WATER QUALITY ASSESSMENT OF INTERSTATE STREAMS IN THE OHIO RIVER BASIN

OHIO RIVER VALLEY WATER SANITATION COMMISSION

CINCINNATI, OHIO

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INTRODUCTION

The Ohio River Valley Water Sanitation Commission (ORSANCO) is an interstate agency whose major charge is the control and abatement of water pollution in the Ohio River Valley. ORSANCO was created and draws its authority from the Ohio River Valley Water Sanitation Compact, which was approved by the United States Congress in 1936 and signed by the governors of the states of Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia in 1948.

Although the concept of nonpoint source pollution did not exist when the Compact was signed, the document provides a mechanism by which ORSANCO can address the issue from a basin-wide perspective. Article 1 of the Compact states "Each of the signatory states pledges...faithful cooperation in the control of future pollution in and abatement of existing pollution from the rivers, streams and water in the Ohio River basin which flows through, into or border upon any of such signatory States..." The guiding principle of the compact, as stated in Article VI, is that pollution originating within a signatory State shall not injuriously affect the various uses of the interstate waters in the basin.

The following report identifies the quality of water and aquatic life of all interstate streams located within the Compact district. The data used for this assessment were taken from the basin states' 1994 305(b) water quality assessment reports.[1] A discussion of those streams located in the Tennessee River Valley portion of the Ohio River basin, and therefore outside of the Compact district, is not included in this report. The purpose of this document is to bring any problems existing in these streams to the forefront so that the appropriate pollution control agencies and organizations in the neighboring states can address the problems in a cooperative and more effective manner.

This report provides detailed water quality information on a stream by stream basis. A report providing a broader perspective of water quality in the Ohio River Basin was developed by ORSANCO and the Tennessee Valley Authority. This can be found in U.S. EPA's *The Quality of Our Nation's Water:1994* (see Section II, "Basinwide Survey: Ohio and Tennessee River Valley".

RATING WATER QUALITY CONDITIONS IN THE BASIN

In their 305(b) reports, the states rate water quality conditions by comparing water quality data and narrative information with water quality criteria established by the states. Water quality criteria define conditions that must be met to support designated beneficial uses. Each state is responsible for assigning uses to each of the waterbodies within its borders. At a minimum, the Clean Water Act requires that the states designate their waters for uses that protect aquatic life and contact recreation (i.e., swimming).

The U.S. Environmental Protection Agency encourages the states to use the following use support categories for rating water quality

[1] *Water quality data for West Virginia was gathered from the state's 1992 Waterbody System database.*

conditions in their rivers, streams and lakes:

- Fully supporting - water quality meets the criteria for designated uses
- Threatened - water quality currently meets designated use criteria, but may not in the future
- Partially supporting - water quality occasionally fails to meet designated use criteria
- not supporting - water quality frequently fails to meet designated use criteria.

It is important to keep the above definitions in mind when reading this document. Throughout this report there are several references to streams either fully, partially or not supporting a particular designated use, such as aquatic life or contact recreation. If a stream "does not support aquatic life," for example, this means that the criteria for aquatic life are frequently exceeded in the stream. It *does not* mean that the stream in question is devoid of aquatic life.

It is also important to note that the assessment procedures used differ from state to state. For example, while one state may base use support assessments primarily on biological data, a neighboring state may rely more heavily on physical and chemical data. As a result, inconsistencies do exist in use assessments from one state to the next.

ALLEGHENY RIVER BASIN (New York - Pennsylvania Border)

All streams, rivers and lakes which cross the New York-Pennsylvania state border are located within the Allegheny River basin. This report addresses those border streams which are included in the U.S Geological Survey's Reach File 1 stream database. Figure 1 illustrates the basin's border streams listed below:

1. Allegheny River
2. Brokenstraw Creek
3. Conewango Creek
4. French Creek
5. French Creek, West Branch
6. Honeoye Creek
7. Little Brokenstraw Creek
8. Little Gennessee Creek
9. Oswayo Creek
10. Stillwater Creek
11. Tunungwant Creek

The **Allegheny River** itself originates in north-central Potter County, Pennsylvania, flows northwest into New York, turns southwest and re-enters Pennsylvania. From its headwaters, the Allegheny flows 325 miles to its mouth in Pittsburgh, where it joins the Monongahela River to form the Ohio River. Pennsylvania reported no water quality problems on the upper Allegheny River in its 1994 305(b) report. The only problems reported by the state were well downstream of the state border, including 1.5 stream miles in Perry Township impaired due to mining activities and a fish consumption advisory on the lower 14.5 miles of the Allegheny. The advisory lists carp and catfish as unsafe to eat because of contamination from PCBs and chlordane. Information was also

FIGURE 1: OHIO RIVER BASIN INTERSTATE STREAMS
Allegheny River Basin

provided for the **Allegheny Reservoir** (also called Kinzua Lake), which is located on the New York-Pennsylvania border. The majority of the lake (12,100 acres) is located in Pennsylvania. This portion has been classified as mesotrophic (borderline eutrophic) using Carlson's Trophic Status Index, which is based on mean values calculated for phosphorus, chlorophyll and Secchi disk readings. The lake has not been classified as impaired or threatened. No data for the Allegheny Reservoir were available from New York.

New York conducted an intensive survey in the Allegheny River basin in 1989-90 as part of its Rotating Intensive Basin Studies. Three sampling sites were located on interstate streams, including the Allegheny River at Salamanca and at Mill Grove, and Conewango Creek at Kennedy. Upstream of the Allegheny Reservoir at Salamanca, the river's water was good. Further upstream, just across the state line at Mill Grove, the river is rated as fair. Identified problems at this site are the presence of PCBs in macro-invertebrate tissue and several pollutants in the water column.

Aquatic life in the lower 45 miles of **Conewango Creek** were listed as "stressed" in the New York's 1994 305(b) report. As defined by the New York Department of Environmental Conservation (NY DEC), a water body is stressed when a water quality problem is evident, but impairment is not clearly demonstrated. The entire Conewango Creek corridor and associated tributaries are located in a highly intensive agricultural area. Excessive siltation and algal accumulation is often evident, indicating erosion and nutrient runoff in the watershed. Dairy farms, sand and gravel extraction, streambank erosion and channelization in the watershed result in sedimentation of the spawning areas of Conewango main stem.

Both states identify problems in **Tunungwant Creek**, which begins in Bradford, PA and enters the Allegheny River upstream of Salamanca, NY. Aquatic life use of the 6.5 stream miles located in New York is listed as "impaired," meaning that the use may be supported, but at a level significantly less than is possible. The 2.5 miles in Pennsylvania are listed as not supporting due to pollutants from industrial point sources. Oil sheens and occasional fish kills resulting from oil field discharges and chemical spills reportedly impair fish survival in the creek.

Of the remaining interstate streams, use support assessment data were available for Brokenstraw Creek, French Creek, Little Genessee Creek and the Stillwater River. French Creek data were available from both states, while information for the remaining streams were presented in New York's 1994 305(b) report only. Information was not presented in either states' 305(b) report for the West Branch of French Creek, Honeoye Creek or Oswayo Creek.

The **Brokenstraw Creek** watershed is primarily agricultural. Typical water quality problems found here include sedimentation from row crops and streambank erosion from disturbed stream banks. Manure spreading contributes to the problem when manure spread in the winter months is washed from the fields with the spring snow melt. The stream has been classified as stressed by NY DEC.

The New York portion of the **French Creek** watershed is also primarily agricultural, and has the largest cattle population in Chautauqua County. Fish propagation and survival in all 50 miles of French Creek within the state have been classified as stressed by NY DEC. Siltation and thermal changes caused by agriculture are listed as the primary problems in the main stem of the creek.

Also identified by NY DEC as stressed are **Little Genessee Creek** and the lower **Stillwater River**. Oil and grease from numerous oil field discharges are the principal pollutants of concern in Little Genessee Creek, while thermal changes and sedimentation from agricultural activities impact the Stillwater River from the Pennsylvania state line to its confluence with Conewango Creek.

Table 1: Water Quality of Interstate Streams - Allegheny River Basin

Stream	State	Miles Assessed	Aquatic Life Use Support	Primary Concern
Allegheny River	PA/NY	---	Full Support	No impairment upstream of Perry Twp. (PA)
Kinzua Lake	PA	12,100 acres	Full Support	
Brokenstraw Cr.	NY	10	Stressed*	Siltation
Conewango Cr.	NY	45	Stressed*	Siltation/Algae
Tunungwant Cr.	NY	6.5	Impaired*	Oil and Grease
	PA	2.5	Non-support	Industrial Sources
French Cr.	NY	50	Stressed*	Siltation/Thermal
L. Genessee Cr.	NY	5.4	Stressed*	Oil and Grease
Stillwater Cr.	NY	20	Stressed*	Siltation/Thermal

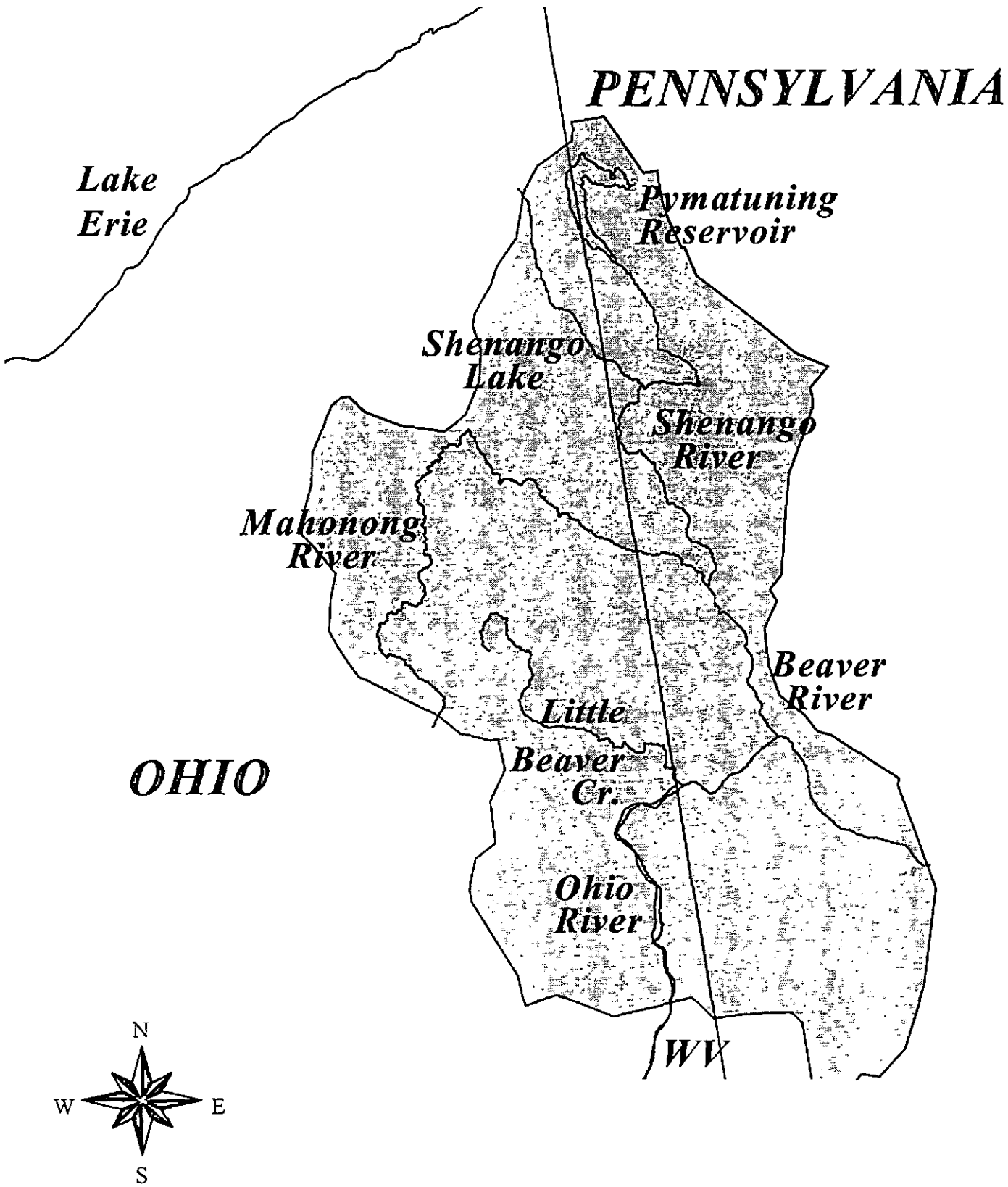
** - For NY assessments, "stressed" is approx. equivalent to "partial/minor" impairment; "impaired" is equivalent to "partial/moderate" impairment.*

BEAVER/OHIO RIVER BASINS (Pennsylvania - Ohio Border)

Although only two streams and two lakes cross the border of Ohio and Pennsylvania, the majority of the water bodies are significant in size. Those border streams and lakes listed by USGS in its RF1 Stream database include Little Beaver Creek, the Mahoning River, Pymatuning Reservoir and Shenango River Lake (Figure 2).

While **Little Beaver Creek** is technically an interstate stream, the vast majority of the creek is located in Ohio. Its confluence with the Ohio River is located in Pennsylvania just upstream of the state line and East Liverpool, OH. Two smaller tributaries, Brush Run and the North Fork of Little Beaver Creek, are primarily located in Pennsylvania. Pennsylvania reports six miles of the North Fork as not supporting aquatic life due to natural causes. Approximately eight miles of Brush Run are classified as not supporting due to resource extraction activities. No data are

FIGURE 2: OHIO RIVER BASIN INTERSTATE STREAMS
Beaver/Ohio River Basins



available for the short stretch of Little Beaver Creek located in Pennsylvania. Ohio EPA classifies the creek as fully supporting along its 16 miles from Middle Fork to the Pennsylvania state line; however, there is a fish consumption advisory on the Middle Fork for all fish. Contaminants of concern are chlordane and Mirex.

Lake Milton represents the headwaters of the **Mahoning River**. From here, the river flows north for a short distance, then turns southeast and flows through the cities of Warren and Youngstown, OH before crossing the state line. The Mahoning joins the Shenango River south of New Castle, PA, forming the Beaver River. Ohio EPA classifies the lower 34 miles of the river as not supporting aquatic life, while Pennsylvania DEP also rates 11 miles as not supporting. Pollutants of primary concern in the lower reaches are metals, other inorganic compounds and organic enrichment (resulting in low dissolved oxygen levels). Municipal and industrial point sources are listed as major pollutant contributors in both states. Combined sewer overflows and urban runoff are also listed as problems in Ohio. A fish consumption advisory is in effect for all species from the Northwest Bridge Street in Newton Falls, OH to the Pennsylvania line, a distance of 29.2 stream miles. Contaminants of concem are listed as PCBs, polyaromatic hydrocarbons, phthalate esters and Mirex. There is no advisory for the Mahoning River in Pennsylvania, although consumption advisory for carp and channel catfish is in effect for the Beaver River as a result from PCBs and chlordane contamination.

Two reservoirs are located directly on the Ohio-Pennsylvania border - Pymatuning Reservoir and Shenango River Lake. Little information on lake water quality was available from Ohio EPA's 305(b) report, since the majority of both lakes are in Pennsylvania. Water supply, recreation and flood control are the uses listed for **Pymatuning Reservoir** in Ohio. Based on 1972 data, the lake is assessed as eutrophic. No data regarding **Shenango River Lake** was available from Ohio.

Trophic analysis reports for the **Shenango River** and **Pymatuning Reservoirs** were completed by Pennsylvania DEP in 1989 and 1990, respectively. Both watersheds are located in primarily agricultural or undeveloped areas and are sparsely populated. The upper end of the Pymatuning Reservoir contains a large wildlife sanctuary and is noted for its recreational opportunities. Recreational activities are also popular in and around the Shenango Reservoir. High nutrient loadings and the shallowness of Pymatuning Reservoir have caused the lake to suffer from excessive growth of algae and rooted plants. Aquatic herbicides have been used to control nuisance plants for many years. There are no reports of such problems in the Shenango Reservoir. The reports rate both lakes as eutrophic with the potential for becoming hyper-eutrophic if point source controls are not implemented. Both reports also recommend implementing first level best management practices throughout the basins to control nonpoint nutrient runoff from agricultural lands.

Table 2: Water Quality of Interstate Streams - Beaver River/Ohio Tributaries				
Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
L. Beaver Cr.	OH	16	Full Support	
Mahoning River*	OH	34	Non-support	Metals, low
	PA	11	Non-support	DO, inorganics
Pymatuning Reservoir	PA	14,500 acres	Full/Threatened	Nutrients
Shenango Lake	PA	3,560 acres	Full/Threatened	Nutrients
* Fish consumption advisory for Ohio portion of stream				

MONONGAHELA RIVER BASIN (Pennsylvania - West Virginia - Maryland Borders)

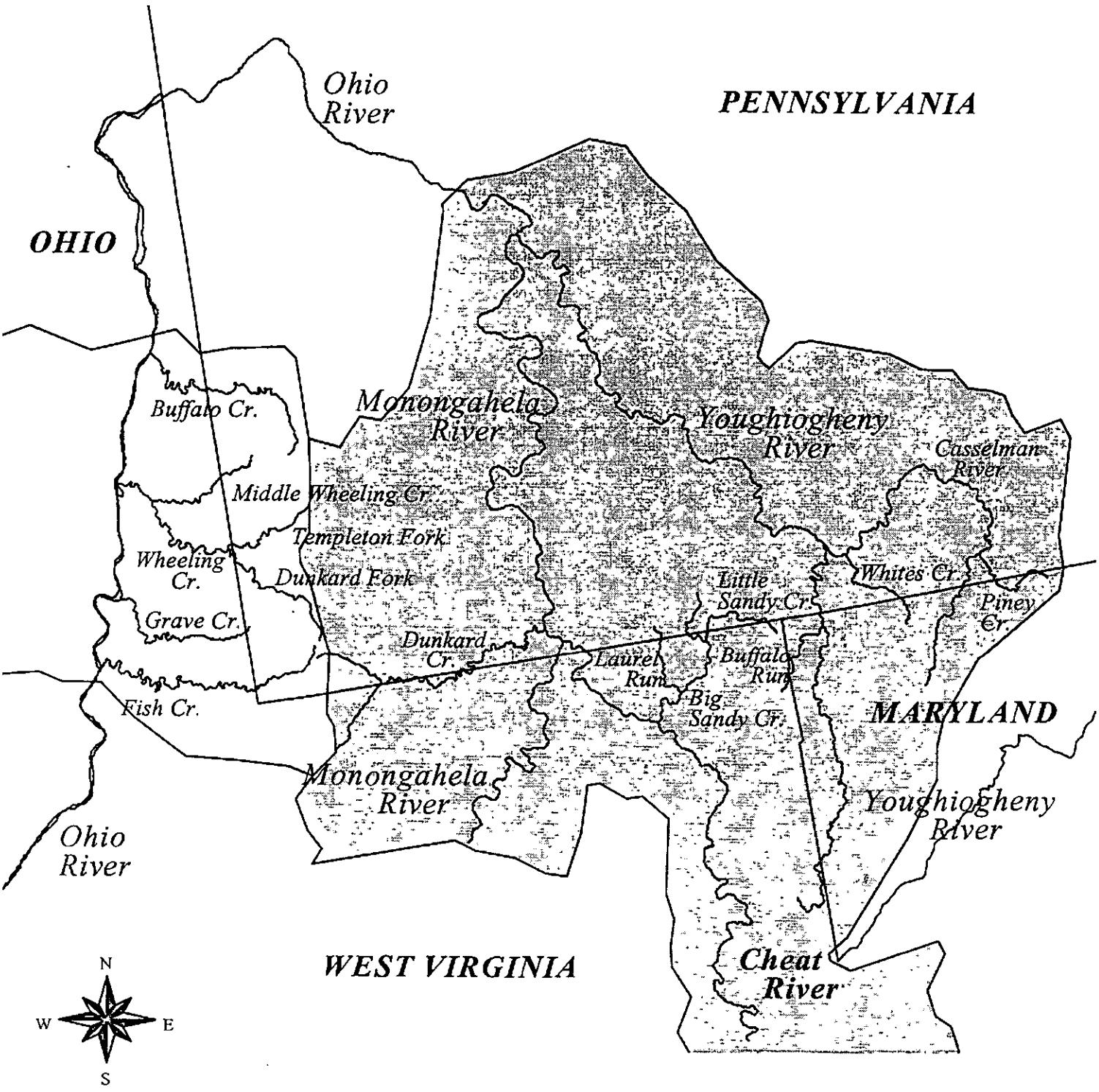
The Monongahela River basin drains over 7,300 square miles of the Ohio River Basin in the states of Pennsylvania, West Virginia and Maryland. The main stem of the Monongahela River originates south of Fairmont, WV at the confluence of the West Fork and the Tygart Valley Rivers. From this point, the river flows north into Pennsylvania until it joins the Allegheny River in Pittsburgh to form the Ohio River. Major tributaries to the Monongahela River, as shown in Figure 3, include the Casselman, Youghiogheny and Cheat Rivers.

The entire stretch of **Monongahela River** in West Virginia (37.5 miles) was classified as partially supporting, primarily due to elevated concentrations of metals from acid mine drainage. Just across the border in Pennsylvania, near the Point Marion Lock and Dam, a fish consumption advisory is in effect for white bass as a result of chlordane contamination. No further problems on the river have been noted, with the exception of the last eleven stream miles near Pittsburgh, where a second consumption advisory has been posted. No consumption advisories for the river exist in West Virginia. One direct tributary to the Monongahela - **Dunkard Creek** - is said to fully support aquatic life in West Virginia; however, across the state line, Pennsylvania classifies the stream as not supporting this designated use.

The **Casselman River** begins in the Savage River State Forest in Garret County, Maryland and flows northeast through the mountains into Pennsylvania, where it turns back and flows southwest to the Youghiogheny River. The Maryland Department of the Environment (MDE) reports that a little more than 33 miles of the river fully support contact recreation and aquatic life, while approximately 13 miles partially support these uses. In addition, over 20 miles of the river fully support natural trout populations. Just over eight stream miles are designated as a public drinking water supply and are fully supported. Problems noted on the lower river near the Maryland-Pennsylvania border include low pH due to acid mine drainage and natural wetland conditions. High bacteria and low oxygen levels resulting from agricultural runoff were also reported by MDE.

In 1988, Pennsylvania DEP conducted a Casselman River watershed study which included water chemistry, macroinvertebrate and fish sampling. In general, it was found that watershed

FIGURE 3: OHIO RIVER BASIN INTERSTATE STREAMS
Monongahela/Ohio River Basins



streams either had exceptional water quality and aquatic communities or were severely degraded due to acid mine drainage. Two interstate streams represent both categories. **Whites Creek** was found to have excellent water quality and supports a trout fishery. **Piney Creek** had low pH as a result of mine drainage; however, metals concentrations in the stream were low. The main stem of the Casselman River reportedly had good water quality entering the state. Numerous and diverse macroinvertebrates were found and sensitive species dominated the community. Resident trout species were also found. The high quality extends for six miles into Pennsylvania until Coal Run enters the river. Coal Run is severely affected by acid mine drainage from the Shaw Mines Complex. No aquatic life exists in the stream. Impacts of Coal Run on the river are easily seen.

The **Youghiogheny River** is the only water body to be located in portions of all three states. The river originates in West Virginia near Aurora - only six miles of the main stem are located in the state. The river then enters Maryland where it flows northward through primarily forested land until it reaches the Youghiogheny River Reservoir at the Pennsylvania border. Once in Pennsylvania, the river flows northwest, initially through forests and state parks and, once downstream of Connellsville, PA, through agricultural and urban areas. The river empties into the Monongahela River at McKeesport, PA.

Of the six miles located in the state of West Virginia, 4.5 miles were rated as fully supporting aquatic life, while 1.5 miles were classified as partially supporting. In Maryland, the Youghiogheny River is designated as a state scenic river. The water quality in the upper portion of the river was rated as fair. Problems noted include low pH from abandoned coal mines. The water quality improved downstream near the Pennsylvania border, although low pH and dissolved oxygen concentrations were reported as concerns. At the border, MDE classified over 590 acres of **Youghiogheny Reservoir** as fully supporting aquatic life and rated the lake as meso-eutrophic. Pennsylvania DEP also classified its portion of the reservoir, more than 2800 acres, as fully supporting and eutrophic (borderline mesotrophic). Only 1.5 miles of the river's main stem in Pennsylvania did not support aquatic life.

All but approximately one mile of the 80-mile long **Cheat River** is located in West Virginia; however, it is important to note that Pennsylvania has issued a fish consumption advisory for the one stream mile in the state. The public is advised against consuming any white bass caught from the river due to contamination from chlordane. As mentioned above, a similar advisory is in effect for the Monongahela, downstream of its confluence with the Cheat River. No consumption advisories for either river exist in West Virginia. West Virginia does report that metals and pH problems exist throughout the Cheat River resulting from mine drainage.

Three tributaries to the Cheat River cross the West-Virginia-Pennsylvania state line - Big Sandy Creek, Little Sandy Creek and Laurel Run. Two of the 14 miles of **Little Sandy Creek** have significant mine drainage problems. **Laurel Run** is reported as fully supporting both aquatic

life and contact recreation; however, the public water supply use is not supported. Inorganic pollutants and siltation are listed as the primary concerns. **Big Sandy Creek**, which receives the two streams just mentioned, fully supports its aquatic life use, despite problems of acid mine drainage in the area.

Table 3: Water Quality of Interstate Streams - Monongahela River Basin

Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
Monongahela River*	PA	1.0	Partial	Chlordane
	WV	37.5	Partial	Metals
Dunkard Creek	PA	8.5	Non-support	Metals, pH
	WV	22	Full	
Youghiogheny River	WV	4.5/1.5	Full/Partial	
	MD	217/32	Full/Partial	pH, low DO
Yough. Reservoir	MD	593 acres	Full	
	PA	2800 acres	Full	
Casselman River	MD	33/13	Full/Partial	pH
	PA	6	Full	
Whites Creek	PA	---	Full	
Piney Creek	PA	---	Non-support	pH
Cheat River*	WV	12/66	Partial/Non	Metals, pH, bacteria
	PA	---	Partial	Chlordane
Big Sandy Creek	PA	14	Non-support	Metals, pH
	WV	19	Full	
Little Sandy Creek	WV	12/2	Full/Partial	pH
Laurel Run	WV	8.6	Full	

--- *Miles assessed are undetermined.*
* *- Consumption advisories in place for white bass near state border.*

OHIO RIVER TRIBUTARIES (Pennsylvania - West Virginia Border)

As the Ohio River exits Pennsylvania, it begins to flow south, bordered by Ohio on the west and the West Virginia panhandle on the east. Since the panhandle is less than 20 miles across at its widest point, many tributaries entering the Ohio River from the east flow through both Pennsylvania and West Virginia. Interstate creeks in the area addressed in this report are shown in Figure 3 and include:

1. Buffalo Creek
2. Wheeling Creek
3. Middle Wheeling Creek
4. Dunkard Fork
5. Grave Creek
6. Fish Creek

Buffalo Creek is the most upstream of the interstate tributaries in the West Virginia panhandle. Its headwaters are located southeast of Washington, PA. The creek flows into West Virginia just north of the Brooke County/Ohio County Border and joins the Ohio River at mile point 74.7. Only West Virginia reported on the water

quality of Buffalo Creek, classifying the 18 miles of creek which flowed through the state as fully supporting aquatic life and contact recreation.

Downstream of Buffalo Creek is the Wheeling Creek watershed. Interstate tributaries in this watershed include Middle Wheeling Creek and Dunkard Fork of Wheeling Creek. Middle Wheeling Creek originates in Pennsylvania approximately three miles east of the West Virginia border. The majority of Dunkard Fork is located in Pennsylvania, joining Wheeling Creek just across the state border. Wheeling Creek begins near the border on the Pennsylvania side at the confluence of Enlow and Robinson Forks and enters the Ohio River at mile point 90.8.

No water quality information is available from either state for **Dunkard Fork;** however, a fish consumption advisory is in effect for the North Fork of Dunkard Fork in Pennsylvania. The advisory states that smallmouth bass should not be consumed due to contamination from PCBs and chlordane. West Virginia classifies 11 miles of **Middle Wheeling Creek** as fully supporting aquatic life and contact recreation; however, several pollutants are listed as concerns, including metals, oil and grease, nutrients, pH and siltation. Pollutant sources include CSOs, urban runoff, septic tanks, agriculture and resource extraction. Water quality in **Wheeling Creek** is reported in a similar fashion. Nearly 28 miles of the creek is classified as fully supporting aquatic life and contact recreation; however, the same pollutants identified as concerns on Middle Wheeling Creek are listed as having a high impact on Wheeling Creek. No data for either Wheeling Creek or Middle Wheeling Creek were available from Pennsylvania.

Grave Creek and **Fish Creek** both originate in the southwestern corner of Pennsylvania and enter the Ohio River at mile points 102.9 and 113.9, respectively. Pennsylvania does not report on the water quality data for either of these streams. West Virginia classifies entire stretches of both streams as partially supporting aquatic life. No pollutants or sources are provided.

Table 4: Water Quality of Interstate Streams - PA/WV Ohio River Tributaries

Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
Buffalo Creek	WV	18	Full	
Wheeling Creek	WV	28	Full	Metals, pH, oil and grease, nutrients, siltation
Middle Wheeling Creek	WV	11	Full	Metals, pH, oil and grease, nutrients, siltation
Dunkard Fork*	WV	1.3	Full	
Grave Creek	WV	22	Partial	
Fish Creek	WV	26.5	Partial	

** - Fish consumption advisory for N. Fork of Dunkard Fork in Pennsylvania*

NEW RIVER BASIN (North Carolina - Virginia - West Virginia Borders)

The New River flows through portions of three states, beginning in Watauga County, North Carolina, entering Virginia near the City of Radcliff, then exiting into West Virginia, near Glen Lyn. From here it flows to the confluence of the Gauley River forming the Kanawha River, a tributary of the Ohio River. The basin is sparsely populated. The higher elevations have steep slopes and are thickly forested, while the mountain bases are mostly used for agriculture. Less than three percent of the basin is considered urban in Virginia.

Figure 4 illustrates the interstate streams along the Virginia-West Virginia border, including the New River, Bluestone River, Laurel Fork, Brush Creek and Rich Creek. Data collected by Virginia from the **New River** site closest to the West Virginia state line revealed no water quality standards violations for field-measurable parameters (temperature, dissolved oxygen and pH) or fecal coliform bacteria. West Virginia classified 87 miles of the New River as fully supporting aquatic life and partially supporting contact recreation activities. No pollutants of concern were mentioned.

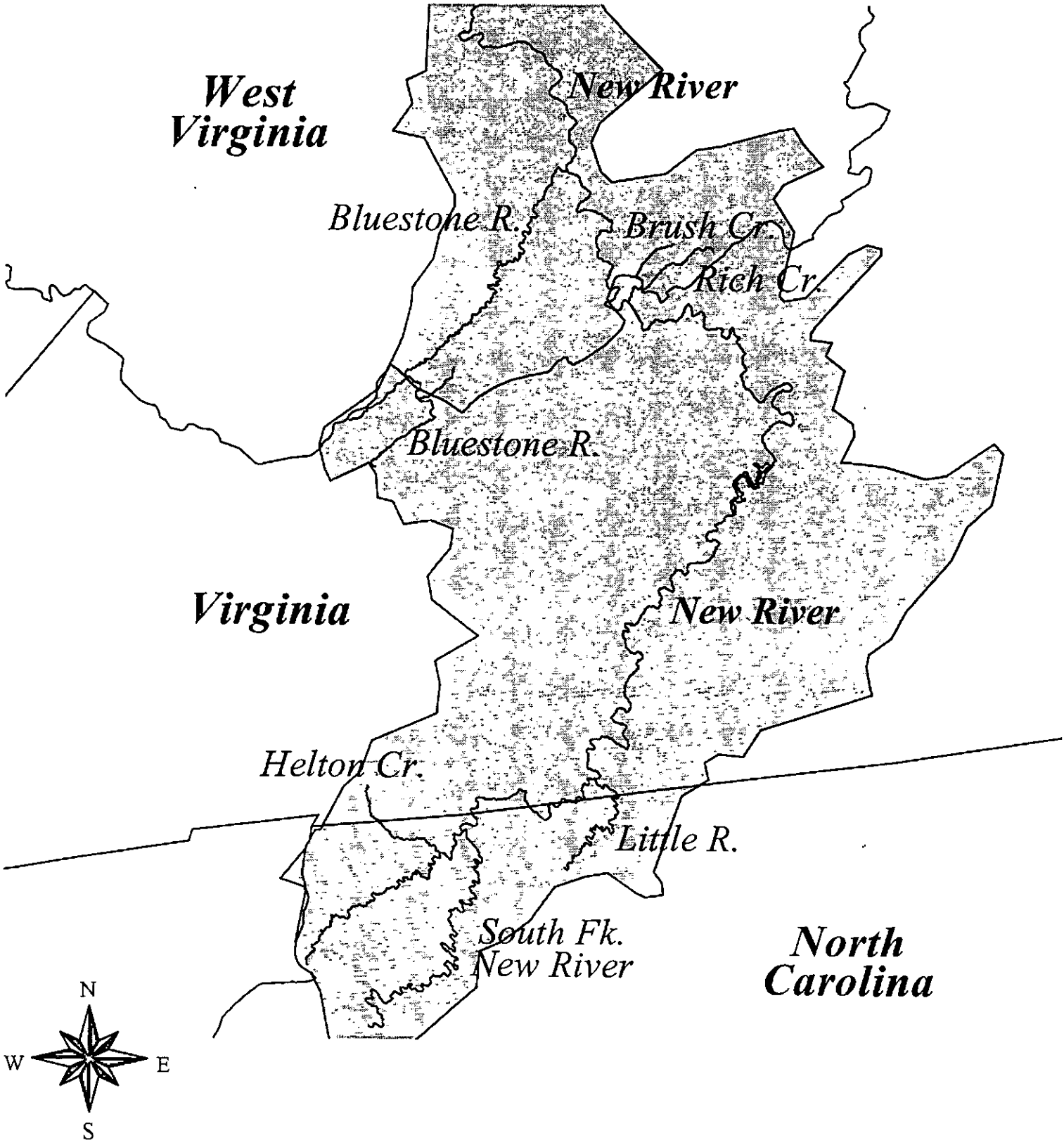
Data from two Virginia monitoring stations on the **Bluestone River** were available for field measurable parameters and fecal coliform bacteria. Of the sixteen samples taken for each parameter, fecal coliform levels exceeded water quality samples three times while dissolved oxygen standards were not met on only one occasion. Six samples were collected from Laurel Fork, a tributary of the Bluestone River. Water quality standards exceedences were seen twice for fecal coliform and once for dissolved oxygen. Samples for organic compounds were also collected - no violations were recorded. On the West Virginia side, the entire river is classified as fully supporting aquatic life and contact recreation uses. Pollutants of concern listed by West Virginia include nutrients, siltation and low dissolved oxygen concentrations. Only one mile of **Laurel Fork** is located in West Virginia, which was classified as fully supporting both uses.

No information regarding **Rich Creek** or **Brush Creek** was available from Virginia DEQ. West Virginia DEP classified ten miles of each stream as fully supporting both aquatic life and contact recreation.

Of the streams included in the USGS RF1 database, only the New River, Little River and Helton Creek cross the Virginia-North Carolina state line. Near Amelia, NC, ten miles of the **New River** are classified as fully supporting aquatic life and secondary contact recreation. North Carolina Department of Environment, Health and Natural Resources rated the biological conditions of the river as excellent from 1989 to 1991 (the last year the rating was given). In Virginia, only one fecal coliform sample out of 16 taken for field measurable parameters, bacteria and organics exceeded state water quality criteria.

Approximately 34 miles of the **Little River** is located in North Carolina, 28 of which has been classified

FIGURE 4: OHIO RIVER BASIN INTERSTATE STREAMS
New River Basin



as fully supporting aquatic life and contact recreation uses. Nearly 11 miles of this stretch was rated as having an excellent biological community from 1988 to 1990. Six were listed as partially supporting in North Carolina's 1994 305(b) report. No problem parameters were mentioned - only nonpoint source activities were listed as a concern. One monitoring station is located in Virginia near the river's mouth. No violations were seen for field measurable parameters, bacteria or organic compounds at this site.

Only North Carolina reported water quality information for **Helton Creek**. Approximately seven miles of the creek was classified as supporting aquatic life and recreation uses; however, contaminated sediments were listed as a concern.

Table 5: Water Quality of Interstate Streams - New River Basin

Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
New River	WV	87	Full	
	VA	---	Full	
	NC	10	Full	
Bluestone River	WV	---	Full	
	VA	---	Full	
Laurel Fork	WV	1.0	Full	
	VA	---	Full	
Rich Creek	WV	10	Full	
Brush Creek	WV	10	Full	
Little River	VA	--	Full	
	NC	28/6	Full/Partial	
Helton Creek	NC	7	Full	Contaminated sediments

--- *Miles assessed are undetermined.*

BIG SANDY RIVER BASIN (Virginia - West Virginia - Kentucky Borders)

The headwaters of the Big Sandy River basin are located in Virginia and extend into both Kentucky and West Virginia. For the most part, the basin is forested, particularly in the southern parts. Urban land use and industrial activities are prevalent in the northern section, where the Big Sandy River joins the Ohio River. There are three major interstate rivers in this basin, including: the Big Sandy River, which forms the northern portion of the Kentucky-West Virginia border; Tug Fork, which forms the southern border; and Levisa Fork, which originates in Virginia, flows through Kentucky, and eventually joins Tug Fork to form the Big Sandy River. Other interstate streams which will be covered in this section are Dry Fork, Jacob Fork, Russell Fork, Hunts Creek, Knox Creek and Pawpaw Creek. A map of the interstate streams in the basin is provided in Figure 5.

Both Kentucky and West Virginia classified all 27 miles of the **Big Sandy River** as fully supporting

FIGURE 5: OHIO RIVER BASIN INTERSTATE STREAMS
Big Sandy River Basin

aquatic life; however, only West Virginia classified the river as fully supporting recreational uses. The river does not support recreation according to Kentucky's 1994 305(b) assessment. Differences between the two state assessments are also apparent in the assessments conducted for **Tug Fork**. West Virginia DEP lists the entire stream as partially supporting both aquatic life and recreational uses. The lower 58 miles of Tug Fork were assessed by Kentucky DOW - 22 miles as fully supporting, 26 miles as partially supporting and 10 miles as not supporting aquatic life. All 58 miles were rated as not supporting contact recreation due to pathogens from septic tanks and package treatment plants. The primary cause of less than full aquatic life use support was reported as siltation from surface and subsurface mining activities.

Virginia DEQ has monitoring stations on **Levisa Fork** near the Kentucky border for which biological data are available. Both sites have been reported as having biological communities moderately impacted by mining activities. In Kentucky, the stream is rated as fully supporting aquatic life for nearly 12 miles above the confluence with Russell Fork. Use support gradually shifts to partial and finally non-support at its confluence with the Big Sandy River near Louisa, KY, primarily due to mining impacts. Contact recreation is not supported in 65 miles of the stream. On **Russell Fork**, there were no criteria exceedences for dissolved oxygen or pH and only one fecal coliform violation out of 38 samples collected from three Virginia monitoring stations within 15 miles of the state line. However, at a monitoring station approximately 14 miles upstream of Kentucky, the biological community was determined to be moderately impaired. In Kentucky, Russell Fork fully supports its aquatic life use but does not support recreational activities. No water quality or biological information was available from either state for Hunts Creek, a small tributary of Russell Fork which crosses the state line near Breaks (Va.) Interstate Park.

Only West Virginia DEP had information on the water quality of **Dry Fork** and one of its tributaries, **Jacob Fork**, both of which cross the Virginia-West Virginia Border. The entire reach of both streams within West Virginia was classified as fully supporting aquatic life. Water quality assessments of two additional streams in the Tug Fork watershed - **Knox Creek** and **Pawpaw Creek** - were provided by Virginia. Based on the results of biological studies, Pawpaw Creek, a tributary of Knox Creek, is said to be severely impaired as a result of mining activity in the area. Mining activities also impact Knox Creek, although the biological community is only moderately impaired, according to Virginia DEQ. Kentucky reported that the eight miles of Knox Creek within the state did not support swimming uses; aquatic life uses were not assessed.

GREAT MIAMI RIVER BASIN (Ohio - Indiana Border)

The Great Miami River watershed, shown in Figure 6, drains approximately 5,400 square miles of primarily agricultural land in Ohio and Indiana. Indian Lake in Logan County, Ohio form the headwaters of the river, which flows southwest, entering the

FIGURE 6: OHIO RIVER BASIN INTERSTATE STREAMS
Ohio-Indiana Border

Table 6: Water Quality of Interstate Streams - Big Sandy River Basin				
Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
Big Sandy River	WV	27	Full	
	KY	27	Full	
Tug Fork	WV	58	Partial	Siltation
	KY	22/26/10	Full/Part/Non	Siltation
Levisa Fork	VA	---	Non-support	Siltation
	KY	12/61/34	Full/Part/Non	Siltation, low DO
Russell Fork	VA	---	Full	
	KY	16	Full	
Dry Fork	WV	---	Full	
Jacob Fork	WV	---	Full	
Pawpaw Creek	VA	---	Non-support	Mining activities
Knox Creek	VA	---	Partial	Mining activities
--- *Miles assessed are undetermined.*				

Ohio River just west of Cincinnati. The vast majority of the river is located in Little Fourmile Creek and Indian Creek all cross from Indiana to Ohio before joining the main stem of the Great Miami. The Great Miami River's major tributary, the Whitewater River, primarily flows through Indiana, crossing the state line as it approaches the Great Miami. Interstate tributaries to the Whitewater River include the East, Middle and Dry Forks, and Elkhorn Creek.

For the lower stretches of the **Great Miami River**, from Taylor Creek to the Ohio River, eight miles are said to partially support aquatic life while nearly seven miles are non-supporting, according to Ohio EPA data. The 1½ miles in Indiana are classified as not supporting due to a fish consumption advisory for channel catfish. An advisory also exists in Ohio for carp and suckers as well as catfish from the Lowhead Dam to the Ohio River, a stretch of 80 miles. PCBs are listed in both advisories as the contaminant of concern.

Ohio, with only 1½ miles near the mouth crossing into Indiana. Greenville Creek,

Greenville Creek is actually a tributary of the Stillwater River, which enters the Great Miami River about half way between the headwaters and the mouth. No water quality information about the creek was available through Indiana's 305(b) report. The nine miles downstream of the state line are partially impaired. Low dissolved oxygen concentrations and habitat alterations are listed as the causes of impairment; sources include municipal discharges and dam construction. Bacteria levels in Greenville Creek were also shown to be elevated during a 1990 survey by Ohio EPA.

Downstream of Dayton, Ohio, **Little Fourmile Creek** and **Indian Creek** enter the Great Miami River. Neither state reported on the water quality of Little Fourmile Creek; however, Fourmile Creek below its confluence with Little Fourmile Creek fully supports aquatic life. Problems with low dissolved oxygen and fecal

coliform bacteria on Indian Creek have been documented by Ohio EPA. Municipal discharges to Indian Creek are suspected to be the largest pollutant contributors.

For sixteen miles below the confluence of East and West Forks, the **Whitewater River** is rated by Indiana as partially supporting aquatic life and not supporting the recreational use of the river. Six of eight miles below the state line are also partially supporting of aquatic life, while two miles are classified as not supporting. Flow alteration/modification is listed as the major impairment in Ohio; no causes of impairment are listed for the Indiana stream segment. Only Indiana DEM reported on the quality of one interstate tributary to the Whitewater River. Approximately 50 miles of the **East Fork** partially support aquatic life and do not support recreational activities. No data from either state were available for the Middle and Dry Forks or Elkhorn Creek.

Table 7: Water Quality of Interstate Streams - Great Miami River Basin

Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
Great Miami River*	OH	8/7	Partial/Non	Low DO, Fish consumption
	IN	1.5	Non-support	Fish consumption
Greenville Creek	OH	9	Partial	Low DO, habitat alterations
Indian Creek	OH	1/5/4	Full/Part/Non	Low DO
Whitewater River	IN	16	Partial	
	OH	6/2	Partial/Non	Flow alteration
East Fork Whitewater R.	IN	50	Partial	

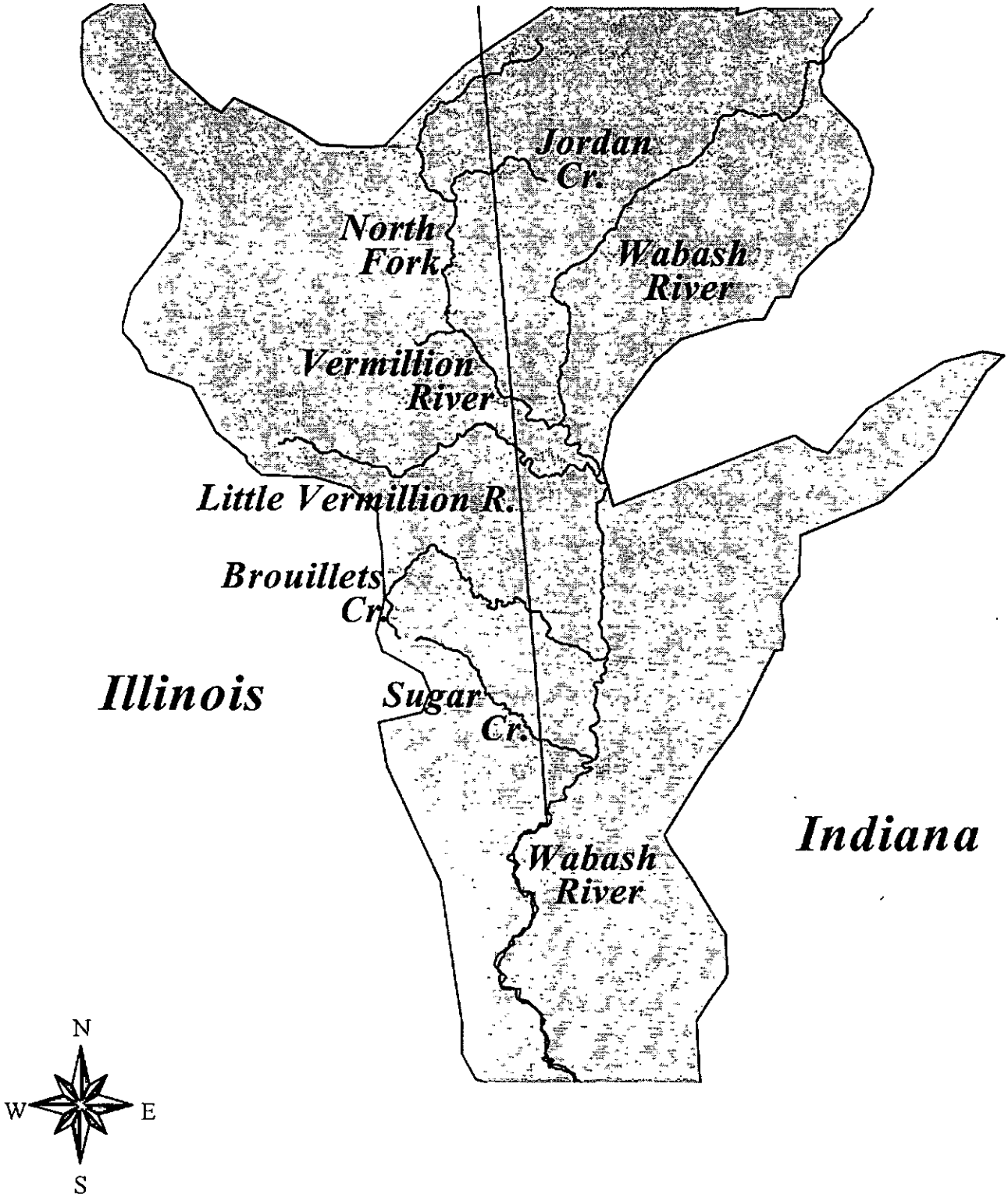
** - Fish consumption advisory in effect for both states*

WABASH RIVER BASIN (Ohio - Indiana - Illinois Borders)

The Wabash River Basin provides drainage for an extremely large area - 33,000 square miles in portions of Indiana, Illinois and Ohio. The greatest percentage of the basin lies within Indiana, where it drains approximately two-thirds of the state. The main stem of the Wabash River begins in Ohio along the border of Mercer and Darke counties, just south of Ft. Recovery. This portion of the basin is pictured in Figure 6. From its headwaters, the river flows for 474 miles through primarily agricultural land and the cities of Lafayette and Terre Haute, IN until joining the Ohio River at mile point 848. Along the way, approximately 180 miles of the Wabash River form the border between Indiana and Illinois (Figure 7).

Near the Ohio-Indiana state line, the primary concern on the **Wabash River** main stem is habitat alterations resulting from channelization. Ohio rates the immediate three miles upstream of the border as not supporting due to this problem. Sixteen miles downstream of the state line, the Wabash River is classified as fully supporting by Indiana DEM.

FIGURE 7: OHIO RIVER BASIN INTERSTATE STREAMS
Wabash River Basin



In addition to the Wabash River, the headwaters of the **Mississinewa River** also cross the Ohio-Indiana state line. No data are available from Ohio EPA. A fish consumption advisory is in effect for nine miles of the Mississinewa River from Union City, IN, which lies on the border, to Ridgeville, IN. Consumption of carp and catfish is advised against due to contamination from PCBs and chlordane. The reported source of the contamination is the Westinghouse facility, which discharged to the Union City wastewater treatment plant. The treatment plant itself discharges to the Little Mississinewa River, which joins the Mississinewa River *just downstream of the state line.* Cleanup of the site began in 1986. While contamination of the site is still suspected, the wastewater treatment plant effluent was shown to be free of PCBs.

Southwest of Terre Haute, IN, the **Wabash River** forms the state line between Indiana and Illinois and flows southward for 180 miles until joining the Ohio River. Based on information contained in Indiana's 1994 305(b) report, this reach of the Wabash River fully supports aquatic life but does not support recreational activities. Illinois reports that impacts from municipal and industrial wastewater facilities, as well as agricultural activities, have reduced aquatic life of the Wabash River to partial support/minor impairment from Terre Haute downstream to the Ohio River. There are no fish consumption advisories in effect for the Wabash River.

Four major tributaries to the Wabash River traverse the Indiana-Illinois state line prior to the main stem forming the border between the two states - the Vermillion and Little Vermillion Rivers, Brouillets Creek and Sugar Creek. The headwaters of each of these streams begin in Illinois and flow east to the Wabash River. Two additional interstate streams to be addressed are the North Fork of the Vermillion River and Jordan Creek, a tributary of the North Fork.

The **Vermillion River** begins at the confluence of the Middle and Salt Forks in Kickapoo State Park, just east of Danville, IL and flows southeast through the city and into Indiana. The North Fork, which begins in Indiana, joins the main stem of the Vermillion River at Danville's west side. No water quality information regarding the North Fork was available from Indiana's 1994 (305(b) report. Illinois reported the 31 miles of the **North Fork** from the state line to Jordan Creek as fully supporting aquatic life. Sixteen miles of **Jordan Creek** was also rated as fully supporting. The Vermillion River from the North Fork to the state line reportedly has minor problems due to siltation caused by agricultural runoff. Swimming and similar full contact activities are not supported on the same stretch of river. Once in Indiana, the Vermillion River fully supports aquatic life for eight miles from the border to the Wabash River.

During 1992, Illinois conducted an intensive survey on the **Little Vermillion River**, which enters the Wabash River approximately 15 miles downstream of the Vermillion River's point of entry. All 50 stream miles assessed in the Illinois portion of the watershed fully supported aquatic life. The Little Vermillion River was found to support two fish and two mussel species

considered threatened or endangered in Illinois. The River has been characterized as a unique aquatic resource in the State of Illinois. No information was available for the short reach of river located in Indiana.

Further downstream, **Brouillets Creek** joins the Wabash River. Illinois EPA reports that the creek fully supports aquatic life from its headwaters to the state line, a distance of approximately 47 miles. Over the same distance, the river is moderately impaired in terms of recreational uses. Only two creek miles were assessed in Indiana. These fully supported aquatic life; however, this use was reported as threatened due to acid mine drainage. Similar assessments were made for **Sugar Creek**. No problems are reported on the 28 creek miles in Edgar County, Illinois, but nine miles in Indiana are impaired, again due to acid mine drainage.

Table 8: Water Quality of Interstate Streams - Wabash River Basin

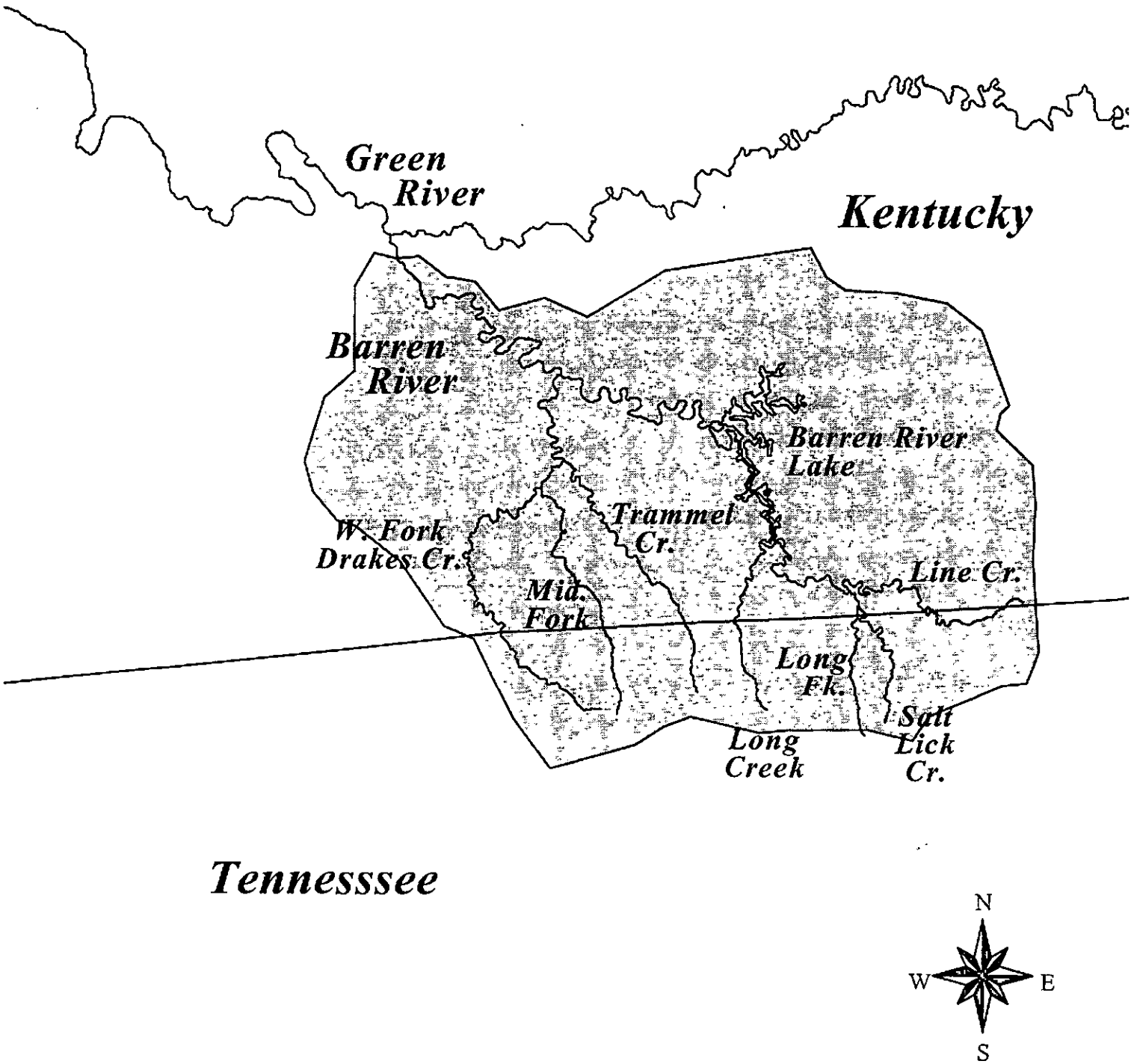
Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
Wabash River	OH	3	Non-support	Habitat alterations
	IN	16	Full	
Mississinewa River	IN	9	Non-support	Fish consumption
Wabash River	IN	180	Full	
	IL	180	Partial/Minor	Siltation, nutrients
North Fk. Vermillion R.	IL	31	Full	
Jordan Creek	IL	16	Full	
Vermillion River	IL	25	Partial/Minor	Siltation
	IN	8	Full	
Little Vermillion River	IL	50	Full	
Brouillets Creek	IL	47	Full	
	IN	2	Threatened	Mine drainage
Sugar Creek	IL	28	Full	
	IN	9	Non-support	Mine drainage

BARREN RIVER BASIN (Kentucky - Tennessee Border)

The Barren River is not a true interstate stream, beginning very close to and flowing westward along the Kentucky-Tennessee border; however, several of its tributaries do cross the state line. These streams include Line Creek, Salt Lick Creek, Long Creek, Drakes Creek and its tributaries, the West and Middle Forks of Drakes Creek and Trammel Creek, all of which may be seen in Figure 8.

Kentucky reported all of the above streams as fully supporting aquatic life in its 1994 305(b) report, although a fish consumption advisory for all species has been in effect for the **West Fork of Drakes Creek** since 1985. Fish in the West Fork have been contaminated with PCBs from an adhesive plant below the state line. Monitoring on the creek continues, and PCB levels in fish appear to be declining. Since the source is located downstream of the state line, no advisory exists in Tennessee.

FIGURE 8: OHIO RIVER BASIN INTERSTATE STREAMS
Barren River Basin



Data for three interstate tributaries in the basin were available from the Tennessee Department of Environment and Conservation. Fifteen miles of **Salt Lick Creek** has reported problems of siltation due to construction runoff. A current enforcement action is expected to alleviate some of these problems. Due to high concentrations of inorganic compounds and taste and odor problems, the **Middle Fork of Drakes Creek** only partially supports its designated uses. **Trammel Creek** reportedly has severe impacts from municipal point source discharges, which has led to high levels of pathogens, ammonia and low dissolved oxygen levels. The Tennessee DEC Division of Water Pollution Control is currently taking enforcement action against the responsible parties.

Table 9: Water Quality of Interstate Streams - Barren River Basin

Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
Line Creek	KY	7	Full	
Salt Lick Creek	KY	4.6	Full	
	TN	15	Partial	Siltation
Long Creek	KY	14	Full	
Drakes Creek	KY	24	Full	
West Fork Drakes Cr.*	KY	33	Full	Fish consumption - PCBs
Middle Fork Drakes Cr.	KY	22	Full	
	TN	4.5	Partial	Inorganics, taste and odor
Trammel Creek	KY	30	Full	
	TN	7.3	Non-support	Ammonia, low DO

CUMBERLAND RIVER BASIN
(Kentucky - Tennessee Border)

Almost 700 miles above its mouth, the Cumberland River originates in Harlan County, Kentucky at the confluence of Clover and Poor Forks. The River flows in a westerly direction for over 300 miles before entering Tennessee. From the state line, the river continues southwest through steep terrain and highly forested land. Once past Caney Fork, the Cumberland River flows west to Davidson County and the City of Nashville, and then turns in a northwesterly direction to once again cross into Kentucky at Lake Barkley. Numerous streams in the basin are interstate in nature. Those to be addressed in this report include:

1. Cumberland River
2. Clear Fork
3. Jellico Creek
4. Marsh Creek
5. South Fork
6. Little South Fork
7. Rock Creek
8. Roaring Paunch Creek
9. Bear Creek
10. Beaver Creek
11. Dale Hollow Lake
12. McFarland Creek
13. Saline Creek
14. Lake Barkley

The interstate streams of the Upper Cumberland River are presented in Figure 9, while those of the lower river are shown in Figure 10. In addition to the above, the Red River, which flows through southern Kentucky and joins the Cumberland River at Clarksville, Tennessee will be discussed, along with five of its tributaries.

It is important to note that in its 305(b) report, Tennessee DEC did not specify streams which fully supported their designated uses. Thus, streams discussed in the following paragraphs for which no information was available may fully support healthy biological communities as well as various recreational activities.

The **Cumberland River** fully supports aquatic life throughout Kentucky. The river is also fully supporting as it enters Tennessee, but is classified as partially supporting before re-entering Kentucky. It must be stressed that Tennessee DEC only evaluates overall use support assessment. Pathogens are reported as the primary pollutant responsible for the Cumberland River not attaining full use support. Since pathogens generally affect the contact recreation use designation, it can be assumed that the river fully supports aquatic life, except in the Nashville area, where siltation and low dissolved oxygen concentrations impact the river.

Most of the interstate tributaries cross the Kentucky-Tennessee border upstream of Lake Cumberland. The **Clear Fork of the Cumberland River** originates near Indian Mountain State Park in Tennessee and flows northward along the eastern edge of the Daniel Boone National Forest before joining the Cumberland River at Williamsburg, KY. No problems were reported on the entire stream reach in Tennessee, which is a change from the 1990 assessment, where approximately five miles only partially supported the designated uses. The Kentucky portion of the stream was not assessed.

Seven additional interstate streams flow into or through the Daniel Boone National Forest. Between the Clear and South Forks, two interstate tributaries join the main stem of the Cumberland River - Jellico Creek and Marsh Creek. Both streams flow through the heart of the forest. Neither state presented use support data in their 1994 305(b) reports for Jellico Creek. Kentucky reported all 26 miles of **Marsh Creek** as fully supporting aquatic life.

South Fork Basin

Mining activities are a major concern in the South Fork drainage basin. Flowing through and along the western edge of the Daniel Boone National Forest are the South Fork and Little South Fork of the Cumberland River, respectively. In Kentucky, the **South Fork** is presently threatened by low pH levels resulting from acid mine drainage. Low pH as well as salinity, dissolved solids and chlorides also threaten 22 miles of the **Little South Fork**, while an additional 22 miles are partially impaired by similar pollutants.

Three tributaries of the South Fork are also impaired as a result of mining activities. Based on Tennessee and Kentucky data, the first 30 miles of **Rock Creek** are unimpaired, but the last four miles before joining the South Fork do not support aquatic life due to

FIGURE 9: OHIO RIVER BASIN
INTERSTATE STREAMS
Upper Cumberland River Basin

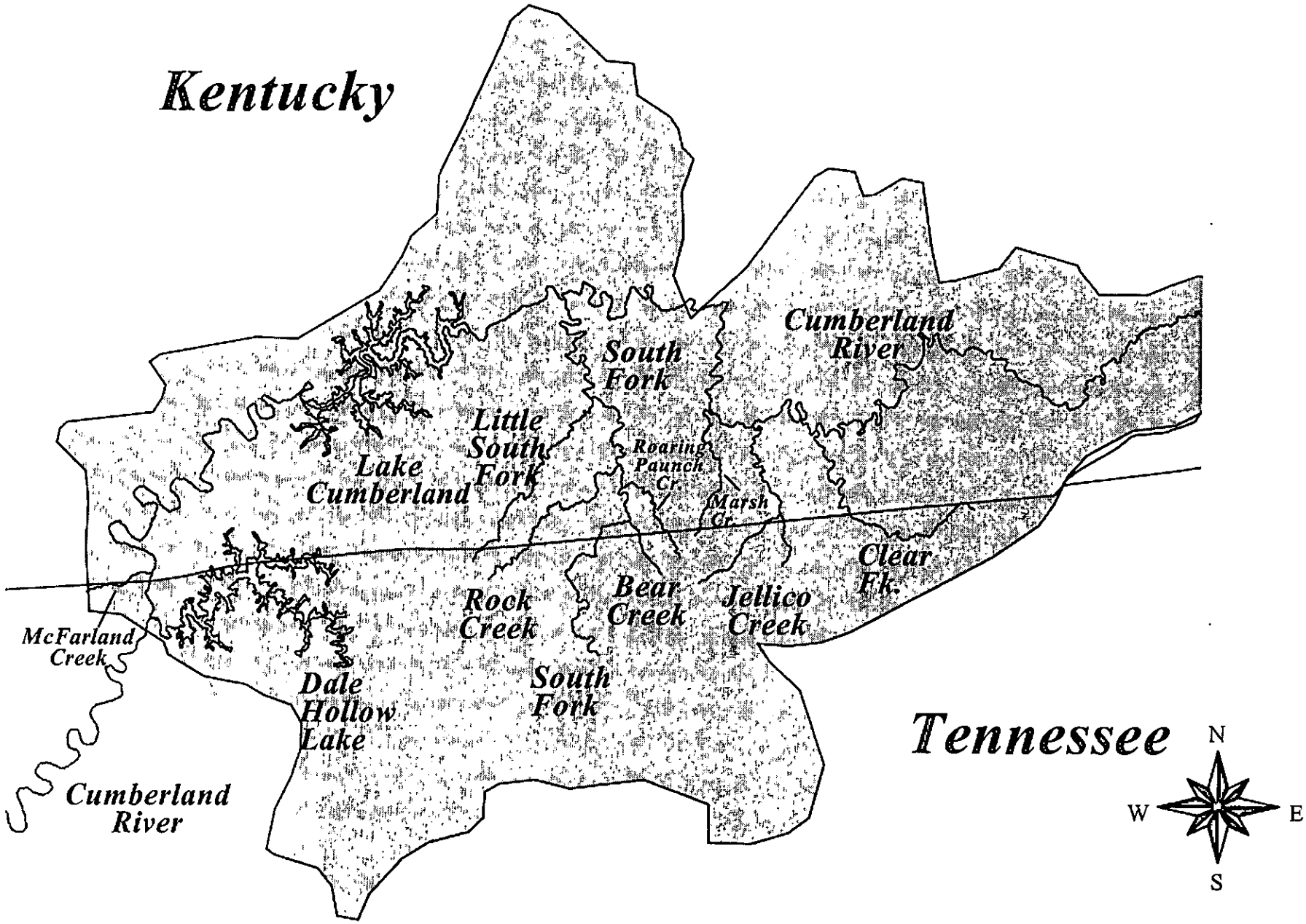


FIGURE 10: OHIO RIVER BASIN INTERSTATE STREAMS
Lower Cumberland River Basin

elevated concentrations of metals and high acidity. Both states report **Roaring Paunch Creek** as not supporting designated uses for similar reasons. Kentucky also reports all three streams as not supporting recreational uses.

Bear Creek is perhaps the most severely impacted, as acid mine drainage from 600 acres of abandoned mines have rendered the stream lifeless. The South Fork River, as it flows through the Big South Fork National River and Recreation Area, is designated as a Kentucky Wild and Scenic River. Three endangered and 19 other mussel species are found in the South Fork upstream of its confluence with Bear Creek. No mussels are found immediately downstream of the confluence, even though suitable habitats exist. Heavy metals, sulfates and acidity are a large part of the problem. Sediment and coal fines are found all along Bear Creek. A partnership made up of representatives of federal, state (KY and TN) and local governments, watershed residents, conservation groups and universities has been created to address problems on Bear Creek. To date, three anoxic drains and nine constructed wetland cells have been installed to treat acid mine drainage, a county soil survey has been funded, and ground water mapping is being conducted.

Only one of the three remaining streams which cross from Tennessee to Kentucky before joining the Cumberland River (Beaver Creek, McFarland Creek and Saline Creek) was assessed. Nearly three miles of **McFarland Creek** in Kentucky were evaluated as fully supporting aquatic life. No assessment information was available for the Tennessee segment of the stream.

Two major lakes in the Cumberland River basin are partially located in both states. A dam constructed by the U.S. Army Corps of Engineers on the Obey River seven miles upstream of the Cumberland River main stem creates **Dale Hollow Lake**. The majority of this reservoir (22,000 acres) is located in Tennessee and fully supports all designated uses, as does the Kentucky portion (4,300 acres). Both states have classified the lake's trophic status as oligotrophic. **Lake Barkley** was created with the construction of the Barkley Dam at Cumberland River mile point 30.6. Over 45,000 acres of Lake Barkley were assessed by Kentucky and Tennessee as eutrophic and fully supporting its designated uses; however, according to Kentucky Division of Water, the lake's secondary contact recreation use is threatened by suspended solids from unidentified nonpoint sources.

Red River Basin

The Red River begins near the Kentucky-Tennessee border, enters Kentucky and continues to flow west through Simpson and Logan Counties. The river turns southwest to re-enter Tennessee and joins the Cumberland River at mile point 125.4 in Clarksville. Along the way, the South, Elk and West Forks all cross the state line before joining the Red River. Other interstate streams include Spring Creek and Little West Fork, tributaries of the West Fork, which enters the Red River just 1½ miles upstream of the Cumberland River confluence. The main stem of the **Red River** is reported as fully supporting aquatic life in Kentucky, and partially supporting the lower 23 miles in Tennessee. Concerns here are runoff

from animal feedlots contributing pathogens and silt to the lower river.

The **South Fork of the Red River** flows for 35 miles through Tennessee northeast into Kentucky before joining the Red River main stem. Because of problems with siltation from pasture lands and agricultural runoff, the Tennessee portion of the South Fork has been classified as partially impaired. There are no reported problems on the eight stream miles in Kentucky. The **Elk Fork** flows south through Todd County, Kentucky for 37 miles before crossing the state line. Organic enrichment from municipal point sources and agricultural runoff, which results in low dissolved oxygen levels, result in seven of the 30 miles not supporting aquatic life. The remainder of the stream fully supports this use designation. The last interstate stream to join the Red River is the West Fork. Nearly 30 miles of the **West Fork** in Kentucky fully support aquatic life, while no problems were reported in Tennessee. However, the Tennessee segment of **Little West Fork** has documented problems with organic enrichment, chlorine and overall toxicity. Suspected sources of these problems are municipal discharges and urban runoff from the City of Portland, TN and agricultural runoff.

Table 10: Water Quality of Interstate Streams - Cumberland River Basin				
Stream	State	Miles	Aquatic Life Use Support	Primary Concerns
Cumberland River	KY	All	Full	
	TN	237/29/45	Full/Part/Non	Pathogens-Contact Recreation Use
Marsh Creek	KY	26	Full	
South Fork Cumberland	KY	15	Threatened	Low pH
Little South Fork	KY	22/22	Threatened/ Partial	Low pH, salinity, dissolved solids, chlorides
Rock Creek	KY	18/4	Full/Non	Metals, low pH
	TN	12	Full	
Roaring Paunch Creek	KY	16	Non-support	Metals, low pH
	TN	5	Non-support	Metals, low pH, siltation
Bear Creek	KY	3.2	Non-support	Metals, low pH, sulfates
	TN	5.4	Non-support	Metals, low pH, sulfates
McFarland Creek	KY	3	Full	
Red River	KY	30	Full	
	TN	23	Partial	Siltation, pathogens (contact recreation)
South Fork Red River	TN	35	Partial	Siltation
	KY	8	Full	
Elk Fork Red River	KY	23/7	Full/Non	Low DO
West Fork Red River	KY	30	Full	
Little West Fork	TN	55	Partial	Low DO, chlorine, toxicity
Dale Hollow Lake	KY	4300 ac.	Full	
	TN	22,000 ac.	Full	
Lake Barkley	KY/TN	45,000 ac.	Full	

SUMMARY

In examining the water quality of streams which cross state borders in the Ohio River basin, some stand out more than others as problem areas. In general, siltation, low dissolved oxygen concentrations and impacts from mining activities (low pH, high metals concentrations) appear to be the biggest concerns on the interstate rivers and streams. It is also evident that a good amount of inconsistency exists among the state assessments. This is particularly noticeable in streams that are rated as not supporting on one side of the state line and fully supporting on the other. Examples include Dunkard Creek and Sandy Creek in the Monongahela River Basin, the Wabash River as it crosses from Ohio to Indiana, Sugar Creek as it flows from Illinois to Indiana, and Trammel Creek in the Barren River basin. Inconsistencies are also evident on border streams such as the Tug Fork of the Big Sandy River and the Wabash River, each of which were assessed differently by their neighboring states. Perhaps the greatest inconsistencies are seen when an interstate stream has a fish consumption advisory in effect in one state, but no advisory exists across the border. This is the case on three streams, excluding the Ohio river itself - the Mahoning River (OH-PA), the Monongahela River and the Cheat River (WV-PA).

As is to be expected, some interstate watersheds have better water quality than others. The New River basin, which occupies parts of North Carolina, Virginia and West Virginia, appears to be the least impaired, based on the states' 305(b) reports. Of the interstate streams, only six miles of the Little River attained less than full aquatic life use support. Others exhibiting good overall water quality include the Barren and Wabash River basins.

No one interstate basin stood out as extremely impaired; however, several individual streams did show significant problems. Both New York and Pennsylvania identified significant problems with oil sheens, chemical spills and fish kills on Tunungwant Creek, a tributary to the Allegheny River. The Mahoning River does not support its aquatic life use designation on either side of the Ohio-Pennsylvania border. High concentrations of metals and inorganic compounds and low dissolved oxygen are identified as primary problems over 45 river miles. West Virginia reports that mine drainage problems exist throughout the Cheat River, a tributary of the Monongahela River. Surface and subsurface mining activities are also concerns on the Tug Fork of the Big Sandy River, particularly on two of the smaller interstate streams - Knox Creek and Pawpaw Creek. Along the Ohio-Indiana border, the two states have classified the majority of the interstate streams as attaining less than full aquatic life use support.

Perhaps the most severely impacted streams are located in the South Fork Cumberland river watershed, where mining activities have had devastating effects on Rock Creek, Roaring Paunch Creek and Bear Creek. Bear Creek in particular has been rendered lifeless by acid mine drainage. On the bright side, the Bear Creek watershed also is the best example of

diverse partnerships being developed to address a single concern. The Bear Grass Creek partnership is made up of members from federal, state and local government agencies, universities, conservation groups, and local residents and land owners, each bringing different perspectives and expertise to the group. Unfortunately, this type of cooperation seems to come about most often when problems are at their worst. Cooperative efforts among the states and other parties need to be increased in order for inconsistencies in states' assessments to be minimized, and more importantly, so that pollution abatement in interstate streams may be carried out in the most effective and efficient manner.