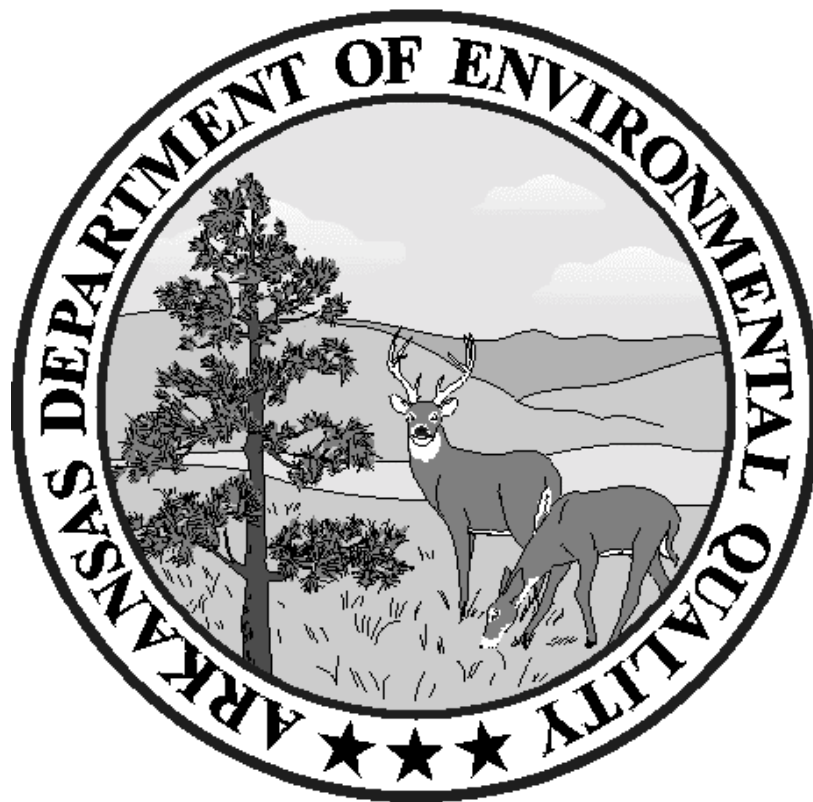


2002 PROPOSED 303(d) LIST



ARKANSAS DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER DIVISION

WATER QUALITY LIMITED WATERBODIES - 303(d) LIST - 2002

Introduction

Section 303(d) of the Clean Water Act requires that States identify waters which do not meet or are not expected to meet applicable water quality standards. These water bodies are compiled into a list known as the 303(d) list. The regulation (40 CFR 130.7) requires that each 303(d) list be prioritized and identify waters targeted for Total Maximum Daily Load (TMDL) development in the next two years.

As a result of several lawsuits concerning past 303(d)/TMDL processes, EPA has issued numerous administrative interpretations, administrative procedures, policies and guidance from both headquarters and regional offices for preparation of the 303(d) list. Currently, major revisions in the TMDL regulation process has been proposed; however several controversial sections in the proposal have resulted in a stay of the new regulations. As a result, the 303(d) process is driven by previous guidance and administrative directives. Recent EPA guidance requests that the 303(d) Impaired Waterbody List be submitted with the 305(b) report as an *Integrated Water Quality Monitoring and Assessment Report*. Much of this guidance was used to develop the current 303(d) listing.

Methodology

The primary data base for the year 2002 Integrated Water Quality Monitoring and Assessment Report was from ADEQ's physical/chemical water quality monitoring network which includes 142 permanent stations that are sampled monthly, 114 stations on previously unassessed waters that were sampled on a bi-monthly schedule and 76 stations that were sampled as part of special study projects. The period of record from which this data was assimilated was from October 1, 1998, through December 31, 2001.

In addition, other agencies that routinely collect water quality data, e.g. USGS, USCOE, USFS, ASWCC, AWRC, were solicited for data which demonstrates impaired waterbodies. The period of record for which these data will be accepted will be within the last five (5) years, and all data used must be collected and analyzed under a quality-assurance/quality-control protocol equivalent to or more stringent than that of ADEQ or the USGS.

In order to make a monitored assessment of "non-support" for a stream segment, the data must include at least twelve monthly samples or be supplemented with additional data such as aquatic life community data. However, an assessment of "support" can be made with less than 12 monthly samples, but not less than six bimonthly samples which are supplemented by other information, such as, visual knowledge of the waterbody and its watershed.

The percent exceedance criteria as shown in the Ecoregion Assessment Criteria are calculated using the total number of sampling visits, even if no sample is taken due to the absence of sufficient water.

The number of data points exceeding the criteria which are necessary for a “non-support” decision will be calculated and rounded up to the nearest whole number, e.g. 25% of 38 data points = 9.5 or 10 exceedances equal 25%. A routine sample event that found no water present will count as a sample event. For determination of “not-support” of primary contact use, four or more samples are required during the primary contact season. The samples should be taken no less than weekly.

An evaluated assessment can be made for adjacent stream segments or in similar watersheds to monitored waters if there is reason to believe that the segments are similar with respect to the potential cause and magnitude of an impairment. Unless documentation suggest otherwise, an evaluated assessment in the absence of data, but with general knowledge of the waterbody and watershed conditions, may be made as “support” of a use.

For lakes and reservoirs, assessments will be made from long-term trend data or seasonally distributed data.

Numeric Criteria - ADEQ will assess all waters with qualifying data as either “support” or “non-support” based on the assessment criteria in the attached ecoregion/waterbody specific criteria. Waters will be listed as “threatened” if qualifying water quality data indicates a definitive trend toward impairment that most likely will result in a “non-support” status for the waterbody at the next listing of impaired waters.

Narrative Criteria - Waters will be assessed as “non-support” when violation of any narrative water quality standard has been verified by staff of ADEQ as not meeting the intent, as written, in the specific narrative water quality standards and if an associated numeric standard is violated in the specified waterbody. For example, “...production of objectionable algal densities or other nuisance aquatic vegetation ...” must also result in diurnal D.O. fluctuations which violate the D.O. standard or result in violation of pH, dissolved metals or other numeric standards, or result in a significant alteration of the aquatic life community structure.

Designated Uses - A waterbody will be assessed as “non-support” if any of its designated uses are determined to be impaired by a water quality parameter which exceeds the frequency and magnitude established in the assessment criteria for that parameter or otherwise does not meet a descriptive, designated use.

The following parameters are most often associated with impacts on these designated uses:

Designated Uses

Aquatic life use

Parameters

D.O., pH, temp., turbidity/TSS, toxics, or any non-toxic compound which alters the aquatic life community structure beyond that which is expected

Drinking water	Compounds which are not easily removed by drinking water treatment facilities; compounds with established secondary MCL's, e.g., Cl, SO ₄ , TDS, NO ₃
Primary and Secondary contact	fecal coliform
Agriculture or Industrial uses	Compounds which would interfere with industrial uses such as cooling water or the water used in certain manufacturing processes; or waters unsuitable for livestock watering or crop irrigation; most often includes Cl, SO ₄ , TDS

Fish Consumption - Waters will be listed as “non-support” for fish consumption if a primary segment of the fish community (e.g., all predators or all Largemouth bass) is recommended for non-consumption by any user group (e.g., general population or high risk groups). However, if a consumption restriction is recommended, e.g., no more than two meals per month or no consumption of fish over 15-inches, these waters will not be listed as “non-support”

Antidegradation - In compliance with the antidegradation policy, a Tier 3 waterbody will be listed as “non- support” if the water quality that existed at the time of designation has declined. For all other waters (Tier 1 and Tier 2), the listing requirements discussed above will apply.

ASSESSMENT CRITERIA

Following are ecoregion or stream specific assessment criteria which were used to list all assessed waterbodies as either supporting or not supporting the designated uses. These criteria are developed from Arkansas’ Water Quality Standards and, in part, from EPA guidance for determining support or non-support of a waterbody.

Key to the remarked entries in the assessment criteria are as follows:

- 1- Except for site specific standards approved in Water Quality Standards
- 2 - Based on ecoregion or stream specific hardness values.
- 3 - Refers to number of data points instead of percentage (i.e. greater than one value exceeding criteria = not support).
- 4 - Criteria based on 90th percentile of ecoregion values

ASSESSMENT CRITERIA FOR OZARK HIGHLANDS ECOREGION STREAMS

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	29 C		≤ 10%	>10%		
DISSOLVED OXYGEN	Primary	Critical	≤10%	>10%		
<10 MI ²	6	2				
10-100 MI ²	6	5				
> 100 MI ²	6	6				
TROUT WATERS	6	6				
pH	6 to 9 standard pH units		≤10%	>10%		
T. AMMONIA-N						
ACUTE	12.1 mg/L		≤1	>1		
CHRONIC	1.3 mg/L		≤25%	>25%		
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%	>10%		
CL/SO ₄ /TDS (E.R.)	17/23/250 ¹		≤50%	>50%		
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%	>10%		
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	5.7	1.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	24.6	15.9	≤1	≤10%	>1	>10%
LEAD (Pb)	98.7	3.9	≤1	≤10%	>1	>10%
ZINC (Zn)	159.5	145.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%	>25% ¹		
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%	>25% ¹		
TURBIDITY						
	10 NTU		≤ 25%	>25%		
	17 NTU ⁴		≤ 15%	>15%		
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR BOSTON MOUNTAINS ECOREGION STREAMS

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	31 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI ²	6	2				
> 10 MI ²	6	6				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	39.1 mg/L		≤1		>1	
CHRONIC	2.3 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS (E.R.)	17/15/95 ¹		≤50%		>50%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	0.8	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	4.6	3.5	≤1	≤10%	>1	>10%
LEAD (Pb)	13.9	0.5	≤1	≤10%	>1	>10%
ZINC (Zn)	35.0	32.3	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	10 NTU		≤ 25%		>25%	
	19 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR ARKANSAS RIVER VALLEY ECOREGION STREAMS

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	31 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI ²	5	2				
10-150 MI ²	5	3				
151-400 MI ²	5	4				
>400 MI ²	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	44.6 mg/L		≤1		>1	
CHRONIC	2.4 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS (E.R.)	15/17/112 ¹		≤50%		>50%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	0.8	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	4.6	3.5	≤1	≤10%	>1	>10%
LEAD (Pb)	13.9	0.5	≤1	≤10%	>1	>10%
ZINC (Zn)	35.0	32.3	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	21 NTU		≤ 25%		>25%	
	40 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR OUACHITA MOUNTAINS ECOREGION STREAMS

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI ²	6	2				
>10 MI ²	6	6				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	29.5 mg/L		≤1		>1	
CHRONIC	2.0 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS (E.R.)	15/20/142 ¹		≤50%		>50%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	1.0	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	5.6	4.2	≤1	≤10%	>1	>10%
LEAD (Pb)	17.7	0.7	≤1	≤10%	>1	>10%
ZINC (Zn)	42.4	38.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	10 NTU		≤ 25%		>25%	
	18 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR GULF COASTAL ECOREGION (typical streams)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI ²	5	2				
10-500 MI ²	5	3				
>500 MI ²	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	42.0 mg/L		≤1		>1	
CHRONIC	2.3 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS (E.R.)	19/41/138 ¹		≤50%		>50%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	1.0	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	5.6	4.2	≤1	≤10%	>1	>10%
LEAD (Pb)	17.7	0.7	≤1	≤10%	>1	>10%
ZINC (Zn)	42.4	38.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	21 NTU		≤ 25%		>25%	
	32 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR DELTA ECOREGION (least altered)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI ²	5	2				
10-100 MI ²	5	3				
>100 MI ²	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	19.9 mg/L		≤1		>1	
CHRONIC	1.6 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS (E.R.)	48/37/411 ¹		≤50%		>50%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	2.9	0.9	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	14.0	9.5	≤1	≤10%	>1	>10%
LEAD (Pb)	51.3	2.0	≤1	≤10%	>1	>10%
ZINC (Zn)	95.7	87.4	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	45 NTU		≤ 25%		>25%	
	84 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR GULF COASTAL ECOREGION (springwater influenced)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERSHEDS	6	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	48.8 mg/L		≤1		>1	
CHRONIC	2.5 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS (E.R.)	19/41/138 ¹		≤50%		>50%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	1.0	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	5.6	4.2	≤1	≤10%	>1	>10%
LEAD (Pb)	17.7	0.7	≤1	≤10%	>1	>10%
ZINC (Zn)	42.4	38.7	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	21 NTU		≤ 25%		>25%	
	32 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR DELTA ECOREGION (channel-altered)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
<10 MI ²	5	2				
10-100 MI ²	5	3				
>100 MI ²	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	19.9 mg/L		≤1		>1	
CHRONIC	1.61 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS (E.R.)	48/37/411 ¹		≤50%		>50%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	2.9	0.9	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	14.0	9.5	≤1	≤10%	>1	>10%
LEAD (Pb)	51.3	2.0	≤1	≤10%	>1	>10%
ZINC (Zn)	95.7	87.4	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	75 NTU		≤ 25%		>25%	
	100 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR WHITE RIVER(MAIN STEM)

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
	DATA POINTS EXCEEDING CRITERIA					
TEMPERATURE			≤ 10%		>10%	
DAM #1 TO MOUTH	32 C					
OZARK HIGHLANDS	29 C					
TROUT WATERS	20 C					
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
DELTA	5	5				
OZARK HIGHLANDS	6	6				
TROUT WATERS	6	6				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
LOWER WHITE RIVER ACUTE	14.4 mg/L		≤1		>1	
CHRONIC	1.3 mg/L		≤25%		>25%	
TROUT WATERS (acute)	9.7 mg/l		≤1		>1	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS						
DAM #3 TO MO. LINE	20/20/180 ¹		≤25%		>25%	
MO. LINE TO HEADWATERS	20/20/160 ¹		≤25%		>25%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	4.3	1.2	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	19.6	12.9	≤1	≤10%	>1	>10%
LEAD (Pb)	75.9	3.0	≤1	≤10%	>1	>10%
ZINC (Zn)	129.8	118.5	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY DELTA	45 NTU		≤ 25%		>25%	
	84 NTU ⁴		≤ 15%		>15%	
OZARK HIGHLANDS	10 NTU		≤ 25%		>25%	
	17 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR ST. FRANCIS RIVER

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS ²	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	19.9 mg/L		≤1		>1	
CHRONIC	1.6 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS						
MOUTH TO 36 ⁰ N. LAT.	10/30/330 ¹		≤25%		>25%	
36 ⁰ N. LAT. TO 36 ⁰ 30'N LAT.	10/20/180 ¹		≤25%		>25%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	3.8	1.1	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	17.5	11.6	≤1	≤10%	>1	>10%
LEAD (Pb)	66.7	2.6	≤1	≤10%	>1	>10%
ZINC (Zn)	117.3	107.2	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	75 NTU		≤ 25%		>25%	
	100 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR THE ARKANSAS RIVER

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	26.2 mg/L		≤1		>1	
CHRONIC	1.9 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS						
MOUTH TO L&D #7	250/100/500 ¹		≤25%		>25%	
L&D #7 TO L&D #10	250/100/500 ¹		≤25%		>25%	
L&D #10 TO OK LINE	250/120/500 ¹		≤25%		>25%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS.METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	4.7	1.2	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	21.0	13.7	≤1	≤10%	>1	>10%
LEAD (Pb)	82.3	3.2	≤1	≤10%	>1	>10%
ZINC (Zn)	138.3	126.3	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	50 NTU		≤ 25%		>25%	
	52 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR THE OUACHITA RIVER BELOW LAKE CATHERINE

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE						
L. MISSOURI TO S.LINE	32 C		≤ 10%		>10%	
ABOVE L. MISSOURI	30 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS ²	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	36.1 mg/L		≤1		>1	
CHRONIC	2.2 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS						
LA LINE TO CAMDEN	160/40/350 ¹		≤25%		>25%	
CAMDEN TO CARPENTER DAM	50/40/150 ¹		≤25%		>25%	
CARPENTER DAM TO HEADWATERS	10/10/100		≤25%		>25%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	0.9	0.4	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	5.1	3.8	≤1	≤10%	>1	>10%
LEAD (Pb)	15.8	0.6	≤1	≤10%	>1	>10%
ZINC (Zn)	38.9	35.5	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	21 NTU		≤ 25%		>25%	
	32 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR THE RED RIVER

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤ 10%		>10%	
ALL WATERS ²	5	5				
pH	6 to 9 standard pH units		≤ 10%		>10%	
T. AMMONIA-N						
ACUTE	14.4 mg/L		≤ 1		>1	
CHRONIC	1.3 mg/L		≤ 25%		>25%	
NO ₃ -N (D.W.)	10 mg/L		≤ 10%		>10%	
CL/SO ₄ /TDS						
OK LINE TO CONFLUENCE WITH LITTLE RIVER	250/200/850 ¹		≤ 25%		>25%	
LITTLE RIVER TO LA LINE	250/200/500 ¹		≤ 25%		>25%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤ 10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	8.3	1.8	≤ 1	≤ 10%	> 1	>10%
CHROMIUM (Cr)	16.0	11.0	≤ 1	≤ 10%	> 1	>10%
COPPER (Cu)	34.4	21.5	≤ 1	≤ 10%	> 1	>10%
LEAD (Pb)	144.1	5.6	≤ 1	≤ 10%	> 1	>10%
ZINC (Zn)	215.5	196.7	≤ 1	≤ 10%	> 1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	75 NTU		≤ 25%		>25%	
	75 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

ASSESSMENT CRITERIA FOR THE MISSISSIPPI RIVER

PARAMETER	ECOREGION STANDARD		SUPPORT		NON-SUPPORT	
			DATA POINTS EXCEEDING CRITERIA			
TEMPERATURE	32 C		≤ 10%		>10%	
DISSOLVED OXYGEN	Primary	Critical	≤10%		>10%	
ALL WATERS ²	5	5				
pH	6 to 9 standard pH units		≤10%		>10%	
T. AMMONIA-N						
ACUTE	19.9 mg/L		≤1		>1	
CHRONIC	1.6 mg/L		≤25%		>25%	
NO ₃ -N (D.W.)	10 mg/L (drinking water)		≤10%		>10%	
CL/SO ₄ /TDS						
LA LINE TO AR RIVER	60/150/425 ¹		≤25%		>25%	
AR RIVER TO MO LINE	60/175/450 ¹		≤25%		>25%	
CL/SO ₄ /TDS (D.W.)	250/250/500		≤10%		>10%	
DISS. METALS ³ (ug/L)	Acute	Chronic	Acute ⁴	Chronic	Acute ⁴	Chronic
CADMIUM (Cd)	3.7	1.0	≤1	≤10%	>1	>10%
CHROMIUM (Cr)	16.0	11.0	≤1	≤10%	>1	>10%
COPPER (Cu)	17.0	11.4	≤1	≤10%	>1	>10%
LEAD (Pb)	64.6	2.5	≤1	≤10%	>1	>10%
ZINC (Zn)	114.4	104.5	≤1	≤10%	>1	>10%
FECAL COLIFORM						
PRIM.CONTACT	400 col/100 ml (apr-sept)		≤ 25%		>25% ¹	
SEC.CONTACT	2000 col/100 ml(anytime)		≤ 25%		>25% ¹	
TURBIDITY						
	50 NTU		≤ 25%		>25%	
	50 NTU ⁴		≤ 15%		>15%	
FISH CONSUMPTION			No restriction or limited consumption		No consumption for any user group	

Water Quality Limited Waters

The waters designated as not meeting water quality standards are listed in Table 1 for rivers and streams and Table 2 for lakes and reservoirs. A key to the abbreviations used with the lists is attached. The lists include 59 stream segments totaling 1268.9 miles, and five lakes totaling 17,062 acres. Nine stream segments are located on small streams dominated and impacted by a point source discharge. These segments total 69.8 miles. TMDLs have been conducted on three of these which total 28.3 miles, and all of these impairments can be corrected by modification of NPDES permits.

Twenty (20) stream segments with a total of 307.2 miles are listed as non-support of fish consumption use due to mercury contamination. All lakes listed are for mercury contamination except Lake Dupree which has a “no consumption” fish advisory due to dioxin contamination. An extensive multi-year investigation by a multi-agency task force has concluded that there is a source of mercury in the naturally occurring geological formations in the Ouachita Mountains area of the State, and it apparently manifests itself when the runoff from this area enters the sluggish, lowland areas of the State. The mercury impaired waters make up over one-fourth of the stream miles on the 303(d) list for the State. TMDLs for all mercury impaired waters in Arkansas are in progress and TMDLs for the Bayou Bartholomew basin, Flat Creek/Salt Creek basin and Strawberry River basin are currently being conducted. In addition, a TMDL has been completed on the L’Anguille basin. The total stream miles on which a TMDL has been completed or is in progress is 758.9. This also includes Lakes Columbia, Felsenthal, Big Johnson and Grays. Although numerous TMDLs have been completed or are in progress, the current 303(d) list retains the listing of these waters. The waters where a TMDL has been completed has a “Status” designation of “4A”; those waters where a TMDL is in progress or is required are designated as “Status 5”.

Additional dissolved oxygen data was collected from the Arkansas River below the Dardanelle Lock and Dam and in the Ft. Smith area. Below standard DO values were confirmed only immediately below the Dardanelle Lock and Dam with recovery occurring approximately 2 miles downstream in most cases. This led to the listing of 2 miles of the Arkansas River as impaired from hydropower releases from the upstream reservoir during periods of hypoxic conditions in the bottom strata of the reservoir.

The 2002 listing of impaired waters contains seven additional segments and 121.9 additional miles compared to the 1998 list. The majority of this increase is from the southeast Arkansas delta area where additional monitoring indicates very high turbidity values in these channel-altered streams during high run-off events. It is questionable whether these high turbidity values or the physical alteration of the stream habitat has impaired the aquatic life uses in these streams.

Figure 1. is a map of the impaired waters on the 303(d) list.

Key to Abbreviations in 303 (d) List

Priority Rank - A ranking of waters in order of need for corrective action taking into account the severity of the pollution and the designated uses of the waters.

H = high priority
M = medium priority
L = low priority

Assessed Uses of waters include: fish consumption, aquatic life communities, primary contact (swimmable), secondary contact (limited body contact), water supply for raw drinking water, agriculture and industrial uses.

S = use is fully supported M = monitored assessment
N = use not supported E = evaluated assessment
R = designated use removed

Sources of Contamination - the probable source of the contaminant causing impairment

AG = agriculture activities
RE = resource extraction (mining; oil and gas extraction)
IP = industrial point source
MP = municipal point source
RC = road construction/maintenance
HP = hydropower
UN = unknown

Causes of Impairment - the identified contaminant

SI = siltation/turbidity
NU = nutrients
PA = pathogen indicator bacteria
PO = priority organics
MN = minerals (chlorides/sulfates/total dissolved solids)
ME = heavy metals
OE = organic enrichment/low dissolved oxygen
AM = ammonia
HG = mercury
DO = dissolved oxygen

H.U.C. - Reach - a numerical identifier of a specific segment of a stream

Miles - the total length (in miles) of a specific reach or segment of a stream

Station - water quality monitoring station number

**Table 1. Water Quality Limited Waterbodies - 303(d) List
Rivers and Streams**

PRIORITY	STREAM NAME	HUC	REACH	PLNG SEG	MILES	MONITORING STATIONS	ASSESS	FISH COMSUMP	AQUATIC LIFE	PRIMARY CONTACT	SECONDARY CONTACT	DRINKING WATER	AGRI & INDUSTRY	MAJOR SOURCE	MINOR SOURCE	MAJOR CAUSE	MINOR CAUSE	STATUS	TMDL DATE
H	Dorcheat Bayou	11140203	-026	1A	23.3	BDT01,02	M	N	S	S	S	S	S	UN		HG		5	2002
H	Dorcheat Bayou	11140203	-024	1A	7		E	N	S	S	S	S	S	UN		HG		5	2002
H	Dorcheat Bayou	11140203	-022	1A	8.4	RED15A	M	N	S	S	S	S	S	UN		HG		5	2002
H	Dorcheat Bayou	11140203	-020	1A	11.9		E	N	S	S	S	S	S	UN		HG		5	2002
M	Days Creek	11140302	-003	1B	11	RED04A	M	S	S	S	S	N	S	MP		NU		5	2005
M	Holly Creek	11140109	-013	1C	12.7	RED34A&B	M	S	S	N	S	S	S	MP	IP	PA		5	2005
M	Rolling Fork	11140109	-027	1C	8	RED30&58	M	S	N	S	S	S	S	IP		NU		5	2005
L	Boeuf River	8050001	-018	2A	49.4	OUA15A	M	S	N	S	S	S	S	AG		SI	MN	5	2006
L	Boeuf River	8050001	-019	2A	58.1	BFR01	M	S	N	S	S	S	S	AG		SI	MN	5	2006
L	Big Bayou	8050001	-022	2A	27.1	BGB01,+	M	S	N	S	S	S	S	AG		SI	MN	5	2006
L	Macon Bayou	8050002	-003	2A	80.5	BYM02	M	S	N	S	S	S	S	AG		SI		5	2006
L	Macon Bayou	8050002	-006	2A	38.6	BYM01	M	S	N	S	S	S	S	AG		SI		5	2006
L	Oak Bayou	8050002	-010	2A	48.4	OUA179	M	S	N	S	S	S	S	AG		SI	MN	5	2006
H	B. Bartholomew	8040205	-001	2B	60.1	OUA13	M	S	N	S	S	S	S	AG		SI		5	2003
H	B. Bartholomew	8040205	-002	2B	17.9	BYB01	M	N	N	S	S	S	S	UN	AG	HG	SI	5	2003
H	B. Bartholomew	8040205	-006	2B	82.3	OUA33	M	S	N	S	S	S	S	AG		SI		5	2003
H	Deep Bayou	8040205	-005	2B	28.9	OUA151	M	S	N	S	S	S	S	AG		SI		5	2003
H	B. Bartholomew	8040205	-012U	2B	82.7	BYB02	M	S	N	S	S	S	S	AG		SI		5	2003
H	B. Bartholomew	8040205	-012	2B	25		M	N	N	S	S	S	S	UN	AG	HG	SI	5	2003
H	B. Bartholomew	8040205	-013	2B	33.9	BYB03	M	S	N	S	S	S	S	AG		SI		5	2003
H	Cutoff Creek	8040205	-007	2B	16.8	COC01	M	N	S	S	S	S	S	UN		HG		5	2003
H	Saline River	8040203	-001	2C	0.2		E	N	S	S	S	S	S	UN		HG		5	2002
L	Big Creek	8040203	-904	2C	10	OUA18	M	S	N	S	S	S	S	MP		OE		5	2010
H	Saline River	8040204	-001	2C	2.8		M	N	S	S	S	S	S	UN		HG		5	2002
H	Saline River	8040204	-002	2C	53	OUA10A&117	M	N	S	S	S	S	S	UN		HG		5	2002
H	Saline River	8040204	-004	2C	16.4		M	N	S	S	S	S	S	UN		HG		5	2002
H	Saline River	8040204	-006	2C	17.5	OUA118	M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040202	-002	2D	4	OUA08B	M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040202	-003	2D	8.4		M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040202	-004	2D	28.9	OUA124B	M	N	S	S	S	S	S	UN		HG		5	2002
H	Moro Creek	8040201	-001L	2D	12		M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040201	-002	2D	22.5		M	N	S	S	S	S	S	UN		HG		5	2002
H	Ouachita River	8040201	-004	2D	2.5		M	N	S	S	S	S	S	UN		HG		5	2002
H	Champagnolle	8040201	003L	2D	20	CHC01	M	N	S	S	S	S	S	UN		HG		5	2002
H	Elcc Trib.	8040201	-606	2D	8.5	OUA137A+	M	S	N	S	S	N	S	IP		AM	MN	5	2003
H	Flat Cr.	8040201	-706	2D	16	OUA137C	M	S	N	S	S	N	S	RE		MN		5	2003
H	Salt Cr.	8040201	-806	2D	8	OUA137D	M	S	N	S	S	N	S	RE		MN		5	2003
L	Bayou Meto	8020402	-007	3B	65.7	ARK60,50	M	N	S	S	S	S	S	IP		PO		5	2010
M	Fourche LaFave	11110206	-002	3E	8.7		M	N	S	S	S	S	S	UN		HG		5	2004
M	Stone Dam Creek	11110203	-904	3F	3	ARK51	M	S	N	S	S	N	S	MP		AM	NU	5	2004
L	Arkansas River	11110203	_031U	3F	2		M	S	N	S	S	S	S	HP		DO		5	2010
H	Whig Creek	11110203	-931	3F	10	ARK67	M	S	N	S	S	N	S	MP		NU	ME	4A	2001

**Table 1. Water Quality Limited Waterbodies - 303(d) List
Rivers and Streams**

PRIORITY	STREAM NAME	HUC	REACH	P_SEG	MILES	MONITORING STATIONS	ASSESS	FISH COMSUMP	AQUATIC LIFE	PRIMARY CONTACT	SECONDARY CONTACT	DRINKING WATER	AGRI & INDUSTRY	MAJOR SOURCE	MINOR SOURCE	MAJOR CAUSE	MINOR CAUSE	STATUS	TMDL DATE
L	Poteau River	11110105	-001	3I	2	ARK14	M	S	N	S	S	S	S	AG		SI		5	2005
M	Poteau River	11110105	-031	3I	6.6	ARK55	M	S	N	S	S	R	S	IP	MP	ME		5	2005
M	Clear Creek	11110103	-029	3J	13.5	ARK10C	M	S	N	S	S	S	S	AG	UR	SI		5	2004
H	Town Branch	11070208	-901	3J	3	ARK56	M	S	S	S	S	N	S	MP		NU		5	2004
M	Bayou DeView	8020302	-009	4B	20.3	WHI26	M	S	N	S	S	S	S	AG	MP	SI	ME	5	2005
H	Hicks Creek	11010004	-015	4F	9.1	WHI65	M	S	S	S	S	N	S	MP		NU		4A	2001
M	Strawberry R.	11010012	-004	4G	0.3		E	S	N	S	S	S	S	AG		SI		5	2004
M	Strawberry R.	11010012	-005	4G	0.7		E	S	N	S	S	S	S	AG		SI		5	2004
M	Strawberry R.	11010012	-011	4G	20.4	SBR01	M	S	N	N	S	S	S	AG		SI	PA	5	2004
M	White River	11010001	-023	4K	6.2	WHI52	M	S	N	S	S	S	S	RC	AG	SI		5	2005
M	West Fork	11010001	-024	4K	27.2	WHI51	M	S	N	S	S	S	S	RC	AG	SI		5	2005
H	Holman Creek	11010001	-059	4K	9.1	WHI70	M	S	S	S	S	N	S	MP		NU		4A	2001
H	L'Anguille R.	8020205	-001	5B	19.7	FRA10	M	S	N	S	S	S	S	AG		SI		4A	2001
H	L'Anguille R.	8020205	-003	5B	1.8		E	S	N		S	S	S	AG		SI		4A	2001
H	L'Anguille R.	8020205	-004	5B	16	LGR01	M	S	N	S	S	S	S	AG		SI		4A	2001
H	L'Anguille R.	8020205	-005	5B	44.1	LGR02	M	S	N	S	S	S	S	AG		SI		4A	2001

Stream Segments 59
Total Miles 1268.9

**Table 2. Water Quality Limited Waterbodies - 303(d) List
Lakes and Reservoirs**

PRIORITY	LAKE NAME	REACH CODE	LAKE NUMBER	PLNG SEGMENT	ACRES	FISH CONSUMP	AQUATIC LIFE	PRIMARY CONTACT	SECONDARY CONTACT	DRINKING WATER	AGRI & INDUSTRY	MAJOR SOURCE	MINOR SOURCE	MAJOR CAUSE	MINOR CAUSE	STATUS	TMDL DATE
H	COLUMBIA	11140203000286	71	1A	2,950	N	S	S	S	S	S	UN		HG		5	2002
H	FELSENTHAL	08040202001585	77	2D	14,000	N	S	S	S	S	S	UN		HG		5	2002
H	BIG JOHNSON			2D	80	N	S	S	S	S	S	UN		HG		5	2002
H	DUPREE			3B	10	N	S	S	S	S	S	IP		PO		5	2010
H	GRAYS			2C	22	N	S	S	S	S	S	UN		HG		5	2002

TOTAL ACRES 17,062

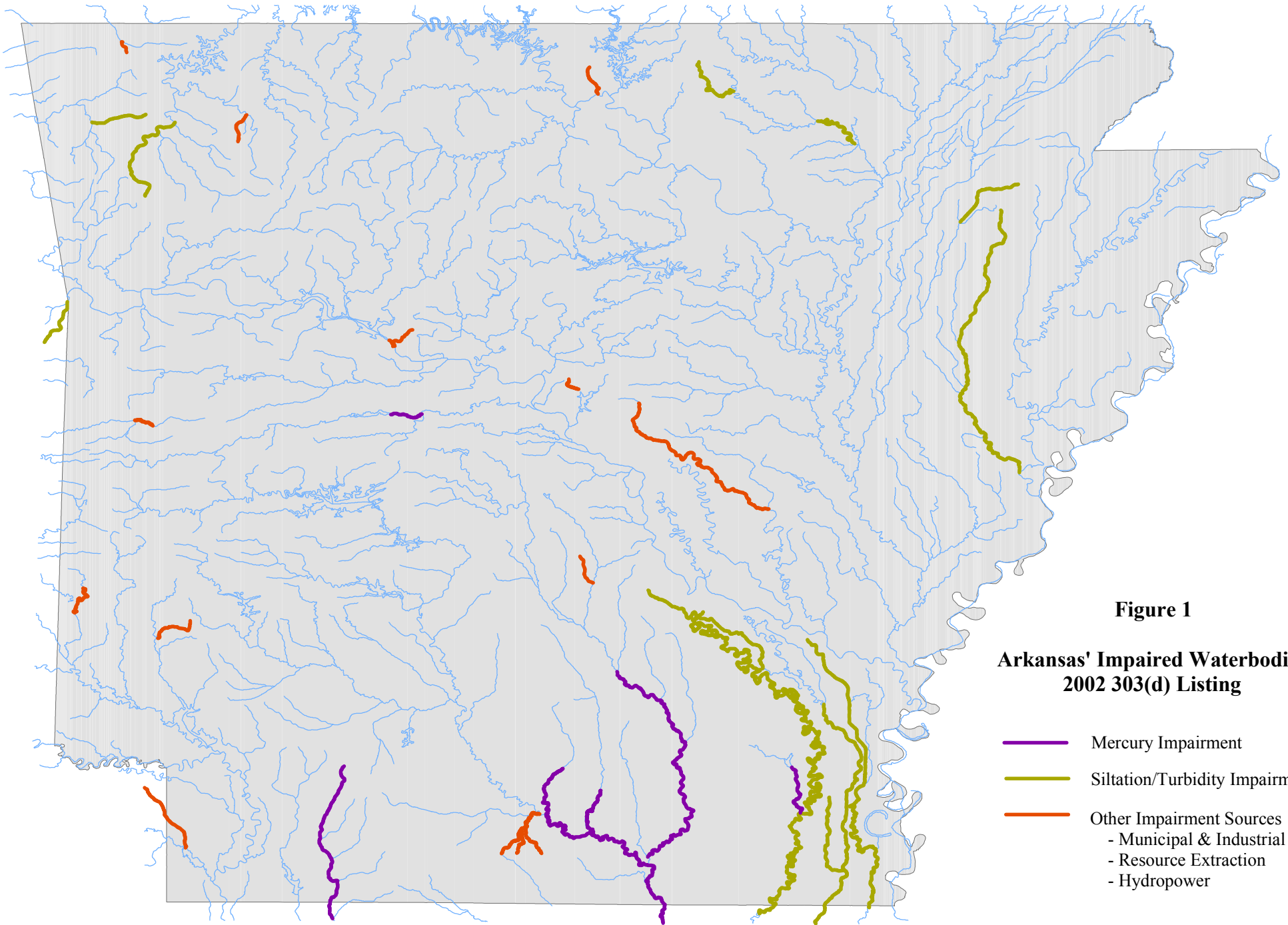


Figure 1

**Arkansas' Impaired Waterbodies
2002 303(d) Listing**

- Mercury Impairment
- Siltation/Turbidity Impairment
- Other Impairment Sources
 - Municipal & Industrial
 - Resource Extraction
 - Hydropower