DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

COAL INVESTIGATIONS
MAP C-93A (SHEET 1 OF 2)

Base from U.S. Geological Survey, 1:24,000, Johns Peak, 1968; Hilgard Mountain, 1968; Yogo Creek, 1966; and Old Woman Plateau, 1968

APPROXIMATE MEAN DECLINATION 1983

SCALE 1:24 000
1 ½ 0 1 MILE
1 .5 0 1 KILOMETER
CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

Geology from E. M. Spieker, 1931

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA.—1983—G82102

MAP SHOWING LOCATION OF DRILL HOLES AND MEASURED SECTIONS

DISCUSSION

INTERTONGUING

Because of extensive but previously unmapped intertonguing of the Blackhawk Formation and the Star Point Sandstone in the Saleratus Benches area, in the northern part of the mapped area, assignment of new coal zone names and abandonment of old coal bed names is imperative because the coal beds were previously miscorrelated (Spieker, 1931). They are not referable on one continuous Star Point Sandstone horizontal datum, as previously thought, but on the Star Point Sandstone en echelon datum. The tongues, herein referred to as the Number 1 and Number 2 tongues of the Star Point Sandstone, stratigraphically offset the continuity of coal zones, as can be seen on the accompanying sections in the Saleratus Benches area. The relationship of intertonguing between the Star Point Sandstone and the Blackhawk Formation has previously been mapped in the Muddy Canyon and Emery areas by Flores and others (1979), Sanchez and Hayes (1979), and Hayes and Sanchez (1979).

COAL ZONES AND BEDS

The Last Chance (Spieker, 1931) coal bed is stratigraphically equivalent to the Hiawatha (Spieker, 1931) coal bed in the Johns Peak area and will be referred to as the Last Chance coal zone (fig. 1). This zone is not widespread and further exploration and development may be limited.

The Upper Last Chance (Spieker, 1931) coal bed is stratigraphically equivalent to the upper Hiawatha (Spieker, 1931) coal bed and will be referred to as the Upper Last Chance coal zone (fig. 1) in the study area. This coal zone is widespread and commonly thicker than 42 in. (107 cm), but it is restricted to the Johns Peak area.

Coal beds in the herein named Knight coal zone (fig. 1) are stratigraphically equivalent to the Hiawatha and Ivie (Spieker 1931) coal beds in the Old Woman Plateau and Johns Peak areas. This coal zone offers great potential for further exploration and development. The coal beds in the zone are commonly thicker than 42 in. (107 cm) and are as thick as 13 ft 8 in. (264 cm) in section B-170, in the Johns Peak and Old Woman Plateau areas. This coal zone is fairly persistent in the study area and is presently being exploited at the Coal Search Corporation Knight mine (sec. 34, T. 23 S., R. 4 E.) near I-70 and Coal Mine Creek. The total coal tonnage mined there from the Knight coal zone was 130,000 short tons (118,000 metric tons) as of July 1980. The coal zone appears to be thickest near the area of intertonguing.

Coal beds in the herein named Acord Lakes coal zone are stratigraphically equivalent to the Upper Ivie and Upper Hiawatha (Spieker, 1931) coal beds (fig. 1). This coal zone is another persistent zone of coal in the study area. It is commonly thicker than 42 in. (107 cm) and attains a thickness of 11 ft 1 in. (338 cm) in section B-195. This coal zone offers great potential for exploration and development in the northern part of the study area. The Acord Lakes coal zone is presently being mined at the Southern Utah Fuels Company underground mine, 2 miles due north of the study area in East Spring Canyon, near the head of Convulsion Canyon.

COAL RESOURCES

The total identified coal resources in the Upper Cretaceous (Campanian) lower Blackhawk Formation, in the Johns Peak and Old Woman Plateau areas of the Wasatch Plateau Coal Field is 424.0 million short tons (385 million metric tons) (table 1). The coal-bearing sequence is approximately 1,000 ft thick. The entire resource area is within the Fishlake National Forest.

All coal beds are identified by zone names because of discontinuities (pinchouts) and bifurcations. Some coal beds occur as isolated lenses that cannot be correlated and are placed in the "other coal beds" category (table 1). Although the resources were tabulated as zones, the coal resources (table 1) were calculated by individual coal bed according to the coal classification system by the U.S. Department of Interior (U.S. Bureau of Mines and U.S. Geological Survey, 1976). Demonstrated resources for most beds were estimated to extend not more than 0.75 mi (1.2 km) from the point of measurement on the outcrop or from a drill hole. Inferred coal resources were calculated for a few of the persistent coal beds. As further exploratory drilling is done in the area, our figures will need to be revised upward.

As can be seen on the accompanying coal sections, the thickest and most persistent coals (Acord Lakes and Knight coal zones) in the study area are within 180 ft (55 m) of the base of the Blackhawk Formation and offer the greatest potential for development. Because of the depth of the coal beds, they will require underground mining.

COAL ANALYSES

Five analyses of coal are available from the Johns Peak area (Hatch and others, 1979). On the basis of these analyses, as well as analyses of Blackhawk coals from nearby areas, it can be inferred that most coal in the study area is high-volatile, B or C bituminous to subbituminous A, and low in sulfur content (1.47 to .96 percent on an as-received basis).

ACKNOWLEDGEMENTS

The authors thank Coal Search Corporation for allowing the use and publication of their drill hole information.

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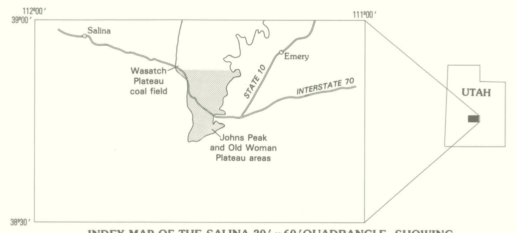
MAP EXPLANATION

CONTACT—Between Star Point Sandstone and overlying Blackhawk Formation. Dotted where concealed. Chevrons enclose zone of intertonguing

U D — NORMAL FAULT—Dashed where approximately located. U, upthrown side; D, downthrown side

USGS-3 — DRILL HOLE—Drilled by U.S. Geological Survey (USGS), Utah Geological and Mineral Survey (UGMS), and Coal Search Corporation (CSC)

B202 — MEASURED SECTION—S, from Spieker (1931); B, from Blanchard (1982); OWP, from authors



INDEX MAP OF THE SALINA 30' × 60' QUADRANGLE, SHOWING THE SOUTHERN PART OF THE WASATCH PLATEAU COAL FIELD, UTAH. PATTERN INDICATES AREA OF THIS REPORT.

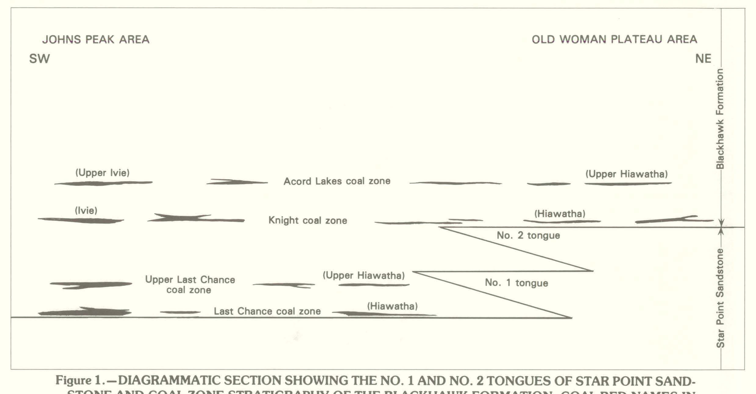


Figure 1.—DIAGRAMMATIC SECTION SHOWING THE NO. 1 AND NO. 2 TONGUES OF STAR POINT SANDSTONE AND COAL ZONE STRATIGRAPHY OF THE BLACKHAWK FORMATION. COAL BED NAMES IN PARENTHESES ARE LOCALLY USED NAMES

Table 1.—Identified coal resources in the Upper Cretaceous Blackhawk Formation, Johns Peak-Old Woman Plateau areas, in part of the Salina 30'x60' Quadrangle, Wasatch Plateau coal field, Sevier County, Utah

[In millions of short tons. Totals rounded to 3 significant figures; coal assumed to weigh 1800 tons per acre foot; 1 short ton = 0.9072 metric ton; 1 foot = 0.3048 m; 1 inch = 2.54 cm. Leaders (---) indicate no resources]

Location			Coal under less than 1000 ft of overburden						Coal overlain by 1000 ft to 2000 ft of overburden						
			Demonstrated			Inferred			Demonstrated			Inferred			
			Thickness of coal bed, in inches			Thickness of coal bed, in inches			Thickness of coal bed, in inches			Thickness of coal bed, in inches			
County	Township (South)	Range (East)	14-28	28-42	>42	14-28	28-42	>42	14-28	28-42	>42	14-28	28-42	>42	Total
Last Chance coal zone															
Sevier	24	4	2.7	3.5	2.8	---	---	---	0.3	---	---	---	---	---	9.3
Sevier	25	4	0.1	0.1	0.5	---	---	---	---	---	---	---	---	---	0.7
Last Chance coal zone totals			2.8	3.6	3.3	---	---	---	0.3	---	---	---	---	---	10.0
Upper Last Chance coal zone															
Sevier	21	4	0.4	0.6	0.1	---	---	---	0.3	0.4	2.5	---	---	---	4.3
Sevier	22	3	0.2	0.3	---	---	---	---	0.2	0.1	---	---	---	---	0.8
Sevier	22	4	4.6	0.4	0.3	---	---	---	5.4	0.5	---	---	---	---	11.2
Sevier	23	4	11.3	4.3	4.2	---	---	---	4.8	---	---	---	---	---	24.6
Sevier	24	4	5.6	11.0	19.0	---	---	---	0.1	0.3	0.4	---	---	---	36.4
Sevier	25	4	0.1	0.1	0.8	---	---	---	---	---	---	---	---	---	1.0
Upper Last Chance coal zone totals			22.2	16.7	24.4	---	---	---	10.8	1.3	2.9	---	---	---	78.3
Knight coal zone															
Sevier	22	3	0.1	0.4	---	---	---	---	0.2	0.1	---	---	---	---	0.8
Sevier	22	4	3.3	3.6	11.6	1.0	---	---	0.4	1.1	0.6	---	---	---	21.6
Sevier	22	5	2.7	---	4.1	0.5	---	---	---	---	---	---	---	---	7.3
Sevier	23	3	0.1	0.3	---	---	---	---	0.5	0.1	---	---	---	---	1.0
Sevier	23	4	9.8	10.3	49.0	10.0	---	---	4.6	3.2	5.7	2.9	---	---	95.5
Sevier	23	5	---	---	0.5	---	---	---	---	---	---	---	---	---	0.5
Sevier	24	4	3.0	6.7	16.8	---	---	---	---	---	---	---	---	---	26.5
Knight coal zone totals			19.0	21.3	82.0	11.5	---	---	5.7	4.5	6.3	2.9	---	---	153.2
Acord Lakes coal zone															
Sevier	22	4	2.8	2.3	6.7	---	---	---	---	0.4	1.4	---	---	---	13.6
Sevier	22	5	0.2	2.6	6.9	---	---	---	---	---	---	---	---	---	9.7
Sevier	23	4	14.7	2.9	1.6	---	0.6	---	1.1	0.8	0.3	---	---	---	22.0
Sevier	23	5	1.4	---	---	---	---	---	0.2	---	---	---	---	---	1.6
Sevier	24	4	1.4	---	---	---	---	---	0.2	---	---	---	---	---	1.6
Acord Lakes coal zone totals			20.5	7.8	15.2	---	0.6	---	1.5	1.2	1.7	---	---	---	48.5
Other coal beds															
Sevier	22	3	---	---	---	---	---	---	0.5	---	---	---	---	---	0.5
Sevier	22	4	10.4	1.3	3.0	---	---	---	3.4	1.2	0.9	---	---	---	20.2
Sevier	22	5	3.6	0.6	10.8	---	---	---	---	---	---	---	---	---	15.0
Sevier	23	3	1.3	0.2	---	---	---	---	0.1	---	---	---	---	---	1.6
Sevier	23	4	51.4	10.7	2.9	---	---	---	10.2	3.2	0.1	---	---	---	78.5
Sevier	24	4	13.7	2.9	1.1	---	---	---	0.9	---	---	---	---	---	18.6
Other coal bed totals			80.4	15.7	17.8	---	---	---	15.1	4.4	1.0	---	---	---	134.4
Grand totals			144.9	65.1	142.7	11.5	0.6	---	33.4	11.4	11.9	2.9	---	---	424.4

EXPLANATION OF COAL SECTIONS

- Sandstone
- Sandstone—Curved line at base indicates erosional surface
- Sandstone, crossbedded
- Sandstone, silty
- Siltstone
- Shale
- Shale, carbonaceous
- Coal
- R — Undescribed rock
- C — Covered
- Altered rock—Burned by natural burning of coal
- Fossil-bearing zone
- Rooted
- Burrowed
- ? — Lithology not described and (or) measured
- Channel sandstone
- B77 — Number of measured section on map and section location. Those with B prefix from Blanchard (1982), S prefix from Spieker (1931)
- 6'1" — Thickness of coal—Shown in feet and inches

Sections not drawn to horizontal scale. Base of sections at top of Star Point Sandstone
Note: To convert feet to meters multiply by 0.3048; to convert inches to centimeters multiply by 2.54

VERTICAL SCALE
METERS FEET

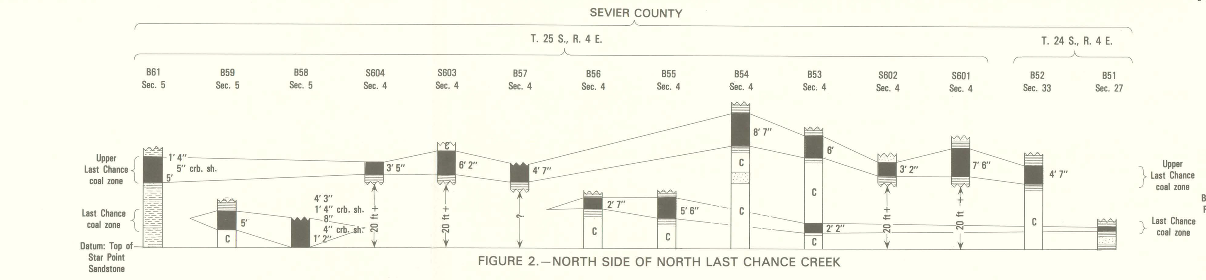


FIGURE 2.—NORTH SIDE OF NORTH LAST CHANCE CREEK

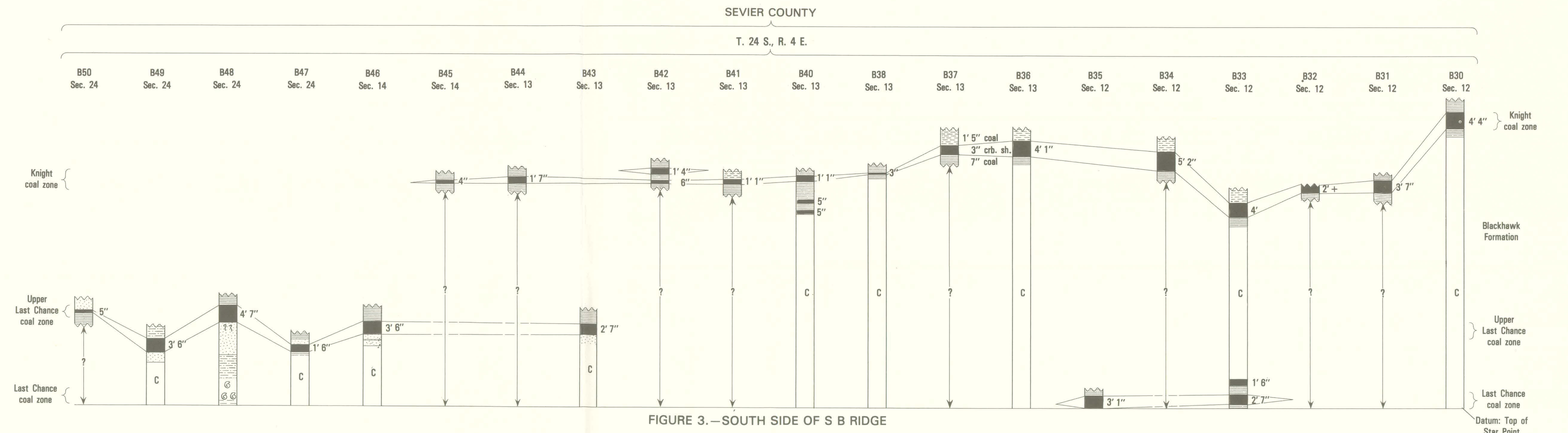


FIGURE 3.—SOUTH SIDE OF S B RIDGE

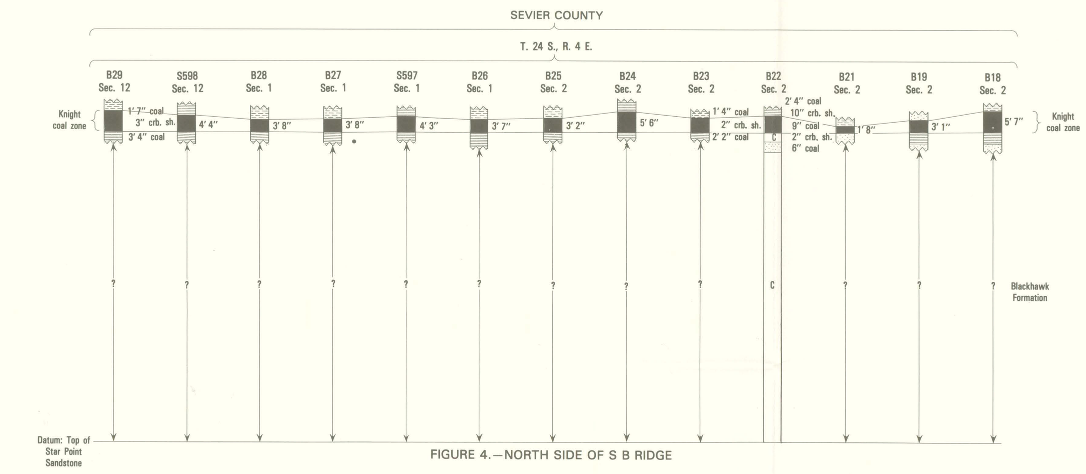


FIGURE 4.—NORTH SIDE OF S B RIDGE

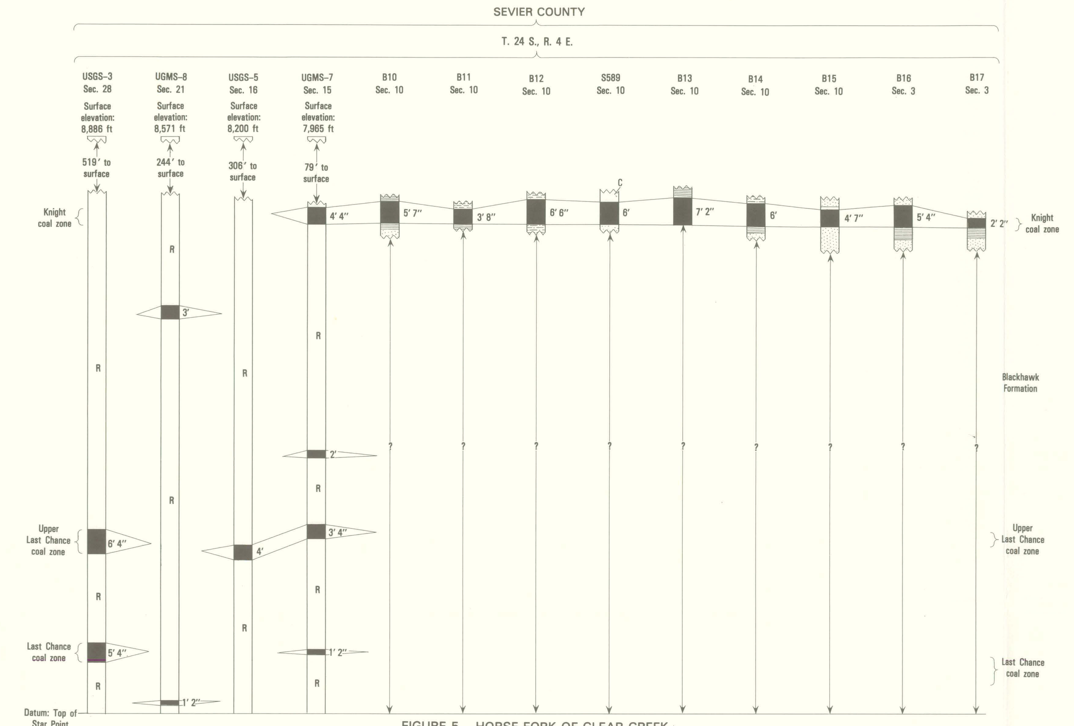


FIGURE 5.—HORSE FORK OF CLEAR CREEK

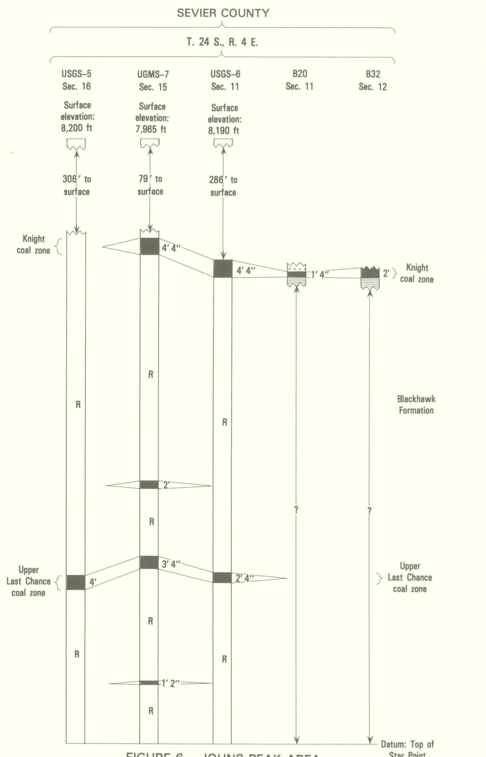


FIGURE 6.—JOHNS PEAK AREA

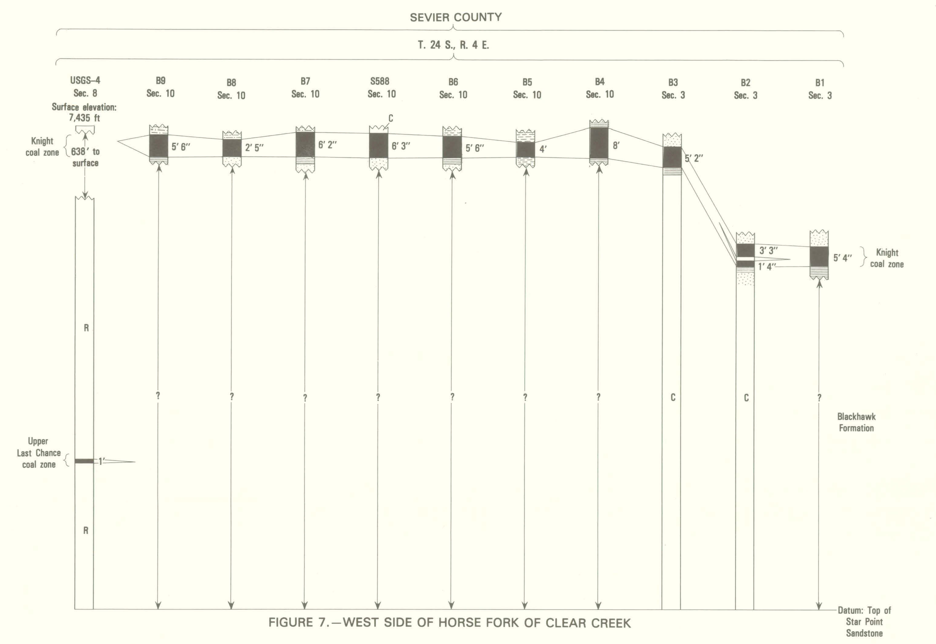


FIGURE 7.—WEST SIDE OF HORSE FORK OF CLEAR CREEK

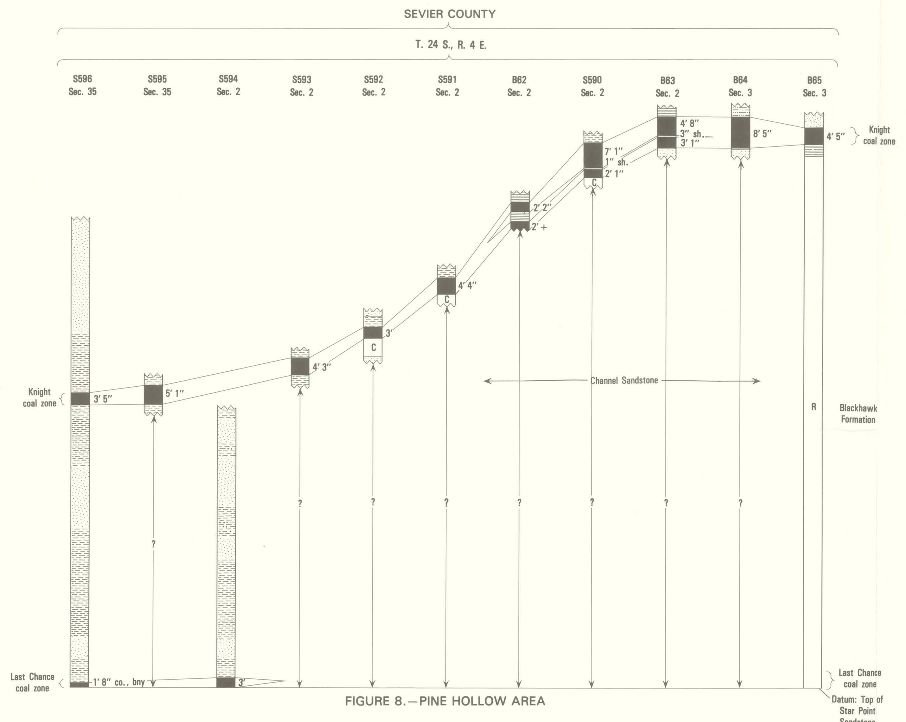


FIGURE 8.—PINE HOLLOW AREA

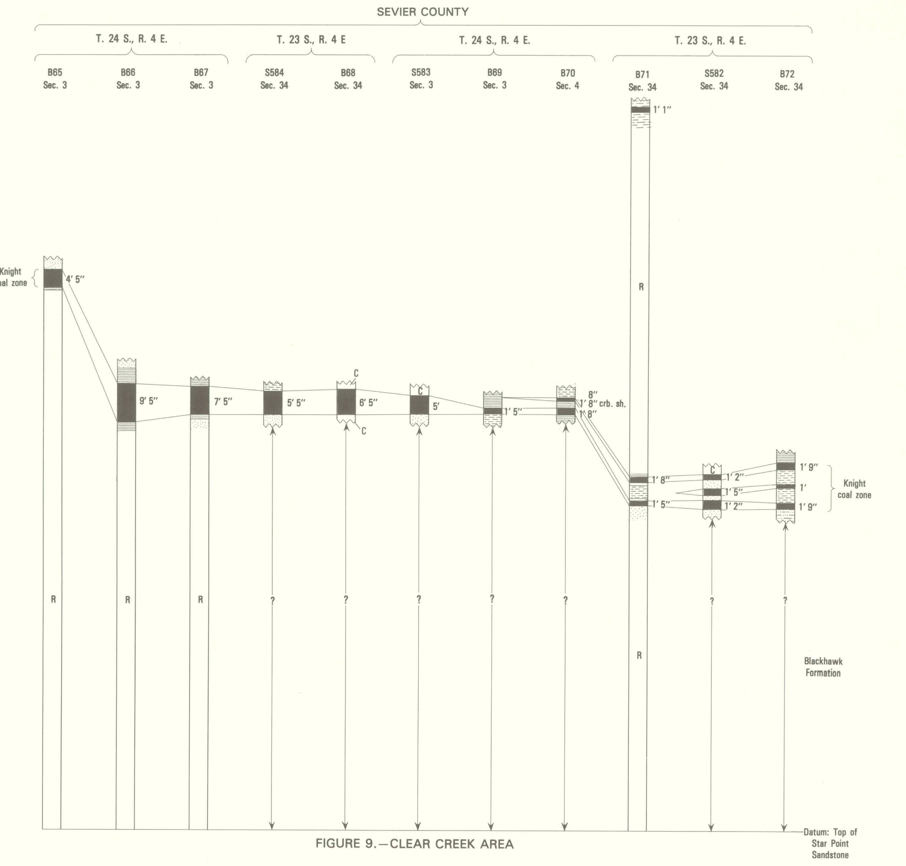


FIGURE 9.—CLEAR CREEK AREA

THICKNESS AND CORRELATION OF COAL BEDS

STRATIGRAPHIC FRAMEWORK AND COAL RESOURCES OF THE UPPER CRETACEOUS BLACKHAWK FORMATION IN THE JOHNS PEAK AND OLD WOMAN PLATEAU AREAS OF THE WASATCH PLATEAU COAL FIELD, SALINA 30' × 60' QUADRANGLE, SEVIER COUNTY, UTAH

By
J. David Sanchez, Louis F. Blanchard, and Lisa L. August

1983

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