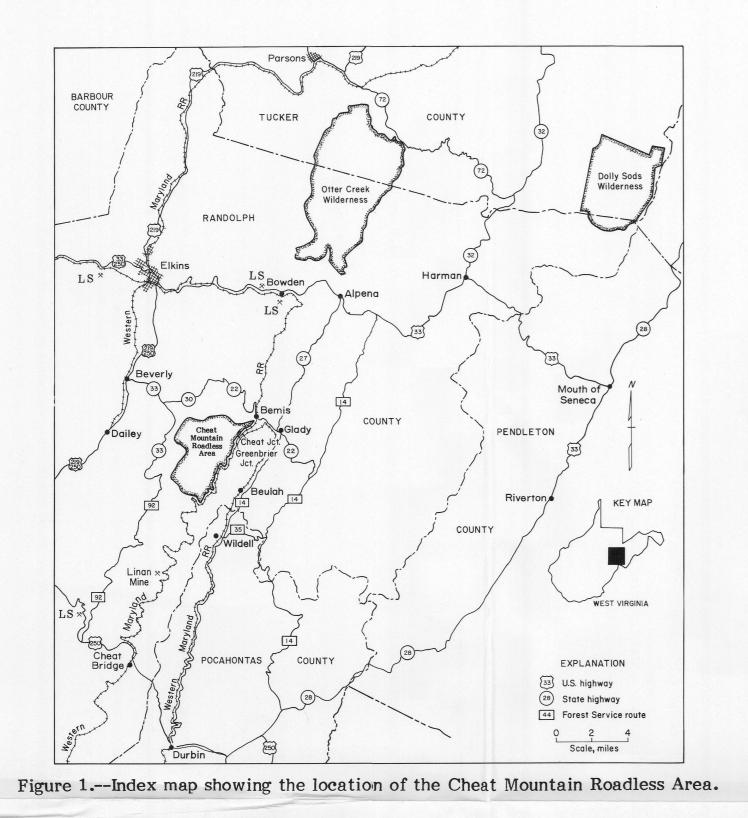
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MAP MF-1271-C



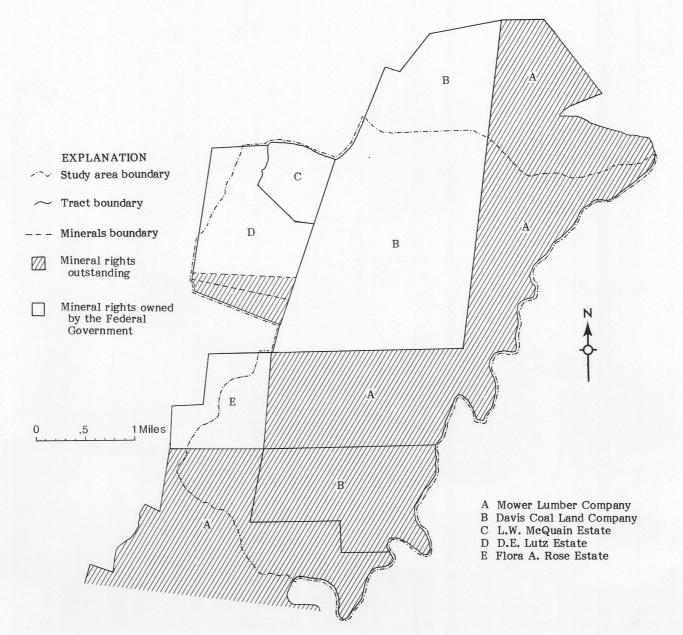
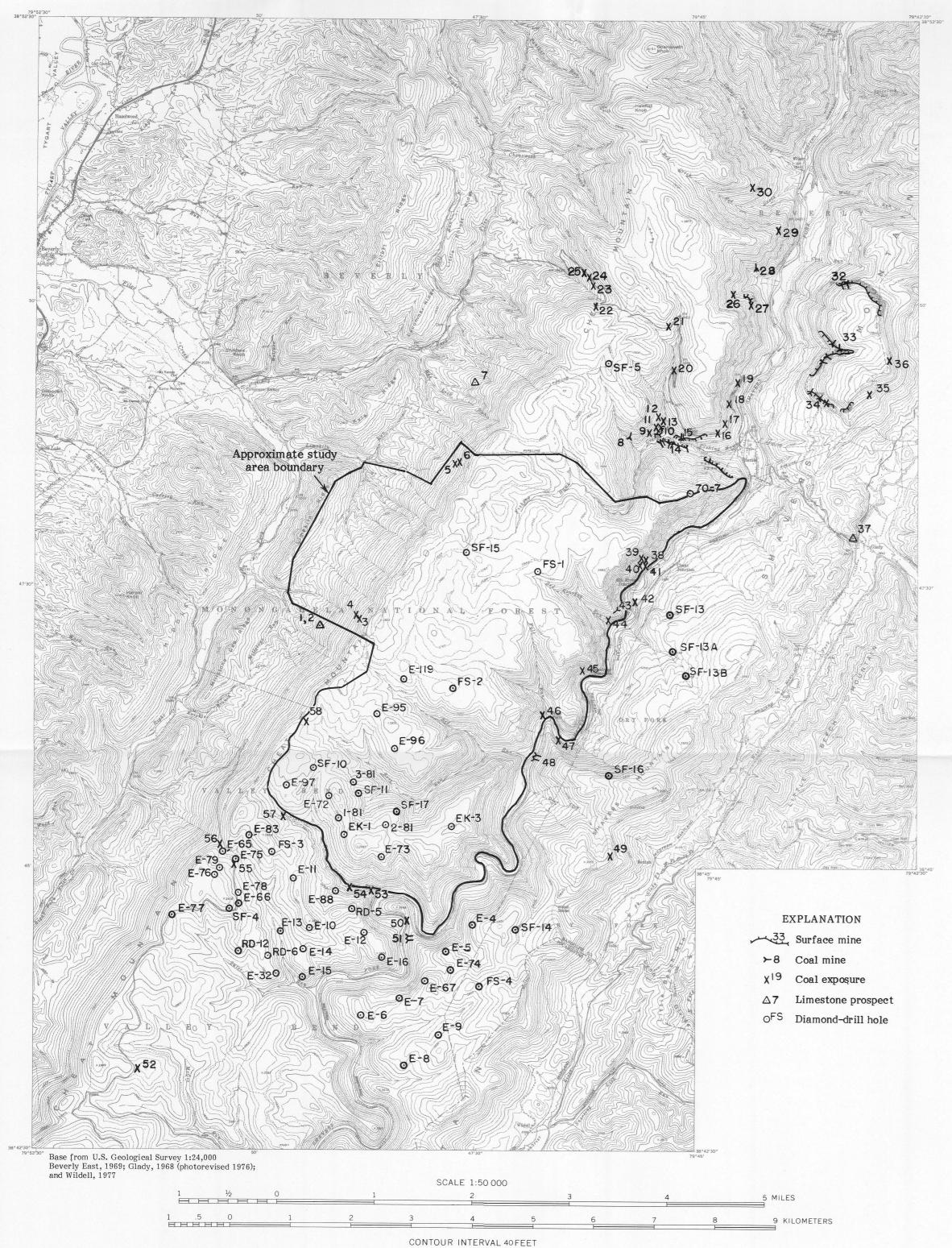


Figure 2.—Surface- and mineral-rights ownership.



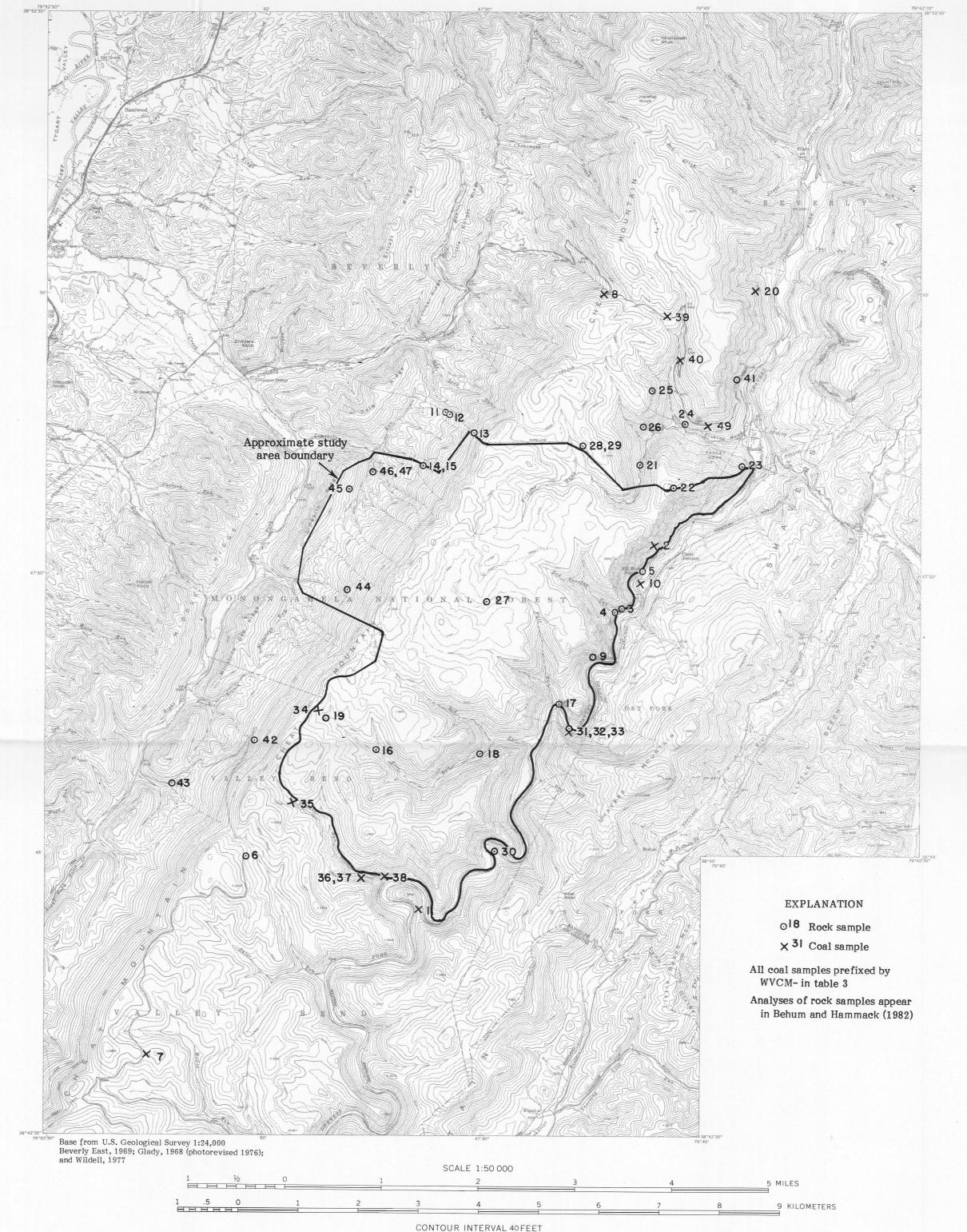


Figure 3.—Mines, quarries, prospects, and exposures.

Figure 4.—Bureau of Mines sample localities.

Figure 3 Location Number	Name	Bed	Development
l 2	G. W. Daniels exposure	Greenbrier Limestone	Limestone robbed from outcrop and burned $^{\mathrm{1}}$
	do Davis Coal Land Co. prospect do	do Sewell(?) coal bed Welch(?) coal bed	do <sup>1</sup> Trench, 3 ft wide by 6 ft long <sup>1</sup> Entirely caved pit <sup>1</sup>
	do	do	$     \begin{array}{c}       \text{do}^1 \\       \text{do}^1     \end{array} $
	do Richard Wamsley exposure	Sewell(?) coal bed Greenbrier Limestone	do <sup>1</sup> None, outcrop exposure <sup>1</sup>
	WVP&P mine, unnamed	C-1 coal bed	Caved mine adit
	Davis Coal Land Co. prospect	Sewell A(?) coal bed	Shallow caved pits <sup>1</sup>
) [	Davis Coal Land Co. No. 2 mine	Sewell(?) coal bed	Three caved adits, two removed by stripping 1
2	Davis Coal Land Co. prospect do	Sewell A(?) coal bed do	Shallow caved pits <sup>1</sup> do <sup>1</sup>
	Davis Coal Land Co. Nos. 3 and 4 mine	Sewell(?) coal bed	Three caved adits, fanhouse, airway, and shed 1
ļ ;	Davis Coal Land Co. prospect Davis Coal Land Co. No. 1 mine	do	Pit, removed by strip mining <sup>1</sup>
5	Davis Coal Land Co. Prospect	do do	Two mine adits partially caved <sup>1</sup> Trench 3 ft long by 3.5 ft wide, caved adit <sup>1</sup>
7	do	do	Trench, 10 ft by 6, ft <sup>1</sup>
	do do	Little Raleigh(?) coal bed Fire Creek(?) coal bed	Roadcut exposure <sup>1</sup>
	do	Hughes Ferry(?) coal bed	Two prospect pits, 4 ft wide by 6 ft long, adit $^{ m I}$ Outcrop exposure in streambed
	do	C coal bed	Roadcut exposure
2	do do	Hughes Ferry(?) coal bed	Trench, 15 ft wide by 10 ft long
	do	Sewell(?) coal bed do	Outcrop exposure in streambed <sup>1</sup> Entirely caved pit <sup>1</sup>
	do	Welch(?) coal bed	$\begin{matrix} do^1 \\ do^1 \end{matrix}$
	Walkers New River Mining Co. prospect Contour strip mine, operator unknown	Sewell(?) coal bed	$do^{1}$
	Walkers New River Mining Co. Big Sewell No. 1 mine	do do	Strip mine cut 600 ft long, 20-30 ft highwall Mine adits, large dump <sup>1</sup>
)	Walkers New River Mining Co. prospect	Sewell B(?) coal bed	Caved prospect pit 1
	do Honnoss Vonna present	Sewell(?) coal bed	do.1
	Harness Kerns prospect T and J Coal Co. mines	do do	do <sup>1</sup> Seven mine adits, contour strip mine
	Hanna-Stout Sewell Coal Co. No. 3 mine	Sewell(?) coal bed	Contour strip, numerous mine adits <sup>2</sup>
	Thompson Coal Co. prospect	do	Prospect adit <sup>1</sup>
	Richard Chaffey prospect do	do do	Prospect pit <sup>1</sup> do <sup>1</sup>
	Globe Realty Co. exposure	Greenbrier Limestone	Outcrop and roadcut exposure <sup>1</sup>
	None, exposed by USBM	Uncorrelated coal bed	Outcrop exposure
	WVP&P prospect do	Welch(?) coal bed Sewell(?) coal bed	Caved prospect pit, 4 ft by 4 ft <sup>1</sup> Entirely caved prospect pit along lumber RR <sup>1</sup>
	do	Fire Creek(?) coal bed	Six caved prospect pits, 4 ft by 4 ft, one caved adit
	None, exposed by USBM	do	Railroad cut exposure
	WVP&P mine, unnamed WVP&P prospect	Sewell(?) coal bed Fire Creek(?) coal bed	Caved mine adit <sup>1</sup> Prospect pit <sup>1</sup>
	Mower Lumber Co. prospect	Sewell(?) coal bed	Prospect pit in exposure in cliff <sup>3</sup>
	do	do	Reclaimed prospect pit <sup>3</sup>
	WVP&P prospect WVP&P, Deer Lick mine	Fire Creek(?) coal bed Sewell(?) coal bed	Railroad cut exposure <sup>1</sup> Caved adits, powderhouse <sup>1</sup>
	Jacob Arbogast prospect	do	Entirely caved prospect pit 1
	WVP&P prospect	Little Raleigh(?) coal bed	Railroad cut exposure.
	WVP&P, Big John mine None, exposed by USBM	Sewell(?) coal bed C coal bed	Two caved mine adits <sup>1</sup> Roadcut exposure
	do	do	Outcrop exposure
	do	Sewell B(?) coal bed	do
	do do	Uncorrelated coal bed	Roadcut exposure
	uo .	Hughes Ferry(?) coal bed	do
	n an ann an am an 18 mar an 18 an an 18 an an 18 an an an an an 18 an 18 a		

Sewell(?) coal bed Hughes Ferry(?) coal bed

Reported by Reger, 1931

Reported by Deurbrouck, 1966
Written commun., Mower Lumber Company, 1980

Mining company and mine name	Years operated	Total Production (short tons)			
Walker Coal Mining Co., Big Sewell #1	1925-1939	354,000			
Walker Coal Mining Co., Big Sewell #2	1938-1948	$346,000^2$			
Davis Coal Land Co., #1, #2, and #3	1928-1935	167,000			
Monsarrat and Co., Inc., Monsarrat #4	1928-1929	33,400			
West Virginia Pulp and Paper, Linan #2	1920-1925	133,000			
Big Bend Coal Co., Linan	1947-1949	78,000			
Linan Coal Co., Linan	1950-1951	29,000			
Tucker County Coal Corp., Linan	1967	4,000			
West Virginia Pulp and Paper, Big John	1923-1924	14,200			
West Virginia Pulp and Paper, Deer Lick	1923-1924	18,100			
Green Smokeless Coal Co., Shaver	1933-1940	319,000			
Glady Sewell Coal Co., Shaver	1941-1942	40,100			
Production of the control of the con	To	tal 1,536,000+			

Sample number	Coal bed	Sample interval (inches)	Condition of sample <sup>2</sup>	13.0	X × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 ×	Carbo	3.4	0. P A P L P L	Carb	1.1	24.2	Sulf 0.6	Calorific value (B.T.U.) 10,975	Fusibility of ash <sup>3</sup> (OF) 2,420 IDT	Sulfa	Pyrit	0.54
WVCM-7	С	42.5	M.F. M.A.F.		31.2 32.5	64.9 67.5	3.9	4.2	75.4 78.4	1.3	14.6	.7	12,614 13,126	2,520 ST 2,600 FT	.02	.02	.62
WVCM-39	Uncorrelated	19.0	A.R. M.F. M.A.F.	9.5	23.3 25.8 29.8	54.9 60.6 70.2	12.3 13.6	5.2 4.6 5.3	66.6 73.6 85.2	1.2 1.3 1.5	13.8 5.9 6.8	1.0 1.1 1.2	11,684 12,910 14,934	2,310 IDT 2,400 ST 2,490 FT	.02 .02 .03	.95 .61 .71	.38 .42 .48
WVCM-35	Hughes Ferry (?)	22.0	A.R. M.F. M.A.F.	21.9	22.6 28.9 34.0	43.8 56.1 66.0	11.7 15.0		==		==	::	8,795 11,265 13,250	2,290 IDT 2,410 ST 2,500 FT	.01	.01	.01
WVCM-34	do.	42.0	A.R. M.F. M.A.F.	21.3	22.6 28.8 35.6	41.0 52.0 64.4	15.1 19.2	5.6 4.1 5.0	47.4 60.2 74.4	0.9 1.1 1.4	30.4 14.6 18.0	0.7 .9 1.1	7,682 9,759 12,072	2,800+IDT 2,800+ST 2,800+FT	.01 .14 .55	.01 .17 .70	.02 .21 .87
WVCM-40	do.	18.5	A.R. M.F. M.A.F.	21.7	21.8 27.9 29.1	53.2 67.9 70.9	3.3 4.2	6.1 4.8 5.0	63.6 81.2 84.7	1.3 1.6 1.7	25.1 7.5 7.8	0.6 .7 .7	11,054 14,117 14,737	2,080 IDT 2,200 ST 2,290 FT	.02	.04	.50 .64 .66
WVCM-8	do.	20.25	A.R M.F. M.A.F.	8.5	23.7 25.9 30.5	53.8 58.8 69.5	14.0 15.3	5.0 4.4 5.7	64.7 70.6 83.4	1.0 1.1 1.3	14.7 7.9 9.3	.6 .6 .7	11,031 12,051 14,235	2,650 IDT 2,760 ST 2,800 FT	.02	.06 .06	.50 .55 .65
WVCM-36	Sewell B (?) <sup>5</sup>	19.0	A.R. M.F. M.A.F.	7.5 	24.3 26.3 30.5	55.6 60.1 69.5	12.6 13.6	5.2 4.7 5.5	68.7 74.3 86.0	1.2 1.3 1.5	10.7 4.3 5.0	1.7 1.9 2.2	12,262 13,260 15,351	2,080 IDT 2,200 ST 2,320 FT	.01	1.48 1.60 1.85	.24 .26 .30
WVCM-37	d o <sup>6</sup>	10.0	A.R. M.F. M.A.F.	8.2	17.9 19.5 38.5	28.5 31.1 61.5	45.4 49.4 			==			6,428 7,001 13,838	2,800 IDT 2,800 ST 2,800 FT	.01 .01	0.26 .28 .56	==
WVCM-20	Sewell (?)	29.0	A.R. M.F. M.A.F.	6.8	21.4 22.9 24.3	66.7 71.6 75.7	5.1 5.5	5.1 4.7 5.0	77.0 82.7 87.4	1.2 1.3 1.4	11.0 5.4 5.7	0.5	13,398 14,376 15,205	2,800+IDT 2,800+ST 2,800+FT	.01 .01	.03 .03 .03	.44 .47 .50
WVCM-38	do.	32.75	A.R. M.F. M.A.F	6.5	20.1 21.5 33.2	40.4 43.2 66.8	33.0 35.3	4.4 3.9 6.1	48.3 51.6 79.8	0.9 .9 1.4	12.0 6.7 10.3	1.4 1.5 2.4	8,511 9,100 14,068	2,510 IDT 2,600 ST 2,680 FT	.01 .01	.93 .99 1.53	.50 .53 .82
WVCM-48	do.	Grab sample	A.R. M.F. M.A.F.	1.3	15.6 15.8 28.1	39.8 40.3 71.9	43.3 43.9						7,821 7,922 14,114	2,800+IDT 2,800+ST 2,800+FT	.01 .01	.03 .03 .05	
WVCM-49	do.	27.0	A.R. M.F. M.A.F.	16.4	20.0 23.9 26.8	54.6 65.4 73.2	9.0 10.7	5.5 4.5 5.0	62.7 75.0 84.0	1.0 1.2 1.3	21.3 8.1 9.0	0.4	10,635 12,721 14,252	2,280 IDT 2,370 ST 2,450 FT	.03 .03 .04	.04 .05 .06	.36 .43 .48
WVCM-1	Little Raleigh (?)	24.0	A.R. M.F. M.A.F.	3.0	21.9 22.6 29.2	53.2 54.9 70.8	21.9 22.5				  		11,372 11,672 15,065	2,800+IDT 2,800+ST 2,800+FT	.01 .01	.07 .07 .09	==
WVCM-31	Fire Creek (?) <sup>7</sup>	16.0	A.R. M.F. M.A.F.	11.8	21.5 24.5 31.3	47.1 53.4 68.7	19.6 22.2	4.6 3.7 4.8	54.5 61.8 79.5	0.7 .8 1.1	20.1 10.9 14.0	.5 .5 .7	9,142 10,360 13,321	==	.02 .02 .03	.09 .10 .13	.37 .42 .54
NVCM-32	do. <sup>8</sup>	16.0	A.R. M.F. M.A.F.	6.7	23.3 25.0 28.7	57.9 62.0 71.3	12.1 13.0		68.8 73.8 84.7	1.0	12.4 6.9 7.9	.8 .8 1.0	11,876 12,724 14,618	2,550 IDT 2,630 ST 2,710 FT	.01 .01	.34 .37 .42	.43 .46 .52
VVCM-2	do.	19.0	A.R. M.F. M.A.F.	3.3	21.1 21.8 27.0	57.0 59.0 73.0	18.6 19.2	4.5 4.3 5.3	67.6 69.9 86.5	1.0 1.1 1.3	7.8 5.0 6.2	0.5	11,768 12,167 15,061	2,800+IDT 2,800+ST 2,800+FT	.01 .01 .01	.06 .06	.46 .48 .59
W C M-10	do.	15.0	A.R. M.F. M.A.F.	20.2	11.8 14.8 18.0	53.6 67.2 82.0	14.4 18.0	==	:-		  		7,799 9,774 11,920	2,800 IDT 2,800 ST 2,800 FT	.01 .01 .01	.10 .12 .15	

Table 3.-- Analyses of coal, Cheat Mountain Roadless Area 1

Sulfur forms<sup>4</sup> (percent)

were collected from either adits, prospects, or exposures. An attempt was made to penetra weathering.

A.R. = as received; M.F. = moisture free; M.A.F. = moisture and ash free.

IDT = initial deformation temperature; ST = softening temperature; FT = fluid temperature.

Atomic absorption analyses
Upper bench at locality 36-37.
Lower bench at locality 36-37.
Upper bench at locality 31-32.
Lower bench at locality 31-32.

# MAPS SHOWING MINES, QUARRIES, PROSPECTS, AND EXPOSURES IN THE CHEAT MOUNTAIN ROADLESS AREA, RANDOLPH COUNTY, WEST VIRGINIA

By
Paul T. Behum and Richard W. Hammack, U.S. Bureau of Mines

#### Studies Related To Wilderness

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral survey of the Cheat Mountain Roadless Area in the Monongahela National Forest, Randolph County, W. Va. The area was designated as a furthur planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

### INTRODUCTION

The Cheat Mountain Roadless Area is in the Greenbrier Ranger District of the Monogahela National Forest, east-central West Virginia. It is located in Randolph County about 10 mi southeast of Elkins, W.Va., and is accessible there via U.S. 219-250 to Beverly, W.Va., and then southeastward along an improved country road (fig. 1). From the east, the study area can be reached via U.S. 33 and by a paved country road that extends from Alpena, W.Va. to the village of Bemis. Unimproved Forest Service roads, abandoned logging railroad grades, and primitive trails provide access by foot or horseback into the interior of the study area. Physiographically, the Cheat Mountain Roadless Area is in the Allegheny Mountain section of the Appalachian Plateaus province and is situated at the eastern edge of the Appalachian coal region. Cheat Mountain, a northeast-trending ridge, is bordered on the west by the right fork of Files Creek and on the east by Shavers Fork and its tributaries. Most of the area occupies an elevated plateau capped by resistant sandstone and conglomerate. Altitudes range from 2,320 ft on Lime Kiln Run to more than 3,900 ft on Cheat Mountain. The topography ranges from relatively flat in the uplands to very steep in the canyons along tributaries of Shavers Fork. The area is heavily forested with vegetation varying from mixed hardwoods on the western slope of Cheat Mountain to thickets of conifers in the uplands. Hemlocks are sparsely interspersed and red spruce, the dominant tree at higher elevations prior to logging in the mid 1920's, is again reforesting upland areas. Rhododendron and laurel flourish in moist protected areas along drainage courses and in coves.

#### SURFACE- AND MINERAL-RIGHTS OWNERSHIP

The Cheat Mountain Roadless Area comprises portions of seven large surface tracts acquired in 1936 under the Weeks Act of 1911. The two largest tracts were purchased from the West Virginia Pulp and Paper Company (WVP&P), a large lumber company. One 3,181-acre tract lies almost entirely within the boundary along the eastern edge and part of a second tract is near the southern boundary (fig. 2). In 1936, two large tracts of 992 and 3,068 acres were purchased from the Davis Coal Land Company. A fifth tract, the 908-acre D.E. Lutz tract, encompasses most of the study area on the west slope of Cheat Mountain. Two smaller tracts of about 292 and 480 acres were acquired from the L.W. McQuain and Flora A. Rose estates.

Mineral rights were retained by the Davis Coal Land Company on the 992-acre tract in the southeastern part of the study area, but the 3,068-acre Davis Coal Land Company tract was acquired "fee simple", thereby passing these mineral rights into U.S. Government ownership in 1936. The mineral rights of were retained for the two WVP&P tracts until August 16, 1975. Prior to this expiration date, however, a 5-year moratorium on mining in the Shavers Fork drainage was enacted beginning September 2, 1973. When this moratorium expired September 2, 1978, the Mower Lumber Company, purchaser of WVP&P's mineral rights on these two tracts, had two years to propose and open mines. The D.E. Lutz tract has mineral rights outstanding in perpetuity to third parties for all mineral rights on 98 acres and for a 3/4 interest in all mineral rights on 110 acres. The remainder of the mineral rights in the study area are owned by the U.S. Government.

Oil and gas leases are retained on Mower Lumber Company tracts by Union Drilling and Columbia Gas.

#### HISTORY OF COAL MINING AND PROSPECTING

Coal prospecting and mining operations in the vicinity of the Cheat Mountain Roadless Area were initially developed in the early 1920's by WVP&P. The coal was used primarily for steam generation to power mills and locomotives, and as domestic fuel for blacksmithing and heating of lumber camps. Prospects and small mines were opened as the lumberrailroad construction progressed down Shavers Fork from the vicinity of Cheat Bridge. During this period, four mines were opened in the Sewell(?) coal bed near the present study area by WVP&P. Known as the Big John, Deer Lick (tables 1 and 2; fig. 2), and Linan No. 1 and No. 2 mines (fig. 1), all four lie on the right-of-way of the former Greenbrier, Cheat, and Elk Railroad (now the Western Maryland Railroad), a subsidiary of WVP&P (fig. 1). The Big John and Deer Lick mines listed production in 1923 and 1924; the Linan No. 2 mine has a much longer period of production (table 2). (Production from Linan No. 1 mine, which is located on the east side of Shavers Fork, was small.) Linan No. 2 operated from 1920 to 1925 with peak production in 1923 and 1924. The mine was inactive until 1947, when it was reopened and operated until 1949 by Big Bend Coal Company. Linan Coal Company took over operations in 1949 and mined coal until 1951 (table 2). Tucker County Coal Corporation reopened Linan No. 2 mine in 1967, but the thinness of the coal bed limited production to only that year and the operation closed in 1972. Enviro Energy, Inc., a subsidiary of Mower Lumber Company, opened a mine in the Hughes Ferry(?) coal bed above the Linan No. 2 mine site (fig.1) in 1980; this was the Enviro No. 2 mine. The Linan No. 2 mine was reopened by Enviro Energy, Inc. in early 1981 as the Enviro No. 3 mine. A loading facility is being built on the east side of Shavers Fork at the Linan No. 1 site. Enviro Energy, Inc. also plans to develop a complex of mines near the mouth of Suter Run (fig. 3) in the near future (Office of Surface Mining, 1981).

Coal production from the Sewell(?) coal bed on Fishinghawk Creek west of Bemis (fig. 1) began in 1928 when Monsarrat and Company and Davis Coal Land Company opened several mines. The Monsarrat No. 4 mine (table 2) only operated as such through 1929, when it was purchased by Davis Coal Land Company and became their No. 3 mine. The Davis Coal Land Company Nos. 1, 2, 3, and 4 mines operated from 1928 through 1935 (tables 1 and 2; fig. 3).

In 1936, Walker Coal Mining Company developed new entries in the

Sewell (?) coal bed between old workings of the Davis Coal Land Company. Coal was produced until 1949, when a multitude of problems forced the mines to close. These included a westward thinning of the coal bed, an inability to maintain dry headings and solid roof when entries were driven south under the left fork of Fishinghawk Creek, and the inability of electrical equipment to sustain a larger operation (Clelland Rhodes, former miner, Bemis, W.Va., oral commun., 1979). Walker Coal Mining Company's Big Sewell No. 1 mine was located on the east slope of Cheat Mountain north of Bemis. This mine began production in 1928 and continued operation until 1939 (table 2), two years after most of the operation had transferred to Fishinghawk Creek mines.

Several mines in the Sewell(?) coal bed were located on Shavers

Mountain northeast of Bemis. One of these, the Shaver Mine, was opened in 1933 and was operated intermittently until 1943 by the Green Smokeless Coal Company and the Glady Sewell Coal Company (table 2). This is now thought to be the Hanna-Stout Sewell Coal Company No. 3 mine (locality 33, fig. 3; table 1).

Except for surface mines on Shavers Mountain (fig. 3), all surface mining operations near the Cheat Mountain Roadless Area were of limited

extent. Small trenches follow the outcrop of the Sewell(?) coal bed along the lower portion of Fishinghawk Creek (fig. 3) and another small cut is located northwest of Bemis (locality 27, fig. 3). No large-scale attempt has

been made to surface mine coal west of Bemis. Most of the surface prospects were opened by WVP&P and others in the 1920's and 30's (table 1; fig. 3). Leaseholders of the Mower Lumber Company developed surface prospects in recent years (localities 45 and 46 fig. 3). Core drilling in the study area and vicinity was initiated by the U.S. Forest Service in 1967 (FS-1 to 4, fig. 3) with additional drilling in 1973 (SF-4, 5, 10, 11, and 13 to 17, fig. 3). Mower Lumber Company drilled core hole 70-7 near the northern boundary in 1970 (fig. 3). Lease holders of Mower Lumber Company, U. S. Steel Resource Development, drilled four core holes near the study area in 1977 (RD-5, 6, 7 and 12, fig. 3) and Enviro Energy, Inc., drilled an additional 30 drill holes north of Suter Run between 1979 and 1981 (E-series drill holes, fig. 3). Elkins and Kelley Lands drilled five holes in the area in 1980 and 1981 to evaluate the coal in their tract (EK-1 and 2 and 1-81, 2-81, and 3-81, fig. 3). U.S. Bureau of Mines investigators located nine coal exposures along roads, railroad cuts, and stream banks during the investigation (table 1; fig.

## HISTORY OF LIMESTONE MINING AND PROSPECTING

The Greenbrier Limestone has been extensively quarried near the Cheat Mountain Roadless Area (fig. 1). North of the study area, near Bowden, numerous quarries have supplied limestone for agricultural use, concrete aggregate, road metal, and railroad ballast. The former Faulkner Quarry of the Monongahela Construction Company was the largest operation, having an underground mine off the main quarry and a crushing and loading facility on a railroad siding at Bowden. Two quarries near Bowden are presently active and furnish stone primarily for road metal. South of the area, the West Virginia Medium Security Prison operated a quarry along Route 250 which produced stone for road metal and some agricultural use.

Limestone prospects were developed where the Greenbrier Limestone is exposed at localities 1, 2, 7, and 37 (fig. 3; Reger, 1931). Some limestone was extracted from these exposures and burned to produce agricultural lime. Figure 4 illustrates the localities of coal, limestone, and other rock samples collected by the U.S. Bureau of Mines. The results of analyses of the coal samples are detailed in table 3. Other analyses are discussed in Englund and others (1983).

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