesaverde group and the Fruitland formation north of the south line of North T. 34 N., west of the east line of R. 7 W., and east of Mesa Verde National Park, including South T. 34 N., Rs. 9 and 10 W., and the area underlain by the Dakota sandstone in the La Plata County portion of the field.

The coal occurs in the Dakota sandstone, the Menefee formation of the Mesaverde group, and the Fruitland formation. The coal in the Dakota sandstone is generally high-volatile bituminous in rank, and the beds are very lenticular, thin, and bony. The Menefee and Fruitland formations contain high-volatile A and B bituminous coal (Zapp, 1949; Barnes, Baltz, and Hayes, 1954; U. S. Bureau of Mines, 1937, p. 88–90; and Aresco, Haller, and Abernethy, 1955, p. 8–9). In general, the coal beds in the Menefee formation are thinner but of higher quality than the coal beds in the Fruitland formation (Zapp, 1949). Menefee formation coal was formerly coked at Durango (Hills, 1893, p. 341–342), and most, if not all of the coal in the Menefee formation

within a radius of about 6 miles of Durango, is probably suitable for making coke (Zapp, 1949).

The Menefee formation is present throughout the area, but available information indicates that there are no workable coal beds in the Menefee formation east of the Florida River (Gardner, 1909, p. 353), and no coal reserves were estimated in that area. In the western part of the field the coal occurs in the upper and lower parts of the Menefee, with a relatively barren interval of rock between, but the coal zones converge eastward and coal may be present at any stratigraphic level in most of the field (Zapp, 1949). The Fruitland formation underlies the southeastern part of the area and is coal-bearing throughout. The thickest beds occur in the lower 100 feet of the formation, but at least 2 other coal zones are present in the Fruitland (Zapp, 1949). In addition to the references cited above, the geology and coal resources of the field have been discussed by Cross (1899), Storrs (1902), Schrader (1906), Shaler (1907), Taff (1907), and Collier (1919).

Reserves of coal in the Dakota sandstone were estimated by the author on an individual-bed basis. The coal reserves of the Menefee and Fruitland formations were estimated on an individual-bed basis and also on a coal-zone basis by Zapp (1949), and Barnes, Baltz, and Hayes (1954).

A total of about 3,556 million tons of bituminous coal is estimated to have been originally present in 243 square miles of the field. Of this total, more than 5 million tons is estimated to be present in the Dakota sandstone northwest of the town of Durango. An additional area of about 107 square miles may contain minable reserves of coal with less than 3,000 feet of overburden.

RED MESA AREA

As defined in this report, the Red Mesa area in La Plata and Montezuma Counties occupies the part of the San Juan River region that lies south of the south line of North T. 34 N., east of a north-south line through the eastern boundary of Mesa Verde National Park and west of the west line of R. 10 W. The area is a canyon-cut plateau underlain by strata that dip predominantly to the southeast with local folding and faulting.

The coal occurs in the Menefee formation of the Mesaverde group and in the Fruitland formation. The coal is mainly of high-volatile A and B bituminous rank.

The Menefee formation is exposed in the north and west parts of the area and underlies most of the area at a depth of less than 3,000 feet. Three coal groups, or zones, can be recognized in the northwestern part of the area; the most important occurs in the lower

60 feet of the formation; another containing thin beds of impure coal occupies the 140 feet of strata above the lower group; and a third group of lenticular beds occurs in the upper 200 feet of the Menefee (Collier, 1919, p. 297). Two main coal zones, in the upper and lower parts of the Menefee, are present farther west, but minable coal beds may be present locally in the interval between them (Shaler, 1907, p. 388–389). The Fruitland formation crops out in the southeastern part of the area, and Shaler reports from 1 to 4 coal beds present (1907, p. 384–386).

The coal reserves of the area were estimated by Barnes, Baltz, and Hayes (1954). Storrs (1902), Shaler (1907), and Taff (1907) have previously discussed the geology and coal resources of the area.

A total of about 3,500 million tons of bituminous coal is estimated to have been originally present in the Red Mesa area, which has a total area of about 290 square miles.

MESA VERDE AREA

For the purposes of this report, the Mesa Verde area includes the part of the San Juan River region of Colorado south and west of Mesa Verde National Park that is underlain by rocks of the Menefee formation of the Mesaverde group.

Coal mining, mainly for local use, has been carried on in the steep canyons that cut the area. Analyses contained in reports by Shaler (1907, p. 422–423) and the U. S. Bureau of Mines (1937, p. 108–111) indicate that the coal in the area is mainly of high-volatile bituminous B and C rank and is essentially noncoking.

Shaler (1907, p. 388) reports that coal beds occur throughout the Menefee formation in the area but that the beds in the middle of the formation are not as persistent or as thick as those near the base and top of the Menefee. Storrs (1902) and Wanek (1954) have also reported on the geology and coal resources of the area.

The coal reserves of the Mesa Verde area were estimated on a coal-zone basis. A total of about 1,136 million tons of bituminous coal is estimated to have been originally present in the Mesa Verde area, which has a total area of about 270 square miles.

COAL IN THE DAKOTA SANDSTONE OF SOUTHWESTERN COLORADO

The Dakota sandstone is coal bearing in many localities in southwestern Colorado. Coal mining has been carried on in the past, and the coal was used for domestic and industrial purposes. However, in general, the coal occurring in the Dakota has been of local interest only, usually for household heating, and has been unable to compete with the higher quality coals of the Uinta and San Juan River regions.

In general, the Dakota sandstone in southwestern Colorado is composed of three members: an upper sandstone member, a middle coal-bearing member, and a lower conglomeratic sandstone member (Cobban and Reeside, 1952, pl. 1). The coal beds are characterized by extreme lenticularity and a large proportion of impurities in the form of shale, bone, and bony coal. Lateral correlation of individual beds is difficult. At most localities only 1 bed approaching minable thickness is found; however, in the Nucla-Naturita field at least 3 fairly thick beds are present, and Woodruff (1912, p. 566–567) reports localities in the Gunnison River valley where several very lenticular beds are present. The stratigraphic relation of the coal in the Gunnison River valley area is in doubt, and the coal may be in the Mancos shale instead of the Dakota sandstone.

The coal ranges widely in rank. Several small areas of anthracite and semianthracite have been reported (Hills, 1893, p. 359). However, most of the coal is of high-volatile bituminous rank and is typically noncoking, though some coal has been coked near the town of Rico in Dolores County (Hills, 1893, p. 359) and southeast of the Nucla-Naturita field (Berryhill and Averitt, 1951, p. 14). In addition to the references cited previously, Storrs (1902), Lee (1909), and Vanderwilt (1947) have briefly discussed coal in the Dakota sandstone; and some data, mainly coal analyses, were obtained from the U. S. Bureau of Mines (1937).

Available information indicates that the Dakota sandstone in the area from Mesa and Delta Counties on the north to the San Juan River region on the south may locally have minable reserves of coal with less than 3,000 feet of overburden. However, most of the coal beds are thin, impure, or discontinuous. Reserves were estimated in three areas: the Nucla-Naturita field, the Cortez area, and the Durango field. The first two are discussed and reported separately in subsequent paragraphs. The reserves of coal in the Dakota sandstone in the Durango field are included in the totals for that field. The available data allowed delineation of several areas in southwestern Colorado in which the Dakota sandstone may have minable reserves with less than 3,000 feet of overburden, but the information was inadequate for reserve estimates. These areas are shown by a distinctive pattern on plate 2.

Reserves in the Dakota sandstone of southwestern Colorado were estimated on an individual-bed basis. Because the beds are lenticular, areas included in reserve estimates were considered to extend no more than one-half mile from points of actual measurement in the Cortez area and Durango field and not more than a mile in the Nucla-Naturita field. All coal estimated in the Cortez area and the Durango

field is in the measured and indicated category, as it was not feasible to infer any reserves of coal in the Dakota sandstone in these areas.

Exclusive of La Plata and Archuleta Counties, a total of about 116 million tons of bituminous coal is estimated to have been originally present in a total area of 16 square miles. In the Durango field about 5 million tons of coal was estimated to be present in the Dakota sandstone in La Plata County. The total area of occurrence of coal-bearing Dakota sandstone with an overburden of less than 3,000 feet is about 5,190 square miles, which includes 170 square miles in La Plata County and 20 square miles in Archuleta County.

CORTEZ AREA

The Cortez area, in Montezuma County, comprises the small areas east of the town of Cortez in which reserves of bituminous coal were estimated to be present in the Dakota sandstone.

The area is in the Canyon Lands section of the Colorado Plateaus physiographic province and is a canyon-cut plateau of moderate to strong relief (Fenneman, 1946). Cortez, with an altitude of 6,200 feet and average annual precipitation of 15.84 inches, is served by 2 Federal highways and 1 State highway. Farming and grazing are the major industries.

One bed of minable thickness is present in each of the three areas shown on plate 2, but lateral correlation was not possible. The coal in the area is of high-volatile bituminous B or C rank and is noncoking (U. S. Bureau of Mines, 1937, p. 108–109).

Slightly more than 2 million tons of measured and indicated coal of bituminous rank was estimated to have been originally present in 1 square mile of the area. No inferred coal was estimated because of the extreme lenticularity and unpredictable quality of the coal beds.

NUCLA-NATURITA FIELD

The area in Montrose County near the towns of Nucla and Naturita has been extensively prospected and mined, and because it is a geologic, physiographic, and economic entity, it is being designated in this report as the Nucla-Naturita field.

The area is in the Canyon Lands section of the Colorado Plateaus physiographic province and is a dissected plateau with moderate to strong relief (Fenneman, 1946). It is drained by the San Miguel River and its tributaries. Nucla, with a population of 452 (1950 census) and an altitude of 5,862 feet, is the largest town. Six State highways and connecting roads traverse the area. Average annual precipitation is about 15 inches, and ranching and mining are the principal industries.

The strata are almost horizontal, and though some local folds and faults may be present, the structure is essentially simple. Infor-

mation obtained from the U. S. Bureau of Mines (1937), and Annual Reports of the Colorado State Coal Mine Inspection Department were used to estimate reserves. At least 3 beds are present within a stratigraphic distance of about 45 feet, but most of the mining has been done in the middle bed because it is usually the thickest. The coal beds are usually split by many partings, but a bench of the middle bed is 4 feet 5 inches thick with no partings at a mine about 3 miles northwest of Nucla. Although the coal beds seem to be more persistent in this field than they are in most areas of occurrence of coal in the Dakota, it was not feasible to extend information more than 1 mile from a measured locality. No inferred reserves were estimated for the upper coal bed. Analyses of a sample of coal, probably from the middle bed, taken in a mine 3 miles south of Nucla, indicate that the coal is high-volatile B bituminous in rank (U. S. Bureau of Mines, 1937, p. 110–111).

A total of about 114 million tons of bituminous coal is estimated to have been originally present in 15 square miles of the field. A large area surrounding the reported occurrences of coal may contain additional minable reserves (pl. 2), but available data were insufficient for a reserve estimation.

RATON MESA REGION

The Raton Mesa region of Colorado, which belongs to the Great Plains physiographic province, is a trenched peneplain surmounted by dissected lava-capped plateaus and buttes (Fenneman, 1946). Structually, the region is an asymmetrical north trending syncline with steeper dips on the west flank than on the east. Faults, folds, and igneous intrusions make the syncline locally more complex.

The Purgatoire, Apishapa, and Cuchara Rivers and their tributaries traverse and drain the region. Tributaries of the Huerfano River drain a small area in the northern part of the region. Average annual precipitation is 14–22 inches. Trinidad, altitude 6,025 feet and average annual precipitation 16.75 inches, is the largest town and is the county seat of Las Animas County. Mining and ranching are the principal industries. The area is served by the Atchison, Topeka, & Santa Fe, Denver & Rio Grande Western, and Colorado & Southern Railroads. Three Federal highways, five State highways, and several State and county connecting roads traverse and skirt the region.

The Vermejo formation of Late Cretaceous age and the Raton formation of Late Cretaceous and Tertiary age (Cobban and Reeside, 1952, pl. 1) are the coal-bearing strata in the region. Three crudely defined groups of coal beds are recognized—the lower group in the Vermejo and the middle and upper groups in the Raton. The group

467521—59——5

in the lower part of the Vermejo has 1–8 beds of coal throughout the region. The middle group, about 300 feet above the base of the Raton, has fewer, thinner, and lower rank beds of coal than the lower group. The upper coal group, which is composed of a few thin beds in a stratigraphic interval of rock, 1,000–1,400 feet above the base of the Raton, is not of much importance (Vanderwilt, 1947, p. 275). The Raton formation is not present in the northwestern part of the region.

In this report the region has been divided into two parts: the Walsenburg field in Huerfano County, and the Trinidad field in Las Animas County. The county line between Huerfano and Las Animas Counties was arbitrarily assumed to be the boundary between the noncoking coal of the Walsenburg field and the coking coal of the Trinidad field. It is probable, however, that a small amount of coal in the Walsenburg field possesses coking qualities and, conversely, that a small part of the Trinidad field contains noncoking coal.

A total of about 12,674 million tons of bituminous coal is estimated to have been originally present in 1,044 square miles of the region. An additional area of 66 square miles may contain minable reserves of coal with less than 3,000 feet of overburden, but available data were insufficient for a reserve estimate.

WALSENBURG FIELD

The Walsenburg field comprises the area in Huerfano County that is underlain by coal-bearing rocks of the Vermejo and Raton formations. Walsenburg, altitude 6,182 feet and average annual precipitation 14.46 inches, is the largest town in the field and is the county seat of Huerfano County. The field is about equally divided into two divisions: the northeastern part which is adjacent to Walsenburg, and the western part which is near the town of La Veta. Coal in the Vermejo formation is mined throughout the field and is generally preferred because the beds are usually thicker and the coal is of higher rank. The Raton formation contains coal near Walsenburg but does not crop out in the La Veta area. Analyses reported by the U. S. Bureau of Mines (1937, p. 76–85) indicate that the coal is high-volatile bituminous, mostly high-volatile B and C. Reserves in most of the area were estimated on an individual-bed basis by Johnson and Stephens (1954) and Johnson (1958). In a small area in the southeastern part of the field, reserves were estimated by Harbour and Dixon (in press).

A total of about 1,190 million tons of bituminous coal is estimated to have been originally present in about 172 square miles of the field. An additional area of about 48 square miles may have minable reserves of coal with less than 3,000 feet of overburden.

TRINIDAD FIELD

The area underlain by coal-bearing rocks in Las Animas County is designated the Trinidad field in this report. The Vermejo formation is coal-bearing throughout the field; and as in the Walsenburg field, the coal beds in the Vermejo are generally thicker, more persistent, of better quality, and more extensively mined than those in the Raton formation. As many as 14 coal beds of minable thickness in the Vermejo have been correlated in parts of the field (Wood, Johnson, and Dixon, 1958). The Vermejo ranges in thickness from about 150 to 550 feet. The Raton formation, which ranges in thickness from about 1,000 feet to over 1,600 feet, has coal beds through almost its entire thickness. However, the beds near the middle of the formation are generally of better quality, thicker, and more extensive than the beds in the upper part. Analyses reported by the U. S. Bureau of Mines (1937, p. 92–101) indicate that most of the coal is high-volatile A bituminous, though some is of high-volatile B rank. Most of the coal possesses coking properties, and a large part of the production is used for making coke.

The coal reserves were estimated by Harbour and Dixon (in press, 1958) in the part of the field northwest of the town of Trinidad; by the author in the southeastern part; by Wood, Johnson, and Dixon (1958) in the southern part; and in the western part; by Wood, Johnson, and Dixon (1956), and Wood, Johnson, and others (1951).

A total of about 11,484 million tons of bituminous coal is estimated to have been originally present in about 872 square miles of the field. An additional area of about 18 square miles may have minable reserves of coal with less than 3,000 feet of overburden.

DENVER REGION

The Denver region comprises an area of about 8,000 square miles in eastern Colorado east of the Front Range. The region is in the Colorado Piedmont section of the Great Plains physiographic province and is a late mature to old elevated plain (Fenneman, 1946). The largest city in the sparsely vegetated region is Denver, which has an average annual precipitation of 13.43 inches and is at an altitude of 5,280 feet. The principal industry is livestock raising, and the average yearly precipitation in the region ranges from 10 to 15 inches. The South Platte River and its tributaries drain most of the region except for the south edge, which is drained by tributaries of the Arkansas River. Railroads serving the region are the Union Pacific; Chicago, Rock Island, and Pacific; Colorado & Southern, Atchison, Topeka, & Santa Fe; Denver & Rio Grande Western; and Chicago, Burlington & Quincy. Eight Federal highways and many State highways and county roads traverse the region.

The Laramie formation of Late Cretaceous age is coal-bearing throughout most of its area of occurrence in the region. In the southern part of the region a few lenticular coal beds are present in the middle of the Dawson arkose (Dane and Pierce, 1936, p. 1322–1323) of Late Cretaceous and Paleocene age (Brown, 1943, p. 83–84). The Dawson arkose of the southern part of the region is the lateral equivalent of the Denver and Arapahoe formations (Dane and Pierce, 1936, p. 1310) of the northern part. The coal occurring in the Scranton district is believed to be in the lower part of the Denver formation, and Richardson (1917, p. 243) correlated the Scranton coal with the coal beds in the Ramah-Fondis area. Brown (1943, p. 83–84) placed the Arapahoe formation, the basal 290 feet of the Denver formation, and the lower 500 feet of the Dawson arkose in the Cretaceous system and indicated that the coal beds occurring in the Denver and Dawson are in the part of those units that is of Paleocene (Puercan) age.

Structurally, the region is a synclinal depression trending north with steeply dipping to overturned strata on the west flank and gently to moderately dipping strata on the north, south, and east flanks. Local folding and faulting have created a few areas of structural complexity, especially in the Boulder-Weld field. In most of the region the coal-bearing basal part of the Laramie formation is less than 1,000 feet below the surface.

The coal of Cretaceous age in the Laramie formation is much more important than the coal of Tertiary age in the Dawson arkose and Denver formation. The Tertiary coals are more lenticular and impure and are of lower rank. Analyses of coal samples reported by the U. S. Bureau of Mines (1937, p. 50–65, 86–91, 126–131) indicate that the coal along the west border of the region is of higher rank than that which crops out along the east border. In general, the coal of the west border is subbituminous B and C in rank and that of the east border is subbituminous C and in some places may be lignite.

A total of about 5,260 million tons of subbituminous coal is estimated to have been originally present in 836 square miles of the region. An additional area of about 7,164 square miles may locally contain minable reserves of coal with less than 3,000 feet of overburden.

COLORADO SPRINGS FIELD

The Colorado Springs field in El Paso County occupies the area of outcrop of the coal-bearing Laramie formation on the southwest flank of the Denver region. Colorado Springs, altitude 6,012 feet, and average annual precipitation 14.43 inches, is the largest city in the area. Four railroads serve the area: the Denver & Rio Grande Western; Atchison, Topeka, & Santa Fe; Colorado & Southern; and

Chicago, Rock Island, & Pacific. The principal industry is livestock raising. The area is drained by southward-flowing tributaries of the Arkansas River. Two Federal highways and several State highways and connecting roads traverse the field.

The Laramie formation crops out north and east of Colorado Springs. Steep dips of 40°–50° are found at the northwest end of the outcrop, where the Laramie approaches the mountain front; but the strata flatten in a short distance, and a dip of 2°–10° to the northeast prevails throughout most of the field (Goldman, 1910, p. 321). Coal beds may be present throughout the Laramie, but the most important occur in the basal sandy part of the formation. Three coal beds in the basal Laramie have been extensively traced and correlated in the field, but reserves were not estimated for the two upper beds because they are less than the minimum thickness for estimation. The lower bed is lenticular and at several localities is less than minimum thickness. Maximum thickness recorded is about 14 feet in a mine north of Colorado Springs (Goldman, 1910, p. 333).

The coal in the field is subbituminous in rank, and analyses reported by the U. S. Bureau of Mines (1937, p. 60–65) indicate that most of it is subbituminous C; a few analyses show a rank of subbituminous B. The information used to estimate reserves was obtained from Goldman (1910), the U. S. Bureau of Mines (1937), Annual Reports of the Colorado State Coal Mine Inspection Department, Finley (1916), and the Colorado State Planning Commission.

A total of about 397 million tons of subbituminous coal is estimated to have been originally present in 68 square miles of the field.

RAMAH-FONDIS AREA

In the southeastern part of the Denver region, coal has been mined near the small towns of Ramah and Fondis. The Chicago, Rock Island & Pacific Railroad, one Federal highway, and several State connecting roads traverse the sparsely vegetated and thinly populated area.

The coal occurs in about the middle of the Dawson arkose (Dane and Pierce, 1936, p. 1322–1323) and is Paleocene in age (Brown, 1943, p. 83–84). Richardson (1917, p. 243) states that these beds are in a zone from 900 to 1,200 feet above the base of the Laramie formation and are low-grade subbituminous in rank. Analyses reported by the U. S. Bureau of Mines (1937, p. 58–59, 60–61, and 64–65) of coal beds in 3 mines in the area indicate that the coal is lignitic because it does not have a heating value of more than 8,300 Btu on a moist mineral-matter-free basis. However, the coal has been included with subbituminous coal in this report because available information indicates that the physical properties are similar to those of the subbituminous

coal in the Laramie formation in nearby areas. Information on which the reserves estimate is based came from Dane and Pierce (1936), the U. S. Bureau of Mines (1937); Brown (1943), the Colorado State Planning Commission; and Annual Reports of the Colorado State Coal Mine Inspection Department. A thickness of 18 feet 9 inches of coal, with several thin partings, was reported to be present in a mine near Fondis by Dane and Pierce (1936, p. 1323), but 12 feet 6 inches of this was estimated. The coal beds in the area are extremely lenticular, and the thickness reported above is more than twice as great as any other measured thickness in the area. The beds generally have many thin partings of shale and sandstone.

About 474 million tons of subbituminous coal is estimated to have been originally present in an area of 128 square miles near the towns of Ramah and Fondis.

BUICK-MATHESON AREA

The Laramie formation crops out on the east flank of the Denver region in Elbert County near the small towns of Buick and Matheson. The area is served by the Union Pacific and Chicago, Rock Island & Pacific Railroads and is traversed by two Federal highway and several State highways and connecting roads. Livestock raising is the principal industry in the sparsely vegetated and thinly populated area.

Coal has been mined intermittently in the area for many years, mainly for local domestic use. The Laramie formation may have lenticular beds of coal throughout its approximate thickness of 300–350 feet (Dane and Pierce, 1936, p. 1313). In the northern part of the area, coal has been mined near the base of the Laramie (Dane and Pierce, 1936, p. 1316). Coal beds in the upper or middle part of the Laramie (Dane and Pierce, 1936, p. 1317–1318) have been mined, both by underground and by stripping methods, in the southern part of the area. Location of mines and thickness of coal beds were obtained from Dane and Pierce (1936), Annual Reports of the Colorado State Coal Mine Inspection Department, the U. S. Bureau of Mines (1937), and the Colorado State Planning Commission.

Analyses of samples from mines in the area indicate that the coal is subbituminous C in rank, though several of the analyses show that some of the coal may actually be lignite. A total of about 488 million tons of subbituminous coal is estimated to have been originally present in an area of 79 square miles near the towns of Buick and Matheson.

SCRANTON DISTRICT

Coal was mined more than 50 years ago east of Denver near the small town of Scranton in sec. 16, T. 3 S., R. 65 W., and a mine may have been in operation near there as early as 1860 (Hayden, 1874, p.

120–121; Emmons and others, 1896, p. 317). The area was designated the Scranton district on a geologic map (Emmons and others, 1896, pl. 111), and that precedent is followed in this report. Emmons and others (1896, p. 373) described the coal beds in the district as belonging to the upper part of the Laramie formation, but Richardson (1917, p. 243) traced the coals of the Ramah-Fondis area to within 15 miles of Scranton and concluded that the coal beds of both areas were in the same zone and were of Tertiary age. Brown (1943, p. 83–84) has shown that the coals of the Ramah-Fondis area are Paleocene in age. Therefore, though conclusive evidence is lacking, it is probable that coal in the Scranton district is in the lower part of the Denver formation and is Paleocene in age. The log of a well about 8 miles west of Scranton indicates that the Scranton coal is about 1,050 feet above the coal zone in the basal Laramie formation (Richardson, 1917, p. 244). Emmons and others (1896, p. 373) reported that the coal worked in the Scranton mine, including many small partings, was more than 10 feet thick. They also reported an old mine shaft that penetrated 2 other coal beds—a 3-foot bed 30 feet below the bed worked and a 7½-foot bed about 115 feet below the bed worked. They also stated that the beds dipped 3°–5° eastward.

No modern analyses of the coal in the district are available, but Emmons and others (1896, p. 377) obtained 6 samples in the mine at Scranton. These are recorded in a form similar but not comparable to the present day as-received proximate analysis, but no calorific values were determined. The average analysis contained 30.39 percent of fixed carbon, 31.75 percent of volatile combustible matter, 26.55 percent of water, 10.84 percent of ash, and 0.46 percent of sulfur. Emmons and others (1896, p. 375) reported that the coal was lignite, weathered rapidly, yielded a large amount of ash and did not produce much heat. In the absence of modern, detailed analyses, the coal is considered to be subbituminous in rank, with the realization that there is a strong possibility that it is actually lignite. A total of about 489 million tons of coal is estimated to have been originally present in 59 square miles of the district.

BRIGGSDALE AREA

At least one mine has been worked in the past near the town of Briggsdale in Weld County. The area is traversed by two State highways and several connecting roads and a Union Pacific Railroad branch line to Briggsdale.

The coal is in the Laramie formation. In the mine on which information is available, a thickness of 5½ feet of coal is reported by the Colorado State Coal Mine Inspection Department. Location of the mine was obtained from the Colorado State Planning Commission.

No analysis of the coal is available, but it is assumed to be subbituminous C in rank, as is the coal in adjacent areas.

A total of about 89 million tons of subbituminous coal is estimated to have been originally present in a 14-square-mile area east of the town of Briggsdale.

EATON AREA

Several mines have operated near the town of Eaton in Weld County. Emmons and others (1896, p. 373) reported that coal was being mined in the area, and a report by the U. S. Bureau of Mines (1937, p. 126–127) includes an analysis of a sample from a mine near Eaton. One Federal highway, one State highway, several connecting roads, and the Union Pacific Railroad traverse the area.

A coal bed 2 feet 10½ inches thick was worked in a mine sampled near Eaton (U. S. Bureau of Mines, 1937, p. 304). The coal occurs in the Laramie formation and is subbituminous C in rank. Owing to lack of detailed information as to location of mines and outcrop of coal beds in the area, no measured and indicated coal was estimated, but a total of about 30 million tons of subbituminous coal is inferred to have been originally present in an area of 9 square miles adjacent to the town of Eaton.

WELLINGTON AREA

Coal has been mined in the past from the Laramie formation in Larimer and Weld Counties northeast of the town of Wellington. The area is skirted by the Colorado & Southern Railway and two Federal highways and is traversed by several State connecting roads.

Evidence presented by mine locations obtained from the Colorado State Planning Commission indicates that 2 coal beds are present in the area. Two reported measurements of the lower bed show thicknesses of 5 feet 10 inches and 4 feet, and a reported measurement of the upper bed showed a thickness of 4 feet 6 inches (Annual Reports of the Colorado State Coal Mine Inspection Department). Five measured sections from 3 mines in the area show thicknesses from 4 feet 7 inches to 6 feet 2 inches, including partings, with the beds dipping 6° to the east (U. S. Bureau of Mines, 1937, p. 214–215). Analyses indicate that the coal is of subbituminous C rank. A total of about 302 million tons of subbituminous coal is estimated to have been originally present in 53 square miles of the area.

FOOTHILLS DISTRICT

Steeply dipping coal-bearing strata of the Laramie formation crop out along the west flank of the Denver region from the northwestern part of Douglas County to the Boulder-Weld field of Boulder and Weld Counties. Coal has been mined in the district for local use and

for the Denver market. The district is crossed by three Federal highways, many State highways and connecting roads, and the Denver & Rio Grande Western Railroad. The South Platte River and several of its eastward flowing tributaries cut the outcrop of the Laramie formation where the streams leave the mountains.

From 1 to 3 minable coal beds are present in the Laramie formation, but in general no more than 2 minable beds are found at any locality. The beds are lenticular, and Emmons and others (1896, p. 328) reported that the Laramie is barren for much of the distance along the outcrop. Most of the coal beds in the district are found in the 60-foot interval of rock above 2 large sandstone units which occupy approximately the basal 120 feet of the Laramie formation (Emmons and others, 1896, p. 328). An old mine in the northern part of the district is reported to have a coal bed from 14 to 18 feet thick (Emmons and others, 1896, p. 337); coal beds that were worked in 2 mines in the central part of the district are reported to be about 15 feet thick (U. S. Bureau of Mines, 1937, p. 206–207); and many other mines have beds from 8 to 12 feet thick that have been worked. However, the beds are commonly split by one or more partings of shale or bony coal.

Analyses of coal samples reported by Martin (1910, p. 300–302) and by the U. S. Bureau of Mines (1937, p. 86–89) show that the coal ranges in rank from subbituminous C to subbituminous B, mostly subbituminous C.

Reserves were estimated using information obtained from Emmons and others (1896), Martin (1910), the Colorado State Planning Commission, and Annual Reports of the Colorado State Coal Mine Inspection Department.

A total of about 993 million tons of subbituminous coal is estimated to have been originally present in 90 square miles of the Foothills district.

BOULDER-WELD FIELD

The area underlain by coal-bearing rocks of the Laramie formation in southeastern Boulder County and in southwestern Weld County is designated the Boulder-Weld field in this report. It also includes a small area in northwestern Adams County. Greeley, altitude 4,663 feet and average annual precipitation 12.30 inches, and Boulder, altitude 5,430 feet and average annual precipitation 18.29 inches, are the largest towns adjacent to the field. Two Federal highways, many State highways and connecting roads, and the Union Pacific and Chicago, Burlington, & Quincy Railroads and the Colorado & Southern Railway traverse the field. The area is drained by the South Platte River and its tributaries.

467521—59——6

The coal occurs in the Laramie formation of Late Cretaceous age, and all the coal beds are lenticular. Six beds, all in the lower 200–225 feet of the Laramie, are recognized in the field, but 3 of these are especially lenticular and exhibit extreme lateral variation in thickness. In a few localities the Laramie has no coal beds of minable thickness, but throughout most of the field from 1 to 3 minable coal beds are present. In the southern part of the field 2 of the beds coalesce and attain a thickness of about 14 feet; and in the central part of the field what is apparently a single bed is also about 14 feet thick. In general, the coal beds seldom attain a thickness greater than 8–10 feet. Regional inclination of the strata is very moderate, from 0.5° to 2°, but steep to vertical dips have been recorded in localities that have been affected by faulting. High-angle reverse and normal faults and low-angle thrust faults complicate the simple regional structure and create many problems in correlation of coal beds and in mining practices. In most of the field the overburden is less than 1,000 feet.

Analyses recorded in reports by the U. S. Bureau of Mines (1937, p. 50–57, 126–131) and Aresco and Haller (1953, p. 9, 13–14) show that the coal is mainly subbituminous B in rank. The coal in the faulted southwestern part is of higher rank than the coal in the northeastern part.

Reserves in the central part of the Boulder-Weld field were estimated by Spencer (written communication, 1954) and in the southern and northeastern parts of the field by the author. Information used to estimate reserves was obtained from Hills (1893), Emmons and others (1896), Martin (1910), the U. S. Bureau of Mines (1937), the Colorado State Planning Commission, Annual Reports of the Colorado State Coal Mine Inspection Department, and Spencer (written communication, 1954). A total of about 1,996 million tons of subbituminous coal is estimated to have been originally present in 336 square miles of the field.

CANON CITY FIELD

The coal-bearing Vermejo formation crops out just east of the Wet Mountains in Fremont County. Canon City, altitude 5,332 feet and average annual precipitation 12.87 inches, is the largest town near the field. The general area is skirted by two state highways and traversed by several State and county connecting roads. The Denver & Rio Grande Western Railroad and the Atchison, Topeka, & Santa Fe Railway serve the area.

The field is in the Colorado Piedmont section of the Great Plains physiographic province (Fenneman, 1946) and structurally is an

asymmetric synclinal basin with steep to moderately dipping beds in the west and gently dipping beds in the east. At the southwest end of the field the Vermejo formation is cut by a thrust fault, and for a short distance the overturned beds of the Vermejo are overlain by granite.

The coal beds occur in the lower 600–700 feet of the Vermejo formation, and as many as 16 beds have been reported to be present (Hills, 1893, p. 332). However, many of these are very thin, all are lenticular, and correlation of the beds is not certain. For these reasons, reserves were estimated for only seven of the more extensively prospected and mined coal beds, whose thickness and lateral extent are fairly well known. Overlying the coal-bearing zone of the Vermejo is a persistent and conspicuous massive sandstone, about 250 feet thick, that forms resistant ridges and escarpments around the boundaries of the field (Washburne, 1910, p. 344).

Analyses of samples of the coal beds, as reported by Washburne (1910, p. 373–374), the U. S. Bureau of Mines (1937, p. 64–67), and Aresco and Haller (1953, p. 9–10), indicate that most of the coal is of high-volatile bituminous C rank, nonweathering, nonagglomerating, and noncoking. Washburne (1910, p. 375) states that the coal in the southern part of the field weathers more readily than the coal of the northern part.

Reserves were estimated from information obtained from Hills (1893), Storrs (1902), Washburne (1910), the U. S. Bureau of Mines (1937), the Colorado State Planning Commission, Vanderwilt (1947), and Annual Reports of the Colorado State Coal Mine Inspection Department. A total of about 295 million tons of bituminous coal is estimated to have been originally present in 36 square miles of the field.

PAGOSA SPRINGS FIELD

Coal has been mined in small quantities for local domestic use for many years in an area about 10 miles northeast of the town of Pagosa Springs, the county seat of Archuleta County. Pagosa Springs, altitude 7,079 feet and average annual precipitation 22.39 inches, is served by 2 Federal highways and the Denver & Rio Grande Western Railroad.

Gardner (1909, p. 362) measured a 5½-foot coal bed and reported the possible presence of 2 other coal beds, each about 3 feet thick. About a mile away he measured a coal bed 10½ feet thick. Annual Reports of the Colorado State Coal Mine Inspection Department have reported coal beds from 5½ to 7 feet thick in several mines that operate intermittently. Gardner (1909, p. 362) referred the coal-bearing strata to the Fruitland formation of Late Cretaceous age

and stated that in his opinion the strata were preserved by block faulting adjacent to the San Juan Mountains. Cross and Larsen (1935, p. 132) stated that the coal-bearing strata are part of the Animas formation of Late Cretaceous and Tertiary age (Cobban and Reeside, 1952, pl. 1). However, G. H. Wood, Jr. (written communication, 1954), has recently studied the area and prefers placing the coal-bearing strata in the Fruitland formation.

One analysis has been reported from the field (Gardner, 1909, p. 363; the U. S. Bureau of Mines, 1937, p. 50–51), which shows, on an as-received basis, 9.5 percent of moisture, 34.8 percent of volatile matter, 45.7 percent of fixed carbon, 10.0 percent of ash, and 1.1 percent of sulfur. This analysis suggests that the coal is probably of high-volatile bituminous C rank and similar to the coal of the Fruitland formation in the San Juan River region to the southwest.

Owing to lack of detailed information as to the thickness and persistency of the coal beds and the geologic and structural relation of the field, reserves were estimated for an area of only 1 square mile. In that area a total of about 10 million tons of bituminous coal is believed to have been originally present.

TONGUE MESA FIELD

At the north end of the Uncompahgre Mountains in Gunnison, Ouray, and Montrose Counties a fingerlike extension of the main mountain mass, known as Tongue Mesa, is underlain by coal-bearing strata of the Mesaverde formation. The largest town in the area is Montrose, altitude 5,306 feet and average annual precipitation 9.65 inches, which is served by 2 Federal highways and the Denver & Rio Grande Western Railroad.

The Mesaverde strata are probably an erosional outlier with no connection to Mesaverde strata in surrounding areas (Cross and Larsen, 1935, p. 132). The coal-bearing strata are concealed by heavy vegetation, landslides, talus from the overlying volcanic rocks of Tertiary age, and glacial deposits of Quaternary age.

Hills (1893, p. 342) reports that 2 beds of coal have been worked; one is 15–20 feet in thickness and one, 400 feet higher stratigraphically, is about 5 feet thick. Evidence presented by the location of coal mines indicates the presence of at least 2 and possibly 3 coal beds. The presence of beds from 24 to 40 feet thick is reported from the mines on which information is available. The dip of the strata is gentle to moderate, the maximum reported being 25° and the minimum being 2°.

Analyses of samples from mines indicate that the coal is subbituminous B in rank (U. S. Bureau of Mines, 1937, p. 110–111). Reserves were estimated on the basis of information obtained from Hills

(1893), the U. S. Bureau of Mines (1937), the Colorado State Planning Commission, and Annual Reports of the Colorado State Coal Mine Inspection Department. A total of about 2,355 million tons of subbituminous coal is estimated to have been originally present in 58 square miles of the field.

NORTH PARK FIELD

Coal, mostly for local domestic use, has been mined intermittently for many years in the large intermontane basin known as North Park. Walden, the county seat of Jackson County, is the largest town in the area, and has an altitude of 8,099 feet and an average annual precipitation of 9.13 inches. The primary industry in the sparsely populated area is livestock raising. The field is served by 6 State highways and a branch line of the Union Pacific Railroad and is drained by the North Platte River and its tributaries.

The coal occurs in the Coalmont formation, which is of predominantly fresh-water origin and which overlies unconformably the marine Pierre shale of Cretaceous age and is overlain by about 500–1,000 feet of fresh-water strata of the North Park formation (Beekly, 1915, p. 20 and 67). The Coalmont, which is about 3,500 feet thick, was not assigned a definite age by Beekly (1915, p. 49) but has since been assigned to the Paleocene by Brown (1949), and it may also include sediments of Eocene age (Wyoming Geol. Assoc., 1953, p. 11).

In the northeastern part of the field, coal-bearing strata crop out on the flanks of the McCallum anticline. At least 3 beds are present: the lower bed occurs immediately above the top of the Pierre shale and ranges from 10 to 58 feet in thickness; the upper 2 beds are about 2,000 feet stratigraphically above the lower bed and are lenticular in character and are split by many carbonaceous shale partings. Maximum thicknesses reported are 8 feet for the lower of the 2 beds and 12 feet for the upper bed, which is about 300 feet higher stratigraphically. The inclination of the strata in the McCallum anticline area ranges from 20° to 85°.

In the southwestern part of the field, at least 4 and possibly 5 coal beds are present, the uppermost of which has been reported to attain a thickness of 66 feet. About 360 feet below the upper bed is a 5-foot bed of soft shaly coal. A bed of coal 12 feet thick occurs about 1,000 feet below the 5-foot bed, and an 18-foot bed is present about 1,250 feet below the 12-foot bed. Another bed, which contains 8½ feet of coal with 1 parting, could not be correlated with the lowermost of the above-mentioned beds. Beekly (1915, p. 105) believed that it was lower stratigraphically than any of the 4 beds cited above. The inclination of the strata ranges from 10° to 20°. Four other isolated

occurrences of coal beds, which could not be correlated with other coal beds in the field, were reported by Beekly (1915, p. 107–109).

Analyses (U. S. Bureau of Mines, 1937, p. 84–87) show that the coal is subbituminous B in rank. Reserves were estimated from information obtained from Beekly (1915), the U. S. Bureau of Mines (1937), the Colorado State Planning Commission, and Annual Reports of the Colorado State Coal Mine Inspection Department. A total of about 3,735 million tons of subbituminous coal is estimated to have been originally present in 102 square miles of the field. An additional area of about 748 square miles may be underlain by coal beds of minable thickness. In an unknown part of this additional area, the coal beds are probably at depths greater than 3,000 feet.

SOUTH PARK FIELD

This field comprises the area of occurrence of coal-bearing rocks of the Laramie formation in the South Park intermontane basin in Park County. Fairplay, altitude 9,953 feet, is the largest town near the field and is served by 1 Federal highway and 1 State highway. Another state highway traverses the northeast corner of the field. Average annual precipitation in the area ranges from 10 to 20 inches.

The coal-bearing strata have been correlated with the Laramie formation of the Denver region (Washburne, 1910, p. 308; and Stark and others, 1949, p. 57) and range in thickness from 0 to about 425 feet. The range in thickness results mainly from erosion that preceded the deposition of the overlying Denver formation (Stark and others, 1949, p. 57).

The Laramie crops out around the north end of the north-trending Michigan syncline (Stark and others, 1949, p. 56) and has been eroded from most of the south end. However, Washburne (1910, p. 314) reports the presence of a few thin coal beds at the south end of the syncline. The east flank of the Michigan syncline has been cut by a thrust fault, and the Laramie is not exposed. Coal reserves were estimated for an area on the west flank of the syncline where coal was formerly mined. Washburne (1910, p. 312) reports 3 coal beds present: a lower bed about 7 feet thick, a middle bed about 2 feet 9 inches thick, and an upper bed about 4 feet thick. Reserves were also estimated on the northeast flank of the syncline, where a thin coal bed is present (Washburne, 1910, p. 309). A few miles northwest of the Michigan syncline the Laramie crops out around the edge of a small syncline, and there is evidence of the presence of 2 coal beds, 1 about 12 feet thick and 1 about 6 feet thick (Washburne, 1910, p. 310).

Washburne (1910, p. 315) reports several very old analyses of coal from the area, but only one modern analysis is reported by the U. S. Bureau of Mines (1937, p. 110–111). The old analyses indicate a

higher rank than the modern one, which shows that the coal is subbituminous B in rank. The old analyses report much less moisture, ash, and oxygen and more volatile matter, fixed carbon, and carbon. Washburne (1910, p. 315) reports that the coal cakes poorly in beehive coke ovens and does not make good coke but is very resistant to weathering. In this report the coal is considered to be bituminous in rank on the basis of the physical properties of the coal. It is probable that coal of both ranks is present in the South Park field, but the status of present information is such as to make any statement about the rank of the coal strictly conjectural.

A total of about 92 million tons of bituminous coal is estimated to have been originally present in 8 square miles of the South Park field. An additional area of 12 square miles may have minable reserves of coal with less than 3,000 feet of overburden.

MIDDLE PARK FIELD

The presence of thin, impure, and lenticular coal beds in the strata exposed in Grand County in the intermontane basin known as Middle Park has long been known (Marvine, 1874, p. 156–157). The coal occurs in the Middle Park formation of Paleocene age (Brown, 1949), which is correlative with the Coalmont formation of the North Park field and is probably continuous with it. Marvine (1874, p. 156) also cites some coal of probable Cretaceous age. No coal reserves were estimated for the Middle Park area as detailed information is lacking and no workable coal beds have been reported (U. S. Bureau of Mines, 1937, p. 6).

PRODUCTION OF COAL IN COLORADO

The recorded history of coal production in Colorado extends back to 1864, but it is known that small tonnages of coal were mined many years before that. The earliest mention of the presence of coal in the State was in 1820 (James, 1823, p. 267) when coal in the Canon City area was noted. Coal was found in the Raton Mesa region in 1848 (Hayden, 1868, p. 199). Emmons and others (1896, p. 317) record that actual mining operations have been traced back to at least 1860, at a mine mentioned by Hayden (1874, p. 120) as being east of Denver on Coal (Upper Sand) Creek. This location is in the Scranton district, and the coal is probably in the Denver formation. Mines in the Boulder-Weld field and the Foothills district are reported to have been in operation prior to 1864 (Emmons and others, 1896, p. 317). From the first recorded production in 1864, the tonnage of coal mined in the State increased, with minor fluctuations, to the year 1917, when 12,483,336 tons of coal was produced. (See tables

5 and 6.) Production continued to be about 10 million tons annually until 1926. Since that time production has steadily declined, namely because of the increased use of other fuels. The total coal production in 1955 was 3,366,490 tons, of which 2,632,295 tons was bituminous coal and 734,195 tons was subbituminous coal (Annual Report of the Colorado State Coal Mine Inspection Department for 1955). Total coal production from 1864 to January 1, 1956, was 492,989,721 tons.

TABLE 5.—*Coal produced in Colorado from 1864–86*[1] *(in short tons)*

Year	Tons	Year	Tons
1864	500	1877	160,000
1865	1,200	1878	200,630
1866	6,400	1879	322,732
1867	17,000	1880	437,005
1868	10,500	1881	706,744
1869	8,000	1882	1,061,479
1870	13,500	1883	1,229,593
1871	15,860	1884	1,130,024
1872	68,540	1885	1,356,062
1873	69,977	1886	1,368,338
1874	77,372		
1875	98,838	Total	8,477,960
1876	117,666		

[1] U. S. Geological Survey Mineral Resources of the United States, 1886.

In the Rocky Mountains region, Colorado is second only to Utah as a producer of coking coal, and about 40 percent of the coal produced in the State in 1955 was used for making coke. In 1950 about 20 percent of the electricity generated in the State was produced using coal as fuel (National Coal Association, 1952, table 32). New processes that utilize coal not only for heat but for large quantities of important byproducts are expected to increase the demand for coal in the future. With industrialization of the Rocky Mountains region proceeding at a rapid rate, Colorado is expected to assume an increasingly important position in the economy of the United States. The large amount of readily available low-cost heat energy represented by the State's coal reserves is expected to be an important factor in the future of Colorado.

TABLE 6.—*Coal produced in Colorado from 1887 to Jan. 1, 1956 by counties* [1] *(in short tons)*

Year	Boulder	Delta	El Paso	Fremont	Garfield	Gunnison	Huerfano	Jefferson	La Plata	Las Animas
1887	288,218	----------	47,517	417,326	30,000	243,122	131,810	12,000	22,880	506,540
1888	315,155	----------	44,114	438,789	115,000	258,374	159,610	9,000	33,625	706,455
1889	323,096	1,357	54,212	274,029	239,292	252,442	333,717	10,790	34,971	993,534
1890	425,704	775	25,617	397,418	183,884	229,212	427,832	10,984	43,193	1,154,668
1891	498,494	----------	34,364	545,789	191,994	261,350	494,466	17,910	72,471	1,219,224
1892	545,563	200	23,014	538,887	277,794	225,260	541,733	21,219	81,500	1,171,069
1893	663,220	2,580	19,415	536,787	212,918	258,539	521,205	1,895	104,992	1,587,338
1894	419,734	3,697	30,268	245,616	75,663	200,325	408,045	34,108	53,571	1,153,863
1895	377,395	4,514	51,840	315,344	274,271	239,182	386,696	----------	106,099	1,253,149
1896	448,706	[10] 3,856	([11])	294,822	165,797	260,596	353,338	----------	104,661	1,261,555
1897	477,790	5,765	[8] 12,849	304,589	182,884	297,417	367,894	[13] 15,445	76,788	1,427,526
1898	451,539	5,052	([11])	426,553	222,480	323,321	1,075,881	12,366	100,650	1,211,340
1899	540,475	6,100	27,668	620,609	134,354	319,434	632,577	9,900	116,500	2,125,143
1900	574,334	5,417	94,334	619,413	141,159	432,555	854,944	([11])	123,524	2,123,411
1901	482,975	5,844	175,979	536,313	173,707	397,043	918,609	([11])	144,892	2,476,138
1902	806,371	9,350	218,549	695,999	207,262	364,874	1,189,313	----------	155,029	3,245,271
1903	803,924	13,029	207,797	633,858	176,354	436,604	1,319,666	----------	143,637	3,213,743
1904	736,824	21,683	248,013	256,200	198,545	494,545	1,187,905	([11])	146,080	2,808,953
1905	839,804	9,497	188,775	512,002	172,563	513,317	1,426,640	([11])	168,669	4,297,599
1906	1,022,096	6,812	210,793	666,034	193,063	583,175	1,803,791	([11])	173,720	4,768,882
1907	1,296,729	22,087	269,795	772,949	220,040	588,859	1,797,790	([11])	184,018	4,885,105
1908	1,067,948	37,689	317,763	669,274	220,099	503,140	1,644,068	([11])	166,090	4,190,801
1909	1,332,322	55,031	312,233	611,980	257,796	598,463	1,915,910	([11])	139,858	4,592,964
1910	802,769	63,590	336,780	722,142	189,755	640,982	2,387,090	([11])	147,755	5,548,085
1911	954,752	71,399	332,155	661,240	165,908	575,648	1,786,654	([11])	96,749	4,458,753
1912	1,054,925	75,043	334,904	738,833	185,452	557,685	1,899,538	([11])	132,487	4,708,698
1913	902,918	86,464	326,899	535,778	158,662	472,753	1,705,240	([11])	140,055	3,739,357
1914	1,000,590	86,861	280,577	169,271	112,842	402,045	1,724,265	([11])	132,317	2,693,288
1915	946,888	69,053	299,883	473,284	139,393	439,403	1,682,335	[29] 152,498	117,502	2,853,847
1916	1,057,539	70,696	312,670	605,108	133,771	512,265	1,884,943	[29] 185,704	108,603	4,042,937
1917	1,277,663	94,569	371,166	871,846	104,463	655,584	2,411,440	[29] 217,486	139,478	4,359,844
1918	1,360,261	89,476	301,647	871,326	92,655	652,770	2,586,911	126,330	138,963	4,250,291
1919	1,122,485	90,301	306,039	823,743	20,539	477,674	1,858,661	([11])	111,333	3,303,970
1920	1,218,504	120,899	383,977	871,532	28,376	618,894	2,395,261	[29] 228,821	127,732	4,219,086
1921 [35]	851,686	89,935	288,531	590,821	16,795	479,007	1,755,750	[36] 181,027	99,653	2,727,713

See footnotes at end of table.

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TABLE 6.—*Coal produced in Colorado from 1887 to Jan. 1, 1956 by counties* [1] *(in short tons)*—Continued

Year	Boulder	Delta	El Paso	Fremont	Garfield	Gunnison	Huerfano	Jefferson	La Plata	Las Animas
1922	728,943	105,203	389,403	478,202	19,778	437,522	2,069,350	180,547	79,086	3,370,064
1923	628,002	107,600	355,583	613,463	22,340	542,992	1,965,417	[36] 214,047	110,757	3,189,502
1924	683,544	87,325	363,941	698,300	26,420	469,021	1,990,741	127,382	92,136	3,118,572
1925	619,985	70,120	296,640	634,788	30,263	513,880	2,102,470	[41] 104,087	103,041	2,986,277
1926	619,550	74,629	352,596	570,345	31,305	574,641	1,965,912	[41] 105,296	106,004	3,299,599
1927	441,991	91,793	356,510	447,485	30,279	559,116	1,815,930	60,332	89,823	3,183,945
1928	428,195	70,519	349,746	472,501	35,773	462,844	1,781,394	100,409	86,568	2,910,631
1929	480,126	74,360	359,146	531,670	44,906	518,786	1,772,558	98,826	74,121	2,543,895
1930	429,197	70,356	344,989	402,978	36,275	499,627	1,375,456	123,471	56,876	1,945,290
1931	498,088	60,529	345,761	345,882	31,585	402,117	978,268	140,314	30,068	1,336,253
1932	578,921	52,637	313,209	351,707	33,649	403,653	674,845	132,551	22,541	859,107
1933	459,880	43,972	299,354	346,815	28,162	404,573	572,833	141,592	21,918	855,669
1934	461,796	36,609	299,293	352,736	28,072	443,073	608,445	135,635	18,849	864,130
1935	498,773	52,676	302,086	417,029	40,315	491,254	668,748	137,533	28,660	953,791
1936	503,274	69,049	291,802	492,542	45,978	627,652	766,914	169,131	34,947	1,225,846
1937	528,540	68,111	293,053	503,170	52,394	659,163	787,683	179,096	40,180	1,425,197
1938	590,351	54,984	264,308	471,012	44,912	522,071	591,667	160,215	32,533	803,648
1939	608,433	61,614	[33] 428,380	510,007	37,978	530,425	615,167	[11]	28,195	1,067,136
1940	622,556	65,707	250,434	515,756	34,925	619,249	753,133	147,501	29,146	1,252,332
1941	654,334	73,244	237,552	516,161	37,344	708,037	815,632	[11]	31,443	1,352,119
1942	711,320	94,662	248,491	540,191	53,768	774,358	982,815	147,057	43,534	1,457,318
1943	605,266	113,523	249,436	567,648	58,958	751,274	1,088,838	[41] 157,915	55,238	1,695,153
1944	604,039	120,216	232,251	621,277	56,178	749,982	1,003,802	[39] 156,435	69,680	1,583,232
1945	477,099	131,505	215,206	552,199	58,037	775,803	882,897	[39] 150,662	68,342	1,432,208
1946	377,639	98,899	191,186	349,507	49,342	609,203	613,846	[39] 160,940	56,147	1,070,392
1947	326,198	102,415	214,494	429,600	51,956	623,110	585,181	[39] 164,097	48,977	1,289,582
1948	235,074	97,554	192,788	394,873	46,906	588,006	551,379	[39] 138,620	48,923	1,142,004
1949	165,250	84,516	126,992	339,651	49,667	491,485	439,130	[39] 97,096	45,091	889,306
1950	109,565	71,560	112,986	274,273	49,401	401,990	304,730	[38] 30,225	46,685	965,904
1951	113,012	75,267	89,622	281,937	39,649	338,071	311,812	[38] 10,315	41,936	998,445
1952	78,958	64,162	72,046	203,724	43,274	341,302	248,261	1,593	40,807	864,369
1953	49,821	57,714	56,324	176,087	36,062	304,622	140,339	----------	41,390	1,179,268
1954	33,952	43,380	75,458	180,950	29,949	268,287	58,070	----------	42,081	875,298
1955	24,501	52,440	73,484	217,891	33,937	328,682	64,864	----------	50,296	1,111,319
Total	42,265,569	3,827,471	15,134,687	34,067,861	6,965,267	32,501,730	75,920,055	4,920,403	5,806,064	154,376,851

Year	Mesa	Moffat	Montezuma	Pitkin	Rio Blanco	Routt	Weld	Other counties	Small mines	Total
1887							48,401	[2] 43,921		1,791,735
1888	300			28,113			28,054	[3] 48,888		2,185,477
1889	1,100		816		2,900	1,491	28,628	[3] 44,806		2,597,181
1890	1,000		238	74,362	200	705	46,417	[4] 54,794		3,077,003
1891	5,000			91,642			22,554	[5] 57,374		3,512,632
1892	5,050		30		100	330	2,205	[6] 76,876		3,510,830
1893	18,100		90	99,211		816	35,355	[7] 39,928		4,102,389
1894	31,750		235	97,724	1,680	2,710	42,818	[8] 29,602		2,831,409
1895	41,150		190		1,761	2,767	27,934	[9] 690		3,082,982
1896	28,979		203	168,413	1,400	1,832	4,300	[12] 13,942		3,112,400
1897	[14] 10,508		(11)	171,111	1,882	945	8,310			3,361,703
1898	[14] 10,690		(11)	195,496	1,341	1,339	24,085	[12] 14,214		4,076,347
1899	[14] 17,572		(11)	[15] 174,172	(11)	1,211	47,573	[16] 2,936		4,776,224
1900	[14] 8,990		(11)	175,942	[17] 3,911	1,375	80,015	[16] 5,040		5,244,364
1901	[18] 27,103		(11)	325,872	(11)	1,558	33,374	[16] 608		5,700,015
1902	[19] 432,464				(11)	3,180	73,681			7,401,343
1903	28,452			[20] 346,774	(11)	2,775	94,492		2,497	7,423,602
1904	26,450			[21] 405,297		5,568	118,862		3,430	6,658,355
1905	49,500			[21] 539,752		3,643	101,812		2,856	8,826,429
1906	37,696		(11)	[22] 542,519	(11)	5,297	95,420		1,920	10,111,218
1907	44,530		(11)	[22] 564,380	(11)	5,690	136,074		2,190	10,790,236
1908	59,250		(11)	[23] 399,452	(11)	13,005	343,414		2,980	9,634,973
1909	98,241		(11)	[24] 364,114	(11)	92,439	327,545		18,040	10,716,936
1910	129,530			[25] 419,212	(11)	258,452	322,896		4,698	11,973,736
1911	92,881		(11)	[26] 111,662	(11)	317,791	520,396		11,395	10,157,383
1912	114,493		(11)	[27] 222,286		448,261	491,037		14,182	10,977,824
1913	134,438			[28] 277,505	(11)	334,961	409,131		8,349	9,232,510
1914	163,894		(11)	[29] 256,959	(11)	666,384	475,734		5,532	8,170,559
1915	101,327		[30] 2,375	[15] 52,143	(11)	852,315	432,501		10,233	8,624,980
1916	132,111			[15] 42,861	(11)	915,028	464,959		15,042	10,484,237
1917	179,222			[15] 26,693	(11)	1,074,103	654,977		[31] 44,802	12,483,336
1918	191,043			[32] 98,078	(11)	941,355	687,609		[31] 18,856	12,407,571
1919	116,321			[33] 225,136	(11)	1,181,332	659,660		26,226	10,323,420
1920	170,256	(11)			[34] 6,472	964,342	920,073		4,000	12,278,225
1921 [35]	113,761	(11)	(11)	[37] 10,992	(11)	889,015	1,028,074		14,869	9,137,629

See footnotes at end of table.

TABLE 6.—*Coal produced (short tons) in Colorado from 1887 to Jan. 1, 1956 by counties* [1]—Continued

Year	Mesa	Moffat	Montezuma	Pitkin	Rio Blanco	Routt	Weld	Other counties	Small mines	Total
1922	151, 937	4, 875	[38] 4, 002	[36] 66, 092	3, 349	432, 198	1, 473, 911		25, 135	10, 019, 597
1923	180, 574	(11)	(11)	[39] 12, 130	3, 706	803, 455	1, 577, 430		19, 220	10, 346, 218
1924	135, 489	6, 963	5, 484	[40] 72, 844	3, 188	911, 643	1, 648, 646	[41] 2, 459		10, 444, 098
1925	126, 011	7, 188	5, 192	[40] 70, 520	6, 264	1, 009, 703	1, 624, 122			10, 310, 551
1926	125, 632	4, 950	5, 659	[42] 66, 606	(11)	920, 569	1, 813, 932			10, 637, 225
1927	113, 823	3, 913	4, 804	[36] 74, 965	4, 598	925, 633	1, 509, 573	[43] 9, 562		9, 724, 075
1928	160, 048	4, 896	6, 086	[44] 83, 274	5, 165	929, 190	1, 947, 386	[45] 13, 082		9, 847, 707
1929	113, 151	5, 853	5, 163	[29] 75, 025	5, 977	1, 006, 157	2, 196, 258	[45] 14, 763		9, 920, 741
1930	91, 183	7, 637	4, 969	[36] 64, 615	5, 599	838, 828	1, 891, 099	[46] 8, 465		8, 196, 910
1931	90, 398	5, 147	6, 678	[47] 12, 038	6, 931	570, 886	1, 696, 878	[48] 46, 548		6, 604, 369
1932	65, 452	3, 798	3, 677	[49] 49, 247	5, 323	572, 458	1, 472, 519	[13] 3, 427		5, 598, 721
1933	68, 919	2, 606	3, 304	[29] 29, 745	4, 264	467, 551	1, 470, 413	[50] 8, 297		5, 229, 767
1934	54, 218	2, 945	5, 056	[29] 25, 672	3, 937	455, 311	1, 375, 783	[50] 9, 373		5, 210, 933
1935	65, 755	6, 804	7, 298	[51] 3, 741	4, 518	789, 905	1, 408, 375	[52] 33, 250		5, 910, 511
1936	64, 762	6, 871	4, 510	[51] 3, 601	5, 206	987, 338	1, 480, 260	[52] 32, 119		6, 811, 802
1937	78, 268	18, 229	(11)	[14] 15, 891	4, 320	1, 024, 621	1, 477, 673	[53] 31, 622		7, 187, 211
1938	65, 116	35, 205	(11)	[14] 30, 159	4, 254	741, 431	1, 231, 371	[53] 19, 907		5, 663, 144
1939	77, 464	55, 900	(11)	[54] 32, 418	(11)	727, 440	1, 134, 630	[41] 8, 023		5, 923, 210
1940	69, 664	48, 162	[10] 43, 218	[55] 7, 894	(11)	909, 942	1, 197, 585	[52] 21, 738		6, 588, 742
1941	106, 254	49, 459	(11)	[56] 5, 916	[10] 57, 358	878, 952	1, 276, 231	[57] 148, 496		6, 948, 532
1942	118, 629	65, 817		(11)	[58] 15, 064	[10] 1, 231, 608	1, 585, 159	[35] 15, 889		8, 085, 680
1943	100, 188	[29] 100, 689			[10] 50, 869	1, 194, 483	1, 534, 714			8, 324, 192
1944	103, 785	138, 394			[10] 54, 497	1, 187, 237	1, 484, 263	[41] 2, 445		8, 167, 713
1945	106, 732	128, 595			[10] 40, 796	1, 093, 294	1, 505, 904	[41] 1, 733		7, 621, 021
1946	91, 846	142, 923	1, 251		[10] 11, 927	896, 303	1, 145, 968	[41] 1, 189		5, 868, 508
1947	103, 790	146, 494			[10] 23, 572	1, 016, 823	1, 230, 683	[41] 1, 132		6, 358, 104
1948	97, 651	144, 288			[10] 35, 142	939, 875	976, 532	[41] 1, 171		5, 630, 786
1949	92, 775	130, 404	1, 295	4, 327	[10] 48, 050	807, 289	823, 013	[41] 1, 095		4, 636, 432
1950	88, 437	125, 743	1, 598	6, 873	[58] 73, 611	832, 928	778, 378			4, 274, 887
1951	93, 749	110, 275	1, 222	8, 468	[58] 40, 190	678, 698	879, 267			4, 111, 945
1952	96, 833	90, 590	275	7, 328	40, 402	688, 486	754, 783	[59] 6, 330		3, 643, 523
1953	82, 086	90, 660	427	35, 928	23, 266	616, 164	701, 887	[59] 6, 822		3, 598, 867
1954	38, 950	85, 683	499	88, 606	18, 539	450, 146	626, 905	[59] 5, 612		2, 922, 365
1955	50, 028	100, 556	1, 108	94, 297	20, 047	522, 942	614, 218	[59] 5, 880		3, 366, 490
Total	5, 892, 749	1, 882, 512	126, 952	7, 555, 893	651, 576	37, 081, 502	54, 394, 119	894, 048	256, 452	484, 511, 761

[1] 1864–92, 1900–32, U. S. Geological Survey: Mineral Resources of the United States. 1893–99, U. S. Geological Survey Annual Reports 16–21. 1932–49, U. S. Bureau of Mines: Minerals Yearbook, 1950–55, Colorado State Mine Inspector Record.
[2] Includes Arapahoe, Douglas, Dolores, and Park Counties.
[3] Includes Arapahoe, Douglas, Larimer, Park, and San Miguel Counties.
[4] Includes Arapahoe, Douglas, Dolores, Larimer, Park, and San Miguel Counties.
[5] Includes Arapahoe, Dolores, and Park Counties.
[6] Includes Arapahoe, Douglas, and Park Counties.
[7] Includes Arapahoe, Douglas, Montrose, and Park Counties.
[8] Includes Arapahoe County.
[9] Includes Arapahoe and Montrose Counties.
[10] Includes Montrose County.
[11] Production included elsewhere.
[12] Includes Arapahoe, El Paso, and Larimer Counties.
[13] Includes Larimer County.
[14] Includes Montrose and Montezuma Counties.
[15] Includes Rio Blanco County.
[16] Includes Arapahoe and Larimer Counties.
[17] Includes Jefferson County.
[18] Includes Jefferson, Rio Blanco, Montezuma, and Montrose Counties.
[19] Includes Arapahoe, Larimer, Montezuma, Ouray, Pitkin, and Rio Blanco Counties.
[20] Includes Arapahoe, Larimer, and Rio Blanco Counties.
[21] Includes Adams, Jefferson, and Larimer Counties.
[22] Includes Adams, Archuleta, Jefferson, Larimer, Montezuma, and Rio Blanco Counties.
[23] Includes Archuleta, Douglas, Jefferson, Larimer, Montezuma, and Rio Blanco Counties.
[24] Includes Archuleta, Jefferson, Montezuma, and Rio Blanco Counties.
[25] Includes Archuleta, Jackson, Jefferson, and Rio Blanco Counties.
[26] Includes Archuleta, Jefferson, Larimer, Montezuma, and Rio Blanco Counties.
[27] Includes Archuleta, Jackson, Jefferson, and Montezuma Counties.
[28] Includes Archuleta, Jackson, Jefferson, Montezuma, and Rio Blanco Counties.
[29] Includes Jackson County.
[30] Includes Archuleta County.
[31] Includes Montrose and Ouray Counties.
[32] Includes Jackson and Rio Blanco Counties.
[33] Includes Jackson, Jefferson, Moffat, and Rio Blanco Counties.
[34] Includes Moffat County.
[35] Exclusive of Wagon Mines in 1921 and from 1924–52.
[36] Includes Jackson and Elbert Counties.
[37] Includes Moffat, Montezuma, Ouray, and Rio Blanco Counties.
[38] Includes Ouray County.
[39] Includes Archuleta, Moffat, Montezuma, and Montrose Counties.
[40] Includes Archuleta, Jackson, and Montrose Counties.
[41] Includes Elbert County.
[42] Includes Archuleta, Jackson, Montrose, and Rio Blanco Counties.
[43] Includes Dolores, Ouray, and San Miguel Counties.
[44] Includes Jackson and Montrose Counties.
[45] Includes Dolores, Elbert, and San Miguel Counties.
[46] Includes Dolores, Montrose, and Ouray Counties.
[47] Includes Montrose, Ouray, and Park Counties.
[48] Includes Archuleta, Elbert, Jackson, and Larimer Counties.
[49] Includes Arapahoe, Elbert, Jackson, Montrose, and Ouray Counties.
[50] Includes Elbert and Larimer Counties.
[51] Includes Montrose and San Miguel Counties.
[52] Includes Elbert, Jackson, and Larimer Counties.
[53] Includes Jackson, Jefferson, and Larimer Counties.
[54] Includes Archuleta, Montezuma, Montrose, and Rio Blanco Counties.
[55] Includes Archuleta and Rio Blanco Counties.
[56] Includes Montezuma County.
[57] Includes Elbert, Jackson, Jefferson, and Larimer Counties.
[58] Includes Archuleta, Montrose, and San Miguel Counties.
[59] Includes Archuleta, Jackson, Montrose, and San Miguel Counties.

MINING METHODS

About 89 percent of the coal produced in Colorado in 1955 was mined by underground methods, with drift mines greatly in preponderance. Only 7 strip mines were in operation in 1955, but they produced almost 11 percent of the State's total coal, and the 143 underground mines in operation produced the remainder. Sixty-five percent, or 2,193,479 tons of the total production of 3,366,490 tons, was mechanically cut. Fifty-six percent, or 1,886,849 tons, of the total production was mechanically loaded with little or no hand labor. The 5 continuous-mining machines in operation in the State in 1955 mined and loaded almost 5 percent of the total production. It is probable that in line with existing trends throughout the industry, more mechanical equipment will be used in the coal mines of Colorado.

Thirty-one of the operating mines are served directly by railroads, and most of the remainder are within short truck-hauling distance of a railroad. About 65 percent of the coal produced in 1955 was shipped by railroad for at least part of its journey from mine to market.

RECOVERABLE COAL RESERVES

Recorded production figures for the years 1864–1955 (tables 5 and 6) show that 492,989,721 tons of coal has been produced from the coal mines in Colorado. Assuming that an equal amount has been lost in the mining process, about 986 million tons of coal has been mined and lost in mining during the recorded coal-producing history of the State. Subtracting this figure from the total original coal reserves as estimated in this report, the remaining reserves of coal are about 80,799 million tons. Again applying the 50-percent recoverability factor, a total of about 40,399 million tons of recoverable coal is estimated to be present in the 5,276 square miles for which estimates were made.

The Bituminous Coal Annual (National Coal Association, 1953, table 11) reports that production of all mineral fuels and hydroelectric power in 1951 in Colorado was the equivalent of 11,034,000 tons of bituminous coal. Even with the expected future increase in power requirements, coal could satisfy those requirements for many generations to come.

REFERENCES CITED

American Society for Testing Materials, 1939, Standard specifications for classification of coals by rank (ASTM Designation: D 388–38), *in* 1939 Book of ASTM Standards, pt. 3, p. 1–6: Philadelphia, Pa.

Aresco, S. J., and Haller, C. P., 1953, Analyses of tipple and delivered samples of coal (collected during the fiscal year 1951): U. S. Bur. Mines, Rept. of Inv. 4934, p. 9–14.

Aresco, S. J., Haller, C. P., and Abernethy, R. F., 1955, Analyses of tipple and delivered samples of coal (collected during the fiscal year 1953): U. S. Bur. Mines, Rept. of Inv. 5085, p. 7–10.

Barnes, Harley, 1953, Geology of the Ignacio area, Ignacio and Pagosa Springs quadrangles, La Plata and Archuleta Counties, Colorado: U. S. Geol. Survey Oil and Gas Inv. Map OM 138.

Barnes, Harley, Baltz, E. H., Jr., and Hayes, P. T., 1954, Geology and fuel resources of the Red Mesa area, La Plata and Montezuma Counties, Colorado: U. S. Geol. Survey Oil and Gas Inv. Map OM 149.

Bass, N. W., Eby, J. B., and Campbell, M. R., 1956, Geology and mineral fuels of parts of Routt and Moffat Counties, Colorado: U. S. Geol. Survey Bull. 1027 D, p. 143–250.

Beekly, A. L., 1915, Geology and coal resources of North Park, Colorado: U. S. Geol. Survey Bull. 596, 121 p.

Berryhill, L. R., and Averitt, Paul, 1951, Coking-coal deposits of the western United States: U. S. Geol. Survey Circ. 90, 20 p.

Brown, R. W., 1943, Cretaceous-Tertiary boundary in the Denver Basin, Colorado: Geol. Soc. America Bull., v. 54, p. 65–86.

——— 1949, Paleocene deposits of the Rocky Mountains and Plains: U. S. Geol. Survey prelim. map.

Campbell, M. R., 1913, Coal resources of the world, Coal reserves of the United States, v. 2: Marang and Co., Ltd., Toronto, p. 525–539.

Cobban, W. A., and Reeside, J. B., Jr., 1952, Correlation of the Cretaceous formations of the western interior of the United States: Geol. Soc. America Bull., v. 63, p. 1011–1044.

Collier, A. J., 1919, Coal south of Mancos, Montezuma County, Colorado: U. S. Geol. Survey Bull. 691–K, p. 293–310.

Cross, Whitman, 1899, Description of the La Plata quadrangle, Colorado: U. S. Geol. Survey Geol. Atlas, folio 60.

Cross, Whitman,and Larsen, E. S., 1935, A brief review of the geology of the San Juan region of southwestern Colorado: U. S. Geol. Survey Bull. 843, 138 p.

Dane, C. H., and Pierce, W. G., 1936, Dawson and Laramie formations in southeastern part of Denver basin: Am. Assoc. Petroleum Geologists Bull., v. 20, no. 10, p. 1308–1328.

Dapples, E. C., 1939, Coal metamorphism in the Anthracite-Crested Butte quadrangles, Colorado: Econ. Geology, v. 34, no. 4, p. 369–398; a correction, v. 35, no. 1, p. 109.

Emmons, S. F., 1894, Anthracite-Crested Butte, Colorado: U. S. Geol. Survey Geol. Atlas, folio 9.

Emmons, S. F., Cross, Whitman, and Eldridge, G. H., 1896, Geology of the Denver basin in Colorado: U. S. Geol. Survey Mon. 27.

Erdmann, C. E., 1934, The Book Cliffs coal field in Garfield and Mesa Counties, Colorado: U. S. Geol. Survey Bull. 851, 150 p.

Fenneman, N. M., 1946, Physical divisions of the United States: U. S. Geol. Survey Map. Reprinted 1949.

Finlay, G. I., 1916, Description of the Colorado Springs quadrangle, Colorado: U. S. Geol. Survey Geol. Atlas, folio 203.

Gale, H. S., 1907, Coal fields of the Danforth Hills and Grand Hogback in northwestern Colorado: U. S. Geol. Survey Bull. 316, p. 264–301.

——— 1909, Coal fields of northwestern Colorado and northeastern Utah: U. S. Geol. Survey Bull. 341, p. 283–315.

Gale, H. S., 1910, Coal fields of northwestern Colorado and northeastern Utah: U. S. Geol. Survey Bull. 415, 265 p.

Gardner, J. H., 1909, The coal field between Durango, Colorado, and Monero, New Mexico: U. S. Geol. Survey Bull. 341, p. 352–363.

Goldman, M. I., 1910, The Colorado Springs coal field, Colorado: U. S. Geol. Survey Bull. 381, p. 317–340.

Hancock, E. T., 1925, Geology and coal resources of the Axial and Monument Butte quadrangles, Moffat County, Colorado: U. S. Geol. Survey Bull. 757, 134 p.

Hancock, E. T., and Eby, J. B., 1929, Geology and coal resources of the Meeker quadrangle, Moffat and Rio Blanco Counties, Colorado: U. S. Geol. Survey Bull. 812–C, p. 191–242.

Harbour, R. L., and Dixon, G. H. (in press), Geology and coal resources of the Trinidad-Aguilar area, Las Animas and Huerfano Counties, Colorado: U. S. Geol. Survey Bull. 1072–G.

Hayden, F. V., 1868, Notes on the lignite deposits of the West: The Am. Jour. Sci. and Arts, v. 45, no. 134, art. 22, p. 198–208.

——— 1874, Annual report of the U. S. Geological and Geographical Survey of the Territories, for the year 1873.

Hills, R. C., 1893, Coal fields of Colorado: U. S. Geol. Survey Min. Res. 1892, p. 319–365.

James, Edwin, 1823, Account of an expedition from Pittsburg to the Rocky Mountains performed in the years 1819–20: Philadelphia, H. C. Carey and I. Lea, v. 2, 442 p.

Johnson, R. B., 1958, Geology and coal resources of the Walsenburg area, Huerfano County, Colorado: U. S. Geol. Survey Bull. 1042–O, p. 557–581.

Johnson, R. B., and Stephens, J. G., 1954, Coal resources of the La Veta area, Huerfano County, Colorado: U. S. Geol. Survey Coal Inv. Map C 20.

Johnson, V. H., 1948, Geology of the Paonia coal field, Delta and Gunnison Counties, Colorado: U. S. Geol. Survey Coal Inv. Map.

Lee, W. T., 1909, The Grand Mesa coal field, Colorado: U. S. Geol. Survey Bull. 341, p. 316–334.

——— 1912, Coal fields of Grand Mesa and the West Elk Mountains, Colorado: U. S. Geol. Survey Bull. 510, 237 p.

Martin, G. C., 1910, Coal in the Denver basin, Colorado: U. S. Geol. Survey Bull. 381, p. 297–306.

Marvine, A. R., 1874, Geology of Middle Park, Colorado: U. S. Geol. and Geog. Survey of the Territories, 7th Annual Rept., p. 154–192.

National Coal Association, 1952, Bituminous Coal Annual.

——— 1953, Bituminous Coal Annual.

Richardson, G. B., 1907, The Book Cliffs coal field, between Grand River, Colorado, and Sunnyside, Utah: U. S. Geol. Survey Bull. 316, p. 302–320.

——— 1909, Reconnaissance of the Book Cliffs coal field between Grand River, Colorado, and Sunnyside, Utah: U. S. Geol. Survey Bull. 371, 54 p.

——— 1917, Note on the age of the Scranton coal, Denver basin, Colorado: Am. Jour. Sci., 4th ser., v. 43, p. 243–244.

Rocky Mountain Association of Geologists, Research Committee, 1952, Chart showing tentative correlations of geologic units in Colorado and Utah.

Schrader, F. C., 1906, The Durango-Gallup coal field of Colorado and New Mexico: U. S. Geol. Survey Bull. 285, p. 241–258.

Shaler, M. K., 1907, A reconnaissance survey of the western part of the Durango-Gallup coal field of Colorado and New Mexico: U. S. Geol. Survey Bull. 316, p. 375–426.

Spencer, F. D., and Erwin, M. I., 1953, Coal resources of Colorado: U. S. Geol. Survey Circ. 258, 17 p.

Stark, J. T., and others, 1949, Geology and origin of South Park, Colorado: Geol. Soc. America Mem. 33.

Storrs, L. S., 1902, The Rocky Mountain coal fields: U. S. Geol. Survey 22nd Ann. Rept., pt. 3, p. 415–471.

Taff, J. A., 1907, The Durango coal district, Colorado: U. S. Geol. Survey Bull. 316, p. 321–337.

Toenges, A. L., and others, 1949, Reserves, petrographic and chemical characteristics, and carbonizing properties of coal occurring south of Dry Fork of Minnesota Creek, Gunnison County, near Paonia, Colorado, and the geology of the area: U. S. Bur. Mines Tech. Paper 721, 48 p.

——— 1952, Coal deposit, Coal Creek district, Gunnison County, Colorado: U. S. Bur. Mines Bull. 501, 83 p.

U. S. Bureau of Mines, 1937, Analyses of Colorado coals: Tech. Paper 574, 327 p.

Vanderwilt, J. W., 1947, Mineral resources of Colorado: Colorado Min. Res. Board, Denver, Colo., p. 266–276.

Wanek, A. A., 1954, Geologic map of the Mesa Verde area, Montezuma County, Colorado: U. S. Geol. Survey Oil and Gas Inv. Map OM 152.

Washburne, C. W., 1910, The Canon City coal field, Colorado: U. S. Geol. Survey Bull. 381, p. 341–378.

——— 1910, The South Park coal field, Colorado: U. S. Geol. Survey Bull. 381, p. 307–316.

Wood, G. H., Jr., Kelley, V. C., and MacAlpin, A. J., 1948, Geology of southern Archuleta County, Colorado: U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 81.

Wood, G. H., Jr., Johnson, R. B., and others, 1951, Geology and coal resources of the Stonewall-Tercio area, Las Animas County, Colorado: U. S. Geol. Survey Coal Inv. Map C 4.

Wood, G. H., Jr., Johnson, R. B., and Dixon, G. H., 1956, Geology and coal resources of the Gulnare, Cuchara Pass, and Stonewall area, Huerfano and Las Animas Counties, Colorado: U. S. Geol. Survey Coal Inv. Map C 26.

——— 1958, Geology and coal resources of the Starkville-Weston area, Las Animas County, Colorado: U. S. Geol. Survey Bull. 1051, 68 p.

Woodruff, E. G., 1912, The coal resources of Gunnison Valley, Mesa and Delta Counties, Colorado; U. S. Geol. Survey Bull. 471, p. 565–573.

Wyoming Geological Association and University of Wyoming, 1953, Guidebook, 8th Annual Field Conference.

Zapp, A. D., 1949, Geology and coal resources of the Durango area, La Plata and Montezuma Counties, Colorado: U. S. Geol. Survey Oil and Gas Inv. Prelim. Map 109.

TABLE 7.—*Original coal reserves (in millions of short tons) of Colorado, by field, district, or area, and by rank, under less than 3,000 feet of overburden*

Region, field, district, or area	Square miles included in estimate	Rank of coal		Total
		Subbituminous	Bituminous	
Green River region:				
Yampa field	828	5,711.49	17,896.07	23,607.56
Uinta region:				
Book Cliffs field	255	----------	2,293.91	2,293.91
Grand Mesa field	96	1,429.96	138.77	1,568.73
Somerset field	133	----------	3,348.16	3,348.16
Crested Butte field [1]	35	----------	206.93	244.01
Carbondale field [2]	34	----------	744.62	797.92
Grand Hogback field	43	----------	884.99	884.99
Danforth Hills field	252	----------	7,853.92	7,853.92
Lower White River field	553	----------	7,012.79	7,012.79
San Juan River region:				
Pagosa Junction district	24	----------	183.87	183.87
Bayfield-Yellowjacket Pass district	123	----------	1,256.34	1,256.34
Durango field	243	----------	3,556.60	3,556.60
Red Mesa area	288	----------	3,500.54	3,500.54
Mesa Verde area	268	----------	1,136.50	1,136.50
Raton Mesa region:				
Walsenburg field	172	----------	1,190.44	1,190.44
Trinidad field	872	----------	11,483.97	11,483.97
Denver region:				
Colorado Springs field	68	397.31	----------	397.31
Ramah-Fondis area	128	474.28	----------	474.28
Buick-Matheson area	79	488.12	----------	488.12
Scranton district	59	488.90	----------	488.90
Briggsdale area	14	89.17	----------	89.17
Eaton area	9	30.33	----------	30.33
Wellington area	53	302.56	----------	302.56
Foothills district	90	993.35	----------	993.35
Boulder-Weld field	336	1,996.06	----------	1,996.06
Canon City field	36	----------	295.34	295.34
Pagosa Springs field	1	----------	10.10	10.10
Tongue Mesa field	58	2,354.94	----------	2,354.94
North Park field	102	3,735.13	----------	3,735.13
South Park field	8	----------	92.25	92.25
Cortez area	1	----------	2.20	2.20
Nucla-Naturita field	15	----------	114.34	114.34
Total	5,276	18,491.60	63,202.65	81,784.63

[1] Crested Butte field had original reserves of 37.08 millions of short tons of anthracitic coal.
[2] Carbondale field had original reserves of 53.30 millions of short tons of anthracitic coal.

TABLE 8.—*Measured and indicated original reserves of anthracite and semianthracite (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Gunnison County, Colo.*

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 11 S., R. 88 W.	2.04	0.88	8.10	11.02	0.58	0.50	0.80	1.88					2.62	1.38	8.90	12.90
T. 11 S., R. 89 W.	.06	.63	4.20	4.89	.05	.90	3.43	4.38		0.50	0.96	1.46	.11	2.03	8.59	10.73
T. 13 S., R. 86 W.	1.97	4.18	3.07	9.22	.06	.10		.16					2.03	4.28	3.07	9.38
T. 13 S., R. 87 W.		.60		.60		.13		.13						.73		.73
T. 14 S., R. 87 W.		6.07		6.07		.79		.79						6.86		6.86
County total	4.07	12.36	15.37	31.80	.69	2.42	4.23	7.34		.50	.96	1.46	4.76	15.28	20.56	40.60

TABLE 9.—*Inferred original reserves of anthracite and semianthracite (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Gunnison County, Colo.*

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 11 S., R. 88 W.	2.57	1.00	5.94	9.51	1.68	0.97	3.06	5.71	1.59	1.19	2.49	5.27	5.84	3.16	11.49	20.49
T. 11 S., R. 89 W.		.92	.14	1.06		.65	1.37	2.02		1.13	4.97	6.10		2.70	6.48	9.18
T. 13 S., R. 86 W.	2.95	5.05	.70	8.70	.97	1.82		2.79					3.92	6.87	.70	11.49
T. 13 S., R. 87 W.		1.11		1.11		.13		.13						1.24		1.24
T. 14 S., R. 86 W.			3.86	3.86											3.86	3.86
T. 14 S., R. 87 W.		2.05		2.05		1.47		1.47						3.52		3.52
County total	5.52	10.13	10.64	26.29	2.65	5.04	4.43	12.12	1.59	2.32	7.46	11.37	9.76	17.49	22.53	49.78

TABLE 10.—*Measured and indicated original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Archuleta County																
T. 32 N., R. 2 W.			18.63	18.63											18.63	18.63
T. 32 N., R. 2 W.		5.99	10.79	16.78										5.99	10.79	16.78
T. 32 N., R. 3 W.		6.75	9.00	15.75										6.75	9.00	15.75
S. T. 34 N., R. 4 W.	3.01		9.56	12.57									3.01		9.56	12.57
S. T. 34 N., R. 5 W.	1.22	4.53	3.87	9.62									1.22	4.53	3.87	9.62
N. T. 34 N., R. 5 W.			17.45	17.45			3.23	3.23							20.68	20.68
T. 35 N., R. 1 E.			1.86	1.86											1.86	1.86
T. 35 N., R. 1 W.			.56	.56											.56	.56
T. 35 N., R. 5 W.	.17	.37	1.97	2.51	0.11	0.16	.69	.96					.28	.53	2.66	3.47
T. 35 N., R. 6 W.			.78	.78			.50	.50							1.28	1.28
T. 36 N., R. 1 E.	.64		1.12	1.76									.64		1.12	1.76
T. 36 N., R. 1 W.	1.50	1.37		2.87									1.50	1.37		2.87
County total	6.54	19.01	75.59	101.14	.11	.16	4.42	4.69					6.65	19.17	80.01	105.83
Delta County																
T. 12 S., R. 91 W.							0.34	0.34							0.34	0.34
T. 13 S., R. 91 W.		2.40	63.41	65.81			33.78	33.78						2.40	97.19	99.59
County total		2.40	63.41	65.81			34.12	34.12						2.40	97.53	99.93
Fremont County																
T. 19 S., R. 69 W.		12.88	4.13	17.01										12.88	4.13	17.01
T. 19 S., R. 70 W.	1.90	42.78	72.06	116.74									1.90	42.78	72.06	116.74
T. 20 S., R. 69 W.		13.03	.48	13.51										13.03	.48	13.51
T. 20 S., R. 70 W.		11.30	23.66	34.96										11.30	23.66	34.96
County total	1.90	79.99	100.33	182.22									1.90	79.99	100.33	182.22

Garfield County

T. 3 S., R. 94 W.		0.56	5.48	6.04		0.44	1.68	2.12		0.67	2.58	3.25		1.67	9.74	11.41
T. 4 S., R. 94 W.		.99	12.56	13.55		.79	4.18	4.97		.51	1.96	2.47		2.29	18.70	20.99
T. 5 S., R. 90 W.		.46	5.75	6.21		.42	4.01	4.43		.08	1.66	1.74		.96	11.42	12.38
T. 5 S., R. 91 W.		1.78	31.66	33.44		.21	23.36	23.57			19.07	19.07		1.99	74.09	76.08
T. 5 S., R. 92 W.		2.44	12.99	15.43		2.37	9.31	11.68		2.44	9.79	12.23		7.25	32.09	39.34
T. 5 S., R. 93 W.		.68	4.15	4.83		.68	3.26	3.94		.81	3.56	4.37		2.17	10.97	13.14
T. 6 S., R. 90 W.		1.90	36.10	38.00		2.57	48.80	51.37		1.95	37.09	39.04		6.42	121.99	128.41
T. 6 S., R. 91 W.		8.92	10.61	19.53		9.58	17.39	26.97		7.11	25.48	32.59		25.61	53.48	79.09
T. 6 S., R. 103 W.	0.53	2.98	24.92	28.43									0.53	2.98	24.92	28.43
T. 6 S., R. 104 W.	2.38	22.96	1.84	27.18		2.43		2.43					2.38	25.39	1.84	29.61
T. 7 S., R. 89 W.	2.00		48.99	50.99	1.59		55.79	57.38	1.56		57.45	59.01	5.15		162.23	167.38
T. 7 S., R. 102 W.	3.22	5.87	63.92	73.01			23.72	23.72					3.22	5.87	87.64	96.73
T. 7 S., R. 103 W.	9.77	18.56	40.86	69.19									9.77	18.56	40.86	69.19
T. 7 S., R. 104 W.	20.89	60.26	30.11	111.26	.15			.15					21.04	60.26	30.11	111.41
T. 7 S., R. 105 W.	1.03	.13		1.16									1.03	.13		1.16
T. 8 S., R. 89 W.	2.75	3.15	21.41	27.31	2.18	2.56	20.12	24.86	1.99	2.72	22.58	27.29	6.92	8.43	64.11	79.46
T. 8 S., R. 101 W.			.63	.63			.52	.52							1.15	1.15
T. 8 S., R. 102 W.			64.06	64.06			15.51	15.51							79.57	79.57
T. 8 S., R. 103 W.	1.84	.98	4.35	7.17									1.84	.98	4.35	7.17
County total	44.41	132.62	420.39	597.42	3.92	22.05	227.65	253.62	3.55	16.29	181.22	201.06	51.88	170.96	829.26	1,052.10

Gunnison County

T. 10 S., R. W.	0.15			0.15	0.43			0.43	0.10			0.10	0.68			0.68
T. 11 S., R. 88 W.		0.02		.02	.06	0.19		.25					.06	0.21		.27
T. 13 S., R. 89 W.	3.85	4.98	36.64	45.47	6.05	24.06	103.63	133.74	2.97	13.15	48.00	64.12	12.87	42.19	188.27	243.33
T. 13 S., R. 90 W.		9.50	264.34	273.84		7.48	191.69	199.17			38.88	38.88		16.98	494.91	511.89
T. 13 S., R. 91 W.			1.34	1.34			.89	.89							2.23	2.23
T. 14 S., R. 85 W.		.45		.45										.45		.45
T. 14 S., R. 86 W.		6.69	30.08	36.77										6.69	30.08	36.77
T. 14 S., R. 89 W.	2.50	3.63	46.19	52.32	.07		7.74	7.81					2.57	3.63	53.93	60.13
T. 14 S., R. 90 W.	.55	18.86	197.90	217.31	6.71	6.38	79.97	93.06					7.26	25.24	277.87	310.37
T. 15 S., R. 85 W.	.63			.63									.63			.63
T. 15 S., R. 86 W.	1.96	7.02	35.13	44.11									1.96	7.02	35.13	44.11
T. 15 S., R. 87 W.			11.90	11.90											11.90	11.90
T. 15 S., R. 89 W.		2.09	23.09	25.18										2.09	23.09	25.18
County total	9.64	53.24	646.61	709.49	13.32	38.11	383.92	435.35	3.07	13.15	86.88	103.10	26.03	104.50	1,117.41	1,247.94

TABLE 10.—*Measured and indicated original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Huerfano County																
T. 27 S., R. 66 W.	0.20	0.20	1.20	1.60									0.20	0.20	1.20	1.60
T. 27 S., R. 67 W.	21.70	36.70	44.50	102.90	0.30	1.20	4.00	5.50					22.00	37.90	48.50	108.40
T. 27 S., R. 68 W.	1.50	1.70	6.40	9.60	.70	.60	3.70	5.00					2.20	2.30	10.10	14.60
T. 28 S., R. 66 W.	28.00	36.30	21.60	85.90	1.30	1.10		2.40					29.30	37.40	21.60	88.30
T. 28 S., R. 67 W.	2.80	7.90	3.80	14.50			.10	.10					2.80	7.90	3.90	14.60
T. 28 S., R. 68 W.						.20	1.20	1.40						.20	1.20	1.40
T. 29 S., R. 65 W.	5.17	7.22	26.61	39.00			.10	.10					5.17	7.22	26.71	[a]39.10
T. 29 S., R. 66 W.	29.09	28.60	25.20	82.89	13.20	11.50	9.80	34.50	1.00			1.00	43.29	40.10	35.00	118.39
T. 29 S., R. 69 W.	1.90	.30	20.00	22.20	.70	.10		.80					2.60	.40	20.00	23.00
T. 30 S., R. 65 W.[b]																
T. 30 S., R. 68 W.										[c]2.60	[c]2.90	[c]5.50		2.60	2.90	5.50
T. 30 S., R. 69 W.									[c]4.90	[c]8.80	[c]30.90	[c]44.60	4.90	8.80	30.90	44.60
County total	90.36	118.92	149.31	358.59	16.20	14.70	18.90	49.80	5.90	11.40	33.80	51.10	112.46	145.02	202.01	459.49
La Plata County																
T. 32 N., R. 11 W.	0.05	0.09	11.28	11.42									0.05	0.09	11.28	11.42
T. 32 N., R. 12 W.	.38	.30	51.83	52.51									.38	.30	51.83	52.51
T. 33 N., R. 11 W.	5.13	3.27	80.84	89.24	0.61	1.38	3.10	5.09					5.74	4.65	83.94	94.33
T. 33 N., R. 12 W.			2.05	2.05											2.05	2.05
S. T. 34 N., R. 10 W.	1.20	.11	56.07	57.38	.09			.09					1.29	.11	56.07	57.47
S. T. 34 N., R. 11 W.	1.17	.97	36.17	38.31	.08	.63	3.36	4.07					1.25	1.60	39.53	42.38
N. T. 34 N., R. 9 W., and T. 34½ N., R. 9 W.			22.54	22.54											22.54	22.54
N. T. 34 N., R. 11 W.			3.41	3.41											3.41	3.41
N. T. 34 N., R. 13 W.	1.31	.03		1.34									1.31	.03		1.34
T. 35 N., R. 6 W.	.49	.82	2.88	4.19	.09	.09	.07	.25					.58	.91	2.95	4.44
T. 35 N., R. 7 W.	.48	.71	4.79	5.98	.03			.03					.51	.71	4.79	6.01
T. 35 N., R. 8 W.	.16	.45	1.06	1.67									.16	.45	1.06	1.67
T. 35 N., R. 9 W.	.58			.58									.58			.58

[a] Part of these reserves are in Las Animas County.
[b] Reserves included with Las Animas County.
[c] Overburden 0–3,000 feet.

T. 35 N., R. 10 W.	.26		8.10	8.36									.26		8.10	8.36
T. 35 N., R. 11 W.			31.24	31.24	.05			.05					.05		31.24	31.29
T. 35 N., R. 12 W.			1.89	1.89											1.89	1.89
T. 35 N., R. 13 W.	2.35	1.21	.13	3.69									2.35	1.21	.13	3.69
T. 36 N., R. 10 W.	2.58			2.58									2.58			2.58
T. 36 N., R. 11 W.	1.45			1.45	.36			.36					1.81			1.81
County total	17.59	7.96	314.28	339.83	1.31	2.10	6.53	9.94					18.90	10.06	320.81	349.77

Las Animas County

T. 29 S., R. 65 W.[a]																
T. 30 S., R. 65 W.	40.41	38.44	19.73	98.58	.32	2.53	1.15	4.00					40.73	40.97	20.88	[b] 102.58
T. 30 S., R. 66 W.[a]																
T. 31 S., R. 64 W.	1.22	5.53	11.32	18.07									1.22	5.53	11.32	18.07
T. 31 S., R. 65 W.	28.09	16.86	54.64	99.59									28.09	16.326	54.64	99.59
T. 31 S., R. 68 W.	.04	.02		.06					0.63	0.52	0.02	1.17	.67	.54	.02	1.23
T. 31 S., R. 69 W.	2.19	2.23	3.19	7.61	1.57	1.35	1.65	4.57	.68	1.57	.61	2.86	4.44	5.15	5.45	15.04
T. 32 S., R. 64 W.	19.81	21.42	40.70	81.93									19.81	21.42	40.70	81.93
T. 32 S., R. 65 W.	27.02	21.21	20.22	68.45									27.02	21.21	20.22	68.45
T. 32 S., R. 66 W.	.15		4.22	4.37									.15		4.22	4.37
T. 32 S., R. 68 W.	7.15	4.29	37.69	49.13	2.99	4.38	15.84	23.21	.16	.01	1.77	1.94	10.30	8.68	55.30	74.28
T. 32 S., R. 69 W.	.35	.06	.57	.98									.35	.06	.57	.98
T. 33 S., R. 63 W.	.10	1.50	2.60	4.20									.10	1.50	2.60	4.20
T. 33 S., R. 64 W.	23.26	48.17	46.86	118.29									23.26	48.17	46.86	118.29
T. 33 S., R. 65 W.	15.68	14.39	34.24	64.31									15.68	14.39	34.24	64.31
T. 33 S., R. 66 W.	21.43	4.90	42.01	68.34									21.43	4.90	42.01	68.34
T. 33 S., R. 67 W.	43.23	56.68	8.24	108.15									43.23	56.68	8.24	108.15
T. 33 S., R. 68 W.	13.50	14.22	45.61	73.33	.03	2.48	4.07	6.58	.01			.01	13.54	16.70	49.68	79.92
T. 34 S., R. 63 W.	1.04	.48	.65	2.17									1.04	.48	.65	2.17
T. 34 S., R. 64 W.	19.67	15.09	14.47	49.23									19.67	15.09	14.47	49.23
T. 34 S., R. 65 W.	20.00	30.16	39.67	89.83									20.00	30.16	39.67	89.83
T. 34 S., R. 66 W.	15.24	4.70	.22	20.16									15.24	4.70	.22	20.16
T. 34 S., R. 67 W.	42.40	14.15	3.76	60.31									42.40	14.15	3.76	60.31
T. 34 S., R. 68 W.	29.94	36.39	34.09	100.42									29.94	36.39	34.09	100.42
T. 35 S., R. 63 W.	.38	.85	1.70	2.93									.38	.85	1.70	2.93
T. 35 S., R. 64 W.	6.12	9.63	15.93	31.68									6.12	9.63	15.93	31.68
T. 35 S., R. 65 W.	3.86	.37		4.23									3.86	.37		4.23
T. 35 S., R. 66 W.	4.67			4.67									4.67			4.67
T. 35 S., R. 67 W.	3.10	.53		3.63									3.10	.53		3.63
County total	390.05	362.27	482.33	1,234.65	4.91	10.74	22.71	38.36	1.48	2.10	2.40	5.98	396.44	375.11	507.44	1,278.99

[a] Reserves included with Huerfano County.
[b] Part of these reserves are in Huerfano County.

TABLE 10.—*Measured and indicated original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Mesa County																
T. 1 N., R. 1 E.		0.79	27.05	27.84										0.79	27.05	27.84
T. 1 S., R. 2 E.		1.03	.96	1.99										1.03	.96	1.99
T. 8 S., R. 100 W.					0.05		1.22	1.27					0.05		1.22	1.27
T. 8 S., R. 101 W.		2.40	36.17	38.57	.44	0.23	3.04	3.71					.44	2.63	39.21	42.28
T. 8 S., R. 102 W.			3.98	3.98											3.98	3.98
T. 9 S., R. 99 W.			1.61	1.61											1.61	1.61
T. 9 S., R. 100 W.	0.23	1.46	47.33	49.02	.34		20.32	20.66					.57	1.46	67.65	69.68
T. 9 S., R. 101 W.	.86		.86		.34		.34						1.20			1.20
T. 10 S., R. 98 W.			22.47	22.47			.25	.25							22.72	22.72
T. 10 S., R. 99 W.		.56	32.95	33.51										.56	32.95	33.51
T. 10 S., R. 100 W.			4.19	4.19											4.19	4.19
T. 11 S., R. 98 W.		10.01	41.55	51.56			3.27	3.27						10.01	44.82	54.83
T. 11 S., R. 99 W.			3.54	3.54											3.54	3.54
County total	1.09	16.25	221.80	239.14	1.17	.23	28.10	29.50					2.26	16.48	249.90	268.64
Moffat County																
T. 3 N., R. 90 W.		1.22	34.33	35.55										1.22	34.33	35.55
T. 3 N., R. 91 W.	0.10		.10										0.10			.10
T. 3 N., R. 92 W.	3.83	13.03	28.45	45.31	0.77	3.98	6.33	11.08					4.60	17.01	34.78	56.39
T. 3 N., R. 93 W.	2.03	9.41	122.71	134.15	.27		8.36	8.63					2.30	9.41	131.07	142.78
T. 3 N., R. 94 W.	11.94	15.89	73.69	101.52									11.94	15.89	73.69	101.52
T. 3 N., R. 95 W.	1.21	1.77	3.18	6.16									1.21	1.77	3.18	6.16
T. 3 N., R. 97 W.			1.87	1.87											1.87	1.87
T. 3 N., R. 104 W.			.56	.56											.56	.56
T. 4 N., R. 90 W.	1.32	1.39	107.95	110.66									1.32	1.39	107.95	110.66
T. 4 N., R. 91 W.	12.47	8.37	129.70	150.54			3.82	3.82					12.47	8.37	133.52	154.36
T. 4 N., R. 92 W.	11.66	14.51	66.47	92.64	2.63	1.39	2.31	6.33					14.29	15.90	68.78	98.97
T. 4 N., R. 93 W.	15.69	10.10	48.18	73.97	3.74	3.65	7.69	15.08					19.43	13.75	55.87	89.05
T. 4 N., R. 94 W.	47.23	57.57	164.83	269.63	4.50	1.07	18.11	23.68					51.73	58.64	182.94	293.31
T. 4 N., R. 95 W.	.10	.23		.33									.10	.23		.33
T. 4 N., R. 98 W.			20.65	20.65			13.23	13.23			7.72	7.72			41.60	41.60
T. 5 N., R. 90 W.	37.97	50.25	277.15	365.37	12.43	2.87	112.13	127.43					50.40	53.12	389.28	492.80
T. 5 N., R. 91 W.	20.56	21.68	236.24	278.48		1.33	56.65	57.98					20.56	23.01	292.89	336.46

T. 5 N., R. 92 W.	21.95	11.68	42.80	76.43			.65	.65					21.95	11.68	43.45	77.08
T. 5 N., R. 93 W.	.82		9.84	10.66									.82		9.84	10.66
T. 5 N., R. 94 W.	.06		5.97	6.03									.06		5.97	6.03
T. 5 N., R. 97 W.			22.48	22.48			7.59	7.59			9.84	9.84			39.91	39.91
T. 5 N., R. 98 W.			38.07	38.07			11.92	11.92			11.16	11.16			61.15	61.15
T. 6 N., R. 90 W.					12.41	17.74	46.55	76.70					12.41	17.74	46.55	76.70
T. 6 N., R. 91 W.	.10	3.72	86.01	89.83		.57	11.13	11.70					.10	4.29	97.14	101.53
T. 6 N., R. 92 W.	.34	1.94	58.23	60.51			8.41	8.41					.34	1.94	66.64	68.92
T. 6 N., R. 93 W.	17.25	38.59	143.38	199.22	1.04	.78	11.21	13.03					18.29	39.37	154.59	212.25
T. 6 N., R. 94 W.	5.03	.18	.23	5.44									5.03	.18	.23	5.44
T. 7 N., R. 93 W.				[a] 40.39				[a] 55.54								95.93
County total	211.66	261.53	1,722.97	2,236.55	37.79	33.38	326.09	452.80			28.72	28.72	249.45	294.91	2,077.78	2,718.07

[a] Estimated on zone basis.

Montezuma County

S. T. 34 N., R. 13 W.	0.06			0.06									0.06			0.06
S. T. 34 N., R. 14 W.	6.66	2.62		9.28									6.66	2.62		9.28
N. T. 34 N., R. 13 W.	3.75	.74	0.27	4.76									3.75	.74	0.27	4.76
T. 35 N., R. 13 W.	12.28	9.32	3.85	25.45									12.28	9.32	3.85	25.45
T. 36 N., R. 13 W.	2.34	1.92	.21	4.47									2.34	1.92	.21	4.47
T. 36 N., R. 15 W.	2.20			2.20									2.20			2.20
County total	27.29	14.60	4.33	46.22									27.29	14.60	4.33	46.22

Montrose County

T. 46 N., R. 15 W.		2.33	1.44	3.77										2.33	1.44	3.77
T. 46 N., R. 16 W.		4.99	14.77	19.76										4.99	14.77	19.76
T. 47 N., R. 15 W.		.18	2.89	3.07										.18	2.89	3.07
T. 47 N., R. 16 W.		2.27	13.95	16.22										2.27	13.95	16.22
County total		9.77	33.05	42.82										9.77	33.05	42.82

Park County

T. 7 S., R. 75 W.	0.17			0.17	0.17			0.17	0.17			0.17	0.51			0.51
T. 8 S., R. 75 W.	.13			.13	.17			.17	.17			.17	.47			.47
T. 8 S., R. 76 W.	1.79		18.44	20.23	1.79		11.50	13.29	1.46		6.93	8.39	5.04		36.87	41.91
T. 9 S., R. 76 W.		0.85	6.02	6.87		7.60	6.84	14.44		7.60	5.89	13.49		16.05	18.75	34.80
County total	2.09	.85	24.46	27.40	2.13	7.60	18.34	28.07	1.80	7.60	12.82	22.22	6.02	16.05	55.62	77.69

TABLE 10—*Measured and indicated original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Pitkin County																
T. 8 S., R. 89 W.	2.34	6.28	47.29	55.91	1.61	4.42	41.61	47.64	1.43	2.93	54.35	58.71	5.38	13.63	143.25	162.26
T. 9 S., R. 89 W.	.33	8.06	13.56	21.95	.22	6.16	11.62	18.00	.15	5.27	10.90	16.32	.70	19.49	36.08	56.27
T. 10 S., R. 88 W.		.02		.02										.02		.02
T. 10 S., R. 89 W.	.22		10.22	10.44	.07		9.38	9.45			3.33	3.33	.29		22.93	23.22
T. 11 S., R. 88 W.	1.04	3.18		4.22	.32	.81		1.13					1.36	3.99		5.35
County total	3.93	17.54	71.07	92.54	2.22	11.39	62.61	76.22	1.58	8.20	68.58	78.36	7.73	37.13	202.26	247.12
Rio Blanco County																
T. 1 N., R. 94 W.	10.83	24.47	184.81	220.11	7.43	21.20	156.56	185.19	2.75	5.18	69.20	77.13	21.01	50.85	410.57	482.43
T. 1 N., R. 101 W.			51.19	51.19			19.38	19.38							70.57	70.57
T. 1 N., R. 102 W.		6.17	137.66	143.83		1.41	6.37	7.78						7.58	144.03	151.61
T. 1 N., R. 103 W.		4.00		4.00		10.16		10.16		3.65		3.65		17.81		17.81
T. 2 N., R. 92 W.	4.35	1.25	39.61	45.21									4.35	1.25	39.61	45.21
T. 2 N., R. 93 W.	21.45	35.26	115.82	172.53	5.73	3.38	42.95	52.06			1.35	1.35	27.18	38.64	160.12	225.94
T. 2 N., R. 94 W.	57.51	30.95	71.50	159.96	25.54	16.55	41.74	83.83	6.51	2.76	10.16	19.43	89.56	50.26	123.40	263.22
T. 2 N., R. 95 W.	.56	.34		.90	.62	.26		.88	.02			.02	1.20	.60		1.80
T. 2 N., R. 97 W.			13.61	13.61			1.26	1.26							14.87	14.87
T. 2 N., R. 98 W.			49.68	49.68			46.01	46.01			24.24	24.24			119.93	119.93
T. 2 N., R. 99 W.											8.82	8.82			8.82	8.82
T. 2 N., R. 100 W.							4.40	4.40			.85	.85			5.25	5.25
T. 2 N., R. 101 W.			21.16	21.16			8.47	8.47			.17	.17			29.80	29.80
T. 2 N., R. 103 W.			4.94	4.94			4.02	4.02			5.21	5.21			14.17	14.17
T. 2 N., R. 104 W.			4.94	4.94			4.60	4.60			11.79	11.79			21.33	21.33
T. 3 N., R. 92 W.	.70	.18	5.64	6.52									.70	.18	5.64	6.52
T. 3 N., R. 93 W.	5.86	4.55	18.38	28.79									5.86	4.55	18.38	28.79
T. 3 N., R. 94 W.	2.07	31.65	61.66	95.38			.76	.76					2.07	31.65	62.42	96.14
T. 3 N., R. 95 W.	.74	.06	8.19	8.99			1.38	1.38					.74	.06	9.57	10.37
T. 3 N., R. 97 W.			97.00	97.00											97.00	97.00
T. 3 N., R. 98 W.			30.24	30.24			6.63	6.63			5.37	5.37			42.24	42.24
T. 3 N., R. 99 W.			1.88	1.88			20.61	20.61			11.66	11.66			34.15	34.15
T. 3 N., R. 100 W.			.94	.94			.86	.86			.86	.86			2.66	2.66

T. 3 N., R. 104 W.			1.50	1.50											1.50	1.50
T. 1 S., R. 94 W.	.03		1.50	1.53	.02		1.09	1.11			.67	.67	.05		3.26	3.31
T. 3 S., R. 94 W.			1.84	1.84			.92	.92							2.76	2.76
T. 4 S., R. 94 W.			4.37	4.37			5.75	5.75							10.12	10.12
County total	104.10	138.88	928.06	1,171.04	39.34	52.96	373.76	466.06	9.28	11.59	150.35	171.22	152.72	203.43	1,452.17	1,808.32

Routt County

T. 3 N., R. 86 W.		5.70	72.49	78.19										5.70	72.49	78.19
T. 4 N., R. 85 W.		6.02	120.94	126.96			22.00	22.00						6.02	142.94	148.96
T. 4 N., R. 86 W.		30.39	322.09	352.48		5.09	103.23	108.32						35.48	425.32	460.80
T. 4 N., R. 87 W.			36.07	36.07			21.61	21.61							57.68	57.68
T. 4 N., R. 88 W.		.16	97.50	97.66			24.06	24.06						.16	121.56	121.72
T. 4 N., R. 89 W.			5.83	5.83											5.83	5.83
T. 5 N., R. 85 W.		2.65	142.91	145.56			42.22	42.22						2.65	185.13	187.78
T. 5 N., R. 86 W.		34.08	377.51	411.59		22.56	291.45	314.01		4.57	14.38	18.95		61.21	683.34	744.55
T. 5 N., R. 87 W.			42.71	42.71			4.19	4.19							46.90	46.90
T. 5 N., R. 88 W.		1.99	178.57	180.56		7.12	36.34	43.46						9.11	214.91	224.02
T. 5 N., R. 89 W.	40.88	30.23	476.76	547.87	20.96	37.67	300.04	358.67					61.84	67.90	776.80	906.54
T. 6 N., R. 86 W.	2.92	5.14	55.33	63.39									2.92	5.14	55.33	63.39
T. 6 N., R. 87 W.	3.02	48.12	328.70	379.84	1.53	32.01	359.91	393.45					4.55	80.13	688.61	773.29
T. 6 N., R. 88 W.			31.25	31.25			82.80	82.80							114.05	114.05
T. 7 N., R. 86 W.			4.47	4.47			9.43	9.43							13.90	13.90
T. 7 N., R. 87 W.	1.62	6.31	224.83	232.76	.52		108.33	108.85					2.14	6.31	333.16	341.61
T. 8 N., R. 86 W.	.48	7.65	46.23	54.36		3.89	1.24	5.13					.48	11.54	47.47	59.49
T. 8 N., R. 87 W.	6.85	22.09	263.23	292.17	12.10	26.47	216.18	254.75	5.64		16.84	22.48	24.59	48.56	496.25	569.40
T. 9 N., R. 86 W.		24.46	83.22	107.68		10.54	22.16	32.70						35.00	105.38	140.38
T. 9 N., R. 87 W.		16.08		16.08		17.96	24.77	42.73		6.59		6.59		40.63	24.77	65.40
County total	55.77	241.07	2,910.64	3,207.48	35.11	163.31	1,669.96	1,868.38	5.64	11.16	31.22	48.02	96.52	415.54	4,611.82	5,123.88

TABLE 11.—*Inferred original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Archuleta County																
T. 32 N., R. 1½ W.			0.59	0.59											0.59	0.59
T. 32 N., R. 2 W.		5.72	36.43	42.15			2.15	2.15						5.72	38.58	44.30
T. 33 N., R. 2 W.		10.17	16.95	27.12										10.17	16.95	27.12
T. 33 N., R. 3 W.		22.96	31.91	54.87		2.50	3.33	5.83						25.46	35.24	60.70
T. 33 N., R. 4 W.		.74	2.36	3.10		1.11	3.53	4.64						1.85	5.89	7.74
T. 33 N., R. 5 W.		.71	2.27	2.98		.03	.08	.11						.74	2.35	3.09
S. T. 34 N., R. 4 W.	4.65		14.78	19.43	0.14		.45	.59					4.79		15.23	20.02
S. T. 34 N., R. 5 W.	6.07	5.73	19.32	31.12		5.13		5.13					6.07	10.86	19.32	36.25
N. T. 34 N., R. 5 W.			33.00	33.00			34.63	34.63							67.63	67.63
T. 35 N., R. 1 E.			1.02	1.02											1.02	1.02
T. 35 N., R. 5 W.	.08	.04	2.04	[a] 8.71	.37	1.09	6.02	[a] 28.74	0.81	0.20		[a] 27.18	1.26	1.33	8.06	64.63
T. 35 N., R. 6 W.	.03	.12	.21	[a] .59	.31	1.29	1.64	[a] 6.54	.57	.32		[a] 7.22	.91	1.73	1.85	14.35
T. 36 N., R. 1 W.	1.06	.97		2.03									1.06	.97		2.03
County total	11.89	47.16	160.88	226.71	.82	11.15	51.83	88.36	1.38	.52		34.40	14.09	58.83	212.71	349.47
Delta County																
T. 12 S., R. 91 W.							10.93	10.93			10.31	10.31			21.24	21.24
T. 13 S., R. 91 W.			87.03	87.03			153.54	153.54			.74	.74			241.31	241.31
County total			87.03	87.03			164.47	164.47			11.05	11.05			262.55	262.55
Fremont County																
T. 19 S., R. 69 W.		0.25	1.68	1.93										0.25	1.68	1.93
T. 19 S., R. 70 W.	2.42	18.93	47.73	69.08									2.42	18.93	47.73	69.08
T. 20 S., R. 69 W.		2.65		2.65										2.65		2.65
T. 20 S., R. 70 W.		30.41	9.05	39.46										30.41	9.05	39.46
County total	2.42	52.24	58.46	113.12									2.42	52.24	58.46	113.12

[a] Includes reserves estimated on zone basis.

Garfield County

T. 3 S., R. 94 W.		0.45	5.72	6.17		0.66	2.52	3.18		0.99	3.81	4.80		2.10	12.05	14.15
T. 4 S., R. 94 W.		.54	8.76	9.30		.64	5.45	6.09		1.10	4.20	5.30		2.28	18.41	20.69
T. 5 S., R. 90 W.		.42	3.53	3.95		.30	2.34	2.64		.19	1.49	1.68		.91	7.36	8.27
T. 5 S., R. 91 W.		3.79	32.85	36.64		3.29	39.92	43.21		1.89	37.26	39.15		8.97	110.03	119.00
T. 5 S., R. 92 W.		1.29	8.67	9.96		1.35	7.65	8.99		1.76	6.74	8.50		4.40	23.05	27.45
T. 5 S., R. 93 W.		1.62	11.27	12.89		1.35	4.75	6.10		1.22	5.34	6.56		4.19	21.36	25.55
T. 6 S., R. 90 W.		1.62	30.74	32.36		2.21	41.98	44.19		2.29	43.44	45.73		6.12	116.16	122.28
T. 6 S., R. 91 W.		5.44	11.42	16.86		4.32	17.75	22.07		14.96	40.00	54.96		24.72	69.17	93.89
T. 6 S., R. 103 W.		12.53	60.94	73.47		5.17	16.97	22.14						17.70	77.91	95.61
T. 6 S., R. 104 W.		12.82	16.09	28.91		16.78	25.50	42.28						29.60	41.59	71.19
T. 7 S., R. 89 W.	0.92		15.42	16.34	0.94		22.77	23.71	1.13		22.36	23.49	2.99		60.55	63.54
T. 7 S., R. 102 W.		12.95	56.25	69.20		10.74	95.88	106.62		2.36	27.95	30.31		26.05	180.08	206.13
T. 7 S., R 103 W.	4.42	2.69	88.48	95.59									4.42	2.69	88.48	95.59
T. 7 S., R. 104 W.	38.31	17.38	56.75	112.44	3.14	7.21	17.09	27.44					41.45	24.59	73.84	139.88
T. 7 S., R. 105 W.	11.34			11.34									11.34			11.34
T. 8 S., R. 89 W.	.44	.28	2.96	3.68	.39	.25	2.62	3.26	.80	.57	4.49	5.86	1.63	1.10	10.07	12.80
T. 8 S., R. 101 W.			14.73	14.73			17.78	17.78			22.31	22.31			54.82	54.82
T. 8 S., R. 102 W.			22.94	22.94			8.44	8.44							31.38	31.38
T. 8 S., R. 103 W.			.41	.41											.41	.41
T. 8. S., R. 104 W.	1.24		.34	1.58									1.24		.34	1.58
County total	56.67	73.82	448.27	578.76	4.47	54.27	329.40	388.14	1.93	27.33	219.39	248.65	63.07	155.42	997.06	1,215.55

Gunnison County

T. 10 S., R. 89 W.	0.04			0.04	0.35			0.35	0.91		2.16	3.07	1.30		2.16	3.46
T. 11 S., R. 88 W.		0.03		.03	.26	1.37		1.63	.34	1.18		1.52	.60	2.58		3.18
T. 11 S., R. 89 W.					.05	.06		.11	.30	.92		1.22	.35	.98		1.33
T. 12 S., R. 89 W.					.21		0.59	.80	3.52	7.40	12.18	23.10	3.73	7.40	12.77	23.90
T. 12 S., R. 90 W.							4.22	4.22			131.58	131.58			135.80	135.80
T. 12 S., R. 91 W.							2.04	2.04			4.11	4.11			6.15	6.15
T. 13 S., R. 88 W.										8.25	15.82	24.07		8.25	15.82	24.07
T. 13 S., R. 89 W.		3.15	11.96	15.11		16.85	56.33	73.18		29.79	96.14	125.93		49.79	164.43	214.22
T. 13 S., R. 90 W.		10.62	198.81	209.43	.36	20.33	469.89	490.58			66.67	66.67	.36	30.95	735.37	766.68
T. 13 S., R. 91 W.			12.39	12.39			12.03	12.03							24.42	24.42
T. 14 S., R. 85 W.		.14		.14										.14		.14
T. 14 S., R. 86 W.	1.00	6.16	39.42	46.58			.13	.13					1.00	6.16	39.55	46.71
T. 14 S., R. 89 W.	6.65	5.62	126.23	138.50	.23		29.49	29.72			29.82	29.82	6.88	5.62	185.54	198.04
T. 14 S., R. 90 W.		11.49	114.10	125.59	6.93		250.20	257.13			4.58	4.58	6.93	11.49	368.88	387.30
T. 15 S., R. 85 W.	.29	.15		.44									.29	.15		.44
T. 15 S., R. 86 W.	2.24	7.43	33.04	42.71									2.24	7.43	33.04	42.71
T. 15 S., R. 87 W.			23.07	23.07											23.07	23.07
T. 15 S., R. 89 W.		4.60	47.37	51.97										4.60	47.37	51.97
County total	10.22	49.39	606.39	666.00	8.39	38.61	824.92	871.92	5.07	47.54	363.06	415.67	23.68	135.54	1,794.37	1,953.59

TABLE 11.—*Inferred original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Huerfano County																
T. 27 S., R. 66 W.	0.10	0.10	0.10	0.30									0.10	0.10	0.10	0.30
T. 27 S., R. 67 W.	9.00	9.70	14.50	33.20	6.50	2.30	25.50	34.30	0.20	1.30	10.50	12.00	15.70	13.30	50.50	79.50
T. 27 S., R. 68 W.	.50	1.20	7.80	9.50	.40	1.40	4.00	5.80					.90	2.60	11.80	15.30
T. 28 S., R. 66 W.	30.20	12.90	8.80	51.90	9.10	.60		9.70					39.30	13.50	8.80	61.60
T. 28 S., R. 67 W.	12.80	14.90	3.60	31.30	18.90	15.60	3.50	38.00	6.20	10.80	.50	17.50	37.90	41.30	7.60	86.80
T. 28 S., R. 68 W.					3.30	4.60	.40	8.30	7.20	2.60		9.80	10.50	7.20	.40	18.10
T. 28 S., R. 69 W.										.50		.50		.50		.50
T. 29 S., R. 65 W.	5.80	12.01	12.23	30.04	.10	.10	.10	.30				[a] 1.01	5.90	12.11	12.33	[b] 31.35
T. 29 S., R. 66 W.	28.17	33.79	13.86	75.82	34.00	38.24	13.27	85.51	29.20	2.60		[c] 47.99	91.37	74.63	27.13	209.32
T. 29 S., R. 67 W.									4.80			4.80	4.80			4.80
T. 29 S., R. 69 W.	1.30	.20		1.50	2.40	.40		2.80	2.70			2.70	6.40	.60		7.00
T. 30 S., R. 65 W.[d]																
T. 30 S., R. 66 W.	4.46	11.60		16.06	38.16	38.37	.43	76.96				[a] 104.16	42.62	49.97	.43	[b] 197.18
T. 30 S., R. 68 W.									[e] 1.40	[e] 5.10	[e] .60	[c] 7.10	1.40	5.10	.60	7.10
T. 30 S., R. 69 W.									[e] 5.70	[e] 1.80	[e] 3.40	[e] 10.90	5.70	1.80	3.40	10.90
T. 31 S., R. 69 W.										[e] .70	[e] .50	[e] 1.20		.70	.50	1.20
County total	92.33	96.40	60.89	249.62	112.86	101.61	47.20	261.67	57.40	25.40	15.50	219.66	262.59	223.41	123.59	730.95

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Part of these reserves are in Las Animas County.
[c] Includes reserves estimated on zone basis, 0–3,000 feet overburden.
[d] Reserves included with Las Animas County.
[e] Overburden 0–3,000 feet.

La Plata County																
T. 32 N., R. 10 W.												[a] 13.90				13.90
T. 32 N., R. 11 W.	0.05	0.08	26.62	26.75	0.36	0.52	88.41	89.29	17.62	19.34	156.76	[b] 503.14	18.03	19.94	271.79	619.18
T. 32 N., R. 12 W.			36.64	36.64			7.71	7.71				[a] 36.15			44.35	80.50
T. 32 N., R. 13 W.												[a] 73.00				73.00
T. 32 N., R. 14 W.												[a] 72.10				72.10
T. 33 N., R. 10 W.												[a] 18.00				18.00
T. 33 N., R. 11 W.	.56	.15	18.35	19.06	4.01	5.61	90.77	100.39	5.49	10.28	42.17	[b] 874.93	10.06	16.04	151.29	994.38
T. 33 N., R. 12 W.												[a] 123.06				123.06

T. 33 N., R. 13 W.												[a] 154.00				154.00
T. 33 N., R. 14 W.												[a] 14.60				14.60
S. T. 34 N., R. 6 W.												[a] 12.06				12.06
S. T. 34 N., R. 7 W.												[a] 179.70				179.70
S. T. 34 N., R. 8 W.												[a] 37.66				37.66
S. T. 34 N., R. 9 W.												[a] 567.00				567.00
S. T. 34 N., R. 10 W.	.26	.60	51.47	52.33	.55	.63	38.18	39.36	.65	.83	181.79	[b] 419.14	1.46	2.06	271.44	510.83
S. T. 34 N., R. 11 W.	.28	.23	5.10	5.61	.46	.93	13.25	14.64	1.24	1.82	9.00	[b] 177.87	1.98	2.98	27.35	198.12
S. T. 34 N., R. 12 W.												[a] 141.00				141.00
S. T. 34 N., R. 13 W.	3.39			3.39								[a] 132.71	3.39			136.10
N. T. 34 N., R. 6 W.												[a] 95.72				95.72
N. T. 34 N., R. 7 W.								[c] 11.51				[c] 116.36				127.87
N. T. 34 N., R. 8 W.												[a] 454.05				454.05
N. T. 34 N., R. 9 W., T. 34½ N., R. 9 W.	[c] 8.61	[c] 13.96	[c] 22.06	[c] 44.63				[c] 53.42				[c] 249.55	[c] 8.61	[c] 13.96	[c] 22.06	347.60
N. T. 34 N., R. 10 W.	[c] 24.64	[c] 49.28	[c] 74.47	[c] 148.39				[c] 22.49				[c] 1.79	[c] 24.64	[c] 49.28	[c] 74.47	172.67
N. T. 34 N., R. 11 W.	[c] 23.59	[c] 35.39	[c] 55.58	[c] 114.56									[c] 23.59	[c] 35.39	[c] 55.58	114.56
N. T. 34 N., R. 12 W.	[c] 21.81	[c] 32.71	[c] 54.52	[c] 109.04									[c] 21.81	[c] 32.71	[c] 54.52	109.04
N. T. 34 N., R. 13 W.	5.03			5.03								[a] 6.43	5.03			11.46
T. 35 N., R. 6 W.	.23	.51	1.32	[b] 11.61	4.36	2.68	1.99	[b] 113.27	1.10	.02		[b] 91.16	5.69	3.21	3.31	216.04
T. 35 N., R. 7 W.	.71	2.54	7.00	[b] 38.58	2.82	5.14	.96	[b] 203.76				[c] 73.17	3.53	7.68	7.96	315.51
T. 35 N., R. 8 W.	[b] 15.70	[b] 27.94	[b] 56.77	[b] 104.00	1.26	.10		[b] 107.21				[c] 579.77	[b] 16.96	[b] 28.04	[b] 56.77	790.98
T. 35 N., R. 9 W.	[c] 22.64	[c] 26.61	[c] 19.87	[c] 69.12				[c] 41.48				[c] 78.88	[c] 22.64	[c] 26.61	[c] 19.87	189.48
T. 35 N., R. 10 W.	[c] 43.87	[c] 87.74	[c] 123.51	[c] 255.12									[c] 43.87	[c] 87.74	[c] 123.51	255.12
T. 35 N., R. 11 W.	[c] 52.48	[c] 78.72	[c] 99.95	[c] 231.15									[c] 52.48	[c] 78.72	[c] 99.95	231.15
T. 35 N., R. 12 W.	[c] 37.40	[c] 56.10	[c] 91.61	[c] 185.11									[c] 37.40	[c] 56.10	[c] 91.61	185.11
T. 35 N., R. 13 W.	1.44	.05		1.49								[a] .13	1.44	.05		1.62
County total	262.69	412.61	744.84	1,461.61	13.82	15.61	241.27	804.53	26.10	32.29	389.72	5,297.03	302.61	460.51	1,375.83	7,563.17

[a] Estimated on zone basis, 0—3,000 feet overburden.
[b] Includes reserves estimated on zone basis.
[c] Estimated on zone basis.

Las Animas County

T. 29 S., R. 65 W. [a]																
T. 30 S., R. 65 W.	42.02	29.86	2.80	74.68	35.17	32.50	2.29	[b] 161.37					77.19	62.36	5.09	[c] 236.05
T. 30 S., R. 66 W. [a]																
T. 31 S., R. 64 W.	.85	.27	7.57	8.69				[d] .64					.85	.27	7.57	9.33
T. 31 S., R. 65 W.	75.75	35.71	55.30	166.76	1.24	.77		2.01				[c] 361.27	76.99	36.48	55.30	530.04
T. 31 S., R. 66 W.	7.38			7.38								[c] 311.05	7.38			318.43
T. 31 S., R. 67 W.												[c] 23.60				23.60
T. 31 S., R. 68 W.			.03	.03	.24	.12	.56	.92	0.17		0.84	1.01	.41	.12	1.43	1.96
T. 31 S., R. 69 W.	.79		1.40	2.19	.51		.65	1.16	.33		.64	.97	1.63		2.69	4.32
T. 32 S., R. 64 W.	14.73	40.59	24.72	80.04	.79	4.65		5.44				[c] 72.78	15.52	45.24	24.72	158.26
T. 32 S., R. 65 W.	53.04	18.45	6.60	78.09	8.62	5.22		13.84				[c] 524.27	61.66	23.67	6.60	616.20
T. 32 S., R. 66 W.	5.68	5.83	3.70	15.21								[c] 487.18	5.68	5.83	3.70	502.39
T. 32 S., R. 67 W.					.01			.01				[c] 424.75	.01			424.76
T. 32 S., R. 68 W.	3.60	10.39	5.38	19.37	8.59	7.60	14.81	31.00	28.74	4.76	18.11	[f] 151.32	40.93	22.75	38.30	201.69

See notes at end of section.

TABLE 11.—*Inferred original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Las Animas County—Continued																
T. 32 S., R. 69 W.	0.23		1.03	1.26									0.23		1.03	1.26
T. 33 S., R. 63 W.	.03	0.10		.13								[e] 33.02	.03	0.10		33.15
T. 33 S., R. 64 W.	30.24	32.14	6.13	68.51	0.46	0.45		0.91				[e] 101.94	30.70	32.59	6.13	171.36
T. 33 S., R. 65 W.	28.44	17.46	12.95	58.85	2.31	.39		2.70				[e] 588.56	30.75	17.85	12.95	650.11
T. 33 S., R. 66 W.	17.61	8.91	76.54	103.06								[e] 626.75	17.61	8.91	76.54	729.81
T. 33 S., R. 67 W.	41.24	11.00	29.08	81.32	10.36	1.58	0.03	11.97	3.60			[f] 472.50	55.20	12.58	29.11	565.79
T. 33 S., R. 68 W.	24.19	42.08	17.36	83.63	10.09	38.76	6.12	54.97	10.51	1.49		[f] 197.85	44.79	82.33	23.48	336.45
T. 34 S., R. 62 W.												[e] 56.40				56.40
T. 34 S., R. 63 W.	4.01	.82	.97	5.80								[e] 206.05	4.01	.82	.97	211.85
T. 34 S., R. 64 W.	62.99	42.67	18.51	124.17	1.59			1.59				[e] 602.13	64.58	42.67	18.51	727.89
T. 34 S., R. 65 W.	35.74	10.02	1.53	47.29	.27			.27				[e] 889.87	36.01	10.02	1.53	937.43
T. 34 S., R. 66 W.	42.77	6.33		49.10								[e] 765.00	42.77	6.33		814.10
T. 34 S., R. 67 W.	33.47	5.07	3.78	42.32								[e] 277.38	33.47	5.07	3.78	319.70
T. 34 S., R. 68 W.	45.28	40.03	93.92	[g] 210.45				[h] 6.52					45.28	40.03	93.92	216.97
T. 34 S., R. 69 W.				[h] 21.52				[h] 24.21								45.73
T. 35 S., R. 61 W.												[e] 15.19				15.19
T. 35 S., R. 62 W.												[e] 54.45				54.45
T. 35 S., R. 63 W.												[e] 82.49				82.49
T. 35 S., R. 64 W.	26.64	13.28	.97	40.89								[e] 176.12	26.64	13.28	.97	217.01
T. 35 S., R. 65 W.	2.68			2.68								[e] 303.98	2.68			306.66
T. 35 S., R. 66 W.	8.95			8.95								[e] 327.92	8.95			336.87
T. 35 S., R. 67 W.	5.17			5.17								[e] 129.57	5.17			134.74
T. 35 S., R. 68 W.				[h] 55.29				[h] 63.89								119.18
T. 35 S., R. 69 W.				[h] 14.79				[h] 78.57								93.36
County total	613.52	371.01	370.27	1,477.62	80.25	92.04	24.46	461.99	43.35	6.25	19.59	8,265.37	737.12	469.30	414.32	10,204.98

[a] Reserves included with Huerfano County.
[b] Includes reserves estimated on zone basis, 0–2,000 feet overburden.
[c] Part of these reserves are in Huerfano County.
[d] Estimated on zone basis, 0–2,000 feet overburden.
[e] Estimated on zone basis, 0–3,000 feet overburden.
[f] Includes reserves estimated on zone basis, 0–3,000 feet overburden.
[g] Includes reserves estimated on zone basis.
[h] Estimated on zone basis.

Mesa County

T. 1 N., R. 1 E.			18.15	18.15			7.67	7.67							25.82	25.82
T. 1 S., R. 2 E.		0.07		.07										0.07		.07
T. 8 S., R. 100 W.							23.65	23.65			49.33	49.33			72.98	72.98
T. 8 S., R. 101 W.		4.59	15.08	19.67		2.87	21.54	24.41			10.78	10.78		7.46	47.40	54.86
T. 8 S., R. 102 W.		1.02	5.24	6.26										1.02	5.24	6.26
T. 9 S., R. 98 W.			1.28	1.28			54.34	54.34			68.07	68.07			123.69	123.69
T. 9 S., R. 99 W.			1.64	1.64			118.02	118.02			71.75	71.75			191.41	191.41
T. 9 S., R. 100 W.			27.06	27.06			63.69	63.69			33.42	33.42			124.17	124.17
T. 9 S., R. 101 W.			2.66	2.66			.21	.21							2.87	2.87
T. 10 S., R. 98 W.			176.01	176.01			57.86	57.86			9.10	9.10			242.97	242.97
T. 10 S., R. 99 W.			46.53	46.53			70.69	70.69							117.22	117.22
T. 11 S., R. 97 W.							14.57	14.57			18.21	18.21			32.78	32.78
T. 11 S., R. 98 W.			23.24	23.24			13.35	13.35							36.59	36.59
County total		5.68	316.89	322.57		2.87	445.59	448.46			260.66	260.66		8.55	1,023.14	1,031.69

Moffat County

T. 3 N., R. 90 W.											[a] 55.03					55.03
T. 3 N., R. 92 W.	1.22		7.47	[b] 170.74				[c] 180.47				1.22			7.47	351.21
T. 3 N., R. 93 W.	.55	12.48	92.65	[b] 424.42				[c] 477.31				.55	12.48		92.65	901.73
T. 3 N., R. 94 W.	5.12	51.45	37.23	[b] 103.36				[c] 1.39				5.12	51.45		37.23	104.75
T. 3 N., R. 95 W.	1.00	3.51	.90	5.41							[a] 149.40	1.00	3.51		.90	154.81
T. 3 N., R. 97 W.											[a] 11.81					11.81
T. 3 N., R. 98 W.											[a] 262.44					262.44
T. 3 N., R. 101 W.											[a] 6.16					6.16
T. 3 N., R. 102 W.											[a] 18.63					18.63
T. 4 N., R. 90 W.				[c] 154.04				[c] 20.94								174.98
T. 4 N., R. 91 W.				[c] 252.56				[c] 93.63								346.19
T. 4 N., R. 92 W.				[c] 56.43				[c] 12.11								68.54
T. 4 N., R. 93 W.				[c] 459.27				[c] 482.99								942.26
T. 4 N., R. 94 W.				[c] 693.77				[c] 602.08								1,295.85
T. 4 N., R. 95 W.				[c] 25.55							[a] 72.00					97.55
T. 4 N., R. 96 W.											[c] 69.12					69.12
T. 4 N., R. 98 W.											[c] 128.99					128.99
T. 5 N., R. 90 W.				[c] 179.17				[c] 75.47								254.64
T. 5 N., R. 91 W.				[c] 450.95				[c] 112.40								563.35
T. 5 N., R. 92 W.				[c] 760.45				[c] 48.47								808.92
T. 5 N., R. 93 W.				[c] 10.78												10.78
T. 5 N., R. 95 W.											[a] 18.00					18.00
T. 5 N., R. 96 W.											[a] 138.24					138.24
T. 6 N., R. 90 W.			77.71	[b] 517.59				[c] 130.46							77.17	648.05
T. 6 N., R. 91 W.				[c] 279.17				[c] 1,222.45			[c] 340.40					1,842.02
T. 6 N., R. 92 W.				[c] 354.95				[c] 1,402.63			[c] 464.94					2,222.52
T. 6 N., R. 93 W.				[c] 427.25				[c] 763.97			[c] 238.32					1,429.54
T. 7 N., R. 93 W.								[c] 28.22			[c] 108.50					136.72
County total	7.89	67.44	215.96	5,325.86				5,654.99			2,081.98	7.89	67.44	215.96		13,062.83

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Includes reserves estimated on zone basis.
[c] Estimated on zone basis.

TABLE 11.—*Inferred original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Montezuma County																
T. 32 N., R. 14 W.												[a] 45.30				45.30
T. 32 N., R. 15 W.												[a] 102.00				102.00
T. 32 N., R. 16 W.												[a] 102.00				102.00
T. 32 N., R. 17 W.												[a] 42.60				42.60
T. 33 N., R. 14 W.												[a] 166.30				166.30
T. 33 N., R. 15 W.												[a] 204.00				204.00
T. 33 N., R. 16 W.												[a] 107.00				107.00
T. 33 N., R. 17 W.												[a] 39.80				39.80
S. T. 34 N., R. 13 W.	2.53			2.53								[a] 23.22	2.53			25.75
S. T. 34 N., R. 14 W.	3.58	0.12		3.70								[a] 129.32	3.58	0.12		133.02
S. T. 34 N., R. 15 W.												[a] 27.60				27.60
S. T. 34 N., R. 16 W.												[a] 123.00				123.00
S. T. 34 N., R. 17 W.												[a] 35.40				35.40
N. T. 34 N., R. 13 W.	.63			.63								[a] 1.51	.63			2.14
N. T. 34 N., R. 16 W.												[a] 27.60				27.60
T. 35 N., R. 12 W.	[b] 1.78	[b] 2.67	[b] 4.46	[b] 8.91									[b] 1.78	[b] 2.67	[b] 4.46	8.91
T. 35 N., R. 13 W.	.69	.03		.72								[a] .73	.69	.03		1.45
T. 35 N., R. 16 W.												[a] 37.40				37.40
T. 36 N., R. 13 W.												[a] .42				.42
County total	9.21	2.82	4.46	16.49								1,215.20	9.21	2.82	4.46	1,231.69

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Estimated on zone basis.

Montrose County																
T. 46 N., R. 15 W.		5.25	5.80	11.05										5.25	5.80	11.05
T. 46 N., R. 16 W.		15.26	19.85	35.11										15.26	19.85	35.11
T. 47 N., R. 15 W.		2.00	8.58	10.58										2.00	8.58	10.58
T. 47 N., R. 16 W.			14.78	14.78											14.78	14.78
County total		22.51	49.01	71.52										22.51	49.01	71.52

Park County

T. 7 S., R. 75 W.	0.17			0.17	0.25			0.25	0.25			0.25	0.67			0.67
T. 8 S., R. 75 W.	.17			.17	.21			.21	.17			.17	.55			.55
T. 8 S., R. 76 W.			5.05	5.05			4.50	4.50			3.79	3.79			13.34	13.34
County total	.34		5.05	5.39	.46		4.50	4.96	.42		3.79	4.21	1.22		13.34	14.56

Pitkin County

T. 8 S., R. 89 W.	1.06	3.56		4.62	1.14	3.81	0.16	5.11	2.57	8.61	8.12	19.30	4.77	15.98	8.28	29.03
T. 9 S., R. 89 W.	.97	10.60	15.52	27.09	.71	11.88	19.54	32.13	.84	11.58	18.25	30.67	2.52	34.06	53.31	89.89
T. 10 S., R. 88 W.		.25		.25										.25		.25
T. 10 S., R. 89 W.	.30	.07	10.67	11.04	.22	.25	18.57	19.04	.03	.07	10.65	10.75	.55	.39	39.89	40.83
T. 11 S., R. 88 W.	.23	1.92		2.15	.33	1.89		2.22	.10	.93		1.03	.66	4.74		5.40
County total	2.56	16.40	26.19	45.15	2.40	17.83	38.27	58.50	3.54	21.19	37.02	61.75	8.50	55.42	101.48	165.40

Rio Blanco County

T. 1 N., R. 93 W.		0.12		0.12										0.12		0.12
T. 1 N., R. 94 W.	6.05	9.15	74.10	89.30	5.55	20.96	112.95	139.46	6.51	22.66	128.94	158.11	18.11	52.77	315.99	386.87
T. 1 N., R. 99 W.												[a] 20.70				20.70
T. 1 N., R. 100 W.												[a] 331.74				331.74
T. 1 N., R. 101 W.												[a] 351.35				351.35
T. 1 N., R. 102 W.												[a] 442.39				442.39
T. 1 N., R. 103 W.												[a] 237.79				237.79
T. 2 N., R. 86 W.												[a] 110.08				110.08
T. 2 N., R. 87 W.												[a] 78.13				78.13
T. 2 N., R. 90 W.												[a] 92.00				92.00
T. 2 N., R. 91 W.												[a] 4.56				4.56
T. 2 N., R. 92 W.	4.18	1.10	36.06	41.34	.75			.75				[a] 12.31	4.93	1.10	36.06	54.40
T. 2 N., R. 93 W.	18.53	24.46	198.43	241.42	24.41	39.65	369.83	433.89	11.26	9.43	32.58	53.27	54.20	73.54	600.84	728.58
T. 2 N., R. 94 W.	23.99	18.83	37.00	79.82	29.44	34.05	85.44	148.93	38.61	37.50	33.31	109.42	92.04	90.38	155.75	338.17
T. 2 N., R. 95 W.	1.30	1.98		3.28	.67	1.52		2.19	1.48	2.13		3.61	3.45	5.63		9.08
T. 2 N., R. 99 W.												[a] 1.44				1.44
T. 2 N., R. 100 W.												[a] 419.73				419.73
T. 2 N., R. 101 W.												[a] 113.26				113.26
T. 2 N., R. 102 W.												[a] 12.31				12.31
T. 2 N., R. 103 W.												[a] 151.44				151.44
T. 2 N., R. 104 W.												[a] 102.87				102.87
T. 3 N., R. 86 W.												[a] 4.56				4.56
T. 3 N., R. 87 W.												[a] 13.83				13.83
T. 3 N., R. 89 W.												[a] 41.48				41.48
T. 3 N., R. 90 W.												[a] 69.20				69.20
T. 3 N., R. 91 W.												[a] 9.20				9.20

See notes at end of section.

TABLE 11.—*Inferred original reserves of bituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
Rio Blanco County—Continued																
T. 3 N., R. 92 W.			19.01	19.01								[a] 145.15			19.01	164.16
T. 3 N., R. 93 W.	10.79	3.21	74.04	88.04									10.79	3.21	74.04	88.04
T. 3 N., R. 94 W.	.08	18.09	10.27	28.44		0.51	0.69	1.20					.08	18.60	10.96	29.64
T. 3 N., R. 95 W.		4.82	9.11	13.93		1.38	3.71	5.09		0.21	0.89	[b] 77.06		6.41	13.71	96.08
T. 3 N., R. 98 W.												[a] 330.71				330.71
T. 3 N., R. 99 W.												[a] 33.97				33.97
T. 3 N., R. 100 W.												[a] 135.59				135.59
T. 3 N., R. 101 W.												[a] 161.68				161.68
T. 3 N., R. 102 W.												[a] 49.73				49.73
T. 3 N., R. 104 W.												[a] 25.86				25.86
T. 1 S., R. 94 W.	.26	.15	8.07	8.48	0.26	.10	7.05	7.41	0.28	.06	4.12	[a] 4.46	.80	.31	19.24	20.35
T. 1 S., R. 100 W.												[a] 62.19				62.19
T. 1 S., R. 101 W.												[a] 152.01				152.01
T. 1 S., R. 102 W.												[a] 197.10				197.10
T. 1 S., R. 103 W.												[a] 207.36				207.36
T. 2 S., R. 100 W.												[a] 96.75				96.75
T. 2 S., R. 101 W.												[a] 120.96				120.96
T. 2 S., R. 102 W.												[a] 190.08				190.08
T. 2 S., R. 103 W.												[a] 207.36				207.36
T. 2 S., R. 104 W.												[a] 31.05				31.05
T. 3 S., R. 94 W.			3.22	3.22			7.13	7.13			7.13	7.13			17.48	17.48
T. 3 S., R. 99 W.												[a] 10.35				10.35
T. 3 S., R. 100 W.												[a] 179.64				179.64
T. 3 S., R. 101 W.												[a] 196.92				196.92
T. 3 S., R. 102 W.												[a] 207.36				207.36
T. 3 S., R. 103 W.												[a] 207.36				207.36
T. 3 S., R. 104 W.												[a] 41.40				41.40
T. 4 S., R. 94 W.							5.52	5.52			13.33	13.33			18.85	18.85
T. 4 S., R. 100 W.												[a] 44.91				44.91

T. 4 S., R. 101 W.												[a] 158.94				158.94
T. 4 S., R. 102 W.												[a] 172.80				172.80
T. 4 S., R. 103 W.												[a] 183.15				183.15
T. 4 S., R. 104 W.												[a] 79.47				79.47
County total	65.18	81.91	469.31	616.40	61.08	98.17	592.32	751.57	58.14	71.99	220.30	6,676.61	184.40	252.07	1,281.93	8,044.58

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Includes reserves estimated on zone basis, 0–3,000 feet overburden.

Routt County

T. 3 N., R. 87 W.												[a] 13.83				13.83
T. 3 N., R. 88 W.												[a] 13.83				13.83
T. 3 N., R. 89 W.												[a] 64.30				64.30
T. 4 N., R. 86 W.			87.68	87.68											87.68	87.68
T. 4 N., R. 87 W.		8.46	5.68	14.14										8.46	5.68	14.14
T. 4 N., R. 88 W.		4.78	13.45	18.23		0.30	0.58	0.88						5.08	14.03	19.11
T. 5 N., R. 85 W.		1.10		1.10										1.10		1.10
T. 5 N., R. 86 W.		5.71	87.84	93.55		38.28	277.63	315.91						43.99	365.47	409.46
T. 5 N., R. 87 W.		13.44	226.34	239.78			104.20	104.20						13.44	330.54	343.98
T. 5 N., R. 88 W.			151.02	151.02			88.56	88.56							239.58	239.58
T. 5 N., R. 89 W.		.74	4.68	5.42		12.13	301.14	313.27						12.87	305.82	318.69
T. 6 N., R. 86 W.		7.98	8.99	16.97		4.40	5.93	10.33						12.38	14.92	27.30
T. 6 N., R. 87 W.						7.94	123.75	131.69			19.23	19.23		7.94	142.98	150.92
T. 6 N., R. 88 W.							154.10	154.10			93.85	93.85			247.95	247.95
T. 6 N., R. 89 W.							21.30	21.30							21.30	21.30
T. 11 N., R. 86 W.												[a] 6.60				6.60
T. 11 N., R. 87 W.												[a] 98.20				98.20
County total		42.21	585.68	627.89		63.05	1,077.19	1,140.24			113.08	309.84		105.26	1,775.95	2,077.97

[a] Estimated on zone basis, 0–3,000 feet overburden.

TABLE 12.—*Measured and indicated original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
Adams County																
T. 1 S., R. 67 W.	1.96			1.96									1.96			1.96
T. 1 S., R. 68 W.	5.94	4.62	2.15	12.71									5.94	4.62	2.15	12.71
T. 3 S., R. 65 W.	25.75	115.87		141.62									25.75	115.87		141.62
County total	33.65	120.49	2.15	156.29									33.65	120.49	2.15	156.29
Arapahoe County																
T. 4 S., R. 65 W.		26.30		26.30										26.30		26.30
T. 4 S., R. 66 W.		43.82		43.82										43.82		43.82
County total		70.12		70.12										70.12		70.12
Boulder County																
T. 1 N., R. 69 W.	47.81	14.03	0.94	62.78									47.81	14.03	0.94	62.78
T. 1 S., R. 69 W.	146.16	33.42	28.79	208.37									146.16	33.42	28.79	208.37
T. 1 S., R. 70 W.	59.88	86.06		145.94									59.88	86.06		145.94
County total	253.85	133.51	29.73	417.09									253.85	133.51	29.73	417.09
Delta County																
T. 13 S., R. 92 W.		5.28	30.65	35.93			1.45	1.45						5.28	32.10	37.38
T. 13 S., R. 93 W.	5.13	33.51	36.84	75.48	0.25	0.84	.69	1.78					5.38	34.35	37.53	77.26
T. 13 S., R. 94 W.	3.66	12.99		16.65		1.69		1.69					3.66	14.68		18.34
T. 13 S., R. 95 W.	7.78	40.86	20.98	69.62		1.80		1.80					7.78	42.66	20.98	71.42
T. 13 S., R. 96 W.	1.34	3.52	17.29	22.15									1.34	3.52	17.29	22.15
T. 13 S., R. 97 W.		2.78		2.78										2.78		2.78
T. 14 S., R. 98 W.		.27		.27										.27		.27
County total	17.91	99.21	105.76	222.88	.25	4.33	2.14	6.72					18.16	103.54	107.90	229.60

Douglas County

T. 7 S., R. 68 W.	2.39	5.07		7.46	4.69	9.98		14.67					7.08	15.05		22.13
County total	2.39	5.07		7.46	4.69	9.98		14.67					7.08	15.05		22.13

Elbert County

T. 7 S., R. 58 W.	20.65			20.65									20.65			20.65
T. 7 S., R. 59 W.	2.30			2.30									2.30			2.30
T. 8 S., R. 58 W.	29.07			29.07									29.07			29.07
T. 8 S., R. 59 W.	1.53			1.53									1.53			1.53
T. 9 S., R. 62 W.	27.78	96.54		124.32									27.78	96.54		124.32
T. 9 S., R. 63 W.	2.73	5.47		8.20									2.73	5.47		8.20
T. 10 S., R. 58 W.		45.35		45.35										45.35		45.35
T. 10 S., R. 59 W.		77.77		77.77										77.77		77.77
T. 10 S., R. 62 W.		23.68		23.68										23.68		23.68
County total	84.06	248.81		332.87									84.06	248.81		332.87

El Paso County

T. 11 S., R. 60 W.	28.98			28.98									28.98			28.98
T. 11 S., R. 61 W.	22.95			22.95									22.95			22.95
T. 12 S., R. 60 W.	3.14			3.14									3.14			3.14
T. 12 S., R. 61 W.	4.37			4.37									4.37			4.37
T. 12 S., R. 66 W.									5.05			5.05	5.05			5.05
T. 12 S., R. 67 W.					0.84			0.84	3.68			3.68	4.52			4.52
T. 13 S., R. 66 W.		56.97		56.97		47.49		47.49	16.20			16.20	16.20	104.46		120.66
T. 13 S., R. 67 W.	13.13			13.13	9.79			9.79					22.92			22.92
T. 14 S., R. 64 W.	31.29			31.29	5.01			5.01					36.30			36.30
T. 14 S., R. 65 W.		66.92		66.92		6.90		6.90						73.82		73.82
T. 14 S., R. 66 W.	2.46			2.46									2.46			2.46
County total	106.32	123.89		230.21	15.64	54.39		70.03	24.93			24.93	146.89	178.28		325.17

Gunnison County

T. 46 N., R. 7 W.			92.48	92.48											92.48	92.48
T. 47 N., R. 7 W.			127.57	127.57											127.57	127.57
County total			220.05	220.05											220.05	220.05

TABLE 12.—*Measured and indicated original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*—Continued

Jackson County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 6 N., R. 81 W.		8.26		8.26										8.26		8.26
T. 7 N., R. 80 W.			59.51	59.51			98.24	98.24			59.51	59.51			217.26	217.26
T. 7 N., R. 81 W.		11.51	138.33	149.84		3.45	82.96	86.41			10.64	10.64		14.96	231.93	246.89
T. 8 N., R. 77 W.			21.25	21.25			2.73	2.73							23.98	23.98
T. 8 N., R. 78W.			84.58	84.58			209.26	209.26			129.92	129.92			423.76	423.76
T. 8 N., R. 81 W.		8.30		8.30										8.30		8.30
T. 8 N., R. 82 W.		4.35		4.35										4.35		4.35
T. 9 N., R. 78 W.		12.65	415.74	428.39			271.34	271.34			123.08	123.08		12.65	810.16	822.81
T. 9 N., R. 79 W.			44.06	44.06			50.30	50.30			102.34	102.34			196.70	196.70
T. 9 N., R. 81 W.	2.16			2.16									2.16			2.16
T. 10 N., R. 78 W.			9.83	9.83			9.14	9.14			1.49	1.49			20.46	20.46
T. 10 N., R. 79 W.		5.13		5.13		10.27		10.27		15.90		15.90		31.30		31.30
T. 10 N., R. 81 W.	2.59			2.59									2.59			2.59
County total	4.75	50.20	773.30	828.25		13.72	723.97	737.69		15.90	426.98	442.88	4.75	79.82	1,924.25	2,008.82

Jefferson County

T. 2 S., R. 70 W.	6.03	100.51		106.54		28.32		28.32					6.03	128.83		134.86
T. 2 S., R. 70 W.	8.77	13.30	18.26	40.33	11.19	10.20	15.41	36.80					19.96	23.50	33.67	77.13
T. 4 S., R. 69 W.	6.24			6.24	10.02			10.02					16.26			16.26
T. 4 S., R. 70 W.	2.79	8.76		11.55	9.62	11.56		21.18	6.42	6.01		12.43	18.83	26.33		45.16
T. 5 S., R. 69 W.	5.19	12.91		18.10	5.27	15.75		21.02					10.46	28.66		39.12
T. 6 S., R. 69 W.		.25		.25										.25		.25
County total	29.02	135.73	18.26	183.01	36.10	65.83	15.41	117.34	6.42	6.01		12.43	71.54	207.57	33.67	312.78

Larimer County

T. 10 N., R. 68 W.	1.39			1.39									1.39			1.39
T. 11 N., R. 68 W.	37.79			37.79									37.79			37.79
County total	39.18			39.18									39.18			39.18

Moffat County

T. 5 N., R. 90 W.	1.86	48.88		50.74									1.86	48.88		50.74
T. 5 N., R. 91 W.	1.53	1.88		3.41									1.53	1.88		3.41
T. 5 N., R. 92 W.	16.05	15.61		31.66									16.05	15.61		31.66
T. 6 N., R. 90 W.	49.76	75.97	16.48	142.21	9.00			9.00					58.76	75.97	16.48	151.21
T. 6 N., R. 91 W.	86.89	66.45		153.34									86.89	66.45		153.34
T. 6 N., R. 92 W.	125.81	20.60		146.41									125.81	20.60		146.41
T. 6 N., R. 93 W.	41.65	33.61		75.26									41.65	33.61		75.26
T. 7 N., R. 90 W.	27.54	31.56	25.94	85.04									27.54	31.56	25.94	85.04
T. 7 N., R. 92 W.		20.61		20.61										20.61		20.61
T. 7 N., R. 93 W.		2.04		2.04										2.04		2.04
T. 7 N., R. 94 W.		12.62		12.62										12.62		12.62
T. 7 N., R. 95 W.		26.27		26.27		18.35		18.35		1.06		1.06		45.68		45.68
T. 8 N., R. 89 W.	13.94	24.79	67.91	106.64									13.94	24.79	67.91	106.64
T. 8 N., R. 90 W.	9.49	6.78	14.50	30.77									9.49	6.78	14.50	30.77
T. 8 N., R. 92 W.		7.17		7.17										7.17		7.17
T. 8 N., R. 93 W.			30.20	30.20											30.20	30.20
T. 8 N., R. 94 W.		15.68		15.68		2.02		2.02						17.70		17.70
T. 9 N., R. 89 W.	3.62			3.62	.28			.28					3.90			3.90
County total	378.14	410.52	155.03	943.69	9.28	20.37		29.65		1.06		1.06	387.42	431.95	155.03	974.40

Montrose County

T. 47 N., R. 7 W.			100.23	100.23											100.23	100.23
County total			100.23	100.23											100.23	100.23

Ouray County

T. 46 N., R. 7 W.			680.60	680.60											680.60	680.60
T. 47 N., R. 7 W.			81.99	81.99											81.99	81.99
County total			762.59	762.59											762.59	762.59

Routt County

T. 5 N., R. 86 W.	38.49			38.49									38.49			38.49
T. 5 N., R. 87 W.	30.32		4.01	34.33									30.32		4.01	34.33
T. 5 N., R. 88 W.	42.86	115.24	19.07	177.17									42.86	115.24	19.07	177.17
T. 5 N., R. 89 W.	47.03	170.04		217.07									47.03	170.04		217.07
T. 6 N., R. 86 W.	3.04			3.04									3.04			3.04
T. 6 N., R. 87 W.	30.73		19.92	50.65									30.73		19.92	50.65
T. 6 N., R. 88 W.	7.41	30.22	106.11	143.74									7.41	30.22	106.11	143.74
T. 6 N., R. 89 W.	46.10	109.05		155.15									46.10	109.05		155.15

TABLE 12.—*Measured and indicated original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*—Continued

Routt County—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 7 N., R. 88 W.	26.85	30.81		57.66									26.85	30.81		57.66
T. 7 N., R. 89 W.	7.67	14.49		22.16									7.67	14.49		22.16
T. 8 N., R. 87 W.	9.92			9.92									9.92			9.92
T. 8 N., R. 88 W.	25.18			25.18									25.18			25.18
T. 9 N., R. 87 W.	8.33	26.17	29.18	63.68									8.33	26.17	29.18	63.68
T. 9 N., R. 88 W.	47.28	.87		48.15									47.28	.87		48.15
County total	371.21	496.89	178.29	1,046.39									371.21	496.89	178.29	1,046.39

Weld County

T. 1 N., R. 66 W.		8.77		8.77										8.77		8.77
T. 1 N., R. 67 W.	32.90	88.01	5.86	126.77									32.90	88.01	5.86	126.77
T. 1 N., R. 68 W.	96.19	158.95	11.19	266.33									96.19	158.95	11.19	266.33
T. 2 N., R. 66 W.		22.12		22.12										22.12		22.12
T. 2 N., R. 67 W.	136.44	32.34	1.36	170.14									136.44	32.34	1.36	170.14
T. 2 N., R. 68 W.	20.14	37.30	2.89	60.33									20.14	37.30	2.89	60.33
T. 3 N., R. 64 W.	6.58			6.58									6.58			6.58
T. 3 N., R. 65 W.	3.66			3.66									3.66			3.66
T. 3 N., R. 66 W.		62.16		62.16										62.16		62.16
T. 3 N., R. 67 W.	16.82	7.31		24.13									16.82	7.31		24.13
T. 4 N., R. 64 W.	34.19			34.19									34.19			34.19
T. 4 N., R. 65 W.	33.46			33.46									33.46			33.46
T. 7 N., R. 61 W.		20.04		20.04										20.04		20.04
T. 8 N., R. 61 W.		6.01		6.01										6.01		6.01
County total	380.38	443.01	21.30	844.69									380.38	443.01	21.30	844.69

TABLE 13.—*Inferred original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*

Adams County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 1 S., R. 67 W.	15.82			15.82									15.82			15.82
T. 1 S., R. 68 W.	72.85	14.73		87.58									72.85	14.73		87.58
T. 3 S., R. 64 W.		8.76		8.76										8.76		8.76
T. 3 S., R. 65 W.		55.87		55.87										55.87		55.87
T. 3 S., R. 66 W.		10.96		10.96										10.96		10.96
County total	88.67	90.32		178.99									88.67	90.32		178.99

Arapahoe County

T. 4 S., R. 64 W.		3.29		3.29										3.29		3.29
T. 4 S., R. 65 W.		101.88		101.88										101.88		101.88
T. 4 S., R. 66 W.		96.40		96.40										96.40		96.40
County total		201.57		201.57										201.57		201.57

Boulder County

T. 1 S., R. 69 W.	25.16	9.99		35.15									25.16	9.99		35.15
T. 1 S., R. 70 W.	9.10	3.80		12.90									9.10	3.80		12.90
County total	34.26	13.79		48.05									34.26	13.79		48.05

TABLE 13.—*Inferred original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*—Continued

Delta County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 12 S., R. 93 W.						7.31		7.31		3.03		3.03		10.34		10.34
T. 12 S., R. 94 W.						6.25		6.25		2.65		2.65		8.90		8.90
T. 12 S., R. 95 W.						1.69		1.69		1.04		1.04		2.73		2.73
T. 13 S., R. 92 W.		41.25	128.08	169.33		16.04	64.28	80.32			6.33	6.33		57.29	198.69	255.98
T. 13 S., R. 93 W.	20.04	141.88		161.92	12.03	90.60		102.63					32.07	232.48		264.55
T. 13 S., R. 94 W.	5.16	44.61		49.77	2.66	55.82		58.48		4.15		4.15	7.82	104.58		112.40
T. 13 S., R. 95 W.	12.13	49.54	15.01	76.68	19.90	124.20	20.64	164.74	0.94	15.40		16.34	32.97	189.14	35.65	257.76
T. 13 S., R. 96 W.	9.09	27.03	23.85	59.97	8.19	48.76	21.51	78.46		14.62		14.62	17.28	90.41	45.36	153.05
T. 13 S., R. 97 W.		4.70		4.70		2.24		2.24		.80		.80		7.74		7.74
T. 14 S., R. 96 W.		3.30		3.30										3.30		3.30
County total	46.42	312.31	166.94	525.67	42.78	352.91	106.43	502.12	.94	41.69	6.33	48.96	90.14	706.91	279.70	1,076.75

Douglas County

T. 6 S., R. 68 W.	14.54	30.89		45.43	9.80	20.82		30.62					24.34	51.71		76.05
T. 6 S., R. 69 W.	.59	1.25		1.84	.05	1.40		1.45					.64	2.65		3.29
T. 7 S., R. 68 W.	2.24	4.77		7.01	25.04	53.21		78.25					27.28	57.98		85.26
County total	17.37	36.91		54.28	34.89	75.43		110.32					52.26	112.34		164.60

Elbert County

T. 7 S., R. 58 W.	6.56			6.56									6.56			6.56
T. 7 S., R. 59 W.	33.51			33.51									33.51			33.51
T. 8 S., R. 58 W.	18.22			18.22									18.22			18.22
T. 8 S., R. 59 W.	20.40			20.40									20.40			20.40
T. 9 S., R. 58 W.		4.92		4.92										4.92		4.92
T. 9 S., R. 59 W.		14.21		14.21										14.21		14.21
T. 9 S., R. 61 W.	13.66			13.66									13.66			13.66
T. 9 S., R. 62 W.	12.75			12.75									12.75			12.75
T. 9 S., R. 63 W.	34.60			34.60									34.60			34.60
T. 10 S., R. 58 W.		16.94		16.94										16.94		16.94
T. 10 S., R. 59 W.		108.19		108.19										108.19		108.19
T. 10 S., R. 61 W.	40.52			40.52									40.52			40.52
T. 10 S., R. 62 W.	32.79			32.79									32.79			32.79

T. 10 S., R. 63W.	9.11			9.11									9.11			9.11
T. 11 S., R. 58 W.		54.62		54.62										54.62		54.62
T. 11 S., R. 59 W.		33.88		33.88										33.88		33.88
County total	222.12	232.76		454.88									222.12	232.76		454.88
El Paso County																
T. 11 S., R. 60 W.	29.60			29.60									29.60			29.60
T. 11 S., R. 61 W.	25.05			25.05									25.05			25.05
T. 11 S., R. 62 W.	7.74			7.74									7.74			7.74
T. 12 S., R. 60 W.	19.58			19.58									19.58			19.58
T. 12 S., R. 61 W.	33.24			33.24									33.24			33.24
T. 12 S., R. 66 W.									4.04			4.04	4.04			4.04
T. 12 S., R. 67 W.					0.76			0.76	5.60			5.60	6.36			6.36
T. 13 S., R. 64 W.						2.89		2.89						2.89		2.89
T. 13 S., R. 65 W.					20.23			20.23	2.88			2.88	23.11			23.11
T. 13 S., R. 66 W.					.16			.16	12.28			12.28	12.44			12.44
T. 14 S., R. 64 W.	4.17			4.17	59.05			59.05					63.22			63.22
T. 14 S., R. 65 W.		3.52		3.52		16.00		16.00						19.52		19.52
County total	119.38	3.52		122.90	80.20	18.89		99.09	24.80			24.80	224.38	22.41		246.79
Gunnison County																
T. 46 N., R. 6 W.			63.81	63.81											63.81	63.81
T. 46 N., R. 7 W.			13.90	13.90											13.90	13.90
T. 47 N., R. 7 W.			9.12	9.12											9.12	9.12
County total			86.83	86.83											86.83	86.83
Jackson County																
T. 6 N., R. 81 W.		21.53		21.53		8.99		8.99						30.52		30.52
T. 7 N., R. 80 W.			110.99	110.99			129.31	129.31			203.88	203.88			444.18	444.18
T. 7 N., R. 81 W.		23.32	16.48	39.80		28.54	21.24	49.78		9.55	47.84	57.39		61.41	85.56	146.97
T. 7 N., R. 82 W.		1.08		1.08										1.08		1.08
T. 8 N., R. 77 W.			186.29	186.29			184.43	184.43			234.53	234.53			605.25	605.25
T. 8 N., R. 78 W.		11.50		11.50		1.53	154.91	156.44			80.36	80.36		13.03	235.27	248.30
T. 8 N., R. 79 W.						.38		.38						.38		.38
T. 8 N., R. 81 W.		32.48		32.48		38.25		38.25		25.98		25.98		96.71		96.71
T. 8 N., R. 82 W.		4.62		4.62										4.62		4.62
T. 9 N., R. 78 W.		8.43	3.46	11.89		3.66		3.66						12.09	3.46	15.55
T. 9 N., R. 79 W.			21.86	21.86			15.53	15.53							37.39	37.39
T. 9 N., R. 81 W.	3.02			3.02									3.02			3.02
T. 10 N., R. 79 W.		34.89		34.89		32.32		32.32		25.13		25.13		92.34		92.34
County total	3.02	137.85	339.08	479.95		113.67	505.42	619.09		60.66	566.61	627.27	3.02	312.18	1,411.11	1,726.31

TABLE 13.—*Inferred original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*—Continued

Jefferson County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 2 S., R. 69 W.		8.86		8.86		34.29		34.29						43.15		43.15
T. 2 S., R. 70 W.	27.23	21.92		49.15		17.76		17.76					27.23	39.68		66.91
T. 3 S., R. 69 W.						5.33		5.33						5.33		5.33
T. 3 S., R. 70 W.					13.09	87.24		100.33					13.09	87.24		100.33
T. 4 S., R. 69 W.	2.82			2.82	91.82			91.82	4.69	6.69		11.38	99.33	6.69		106.02
T. 4 S., R. 70 W.	3.71			3.71	9.24	13.17		22.41	4.36	6.22		10.58	17.31	19.39		36.70
T. 5 S., R. 69 W.	2.32	5.26		7.58	18.29	85.37		103.66					20.61	90.63		111.24
T. 6 S., R. 69 W.		7.61		7.61		16.55		16.55						24.16		24.16
County total	36.08	43.65		79.73	132.44	259.71		392.15	9.05	12.91		21.96	177.57	316.27		493.84

Larimer County

T. 10 N., R. 68 W.	27.05			27.05									27.05			27.05
T. 11 N., R. 68 W.	11.93			11.93									11.93			11.93
County total	38.98			38.98									38.98			38.98

Moffat County

T. 5 N., R. 90 W.				[a] 23.21												23.21
T. 5 N., R. 91 W.				[a] 75.87												75.87
T. 5 N., R. 92 W.				[a] 77.15												77.15
T. 6 N., R. 90 W.				[a] 448.49												448.49
T. 6 N., R. 91 W.				[a] 1,257.69												1,257.69
T. 6 N., R. 92 W.				[a] 906.66												906.66
T. 6 N., R. 93 W.				[a] 245.42												245.42
T. 7 N., R. 90 W.		18.49		18.49		7.39		7.39						25.88		25.88
T. 7 N., R. 91 W.		6.80		6.80										6.80		6.80
T. 7 N., R. 92 W.		20.15		20.15										20.15		20.15
T. 7 N., R. 93 W.		8.92		8.92										8.92		8.92
T. 7 N., R. 94 W.		7.20		7.20										7.20		7.20
T. 7 N., R. 95 W.		26.61		26.61		31.91		31.91		35.63		35.63		94.15		94.15
T. 8 N., R. 91 W.		.38		.38		.38		.38						.76		.76

T. 8 N., R. 92 W.		42.36		42.36		5.62		5.62						47.98		47.98
T. 8 N., R. 93 W.		10.25	73.97	84.22			23.03	23.03						10.25	97.00	107.25
T. 8 N., R. 94 W.		16.78		16.78		44.76		44.76						61.54		61.54
T. 8 N., R. 95 W.										1.59		1.59		1.59		1.59
County total		157.94	73.97	3,266.40		90.06	23.03	113.09		37.22		37.22		285.22	97.00	3,416.71

• Estimated on zone basis.

Montrose County

T. 47 N., R. 7 W.			309.79	309.79										309.79		309.79
T. 48 N., R. 7 W.			619.24	619.24										619.24		619.24
County total			929.03	929.03										929.03		929.03

Ouray County

T. 46 N., R. 7 W.			73.99	73.99										73.99		73.99
T. 47 N., R. 7 W.			182.22	182.22										182.22		182.22
County total			256.21	256.21										256.21		256.21

Routt County

T. 5 N., R. 86 W.	9.55			9.55									9.55			9.55
T. 5 N., R. 87 W.			13.34	13.34											13.34	13.34
T. 5 N., R. 89 W.		29.42		29.42										29.42		29.42
T. 6 N., R. 87 W.			99.40	99.40			11.46	11.46							110.86	110.86
T. 6 N., R. 89 W.						98.82	12.00	110.82						98.82	12.00	110.82
County total	9.55	29.42	112.74	151.71		98.82	23.46	122.28					9.55	128.24	136.20	273.99

Weld County

T. 1 N., R. 66 W.		47.17		47.17										47.17		47.17
T. 1 N., R. 67 W.	14.50	35.51		50.01									14.50	35.51		50.01
T. 1 N., R. 68 W.	4.59			4.59									4.59			4.59
T. 2 N., R. 66 W.	10.21			10.21									10.21			10.21
T. 2 N., R. 67 W.	1.44	17.41		18.85									1.44	17.41		18.85
T. 2 N., R. 68 W.		11.51		11.51										11.51		11.51
T. 3 N., R. 64 W.	32.91			32.91									32.91			32.91
T. 3 N., R. 65 W.	127.53			127.53									127.53			127.53
T. 3 N., R. 66 W.	120.11			120.11									120.11			120.11
T. 3 N., R. 67 W.	30.44			30.44									30.44			30.44
T. 4 N., R. 64 W.	61.98			61.98									61.98			61.98
T. 4 N., R. 65 W.	43.88			43.88									43.88			43.88
T. 4 N., R. 66 W.	28.16			28.16									28.16			28.16

TABLE 13.—*Inferred original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*—Continued

Weld County—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 5 N., R. 64 W.	5.49			5.49									5.49			5.49
T. 5 N., R. 65 W.	1.37			1.37									1.37			1.37
T. 6 N., R. 65 W.	4.64			4.64									4.64			4.64
T. 6 N., R. 66 W.	6.56			6.56									6.56			6.56
T. 7 N., R. 61 W.		23.04		23.04										23.04		23.04
T. 7 N., R. 62 W.		13.03		13.03										13.03		13.03
T. 7 N., R. 65 W.	6.01			6.01									6.01			6.01
T. 7 N., R. 66 W.	13.12			13.12									13.12			13.12
T. 8 N., R. 61 W.		23.04		23.04										23.04		23.04
T. 8 N., R. 62 W.		4.01		4.01										4.01		4.01
T. 9 N., R. 67 W.	29.87			29.87									29.87			29.87
T. 10 N., R. 67 W.	146.44			146.44									146.44			146.44
T. 11 N., R. 67 W.	48.09			48.09									48.09			48.09
County total	737.34	174.72		912.06									737.34	174.72		912.06

TABLE 14.—*Original reserves of anthracite and semianthracite (millions of short tons) under indicated overburden (feet) for coal beds (inches) in Gunnison County, Colo.*

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 11 S., R. 88 W.	4.61	1.88	14.04	20.53	2.26	1.47	3.86	7.59	1.59	1.19	2.49	5.27	8.46	4.54	20.39	33.39
T. 11 S., R. 89 W.	.06	1.55	4.34	5.95	.05	1.55	4.80	6.40		1.63	5.93	7.56	.11	4.73	15.07	19.91
T. 13 S., R. 86 W.	4.92	9.23	3.77	17.92	1.03	1.92		2.95					5.95	11.15	3.77	20.87
T. 13 S., R. 87 W.		1.71		1.71		.26		.26						1.97		1.97
T. 14 S., R. 86 W.			3.86												3.86	3.86
T. 14 S., R. 87 W.		8.12		8.12		2.26		2.26						10.38		10.38
County totals	9.59	22.49	26.01	58.09	3.34	7.46	8.66	19.46	1.59	2.82	8.42	12.83	14.52	32.77	43.09	90.38

TABLE 15.—*Original reserves of bituminous coal (in millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*

Archuleta County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 32 N., R. 1½ W.			0.59	0.59											0.59	0.59
T. 32 N., R. 2 W.		5.72	55.06	60.78			2.15	2.15						5.72	57.21	62.93
T. 33 N., R. 2 W.		16.16	27.74	43.90										16.16	27.74	43.90
T. 33 N., R. 3 W.		29.71	40.91	70.62		2.50	3.33	5.83						32.21	44.24	76.45
T. 33 N., R. 4 W.		.74	2.36	3.10		1.11	3.53	4.63						1.85	5.89	7.74
T. 33 N., R. 5 W.		.71	2.27	2.98		.03	.08	.11						.74	2.35	3.09
S. T. 34 N., R. 4 W.	7.66		24.34	32.00	0.14		.45	.59					7.80		24.79	32.59
S. T. 34 N., R. 5 W.	7.29	10.26	23.19	40.74		5.13		5.13					7.29	15.39	23.19	45.87
N. T. 34 N., R. 5 W.			50.45	50.45			37.86	37.86							88.31	88.31
T. 35 N., R. 1 E.			2.88	2.88											2.88	2.88
T. 35 N., R. 1 W.			.56	.56											.56	.56
T. 35 N., R. 5 W.	.25	.41	4.01	[a] 11.22	.48	1.25	6.71	[a] 29.70	0.81	0.20		[a] 27.18	1.54	1.86	10.72	68.10
T. 35 N., R. 6 W.	.03	.12	.99	[a] 1.37	.31	1.29	2.14	[a] 7.04	.57	.32		[a] 7.22	.91	1.73	3.13	15.63
T. 36 N., R. 1 E.	.64		1.12	1.76									.64		1.12	1.76
T. 36 N., R. 1 W.	2.56	2.34		4.90									2.56	2.34		4.90
County total	18.43	66.17	236.47	327.85	.93	11.31	56.25	93.05	1.38	.52		34.40	20.74	78.00	292.72	455.30

[a] Includes reserves estimated on zone basis.

Delta County

T. 12 S., R. 91 W.							11.27	11.27			10.31	10.31			21.58	21.58
T. 13 S., R. 91 W.		2.40	150.44	152.84			187.32	187.32			.74	.74		2.40	338.50	340.90
County total		2.40	150.44	152.84			198.59	198.59			11.05	11.05		2.40	360.08	362.48

Fremont County

T. 19 S., R. 69 W.		13.13	5.81	18.94										13.13	5.81	18.94
T. 19 S., R. 70 W.	4.32	61.71	119.79	185.82									4.32	61.71	119.79	185.82
T. 20 S., R. 69 W.		15.68	.48	16.16										15.68	.48	16.16
T. 20 S., R. 70 W.		41.71	32.71	74.42										41.71	32.71	74.42
County total	4.32	132.23	158.79	295.34									4.32	132.23	158.79	295.34

TABLE 15.—*Original reserves of bituminous coal (in millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Garfield County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 3 S., R. 94 W.		1.01	11.20	12.21		1.10	4.20	5.30		1.66	6.39	8.05		3.77	21.79	25.56
T. 4 S., R. 94 W.		1.53	21.32	22.85		1.43	9.63	11.06		1.61	6.16	7.77		4.57	37.11	41.68
T. 5 S., R. 90 W.		.88	9.28	10.16		.72	6.35	7.07		.27	3.15	3.42		1.87	18.78	20.65
T. 5 S., R. 91 W.		5.57	64.51	70.08		3.50	63.28	66.78		1.89	56.33	58.22		10.96	184.12	195.08
T. 5 S., R. 92 W.		3.73	21.66	25.39		3.72	16.95	20.67		4.20	16.53	20.73		11.65	55.14	66.79
T. 5 S., R. 93 W.		2.30	15.42	17.72		2.03	8.01	10.04		2.03	8.90	10.93		6.36	32.33	38.69
T. 6 S., R. 90 W.		3.52	66.84	70.36		4.78	90.78	95.56		4.24	80.53	84.77		12.54	238.15	250.69
T. 6 S., R. 91 W.		14.36	22.03	36.39		13.90	35.14	49.04		22.07	65.48	87.55		50.33	122.65	172.98
T. 6 S., R. 103 W.	0.53	15.51	85.86	101.90		5.17	16.97	22.14					0.53	20.68	102.83	124.04
T. 6 S., R. 104 W.	2.38	35.78	17.93	56.09		19.21	25.50	44.71					2.38	54.99	43.43	100.80
T. 7 S., R. 89 W.	2.92		64.41	67.33	2.53		78.56	81.09	2.69		79.81	82.50	8.14		222.78	230.92
T. 7 S., R. 102 W.	3.22	18.82	120.17	142.21		10.74	119.60	130.34		2.36	27.95	30.31	3.22	31.92	267.72	302.86
T. 7 S., R. 103 W.	14.19	21.25	129.34	164.78									14.19	21.25	129.34	164.78
T. 7 S., R. 104 W.	59.20	77.64	86.86	223.70	3.29	7.21	17.09	27.59					62.49	84.85	103.95	251.29
T. 7 S., R. 105 W.	12.37	.13		12.50									12.37	.13		12.50
T. 8 S., R. 89 W.	3.19	3.43	24.37	30.99	2.57	2.81	22.74	28.12	2.79	3.29	27.07	33.15	8.55	9.53	74.18	92.26
T. 8 S., R. 101 W.			15.36	15.36			18.30	18.30			22.31	22.31			55.97	55.97
T. 8 S., R. 102 W.			87.00	87.00			23.95	23.95							110.95	110.95
T. 8 S., R. 103 W.	1.84	.98	4.76	7.58									1.84	.98	4.76	7.58
T. 8 S., R. 104 W.	1.24		.34	1.58									1.24		.34	1.58
County total	101.08	206.44	868.66	1,176.18	8.39	76.32	557.05	641.76	5.48	43.62	400.61	449.71	114.95	326.38	1,826.32	2,267.65

Gunnison County

T. 10 S., R. 89 W.	0.19			0.19	0.78			0.78	1.01		2.16	3.17	1.98		2.16	4.14
T. 11 S., R. 88 W.		0.05		.05	.32	1.56		1.88	.34	1.18		1.52	.66	2.79		3.45
T. 11 S., R. 89 W.					.05	.06		.11	.30	.92		1.22	.35	.98		1.33
T. 12 S., R. 89 W.					.21		0.59	.80	3.52	7.40	12.18	23.10	3.73	7.40	12.77	23.90
T. 12 S., R. 90 W.							4.22	4.22			131.58	131.58			135.80	135.80
T. 12 S., R. 91 W.							2.04	2.04			4.11	4.11			6.15	6.15
T. 13 S., R. 88 W.										8.25	15.82	24.07		8.25	15.82	24.07
T. 13 S., R. 89 W.	3.85	8.13	48.60	60.58	6.05	40.91	159.96	206.92	2.97	42.94	144.14	190.05	12.87	91.98	352.70	457.55
T. 13 S., R. 90 W.		20.12	463.15	483.27	.36	27.81	661.58	689.75			105.55	105.55	.36	47.93	1,230.28	1,278.57
T. 13 S., R. 91 W.			13.73	13.73			12.92	12.92							26.65	26.65
T. 14 S., R. 85 W.		.59		.59										.59		.59

T. 14 S., R. 86 W.	1.00	12.85	69.50	83.35			.13	.13					1.00	12.85	69.63	83.48
T. 14 S., R. 89 W.	9.15	9.25	172.42	190.82	.30		37.23	37.53			29.82	29.82	9.45	9.25	239.47	258.17
T. 14 S., R. 90 W.	.55	30.35	312.00	342.90	13.64	6.38	330.17	350.19			4.58	4.58	14.19	36.73	646.75	697.67
T. 15 S., R. 85 W.	.92	.15		1.07									.92	.15		1.07
T. 15 S., R. 86 W.	4.20	14.45	68.17	86.82									4.20	14.45	68.17	86.82
T. 15 S., R. 87 W.			34.97	34.97											34.97	34.97
T. 15 S., R. 89 W.		6.69	70.46	77.15										6.79	70.46	77.15
County total	19.86	102.63	1,253.00	1,375.49	21.71	76.72	1,208.84	1,307.27	8.14	60.69	449.94	518.77	49.71	240.04	2,911.78	3,201.53

Huerfano County

T. 27 S., R. 66 W.	0.30	0.30	1.30	1.90									0.30	0.30	1.30	1.90
T. 27 S., R. 67 W.	30.70	46.40	59.00	136.10	6.80	3.50	29.50	39.80	0.20	1.30	10.50	12.00	37.70	51.20	99.00	187.90
T. 27 S., R. 68 W.	2.00	2.90	14.20	19.10	1.10	2.00	7.70	10.80					3.10	4.90	21.90	29.90
T. 28 S., R. 66 W.	58.20	49.20	30.40	137.80	10.40	1.70		12.10					68.60	50.90	30.40	149.90
T. 28 S., R. 67 W.	15.60	22.80	7.40	45.80	18.90	15.60	3.60	38.10	6.20	10.80	.50	17.50	40.70	49.20	11.50	101.40
T. 28 S., R. 68 W.					3.30	4.80	1.60	9.70	7.20	2.60		9.80	10.50	7.40	1.60	19.50
T. 28 S., R. 69 W.										.50		.50		.50		.50
T. 29 S., R. 65 W.	10.97	19.23	38.84	69.04	.10	.10	.20	.40				[a] 1.01	11.07	19.33	39.04	[b] 70.45
T. 29 S., R. 66 W.	57.26	62.39	39.06	158.71	47.20	49.74	23.07	120.01	30.20	2.60		[c] 48.99	134.66	114.73	62.13	327.71
T. 29 S., R. 67 W.									4.80			4.80	4.80			4.80
T. 29 S., R. 69 W.	3.20	.50	20.00	23.70	3.10	.50		3.60	2.70			2.70	9.00	1.00	20.00	30.00
T. 30 S., R. 65 W.[d]																
T. 30 S., R. 66 W.	4.46	11.60		16.06	38.16	38.37	.43	76.96				[a] 104.16	42.62	49.97	.43	[b] 197.18
T. 30 S., R. 68 W.									[e] 1.40	[e] 7.70	[e] 3.50	[e] 12.60	1.40	7.70	3.50	12.60
T. 30 S., R. 69 W.									[e] 10.60	[e] 10.60	[e] 34.30	[e] 5.50	10.60	10.60	34.30	55.50
T. 31 S., R. 69 W.										[e] .70	[e] .50	[e] 1.20		.70	.50	1.20
County total	182.69	215.32	210.20	608.21	129.06	116.31	66.10	311.47	63.30	36.80	49.30	270.76	375.05	368.43	325.60	1,190.44

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Part of these reserves are in Las Animas County.
[c] Includes reserves estimated on zone basis, 0–3,000 feet overburden.
[d] Reserves included with Las Animas County.
[e] Overburden 0–3,000 feet.

La Plata County

T. 32 N., R. 10 W.												[a] 13.90				13.90
T. 32 N., R. 11 W.	0.10	0.17	37.90	38.17	0.36	0.52	88.41	89.29	17.62	19.34	156.76	[b] 503.14	18.08	20.03	283.07	630.60
T. 32 N., R. 12 W.	.38	.30	88.47	89.15			7.71	7.71				[a] 36.15	.38	.30	96.18	133.01
T. 32 N., R. 13 W.												[a] 73.00				73.00
T. 32 N., R. 14 W.												[a] 72.10				72.10
T. 33 N., R. 10 W.												[a] 18.00				18.00
T. 33 N., R. 11 W.	5.69	3.42	99.19	108.30	4.62	6.99	93.87	105.48	5.49	10.28	42.17	[b] 874.93	15.80	20.69	235.23	1,088.71
T. 33 N., R. 12 W.			2.05	2.05								[a] 123.06			2.05	125.11
T. 33 N., R. 13 S.												[a] 154.00				154.00

See notes at end of section.

TABLE 15.—*Original reserves of bituminous coal (in millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

La Plata County—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 33 N., R 14 W.												[a] 14.60				14.60
S. T. 34 N., R. 6 W.												[a] 12.06				12.06
S. T. 34 N., R. 7 W.												[a] 179.70				179.70
S. T. 34 N., R. 8 W.												[a] 37.66				37.66
S. T. 34 N., R. 9 W.												[a] 567.00				567.00
S. T. 34 N., R. 10 W.	1.46	.71	107.54	109.71	.64	.63	38.18	39.45	.65	.83	181.79	[b] 419.14	2.75	2.17	327.51	568.30
S. T. 34 N., R. 11 W.	1.45	1.20	41.27	43.92	.54	1.56	16.61	18.71	1.24	1.82	9.00	[b] 177.87	3.23	4.58	66.88	240.50
S. T. 34 N., R. 12 W.												[a] 141.00				141.00
S. T. 34 N., R. 13 W.	3.39			3.39								[a] 132.71	3.39			136.10
N T. 34 N., R. 6 W.												[a] 95.72				95.72
N. T. 34 N., R. 7 W.								[c] 11.51				[c] 116.36				127.87
N. T. 34 N., R. 8 W.												[a] 454.05				454.05
N. T. 34 N., R. 9 W., and T. 34½ N., R. 9 W.	[c] 8.61	[c] 13.96	[b] 44.60	[b] 67.17				[c] 53.42				[c] 249.55	[c] 8.61	[c] 13.96	[b] 44.60	370.14
N. T. 34 N., R. 10 W.	[c] 24.64	[c] 49.28	[c] 74.47	[c] 148.39				[c] 22.49				[c] 1.79	[c] 24.64	[c] 49.28	[c] 74.47	172.67
N. T. 34 N., R. 11 W.	[c] 23.59	[c] 35.39	[b] 58.99	[b] 117.97									[c] 23.59	[c] 35.39	[b] 58.99	117.97
N. T. 34 N., R. 12 W.	[c] 21.81	[c] 32.71	[c] 54.52	[c] 109.04									[c] 21.81	[c] 32.71	[c] 54.52	109.04
N. T. 34 N., R. 13 W.	6.34	.03		6.37								[a] 6.43	6.34	.03		12.80
T. 35 N., R. 6 W.	.72	1.33	4.20	[b] 15.80	4.45	2.77	2.06	[b] 113.52	1.10	.02		[b] 91.16	6.27	4.12	6.26	220.48
T. 35 N., R. 7 W.	1.19	3.25	11.79	[b] 44.56	2.85	5.14	.96	[b] 203.79				[c] 73.17	4.04	8.39	12.75	321.52
T. 35 N., R. 8 W.	[b] 15.86	[b] 28.39	[b] 57.83	[b] 105.67	1.26	.10		[b] 107.21				[c] 579.77	[b] 17.12	[b] 28.49	[b] 57.83	792.65
T. 35 N., R. 9 W.	[b] 23.22	[c] 26.61	[c] 19.87	[b] 69.70				[c] 41.48				[c] 78.88	[b] 23.22	[c] 26.61	[c] 19.87	190.06
T. 35 N., R. 10 W.	[b] 44.13	[c] 87.74	[b] 131.61	[b] 263.48									[b] 44.13	[c] 87.74	[b] 131.61	263.48
T. 35 N., R. 11 W.	[c] 52.48	[c] 78.72	[b] 131.19	[b] 262.39	.05			.05					[b] 52.53	[c] 78.72	[b] 131.19	262.44
T. 35 N., R. 12 W.	[c] 37.40	[c] 56.10	[b] 93.50	[b] 187.00									[c] 37.40	[c] 56.10	[b] 93.50	187.00
T. 35 N., R. 13 W.	3.79	1.26	.13	5.18								[a] .13	3.79	1.26	.13	5.31
T. 36 N., R. 10 W.	2.58			2.58									2.58			2.58
T. 36 N., R. 11 W.	1.45			1.45	.36			.36					1.81			1.81
County total	280.28	420.57	1,059.12	1,801.44	15.13	17.71	247.80	814.47	26.10	32.29	389.72	5,297.03	321.51	470.57	1,696.64	7,912.94

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Includes reserves estimated on zone basis.
[c] Estimated on zone basis.

Las Animas County

T. 29 S., R. 65 W. [a]																
T. 30 S., R. 65 W.	82.43	68.30	22.53	173.26	35.49	35.03	3.44	[b] 165.37					117.92	103.33	25.97	[c] 338.63
T. 30 S., R. 66 W. [a]																
T. 31 S., R. 64 W.	2.07	5.80	18.89	26.76				[d] .64					2.07	5.80	18.89	27.40
T. 31 S., R. 65 W.	103.84	52.57	109.94	266.35	1.24	.77		2.01				[c] 361.27	105.08	53.34	109.94	629.63
T. 31 S., R. 66 W.	7.38			7.38								[c] 311.05	7.38			318.43
T. 31 S., R. 67 W.												[c] 23.60				23.60
T. 31 S., R. 68 W.	.04	.02	.03	.09	.24	.12	.56	.92	0.80	0.52	0.86	2.18	1.08	.66	1.45	3.19
T. 31 S., R. 69 W.	2.98	2.23	4.59	9.80	2.08	1.35	2.30	5.73	1.01	1.57	1.25	3.83	6.07	5.15	8.14	19.36
T. 32 S., R. 64 W.	34.54	62.01	65.42	161.97	.79	4.65		5.44				[c] 72.78	35.33	66.66	65.42	240.19
T. 32 S., R. 65 W.	80.06	39.66	26.82	146.54	8.62	5.22		13.84				[c] 524.27	88.68	44.88	26.82	684.65
T. 32 S., R. 66 W.	5.83	5.83	7.92	19.58								[c] 487.18	5.83	5.83	7.92	506.76
T. 32 S., R. 67 W.					.01			.01				[c] 424.75	.01			424.76
T. 32 S., R. 68 W.	10.75	14.68	43.07	68.50	11.58	11.98	30.65	54.21	28.90	4.77	19.88	[f] 153.26	51.23	31.43	93.60	275.97
T. 32 S., R. 69 W.	.58	.06	1.60	2.24									.58	.06	1.60	2.24
T. 33 S., R. 63 W.	.13	1.60	2.60	4.33								[c] 33.02	.13	1.60	2.60	37.35
T. 33 S., R. 64 W.	53.50	80.31	52.99	186.80	.46	.45		.91				[c] 101.94	53.96	80.76	52.99	289.65
T. 33 S., R. 65 W.	44.12	31.85	47.19	123.16	2.31	.39		2.70				[c] 588.56	46.43	32.24	47.19	714.42
T. 33 S., R. 66 W.	39.04	13.81	118.55	171.40								[c] 626.75	39.04	13.81	118.55	798.15
T. 33 S., R. 67 W.	84.47	67.68	37.32	189.47	10.36	1.58	.03	11.97	3.60			[f] 472.50	98.43	69.26	37.35	673.94
T. 33 S., R. 68 W.	37.69	56.30	62.97	156.96	10.12	41.24	10.19	61.55	10.52	1.49		[f] 197.86	58.33	99.03	73.16	416.37
T. 34 S., R. 62 W.												[c] 56.40				56.40
T. 34 S., R. 63 W.	5.05	1.30	1.62	7.97								[c] 206.05	5.05	1.30	1.62	214.02
T. 34 S., R. 64 W.	82.66	57.76	32.98	173.40	1.59			1.59				[c] 602.13	84.25	57.76	32.98	777.12
T. 34 S., R. 65 W.	55.74	40.18	41.20	137.12	.27			.27				[c] 889.87	56.01	40.18	41.20	1,027.26
T. 34 S., R. 66 W.	58.01	11.03	.22	69.26								[c] 765.00	58.01	11.03	.22	834.26
T. 34 S., R. 67 W.	75.87	19.22	7.54	102.63								[c] 277.38	75.87	19.22	7.54	380.01
T. 34 S., R. 68 W.	75.22	76.42	128.01	[g] 310.87				[b] 6.52					75.22	76.42	128.01	317.39
T. 34 S., R. 69 W.				[b] 21.52				[b] 24.21								45.73
T. 35 S., R. 61 W.												[c] 15.19				15.19
T. 35 S., R. 62 W.												[c] 54.45				54.45
T. 35 S., R. 63 W.	.38	.85	1.70	2.93								[c] 82.49	.38	.85	1.70	85.42
T. 35 S., R. 64 W.	32.76	22.91	16.90	72.57								[c] 176.12	32.76	22.91	16.90	248.69
T. 35 S., R. 65 W.	6.54	.37		6.91								[c] 303.98	6.54	.37		310.89
T. 35 S., R. 66 W.	13.62			13.62								[c] 327.92	13.62			341.54
T. 35 S., R. 67 W.	8.27	.53		8.80								[c] 129.57	8.27	.53		138.37
T. 35 S., R. 68 W.				[b] 55.29				[b] 63.89								119.18
T. 35 S., R. 69 W.				[b] 14.79				[b] 78.57								93.36
County total	1,003.57	733.28	852.60	2,712.27	85.16	102.78	47.17	500.35	44.83	8.35	21.99	8,271.35	1,133.56	844.41	921.76	11,483.97

[a] Reserves included with Huerfano County.
[b] Includes reserves estimated on zone basis, 0–2,000 feet overburden.
[c] Part of these reserves are in Huerfano County.
[d] Estimated on zone basis, 0–2,000 feet overburden.
[e] Estimated on zone basis, 0–3,000 feet overburden.
[f] Includes reserves estimated on zone basis, 0–3,000 feet overburden.
[g] Includes reserves estimated on zone basis.
[h] Estimated on zone basis.

TABLE 15.—*Original reserves of bituminous coal (in millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Mesa County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 1 N., R. 1 E.		0.79	45.20	45.99			7.67	7.67						0.79	52.87	53.66
T. 1 S., R. 2 E.		1.10	.96	2.06										1.10	.96	2.06
T. 8 S., R 100 W.					0.05		24.87	24.92			49.33	49.33	0.05		74.20	74.25
T. 8 S., R. 101 W.		6.99	51.25	58.24	.44	3.10	24.58	28.12			10.78	10.78	.44	10.09	86.61	97.14
T. 8 S., R. 102 W.		1.02	9.22	10.24										1.02	9.22	10.24
T. 9 S., R. 98 W.			1.28	1.28			54.34	54.34			68.07	68.07			123.69	123.69
T. 9 S., R. 99 W.			3.25	3.25			118.02	118.02			71.75	71.75			193.02	193.02
T. 9 S., R. 100 W.	0.23	1.46	74.39	76.08	.34		84.01	84.35			33.42	33.42	.57	1.46	191.82	193.85
T. 9 S., R. 101 W.	.86		2.66	3.52	.34		.21	.55					1.20		2.87	4.07
T. 10 S., R. 98 W.			198.48	198.48			58.11	58.11			9.10	9.10			265.69	265.69
T. 10 S., R. 99 W.		.56	79.48	80.04			70.69	70.69						.56	150.17	150.73
T. 10 S., R. 100 W.			4.19	4.19											4.19	4.19
T. 11 S., R. 97 W.							14.57	14.57			18.21	18.21			32.78	32.78
T. 11 S., R. 98 W.		10.01	64.79	74.80			16.62	16.62						10.01	81.41	91.42
T. 11 S., R. 99 W.			3.54	3.54											3.54	3.54
County total	1.09	21.93	538.69	561.71	1.17	3.10	473.69	477.96			260.66	260.66	2.26	25.03	1,273.04	1,300.33

Moffat County

T. 3 N., R. 90 W.		1.22	34.33	35.55								[a] 55.03		1.22	34.33	90.58
T. 3 N., R. 91 W.	0.10			.10									0.10			.10
T. 3 N., R. 92 W.	5.05	13.03	35.92	[b] 216.05	0.77	3.98	6.33	[b] 191.55					5.82	17.01	42.25	407.60
T. 3 N., R. 93 W.	2.58	21.89	215.36	[b] 558.57	.27		8.36	[b] 485.94					2.85	21.89	223.72	1,044.51
T. 3 N., R. 94 W.	17.06	67.34	110.92	[b] 204.88				[c] 1.39					17.06	67.34	110.92	206.27
T. 3 N., R. 95 W.	2.21	5.28	4.08	11.57								[a] 149.40	2.21	5.28	4.08	160.97
T. 3 N., R. 97 W.			1.87	1.87								[a] 11.81			1.87	13.68
T. 3 N., R. 98 W.												[a] 262.44				262.44
T. 3 N., R. 101 W.												[a] 6.16				6.16
T. 3 N., R. 102 W.												[a] 18.63				18.63
T. 3 N., R. 104 W.			.56	.56											.56	.56
T. 4 N., R. 90 W.	1.32	1.39	107.95	[b] 264.70				[c] 20.94					1.32	1.39	107.95	285.64
T. 4 N., R. 91 W.	12.47	8.37	129.70	[b] 403.10			3.82	[b] 97.45					12.47	8.37	133.52	500.55
T. 4 N., R. 92 W.	11.66	14.51	66.47	[b] 149.07	2.63	1.39	2.31	[b] 18.44					14.29	15.90	68.78	167.51
T. 4 N., R. 93 W.	15.69	10.10	48.18	[b] 533.24	3.74	3.65	7.69	[b] 498.07					19.43	13.75	55.87	1,031.31
T. 4 N., R. 94 W.	47.23	57.57	164.83	[b] 963.40	4.50	1.07	18.11	[b] 625.76					51.73	58.64	182.94	1,589.16

T. 4 N., R. 95 W.	.10	.23		[b] 25.88								[a] 72.00	.10	.23		97.88
T. 4 N., R. 96 W.												[a] 69.12				69.12
T. 4 N., R. 98 W.			20.65	20.65			13.23	13.23			7.72	[d] 136.71			41.60	170.59
T. 5 N., R. 90 W.	37.97	50.25	277.15	[b] 544.54	12.43	2.87	112.13	[b] 202.90					50.40	53.12	389.28	747.44
T. 5 N., R. 91 W.	20.56	21.68	236.24	[b] 729.43		1.33	56.65	[b] 170.38					20.56	23.01	292.89	899.81
T. 5 N., R. 92 W.	21.95	11.68	42.80	[b] 836.88			.65	[b] 49.12					21.95	11.68	43.45	886.00
T. 5 N., R. 93 W.	.82		9.84	[b] 21.44									.82		9.84	21.44
T. 5 N., R. 94 W.	.06		5.97	6.03									.06		5.97	6.03
T. 5 N., R. 95 W.												[a] 18.00				18.00
T. 5 N., R. 96 W.												[a] 138.24				138.24
T. 5 N., R. 97 W.			22.48	22.48			7.59	7.59			9.84	9.84			39.91	39.91
T. 5 N., R. 98 W.			38.07	38.07			11.92	11.92			11.16	11.16			61.15	61.15
T. 6 N., R. 90 W.			77.71	[b] 517.59	12.41	17.74	46.55	[b] 207.16					12.41	17.74	124.26	724.75
T. 6 N., R. 91 W.	.10	3.72	86.01	[b] 369.00		.57	11.13[b]	1,234.15				[c] 340.40	.10	4.29	97.14	1,943.55
T. 6 N., R. 92 W.	.34	1.94	58.23	[b] 415.46			8.41[b]	1,411.04				[c] 464.94	.34	1.94	66.64	2,291.44
T. 6 N., R. 93 W.	17.25	38.59	143.38	[b] 626.47	1.04	.78	11.21	[b] 777.00				[c] 238.32	18.29	39.37	154.59	1,641.79
T. 6 N., R. 94 W.	5.03	.18	.23	5.44									5.03	.18	.23	5.44
T. 7 N., R. 93 W.				[c] 40.39				[c] 83.76				[c] 108.50				232.65
County total	219.55	328.97	1,938.93	7,562.41	37.79	33.38	326.09	6,107.79			28.72	2,110.70	257.34	362.35	2,293.74	15,780.90

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Includes reserves estimated on zone basis.
[c] Estimated on zone basis.
[d] Includes reserves estimated on zone basis, 0–3,000 feet overburden.

Montezuma County

T. 32 N., R. 14 W.												[a] 45.30				45.30
T. 32 N., R. 15 W.												[a] 102.00				102.00
T. 32 N., R. 16 W.												[a] 102.00				102.00
T. 32 N., R. 17 W.												[a] 42.60				42.60
T. 33 N., R. 14 W.												[a] 166.30				166.30
T. 33 N., R. 15 W.												[a] 204.00				204.00
T. 33 N., R. 16 W.												[a] 107.00				107.00
T. 33 N., R. 17 W.												[a] 39.80				39.80
S. T. 34 N., R. 13 W.	2.59			2.59								[a] 23.22	2.59			25.81
S. T. 34 N., R. 14 W.	10.24	2.74		12.98								[a] 129.32	10.24	2.74		142.30
S. T. 34 N., R. 15 W.												[a] 27.60				27.60
S. T. 34 N., R. 16 W.												[a] 123.00				123.00
S. T. 34 N., R. 17 W.												[a] 35.40				35.40
N. T. 34 N., R. 13 W.	4.38	.74	0.27	5.39								[a] 1.51	4.38	.74	0.27	6.90
N. T. 34 N., R. 16 W.												[a] 27.60				27.60
T. 35 N., R. 12 W.	[b] 1.78	[b] 2.67	[b] 4.46	[b] 8.91									[b] 1.78	[b] 2.67	[b] 4.46	8.91
T. 35 N., R. 13 W.	12.97	9.35	3.85	26.17								[a] .73	12.97	9.35	3.85	26.90
T. 35 N., R. 16 W.												[a] 37.40				37.40
T. 36 N., R. 13 W.	2.34	1.92	.21	4.47								[a] .42	2.34	1.92	.21	4.89
T. 36 N., R. 15 W.	2.20			2.20									2.20			2.20
County total	36.50	17.42	8.79	62.71								1,215.20	36.50	17.42	8.79	1,277.91

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Estimated on zone basis.

TABLE 15.—*Original reserves of bituminous coal (in millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Montrose County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 46 N., R. 15 W.		7.58	7.24	14.82										7.58	7.24	14.82
T. 46 N., R. 16 W.		20.25	34.62	54.87										20.25	34.62	54.87
T. 47 N., R. 15 W.		2.18	11.47	13.65										2.18	11.47	13.65
T. 47 N., R. 16 W.		2.27	28.73	31.00										2.27	28.73	31.00
County total		32.28	82.06	114.34										32.28	82.06	114.34

Park County

T. 7 S., R. 75 W.	0.34			0.34	0.42			0.42	0.42			0.42	1.18			1.18
T. 8 S., R. 75 W.	.30			.30	.38			.38	.34			.34	1.02			1.02
T. 8 S., R. 76 W.	1.79		23.49	25.28	1.79		16.00	17.79	1.46		10.72	12.18	5.04		50.21	55.25
T. 9 S., R. 76 W.		0.85	6.02	6.87		7.60	6.84	14.44		7.60	5.89	13.49		16.05	18.75	34.80
County total	2.43	.85	29.51	32.79	2.59	7.60	22.84	33.03	2.22	7.60	16.61	26.43	7.24	16.05	68.96	92.25

Pitkin County

T. 8 S., R. 89 W.	3.40	9.84	47.29	60.53	2.75	8.23	41.77	52.75	4.00	11.54	62.47	78.01	10.15	29.61	151.53	191.29
T. 9 S., R. 89 W.	1.30	18.66	29.08	49.04	.93	18.04	31.16	50.13	.99	16.85	29.15	46.99	3.22	53.55	89.39	146.16
T. 10 S., R. 88 W.		.27		.27										.27		.27
T. 10 S., R. 89 W.	.52	.07	20.89	21.48	.29	.25	27.95	28.49	.03	.07	13.98	14.08	.84	.39	62.82	64.05
T. 11 S., R. 88 W.	1.27	5.10		6.37	.65	2.70		3.35	.10	.93		1.03	2.02	8.73		10.75
County total	6.49	33.94	97.26	137.69	4.62	29.22	100.88	134.72	5.12	29.39	105.60	140.11	16.23	92.55	303.74	412.52

Rio Blanco County

T. 1 N., R. 93 W.		0.12		0.12										0.12		0.12
T. 1 N., R. 94 W.	16.88	33.62	258.91	309.41	12.98	42.16	269.51	324.65	9.26	27.84	198.14	235.24	39.12	103.62	726.56	869.30
T. 1 N., R. 99 W.												[a] 20.70				20.70
T. 1 N., R. 100 W.												[a] 331.74				331.74

T. 1 N., R. 101 W.			51.19	51.19			19.38	19.38				[a] 351.35			70.57	421.92
T. 1 N., R. 102 W.		6.17	137.66	143.83		1.41	6.37	7.78				[a] 442.39		7.58	144.03	594.00
T. 1 N., R. 103 W.		4.00		4.00		10.16		10.16		3.65		[b] 241.44		17.81		255.60
T. 2 N., R. 86 W.												[a] 110.08				110.08
T. 2 N., R. 87 W.												[a] 78.13				78.13
T. 2 N., R. 90 W.												[a] 92.00				92.00
T. 2 N., R. 91 W.												[a] 4.56				4.56
T. 2 N., R. 92 W.	8.53	2.35	75.67	86.55	.75			.75				[a] 12.31	9.28	2.35	75.67	99.61
T. 2 N., R. 93 W.	39.98	59.72	314.25	413.95	30.14	43.03	412.78	485.95	11.26	9.43	33.93	54.62	81.38	112.18	760.96	954.52
T. 2 N., R. 94 W.	81.50	49.78	108.50	239.78	54.98	50.60	127.18	232.76	45.12	40.26	43.47	128.85	181.60	140.64	279.15	601.39
T. 2 N., R. 95 W.	1.86	2.32		4.18	1.29	1.78		3.07	1.50	2.13		3.63	4.65	6.23		10.88
T. 2 N., R. 97 W.			13.61	13.61			1.26	1.26							14.87	14.87
T. 2 N., R. 98 W.			49.68	49.68			46.01	46.01			24.24	24.24			119.93	119.93
T. 2 N., R. 99 W.											8.82	[b] 10.26			8.82	10.26
T. 2 N., R. 100 W.							4.40	4.40			.85	[b] 420.58			5.25	424.98
T. 2 N., R. 101 W.			21.16	21.16			8.47	8.47			.17	[b] 113.43			29.80	143.06
T. 2 N., R. 102 W.												[a] 12.31				12.31
T. 2 N., R. 103 W.			4.94	4.94			4.02	4.02			5.21	[b] 156.65			14.17	165.61
T. 2 N., R. 104 W.			4.94	4.94			4.60	4.60			11.79	[b] 114.66			21.33	124.20
T. 3 N., R. 86 W.												[a] 4.56				4.56
T. 3 N., R. 87 W.												[a] 13.83				13.83
T. 3 N., R. 89 W.												[a] 41.48				41.48
T. 3 N., R. 90 W.												[a] 69.20				69.20
T. 3 N., R. 91 W.												[a] 9.20				9.20
T. 3 N., R. 92 W.	.70	.18	24.65	25.53								[a] 145.15	.70	.18	24.65	170.68
T. 3 N., R. 93 W.	16.65	7.76	92.42	116.83									16.65	7.76	92.42	116.83
T. 3 N., R. 94 W.	2.15	49.74	71.93	123.82		.51	1.45	1.96					2.15	50.25	73.38	125.78
T. 3 N., R. 95 W.	.74	4.88	17.30	22.92		1.38	5.09	6.47		.21	.89	[b] 77.06	.74	6.47	23.28	106.45
T. 3 N., R. 97 W.			97.00	97.00											97.00	97.00
T. 3 N., R. 98 W.			30.24	30.24			6.63	6.63			5.37	[b] 336.08			42.24	372.95
T. 3 N., R. 99 W.			1.88	1.88			20.61	20.61			11.66	[b] 45.63			34.15	68.12
T. 3 N., R. 100 W.			.94	.94			.86	.86			.86	[b] 136.45			2.66	138.25
T. 3 N., R. 101 W.												[a] 161.68				161.68
T. 3 N., R. 102 W.												[a] 49.73				49.73
T. 3 N., R. 104 W.			1.50	1.50								[a] 25.86			1.50	27.36
T. 1 S., R. 94 W.	.29	.15	9.57	10.01	.28	.10	8.14	8.52	.28	.06	4.79	5.13	.85	.31	22.50	23.66
T. 1 S., R. 100 W.												[a] 62.19				62.19
T. 1 S., R. 101 W.												[a] 152.01				152.01
T. 1 S., R. 102 W.												[a] 197.10				197.10
T. 1 S., R. 103 W.												[a] 207.36				207.36
T. 2 S., R. 100 W.												[a] 96.75				96.75
T. 2 S., R. 101 W.												[a] 120.96				120.96
T. 2 S., R. 102 W.												[a] 190.08				190.08
T. 2 S., R. 103 W.												[a] 207.36				207.36
T. 2 S., R. 104 W.												[a] 31.05				31.05
T. 3 S., R. 94 W.			5.06	5.06			8.05	8.05			7.13	7.13			20.24	20.24
T. 3 S., R. 99 W.												[a] 10.35				10.35
T. 3 S., R. 100 W.												[a] 179.64				179.64
T. 3 S., R. 101 W.												[a] 196.92				196.92
T. 3 S., R. 102 W.												[a] 207.36				207.36
T. 3 S., R. 103 W.												[a] 207.36				207.36

See notes at end of section.

TABLE 15.—*Original reserves of bituminous coal (in millions of short tons) under indicated overburden (feet) for coal beds (inches) in Colorado*—Continued

Rio Blanco County—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	Total	14–28 inches	28–42 inches	>42 inches	
T. 3 S., R. 104 W.												[a] 41.40				41.40
T. 4 S., R. 94 W.			4.37	4.37			11.27	11.27			13.33	13.33			28.97	28.97
T. 4 S., R. 100 W.												[a] 44.91				44.91
T. 4 S., R. 101 W.												[a] 158.94				158.94
T. 4 S., R. 102 W.												[a] 172.80				172.80
T. 4 S., R. 103 W.												[a] 183.15				183.15
T. 4 S., R. 104 W.												[a] 79.47				79.47
County total	169.28	220.79	1,397.37	1,787.44	100.42	151.13	966.08	1,217.63	67.42	83.58	370.65	6,847.83	337.12	455.50	2,734.10	9,852.90

[a] Estimated on zone basis, 0–3,000 feet overburden.
[b] Includes reserves estimated on zone basis, 0–3,000 feet overburden.

Routt County

T. 3 N., R. 86 W.		5.70	72.49	78.19										5.70	72.49	78.19
T. 3 N., R. 87 W.												[a] 13.83				13.83
T. 3 N., R. 88 W.												[a] 13.83				13.83
T. 3 N., R. 89 W.												[a] 64.30				64.30
T. 4 N., R. 85 W.		6.02	120.94	126.96			22.00	22.00						6.02	142.94	148.96
T. 4 N., R. 86 W.		30.39	409.77	440.16		5.09	103.23	108.32						35.48	513.00	548.48
T. 4 N., R. 87 W.		8.46	41.75	50.21			21.61	21.61						8.46	63.36	71.82
T. 4 N., R. 88 W.		4.94	110.95	115.89		.30	24.64	24.94						5.24	135.59	140.83
T. 4 N., R. 89 W.			5.83	5.83											5.83	5.83
T. 5 N., R. 85 W.		3.75	142.91	146.66			42.22	42.22						3.75	185.13	188.88
T. 5 N., R. 86 W.		39.79	465.35	505.14		60.84	569.08	629.92		4.57	14.38	18.95		105.20	1,048.81	1,154.01
T. 5 N., R. 87 W.		13.44	269.05	282.49			108.39	108.39						13.44	377.44	390.88
T. 5 N., R. 88 W.		1.99	329.59	331.58		7.12	124.90	132.02						9.11	454.49	463.60
T. 5 N., R. 89 W.	40.88	30.97	481.44	553.29	20.96	49.80	601.18	671.94					61.84	80.77	1,082.62	1,225.23
T. 6 N., R. 86 W.	2.92	13.12	64.32	80.36		4.40	5.93	10.33					2.92	17.52	70.25	90.69
T. 6 N., R. 87 W.	3.02	48.12	328.70	379.84	1.53	39.95	483.66	525.14			19.23	19.23	4.55	88.07	831.59	924.21
T. 6 N., R. 88 W.			31.25	31.25			236.90	236.90			93.85	93.85			362.00	362.00
T. 6 N., R. 89 W.							21.30	21.30							21.30	21.30
T. 7 N., R. 86 W.			4.47	4.47			9.43	9.43							13.90	13.90
T. 7 N., R. 87 W.	1.62	6.31	224.83	232.76	.52		108.33	108.85					2.14	6.31	333.16	341.61
T. 8 N., R. 86 W.	.48	7.65	46.23	54.36		3.89	1.24	5.13					.48	11.54	47.47	59.49

T. 8 N., R. 87 W.	6.85	22.09	263.23	292.17	12.10	26.47	216.18	254.75	5.64		16.84	22.48	24.59	48.56	496.25	569.40
T. 9 N., R. 86 W.		24.46	83.22	107.68		10.54	22.16	32.70						35.00	105.38	140.38
T. 9 N., R. 87 W.		16.08		16.08		17.96	24.77	42.73		6.59		6.59		40.63	24.77	65.40
T. 11 N., R. 86 W.												[a] 6.60				6.60
T. 11 N., R. 87 W.												[a] 98.20				98.20
County total	55.77	283.28	3,496.32	3,835.37	35.11	226.36	2,747.15	3,008.62	5.64	11.16	144.30	357.86	96.52	520.80	6,387.77	7,201.85

[a] Estimated on zone basis, 0–3,000 feet overburden.

TABLE 16.—*Original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*

Adams County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 1 S., R. 67 W.	17.78			17.78									17.78			17.78
T. 1 S., R. 68 W.	78.79	19.35	2.15	100.29									78.79	19.35	2.15	100.29
T. 3 S., R. 64 W.		8.76		8.76										8.76		8.76
T. 3 S., R. 65 W.	25.75	171.74		197.49									25.75	171.74		197.49
T. 3 S., R. 66 W.		10.96		10.96										10.96		10.96
County total	122.32	210.81	2.15	335.28									122.32	210.81	2.15	335.28

Arapahoe County

T. 4 S., R. 64 W.		3.29		3.29										3.29		3.29
T. 4 S., R. 65 W.		128.18		128.18										128.18		128.18
T. 4 S., R. 66W.		140.22		140.22										140.22		140.22
County total		271.69		271.69										271.69		271.69

Boulder County

T. 1 N., R. 69 W.	47.81	14.03	0.94	62.78									47.81	14.03	0.94	62.78
T. 1 S., R. 69 W.	171.32	43.41	28.79	243.52									171.32	43.41	28.79	243.52
T. 1 S., R. 70 W.	68.98	89.86		158.84									68.98	89.86		158.84
County total	288.11	147.30	29.73	465.14									288.11	147.30	29.73	465.14

TABLE 16.—*Original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*—Continued

Delta County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 12 S., R. 93 W.						7.31		7.31		3.03		3.03		10.34		10.34
T. 12 S., R. 94 W.						6.25		6.25		2.65		2.65		8.90		8.90
T. 12 S., R. 95 W.						1.69		1.69		1.04		1.04		2.73		2.73
T. 13 S., R. 92 W.		46.53	158.73	205.26		16.04	65.73	81.77			6.33	6.33		62.57	230.79	293.36
T. 13 S., R. 93 W.	25.17	175.39	36.84	237.40	12.28	91.44	.69	104.41					37.45	266.83	37.53	341.81
T. 13 S., R. 94 W.	8.82	57.60		66.42	2.66	57.51		60.17		4.15		4.15	11.48	119.26		130.74
T. 13 S., R. 95 W.	19.91	90.40	35.99	146.30	19.90	126.00	20.64	166.54	0.94	15.40		16.34	40.75	231.80	56.63	329.18
T. 13 S., R. 96 W.	10.43	30.55	41.14	82.12	8.19	48.76	21.51	78.46		14.62		14.62	18.62	93.93	62.65	175.20
T. 13 S., R. 97 W.		7.48		7.48		2.24		2.24		.80		.80		10.52		10.52
T. 14 S., R. 96 W.		3.57		3.57										3.57		3.57
County total	64.33	411.52	272.70	748.55	43.03	357.24	108.57	508.84	.94	41.69	6.33	48.96	108.30	810.45	387.60	1,306.35

Douglas County

T. 6 S., R. 68 W.	14.54	30.89		45.43	9.80	20.82		30.62					24.34	51.71		76.05
T. 6 S., R. 69 W.	.59	1.25		1.84	.05	1.40		1.45					.64	2.65		3.29
T. 7 S., R. 68 W.	4.63	9.84		14.47	29.73	63.19		92.92					34.36	73.03		107.39
County total	19.76	41.98		61.74	39.58	85.41		124.99					59.34	127.39		186.73

Elbert County

T. 7 S., R. 58 W.	27.21			27.21									27.21			27.21
T. 7 S., R. 59 W.	35.81			35.81									35.81			35.81
T. 8 S., R. 58 W.	47.29			47.29									47.29			47.29
T. 8 S., R. 59 W.	21.93			21.93									21.93			21.93
T. 9 S., R. 58 W.		4.92		4.92										4.92		4.92
T. 9 S., R. 59 W.		14.21		14.21										14.21		14.21
T. 9 S., R. 61 W.	13.66			13.66									13.66			13.66
T. 9 S., R. 62 W.	40.53	96.54		137.07									40.53	96.54		137.07
T. 9 S., R. 63 W.	37.33	5.47		42.80									37.33	5.47		42.80
T. 10 S., R. 58 W.		62.29		62.29										62.29		62.29
T. 10 S., R. 59 W.		185.96		185.96										185.96		185.96

T. 10 S., R. 61 W.	40.52			40.52									40.52			40.52
T. 10 S., R. 62 W.	32.79	23.68		56.47									32.79	23.68		56.47
T. 10 S., R. 63 W.	9.11			9.11									9.11			9.11
T. 11 S., R. 58 W.		54.62		54.62										54.62		54.62
T. 11 S., R. 59 W.		33.88		33.88										33.88		33.88
County total	306.18	481.57		787.75									306.18	481.57		787.75
El Paso County																
T. 11 S., R. 60 W.	58.58			58.58									58.58			58.58
T. 11 S., R. 61 W.	48.00			48.00									48.00			48.00
T. 11 S., R. 62 W.	7.74			7.74									7.74			7.74
T. 12 S., R. 60 W.	22.72			22.72									22.72			22.72
T. 12 S., R. 61 W.	37.61			37.61									37.61			37.61
T. 12 S., R. 66 W.									9.09			9.09	9.09			9.09
T. 12 S., R. 67 W.					1.60			1.60	9.28			9.28	10.88			10.88
T. 13 S., R. 64 W.						2.89		2.89						2.89		2.89
T. 13 S., R. 65 W.					20.23			20.23	2.88			2.88	23.11			23.11
T. 13 S., R. 66 W.		56.97		56.97	.16	47.49		47.65	28.48			28.48	28.64	104.46		133.10
T. 13 S., R. 67 W.	13.13			13.13	9.79			9.79					22.92			22.92
T. 14 S., R. 64 W.	35.46			35.46	64.06			64.06					99.52			99.52
T. 14 S., R. 65 W.		70.44		70.44		22.90		22.90						93.34		93.34
T. 14 S., R. 66 W.	2.46			2.46									2.46			2.46
County total	225.70	127.41		353.11	95.84	73.28		169.12	49.73			49.73	371.27	200.69		571.96
Gunnison County																
T. 46 N., R. 6 W.			63.81	63.81											63.81	63.81
T. 46 N., R. 7 W.			106.38	106.38											106.38	106.38
T. 47 N., R. 7 W.			136.69	136.69											136.69	136.69
County total			306.88	306.88											306.88	306.88
Jackson County																
T. 6 N., R. 81W.	29.79			29.79	8.99			8.99						38.78		38.78
T. 7 N., R. 80 W.		170.50		170.50		227.55		227.55			263.39	263.39			661.44	661.44
T. 7 N., R. 81 W.	34.83	154.81		189.64	31.99	104.20		136.19		9.55	58.48	68.03		76.37	317.49	393.86
T. 7 N., R. 82 W.	1.08			1.08										1.08		1.08
T. 8 N., R. 77 W.		207.54		207.54		187.16		187.16			234.53	234.53			629.23	629.23
T. 8 N., R. 78 W.	11.50	84.58		96.08	1.53	364.17		365.70			210.28	210.28		13.03	659.03	672.06
T. 8 N., R. 79 W.					.38			.38						.38		.38
T. 8 N., R. 81 W.	40.78			40.78	38.25			38.25		25.98		25.98		105.01		105.01
T. 8 N., R. 82 W.	8.97			8.97										8.97		8.97
T. 9 N., R. 78 W.	21.08	419.20		440.28	3.66	271.34		275.00			123.08	123.08		24.74	813.62	838.36

TABLE 16.—*Original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*—Continued

Jackson County—Continued

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 9 N., R. 79 W.			65.92	65.92			65.83	65.83			102.34	102.34			234.09	234.09
T. 9 N., R. 81 W.	5.18			5.18									5.18			5.18
T. 10 N., R. 78 W.			9.83	9.83			9.14	9.14			1.49	1.49			20.46	20.46
T. 10 N., R. 79 W.		40.02		40.02		42.59		42.59		41.03		41.03		123.64		123.64
T. 10 N., R. 81 W.	2.59			2.59									2.59			2.59
County total	7.77	188.05	1,112.38	1,308.20		127.39	1,229.39	1,356.78		76.56	993.59	1,070.15	7.77	392.00	3,335.36	3,735.13
Jefferson County																
T. 2 S., R. 69 W.		8.86		8.86		34.29		34.29						43.15		43.15
T. 2 S., R. 70 W.	33.26	122.43		155.69		46.08		46.08					33.26	168.51		201.77
T. 3 S., R. 69 W.						5.33		5.33						5.33		5.33
T. 3 S., R. 70 W.	8.77	13.30	18.26	40.33	24.28	97.44	15.41	137.13					33.05	110.74	33.67	177.46
T. 4 S., R. 69 W.	9.06			9.06	101.84			101.84	4.69	6.69		11.38	115.59	6.69		122.28
T. 4 S., R. 70 W.	6.50	8.76		15.26	18.86	24.73		43.59	10.78	12.23		23.01	36.14	45.72		81.86
T. 5 S., R. 69 W.	7.51	18.17		25.68	23.56	101.12		124.68					31.07	119.29		150.36
T. 6 S., R. 69 W.		7.86		7.86		16.55		16.55						24.41		24.41
County total	65.10	179.38	18.26	262.74	168.54	325.54	15.41	509.49	15.47	18.92		34.39	249.11	523.84	33.67	806.62
Larimer County																
T. 10 N., R. 68 W.	28.44			28.44									28.44			28.44
T. 11 N., R. 68 W.	49.72			49.72									49.72			49.72
County total	78.16			78.16									78.16			78.16

Moffat County

T. 5 N., R. 90 W.	1.86	48.88		[a] 73.95									1.86	48.88		73.95
T. 5 N., R. 91 W.	1.53	1.88		[a] 79.28									1.53	1.88		79.28
T. 5 N., R. 92 W.	16.05	15.61		[a] 108.81									16.05	15.61		108.81
T. 6 N., R. 90 W.	49.76	75.97	16.48	[a] 590.70	9.00			9.00					58.76	75.97	16.48	599.70
T. 6 N., R. 91 W.	86.89	66.45		[a] 1,411.03									86.89	66.45		1,411.03
T. 6 N., R. 92 W.	125.81	20.60		[a] 1,053.07									125.81	20.60		1,053.07
T. 6 N., R. 93 W.	41.65	33.61		[a] 320.68									41.65	33.61		320.68
T. 7 N., R. 90 W.	27.54	50.05	25.94	103.53		7.39		7.39					27.54	57.44	25.94	110.92
T. 7 N., R. 91 W.		6.80		6.80										6.80		6.80
T. 7 N., R. 92 W.		40.76		40.76										40.76		40.76
T. 7 N., R. 93 W.		10.96		10.96										10.96		10.96
T. 7 N., R. 94 W.		19.82		19.82										19.82		19.82
T. 7 N., R. 95 W.		52.88		52.88		50.26		50.26		36.69		36.69		139.83		139.83
T. 8 N., R. 89 W.	13.94	24.79	67.91	106.64									13.94	24.79	67.91	106.64
T. 8 N., R. 90 W.	9.49	6.78	14.50	30.77									9.49	6.78	14.50	30.77
T. 8 N., R. 91 W.		.38		.38		.38		.38						.76		.76
T. 8 N., R. 92 W.		49.53		49.53		5.62		5.62						55.15		55.15
T. 8 N., R. 93 W.		10.25	104.17	114.42			23.03	23.03						10.25	127.20	137.45
T. 8 N., R. 94 W.		32.46		32.46		46.78		46.78						79.24		79.24
T. 8 N., R. 95 W.										1.59		1.59		1.59		1.59
T. 9 N., R. 89 W.	3.62			3.62	.28			.28					3.90			3.90
County total	378.14	568.46	229.00	4,210.09	9.28	110.43	23.03	142.74		38.28		38.28	387.42	717.17	252.03	4,391.11

[a] Includes reserves estimated on zone basis.

Montrose County

T. 47 N., R. 7 W.			410.02	410.02											410.02	410.02
T. 48 N., R. 7 W.			619.24	619.24											619.24	619.24
County total			1,029.26	1,029.26											1,029.26	1,029.26

Ouray County

T. 46 N., R. 7 W.			754.59	754.59											754.59	754.59
T. 47 N., R. 7 W.			264.21	264.21											264.21	264.21
County total			1,018.80	1,018.80											1,018.80	1,018.80

TABLE 16.—*Original reserves of subbituminous coal (millions of short tons) under indicated overburden (feet) for coal beds (feet) in Colorado*—Continued

Routt County

Township	0–1,000 feet				1,000–2,000 feet				2,000–3,000 feet				Total in all overburden categories			Township totals
	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	Total	2½–5 feet	5–10 feet	>10 feet	
T. 5 N., R. 86 W.	48.04			48.04									48.04			48.04
T. 5 N., R. 87 W.	30.32		17.35	47.67									30.32		17.35	47.67
T. 5 N., R. 88 W.	42.86	115.24	19.07	177.17									42.86	115.24	19.07	177.17
T. 5 N., R. 89 W.	47.03	199.46		246.49									47.03	199.46		246.49
T. 6 N., R. 86 W.	3.04			3.04									3.04			3.04
T. 6 N., R. 87 W.	30.73		119.32	150.05			11.46	11.46					30.73		130.78	161.51
T. 6 N., R. 88 W.	7.41	30.22	106.11	143.74									7.41	30.22	106.11	143.74
T. 6 N., R. 89 W.	46.10	109.05		155.15		98.82	12.00	110.82					46.10	207.87	12.00	265.97
T. 7 N., R. 88 W.	26.85	30.81		57.66									26.85	30.81		57.66
T. 7 N., R. 89 W.	7.67	14.49		22.16									7.67	14.49		22.16
T. 8 N., R. 87 W.	9.92			9.92									9.92			9.92
T. 8 N., R. 88 W.	25.18			25.18									25.18			25.18
T. 9 N., R. 87 W.	8.33	26.17	29.18	63.68									8.33	26.17	29.18	63.68
T. 9 N., R. 88 W.	47.28	.87		48.15									47.28	.87		48.15
County total	380.76	526.31	291.03	1,198.10		98.82	23.46	122.28					380.76	625.13	314.49	1,320.38

Weld County

T. 1 N., R. 66 W.		55.94		55.94										55.94		55.94
T. 1 N., R. 67 W.	47.40	123.52	5.86	176.78									47.40	123.52	5.86	176.78
T. 1 N., R. 68 W.	100.78	158.95	11.19	270.92									100.78	158.95	11.19	270.92
T. 2 N., R. 66 W.	10.21	22.12		32.33									10.21	22.12		32.33
T. 2 N., R. 67 W.	137.88	49.75	1.36	188.99									137.88	49.75	1.36	188.99
T. 2 N., R. 68 W.	20.14	48.81	2.89	71.84									20.14	48.81	2.89	71.84
T. 3 N., R. 64 W.	39.49			39.49									39.49			39.49
T. 3 N., R. 65 W.	131.19			131.19									131.19			131.19
T. 3 N., R. 66 W.	120.11	62.16		182.27									120.11	62.16		182.27
T. 3 N., R. 67 W.	47.26	7.31		54.57									47.26	7.31		54.57
T. 4 N., R. 64 W.	96.17			96.17									96.17			96.17
T. 4 N., R. 65 W.	77.34			77.34									77.34			77.34
T. 4 N., R. 66 W.	28.16			28.16									28.16			28.16
T. 5 N., R. 64 W.	5.49			5.49									5.49			5.49
T. 5 N., R. 65 W.	1.37			1.37									1.37			1.37
T. 6 N., R. 65 W.	4.64			4.64									4.64			4.64
T. 6 N., R. 66 W.	6.56			6.56									6.56			6.56

T. 7 N., R. 61 W.		43.08		43.08										43.08		43.08
T. 7 N., R. 62 W.		13.03		13.03										13.03		13.03
T. 7 N., R. 65 W.	6.01			6.01									6.01			6.01
T. 7 N., R. 66 W.	13.12			13.12									13.12			13.12
T. 8 N., R. 61 W.		29.05		29.05										29.05		29.05
T. 8 N., R. 62 W.		4.01		4.01										4.01		4.01
T. 9 N., R. 67 W.	29.87			29.87									29.87			29.87
T. 10 N., R. 67 W.	146.44			146.44									146.44			146.44
T. 11 N., R. 67 W.	48.09			48.09									48.09			48.09
County total	1,117.72	617.73	21.30	1,756.75									1,117.72	617.73	21.30	1,756.75

INDEX

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