

SECTION IV

EFFECTS OF MINING ON CURRENT WATERSHED

Conditions

The mining of coal in the Licking Creek Watershed has had certain detrimental environmental, economic and land use effects. The total effect of any land usage is difficult to measure quantitatively since the ideal use of land may or may not have occurred if mining had not interfered with other usage. The most obvious effects of the mining in Licking Creek are the areas of un-reclaimed strip mines, refuse, and acid seeps together with deterioration of natural water supplies. Within the Licking Creek Watershed exist 44 strip mines ranging in size from 1.1 to 193 acres and totaling 2,410 acres. There are five refuse dumps ranging in size from 0.9 to 15 acres and totaling 28.5 acres. The area damaged by stripping and refuse areas total 2,440 acres out of 33,280 acres within the evaluated land or 7.3 percent of available land within the watershed.

Water quality has deteriorated throughout the entire watershed. Practically every stream is affected to some degree and Licking Creek has an average acid loading of 14,000 pounds per day and a sulphate loading 163,000 pounds per day measured at the mouth of Licking Creek.

Active Permits and Abandoned Strip Mines*

Out of a total 33,280 acres within the Licking Creek Watershed, 3,600 acres are currently under active permit. This figure represents 11 percent of the entire watershed acreage.

The active permit areas may be divided into those areas permitted for the extraction of Clarion, Kittanning, or Freeport coal; those permitted to C & K Coal Company, Allison Engineering Company, and those permitted to all other coal operators.

* See Exhibits VIII, IX, X and XI.

The following table shows this breakdown and its relationship to the total watershed area:

TABLE 4-1

MINED AREAS

Total Watershed Area-----	33,280 acres	
Total Permitted Area (Active)-----	3,615.8 acres	
<u>Coal Seam</u>	<u>Amount (Acres)</u>	<u>% of Total Watershed</u>
*Clarion Coal	1,692.1	5.1%
*Kittanning	2,034.1	6.2%
*Freeport	30.0	0.1%
<u>Mining Company</u>		
C & K	2,005.5	6.0%
Allison	1,526.6	4.6%
Others	83.7	0.3%

Inspection of the preceding table shows that 3,615.8 acres of the watershed are not within the limits of Act 443, which applies to mining started prior to January 18, 1968.

Cherry Run Area and Its Tributaries

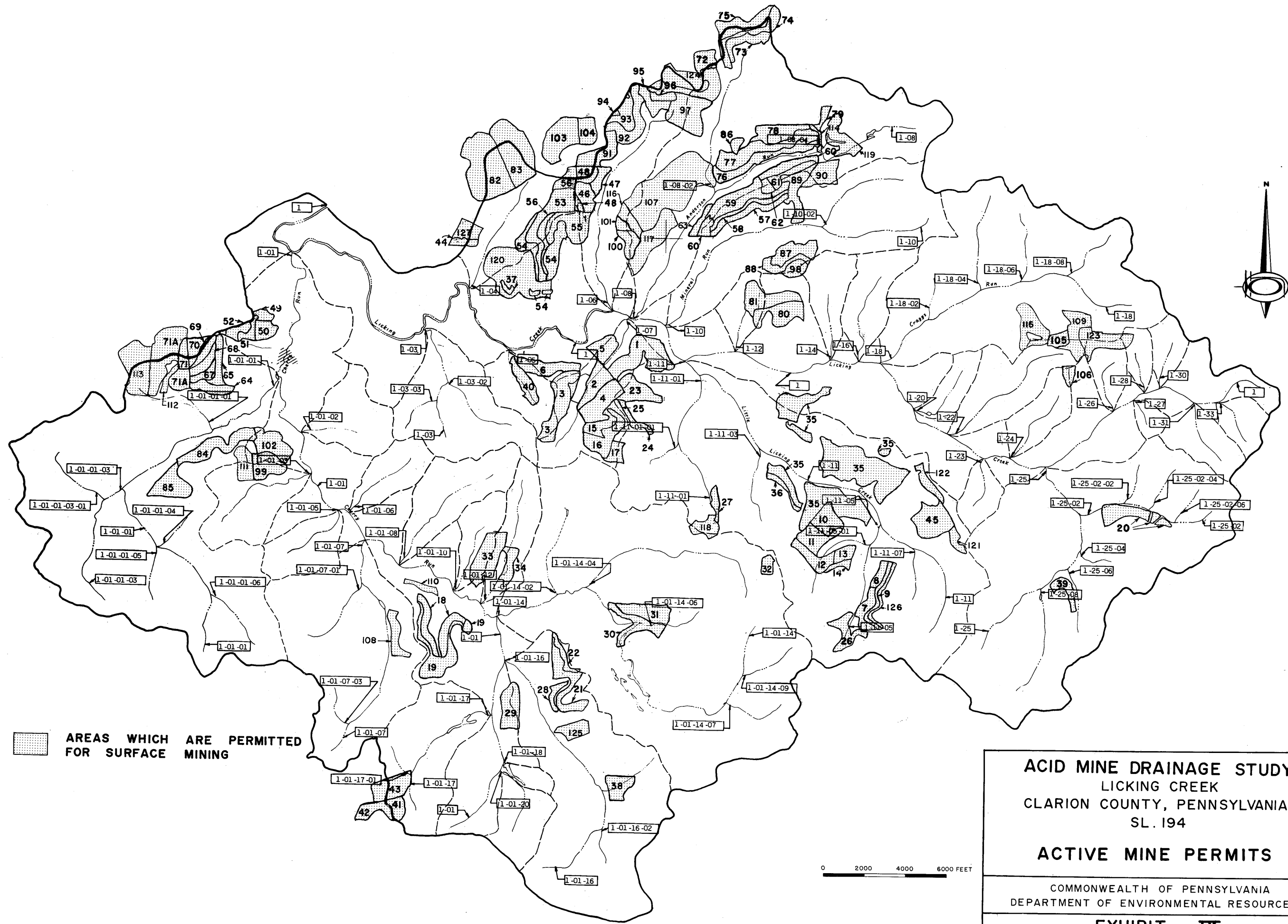
Cherry Run and its tributaries are polluted by drainage from an estimated 951 acres of strip mines located adjacent to the streams. In addition, there are an estimated 25 acres of mine refuse piles located in this area.

Two major seep areas are located on Cherry Run: one adjacent to the Spoil Pile labeled CC located just west of Huey, and one northeast of Huey from what appears to be an abandoned deep mine.

Licking Creek Area

The area immediately adjacent to Licking Creek contains an estimated 340 acres of strip mines. These strippings are believed to form vast recharge areas for contaminated groundwater.

* Totals for permit areas reflected by seam will be greater than total area permitted as some areas are permitted for more than one seam.



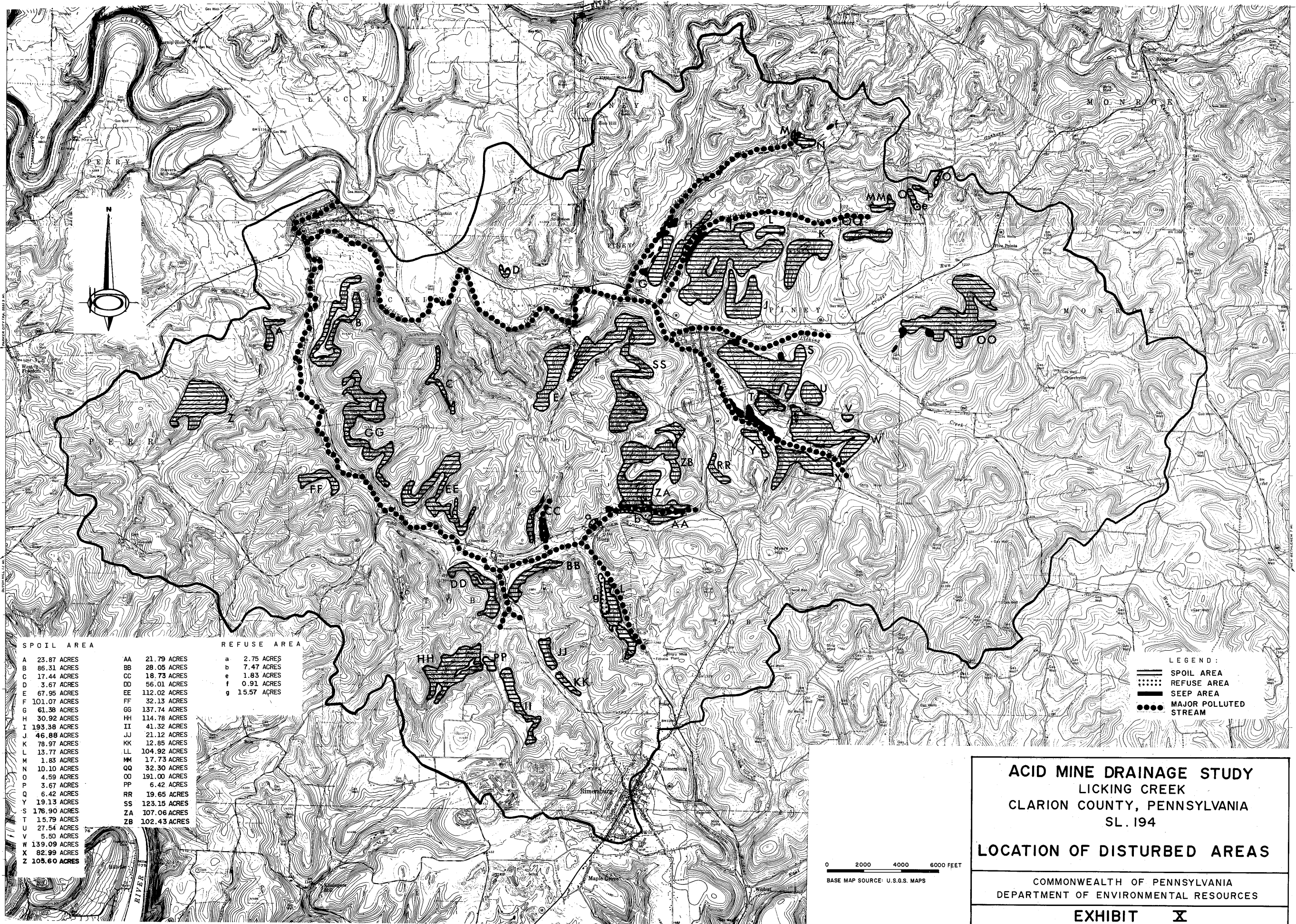

AREAS WHICH ARE PERMITTED FOR SURFACE MINING

ACID MINE DRAINAGE STUDY
 LICKING CREEK
 CLARION COUNTY, PENNSYLVANIA
 SL. 194

ACTIVE MINE PERMITS

COMMONWEALTH OF PENNSYLVANIA
 DEPARTMENT OF ENVIRONMENTAL RESOURCES

EXHIBIT IX



SPOIL AREA		REFUSE AREA	
A	23.87 ACRES	AA	21.79 ACRES
B	86.31 ACRES	BB	28.05 ACRES
C	17.44 ACRES	CC	18.73 ACRES
D	3.67 ACRES	DD	56.01 ACRES
E	67.95 ACRES	EE	112.02 ACRES
F	101.07 ACRES	FF	32.13 ACRES
G	61.38 ACRES	GG	137.74 ACRES
H	30.92 ACRES	HH	114.78 ACRES
I	193.38 ACRES	II	41.32 ACRES
J	46.88 ACRES	JJ	21.12 ACRES
K	78.97 ACRES	KK	12.85 ACRES
L	13.77 ACRES	LL	104.92 ACRES
M	1.83 ACRES	MM	17.73 ACRES
N	10.10 ACRES	OO	32.30 ACRES
O	4.59 ACRES	PP	191.00 ACRES
P	3.67 ACRES	PP	6.42 ACRES
Q	6.42 ACRES	RR	19.65 ACRES
Y	19.13 ACRES	SS	123.15 ACRES
S	176.90 ACRES	ZA	107.06 ACRES
T	15.79 ACRES	ZB	102.43 ACRES
U	27.54 ACRES		
V	5.50 ACRES		
W	139.09 ACRES		
X	82.99 ACRES		
Z	105.60 ACRES		
		a	2.75 ACRES
		b	7.47 ACRES
		e	1.83 ACRES
		f	0.91 ACRES
		g	15.57 ACRES

LEGEND:
 SPOIL AREA
 REFUSE AREA
 SEEP AREA
 MAJOR POLLUTED STREAM

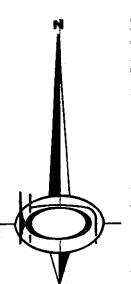
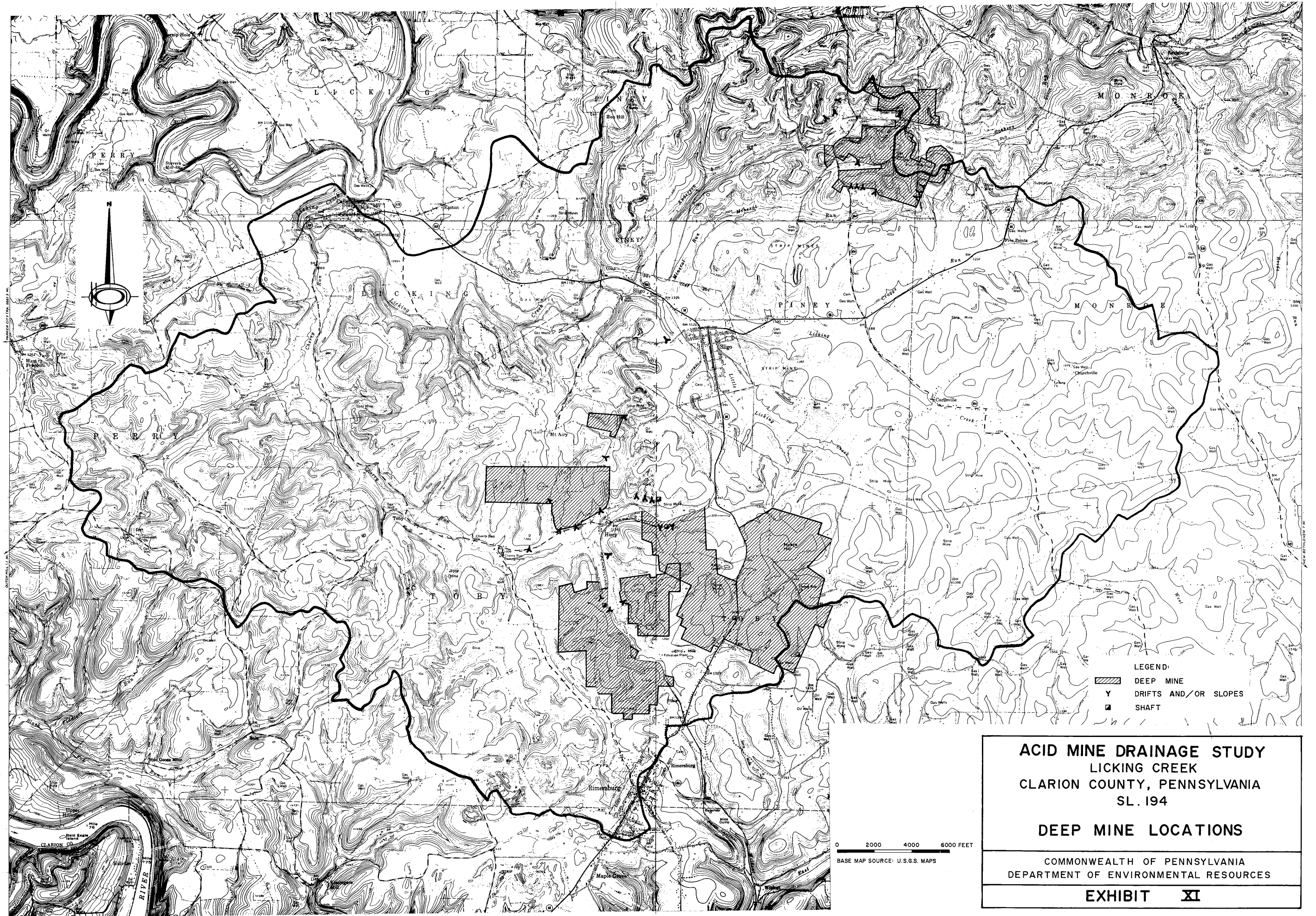
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 BASE MAP SOURCE: U.S.G.S. MAPS




ACID MINE DRAINAGE STUDY
 LICKING CREEK
 CLARION COUNTY, PENNSYLVANIA
 SL 194

LOCATION OF DISTURBED AREAS

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 DEPARTMENT OF ENVIRONMENTAL RESOURCES

EXHIBIT X



- LEGEND:
-  DEEP MINE
 -  DRIFTS AND/OR SLOPES
 -  SHAFT

0 2000 4000 6000 FEET
 BASE MAP SOURCE: U.S.G.S. MAPS

ACID MINE DRAINAGE STUDY
LICKING CREEK
CLARION COUNTY, PENNSYLVANIA
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DEEP MINE LOCATIONS

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EXHIBIT XI

Several seep areas are located on Licking Creek. The most prominent are adjacent to Spoil Pile 5, located just east of Sligo, and Spoil Pile 00, located east of the intersection of Routes 68 and 854.

Anderson Run Area

The Anderson Run Area contains an estimated 85 acres of strippings and one acre of refuse.

This stream is polluted by a large seep area adjacent to Spoil Piles G and H, just northwest of Sligo. Additional percolation and runoff are contributed by Piles M, N and Refuse Pile F in the northern headwater section.

Mineral Run Area

Adjacent to the Mineral Run Area are an estimated 386 acres of strippings and 10 acres of refuse piles.

This stream is polluted by a large seep area adjacent to Spoil Piles I and H, just north of Sligo. Other spoil piles that contribute percolation and runoff are labeled L, K, Q, and R with Refuse Piles c, d, and e.

1-12 Area Unnamed Tributary

Tributary 1-12 is polluted by runoff and percolation from Spoil Piles I and J. These piles cover an estimated 329 acres adjacent to 1-12 and are located just north of Sligo.

Little Licking Creek Area

The area around Little Licking Creek contains an estimated 294 acres of strippings. These strippings are labeled T, U, V, W, X, and Y.

Adjacent to Little Licking Creek are several seep areas near Spoil Piles T, W, and Y, just south of Sligo.