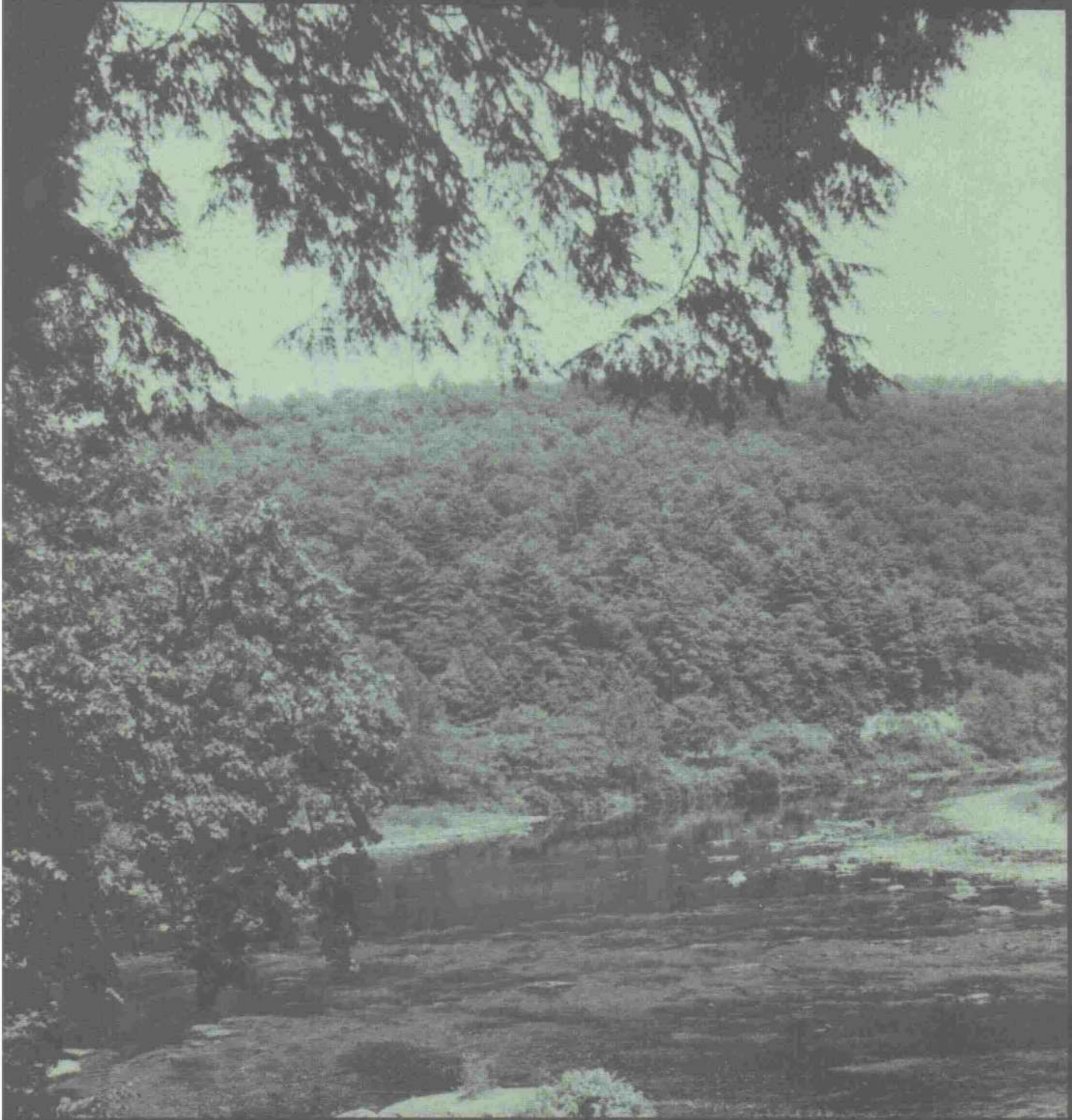


# THE CLARION RIVER - PENNSYLVANIA

A WILD AND SCENIC RIVERS STUDY



As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park and recreational resources.

Indian and territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States now and in the future.



**DEPARTMENT OF THE INTERIOR**  
ROGERS C. B. MORTON, Secretary

**Bureau of Outdoor Recreation**  
G. Douglas Hofe, Jr., Director

903/D-665

CLARION RIVER-PENNSYLVANIA  
WILD AND SCENIC RIVERS STUDY *Center*

REPORT OF THE  
INTERAGENCY FIELD TASK FORCE

MAY 1971

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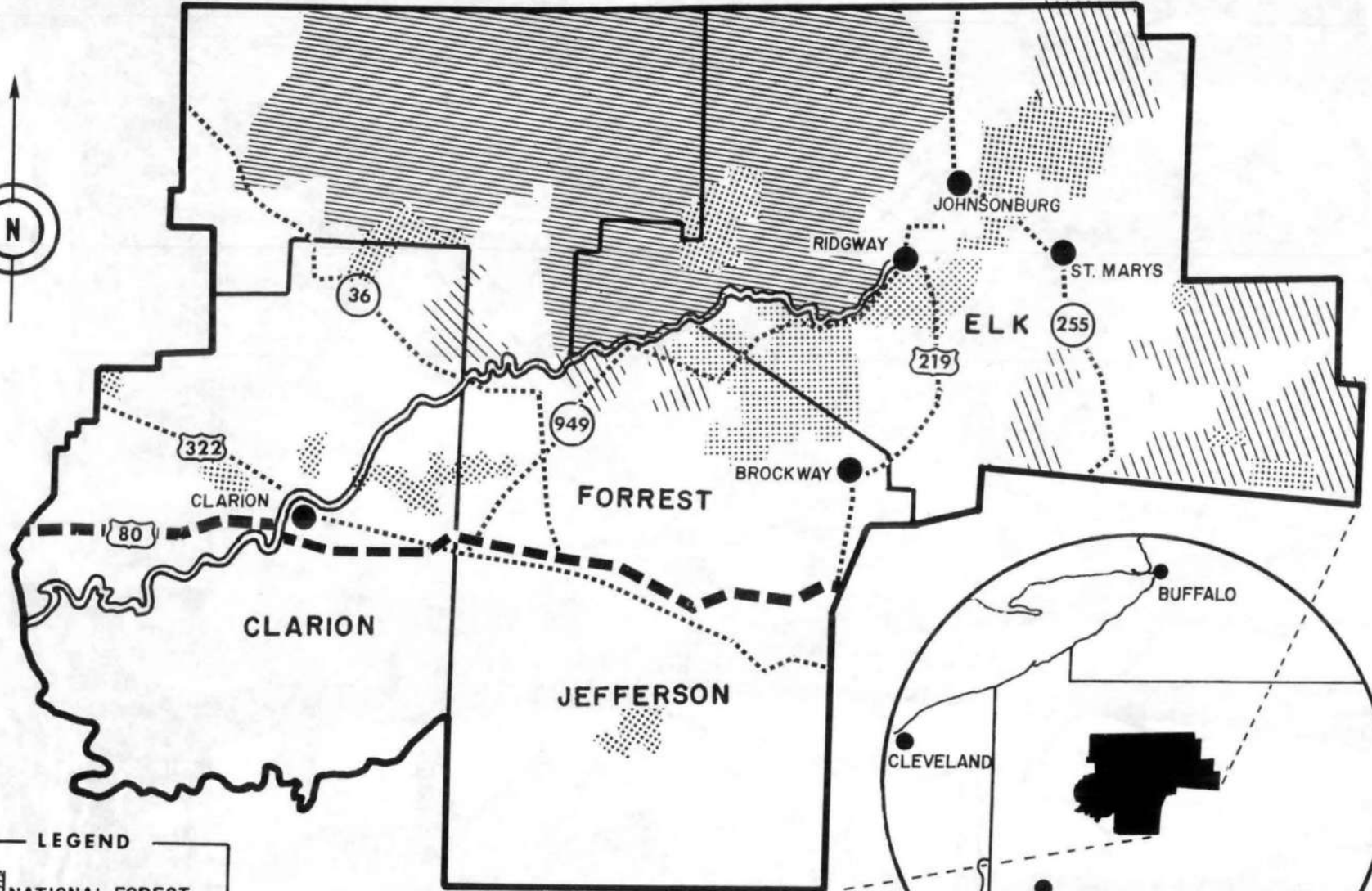
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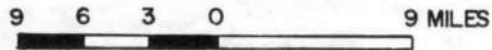




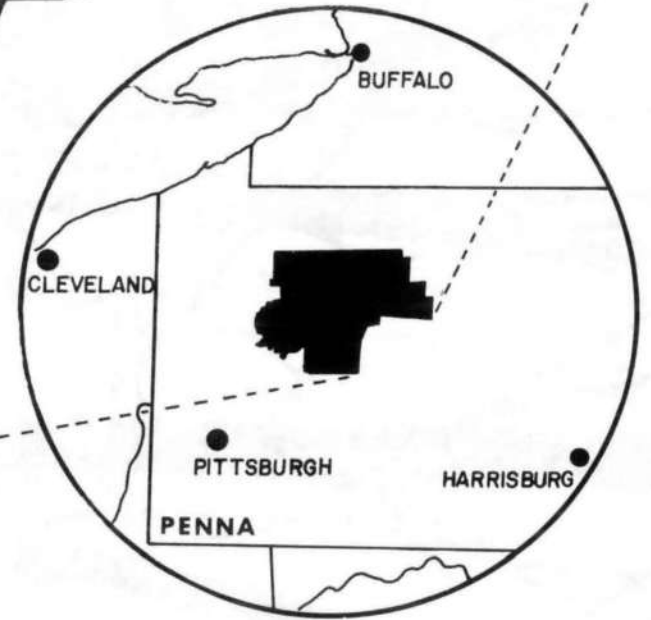
# CLARION RIVER STUDY AREA



## LEGEND



- U.S. ROUTE
- STATE ROUTE



# *Introduction*



## I. INTRODUCTION

This report was prepared under authority contained in Public Law 90-542, the Wild and Scenic Rivers Act, which requires study of the Clarion River from Ridgway, Pennsylvania, to its confluence with the Allegheny River near Foxburg, Pennsylvania, to determine its suitability for inclusion in the National Wild and Scenic River System.

This 90-mile segment of the Clarion River Valley is within or bounded by Elk, Jefferson, Forest and Clarion Counties, which comprise the Study Area.

The Bureau of Outdoor Recreation has led this study on behalf of the Department of the Interior. This report was prepared through the combined efforts of a field task force made up of the following representation:

U. S. Department of Agriculture	Forest Service ✓
U. S. Department of the Army	U.S. Corps of Engineers ✓
U. S. Department of the Interior	Bureau of Outdoor Recreation ✓ National Park Service ✓ Bureau of Sport Fisheries ✓ and Wildlife Bureau of Mines ✓
U. S. Environmental Protection Agency	Water Quality Office* ✓
Commonwealth of Pennsylvania	Governor's Designee

The assistance of other agencies and individuals who contributed to this study is gratefully acknowledged.

\*Formerly Federal Water Quality Administration

## *Summary & Conclusion*

## II. SUMMARY AND CONCLUSION

The 90 miles of the Clarion River from the Borough of Ridgway to its confluence with the Allegheny River has been evaluated in accordance with the requirements of the Wild and Scenic Rivers Act, Public Law 90-542 and the general criteria contained in the "Guidelines for Evaluating Wild, Scenic and Recreational River Areas Proposed for Inclusion in the National Wild and Scenic Rivers System..." published jointly by U. S. Department of the Interior and U.S. Department of Agriculture in February 1970.

### Free-flowing Condition

The 90-mile reach of the Clarion River examined in this report is essentially free-flowing. The upper 53 miles of the study segment are completely free of impoundments and the waters flow smoothly with occasional gentle riffles. The next 12 miles are impounded in a narrow reservoir formed by Piney Dam near Clarion, Pennsylvania. The remaining 25 miles of the river are influenced by the production of hydroelectric power at this dam.

### Volume of Water

During most years the volume of water during the spring and early summer in the Clarion River permits enjoyment of water-related outdoor recreation activities generally associated with comparable rivers. However, during dry years, low flows become a major problem during the late summer and early autumn recreation season. East Branch Dam, the only impoundment upstream from the study segment, is of insufficient influence to remedy low flow conditions. The 25 miles downstream from Piney Dam have limited recreation value due to fluctuations in water volume caused by power releases.

### Aesthetic Character

From the surface of the Clarion River, much of the study area shows little evidence of man's intrusion. The River and its immediate environment have a natural appearance and are generally pleasing to the eye. It flows through a narrow valley bordered by steep slopes covered with a mixture of softwood and hardwood trees. The river adjoins or passes through Cook Forest State Park, Clear Creek State Park and Allegheny National Forest, which are areas possessing considerable natural beauty and are becoming increasingly popular as scenic and recreational attractions. There is an abundance of deer in the area.

However, in other reaches of the study area, there is evidence of past timber exploitation and strip mining detracts in parts of the surrounding countryside. The river bed is crossed at frequent intervals by oil and gas lines and occasional small highway bridges. Road and railroad embankments are visible at points along the upper two-thirds of the river and occasional settlements and industrial plants detract from the natural scene.

#### Water Quality

The variety and extent of pollution in the Clarion, particularly acid mine drainage, severely limits recreation values. The Clarion does not meet the "aesthetics - General Criteria" defined by the National Technical Advisory Committee on Water Quality in the Federal Water Quality Administration's Water Quality Criteria, April 1, 1968, and its water quality does not meet the criteria for fish, other aquatic life and wildlife contained therein. In 1968, prior to enactment of the Wild and Scenic Rivers Act, preliminary studies to determine the natural resource values of the Clarion River Basin led to the conclusion that the values of the Clarion River and its immediate environment were sufficient to merit detailed study and possible protection when an acid mine drainage pollution abatement program is implemented. Pennsylvania has adopted more stringent water quality standards for the Clarion. When these standards are met, including a significant reduction in acid mine drainage, the Clarion would probably support propagation of those forms of life normally adapted to the river.

#### Recreation

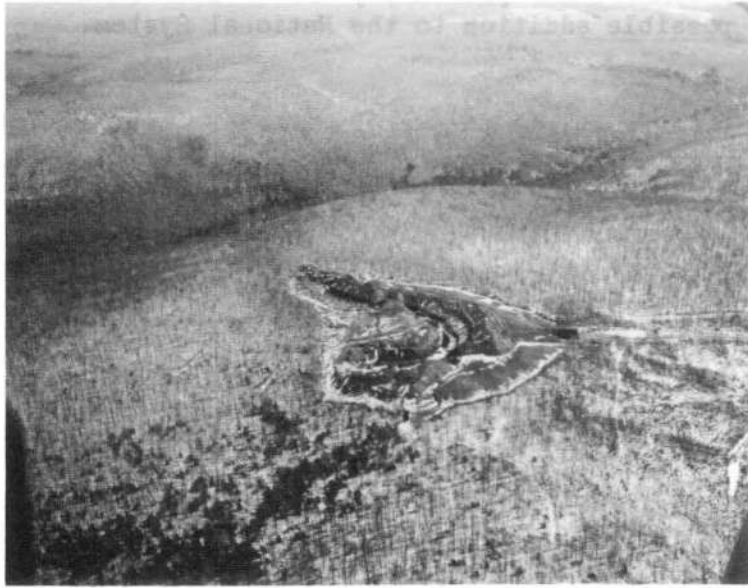
Flow conditions, offensive sights and smells, poor fishing and waters unsafe for water contact recreation, all combine to reduce the value of the available recreation experience on the Clarion River. Were it not for these conditions, the river would be an ideal training and touring course for the canoeist.

Game is abundant in the area and expansion of hunting opportunities should be considered.

Present programs which could improve the environment in the area should be continued, so that recreation along the river corridor may be enhanced. Future consideration should be given to expanding recreational use of the river when pollution abatement programs show positive signs of success.

## Conclusion

When viewed in its entirety, and in consideration of the overall poor water quality, the Clarion River and its immediate environment does not possess the outstandingly remarkable values required for inclusion in the National Rivers System. At such time as the water quality is improved to permit suitable outdoor recreation experiences which are now precluded, the Clarion should be reconsidered for possible addition to the National System.



COAL MINES



# *Influence of Man*

### III. INFLUENCE OF MAN

The rims of the major river valleys in western Pennsylvania were important arteries of prehistoric transportation, along which campsites, hunting stations, rock engravings and other evidence of early man are found. According to preliminary studies in the Clarion River Valley by Dr. G. A. Konitzky of Clarion State College, there is evidence of prehistoric occupation, including sites with accumulated deposits up to two-three feet deep dating back several thousand years. It is believed that nearly every piece of level ground along the banks of the Clarion River has been occupied at one time or another by prehistoric Indians.

Clearly visible traces of more recent Indian life are almost totally lacking. However, there is some evidence of Venango Trail and Pidgeon Path which crossed the Clarion near Cooksburg.

The timber harvesting era in western Pennsylvania peaked between 1830 and 1840. Unattractive to agriculture, the denuded hills were ravaged by fire and erosion. However, the timber is coming back, spurred by better management practices and establishment of Allegheny National Forest in 1923.

The oil rush of the 1870's was productive for several years and then declined until the advent of secondary recovery methods in 1925. Production peaked in 1937 and has been declining since then. Oil is expected to be substantially depleted by the late 1970's.

Natural gas has also been depleted, but the old fields are used today to store gas piped from Texas. A few oil and gas wells are found, notably in Clarion County.

Miners followed the oil boom and in the 19th Century, pig iron destined for the foundaries of Pittsburgh was transported down the Clarion. Only two furnaces, Buchanan and Eagle remain today as reminders of man's activities associated with the iron era in the valley.

Coal mining, which began over a century ago, is still in progress. Clarion and Jefferson Counties which lie in the study area, plus adjacent Clearfield County to the southeast, account for almost half of the state production by the open pit method. Clearfield County leads in the state and Clarion County ranks second. Several billion tons of coal, much of it recoverable by strip mining, is still available for removal.



*The Area Today*

#### IV. THE AREA TODAY

##### Topography

The Clarion Valley is within the dissected Allegheny Plateau, bordered by wooded, broad topped hills from 400 to 700 feet high. Valleys are narrow and steep-sided. Elevations in the area range from 800 to 2,300 feet above mean sea level, but are mostly between 1,000 and 1,700 feet.

##### Climate

The climate is invigorating with its variations in temperature and occasional storms. Winters are cold and snow cover persists through most of the season. Summer days are warm to hot, but nights are generally cool. Winds are westerly and usually moderate. Over the year, 50% of the days are cloudy, 30% are partly cloudy and the remaining 20% are clear. Precipitation totals 40 to 45 inches fairly evenly distributed throughout the year.

##### Forest Cover

Forests which cover about 80% of the four-county region are primarily secondary and tertiary growth hardwoods consisting of oak-hickory and beech-birch-maple forests. Softwoods include white pine, pitch pine and hemlock. Laurel is common, particularly along the water's edge. Today, clearings are primarily for farms, mines, settlements, summer homes and transportation facilities.

##### Transportation

Interstate 80, the Keystone Shortway, crosses the river near Clarion Borough and provides excellent long distance access to the area. More than one-half of the river segment is visible from other roads such as Pennsylvania Route 949 which parallels much of the upper stretch. Most local roads are lightly used and fairly well-screened by underbrush.

Railroads follow the river in several places, but there is no passenger service. Three bus lines serve the area. There are no commercial airports in the four-county study region.

## Population

There are 25 settlements within one mile of the river segment, 19 of which have less than 250 persons each. The four-county study area population is slightly more than 122,000 according to preliminary 1970 census counts. The study area has had outward migration in recent years. However, forty million people live within 250 miles of the Clarion.

## Economy

The economy is based on manufacturing. In the upper basin, economic activity is concentrated in Ridgway, Saint Marys and Johnsonburg where the chief employers are manufacturers of carbon, primary metal products and paper. These three communities contain more than half of the industrial enterprises in the entire Clarion River Basin. In the lower basin, the largest industry is a glass manufacturer located at Clarion.

Employment in mining and agriculture have been declining and the proportion of white collar workers in relation to blue collar workers has increased in recent years. The Pennsylvania State Planning Board anticipates these trends will continue through 1975.

## Public Lands

Public lands make up 24% of the four-county area. The 90-mile river segment is bounded for 18 miles by Allegheny National Forest and for 32 miles by State Parks, Forests and Game Lands. Twenty-six percent of the north bank and 18 percent of the south bank are in public ownership. Management programs of agencies administering these lands are largely responsible for the public recreation opportunities available today.

**PUBLIC OUTDOOR RECREATION AREAS  
WITHIN THE FOUR-COUNTY STUDY AREA**

County	Recreation Land	Land (Acres)	Water (Acres)	TOTAL (Acres)
Elk	Allegheny National Forest	113,404	353	113,757
	East Branch, Clarion R. Res.	1,050	1,050	2,100
	Bendigo State Park	124		124
	Elk State Park	10	2	12
	Elk State Forest	35,283*		35,283*
	Moshannon State Forest	38,000*		38,000*
	State Game Lands No.25	23,136		23,136
	State Game Lands No.28	9,111	32	9,143
	State Game Lands No.34	8,416	29	8,445
	State Game Lands No.44	<u>23,981</u>	<u>14</u>	<u>23,995</u>
	TOTAL:	252,515	1,480	253,995
Jefferson	Clear Creek State Park	1,122	1	1,123
	Kittanning State Forest	9,271		9,271
	State Game Lands No.31	4,119		4,119
	State Game Lands No.54	21,821		21,821
	State Game Lands No.195	1,031		1,031
	State Game Lands No.244	<u>783</u>		<u>783</u>
	TOTAL:	38,147	1	38,148
Forest	Allegheny National Forest	111,116	357	111,473
	Tionesta Reservoir	2,550	500	3,050
	Tionesta Fish Culture Sta.	385	4	389
	Corn Planter State Forest	1,239		1,239
	State Game Lands No.24	<u>8,300</u>		<u>8,300</u>
	TOTAL:	123,590	861	124,431
Clarion	Cook Forest State Park	7,821	1	7,822
	State Game Lands No.63	2,770		2,770
	State Game Lands No.72	2,019		2,019
	State Game Lands No.74	<u>6,043</u>		<u>6,043</u>
	TOTAL:	18,653	1	18,654
	GRAND TOTALS:	432,905	2,343	435,248

\*Estimate

Source: U.S. Department of the Interior, Bureau of Outdoor Recreation,  
Nationwide Inventory — Pennsylvania, 1965.

*The River Today*

## V. THE RIVER TODAY

### Characteristics

The Clarion River ranging about 50 to 200 feet in width, is typically slow moving with a few gentle riffles. The average gradient is 5.7 feet per mile and the river bed is relatively free of large boulders. There are a number of long bends where the river doubles back on its course. The flood plain is either narrow or non-existent and there are no notable islands.

### Water Resource Projects

Piney Dam, a 100-foot high hydroelectric dam built by the Pennsylvania Electric Company in 1922, creates the only impoundment in the study segment. It is located about 25 miles upstream from the river mouth and impounds about 12 miles of slack water with a surface of 690 acres.

The Corps of Engineers has proposed a 288-foot high dam on the Clarion about 5 miles above the mouth near St. Petersburg. If constructed, this dam would create a 30 mile long impoundment with a surface area of 13,600 acres and would inundate Piney Dam. Purposes of the project include flood control, hydroelectric power, and recreation.

Another project proposed by the Corps of Engineers is a 9,000 foot long flood control channeling over one-half of which is in the community of Ridgway. This project has been determined to be a water resource project within the context of the Wild and Scenic Rivers Act. If constructed as proposed, it would have no direct and adverse effect upon the values for which the river might be included in the National Wild and Scenic Rivers System.

### Water Quality

The minimum criteria for inclusion of a river in the National Wild and Scenic Rivers System are those described in Water Quality Criteria for fish, other aquatic life and wildlife recommended by the National Technical Advisory Committee on Water Quality of the Federal Water Pollution Control Administration on April 1, 1968.

Acid mine drainage, industrial wastes and inadequately treated sewage contribute to low water quality in the Clarion River. Of these, acid mine drainage is the most difficult to remedy.

According to samplings conducted by the Pennsylvania Department of Health at Cooksburg and Piney Dam from 1962 to 1969, the study segment alkalinity and dissolved oxygen levels are below the required criteria. During the recreation season, 42% of the samples exceeded turbidity criteria for cold water streams. Solids are present at both locations in sufficient amounts to adversely affect the natural biota. Floating materials of foreign origin and materials that impart odor or taste to fish are also present in various portions of the river.

Continuous acid drainage in excess of minimum criteria enters the Clarion River as far upstream as East Branch Reservoir. Six tributaries contribute most of the continuous acid load and all are more acidic than the main stem. Five of these acid carrying tributaries enter the river in the lower 30 miles. While most of the acid is a result of coal mining activity, additional sizeable acid discharges reach the river from abandoned gas wells in the Licking Creek and Mill Creek watersheds. Elk Creek is an intermittent acid source at the upper end of the study segment. In addition to the serious effects of continuous acid drainage on aquatic life, intermittent quantities produced by natural variations in stream flow cause "slugs" of acid which periodically travel downstream.

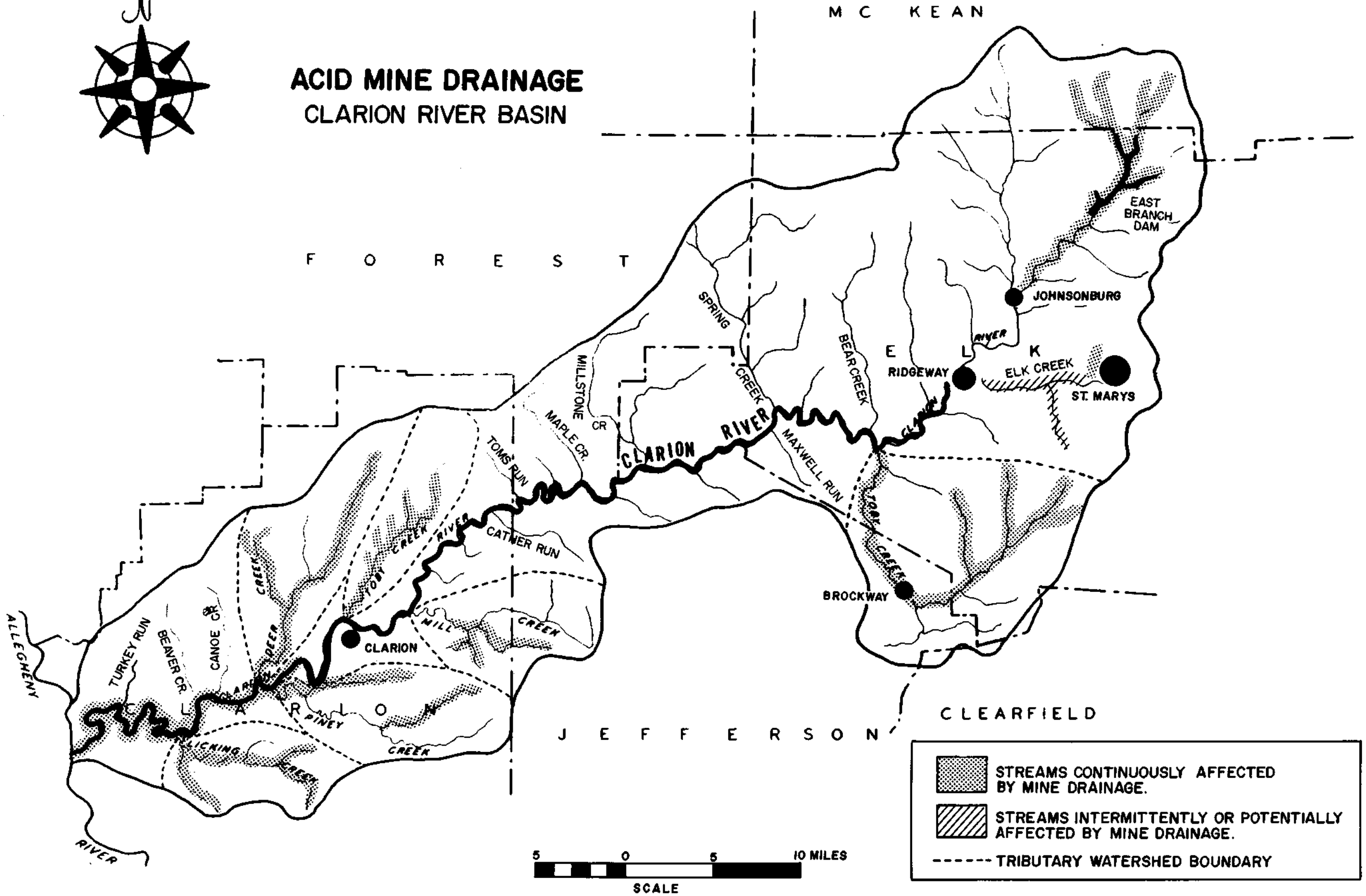
The Pennsylvania Department of Mines and Mineral Industries recommended measures\* for the acid drainage problem in selected areas within the Clarion River Basin include:




1. Removal and burial of all mine refuse piles consisting of acid producing materials to the abandoned strip mine areas.
2. Installation of permanent grout seals at all deep mine openings with the mine workings to the rise and where major discharges of acid water occur.

\*From Development of Water Resources in Appalachia, Main Report, Part III, Project Analyses, U. S. Corps of Engineers, November 1969.



# ACID MINE DRAINAGE CLARION RIVER BASIN



	STREAMS CONTINUOUSLY AFFECTED BY MINE DRAINAGE.
	STREAMS INTERMITTENTLY OR POTENTIALLY AFFECTED BY MINE DRAINAGE.
	TRIBUTARY WATERSHED BOUNDARY



**WATER QUALITY DATA**  
**CLARION RIVER**

STREAM	pH RANGE	AVERAGE OR SAMPLE	AVERAGE NET ACID LOAD (TDS/DND)	ACIDITY mg/l	ALKALINITY mg/l	HARDNESS mg/l	SULFATE mg/l	TOTAL IRON mg/l	MANGANESE mg/l	ALUMINUM mg/l	FLOW (CFS)
West Branch at Wilcox	6.4 to 7.7	6.9	—	0	33	114	16	0.4	—	—	77
East Branch Dam	5.5 to 6.6	6.0	4	14	3	24	96	0.2	0.8	1.0	148
*Johnsonburg	5.6 to 8.8	6.4	—	2	19	71	50	0.4	—	—	262
*Ridgway	—	7.1	—	7	20	46	30	0.6	0.5	1.4	—
*Arroyo	—	6.4	—	12	10	68	55	0.9	1.0	2.0	—
*Below Maxwell Run	—	6.7	—	7	10	62	55	0.6	0.8	1.7	—
*Millstone	—	6.7	—	5	10	51	50	0.6	0.7	1.7	—
*Clairington	—	6.9	—	2	10	47	40	0.5	0.6	1.5	—
Cooksburg	5.7 to 6.7	6.5	—	13	14	86	56	1.1	0.3	3.7	286
*Above Toby Creek	—	6.9	—	20	4	38	50	1.8	1.0	1.7	—
*Piney Dam	—	5.9	—	20	0	54	60	1.3	1.7	2.2	—
*Piney Township	4.5 to 6.4	5.4	—	63	8	86	79	0.7	—	0.6	—
*Cancee Ripple	—	4.8	—	71	0	84	170	3.0	4.6	5.2	—
*Callensburg	—	5.9	—	30	0	74	100	1.5	2.3	2.9	—
*Near Confluence	—	6.2	—	25	3	66	80	1.3	1.8	3.3	—
Confluence	4.1 to 5.3	4.7	63	33	2	114	117	0.7	3.0	4.5	761
<b>TRIBUTARIES OF THE CLARION RIVER</b>											
Little Toby Creek, mouth	3.6 to 4.1	3.9	8	126	0	272	266	0.8	7.8	9.8	29
*Bear Creek, above Little Bear Creek	—	7.4	—	5	10	14	20	0.3	0.3	1.2	—
*Spring Creek, mouth	—	7.3	—	5	10	25	20	0.3	0.1	1.2	—
*Millstone Creek, mouth	—	7.1	—	2	6	21	20	0.6	0.3	1.3	—
*Maple Creek, mouth	—	7.1	—	4	10	17	20	0.3	0.1	1.4	—
*Toms Run, mouth	—	7.2	—	8	4	4	25	0.3	0.3	1.4	—
*Cather Run, N.W. of Ella	—	7.0	—	1	10	21	20	0.3	0.1	1.2	—
Mill Creek, mouth	2.9 to 3.2	3.1	9	280	0	337	385	10.6	26.0	15.0	12
Toby Creek, mouth	2.8 to 3.1	2.9	24	970	0	415	964	10.4	38.0	108.5	10
Piney Creek, mouth	3.4 to 4.0	3.7	10	140	0	289	342	3.1	14.0	12.2	24
Deer Creek, mouth	3.2 to 3.4	3.3	7	134	0	189	281	4.8	8.9	11.6	19
*Cancee Creek, mouth	—	7.2	—	6	5	81	70	1.3	1.7	1.3	—
*Beaver Creek, at Blairs Corners	—	7.1	—	4	14	63	40	0.5	0.3	0.3	—
Licking Creek, mouth	2.6 to 3.1	2.8	8	138	0	297	425	10.7	11.2	6.3	—
*Turkey Run, at Alum Rock	—	6.9	—	6	17	107	75	0.7	0.6	0.8	—

Sources: FWQA averaged data for field season 1966.  
 \*FWQA samples for February 11-12, 1970.  
 • Pennsylvania Dept. of Health averaged data for field season 1962 through 1969.

3. Sealing of mine drifts, slopes, and air shafts with clay or other suitable material where the body of the mine workings lie to the dip.
4. Backfilling and planting abandoned strip mine areas to alleviate runoff and seepage through spoil areas.
5. Planting grass and/or trees on reclaimed strip mining areas to reduce excessive turbidity and oxidation.
6. Constructing diversion ditches and slope drain flumes to direct surface water around or across affected areas.
7. Evaluating results of this abatement program. If acid discharges are still objectionable, additional reclamation measures or treatment plants may be required. With treatment plants, not only is there perpetual maintenance, but lime neutralization yields a highly flocculent hydrate and creates disposal problems.
8. Investigating adequacy of construction measures and perform necessary remedial measures.

The various preliminary cost estimates that have been made for acid drainage abatement in the Clarion River Basin are not directly comparable. However, the more recent ones are summarized as follows:

Pennsylvania has estimated \$60 million will be needed for total Clarion River Basin acid drainage abatement work. This program includes backfilling and burial of refuse on 20,000 acres; surface diversion, sealing and grouting of mines; and construction of five treatment plants.

The Corps of Engineers estimated \$16.7 million will be needed for abatement of selected sources in the six major acid watersheds of the basin. This would include abatement of acid drainage from drift mines, surface mines, refuse piles and oil and gas wells. Land measures for non-acid producing surface mines are also included.

Industrial pollution in the form of pulp and paper mill wastes enters the Clarion River at Johnsonburg, seven miles above the study segment. These wastes are sulfurous in odor and make the river a milky opaque color. During periods of low flow, the river bed may become coated with fiber. According to recent reports, the mill will be converted from a sulfite to a soda process in two or three years. As a result, sulfurous wastes will decrease. However, even with conversion of the mill a large waste lagoon constructed on nearby Dill Hill will remain a problem. From here, sulfurous wastes escape over a weir in a dam built across the channel of Riley Run, a tributary of the Clarion. Depending on the natural drainage flow, these wastes periodically travel the length of the river segment producing suds and some blackening of the river bottom.

Of the other industries in the Clarion Basin, the Pennsylvania Department of Health indicates three carbon plants at St. Marys, a dye plant at Johnsonburg and a dye plant at Ridgway are the only ones capable of producing major pollution. Wastes from these plants receive treatment and adverse effects are confined to the immediate vicinity of the plants. Most of the remaining industries in the basin are small and many are connected to community treatment systems.

The only municipal sewage treatment facilities in the entire Clarion Basin consist of three primary treatment plants serving the communities of St. Marys, Ridgway and Clarion. Consequently, local concentrations of coliform organisms may reach the river from these communities, several villages, smaller settlements and individual dwellings in the study segment. Organisms that digest organic impurities and clean up the water are inhibited by acid. Therefore, coliform bacteria remain for a longer period and extend over greater distances in the acid waters of the Clarion.

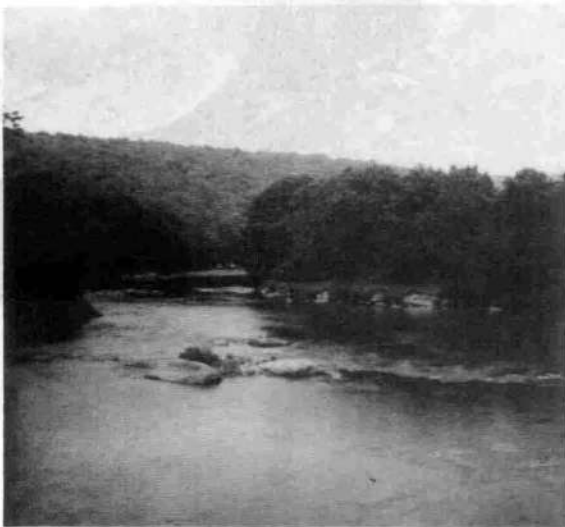
In addition to the previously mentioned minimum criteria for fish, other aquatic life and wildlife, the available water quality data and field observations show that the Clarion River does not meet the minimum aesthetic criteria for inclusion in the National Wild and Scenic Rivers System.

The Pennsylvania Sanitary Water Board adopted more stringent water quality standards for the Clarion on September 17, 1969. When these standards are met, the existence of a normal river ecology would again be possible. However, it has not been determined how long it would be before suitable water quality can be obtained.



PINEY DAM

CLARION RIVER SCENES



TIONESTA SCENIC AREA



## Scenic Values

The natural environment of the Clarion River, although generally pleasing to the eye, is not spectacular. The terrain was formed by erosion of a plateau which produced narrow valleys and hills which crest at or near the same elevation. Being typically steep-sided and forested, the hills restrict views at valley level. Precipitous topography, flat land or other land forms that could add variety to the scenic interest of the area are in short supply.

Most of the hills are wooded with northern mixed forests containing a variety of hardwood and softwood trees. Limited stands of virgin timber can be seen in Cook Forest State Park and Allegheny National Forest. Impressive stands of timber such as these are rare.

The river winds its way through its narrow, timber-clothed valley at a uniform gradient without falls or rapids. There are a few riffles, but flow is generally sluggish. The sight and sound of rushing water are not found, giving an overall impression of silent tranquillity. There are few rocks, islands or other natural features that add variety. Aesthetically, the water is sometimes crystal clear with acid mine drainage and sometimes opaque, sudsy or odorous from industrial wastes and sewage. These conditions, coupled with the scarcity of aquatic life, detract conspicuously from the scenic values and aesthetic pleasure of the outdoors normally expected of a quality river environment.

In summary, with the exception of Allegheny National Forest, Clear Creek State Park and Cook Forest State Park, the Clarion River study segment and its immediate environment does not possess outstandingly remarkable scenic values.



CLEAR CREEK STATE PARK



CLEAR CREEK STATE PARK

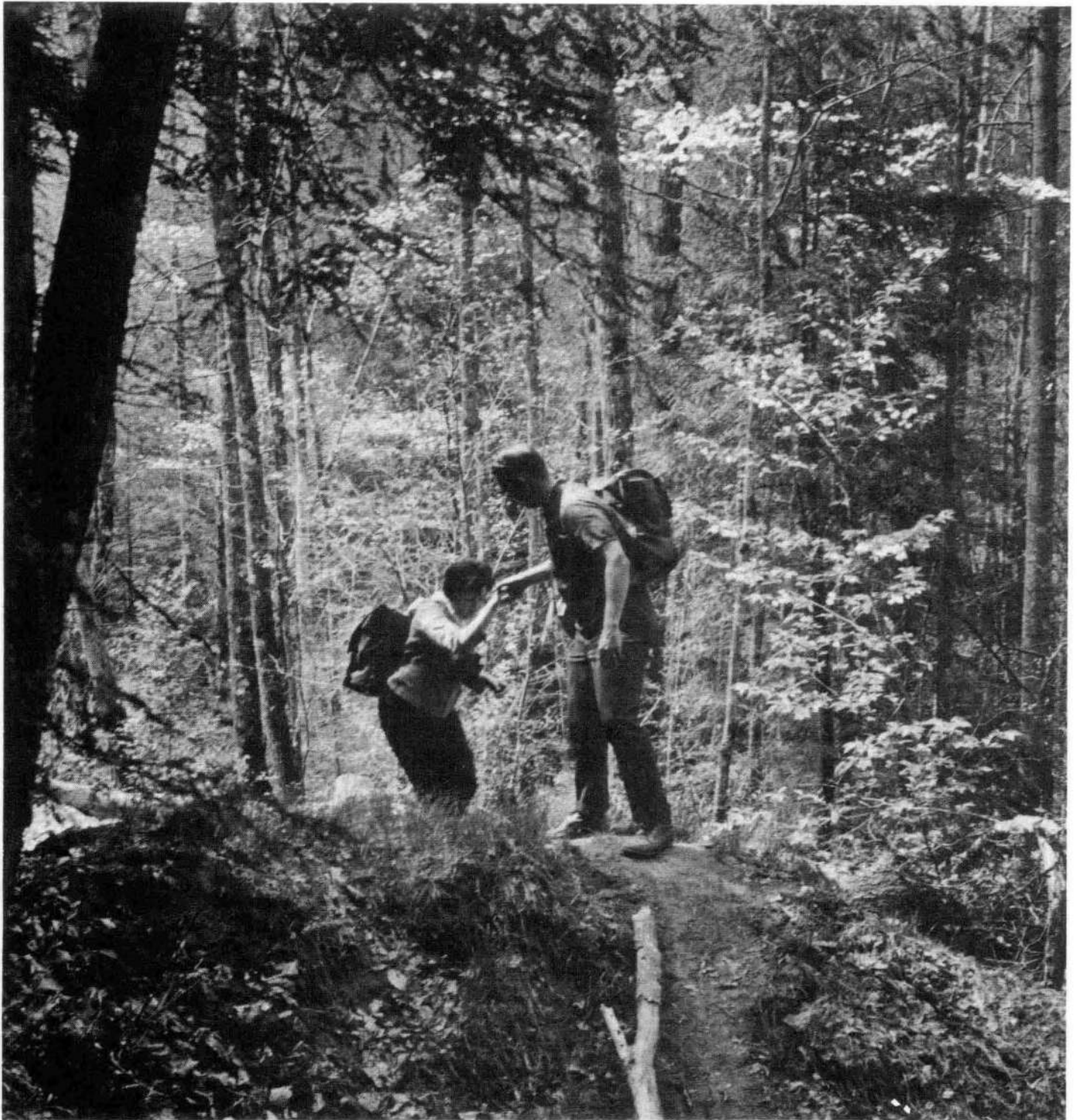




**COOK FOREST STATE PARK**



COOK FOREST STATE PARK



HIKING - ALLEGHENY NATIONAL FOREST

## Recreation Values

In years of normal rainfall, the volume of water in the Clarion River during the recreation season would permit enjoyment of water related outdoor recreation activities generally associated with comparable rivers. One exception is the low flow period in late summer and early autumn. East Branch Reservoir, the only upstream impoundment, is of insufficient influence to remedy this condition. Another exception is the flow variation due to power releases from Piney Dam, which limits recreation opportunities in the lower 25 miles.

During the spring and early summer or after heavy rains most of the Clarion River can accomodate small craft such as canoes, kayaks, johnboats and rubber rafts. Although the river is satisfactory as a canoe stream for beginners, seasoned recreationists would not find it particularly exciting. Aesthetically objectionable sights and smells caused by water pollution reduce the value of the available recreation experience. The aquatic life is not equivalent to that normally found in a similar unpolluted stream. This would disappoint those people expecting to see and enjoy a natural river environment at close range from a small craft. Acid conditions and sewage discharges make the waters unsafe for swimming or other water contact recreation at some locations in the study segment. However, if the water quality is restored, the Clarion would become more suitable for water oriented activity.

The narrow, steep sides and shortage of flat land in the Clarion Valley preclude development of large scale shore facilities. There are suitable sites adjacent to the river for moderate development of launching sites, small water-based campgrounds, trails and support facilities associated with small craft recreation. Potable water and sanitary facilities for recreationists can be expensive because of corrosion and tuberculation, since most ground water sources are polluted by mining activity.

In general, fisheries in the Clarion River are severely limited by poor water quality. From Ridgway to Cooksburg fishery resources are quite limited, primarily due to pulp and paper mill pollution occurring upstream from Ridgway. As these pollutants are diluted and oxidized, the stream improves and supports a moderate fishery in the 20 miles downstream from Cooksburg. Acid mine drainage entering the mainstream from tributaries increases the pollution load and

renders the lower 30 miles of the Clarion unproductive of significant fishery resources. Stocking programs in the past have been mostly a put-and-take. With adequate pollution abatement, however, the Clarion could recover sufficiently to maintain fish populations typical of the region. The main stem would then have smallmouth bass, while the tributaries would support trout.

White-tailed deer are abundant in the area and deer hunting is good. Fur-bearing animals such as muskrat and mink are plentiful. Small game includes grey and red squirrel, snowshoe hare, cottontail rabbit, raccoon, opossum, and ruffed grouse in moderate numbers. Wild turkey populations are on the increase and black bear are hunted in the area. Due to the lack of feeding areas, waterfowl use the Clarion only briefly during migration. Expansion of hunting opportunities on public and private lands should be considered.

Other outdoor recreation activities possible in the area such as nature study or sightseeing appear to be adequately provided for.

In summary, recreation values in the study area are judged to be moderate rather than outstandingly remarkable.



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