

## Draft

# TMDLs for Chloride, Sulfate, and Total Dissolved Solids for the Saline River Basin, Arkansas

(HUC 08040204-006; HUC 08040203-007, -008, -009, and -010)

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## EXECUTIVE SUMMARY

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (at Title 40 of the *Code of Federal Regulations* [CFR] Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for impaired waterbodies. A TMDL establishes the amount of a pollutant that a waterbody can assimilate without exceeding its water quality standard for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and nonpoint sources to restore and maintain the quality of the state's water resources (USEPA 1991).

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the lack of knowledge in the relationship between pollutant loads and the water quality of the receiving waterbody. The TMDL components are illustrated using the following equation:

$$TMDL = \sum WLAs + \sum LAs + MOS$$

The study area for this TMDL is the Saline River Basin, which is in central Arkansas in Planning Segment 2C. The Saline River is approximately 200 miles in length and begins in the foothills of the Ouachita Mountains in Saline and Garland counties in Arkansas. The headwaters of the river are the South Fork, Middle Fork, Alum Fork, and North Fork, which merge north of the city of Benton, Arkansas. After the four forks merge, the river travels through Saline, Grant, Dallas, Cleveland, Bradley, Ashley, and Drew counties. The river then flows into the Ouachita River in the Felsenthal National Wildlife Refuge just north of the Louisiana state border. Forest is the dominant land use in the Saline River Basin (> 80 percent). Urban areas in the watershed include the cities of Benton, Bryant, and Sheridan.

The Arkansas Department of Environmental Quality (ADEQ) included five stream segments in the Saline River Basin on the state's 2004 section 303(d) list for various impairments (Table ES-1). The pollutants causing these impairments include chloride, sulfate, and total dissolved solids (TDS). The impaired designated use for the five segments is agriculture and industry water supply.

The numeric water quality criteria that apply to the impaired subsegments in the Saline River Basin and were used to calculate the total allowable loads are presented in Table ES-2.

The TMDLs for all pollutants (chloride, sulfate, and TDS) were developed using the load duration curve methodology. This method illustrates allowable loading at a wide range of stream flow conditions. The steps for applying the methodology are as follows: (1) develop a flow duration curve; (2) convert the flow duration curve to load duration curves; (3) plot observed loads with load duration curves; and (4) calculate the TMDL, MOS, WLA, and LA. The TMDLs were not developed for a particular season, and they apply year-round.

**Table ES-1. Section 303(d) and Integrated Report information for the Saline River Basin**

<b>Stream reach number</b>	<b>Stream reach name</b>	<b>Impaired use</b>	<b>Causes of impairment</b>	<b>Suspected sources of impairment</b>
08040204-006	Saline River	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction
08040203-007	Saline River	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction
08040203-008	Lost Creek	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction
08040203-009	Saline River	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction
08040203-010	Saline River	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction

Source: ADEQ 2005.

**Table ES-2. Numeric water quality criteria for the listed segments**

<b>Stream reach number</b>	<b>Stream reach name</b>	<b>Chloride<sup>ab</sup> (mg/L)</b>	<b>Sulfate<sup>ab</sup> (mg/L)</b>	<b>TDS<sup>ab</sup> (mg/L)</b>
08040204-006	Saline River	20	40	120
08040203-007	Saline River	20	40	120
08040203-008	Lost Creek (above Little Lost Creek)	14	510	820
08040203-008	Lost Creek (below Little Lost Creek)	14	300	550
08040203-009	Saline River	20	40	120
08040203-010	Saline River	20	40	120

Note: mg/L = milligrams per liter;

<sup>a</sup> These criteria shall apply to all surface waters of the state at all times except during periods when flows are less than the applicable critical flow. Streams with regulated flow will be addressed on a case-by-case basis to maintain designated instream uses. These standards apply outside the applicable mixing zone. Waters may, on occasion have natural background levels of certain substances outside the limits established by these criteria, in which case these criteria do not apply to the naturally occurring excursions. These criteria are not to be exceeded in more than one in ten samples collected over a period of not less than 30 days or more than 360 days.

<sup>b</sup> Note that the most stringent criteria were applied to segment 08040203-008 (i.e., the chloride, sulfate, and TDS criteria of 14, 300, and 550, respectively, were applied to the entire segment).

Source: APCEC 2007

In TMDL development, allowable loadings from all pollutant sources that cumulatively amount to no more than the TMDL must be established, thereby providing the basis for establishing water quality-based controls. WLAs were given to permitted point source discharges, including Phase II municipal separate storm sewer systems (MS4s). The LAs include background loadings, as well as human-induced nonpoint sources. An explicit MOS of 10 percent was included. A summary of the TMDLs for the segments addressed in this report is presented in Table ES-3.

**Table ES-3. Summary of chloride, sulfate, and TDS TMDLs, MOS, WLAs, and LAs for the Saline River Basin**

HUC/reach	Water quality station	Pollutant	Total allowable loading	Explicit MOS (10%)	$\Sigma$ WLA	$\Sigma$ LA
			lb/day			
08040203-007	OUA0042	Chloride	150,903	15,090	5,420	130,392
08040203-007	OUA0042	Sulfate	301,805	30,181	10,840	260,784
08040203-007	OUA0042	TDS	905,416	90,542	32,521	782,353
08040203-008		Chloride	16,826	1,683	34	15,109
08040203-008		Sulfate	33,651	3,365	68	30,218
08040203-008		TDS	100,954	10,095	204	90,654
08040203-009		Chloride	123,839	12,384	5,427	106,028
08040203-009		Sulfate	247,678	24,768	10,796	212,114
08040203-009		TDS	743,035	74,304	32,568	636,164
08040203-010	OUA0026/ OUA0041	Chloride	92,250	9,225	6,122	76,903
08040203-010	OUA0026/ OUA0041	Sulfate	184,500	18,450	49,677	116,373
08040203-010	OUA0026/ OUA0041	TDS	553,501	55,350	115,456	382,694
08040204-006	OUA0118	Chloride	247,664	24,766	12,879	210,018
08040204-006	OUA0118	Sulfate	495,327	49,533	52,443	393,351
08040204-006	OUA0118	TDS	1,485,982	148,598	111,965	1,225,419

Note: Loadings for segment 08040203-010 are included in segment 08040203-009. Loadings for segment 08040203-009 are included in segment 08040203-007. Loadings from segments 08040203-007 and 08040203-008 are included in 08040204-006.



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## 1 INTRODUCTION

Section 303(d) of the Clean Water Act and the U.S. Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (at Title 40 of the *Code of Federal Regulations* [CFR] Part 130) require states to develop Total Maximum Daily Loads (TMDLs) for waterbodies that are not supporting their designated uses even after pollutant sources have implemented technology-based controls. A TMDL establishes the maximum allowable load (mass per unit of time) of a pollutant that a waterbody is able to assimilate and still support its designated uses. The maximum allowable load is determined on the basis of the relationship between pollutant sources and in-stream water quality. A TMDL provides the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and nonpoint sources to restore and maintain the quality of the state's water resources (USEPA 1991).

Monitoring data collected by the Arkansas Department of Environmental Quality (ADEQ) indicate that observed pollutant levels sometimes exceed water quality criteria for five stream segments in the Saline River Basin. The impaired designated use for the five segments is agriculture and industry water supply. The pollutants causing these impairments include chloride, sulfate, and total dissolved solids (TDS). Table 1-1 presents information from Arkansas's 2004 Integrated Report (ADEQ 2005) for the five segments.

**Table 1-1. Section 303(d) and Integrated Report information for the Saline River Basin**

Stream reach number	Stream reach name	Impaired use	Causes of impairment	Suspected sources of impairment
08040204-006	Saline River	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction
08040203-007	Saline River	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction
08040203-008	Lost Creek	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction
08040203-009	Saline River	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction
08040203-010	Saline River	Agriculture and industry water supply	Chloride, sulfate, TDS	Resource extraction

Source: ADEQ 2005

## 2 BACKGROUND INFORMATION

### 2.1 General Description

The five stream segments addressed in this TMDL report are in central Arkansas (Figure 2-1) in portions of U.S. Geological Survey (USGS) hydrologic unit code (HUC) 08040203. The Saline River is approximately 200 miles in length and begins in the foothills of the Ouachita Mountains in Saline and Garland counties, Arkansas. The headwaters of the river are the South Fork, Middle Fork, Alum Fork, and North Fork, which merge north of the city of Benton, Arkansas. After the four forks merge, the river travels through Saline, Grant, Dallas, Cleveland, Bradley, Drew, and Ashley counties. The river then flows into the Ouachita River in the Felsenthal National Wildlife Refuge just north of the Louisiana state border. Table 2-1 lists the counties in which the segments are located and the approximate drainage area of each segment.

**Table 2-1. County and drainage area for each listed subsegment in the Saline River Basin**

Stream reach number	Stream reach name	County	Total drainage area (acres)	Unique subwatershed Area (acres)
08040204-006	Saline River	Saline, Grant, Jefferson, Cleveland	1,180,666	461,278
08040203-007	Saline River	Grant, Dallas, Cleveland	719,388	48,805
08040203-008	Lost Creek	Saline, Grant	80,213	80,213
08040203-009	Saline River	Saline, Hot Spring, Grant, Dallas	590,370	150,596
08040203-010	Saline River	Garland, Saline, Grant	439,774	439,774

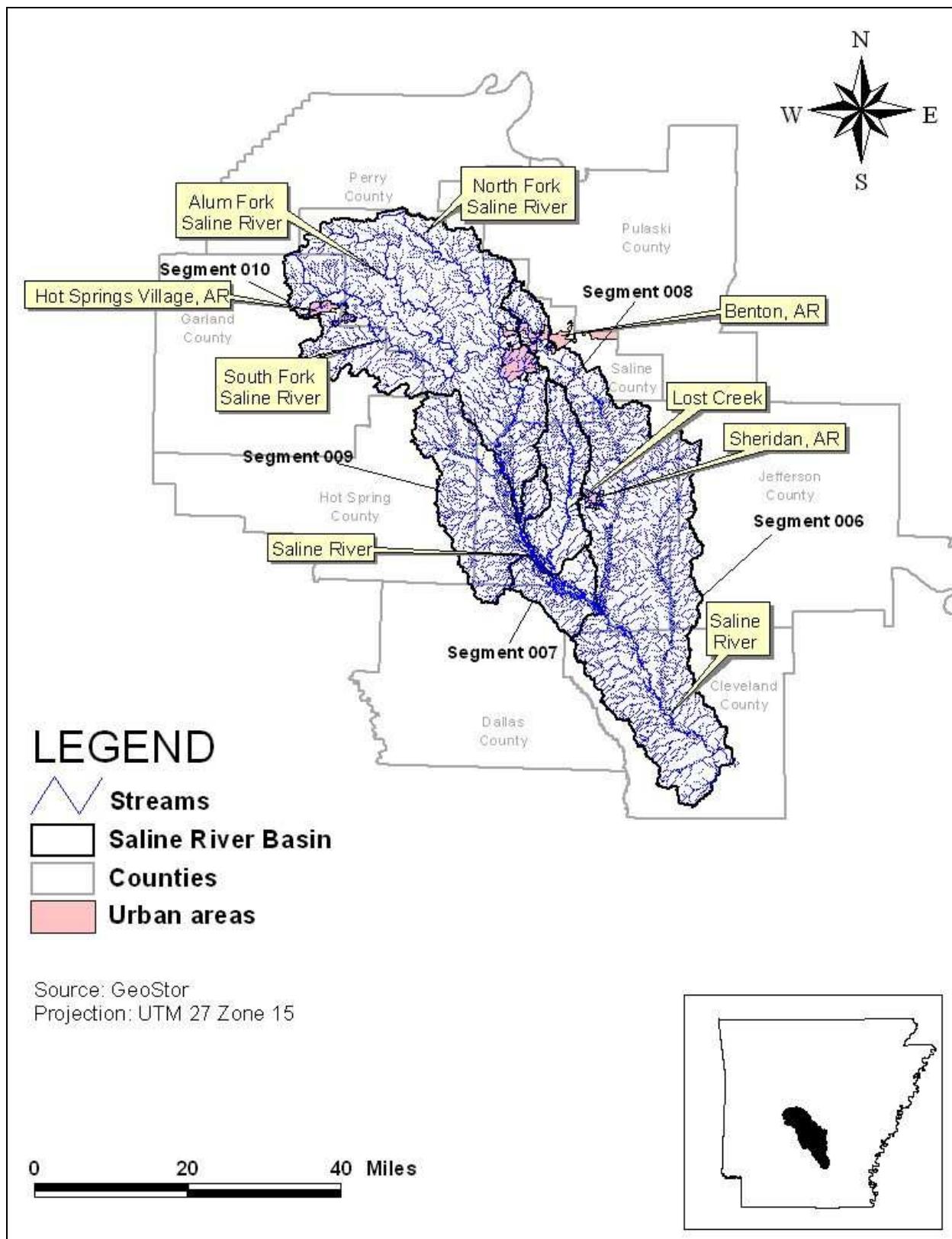


Figure 2-1. Location of the Saline River Basin.

## 2.2 Land Use

Land use data were obtained from the Center for Advanced Spatial Technologies (CAST) at the University of Arkansas in Fayetteville (2005). Table 2-2 and Figure 2-2 present the percentage of segment area covered by each land use and the land use coverage, respectively. Forest constitutes more than 80 percent of the land area in all five of the segments in the Saline River Basin. Pasture/forage is the second largest land use in all the segments, covering at least 9 percent of the area in all segments. Segment 010 has the largest urban area (5.4 percent); portions of Hot Springs Village and the city of Benton are within the watershed.

**Table 2-2. Land use by stream segment**

Land use	Stream segment number									
	08040204-006		08040203-007		08040203-008		08040203-009		08040203-010	
	Area (acres)	Percent coverage	Area (acres)	Percent coverage	Area (acres)	Percent coverage	Area (acres)	Percent coverage	Area (acres)	Percent coverage
Barren	3,168	0.3	1,370	0.2	455	0.6	800	0.1	523	0.1
Forest	1,018,234	86.3	611,701	85.0	410	87.7	496,829	84.2	368,060	83.7
Pasture/ forage	111,173	9.4	70,908	9.9	8,740	10.9	58,962	10	40,932	9.3
Urban	35,501	3.0	26,888	3.7	258	0.3	26,263	4.5	23,782	5.4
Water	12,065	1.0	8,248	1.2	410	0.5	7,276	1.2	6,313	1.5
<b>TOTAL</b>	<b>1,180,141</b>	<b>100</b>	<b>719,116</b>	<b>100</b>	<b>80,215</b>	<b>100</b>	<b>590,130</b>	<b>100</b>	<b>439,611</b>	<b>100</b>

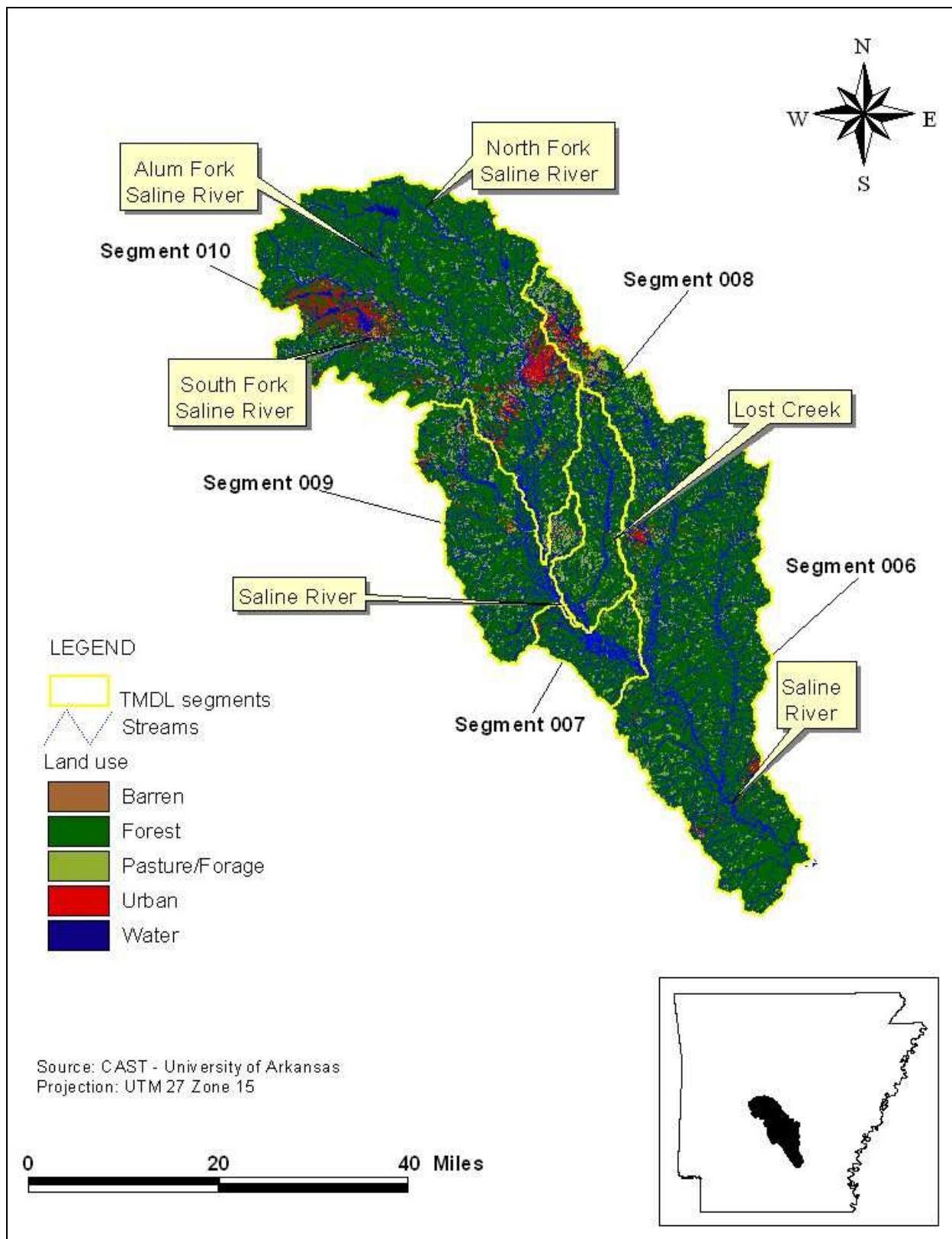


Figure 2-2. Land use in the Saline River Basin.

## 2.3 Flow Characteristics

USGS gauges 07363000 (Saline River at Benton) and 07363200 (Saline River near Sheridan) are the only gauges actually on the listed segments addressed in this report. There are no flow gauges on Lost Creek or segment 006 of the Saline River; however, there is a flow gauge just below segment 006 (07363500). Because there are only two active USGS flow-monitoring gauges in the listed segments, flow data are not available for all the segments in the Saline River Basin. Table 2-5 presents information for the flow gauges used in this TMDL.

**Table 2-3. USGS flow gauge information for the Saline River Basin**

Station number	Station name	Period of record	Drainage area (square miles)
07363500	Saline River near Rye	1937–present	2,102
07363200	Saline River near Sheridan	1971–82; 2001–06	1,123
07363000	Saline River at Benton	1951–79; 1983; 2001–06	550

USGS gauge 07363500 is on the Saline River, approximately 10 miles south of segment 006. USGS gauge 07363200 is on segment 007 of the Saline River, about 1.6 miles below the confluence with Lost Creek. USGS gauge 07363000 is on segment 010 of the Saline River in Benton, approximately 3 miles downstream of the confluence of the Saline River with the North Fork Saline River. Figure 2-3 shows the locations of the four USGS gauges.

The seasonal distribution of flow at each of the four flow gauging stations is shown in Figures 2-4 through 2-6. Low flow occurs in the summer and early fall, and high flow tends to occur in late winter and early spring.

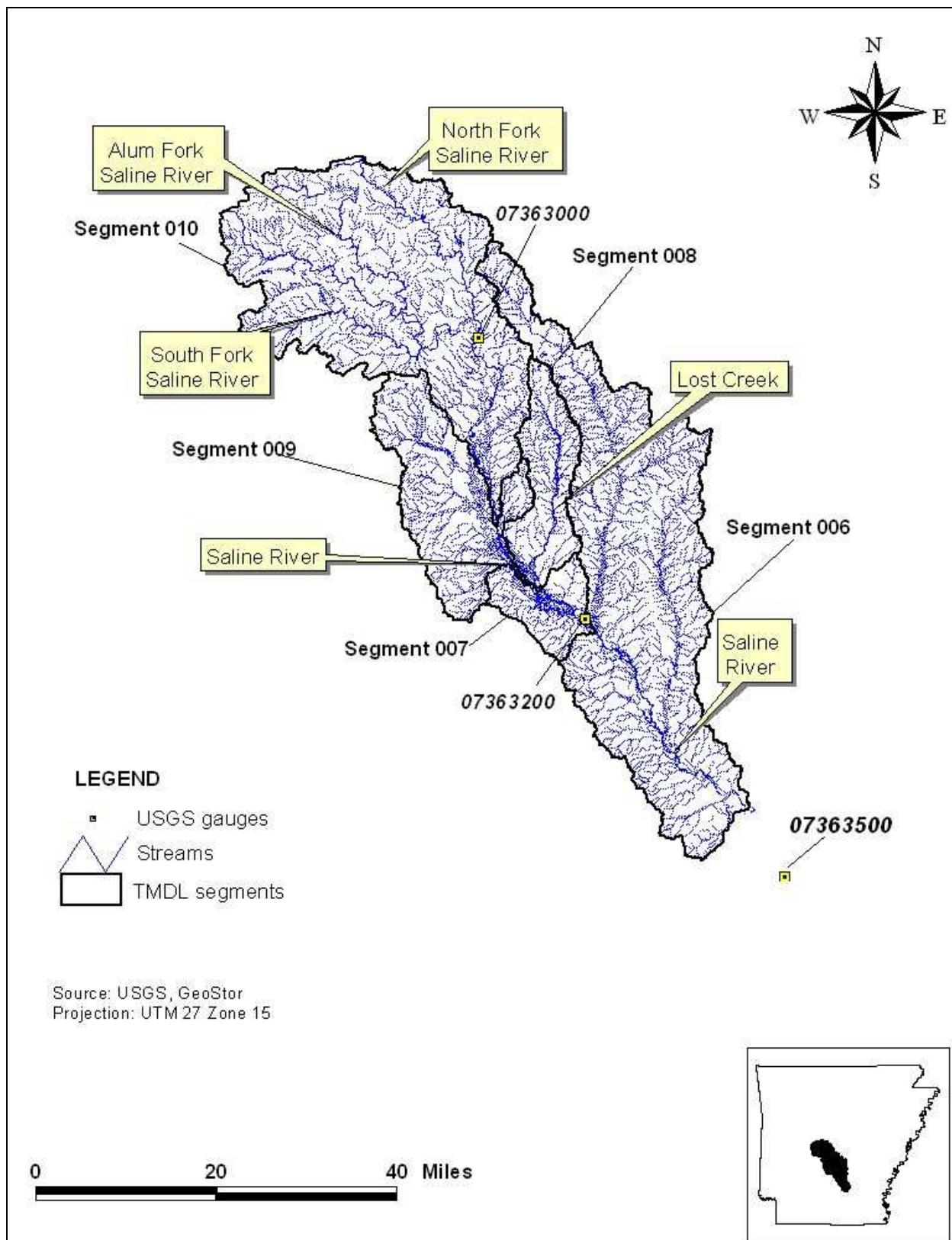
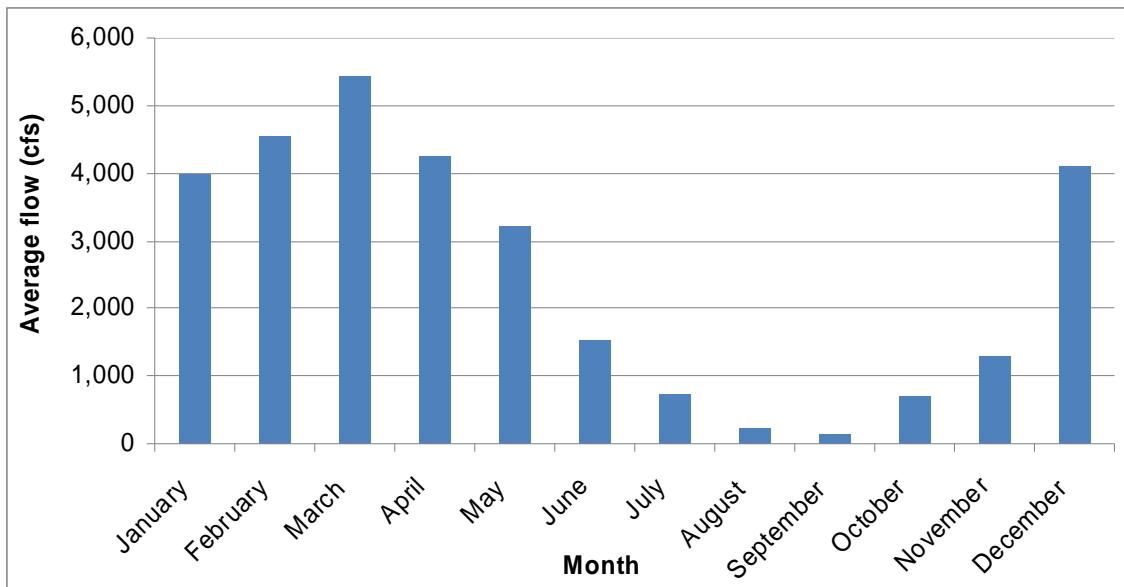
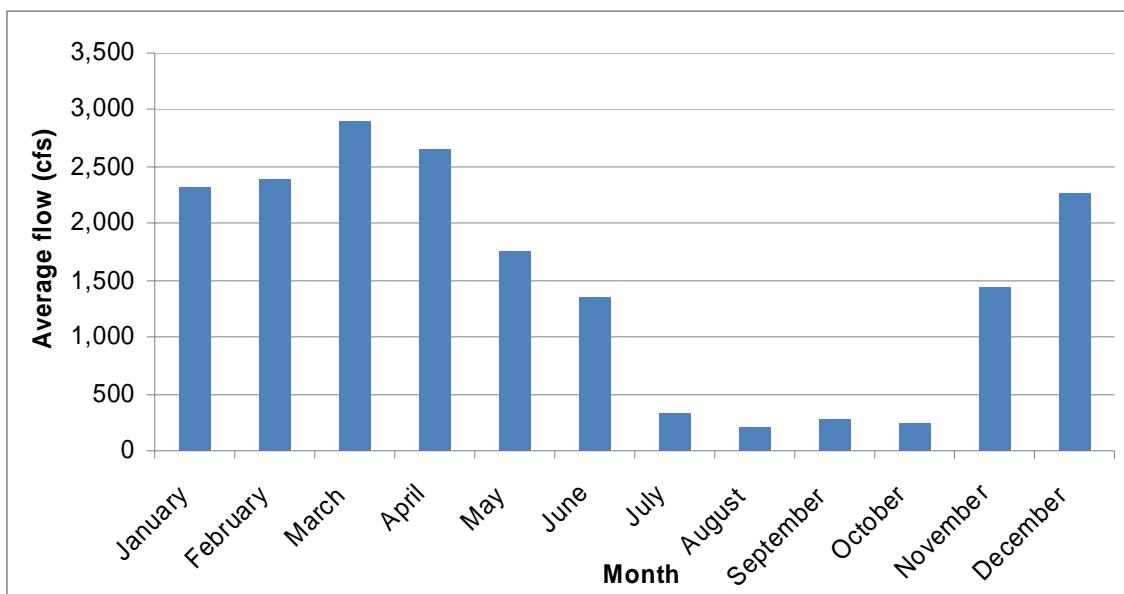


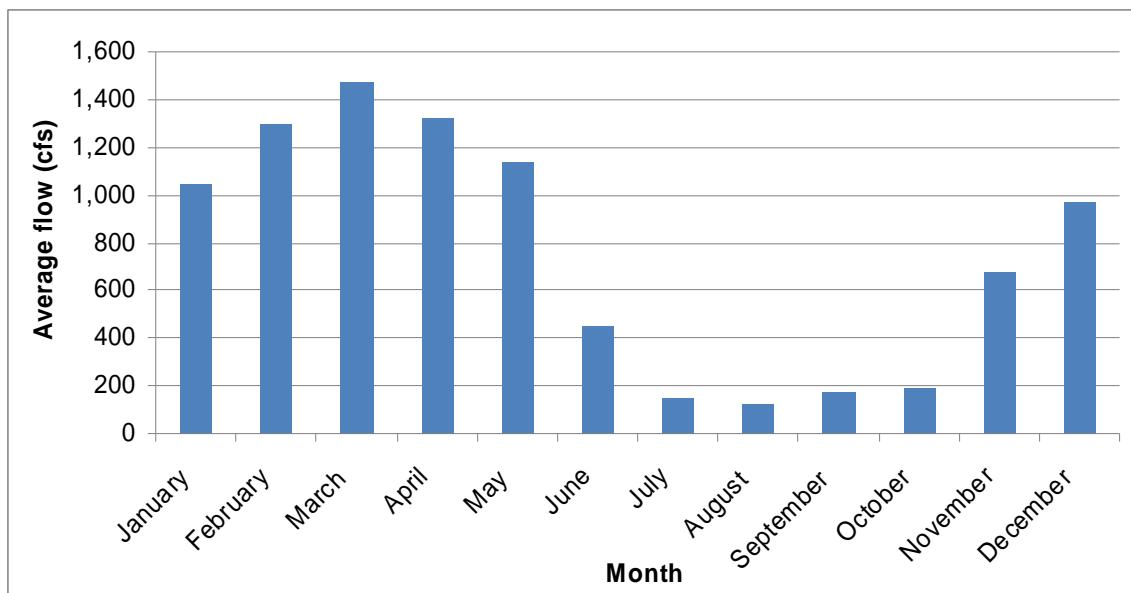
Figure 2-3. Location of USGS gauges assigned to the segments in the Saline River Basin.



**Figure 2-4. Seasonal distribution of flow at Saline River near Rye, Arkansas (USGS 07363500) for 1958 through 2002.**



**Figure 2-5. Seasonal distribution of flow at Saline River near Sheridan, Arkansas (USGS 07363200) for 1958 through 2002.**



**Figure 2-6. Seasonal distribution of flow at Saline River at Benton, Arkansas (USGS 07363000) for 1958 through 2002.**

## 2.4 Designated Uses and Water Quality Criteria

The designated uses for the Saline River are extraordinary resource waters (the entire river in the Ouachita Mountain Ecoregion and the Gulf Coastal Ecoregion, including the North, Alum, Middle, and South Forks); natural and scenic waterways (from the Grant/Saline County line to the mouth); ecologically sensitive waterbody (Lower Saline River in the Gulf Coastal Ecoregion and the Saline River including Alum, Middle, North, and South Forks, and Ten Mile Creek); primary contact recreation; secondary contact recreation; domestic, industrial, and agricultural water supply; and fisheries (APCEC 2007). The designated uses for Lost Creek are primary contact recreation; secondary contact recreation; industrial and agricultural water supply; and fisheries (APCEC 2007). Arkansas's 2004 Integrated Report (ADEQ 2005) indicates that the impaired designated use for the five listed segments is agriculture and industry water supply. Agriculture water supply designates waters that will be protected for irrigation of crops and/or consumption by livestock (APCEC 2007). Industrial water supply indicates waters that will be protected for use as process or cooling water (APCEC 2007). Water quality criteria for the impaired segments are presented in Table 2-4; the designated use was presented in Table 1-1. The criteria apply at all times except during periods when flows are less than the applicable critical flow. The criteria are not to be exceeded in more than 1 in 10 samples collected over a period of not less than 30 days or more than 360 days.

**Table 2-4. Numeric criteria for the segments of concern in the Saline River Basin**

Stream reach number	Stream reach name	Chloride <sup>ab</sup> (mg/L)	Sulfate <sup>ab</sup> (mg/L)	TDS <sup>ab</sup> (mg/L)
08040204-006	Saline River	20	40	120
08040203-007	Saline River	20	40	120
08040203-008	Lost Creek (above Little Lost Creek)	14	510	820

**Table 2-4. (continued)**

Stream reach number	Stream reach name	Chloride <sup>ab</sup> (mg/L)	Sulfate <sup>ab</sup> (mg/L)	TDS <sup>ab</sup> (mg/L)
08040203-008	Lost Creek (below Little Lost Creek)	14	300	550
08040203-009	Saline River	20	40	120
08040203-010	Saline River	20	40	120

Note: mg/L = milligrams per liter.

<sup>a</sup> These criteria shall apply to all surface waters of the state at all times except during periods when flows are less than the applicable critical flow. Streams with regulated flow will be addressed on a case-by-case basis to maintain designated instream uses. These standards apply outside the applicable mixing zone. Waters may, on occasion have natural background levels of certain substances outside the limits established by these criteria, in which case these criteria do not apply to the naturally occurring excursions. These criteria are not to be exceeded in more than one in ten samples collected over a period of not less than 30 days or more than 360 days.

<sup>b</sup> Note that the most stringent criteria were applied to segment 08040203-008 (i.e., the chloride, sulfate, and TDS criteria of 14, 300, and 550, respectively, were applied to the entire segment).

Source: APCEC 2007

## 2.4.1 Antidegradation Policy

The Arkansas water quality standards also include an antidegradation policy (APCEC 2007), which states that existing in-stream water uses and the level of water quality necessary to protect the existing uses must be maintained and protected.

State water exhibiting high water quality must be maintained and protected unless the state finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the state must ensure water quality adequate to protect the existing uses fully.

Those uses and water quality for which the outstanding resource waters were designated must be protected by (1) implementing water quality controls, (2) maintaining the natural flow regime, (3) protecting in-stream habitat, and (4) encouraging land management practices protective of the watershed.

In cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method must be consistent with section 316 of the federal Clean Water Act.

## 2.5 Point Sources

Eight point source dischargers in the segments of concern in the Saline River Basin are permitted to discharge chloride or total residual chlorine. There are no permitted discharges of sulfate or TDS. Four point sources are permitted to discharge total residual chlorine in segment 006, and one is permitted to discharge chloride. Three point sources are permitted to discharge total residual chlorine in segment 010. There are no point sources of chloride, sulfate, or TDS in segments 007, 008 (Lost Creek), or 009 (Table 2-5). Table 2-6 presents additional point source facilities that are in the Saline River Basin, but do not have permit limits for the parameters of interest. Figure 2-7 shows the locations of the NPDES facilities.

**Table 2-5. Point source discharge information for chloride in the Saline River Basin**

NPDES permit	Facility name	Location	Outfall	Discharge	Receiving waters	Average limit concentration <sup>a</sup>	Maximum limit concentration <sup>a</sup>
						mgd	mg/L
<b>Segment 006</b>							
AR0034002	City of Bryant	1019 SW 2nd Street, Bryant	001	3	Trib, Hurricane Creek, Saline River	No monitoring <sup>b</sup>	0.1
AR0050270	Almatis, Inc.	4701 Alcoa Road Bauxite	001	2.16	Hurricane Creek, Saline River	271	406
ARG640005	Sardis Water Treatment Plant	24500 Chicot Road, Bauxite	101	0.025	Moren Branch, Hurricane Creek, Saline River	Optional monitoring <sup>c</sup>	Optional monitoring <sup>c</sup>
ARG640054	Center Grove Water Users Assn.	200 North Oak Street, Sheridan	101	0.01	Saline River	Optional monitoring <sup>c</sup>	Optional monitoring <sup>c</sup>
ARG640121	South Sheridan–Little Creek Water Association	189 Clara Lane, Sheridan	101	0.021	ditch, Hurricane Creek	Optional monitoring <sup>c</sup>	Optional monitoring <sup>c</sup>
<b>Segment 010</b>							
AR0034291	Hot Springs Village POA–Mill Creek WWTP	198 Cortez Rd, Hot Springs Village	001	1	Mill Creek, Middle Fork, Alum Fork, Saline River	No monitoring <sup>b</sup>	0.1
ARG640032	Benton Water Treatment Plant	1314 Venturi Drive, Benton	101	0.5	McNeil Creek, Saline River	Optional monitoring <sup>c</sup>	Optional monitoring <sup>c</sup>
ARG640089	Hot Springs Village POA Water Treatment Plant	295 Jarandilla Drive, Hot Springs Village	101	0.006	Lake Lago, Middle Fork, Saline River	Optional monitoring <sup>c</sup>	Optional monitoring <sup>c</sup>

Note: NPDES = National Pollutant Discharge Elimination System, mgd = million gallons per day; mg/L = milligrams per liter.

<sup>a</sup> All of these NPDES permits are for total residual chlorine, except NPDES permit AR0050270, which is for chloride.

<sup>b</sup> Monitoring is not required for this parameter and limit type.

<sup>c</sup> Monitoring is optional and not required for this parameter and limit type.

**Table 2-6. Point source discharges without dissolved mineral permit limits in the Saline River Basin**

<b>NPDES permit</b>	<b>Facility name</b>	<b>Location</b>	<b>Included in the TMDL?</b>
<b>Segment 006</b>			
AR0000582	Alcoa, Inc. - Bauxite	1401 Bauxite cur-off road	Yes, on the basis of past permit limits and effluent chemistry, effluent limits were based on water quality criteria. (See section 4.3.)
AR0035955	Bryant Public School-Salem Elementary	2701 Salem Rd.	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0043672	City of Kingsland	Second & Larch; East of City Kingsland	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0044156	Alcoa Road Mobile Home Park	7016 Alcoa Rd	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0049522	Fred's Store/Commercial Park	3395 Highway 5	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0049786	City Of Bauxite	201 Pine Haven Rd	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
ARG160018	Saline Co Regional Solid Waste	18511 West Sardis Road	No. This permit contained limits for the following parameters: pH, oil and grease, TSS, and chemical oxygen demand (low level). This permit is not included in this TMDL.
ARG500009	Granite Mountain Quarries #3	2300 County Road 2	No. This permit contained limits for the following parameters: pH, oil and grease, and TSS. This permit is not included in this TMDL.
ARG500019	The Rock Connection, Inc	72 Grant County Road 561	No. This permit contained limits for the following parameters: pH, oil and grease, and TSS. This permit is not included in this TMDL.
AR0021695	City of Rison	Hwy 79, north of City	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
<b>Segment 008</b>			
AR0049751	M & H, INC-D/B/A Sheridan White Rock Company	CR 8	No. This permit contained limits for the following parameters: pH, oil and grease, TSS, and chemical oxygen demand (low level). None of these were of interest to the TMDL and were not included.
AR0049778	Arkansas Decorative Stone, LLC	9 Grant 111	No. This permit contained limits for the following parameters: pH, TSS, and chemical oxygen demand (low level). This permit is not included in this TMDL.
<b>Segment 009</b>			
AR0042899	JJ's Truck Stop, Inc	6106 I-30 & Military Rd	No. This permit contained limits for the following parameters: ph, oil and grease, total ammonia nitrogen (as N), TSS, CBOD <sub>5</sub> , fecal coliform, and dissolved oxygen. This permit is not included in this TMDL.
AR0044105	Flakeboard America Limited	1275 Williamette Road	No. This permit contained limits for the following parameters: pH, oil and grease, total ammonia nitrogen (as N), TSS, CBOD <sub>5</sub> , fecal coliform; dissolved oxygen, chemical oxygen demand (low level), water temperature, and total recoverable zinc. This permit is not included in this TMDL.
AR0046817	Glen Rose School Dist	14334 Hwy 67 N	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)

**Table 2-6. (continued)**

<b>NPDES permit</b>	<b>Facility name</b>	<b>Location</b>	<b>Reason for not including</b>
AR0047431	Pathway Campground, AR Church Of God	12512 Dawson Rd	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0047902	H.G. Toler & Son Lumber Co, Inc	Hwy 229	No. This permit contained limits for the following parameters: floating debris, oil and grease, $\text{BOD}_5$ , TSS, and pH. This permit is not included in this TMDL.
AR0048445	City of Poyen-WWTP	0.25 miles south of Hwy 270 & 229	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
<b>Segment 010</b>			
AR0000582	Alcoa, Inc. - Bauxite	1401 Bauxite cur-off road	Yes, on the basis of past permit limits and effluent chemistry, effluent limits were based on water quality criteria. (See section 4.3.)
AR0036498	City of Benton MWVH	614 W Hazel	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0039284	Hot Springs Village-Cedar Ck	Ponce De Leon Dr @ Hwy 5	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0041416	Timber Ridge Ranch Neurorehabilitation Center	15000 Hwy 298; 10 miles NW of City	No. This permit contained limits for the following parameters: total ammonia nitrogen (as N), pH, TSS, $\text{CBOD}_5$ , fecal coliform, and dissolved oxygen. This permit is not included in this TMDL.
AR0042277	Pawnee Village POA	Pawnee Village Dr	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0044423	Jessieville Public School	Beaudry Rd, NE of AR Hwy 7	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0044547	City of Haskell	620 S Taft - Haskell	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0045047	Village Square Shopping Center	4501 N Hwy 7	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0046141	Mountain Valley Retreat Center	1366 N Hwy 7	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0048194	N Garland County Boys & Girls Club	5050 N Hwy 7	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0049328	Saline Co.Prop. Improv Dist#37 - -East Gate Shopping Center	25255 Highway 5 @ East Gate	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0049506	Benton Packing Company	1837 Southland Cir	No. This permit contained limits for the following parameters: total ammonia nitrogen (as N), pH, TSS, $\text{CBOD}_5$ , fecal coliform, dissolved oxygen, and oil and grease. This permit is not included in this TMDL.
AR0050202	Destined To Win/Family Outreach Ministry, Inc.	None	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0050326	Central Arkansas Utility Services	Jackman Trail	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of domestic wastewater facilities. (See section 4.3.)
AR0050563	Central Ark Utility-Crossroads Village	Crossroads Road	Yes, on the basis of the type of facility, effluent limits were based on median effluent concentrations of

**Table 2-6. (continued)**

NPDES permit	Facility name	Location	Reason for not including
			domestic wastewater facilities. (See section 4.3.)
ARG500018	Cobar Contracting-Elderidge	1613 Pool Road	No. This permit contained limits for the following parameters: pH, oil and grease, and TSS. This permit is not included in this TMDL.
ARG790084	Severns Enterprises-Shell #122	16824 Interstate 30	No. This permit contained limits for the following parameters: pH, benzene, benzene toluene xylenes, and total recoverable petroleum hydrocarbons. This permit is not included in this TMDL.

Phase I and II stormwater systems are another possible point source contributor in the Saline River Basin. Stormwater discharges are generated by runoff from urban land and impervious areas such as paved streets, parking lots, and rooftops during precipitation events. These discharges often contain high concentrations of pollutants that can eventually enter nearby waterbodies. Many stormwater discharges are considered point sources and require coverage by a National Pollutant Discharge Elimination System (NPDES) permit.

Under the NPDES stormwater program, operators of large, medium, and regulated small municipal separate storm sewer systems (MS4s) must obtain authorization to discharge pollutants. The Stormwater Phase I Rule (*55 Federal Register* 47990, November 16, 1990) requires all operators of medium and large MS4s to obtain an NPDES permit and develop a stormwater management program. Medium and large MS4s are defined by the size of the population within the MS4 area, not including the population served by combined sewer systems. A medium MS4 has a population of between 100,000 and 249,999. A large MS4 has a population of 250,000 or more.

Phase II requires a select subset of small MS4s to obtain an NPDES stormwater permit. A small MS4 is any MS4 not already covered by the Phase I program as a medium or large MS4. The Phase II Rule automatically covers all small MS4s in urban areas, as defined by the Bureau of the Census. It also includes small MS4s outside an urban area that are so designated by NPDES permitting authorities, case by case (USEPA 2000).

There are no Phase I MS4 permits in the Saline River Basin; however, there are five Phase II MS4 permits. Table 2-7 presents MS4 information by subsegment for the Saline River Basin.

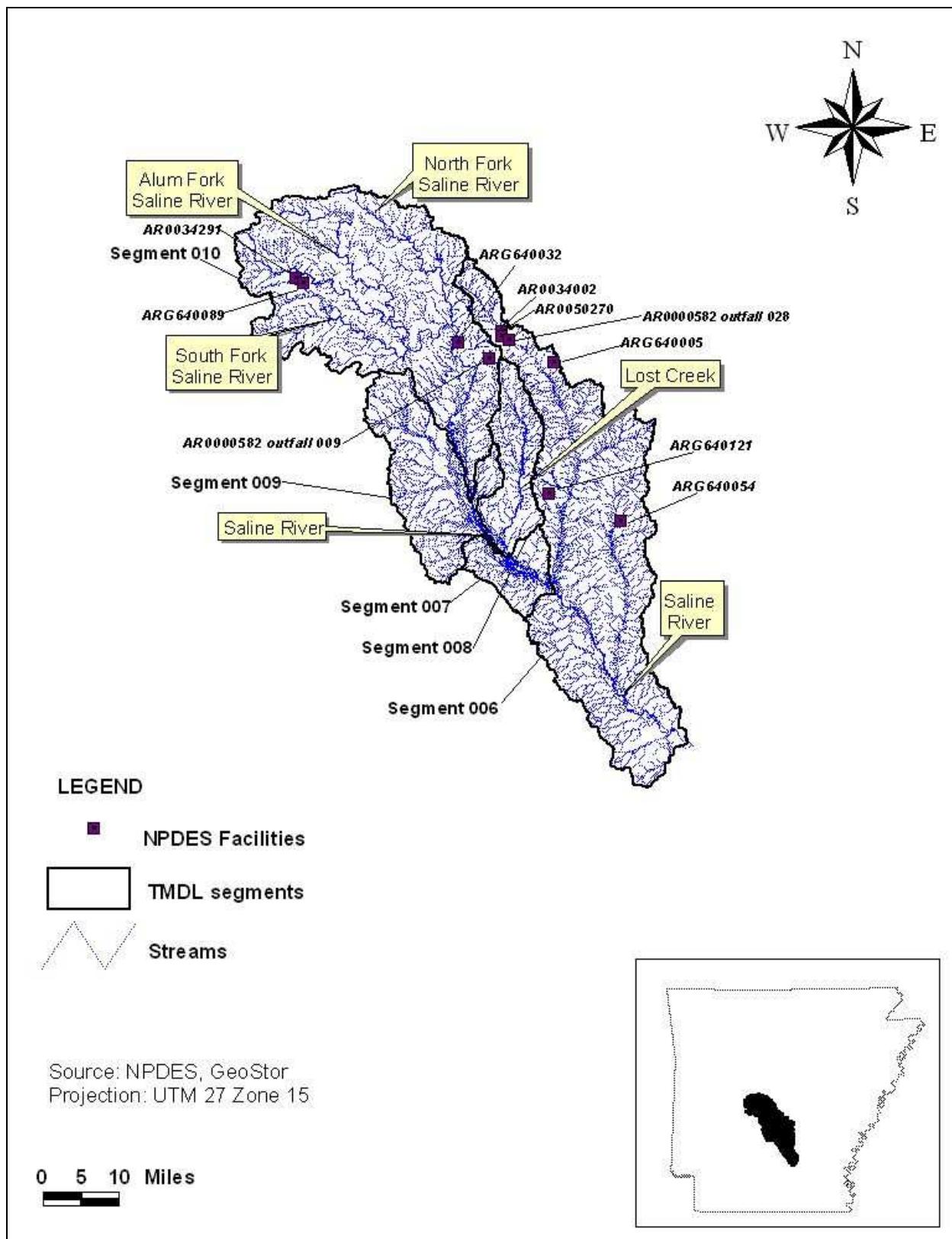


Figure 2-7. NPDES facilities in the Saline River Basin.

**Table 2-7. MS4 information for the Saline River Basin**

NPDES permit number	Authority	Discharge segment	Segment name	Urban area <sup>a,b</sup> (acres)
ARR040043	City of Benton	006	Saline River	10,919
		007	Saline River	10,083
		009	Saline River	10,083
		010	Saline River	10,083
ARR040008	City of Bryant	006	Saline River	1,884
ARR040014	Garland County	006	Saline River	7,196
		007	Saline River	7,196
		009	Saline River	7,196
		010	Saline River	7,196
ARR040003	Saline County	006	Saline River	14,675
		007	Saline River	11,431
		008	Lost Creek	180
		009	Saline River	11,218
		010	Saline River	10,873
ARR040012	Jefferson County	006	Saline River	284

<sup>a</sup> Note that these urban area is not unique to each stream segment. The area includes any urban area discharging to that stream segment. Therefore, urban area upstream of each segment is included in the area.

<sup>b</sup> The urban area for the county permits includes the total urban area in each county based on the 2004 land use/land cover dataset from the Center for Advanced Spatial Technologies at the University of Arkansas.

## 2.6 Nonpoint Sources

According to Arkansas's 2004 section 305(b) report, mineral content (chloride, sulfate, TDS) originates in the Saline River Basin from open-pit bauxite-mining activities (ADEQ 2004b), and a major reclamation project is under way in the area. Typically, sources of dissolved minerals include urban and agricultural runoff, forestry, and natural geology.

Chloride is found in all human and animal waste, and therefore septic systems and areas where animal waste are deposited can be chloride sources. Fertilizers are also a common source of chlorides (University of Florida 2003). Sulfate is a naturally occurring mineral in some soils and rock formations. TDS can originate from natural sources (e.g., mineral springs, carbonate deposits, salt deposits, seawater intrusion) and urban and agricultural runoff (Wilkes University 2005).

### **3 CHARACTERIZATION OF EXISTING WATER QUALITY**

ADEQ has collected water quality data for chloride, sulfate, TDS, and other parameters in the Saline River Basin at stations OUA0026, OUA0041, OUA0042, and OUA0118. Station OUA0026 (Saline River near Benton, Arkansas) is in segment 010 of the Saline River in the city of Benton. Station OUA0041 (Saline River downstream of Benton, Arkansas) is also in segment 010 of the Saline River, about 5 miles south of station OUA0026. Station OUA0042 (Saline River at Highway 167) is in segment 007 of the Saline River, and station OUA0118 (Saline River at Highway 79 bridge south of Rison) is on the Saline River in segment 006, about 19 miles downstream of station OUA0042. Figure 3-1 shows the location of all four water quality monitoring stations.

#### **3.1 Comparison of Observed Data to Criteria**

##### **3.1.1 Chloride**

Station OUA0026 has 191 chloride observations from 1990 to 2007. Station OUA0041 has 181 chloride observations from 1990 to 2007. Station OUA0042 has 188 chloride observations from 1990 to 2007 ,and station OUA0118 has 183 chloride observations from 1991 to 2007. Table A-1 in Appendix A provides a summary of the chloride observations at each water quality station, including the number of observations; the minimum, maximum, mean, and median observations; the number of exceedances of the criterion; and the percentage of observations exceeding the criterion at each station. Appendix B contains the original chloride water quality data.

None of the chloride observations at stations OUA0026 or OUA0118 exceed the 20 mg/L chloride criterion for the Saline River. Only one chloride observation at stations OUA0041 and OUA0042 exceeds the 20 mg/L chloride criterion.

##### **3.1.2 Sulfate**

Station OUA0026 has 192 sulfate observations from 1990 to 2007. Station OUA0041 has 182 sulfate observations from 1990 to 2007. Station OUA0042 has 191 sulfate observations from 1990 to 2007, and station OUA0118 has 185 sulfate observations from 1991 to 2007. Table A-2 in Appendix A provides a summary of the sulfate observations at each water quality station, including the number of observations; the minimum, maximum, mean, and median observations; the number of exceedances of the criterion; and the percentage of observations exceeding the criterion at each station. Appendix B contains the original sulfate water quality data.

None of the sulfate observations at stations OUA0026 exceed the 40 mg/L sulfate criterion for the Saline River. Twenty-two percent, 9 percent, and 14 percent of the sulfate observations exceed the 40 mg/L criterion at stations OUA0041, OUA0042, and OUA0118, respectively.

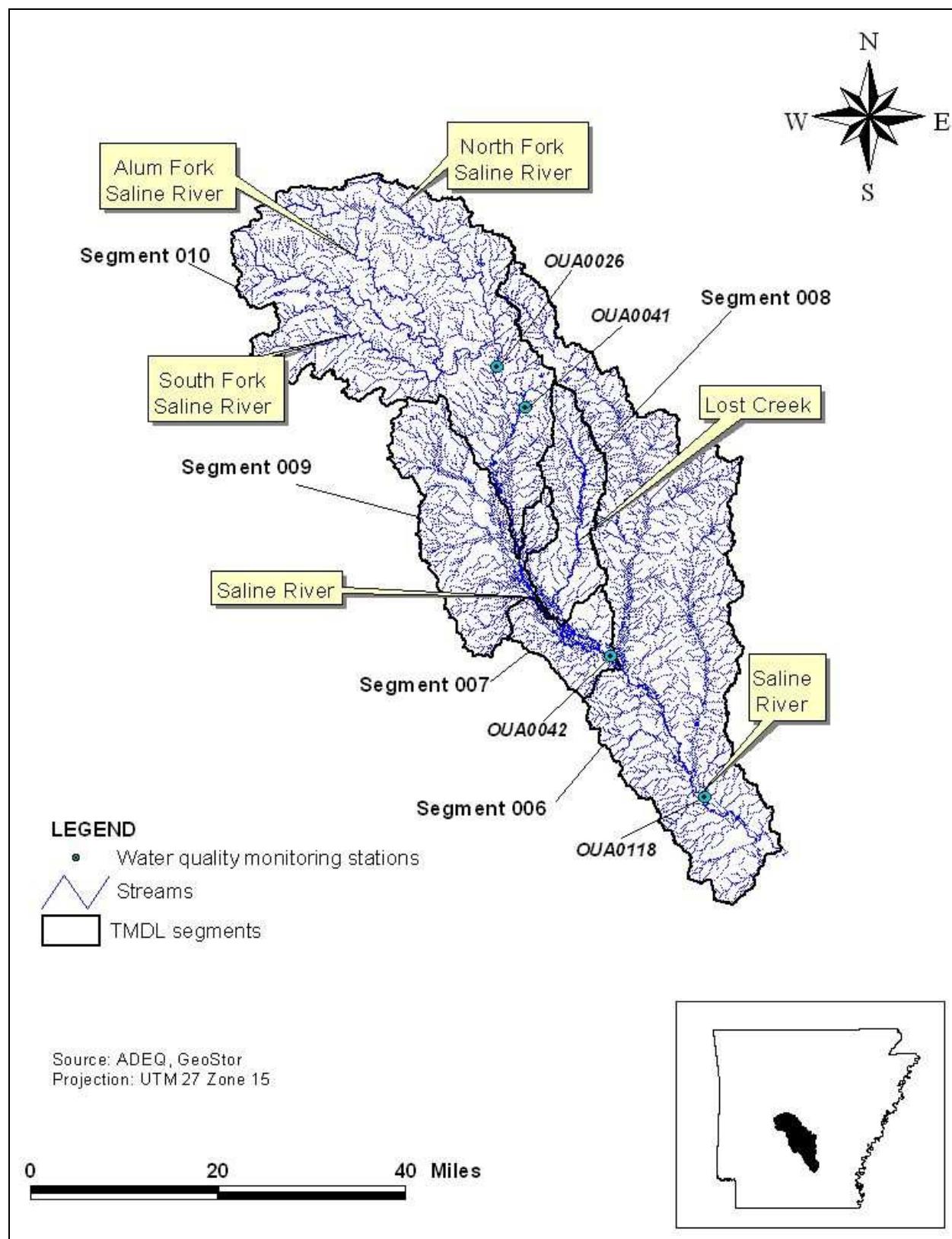


Figure 3-1. Location of water quality monitoring stations in the Saline River Basin.

### **3.1.3 Total Dissolved Solids**

Station OUA0026 has 194 TDS observations from 1990 to 2007. Station OUA0041 has 184 TDS observations from 1990 to 2007. Station OUA0042 has 194 TDS from 1990 to 2007, and station OUA0118 has 188 TDS observations from 1991 to 2007. Table A-3 in Appendix A provides a summary of the sulfate observations at each water quality station, including the number of observations; the minimum, maximum, mean, and median observations; the number of exceedances of the criterion; and the percentage of observations exceeding the criterion at each station. Appendix B contains the original TDS water quality data.

None of the TDS observations at stations OUA0026 exceed the 120 mg/L TDS criterion for the Saline River. Thirty-six percent, 12 percent, and 20 percent of the TDS observations exceed the 120 mg/L criterion at stations OUA0041, OUA0042, and OUA0118, respectively.

## **3.2 Trends and Patterns in Observed Data**

### **3.2.1 Chloride**

The chloride observations at station OUA0026 do not show any strong seasonal trends or patterns. The chloride observations at stations OUA0041, OUA0042, and OUA0118 do not show any strong seasonal trends or patterns; however, the highest observations were seen in July through October.

High chloride levels were observed during low flows at station OUA0026, OUA0041, and OUA0042; however, not enough samples were collected during high flows to allow a valid comparison. High chloride levels were also observed during low flows at station OUA0118. Appendix C contains the chloride sampling results plotted over time and versus flow.

### **3.2.2 Sulfate**

The sulfate observations at stations OUA0026, OUA0041, OUA0042, and OUA0118 do not show any strong seasonal trends or patterns. High sulfate levels were observed during low flows at stations OUA0026, OUA0041, and OUA0042; however, not enough samples were collected during high flows to allow a valid comparison. High sulfate levels were also observed during low flows at station OUA0118. Appendix D contains the sulfate sampling results plotted over time and versus flow.

### **3.2.3 Total Dissolved Solids**

The TDS observations at stations OUA0026, OUA0041, OUA0042, and OUA0118 do not show any strong seasonal trends or patterns. High TDS levels were observed during low flows at stations OUA0026, OUA0041, and OUA0042; however, not enough samples were collected during high flows to allow a valid comparison. High TDS levels were also observed during low flows at station OUA0118. Appendix E contains the TDS sampling results plotted over time and versus flow.

## 4 TMDL DEVELOPMENT

A TMDL is the total amount of a pollutant that can be assimilated by the receiving waterbody while still achieving water quality standards. In TMDL development, allowable loadings from all pollutant sources that cumulatively amount to no more than the TMDL must be established, thereby providing the basis for establishing water quality-based controls.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources, and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the lack of knowledge in the relationship between pollutant loads and the quality of the receiving waterbody. The TMDL components are illustrated using the following equation:

$$TMDL = \sum WLAs + \sum LAs + MOS$$

TMDLs are generally expressed on a mass loading basis (e.g., kilograms per day).

### 4.1 TMDL Analytical Approach

The methodology used to determine the TMDL for each impaired segment is the load duration curve. Because loading capacity varies as a function of the flow present in the stream, these TMDLs represent a continuum of desired loads over all flow conditions, rather than a fixed, single value. The basic elements of this procedure are documented on the Kansas Department of Health and Environment Web site (KDHE 2003). This method was used to illustrate allowable loading for a wide range of flows. The steps for applying this methodology to develop the TMDLs in this report can be summarized as follows:

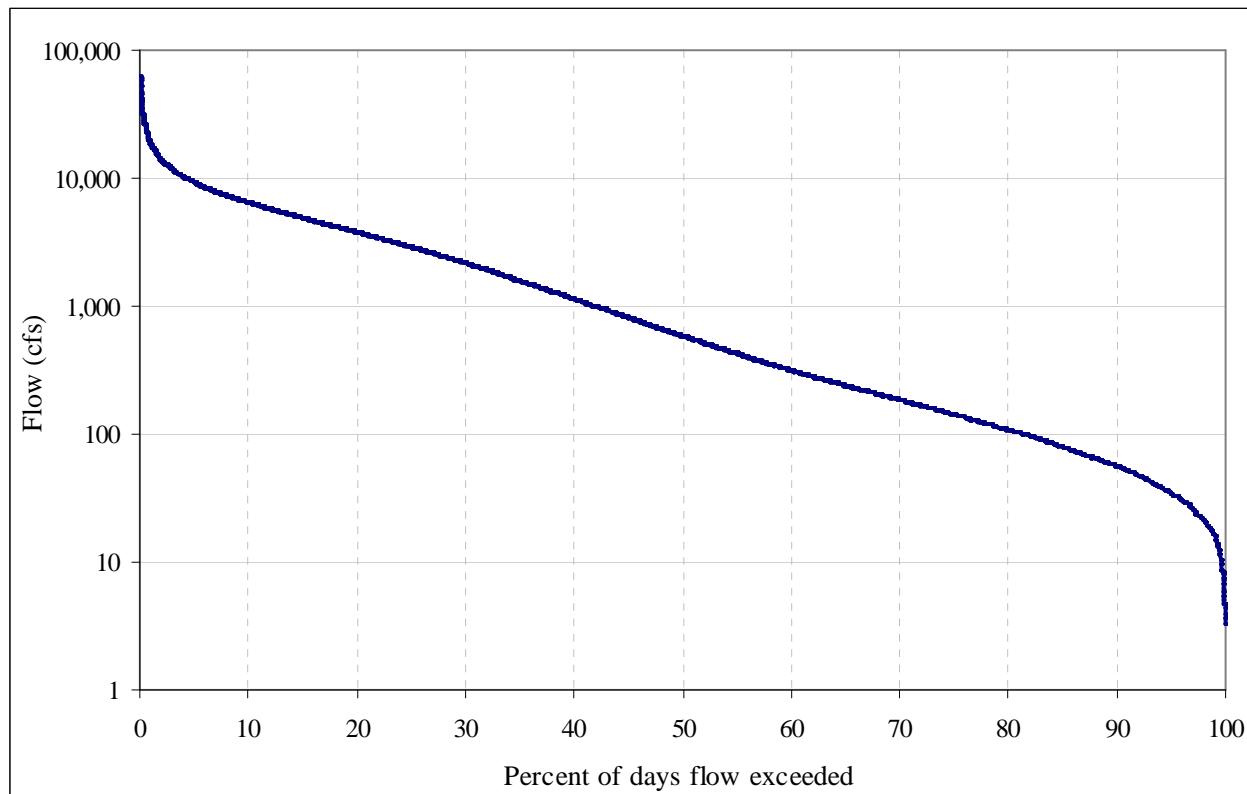
1. Develop a flow duration curve.
2. Convert the flow duration curve to load duration curves for each impairment.
3. Plot the observed loads with load duration curves.
4. Calculate the TMDL, MOS, WLA, and LA (see Section 4.2).
5. Calculate the loadings required to meet Arkansas's water quality standards.

#### 4.1.1 Flow Duration Curve

A flow duration curve was developed for each USGS gauge for the TMDLs. Daily stream flow measurements from USGS gauges for each data set were sorted in increasing order, and the percentile ranking of each flow was calculated. The load duration curve methodology requires that the same flow period be used for both developing the flow duration and calculating observed loads from sampling data. For each season, the flows are then plotted against the corresponding percent flow that exceeds a specific flow to create the flow duration curves.

Figure 4-1 is an example of a flow duration curve. The plot shows the flow (e.g., cubic feet per second) on the Y axis. The X axis shows the percentage of days on which the plotted flow is exceeded. Points at the low end of the plot (0 through 10 percent) represent high-flow conditions,

where only 0 through 10 percent of the flow exceeds the plotted point. Conversely, points at the high end of the plot (90 to 100 percent) represent low-flow conditions.



**Figure 4-1. Example of a flow duration curve.**

Four USGS gauges in the Saline River Basin were used in developing the TMDLs. Table 4-1 presents each USGS gauge in the basin, the period of record used in the TMDL analysis, and the segments represented.

**Table 4-1. USGS flow gauges and represented subsegments for the Saline River Basin**

Station number	Station name	Drainage area (square miles)	Period of record used in TMDL development	Segments represented
07363500	Saline River near Rye	2,102	1937–present	010, 009, 008, 007, 006
07363200	Saline River near Sheridan	1,123	1971–1982; 2001–2006	Not used
07363000	Saline River at Benton	550	1951–1979; 1983; 2001–2006	Not used

For the TMDL calculations, the most recent flow data were used. Data from 1990 through 2006 were used for USGS gauge 07363500. USGS gauges 07363200 and 07363000, even though they are in impaired segments, were not used in these TMDLs. Flow data for these gauges are not available from 1983 through 2001. Many water quality observations occurred between 1990 and 2001, so USGS gauge 07363500 had to be used for these periods. To maintain consistency, this

gauge was used for the entire period. Because of the distance between USGS gauge 07363500 (Rye) and USGS gauges 07363200 (Sheridan) and 0736300 (Benton), an analysis was done comparing flows from the same dates. It was determined that there was a 4-day time-of-travel difference between the gauges at Rye and Benton and a 2-day time-of-travel difference between the gauges at Rye and Sheridan. The dates of the unit area flows were adjusted in the load duration curves to account for these differences so that the observed data would better match with the unit area flows.

Flows were area weighted for each stream segment and those flows were used to create a unique flow duration curve for each segment (Appendix F).

#### **4.1.2 Load Duration Curve**

For each TMDL parameter (chloride, sulfate, and TDS), the flows from the flow duration curves were multiplied by the appropriate numeric criterion concentration (Table 2-6) to compute an allowable load duration curve. Each load duration curve is a plot of mass per day versus the percent flow exceedance from the flow duration curves.

The load duration curve is beneficial when analyzing monitoring data with their corresponding flow information plotted as a load. This approach allows the monitoring data to be placed in relation to their position in the flow continuum. Assumptions of the probable source or sources of the impairment can then be made from the plotted data. The load duration curve shows the calculation of the TMDL at any flow rather than at a single critical flow. The official TMDL number is reported as a single number, but the curve is provided to demonstrate the value of the acceptable load at any flow. This approach will allow analysis of load cases in the future for different flow regimes.

#### **4.1.3 Observed Loads**

For each sampling station observed loads were calculated by multiplying the observed concentration of the parameter of concern by the flow on the sampling day. These observed loads were then plotted versus the percent flow exceedance of the flow on the sampling day and placed on the same plot as the load duration curve. Reductions were applied to the observed loads for each parameter until its water quality criteria and allowable percent exceedance were met to obtain an overall percent reduction for each subsegment. These plots are shown in the appendices to this report as follows:

- Appendix G: Load Duration Calculations for all TMDLs (CD-ROM)
- Appendix H: Load Duration Curve Summaries and Plots for Chloride
- Appendix I: Load Duration Curve Summaries and Plots for Sulfate
- Appendix J: Load Duration Curve Summaries and Plots for Total Dissolved Solids

These plots provide visual comparisons between observed and allowable loads under different flow conditions. Observed loads that are plotted above the load duration curve represent conditions under which observed water quality concentrations exceed the numeric criterion concentrations. Observed loads plotted below the load duration curve represent conditions under

which observed water quality concentrations are less than the numeric criterion concentrations (i.e., do not exceed the water quality standards).

## 4.2 TMDL

Reaches 08040204-006, 08040203-007, and 08040203-010 were the only reaches with monitoring stations. TMDLs for these reaches were determined with load duration curves. TMDLs for the other reaches, which did not have water quality stations, were determined from the reaches with monitoring data and using a ratio of the total drainage area of each reaches. In addition, loadings for 08040203-010 are included in 08040203-009 because 08040203-009 is downstream of 08040203-010. Similarly, loadings for 08040203-009 are included in 08040203-007 and loadings from 08040203-007 and 08040203-008 are included in 08040204-006. Table 4-2 presents the TMDLs and allocations for the segments in this report.

**Table 4-2. Summary of chloride, sulfate, and TDS TMDLs, MOS, WLAs, and LAs for the Saline River Basin**

HUC/reach	Water quality station	Pollutant	Total allowable loading	Explicit MOS (10%)	$\Sigma$ WLA	$\Sigma$ LA
			lb/day			
08040203-007	OUA0042	Chloride	150,903	15,090	5,420	130,392
08040203-007	OUA0042	Sulfate	301,805	30,181	10,840	260,784
08040203-007	OUA0042	TDS	905,416	90,542	32,521	782,353
08040203-008		Chloride	16,826	1,683	34	15,109
08040203-008		Sulfate	33,651	3,365	68	30,218
08040203-008		TDS	100,954	10,095	204	90,654
08040203-009		Chloride	123,839	12,384	5,427	106,028
08040203-009		Sulfate	247,678	24,768	10,796	212,114
08040203-009		TDS	743,035	74,304	32,568	636,164
08040203-010	OUA0026/ OUA0041	Chloride	92,250	9,225	6,122	76,903
08040203-010	OUA0026/ OUA0041	Sulfate	184,500	18,450	49,677	116,373
08040203-010	OUA0026/ OUA0041	TDS	553,501	55,350	115,456	382,694
08040204-006	OUA0118	Chloride	247,664	24,766	12,879	210,018
08040204-006	OUA0118	Sulfate	495,327	49,533	52,443	393,351
08040204-006	OUA0118	TDS	1,485,982	148,598	111,965	1,225,419

Note: Loadings for segment 08040203-010 are included in segment 08040203-009. Loadings for segment 08040203-009 are included in segment 08040203-007. Loadings from segments 08040203-007 and 08040203-008 are included in segment 08040204-006.

Both section 303(d) of the Clean Water Act and the regulations at 40 CFR 130.7 require that TMDLs include an MOS to account for lack of knowledge in the available data or in the actual effect that controls will have on the loading reductions and receiving water quality. The MOS may be expressed explicitly as unallocated assimilative capacity or implicitly by using conservative assumptions in establishing the TMDL. For a more detailed discussion of the MOS, see section 4.4.

### 4.3 Wasteload Allocation

The WLA portion of the TMDL equation is the total loading of a pollutant that is assigned to point sources. The point sources in the Saline River Basin include industry, water supply, wastewater facilities, and MS4s. Wasteload allocations are based on the current permit limits and discharge flow levels.

WLAs are based on the current permit limits and discharge flow rates. No domestic wastewater facilities with permit limits for chloride, sulfate, or TDS were identified in the Saline River Basin, although it is possible that discharges from such facilities contain these constituents. Permit limits might not be given if a waterbody receiving the discharge is not listed and thus the discharge does not adversely affect water quality in the waterbody, or if the effluent from a facility does not contain a particular pollutant. For impaired waterbodies, permit limits are typically assigned. Permit limit designations are made by ADEQ during the permitting process on a case-by-case basis.

As noted above, because domestic wastewater facilities typically discharge chloride, sulfate, and TDS, facilities in this basin were assigned WLAs. These WLAs were based on facility flow and the median effluent concentrations of domestic wastewater facilities as reported in the Permit Compliance System, a database operated by EPA. These medians are 53 mg/L for chloride, 41 mg/L for sulfate, and 343 mg/L for TDS. During the next permit cycle, ADEQ will determine if permit limits are necessary for chloride, sulfate, and TDS.

Alcoa Inc., permit AR0000582, discharges to Holly Creek in HUC/reach 08040203-010 and Hurricane Creek in HUC/reach 08040204-006. Outfall 009 operates as hydrological controlled release, where the discharge volume is determined on the basis of the upstream Saline River flow rate, sulfate concentration, and TDS concentration. Discharge from Outfall 028 is limited by selenium concentrations and the amount of upstream flow of Hurricane Creek. Because of the nature of the operations at the facility, sulfate and TDS WLAs were given to the facility's three outfalls using permitted flows for outfalls 008 and 009 and treatment design modeling for outfall 028. Because no permit limit exists for sulfate and TDS, loadings were assigned on the basis of the water quality criteria of the receiving water. For outfalls 008 and 028, the receiving water is Hurricane Creek (from Hurricane Lake Dam to Ben Ball Bridge), which has a sulfate criterion of 730 mg/L and a TDS criterion of 1,210 mg/L. For outfall 009, the receiving water is Holly Creek, which has a sulfate criterion of 860 mg/L and a TDS criterion of 1,600 mg/L. While these criteria are greater than the Saline River criteria for their respective HUC/reach, these loadings are viewed as not affecting Saline River water quality according to the load duration curves for these reaches.

Table 4-3 lists the chloride, sulfate, and TDS WLAs for each point source in the Saline River Basin. There were not reductions to WLAs.

**Table 4-3. Chloride, sulfate, and TDS WLAs for the Saline River Basin**

HUC/reach	NPDES permit	Outfall	Facility name	Discharge (mgd)	Chloride (lb/d)	Sulfate (lb/d)	TDS (lb/d)
08040204-006	AR0021695	001	Rison, City of	0.31	137.12	106.07	838.21
08040204-006	AR0034002	001	Bryant, City of	3	1,326.92	1,026.49	8,111.74

**Table 4-3. (continued)**

HUC/reach	NPDES permit	Outfall	Facility name	Discharge (mgd)	Chloride (lb/d)	Sulfate (lb/d)	TDS (lb/d)
08040204-006	AR0035955	001	Bryant Public School-Salem Elementary	0.02	8.85	6.84	54.08
08040204-006	AR0043672	001	Kingsland, City of	0.06	26.54	20.53	162.23
08040204-006	AR0044156	001	Alcoa Road Mobile Home Park	0.013	5.75	4.45	35.15
08040204-006	AR0049522	001	Fred's Store/Commercial Park	0.0015	0.66	0.51	4.06
08040204-006	AR0049786	001	Bauxite, City of	0.125	55.29	42.77	337.99
08040204-006	AR0050270	001	Almatis, Inc.	2.16	4,885.07		
08040204-006	ARG640005	101	Sardis Water Treatment Plant	0.025	11.06		
08040204-006	ARG640054	101	Center Grove Water Users Association	0.01	4.42		
08040204-006	ARG640121	101	South Sheridan–Little Creek Water Association	0.021	9.29		
08040204-006	AR0000582	008	Alcoa, Inc.	3.7		22,540.94	37,362.39
08040204-006	AR0000582	028	Alcoa, Inc.	2.74		16,692.48	27,668.36
08040203-009	AR0046817	001	Glen Rose School District	0.024	10.62	8.21	64.89
08040203-009	AR0047431	001	Pathway Campground, AR Church of God	0.033	14.60	11.29	89.23
08040203-009	AR0048445	001	Poyen, City of – WWTP	0.055	24.33	18.82	148.72
08040203-010	AR0000582	009	Alcoa, Inc.	6.1		43,780.00	81,451.17
08040203-010	AR0034291	001	Hot Springs Village POA – Mill Creek WWTP	1	442.31	342.16	2,703.91
08040203-010	AR0036498	001	Benton, City of MWVH	6.3	2,786.53	2,155.62	17,034.64
08040203-010	AR0039284	001	Hot Springs Village–Cedar Creek	1	442.31	342.16	2,703.91
08040203-010	AR0042277	001	Pawnee Village POA –Pawnee Village Subdivision	0.004	1.77	1.37	10.82
08040203-010	AR0044423	001	Jessieville Public School	0.018	7.96	6.16	48.67
08040203-010	AR0044547	001	Haskell, City of	0.6	265.38	205.30	1,622.35
08040203-010	AR0045047	001	Village Square Shopping Center	0.048	21.23	16.42	129.79
08040203-010	AR0046141	001	Mountain Valley Retreat Center	0.025	11.06	8.55	67.60
08040203-010	AR0048194	001	North Garland County Boys & Girls Club	0.01	4.42	3.42	27.04
08040203-010	AR0049328	001	Saline Co. Prop. Improv. Dist. #37- East Gate Shopping Center	0.035	15.48	11.98	94.64
08040203-010	AR0050202	001	Destined to Win/Family Outreach Ministry, Inc., D/B/A Second	0.015	6.63	5.13	40.56

**Table 4-3. (continued)**

HUC/reach	NPDES permit	Outfall	Facility name	Discharge (mgd)	Chloride (lb/d)	Sulfate (lb/d)	TDS (lb/d)
08040203-010	AR0050326	001	Central Arkansas Utility Services D/B/A Reunion Subdivision	0.1	44.23	34.22	270.39
08040203-010	AR0050563	001	Central Ark Utility-Crossroads Village	0.1	44.23	34.22	270.39
08040203-010	ARG640032	101	Benton Water Treatment Plant	0.5	221.15		
08040203-010	ARG640089	101	Hot Springs Village POA Water Treatment Plant	0.006	2.65		

EPA's stormwater permitting regulations require municipalities to obtain permit coverage for all stormwater discharges from MS4s. For the MS4 in the basin, a gross MS4 load was computed by multiplying the LA by the ratio of the MS4 area (which was based on the UA area in each segment) to the segment area in the Saline River Basin. Note that these values are estimates that can be refined in the future as more information about the MS4 and land use-specific loadings information become available. Note also that the MS4 loads presented reflect only that portion of the MS4 in the segment. The computed MS4 load was subtracted from the LA and included as a WLA component of the TMDL because although MS4s are permitted dischargers, they function similarly to nonpoint sources through storm-driven processes. Table 4-4 lists the individual WLAs for the MS4 identified in section 2.5 (Table 2-6). EPA expects that the MS4 WLAs will be achieved through best management practices (BMPs) and adaptive management.

**Table 4-4. Chloride, sulfate, and TDS WLAs for MS4s in the Saline River Basin**

HUC/reach	Urban area (UA)	NPDES	Chloride (lb/d)	Sulfate (lb/d)	TDS (lb/d)
08040203-007	Benton	ARR040043	1,904	3,807	11,421
	Garland County	ARR040003	1,359	2,717	8,151
	Saline County	ARR040014	2,158	4,316	12,949
08040203-008	Saline County	ARR040014	34	68	204
08040203-009	Benton	ARR040043	1,903	3,806	11,416
	Garland County	ARR040003	1,358	2,717	8,148
	Saline County	ARR040014	2,117	4,235	12,701
08040203-010	Benton	ARR040043	1,805	2,731	8,980
	Garland County	ARR040003	1,288	1,949	6,409
	Saline County	ARR040014	1,946	2,945	9,684
08040204-006	Benton	ARR040043	2,002	3,749	11,679
	Bryant	ARR040008	345	647	2,015
	Garland County	ARR040003	1,319	2,471	7,697
	Jefferson County	ARR040012	52	97	304
	Saline County	ARR040014	2,690	5,038	15,697

Note: Loadings for segment 08040203-010 are included in segment 08040203-009. Loadings for segment 08040203-009 are included in segment 08040203-007. Loadings from segments 08040203-007 and 08040203-008 are included in segment 08040204-006.

#### **4.4 Load Allocation**

The LA is the portion of the TMDL assigned to natural background loadings, as well as nonpoint sources like urban runoff that is not covered by MS4s, septic tanks (for TDS), and agricultural practices. For this TMDL, the LA was calculated by subtracting the WLA and MOS from the total TMDL. LAs were not allocated to separate nonpoint sources because there was a lack of available source characterization data. The LAs were presented in Table 4-2.

## **4.5 Margin of Safety**

The MOS is the portion of the pollutant loading reserved to account for any lack of knowledge in the data. There are two ways to incorporate the MOS (USEPA 1991). One way is to implicitly incorporate it by using conservative model assumptions to develop the allocations. The other way is to explicitly specify a portion of the TMDL as the MOS and use the remainder for allocations. In this analysis, for all pollutants, the MOS is explicit: 10 percent of each targeted TMDL was reserved as the MOS to account for any lack of knowledge in the TMDL. Using 10 percent of the TMDL load provides an additional level of protection to the designated use of the segments of concern.

## **4.6 Seasonality and Critical Conditions**

The federal regulations at 40 CFR 130.7 require that TMDLs include seasonal variations and take into account critical conditions for stream flow, loading, and water quality parameters. The sampling results for all pollutants were plotted over time and reviewed for any seasonal patterns (see section 3.2).

By accounting for critical conditions, the TMDL makes sure that water quality standards are maintained for infrequent occurrences and not only for average conditions.

Because of the way the criteria are written (i.e., including critical and noncritical conditions), the TMDL for a pollutant of concern can be developed by reviewing pollutant loads at all flow conditions within applicable periods of the year and evaluating the percentage of values exceeding the criteria. The load duration curve, which determines the allowable loading at a wide range of flows, was chosen as the approach for these TMDLs (see section 4.1). Therefore, the TMDLs were calculated at all flows rather than at a single critical flow.

## **4.7 Future Growth**

Compliance with these chloride, sulfate, and TDS TMDLs is based on keeping loadings in the stream below the assimilative capacity of the stream. Allocations between the WLA and LA may be re-evaluated if there is future growth of existing or new point sources discharging to the impaired reaches or their tributaries.

## 5 FUTURE WATERSHED ACTIVITIES

In accordance with section 106 of the federal Clean Water Act and under its own authority, ADEQ has established a comprehensive program for monitoring the quality of the state's surface waters. ADEQ collects surface water samples at various locations, using appropriate sampling methods and procedures to ensure the quality of the data collected. Four of the locations where ADEQ will continue to monitor water quality are stations OUA0026, OUA0041, OUA0042, and OUA0118. The objectives of the surface water monitoring program are to determine the quality of the state's surface waters, to develop a long-term database for long-term trend analysis, and to monitor the effectiveness of pollution controls. The data obtained through the surface water monitoring program are used to develop the state's biennial 305(b) report and section 303(d) list of impaired waters, which were most recently published as the *State of Arkansas 2004 Integrated Water Quality Monitoring and Assessment Report* (ADEQ 2005).

## **6 PUBLIC PARTICIPATION**

The federal regulations at 40 CFR 130.7(c)(1)(ii) specify that TMDLs “shall be subject to public review as defined in the State’s CPP.” The draft version of this TMDL was submitted to ADEQ and EPA in August 2007. EPA Region 6 will prepare a notice seeking comments, information, and data from the public concerning this TMDL.

## 7 REFERENCES

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## **Appendix A**

### **Summary of Water Quality Data**

Table A-1. Summary of chloride data for the Saline River Basin .....	2
Table A-2. Summary of sulfate data for the Saline River Basin .....	2
Table A-3. Summary of TDS data for the Saline River Basin.....	3

**Table A-1. Summary of chloride data for the Saline River Basin**

Station number	Station name	Period of record	Number of observations	Minimum	Maximum	Mean	Median	Number of observations above criterion <sup>a</sup>	% of observations above criterion <sup>a</sup>
				mg/L	mg/L	mg/L	mg/L		
OUA0026	Saline River near Benton, AR	9/18/90–4/3/07	191	1.3	8.8	2.8	2.7	0	0
OUA0041	Saline River downstream of Benton, AR	9/18/90–4/3/07	181	1.5	31.5	4.9	4.0	1	0.55
OUA0042	Saline River at Hwy 167, AR	9/4/90–4/24/07	188	1.3	40.5	4.5	4.0	1	0.53
OUA0118	Saline River at Hwy 79 bridge south of Rison, AR	1/2/91–4/24/07	183	1.2	8.8	4.2	4.2	0	0

<sup>a</sup> The water quality data were compared to the water quality criterion for chloride, which is 20 mg/L.

**Table A-2. Summary of sulfate data for the Saline River Basin**

Station number	Station name	Period of record	Number of observations <sup>a</sup>	Minimum	Maximum	Mean	Median	Number of observations above criterion <sup>b</sup>	% of observations above criterion <sup>b</sup>
				mg/L	mg/L	mg/L	mg/L		
OUA0026	Saline River near Benton, AR	9/18/90–4/3/07	192	3.21	18	7	6	0	0
OUA0041	Saline River downstream of Benton, AR	9/18/90–4/3/07	182	5.18	119	31	30	40	22
OUA0042	Saline River at Hwy 167, AR	9/4/90–4/24/07	191	0.02	87	22	20	18	9
OUA0118	Saline River at Hwy 79 bridge south of Rison, AR	1/2/91–4/24/07	186	0.02	90	25	21	26	14

<sup>a</sup> Note that one of the sulfate observations at station OUA0118 and one at station OUA0042 were below the detection limit (DL) of 0.04 mg/L, therefore one-half the DL was used for data analysis.

<sup>b</sup> The water quality data were compared to the water quality criterion for sulfate, which is 40 µg/L.

**Table A-3. Summary of TDS data for the Saline River Basin**

Station number	Station name	Period of record	Number of observations	Minimum mg/L	Maximum mg/L	Mean mg/L	Median mg/L	Number of observations above criterion <sup>a</sup>	% of observations above criterion <sup>a</sup>
OUA0026	Saline River near Benton, AR	9/18/90 - 4/3/07	194	47	101	73	73	0	0
OUA0041	Saline River downstream of Benton, AR	9/18/90 - 4/3/07	184	54	254	117	111	66	36
OUA0042	Saline River at Hwy 167, AR	9/4/90 - 4/24/07	194	49	227	98	92	24	12
OUA0118	Saline River at Hwy 79 bridge south of Rison, AR	1/2/91 - 4/24/07	188	53	224	102	95	38	20

<sup>a</sup>The water quality data were compared to the water quality criterion for TDS, which is 120 mg/L.



## **Appendix B**

### **Water Quality Data by Sampling Location**

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**Table B-1. Chloride, sulfate, and TDS data for the Saline River Basin at station OUA0026**

Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
9/18/1990	9/22/1990	21	3.68	5	78
10/16/1990	10/20/1990	1125	3.26	5	63
11/13/1990	11/17/1990	205	6.33	9	84
12/11/1990	12/15/1990	177	4.32	7	71
1/22/1991	1/26/1991	1204	2.25	6	60
2/19/1991	2/23/1991	2410	2.78	7	76
3/26/1991	3/30/1991	589	2.78	6	78
4/16/1991	4/20/1991	6280	3.4	5	57
5/7/1991	5/11/1991	2669	1.28	5	63
6/4/1991	6/8/1991	143	2.15	5	66
7/2/1991	7/6/1991	46	2.69	4	75
7/30/1991	8/3/1991	78	2.22	5	73
9/17/1991	9/21/1991	32			64
10/8/1991	10/12/1991	21			78
11/12/1991	11/16/1991	184	2.65	8.79	69
12/10/1991	12/14/1991	2067	1.94	3.21	53
1/28/1992	2/1/1992	398	2.8	8.16	70
2/25/1992	2/29/1992	1853	2.6	5.66	64
3/3/1992	3/7/1992	1039	2.67	6.66	62
4/7/1992	4/11/1992	301	2.47	7.25	63
5/19/1992	5/23/1992	86	2.88	5.83	78
6/22/1992	6/26/1992	502	1.8	4.66	47
7/14/1992	7/18/1992	267	2.48	6.04	74
8/11/1992	8/15/1992	114	2.4	5.87	73
9/8/1992	9/12/1992	33	3.08		69
10/6/1992	10/10/1992	23	2.95	5.75	71
11/10/1992	11/14/1992	25	3.18		81
11/23/1992	11/27/1992	500	2.18	6.29	56
1/4/1993	1/8/1993	615	3.3	9.31	72
1/5/1993	1/9/1993	727	2.39	7.41	64
2/2/1993	2/6/1993	332	2.09	8.4	59
3/2/1993	3/6/1993	1211	2.4	6.87	59
3/30/1993	4/3/1993	364	2.87	8.7	61
5/4/1993	5/8/1993	1609		6.33	62
6/1/1993	6/5/1993	121	2.39	4.96	77
7/13/1993	7/17/1993	27	3.12	6.54	78
8/3/1993	8/7/1993	33	2.62	7.41	86
9/7/1993	9/11/1993	10	3.2	5.54	74
10/5/1993	10/9/1993	42	2.36	4.96	54
11/2/1993	11/6/1993	47	3.88	8.62	83
12/14/1993	12/18/1993	1662	3.56	8.87	60
2/1/1994	2/5/1994	3192	2.07		61
3/8/1994	3/12/1994	1643	3.1	7.9	55
4/5/1994	4/9/1994	1117	2.76	6.4	59
5/4/1994	5/8/1994	811	1.53	7.92	72
6/21/1994	6/25/1994	139	2.56	6.6	76

<b>Sampling Date</b>	<b>Flow Date</b>	<b>Flow</b>	<b>Chloride</b>	<b>Sulfate</b>	<b>TDS</b>
		(cfs)	(mg/L)	(mg/L)	(mg/L)
7/12/1994	7/16/1994	680	2.77	4	75
8/23/1994	8/27/1994	188	2.71	5.4	64
9/6/1994	9/10/1994	374		7.1	84
10/4/1994	10/8/1994	32	3.35	5.8	76
11/1/1994	11/5/1994	56		7.9	
11/21/1994	11/25/1994	479	2.36	7.7	69
1/24/1995	1/28/1995	2983	1.964	8.4	63
2/14/1995	2/18/1995	429	3.077	10.1	72
3/28/1995	4/1/1995	591	3.111	8.7	82
4/25/1995	4/29/1995	455	2.879	6.4	59
5/23/1995	5/27/1995	138	2.407	12.2	69
6/6/1995	6/10/1995	232	3.142	9.9	61
7/11/1995	7/15/1995	93	2.642	7.8	69
8/8/1995	8/12/1995	37	3.096	6.3	76
9/5/1995	9/9/1995	5	5.423	12.8	82
10/3/1995	10/7/1995	14	3.628	10.3	84
10/31/1995	11/4/1995	42	3.859	5.9	81
11/28/1995	12/2/1995	31	3.718	10.5	81
1/9/1996	1/13/1996	132	7.045	13.6	65
2/13/1996	2/17/1996	52	3.559	7.6	77
3/12/1996	3/16/1996	131	2.912	9.1	70
4/9/1996	4/13/1996	171	2.503	11.6	69
5/7/1996	5/11/1996	662	2.764	9.5	85
6/18/1996	6/22/1996	89	2.257	9.6	75
7/23/1996	7/27/1996	54	3.333	6.4	74
8/13/1996	8/17/1996	49	3.181	4	83
9/10/1996	9/14/1996	24	2.822	10.1	78
10/8/1996	10/12/1996	29	3.27	13.4	73
11/5/1996	11/9/1996	382	3.195	8.2	65
12/3/1996	12/7/1996	2386	2.526	7.5	56
1/21/1997	1/25/1997	1389	3.768	8.5	75
2/18/1997	2/22/1997	1826	2.527	8.7	65
3/11/1997	3/15/1997	3402	2.073	9.2	
4/15/1997	4/19/1997	644	2.398	6.9	66
5/13/1997	5/17/1997	170	2.304	9.3	71
6/17/1997	6/21/1997	819	2.772	11	69
7/15/1997	7/19/1997	58	4.243	7	85
8/26/1997	8/30/1997	25	2.646	4.905	82
9/16/1997	9/20/1997	13	3.01	5.51	78
10/28/1997	11/1/1997	73	3.05	8.88	89
12/2/1997	12/6/1997	150	2.872	7.737	82
12/30/1997	1/3/1998	1047	2.849	6.967	68
1/13/1998	1/17/1998	2499	2.527	5.911	62
2/10/1998	2/14/1998	1047	2.73	7.21	64
3/17/1998	3/21/1998	1994	1.65	5.09	55
4/14/1998	4/18/1998	163	2.25	5.921	62

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
5/19/1998	5/23/1998	52	1.94	4.97	
6/2/1998	6/6/1998	70	2.35	5.67	88
6/30/1998	7/4/1998	13	2.604	5.164	78
8/4/1998	8/8/1998	14	2.71	5.3	54
9/1/1998	9/5/1998	11	2.61	6.14	69
10/5/1998	10/9/1998	238	2.11	5.06	83
11/3/1998	11/7/1998	54	2.97	5.91	69
12/1/1998	12/5/1998	64	2.75	5.96	83
1/5/1999	1/9/1999	1735	1.98	5.98	59
2/2/1999	2/6/1999	2800	1.79	5.47	53
3/2/1999	3/6/1999	192	2.41	6.4	69.5
4/20/1999	4/24/1999	1696	1.95	5.62	66
5/11/1999	5/15/1999	211	2.05	5.27	64.5
6/1/1999	6/5/1999	586	8.83	4.3	82
7/6/1999	7/10/1999	57	2.44	4.93	75
8/3/1999	8/7/1999	18	2.63	4.96	78
9/7/1999	9/11/1999	8	2.59	4.82	70
10/5/1999	10/9/1999	7	2.88	5.49	73
11/17/1999	11/21/1999	23			80
12/14/1999	12/18/1999	484	2.28	6.57	59.5
1/18/2000	1/22/2000	45	2.69	7.77	70.5
2/29/2000	3/4/2000	578		7.02	68
3/27/2000	3/31/2000	372	2.61	6.92	60
4/24/2000	4/28/2000	143	2.78	6.72	67
5/16/2000	5/20/2000	317	2.5	6.33	80.5
6/6/2000	6/10/2000	628	1.71	5.04	73.5
7/18/2000	7/22/2000	24	3.24	6.59	93.5
8/15/2000	8/19/2000	7	2.62	6.22	80
9/5/2000	9/9/2000	3	2.2	6.6	64.5
10/24/2000		14	4.56	8.01	86
10/31/2000		32	4.9	8.54	90.5
12/19/2000		545	2.74	8.74	67
1/15/2001		847	2.32	7.09	59
2/13/2001		2490	2.57	7.21	63
3/6/2001		1990	1.9	5.55	52.5
4/3/2001		390	2.28	7.11	65
5/8/2001		146	2.59	6	77
6/12/2001		165	2.43	5.34	69.5
7/3/2001		190	1.65	4.18	72.5
8/14/2001		67	2	4.7	92
9/25/2001		16	3.58	5.3	87
10/23/2001		19	3.97	7.84	82
11/13/2001		15	3.89	6.47	91.5
12/18/2001		6340	1.77	4.8	51.5
1/22/2002		233	2.75	9.02	73
2/19/2002		1200	2.63	7.15	64

## TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

<b>Sampling Date</b>	<b>Flow Date</b>	<b>Flow</b>	<b>Chloride</b>	<b>Sulfate</b>	<b>TDS</b>
		(cfs)	(mg/L)	(mg/L)	(mg/L)
3/19/2002		2420	2.08	6.5	64
4/16/2002		365	2.03	5.51	56
5/14/2002		1430	2.04	5.34	79
6/25/2002		30	2.87	5.28	
7/30/2002		91	2.24	4.5	83
8/27/2002		124	2.83	4.33	82
9/10/2002		19	3.22	4.31	89
10/15/2002		36	3.7	7.29	86
12/17/2002		496	6.2	18	61
1/21/2003		195	2.63	7.49	68
2/11/2003		215	3.07	8.61	79
3/11/2003		486	2.15	6.71	61
4/8/2003		412	2.32	7.28	78
5/13/2003		272	2.08	5.07	69.5
6/3/2003		113	2.51	5.47	69
6/30/2003		343	1.99	4.82	70
7/29/2003		67	2.96	5.89	101
9/9/2003		66	2.78	4.81	87
10/7/2003		58	3.4	5.3	90.5
11/4/2003		87	3.56	5.68	90.5
12/2/2003		294	3.3	7.47	70.5
1/27/2004		1390	2.16	6.84	66.5
2/24/2004		412	2.29	6.73	53
3/30/2004		433	2.71	6.23	86.5
4/26/2004		1640	1.97	5.48	89
5/4/2004		895	1.97	5.54	65.5
6/1/2004		222	2.4	5.47	77
7/20/2004		79	2.58	4.69	84
8/23/2004		349	2.38	5.68	75.5
9/28/2004		48	3.05	5.41	79.5
10/19/2004		3730	1.92	4.78	74
11/2/2004		7960	1.71	3.73	78.5
12/7/2004		3020	2.11	5.65	86
1/4/2005		10000	1.53	4.24	55.5
2/1/2005		331	3.68	7.05	78
3/15/2005		359	3.17	7.24	78.5
4/12/2005		2950	1.74	5.11	58.5
5/10/2005		207	2.75	5.71	90
6/21/2005		103	2.81	5.15	91.5
7/19/2005		234	2.54	5.54	93
8/16/2005		37	3.64	4.77	93
9/13/2005		10	3.35	4.75	79.5
10/11/2005		16	3.26	6.49	87.5
11/1/2005		22	3.4	6.56	78.5
12/27/2005		58	3.39	7.86	88
2/21/2006		194	3.3	9.89	75.5

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
3/7/2006		170	3.51	9.27	84.5
4/18/2006		147	3.42	6.98	84.5
5/23/2006		96	2.27	5.52	73.5
6/6/2006		46	2.48	5.4	76
7/11/2006		18	2.53	4.67	88.5
8/1/2006		7	2.84	5.05	82
9/5/2006		5	4.07	5.38	87.5
10/3/2006		24	3.41	7.88	83
11/7/2006		2410	2.29	6.06	68
12/5/2006		406	2.46	6.7	50.5
1/9/2007		1240	1.99	6.38	57.5
2/6/2007			2.2	6.99	63.5
3/13/2007			2.7	7.46	74.5
4/3/2007			3.14	7.6	89

**Table B-2. Chloride, sulfate, and TDS data for the Saline River Basin at station OUA0041**

Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
9/18/90	9/22/90	20.67079	5.29	33	131
10/16/90	10/20/90	1125.119	4.45	81	179
11/13/90	11/17/90	205.3996	7.11	49	133
12/11/90	12/15/90	176.8792	5.33	49	133
1/22/91	1/26/91	1203.616	2.79	36	97
1/22/91	1/26/91	1203.616	3.59	44	128
2/19/91	2/23/91	2409.848	3.32	26	100
3/26/91	3/30/91	588.725	3.62	43	121
4/16/91	4/20/91	6279.734	3.65	34	95
5/7/91	5/11/91	2668.887	1.9	32	95
6/4/91	6/8/91	143.3873	3.02	32	110
7/2/91	7/6/91	45.78972	3.71	22	110
7/30/91	8/3/91	77.97336	2.76	40	123
9/17/91	9/21/91	31.92198			116
10/8/91	10/12/91	20.93245			126
11/12/91	11/16/91	183.9439	3.56	50.8	137
1/28/92	2/1/92	397.7165	3.42	42.9	119
2/25/92	2/29/92	1852.521	3.82	36.9	111
3/3/92	3/7/92	1038.773	3.37	43.8	117
4/7/92	4/11/92	300.9039	3.99	57	141
5/19/92	5/23/92	85.82303	4.19	41.9	127
6/22/92	6/26/92	502.3787	1.85	7.33	54
7/14/92	7/18/92	266.8887	3.52	22.8	106
8/11/92	8/15/92	113.8202	3.47	45.6	138
9/8/92	9/12/92	33.23026	4.08		105
10/6/92	10/10/92	22.50238	4.92	34.2	123
11/10/92	11/14/92	24.59562	5.05		118
11/23/92	11/27/92	499.7621	2.89	39.4	106
1/4/93	1/8/93	614.8906	4.56	51.1	139
2/2/93	2/6/93	332.3026	2.66	26.3	87
3/30/93	4/3/93	363.7012	4.15	63.3	149
5/4/93	5/8/93	1609.182		10	64
6/1/93	6/5/93	120.8849	2.89	19	91
7/13/93	7/17/93	27.47383	4.06	13.8	86
8/3/93	8/7/93	33.49191	5.32	10.8	89
9/7/93	9/11/93	9.942912	5.4	8.75	84
10/5/93	10/9/93	41.86489	3.54	23.5	74
11/2/93	11/6/93	46.83635	5.4	49.5	137
12/14/93	12/18/93	1661.513	3.04	13.2	70
2/1/94	2/5/94	3192.198	2.45		79
3/8/94	3/12/94	1643.197	3.16	30.3	93
4/5/94	4/9/94	1117.269	3.43	37.2	106
5/4/94	5/8/94	811.1323	2.98	35	125
6/21/94	6/25/94	138.9391	3.72	27.1	111
7/12/94	7/16/94	680.3045	3.87	30	117
8/23/94	8/27/94	187.8687	2.59	7.3	69

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
9/6/94	9/10/94	374.1675		11.7	91
10/4/94	10/8/94	32.18363	6.34	47.1	145
11/1/94	11/5/94	55.73264		119	
11/21/94	11/25/94	478.8297	3.16	33.5	111
1/24/95	1/28/95	2982.873	2.643	36.7	109
2/14/95	2/18/95	429.1151	4.274	32.5	111
3/28/95	4/1/95	591.3416	3.78	31.6	123
4/25/95	4/29/95	455.2807	3.002	37.5	111
5/23/95	5/27/95	137.8925	3.502	34.8	111
6/6/95	6/10/95	231.5652	3.301	14.8	78
7/11/95	7/15/95	93.14938	3.029	16	90
8/8/95	8/12/95	37.41675	8.063	100	233
9/5/95	9/9/95	5.233111	13.838	13.8	94
10/3/95	10/7/95	13.60609	9.214	109	254
10/31/95	11/4/95	42.12655	3.954	12.5	81
11/28/95	12/2/95	30.87536	5.703	35.7	126
1/9/96	1/13/96	132.3977	5.309	32.8	111
2/13/96	2/17/96	51.54615	4.532	24.4	105
3/12/96	3/16/96	130.8278	3.859	31.2	115
4/9/96	4/13/96	170.8611	4.157	29.3	106
6/18/96	6/22/96	88.70124	3.15	9.6	80
7/23/96	7/27/96	54.42436	4.846	11.2	101
8/13/96	8/17/96	48.92959	4.83	30.8	135
9/10/96	9/14/96	24.33397	5.465	29.8	134
10/8/96	10/12/96	29.04377	5.203	37.9	138
11/5/96	11/9/96	382.0171	4.075	45.9	150
12/3/96	12/7/96	2386.299	3.057	21	84
1/21/97	1/25/97	1389.391	5.962	83.3	234
2/18/97	2/22/97	1826.356	4.162	64.1	168
3/11/97	3/15/97	3401.522	3.285	35.8	
4/15/97	4/19/97	643.6727	5.028	67.6	209
5/13/97	5/17/97	169.5528	5.714	100.6	250
7/15/97	7/19/97	58.08754	3.507	33	127
8/26/97	8/30/97	24.59562	5.787	46.078	147
9/16/97	9/20/97	12.82112	31.5	5.82	129
10/28/97	11/1/97	73.26356	6.56	96.9	239
12/2/97	12/6/97	149.667	5.981	84.514	236
12/30/97	1/3/98	1046.622	4.478	50.998	160
2/10/98	2/14/98	1046.622	5.68	86.55	219
4/14/98	4/18/98	163.2731	4.967	75.788	204
5/19/98	5/23/98	52.33111	4.56	68.2	
6/2/98	6/6/98	69.86204	3.48	15.97	110
6/30/98	7/4/98	13.08278	6.991	14.948	105
8/4/98	8/8/98	13.60609	5.55	7.8	55
9/1/98	9/5/98	10.98953	5.15	9.04	80
10/5/98	10/9/98	238.1066	3.62	14.5	95

<b>Sampling Date</b>	<b>Flow Date</b>	<b>Flow</b>	<b>Chloride</b>	<b>Sulfate</b>	<b>TDS</b>
		(cfs)	(mg/L)	(mg/L)	(mg/L)
11/3/98	11/7/98	54.1627	5.57	25.2	111
12/1/98	12/5/98	64.36727	4.94	39.7	144
1/5/99	1/9/99	1734.776	2.46	18.1	84
2/2/99	2/6/99	2799.715	2.4	21.8	83
3/2/99	3/6/99	192.0552	3.79	31	111.5
4/20/99	4/24/99	1695.528	2.76	29.4	102
5/11/99	5/15/99	211.156	3.42	33.5	112.5
6/1/99	6/5/99	586.1085	1.52	7.46	67
7/6/99	7/10/99	57.04091	4.39	38.3	136
8/3/99	8/7/99	17.53092	6.01	33.8	138
9/7/99	9/11/99	7.588011	8.75	53.3	162
10/5/99	10/9/99	7.326356	11.1	65.8	183
11/17/99	11/21/99	23.28735			121
12/14/99	12/18/99	484.0628	2.59	19.84	83
1/18/00	1/22/00	45.00476	4.35	33.41	112.5
2/29/00	3/4/00	578.2588		32.8	104
3/27/00	3/31/00	371.5509	3.49	22.4	89
4/24/00	4/28/00	143.1256	5.22	41.4	128
5/16/00	5/20/00	316.6032	3.27	11.2	87
6/6/00	6/10/00	627.9734	1.82	5.18	74.5
7/18/00	7/22/00	24.33397	5.65	7.88	92
8/15/00	8/19/00	6.803045	10.85	10.87	101
9/5/00	9/9/00	2.616556	12.8	11.7	101
10/24/00		14	14.57	13.43	110
10/31/00		32	16	13.08	118
12/19/00		545	3.37	18.2	81.5
1/15/01		847	3.22	24.86	86
2/13/01		2490	3.9	33.99	112
3/6/01		1990	1.97	9.34	60.5
4/3/01		390	3.27	35.69	112
5/8/01		146	4.75	47.36	143
6/12/01		165	3.96	43.75	137
7/3/01		190	2.49	21.45	111
8/14/01		67	4.32	40.64	163
9/25/01		16	10.92	76.7	203
10/23/01		19	7.43	45.01	147
11/13/01		15	8.39	38.24	147
1/22/02		233	3.89	37.96	116
2/19/02		1200	3.75	38.74	117
3/19/02		2420	2.29	15.03	78
4/16/02		365	2.78	35.84	105
5/14/02		1430	2.35	19.98	104
6/25/02		30	5.82	9.32	
7/30/02		91	4.18	14.1	105
8/27/02		124	4.23	34.97	130
9/10/02		19	8.51	42.96	150

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
10/15/02		36	5.3	20.8	106
12/17/02		496	3.38	37.4	108
1/21/03		195	3.71	25.5	98
2/11/03		215	4.1	23.4	106
3/11/03		486	3.18	36.9	111
4/8/03		412	3.3	31.8	118
5/13/03		272	3.3	35.7	119
6/3/03		113	4.62	38.4	140
6/30/03		343	3.58	26.6	134
7/29/03		67	5.51	33.6	152
9/9/03		66	5.46	33.3	147
10/7/03		58	10.8	37.6	168
11/4/03		87	7.35	17.7	121
12/2/03		294	4.51	42.2	126
1/27/04		1390	3.12	30.1	122
2/24/04		412	3.47	26.8	103
3/30/04		433	3.4	22.2	122
4/26/04		1640	2.35	16.4	112
5/4/04		895	2.83	31.1	119
6/1/04		222	3.63	25.7	123
7/20/04		79	4.39	11.2	105
8/24/04		264	2.78	6.49	95.5
9/28/04		48	8.76	7.9	106
12/7/04		3020	2.46	9.05	85
2/1/05		331	3.9	21.8	106
3/15/05		359	4.07	20.9	102
4/12/05		2950	1.79	8.87	71
5/10/05		207	4.7	21.9	115
6/21/05		103	5.22	24.2	128
7/19/05		234	2.7	6.11	89
8/16/05		37	8.74	7.28	104
9/13/05		10	12.2	8.55	101
10/11/05		16	7.17	20.7	126
11/1/05		22	10.4	15.2	114
12/27/05		58	5.24	19	112
2/21/06		194	4.7	24.3	105
3/7/06		170	5.02	26.8	124
4/18/06		147	4.33	16.1	99.5
5/23/06		96	3.65	21	105
6/6/06		46	3.58	6.52	79.5
7/11/06		18	4.79	5.38	88.5
8/1/06		7	14.3	9.69	106
9/5/06		5	8.17	7.04	93
10/3/06		24	6.91	9.94	95.5
11/7/06		2410	2.63	6.51	74
12/5/06		406	2.85	7.91	60

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
1/9/07		1240	2.26	9.43	60
2/6/07			3.58	26.8	103
3/13/07			3.7	19.8	98.5
4/3/07			3.92	20.1	108

**Table B-3. Chloride, sulfate, and TDS data for the Saline River Basin at station OUA0042**

Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
9/4/90	9/6/90	20.83587	4.75	23	102
10/2/90	10/4/90	57.69933	5.22	34	112
10/30/90	11/1/90	258.5785	5.35	38	116
11/27/90	11/29/90	482.4305	4.24	39	106
1/2/91	1/4/91	5395.956	3.32	14	62
2/12/91	2/14/91	849.4624	3.76	31	81
3/12/91	3/14/91	1458.511	3.42	43	110
4/2/91	4/4/91	1725.637	4.48	13	78
5/14/91	5/16/91	2104.957	3.27	25	83
6/18/91	6/20/91	214.7697	4.08	23	91
7/9/91	7/11/91	91.89153	4.37	23	97
8/6/91	8/8/91	81.20647	4.36	40	120
9/3/91	9/5/91	118.6042			96
10/15/91	10/17/91	36.32921			88
10/29/91	10/31/91	373.9772			84
11/25/91	11/27/91	2895.652	2.93	11.6	71
1/7/92	1/9/92	1250.152	3.61	21.7	80
2/18/92	2/20/92	1730.98	3.61	31.9	96
3/17/92	3/19/92	6197.336	2.96	30.1	81
4/21/92	4/23/92	453.5809	4.14	28.2	95
5/5/92	5/7/92	169.3582	4.39	39.9	122
6/9/92	6/11/92	657.1313	3.09	31	109
7/28/92	7/30/92	223.852	3.43	20.4	92
8/25/92	8/27/92	69.98716	3.16	23.1	101
9/22/92	9/24/92	54.49382	4.75	26.3	106
10/20/92	10/22/92	30.45243	5.25	28.6	119
11/17/92	11/19/92	147.4539	4.73	24.8	100
12/14/92	12/16/92	630.4186		13.4	106
1/19/93	1/21/93	1581.389	4.1	29.3	94
2/16/93	2/18/93	1554.676	4.25	34.2	181
3/16/93	3/18/93	817.4072	3.86	22.6	81
4/20/93	4/22/93	2879.624	3.38	22.8	86
5/18/93	5/20/93	2649.895	2.9	12.2	67
6/14/93	6/16/93	881.5176	3.78	23.2	92
6/21/93	6/23/93	290.0994	3.67	47.9	131
7/27/93	7/29/93	57.69933	4.68	12	67
8/24/93	8/26/93	39.53473	3.96	15	79
9/21/93	9/23/93	22.97288	5.46	11.3	80
10/12/93	10/14/93	73.19267	4.13	25.2	88
11/16/93	11/18/93	913.5728	3.24	11	76
12/21/93	12/23/93	1031.108	3.54	25.6	82
1/11/94	1/13/94	603.706	4.88	40.6	113
2/22/94	2/24/94	3584.838	4.34	15.6	73
3/1/94	3/3/94	5930.209	3.22	14.9	75
4/12/94	4/14/94	1816.461	3.42		103
5/17/94	5/19/94	1736.323	3.31	24.3	92

<b>Sampling Date</b>	<b>Flow Date</b>	<b>Flow</b>	<b>Chloride</b>	<b>Sulfate</b>	<b>TDS</b>
		(cfs)	(mg/L)	(mg/L)	(mg/L)
7/5/94	7/7/94	439.156	4.06	21.5	92
8/2/94	8/4/94	367.0319	3.53	10.7	76
8/30/94	9/1/94	185.3858	3.53	9.4	72
10/11/94	10/13/94	177.9063	4.79	17.7	77
11/8/94	11/10/94	1164.672	3.77	12	78
12/6/94	12/8/94	465.3344	4.64	38.5	112
2/21/95	2/23/95	833.4348	3.808	17.8	77
3/21/95	3/23/95	3996.213	2.607	19.3	73
4/11/95	4/13/95	2778.116	3.973	12.2	75
5/30/95	6/1/95	913.5728	3.495	19.9	92
6/27/95	6/29/95	117.5357	3.972	19.8	94
7/25/95	7/27/95	95.09705	4.536	14	81
8/22/95	8/24/95	17.63035	5.21	8	85
9/11/95	9/13/95	11.21931	6.592	27.8	107
10/10/95	10/12/95	51.2883	5.978	14.2	78
11/7/95	11/9/95	183.7831	3.886	30.7	108
12/12/95	12/14/95	81.74072	4.964	27.7	102
1/16/96	1/18/96	184.3173	4.069	25.7	90
2/20/96	2/22/96	667.8164	4.636	19.7	93
3/26/96	3/28/96	1437.141		20.3	91
4/16/96	4/18/96	1538.649	4.253	27	112
4/30/96	5/2/96	511.2802	3.772	27	104
6/11/96	6/13/96	539.5956	2.598	12	74
7/9/96	7/11/96	68.3844	3.756	12	76
8/27/96	8/29/96	66.24738	5.181	34.3	132
9/24/96	9/26/96	76.93245	4.867	25.2	112
10/15/96	10/17/96	38.46622	5.04	45.4	155
11/19/96	11/21/96	881.5176	4.979	56.6	174
12/10/96	12/12/96	3835.937	3.293	21.3	86
1/7/97	1/9/97	1789.748	5.182	43.4	143
2/4/97	2/6/97	2238.52	3.325	18.8	89
3/18/97	3/20/97	4354.163	2.815	14.2	73
4/22/97	4/24/97	593.0209	4.218	46.1	150
5/20/97	5/22/97	313.0723	5.916	62.9	183
6/10/97	6/12/97	144.7826	4.724	56.2	
7/8/97	7/10/97	179.509	5.79	46	
8/5/97	8/7/97	51.2883	8.524	58.3	170
9/2/97	9/4/97	42.74025	7.4	84.1	209
9/30/97	10/2/97	107.9191	3.8	31.4	115
11/4/97	11/6/97	544.9382	5.61	77.4	195
12/9/97	12/11/97	415.6489		50.492	161
1/6/98	1/8/98	2019.477	4.44	28.06	108
2/3/98	2/5/98	1709.61	3.33	29.49	106
3/3/98	3/5/98	2088.93	2.297	15.216	83
3/31/98	4/2/98	1041.794	3.725	30.067	113
5/5/98	5/7/98	284.7569	5.42	87.08	227

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
6/23/98	6/25/98	44.87726	4.468	13.647	115
7/28/98	7/30/98	30.98668	3.71	10.8	80
8/25/98	8/27/98	49.68554	2.89	7.86	78
9/29/98	10/1/98	102.0423	2.9	7.7	75
10/20/98	10/22/98	422.0599	3.19	7.84	74
11/17/98	11/19/98	164.0157	3.63	16.7	94
12/21/98	12/23/98	1148.644	4.37	22.8	104
1/19/99	1/21/99	619.7336	3.34	19.7	87
2/9/99	2/11/99	4359.505	3.23	24.4	90.5
3/8/99	3/10/99	726.5842	4.49	31.5	105
4/13/99	4/15/99	4028.268	2.84	17	82
5/18/99	5/20/99	806.7222	3.15	15.1	88
6/8/99	6/10/99	420.9914		14.1	85
7/13/99	7/15/99	143.7141	5.54	34	121.5
8/17/99	8/19/99	30.45243	6.42	34.3	126.5
9/14/99	9/16/99	23.50714		18.5	91
10/19/99	10/21/99	37.93197	10.2	58.6	164
11/22/99	11/24/99	48.08278	5.45	41.28	125.5
12/20/99	12/22/99	433.8135	3.53	21.74	89.5
1/25/00	1/27/00	81.74072	4.97	25.87	94
2/15/00	2/17/00	129.8235	5.42	30.91	102
3/14/00	3/16/00	441.8273			77
4/11/00	4/13/00	404.9638	4.02	24.8	96
5/30/00	6/1/00	1036.451	3.05	13.2	100
6/27/00	6/29/00	1714.952	2.27	4.66	73.5
7/31/00	8/2/00	36.32921	5.09	6.82	
8/22/00	8/24/00	12.28782	7.36	7.58	88
9/26/00	9/28/00	12.28782	8.75	7.21	88
10/3/00		73	8.87	9.82	80
11/14/00		737	3.97	41.3	122.5
12/5/00		586	3.49	25.08	91
1/30/01		1730	3.17	15.6	66
2/20/01		24100	1.33	4.26	48.5
3/20/01		4680	3.56	15.9	64
4/24/01		694	3.49	18.92	92
5/22/01		239	3.43	15.43	96
6/19/01		269	4.17	29	112
7/17/01		397	3.96	21.07	97.5
8/7/01		100	4.79	22.72	102
9/4/01		162	4.71	14.2	87
10/2/01		18	8.95	34.09	112.5
11/6/01		58	5.8	23.15	103.5
12/11/01		1620	3.18	16.01	85
1/2/02		645	3.53	19.26	85
2/12/02		1580	3.36	18.63	83
3/5/02		2100	3.24	11.68	80.5

<b>Sampling Date</b>	<b>Flow Date</b>	<b>Flow</b>	<b>Chloride</b>	<b>Sulfate</b>	<b>TDS</b>
		(cfs)	(mg/L)	(mg/L)	(mg/L)
4/2/02		13600	1.65	6.11	51.5
5/7/02		2820	2.54	7.95	90
6/4/02		451	3.39	34.53	116
7/9/02		80	5.13	11.87	89.5
8/6/02		97	4.86	27.21	114
9/3/02		66	5.9	37.6	129
10/8/02		38	4.5	22.4	98.5
11/12/02		325	4.62	30.4	117
12/10/02		1350	3.76	25.3	100
1/28/03		363	4.12	18.9	87
2/18/03		9960	2.49	10.1	75
3/18/03		791	3.41	?21.0	82
4/15/03		424	3.99	32.8	116
5/20/03		2830	2.8	17.2	93
6/24/03		6340	1.77	6.13	68
7/22/03		462	3.24	9.09	76.5
8/19/03		80	40.5	8.28	205
9/30/03		40	4.5	21.8	107
10/21/03		63	9.01	29	136
11/12/03		170	6.33	18	108
12/9/03		272	4.57	37.8	125
1/20/04		763	4.63	24.8	96
2/10/04		6490	2.37	14.1	78.5
3/9/04		9230	2.4	6.54	67
4/13/04		2250	3.42	14	105
5/25/04		492	3.4	17.5	99
7/6/04		2990	2.87	8.35	91.5
7/27/04		155	4.92	11.7	102
8/10/04		87	3.98	8.22	91
8/31/04		164	3.59	6.8	81
10/12/04		1780	3.16	7.04	97.5
11/9/04		3590	2.82	8.91	65.5
12/14/04		2500	2.85	9.35	75
2/15/05		1300	3.5	14.8	97.5
3/22/05		512	4.49	12.1	85
4/19/05		1180	3.03	15.3	112
5/17/05		125	5.08	13.1	92.5
6/14/05		222	3.72	25.1	117
7/26/05		196	3.56	6.34	80
8/23/05		40	6.06	6.29	87
9/26/05		101	5.42	6.34	71.5
10/25/05		29	6.32	30.3	127
12/13/05		113	5.04	29.7	119
1/17/06		129	5.85	0.02	78.5
1/31/06		1090	3.68	21.1	98.5
3/28/06		2670	2.81	14.6	78

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Sampling Date	Flow Date	Flow	Chloride	Sulfate	TDS
		(cfs)	(mg/L)	(mg/L)	(mg/L)
4/25/06		1060	4.29	19.7	105
5/30/06		171	4.16	14.3	96
6/20/06		105	4.64	6.87	78
7/25/06		35	7.54	7.2	85
8/22/06		33	7.04	5.99	76
9/26/06		320	8.88	8.91	86.5
10/24/06		52	5.4	7.71	82.5
11/28/06		309	3.09	9.73	75
12/19/06		426	4.51	21.7	97.5
1/30/07		1320	3.15	18.7	78
2/27/07		2210	2.79	8.73	81
3/27/07		518	4.57	13.9	87.5
4/24/07		518	4.04	16.6	93

**Table B-4. Chloride, sulfate, and TDS data for the Saline River Basin at station OUA0118**

Date Collected	Flow	Chloride	Sulfate	TDS
	(cfs)	(mg/L)	(mg/L)	(mg/L)
1/2/91	12300	3.73	20	70
2/12/91	2370	3.94	29	79
3/12/91	6630	3.03	28	91
4/2/91	3500	4.76	21	87
5/14/91	5980	3.03	19	66
6/18/91	421	3.82	22	90
7/9/91	163	4.31	41	126
8/6/91	206	3.86	50	122
9/3/91	95			141
10/15/91	72			92
10/29/91	155			112
11/25/91	3980	3.3	16.5	89
1/7/92	1680	4.02	29.1	94
2/18/92	3090	3.75	29.9	94
3/17/92	9320	2.77	23.8	67
4/21/92	545	4.53	35.6	106
5/5/92	372	4.24	39.9	127
6/9/92	2260	3.31	35.9	121
7/28/92	446	3.24	23.9	102
8/25/92	139	3.08	32.7	122
9/22/92	116	4.66	23.5	102
10/20/92	58	5.01	50.8	159
11/17/92	249	5.55	56.1	151
12/14/92	1200	4.5	40.7	110
1/19/93	2420	4.75	48.9	128
2/16/93	2620	4.45	23.2	87
3/16/93	1160	4.01	25.2	86
4/20/93	5060	3.25	14.7	78
5/18/93	4290	2.72	18.5	76
6/14/93	453	3.66	22.4	89
6/21/93	812	2.68	14.2	80
7/26/93	77	4.74	15.7	78
8/24/93	69	3.42	15	81
9/21/93	36	4.79	13.8	85
10/12/93	144	3.04	11.5	68
11/16/93	338	3.88	37.9	115
12/21/93	3270	3.48	31.7	94
1/11/94	640	4.84	53.7	131
2/22/94	3500	4.44	21.4	83
3/1/94	8260	2.17	7.42	68
4/12/94	2740	3.4		99
5/17/94	2850	3.12	18.7	86
7/5/94	1040	2.85	9.8	67
8/2/94	1800	3.18	12.2	81
8/30/94	344	3.2	15.4	85
10/11/94	154	4.65	21	84

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Date Collected	Flow (cfs)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
11/8/94	1110	4.44	24	98
12/6/94	966	5.25	52.6	138
2/21/95	2270	4.491	23.4	87
3/21/95	7630	2.578	13.8	70
4/11/95	2160	3.941	20.3	91
5/30/95	926	4.437	38.3	117
6/27/95	238	4.256	33.4	109
7/25/95	173	4.342	19.2	93
8/22/95	37	5.105	16.1	89
9/11/95	17	4.822	12.1	79
10/10/95	123	7.286	14.2	75
11/7/95	642	3.342	18.1	84
12/12/95	121	4.543	31.6	105
1/16/96	390	3.87	31.9	101
2/20/96	419	5.671	29	101
3/26/96	2370		21.1	95
4/16/96	2340	5.721	26.2	112
4/30/96	1270	3.942	38.1	127
6/11/96	1190	3.505	32.7	121
7/9/96	99	4.232	18.6	93
8/27/96	135	4.155	36	126
9/24/96	64	4.374	90.1	199
10/15/96	82	4.896	50.5	166
11/19/96	1050	4.681	52.4	160
12/10/96	8560	3.141	20.5	82
1/7/97	2020	4.957	39.1	133
2/4/97	3870	4.324	33.5	112
3/18/97	9190	3.12	11.7	78
4/22/97	1060	4.346	43.1	136
5/20/97	751	4.746	57.7	169
6/10/97	311	5.546	54.5	
7/8/97	488	4.649	29	
8/5/97	104	6.628	33.2	119
9/2/97	83	6.49	54.3	158
9/30/97	356	6.43	29.7	118
11/4/97	440	5.96	66.2	178
12/9/97	718		73.164	198
1/6/98	1620	4.42	34.82	117
2/3/98	4060	5.34	23	97
3/3/98	3630	2.929	15.676	86
3/31/98	3170	4.143	32.73	118
5/5/98	651	5.82	86.91	224
6/23/98	92	4.399	20.212	108
7/28/98	58	4.28	9.16	75
8/25/98	125	2.84	16.3	87
9/29/98	245	3.15	13.5	88

## TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

Date Collected	Flow	Chloride	Sulfate	TDS
	(cfs)	(mg/L)	(mg/L)	(mg/L)
10/20/98	428	3.63	17.6	92
11/17/98	392	4.33	33.2	121
12/21/98	1310	4.53	30.3	110
1/19/99	1390	4.66	32	127
2/9/99	10400	2.77	15.4	81
3/8/99	705	4.45	26.3	99
4/13/99	8660	2.68	10	73
5/18/99	835	3.34	21.9	95
6/8/99	1750		17.3	91
7/13/99	188	4.56	30.1	114.5
8/17/99	53	5.51	21.8	104
9/14/99	41		33.4	115.5
10/19/99	89	6.32	23	100
11/22/99	84	4.92	44	127
12/20/99	1880	3.26	24.98	91.5
1/25/00	152	4.38	28.65	91.5
2/15/00	266	4.8	41.27	113
3/14/00	608			110
4/11/00	891	4.21	26.3	101
5/30/00	1070	3.68	13.3	101.5
6/27/00	3200	2.32	5.53	77.5
7/31/00	81	7.3	7.66	
8/22/00	22	5.81	7.45	84
9/26/00	51	6.57	7.38	72
10/3/00	60	7.94	7.53	82
11/14/00	1690	3.87	42.3	126.5
12/5/00	3920	3.46	20.42	99
1/30/01	5850	3.14	15.4	68
2/20/01	13600	1.17	4.95	61.5
3/20/01	10500	2.37	10.1	61.5
4/24/01	3280	3.05	14.45	84
5/22/01	404	3.63	15.27	97
6/19/01	345	4.02	26.2	112
7/17/01	259	3.72	30.29	116
8/7/01	89	4.53	38.47	124.5
9/4/01	97	3.85	27.9	103.5
10/2/01	29	5.96	18.37	92
11/6/01	116	5.24	25.79	110
12/11/01	5630	3.37	16.53	92
1/2/02	2070	3.38	17.39	85.5
2/12/02	3710	3.58	19.94	91
3/5/02	2690	3.48	19.37	86
4/2/02	13700	1.64	6.62	52.5
5/7/02	5440	2.33	6.63	84.5
6/4/02	1400	3.34	17.7	91.5
7/9/02	50	5.12	43.62	130

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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Date Collected	Flow	Chloride	Sulfate	TDS
	(cfs)	(mg/L)	(mg/L)	(mg/L)
8/6/02	88	5.32	41.78	127.5
9/3/02	100	7.1	83	213
10/8/02	54	6.84	57.9	144
11/12/02	753	4.53	36.8	123
1/28/03	589	4.3	22.4	92
2/18/03	7770	2.51	9.48	79.5
3/18/03	1810	3.83	20.5	82
4/15/03	602	4.04	27.2	106
5/20/03	2950	3.16	13.2	85
6/24/03	17500	1.42	5.13	65.5
7/22/03	278	4.47	21.1	109
8/19/03	133	5.36	19.5	97.5
9/30/03	135	4.2	17	97
10/21/03	82	5.82	17.8	101
11/12/03	133	5.72	15.9	104
12/9/03	389	4.9	57.5	140
1/20/04	402	4.79	30	108
2/10/04	3960	2.46	12.5	79
3/9/04	6590	2.85	8.99	69.5
4/13/04	5080	2.79	9.52	77.5
5/25/04	1110	3.24	17.1	102
7/6/04	7070	2.84	8.17	85
7/27/04	1080	3.62	11.5	90.5
8/10/04	172	4.14	9.54	89.5
8/31/04	269	3.58	9.34	82.5
10/12/04	1060	3.6	7.28	92
11/9/04	5610	2.53	7.59	76.5
12/14/04	8440	3.03	8.47	67
2/15/05	4590	3.6	15.7	87
3/22/05	1560	4.87	16.2	94
4/19/05	6120	2.55	9.76	96
5/17/05	220	4.77	15.8	100
6/14/05	445	3.35	19.5	108
7/26/05	231	3.7	8.45	81.5
8/23/05	36	3.96	6.83	73.5
9/26/05	49	7	6.5	69.5
10/25/05	34	4.54	10.2	91
12/13/05	170	5.19	38.8	148
1/17/06	130	6.49	0.02	148
1/31/06	1020	3.95	26	112
3/28/06	5960	2.15	10.5	73
4/25/06	1520	5.13	18.5	99.5
5/30/06	382	2.63	9.47	77.5
6/20/06	118	4.31	10.3	83.5
8/22/06	29	5.57	11.2	86.5
9/26/06	185	8.75	26.5	123

TMDLs for Chloride, Sulfate, and Total Dissolved Solids in the Saline River Basin, Arkansas

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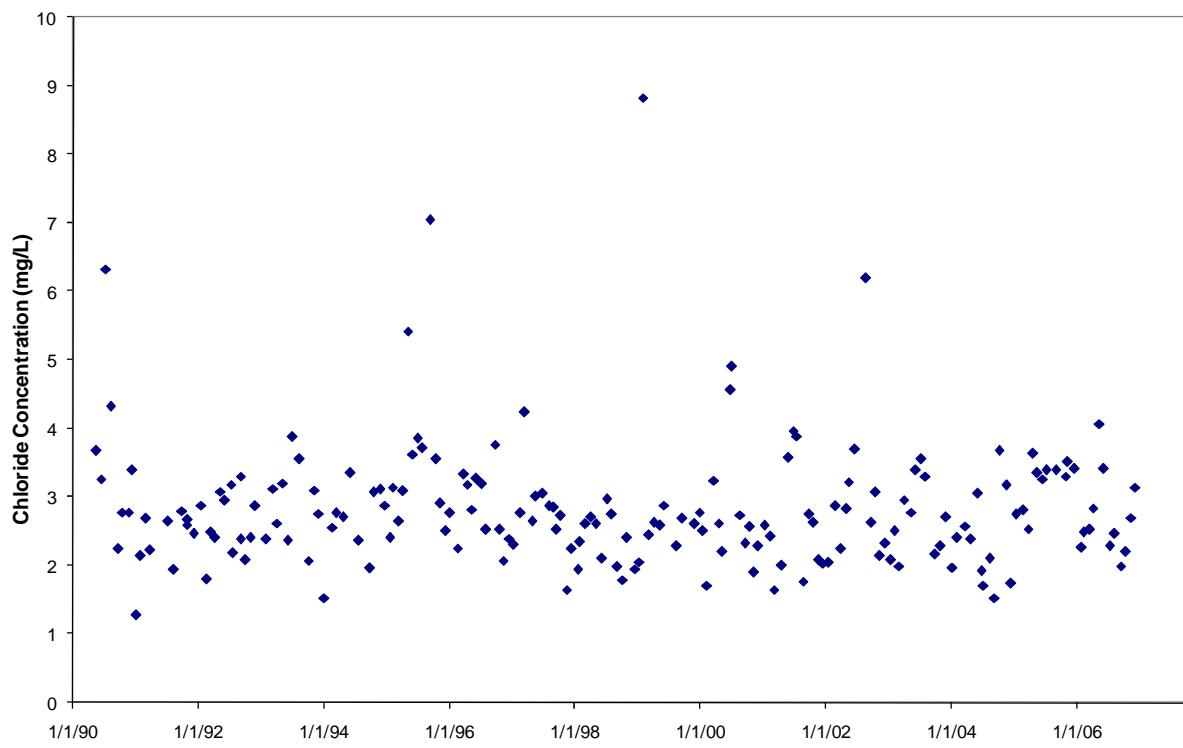
Date Collected	Flow	Chloride	Sulfate	TDS
	(cfs)	(mg/L)	(mg/L)	(mg/L)
10/24/06	58	4.59	23.9	119
11/28/06	439	3.26	14.9	88
12/19/06	666	5.3	23.9	103
1/30/07	6600	3.18	17.2	77
2/27/07	3070	4.43	23.9	97
3/27/07	599	5.42	22.6	100
4/24/07	978	4.34	19	98.5



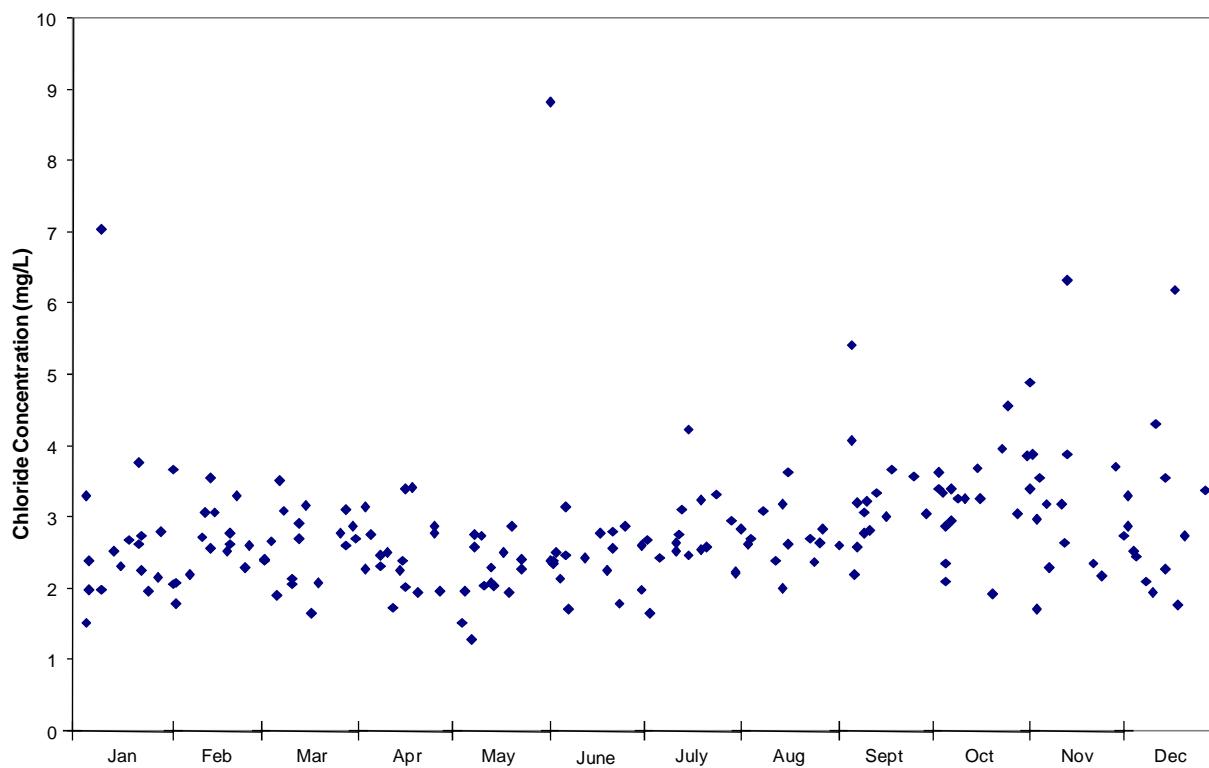
## **Appendix C**

### **Chloride Figures for the Saline River Basin**

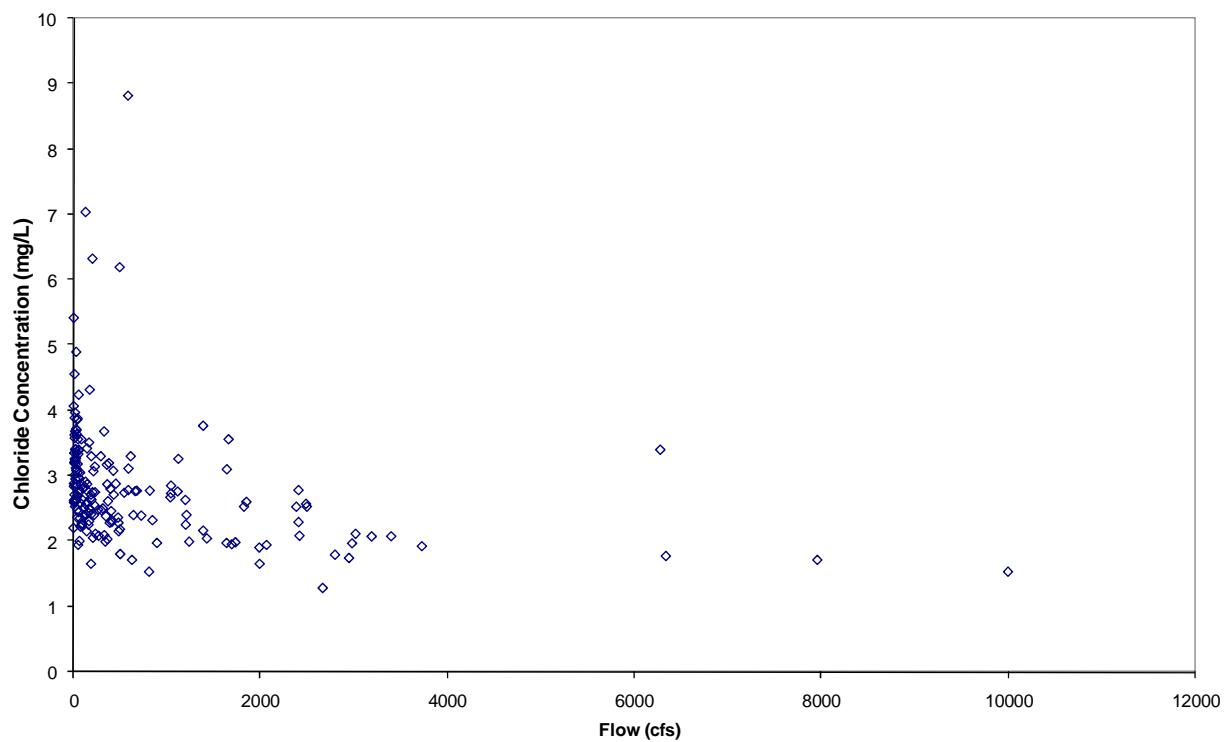
Figure C-1. Time series chloride observations at the Saline River near Benton, Arkansas (station OUA0026).....	2
Figure C-2. Seasonal chloride observations at the Saline River near Benton, Arkansas (station OUA0026).....	3
Figure C-3. Chloride versus flow at the Saline River near Benton, Arkansas (station OUA0026).4	
Figure C-4. Time series chloride observations at the Saline River downstream of Benton, Arkansas (station OUA0041).....	5
Figure C-5. Seasonal chloride observations at the Saline River downstream of Benton, Arkansas (station OUA0041).....	6
Figure C-6. Chloride versus flow at the Saline River downstream of Benton, Arkansas (station OUA0041).....	7
Figure C-7. Time series chloride observations at the Saline River at Highway 167, Arkansas (station OUA0042).....	8
Figure C-8. Seasonal chloride observations at the Saline River at Highway 167, Arkansas (station OUA0042).....	9
Figure C-9. Chloride versus flow observations at the Saline River at Highway 167, Arkansas (station OUA0042).....	10
Figure C-10. Time series chloride observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118). .....	11
Figure C-11. Seasonal chloride observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118). .....	12
Figure C-12. Chloride versus flow observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118). .....	13



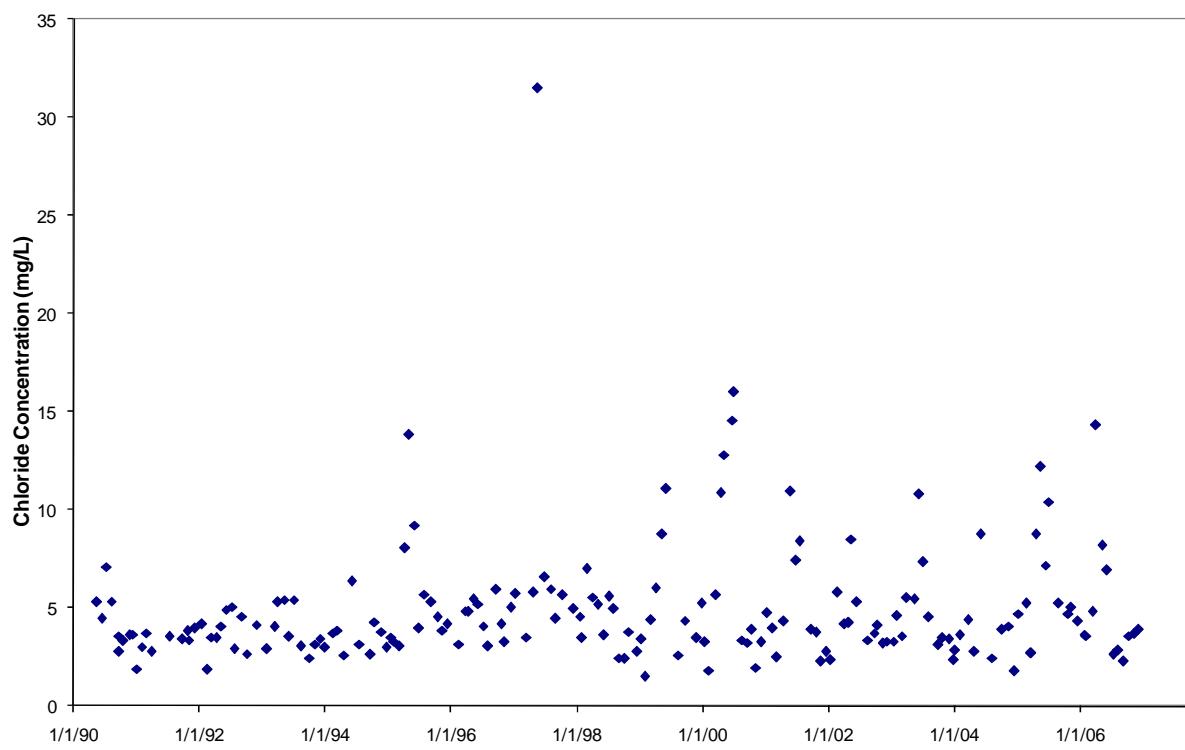
**Figure C-1. Time series chloride observations at the Saline River near Benton, Arkansas (station OUA0026).**



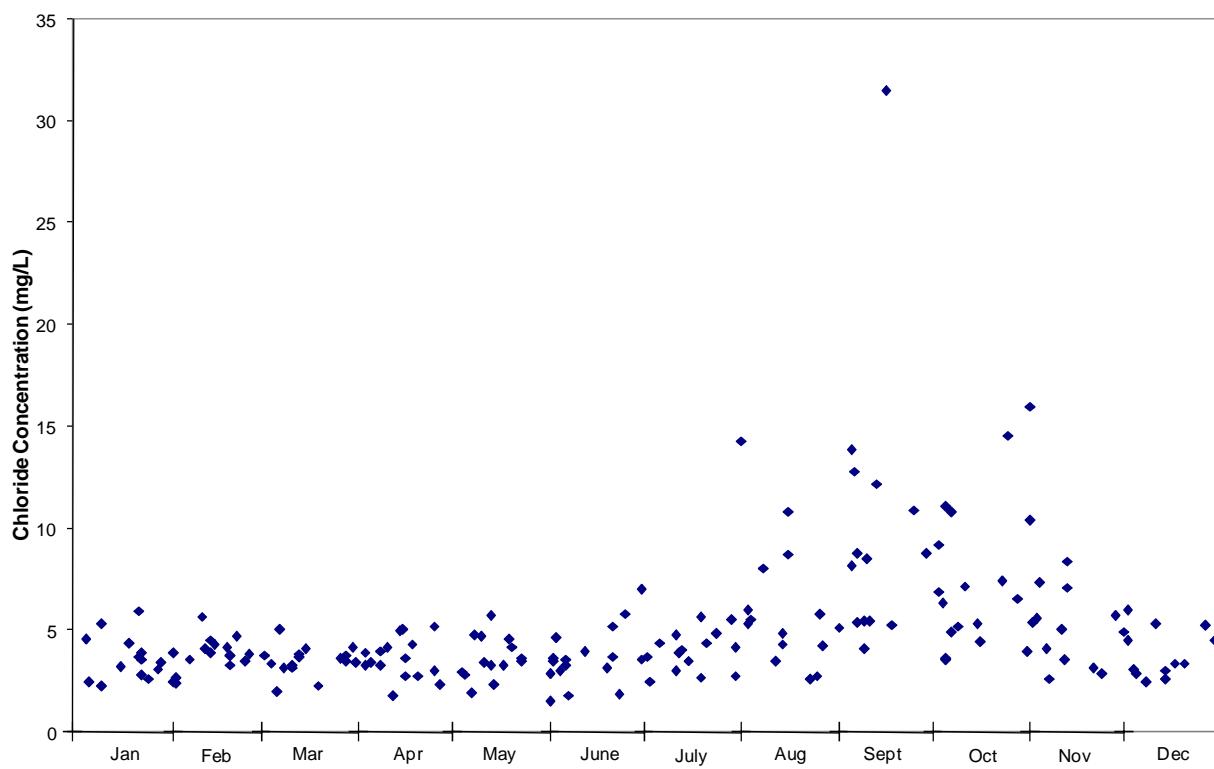
**Figure C-2. Seasonal chloride observations at the Saline River near Benton, Arkansas (station OUA0026).**



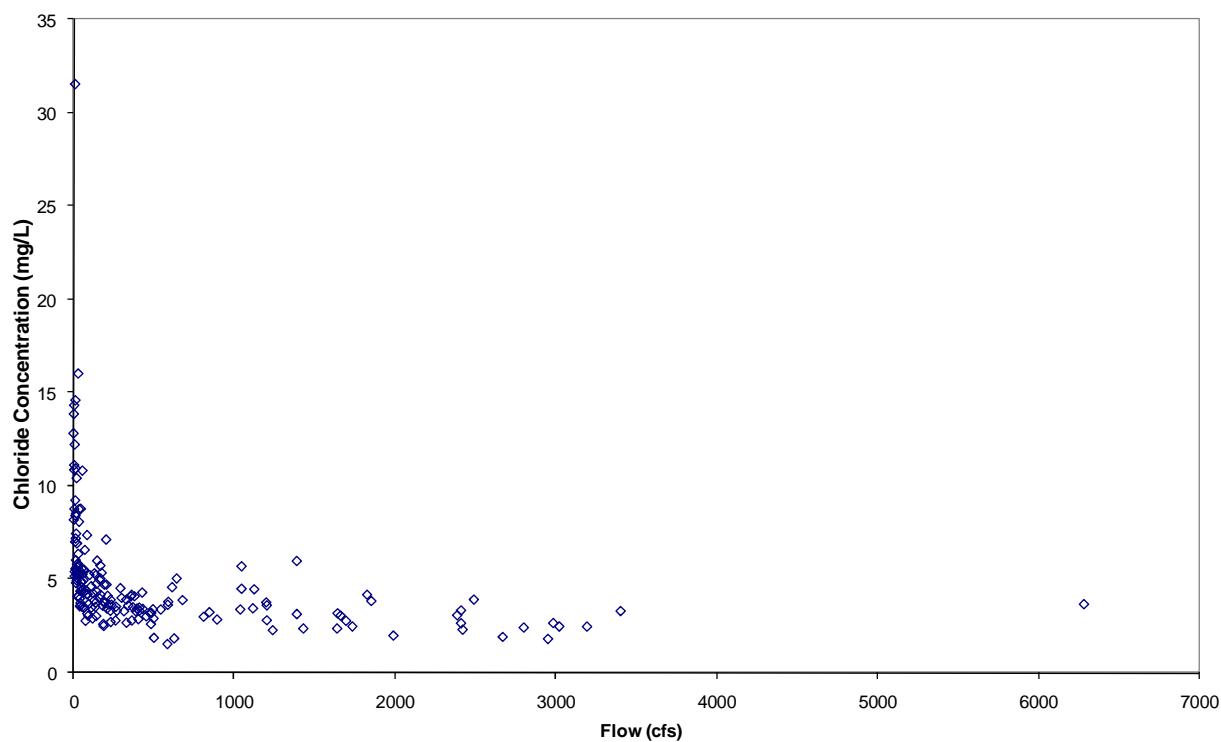
**Figure C-3. Chloride versus flow at the Saline River near Benton, Arkansas (station OUA0026).**



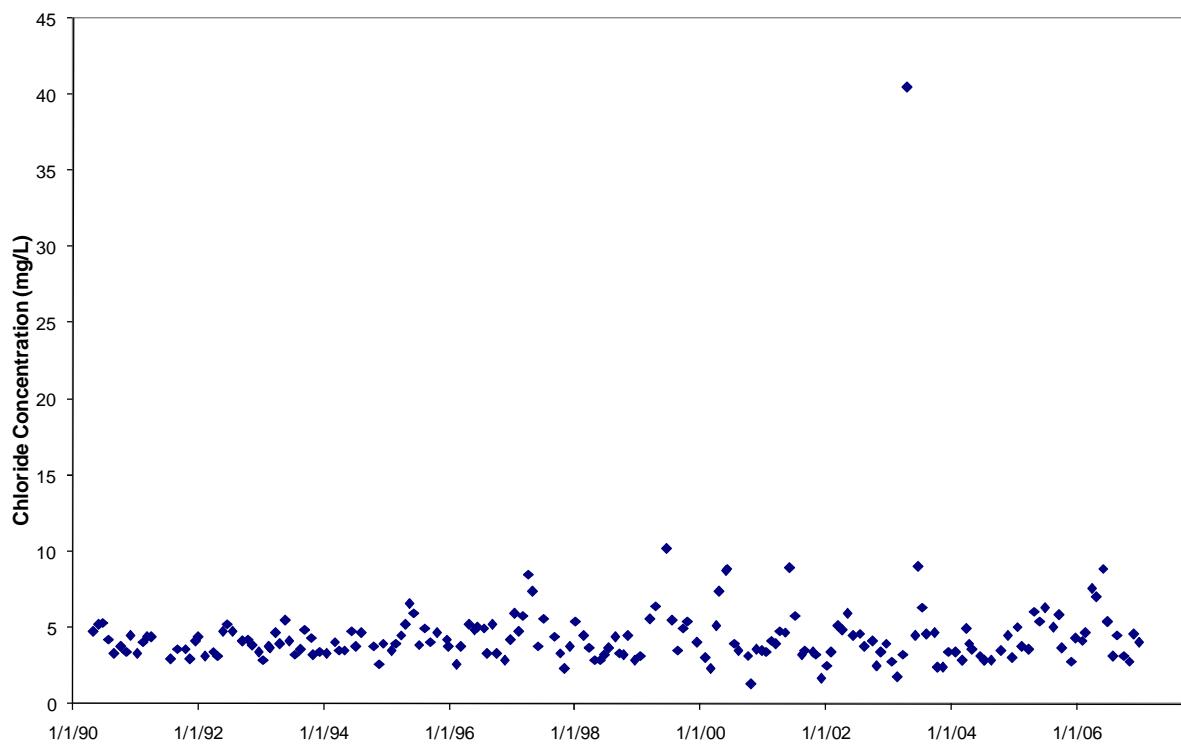
**Figure C-4. Time series chloride observations at the Saline River downstream of Benton, Arkansas (station OUA0041).**



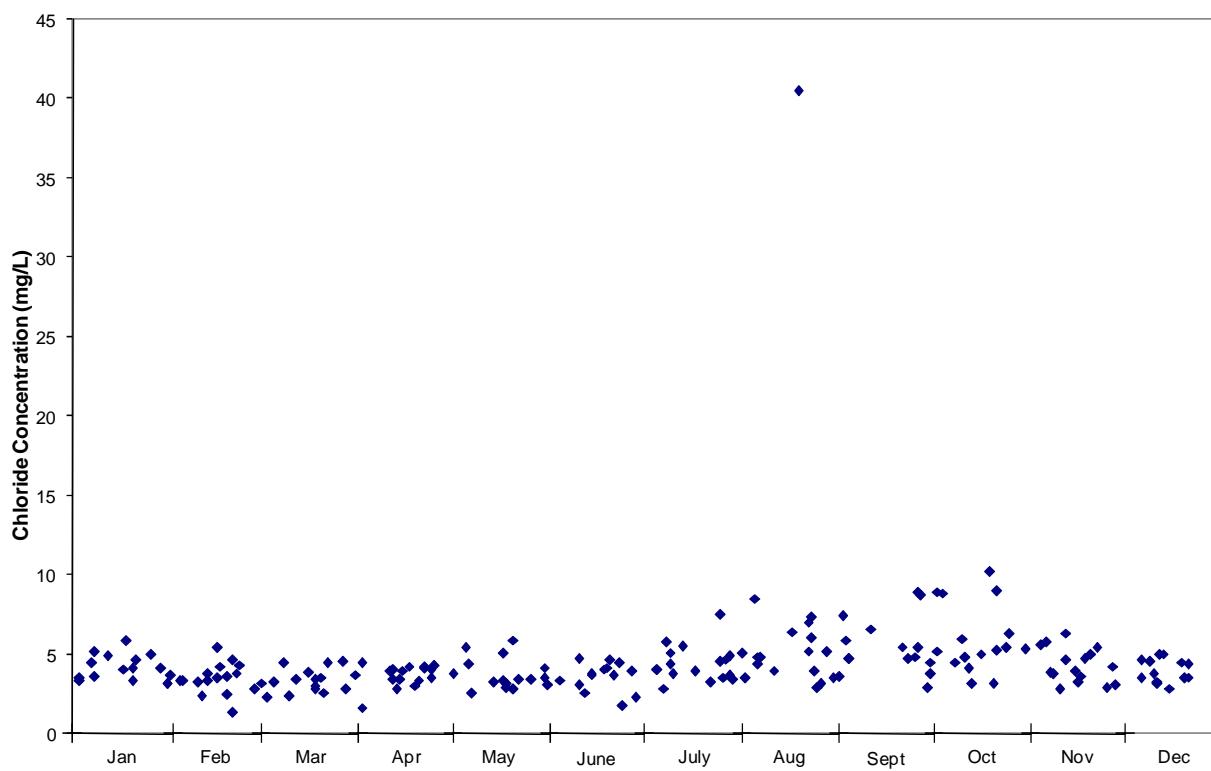
**Figure C-5. Seasonal chloride observations at the Saline River downstream of Benton, Arkansas (station OUA0041).**



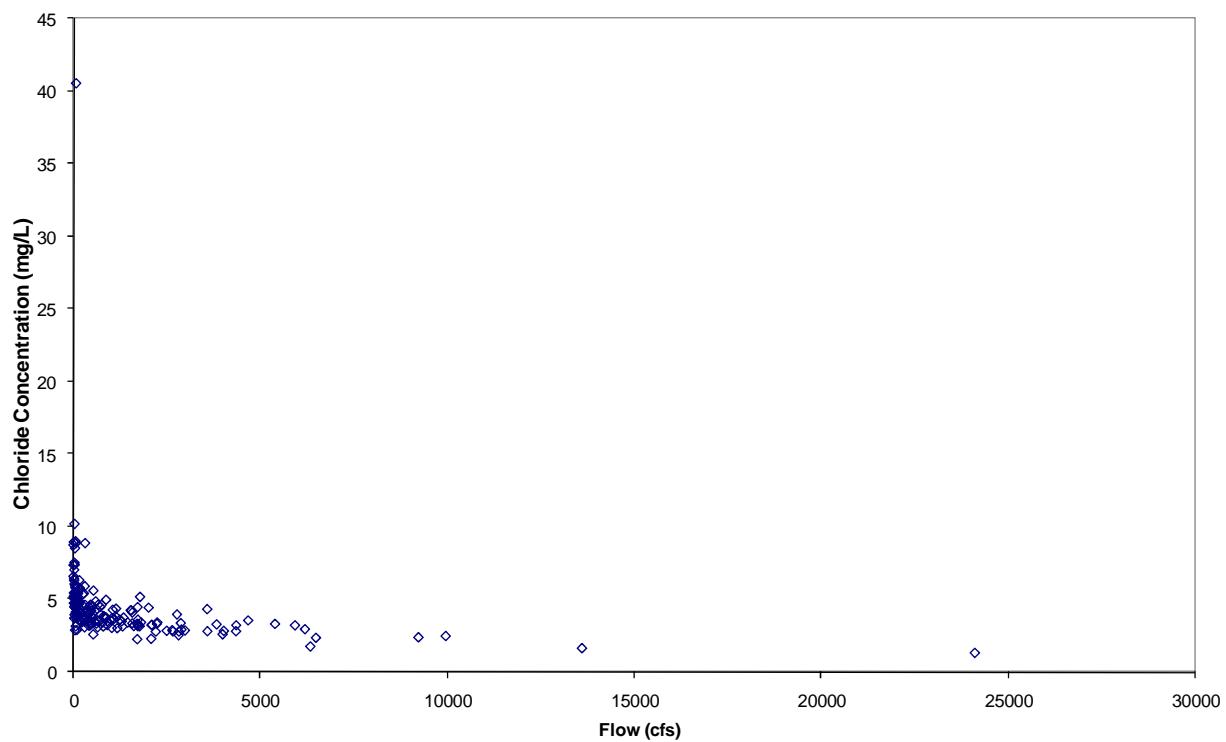
**Figure C-6. Chloride versus flow at the Saline River downstream of Benton, Arkansas (station OUA0041).**



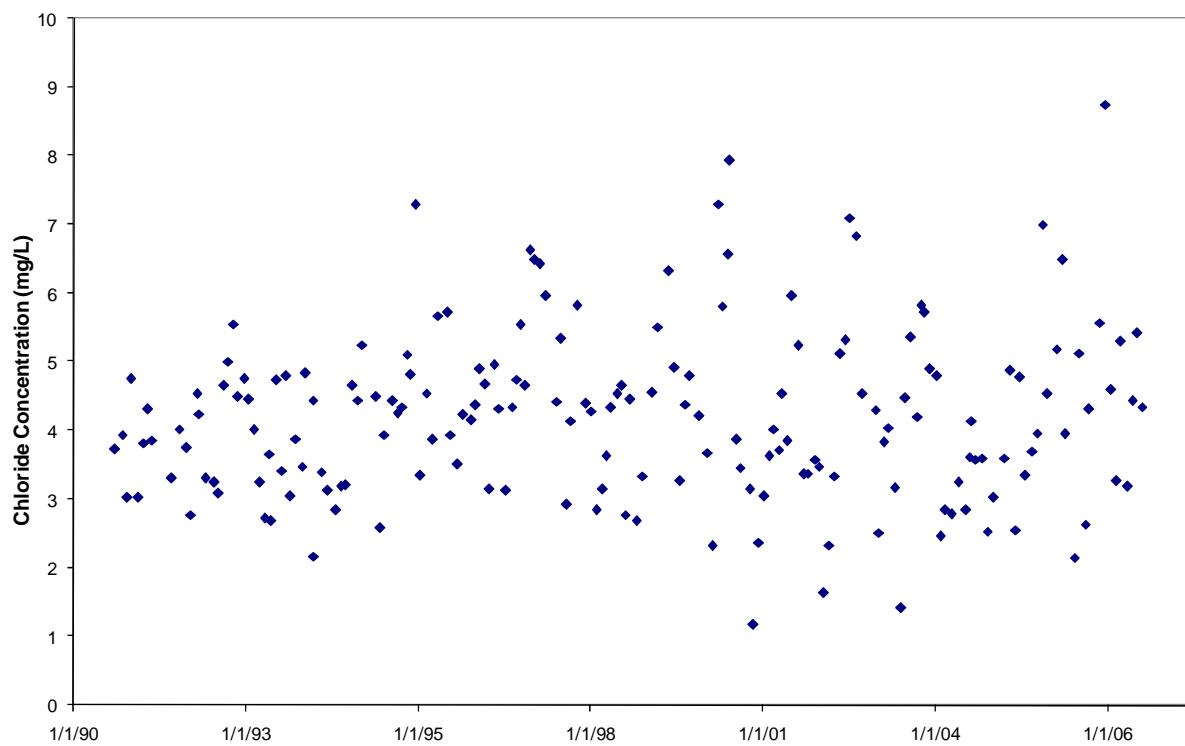
**Figure C-7. Time series chloride observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



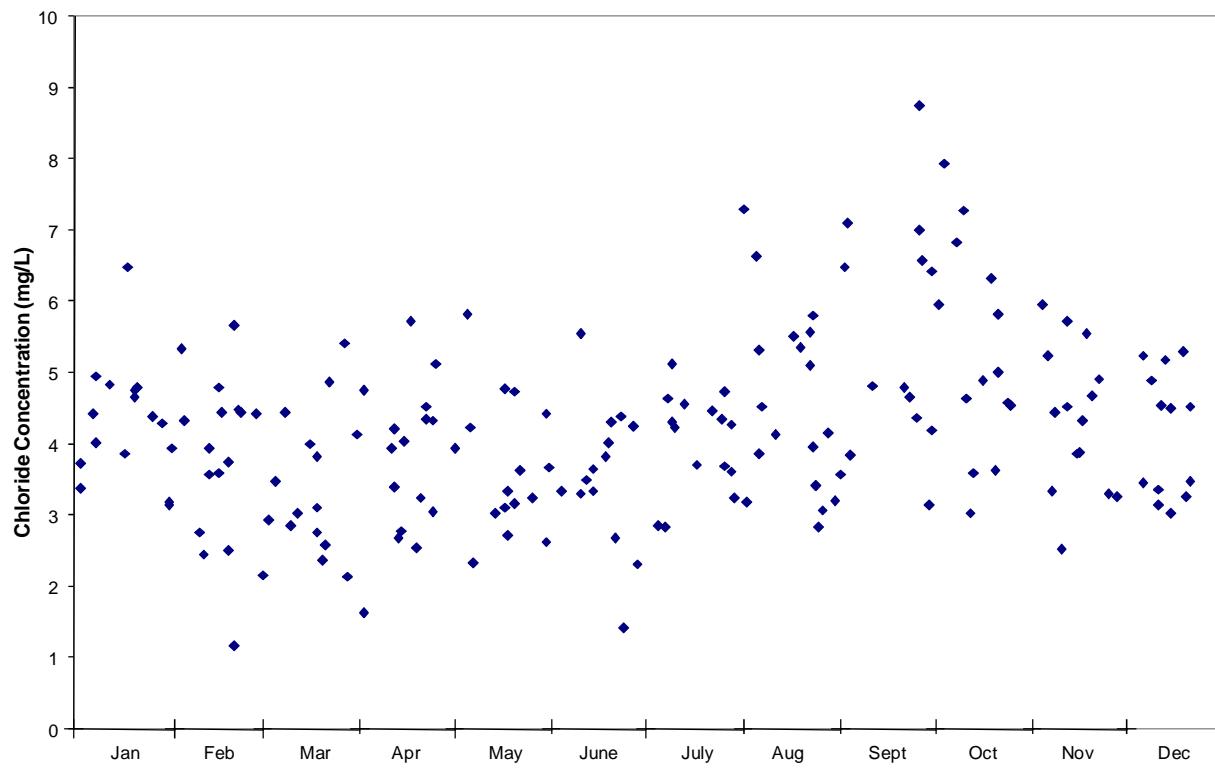
**Figure C-8. Seasonal chloride observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



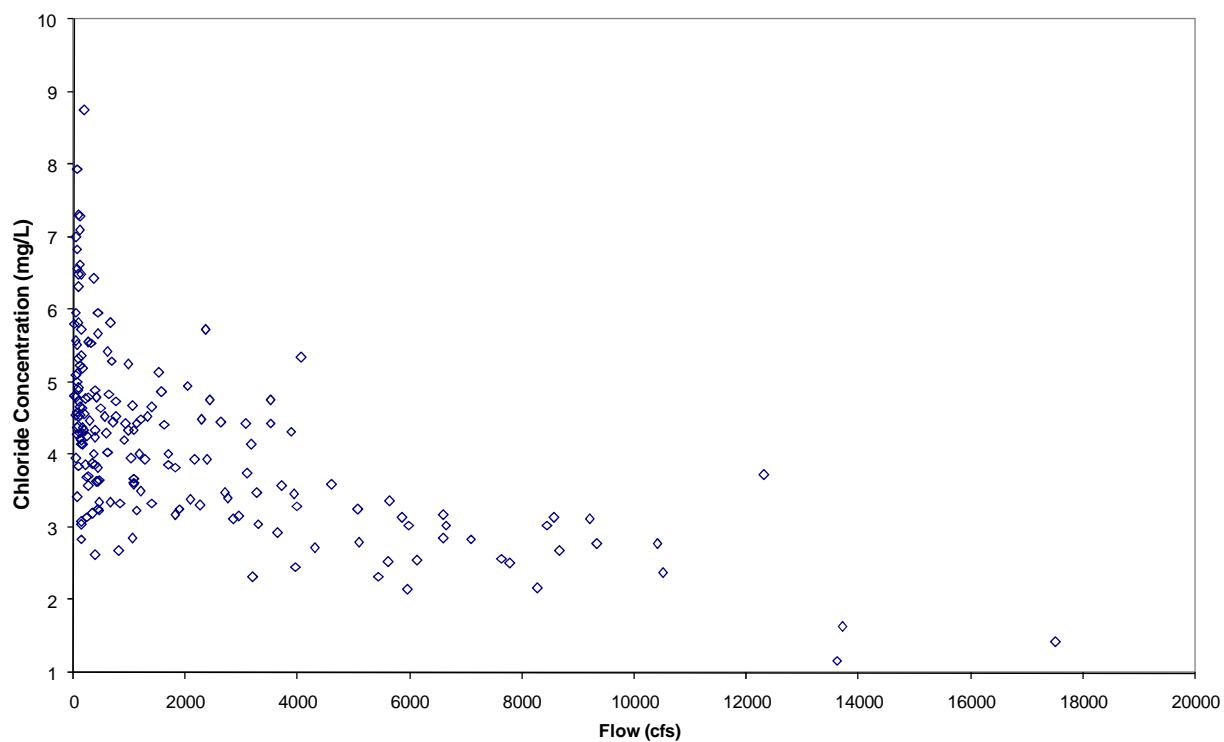
**Figure C-9. Chloride versus flow observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



**Figure C-10. Time series chloride observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



**Figure C-11. Seasonal chloride observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



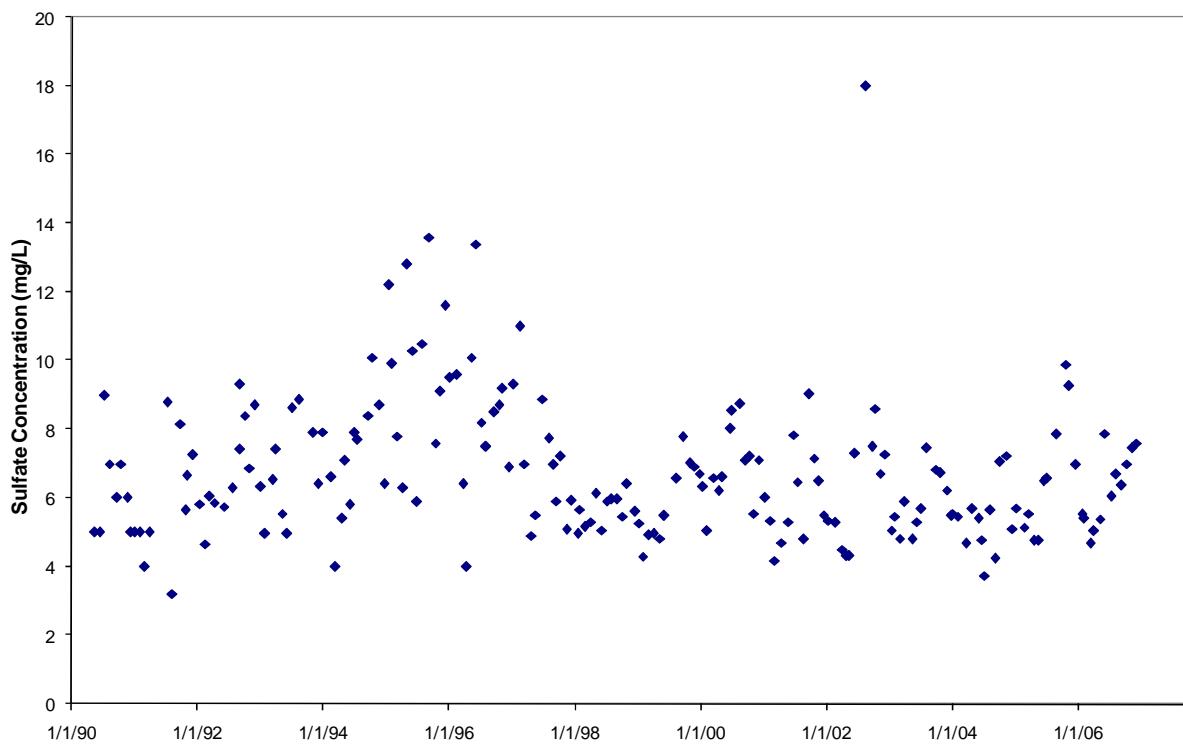
**Figure C-12. Chloride versus flow observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



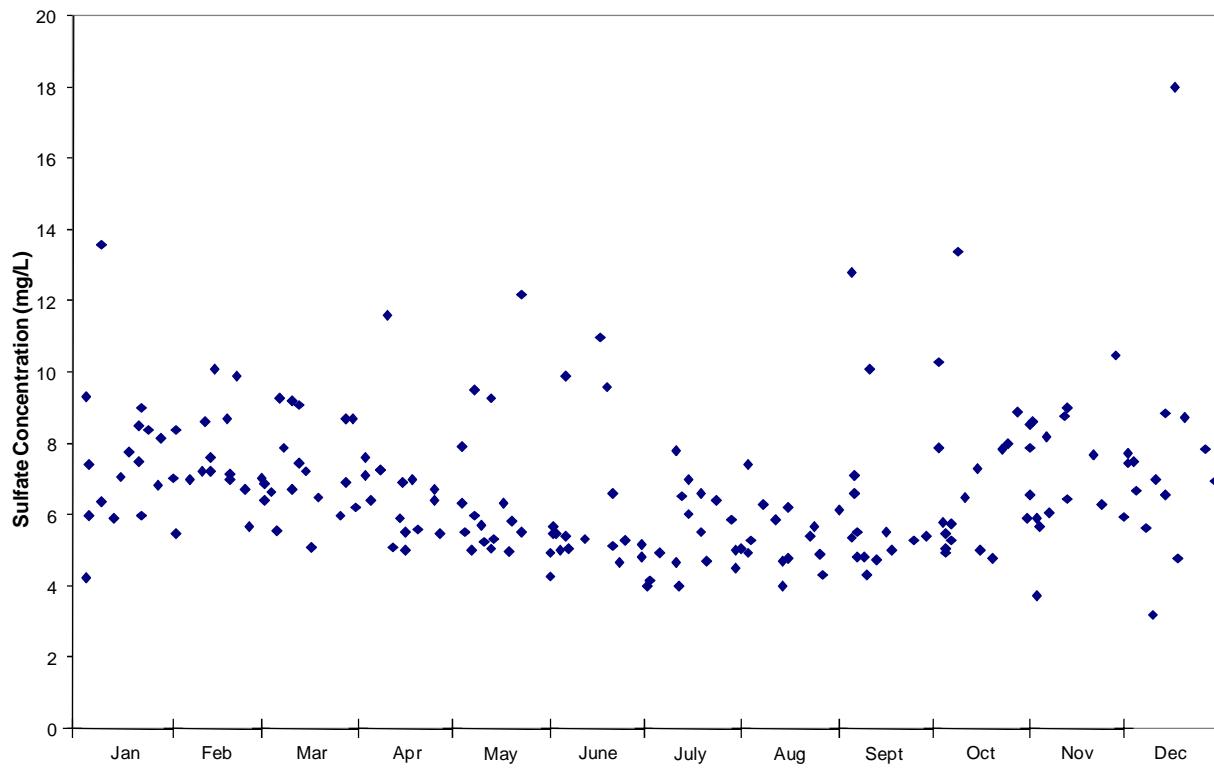
## **Appendix D**

### **Sulfate Figures for the Saline River Basin**

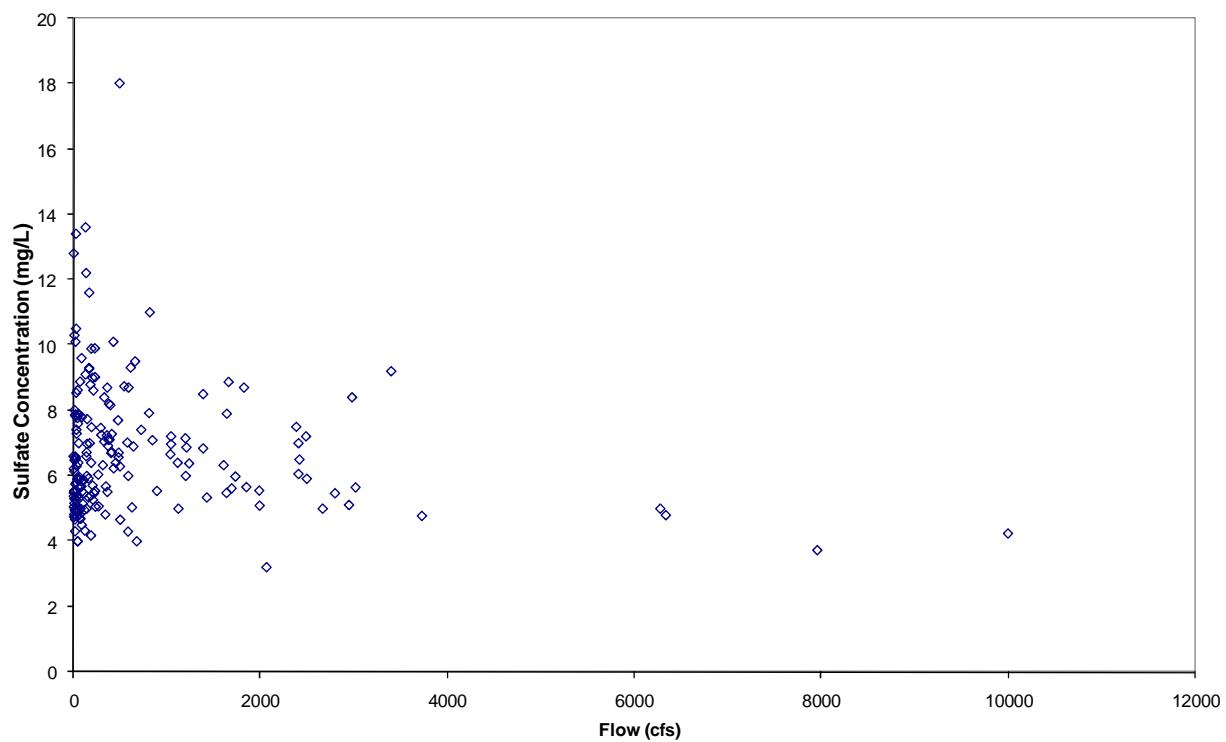
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Figure D-11. Seasonal sulfate observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118). ..	12
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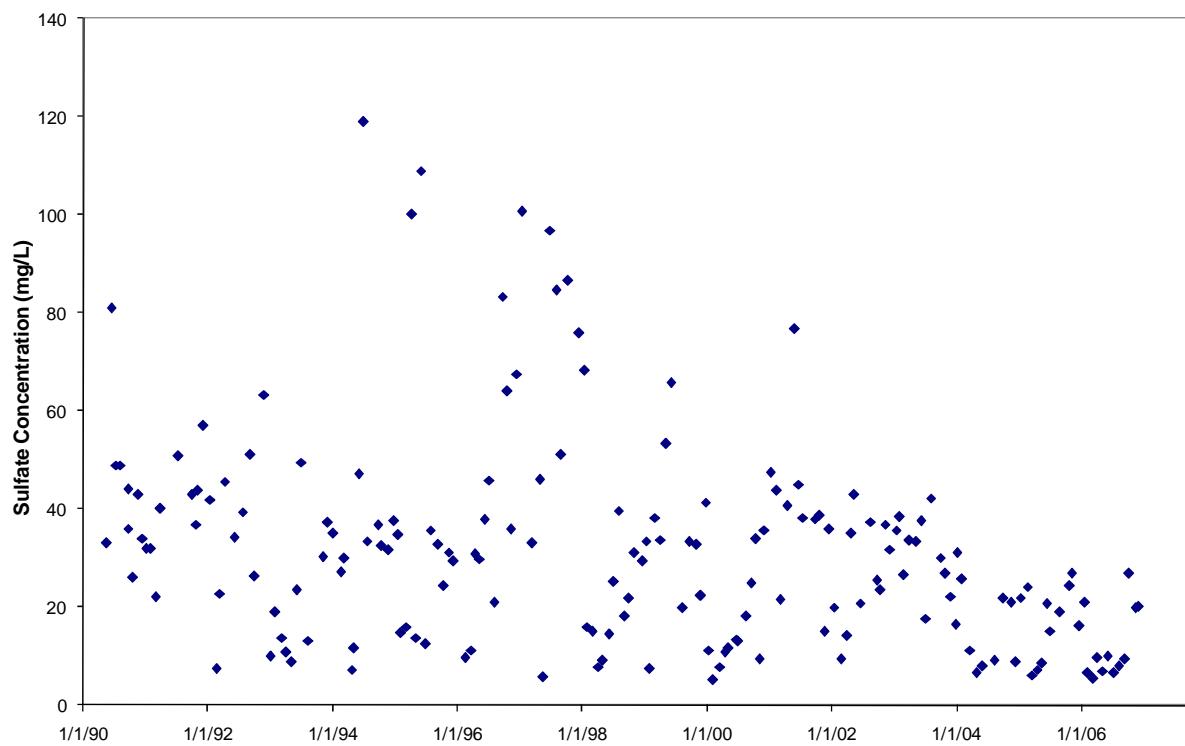
**Figure D-1. Time series sulfate observations at the Saline River near Benton, Arkansas (station OUA0026).**



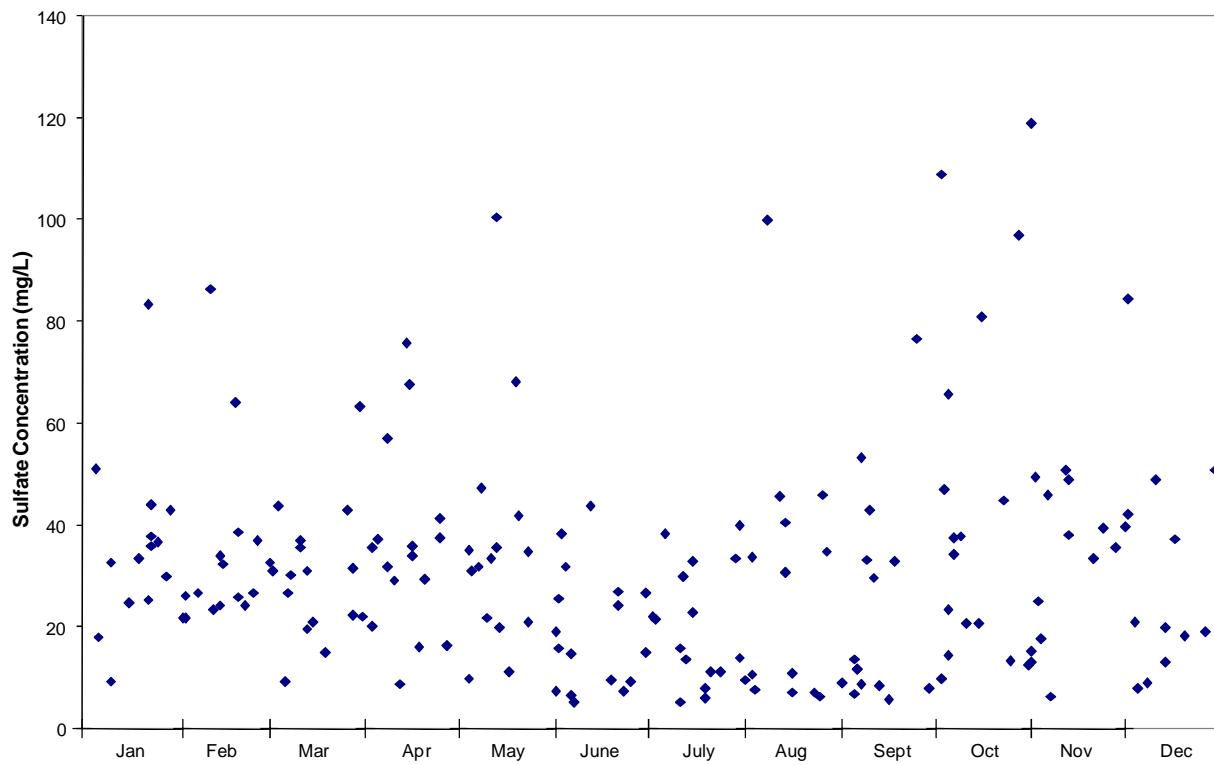
**Figure D-2. Seasonal sulfate observations at the Saline River near Benton, Arkansas (station OUA0026).**



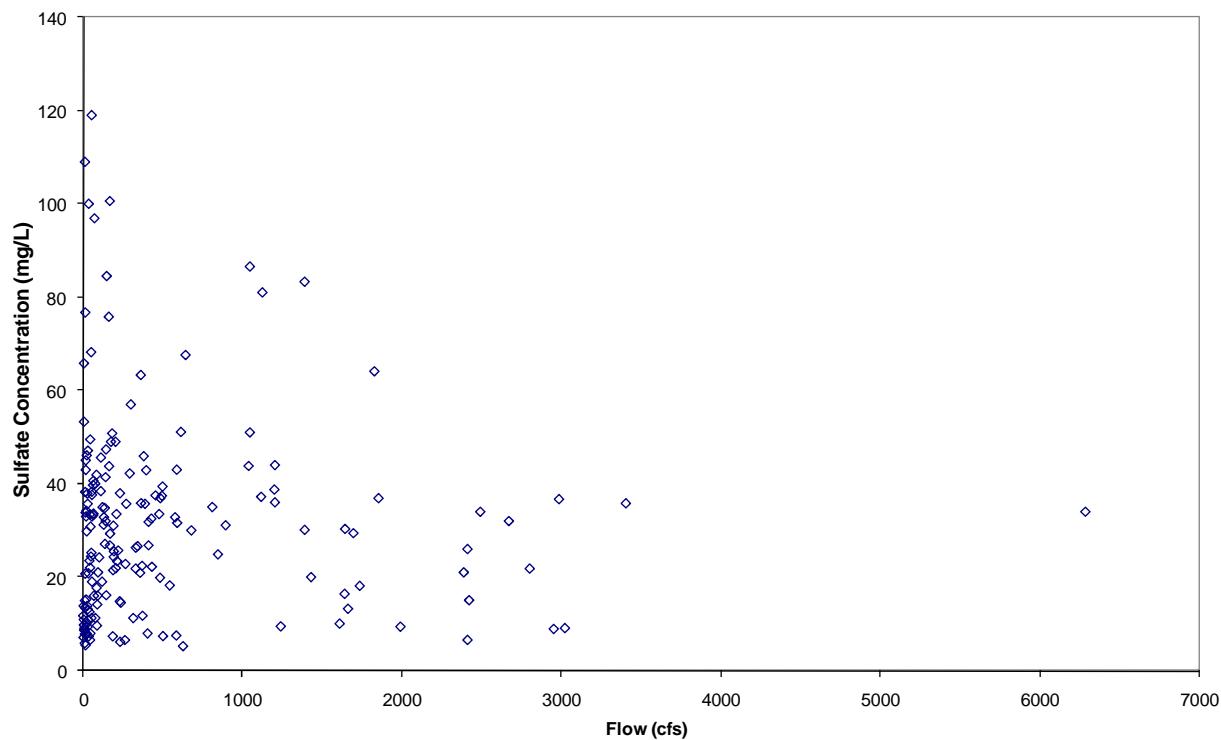
**Figure D-3. Sulfate versus flow at the Saline River near Benton, Arkansas (station OUA0026).**



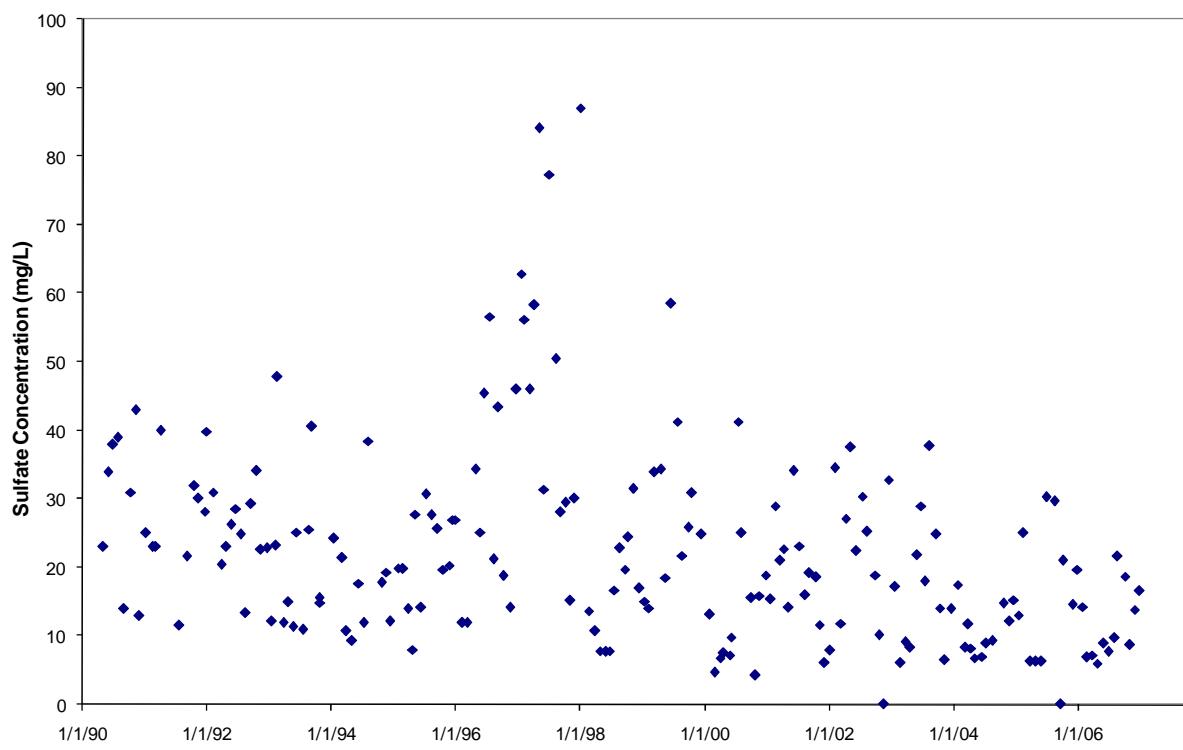
**Figure D-4. Time series sulfate observations at the Saline River downstream of Benton, Arkansas (station OUA0041).**



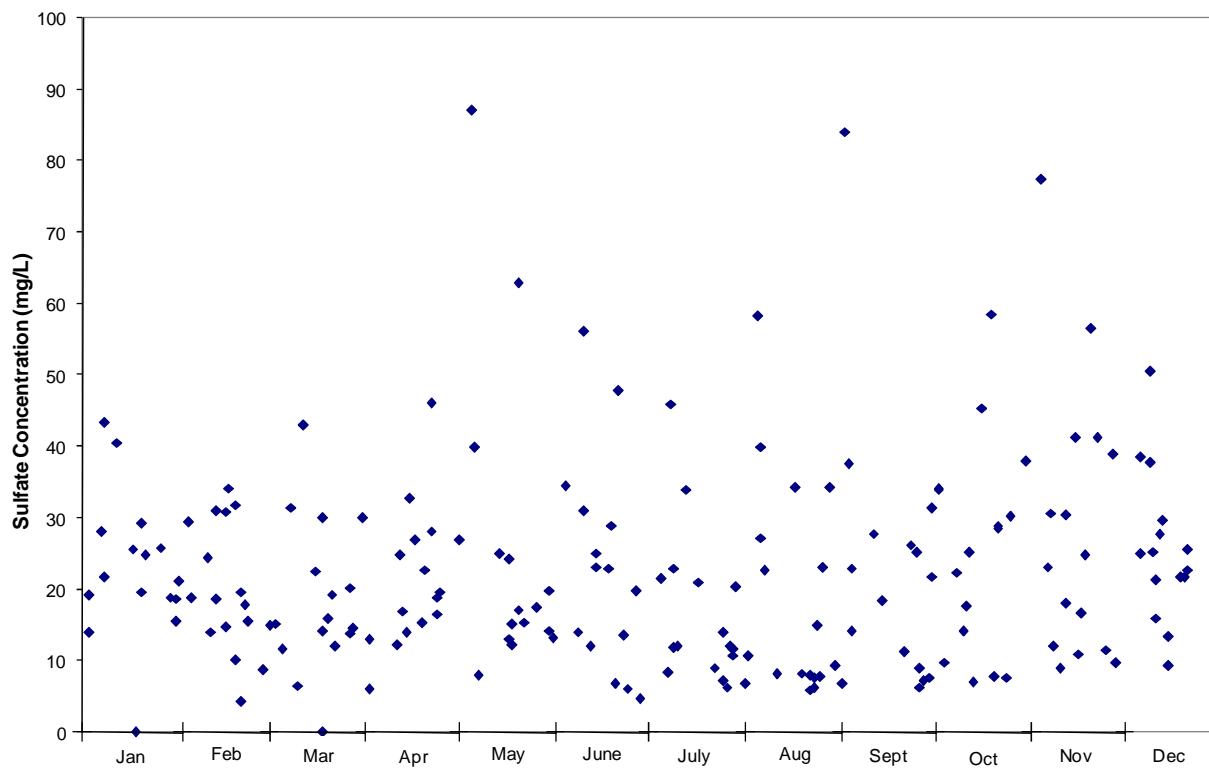
**Figure D-5. Seasonal sulfate observations at the Saline River downstream of Benton, Arkansas (station OUA0041).**



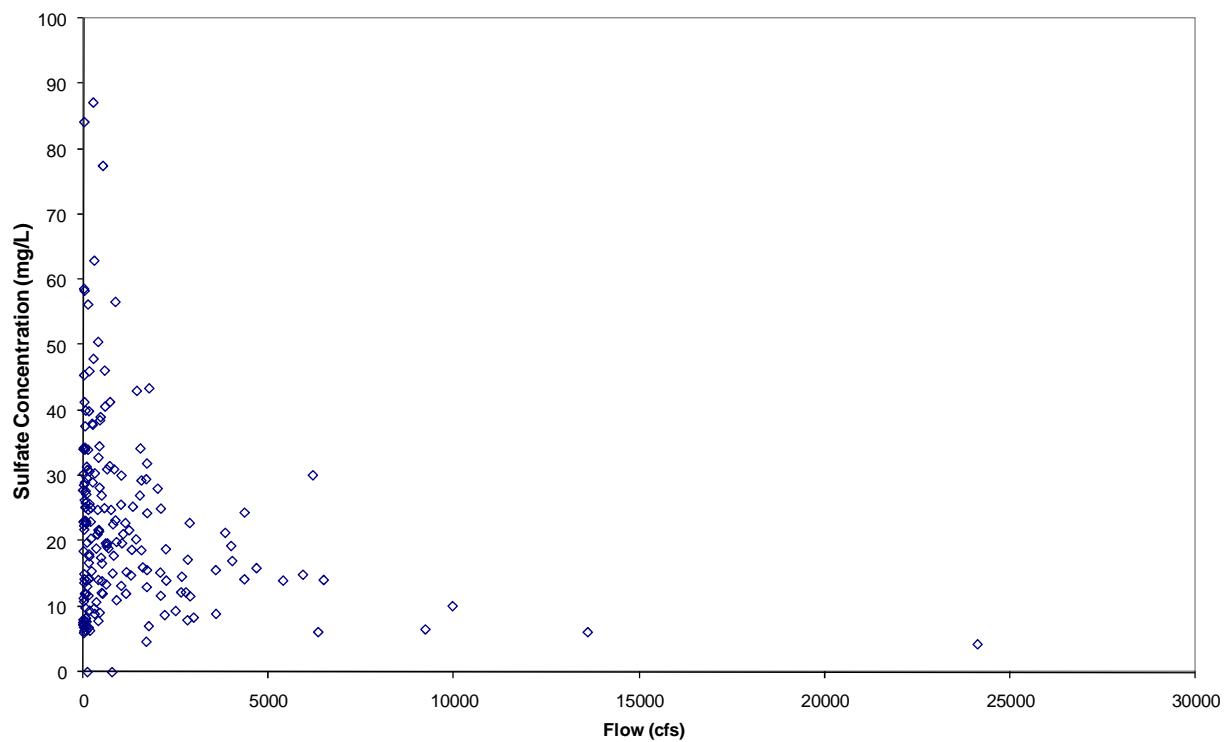
**Figure D-6. Sulfate versus flow at the Saline River downstream of Benton, Arkansas (station OUA0041).**



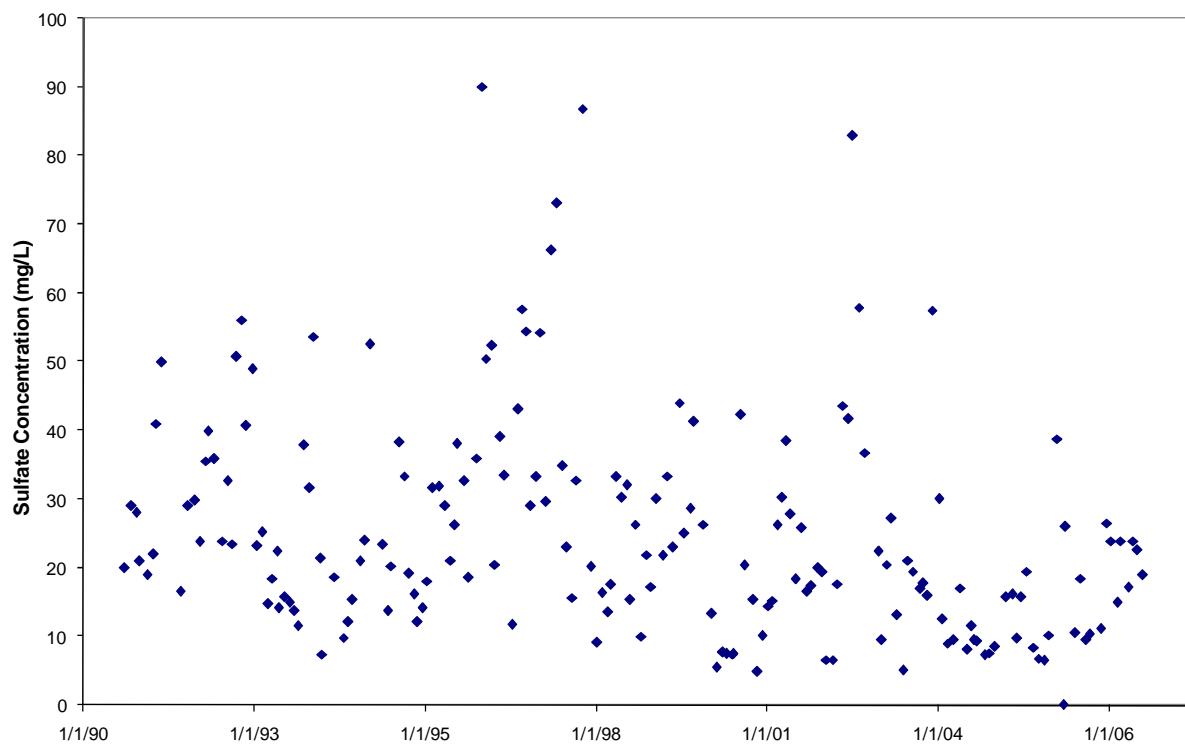
**Figure D-7. Time series sulfate observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



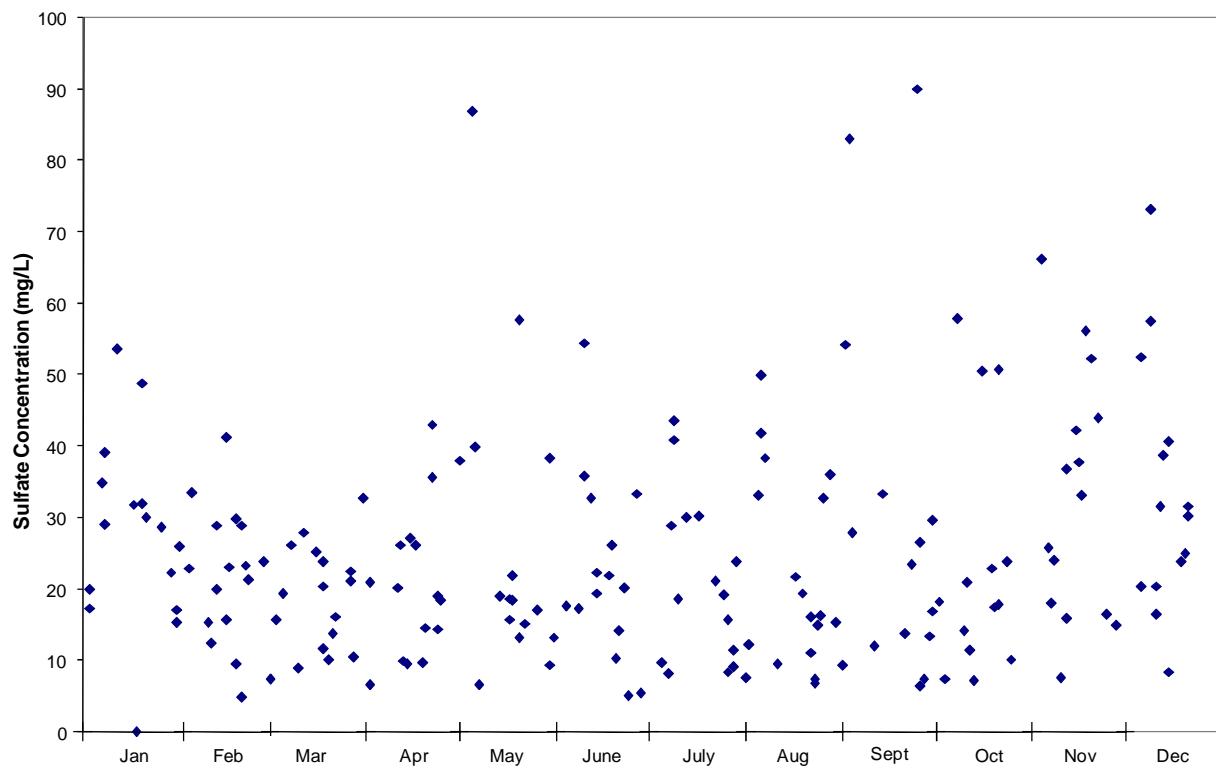
**Figure D-8. Seasonal sulfate observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



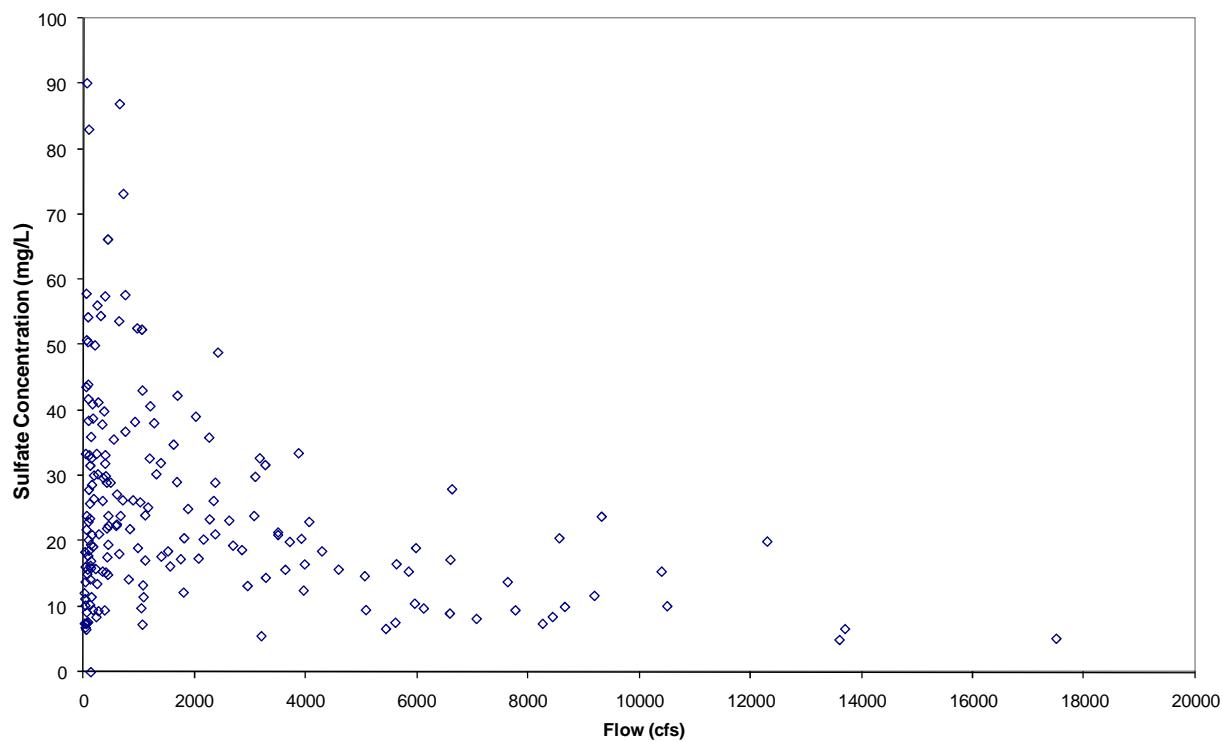
**Figure D-9. Sulfate versus flow observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



**Figure D-10. Time series sulfate observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



**Figure D-11. Seasonal sulfate observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



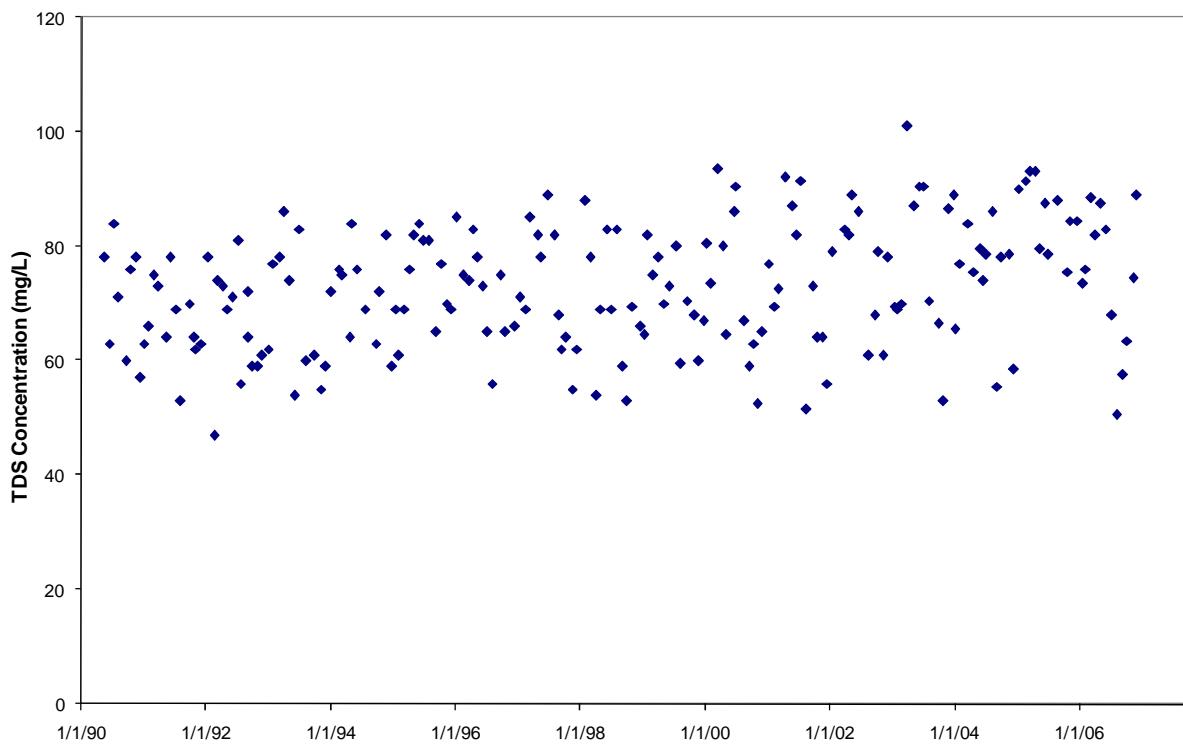
**Figure D-12. Sulfate versus flow observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



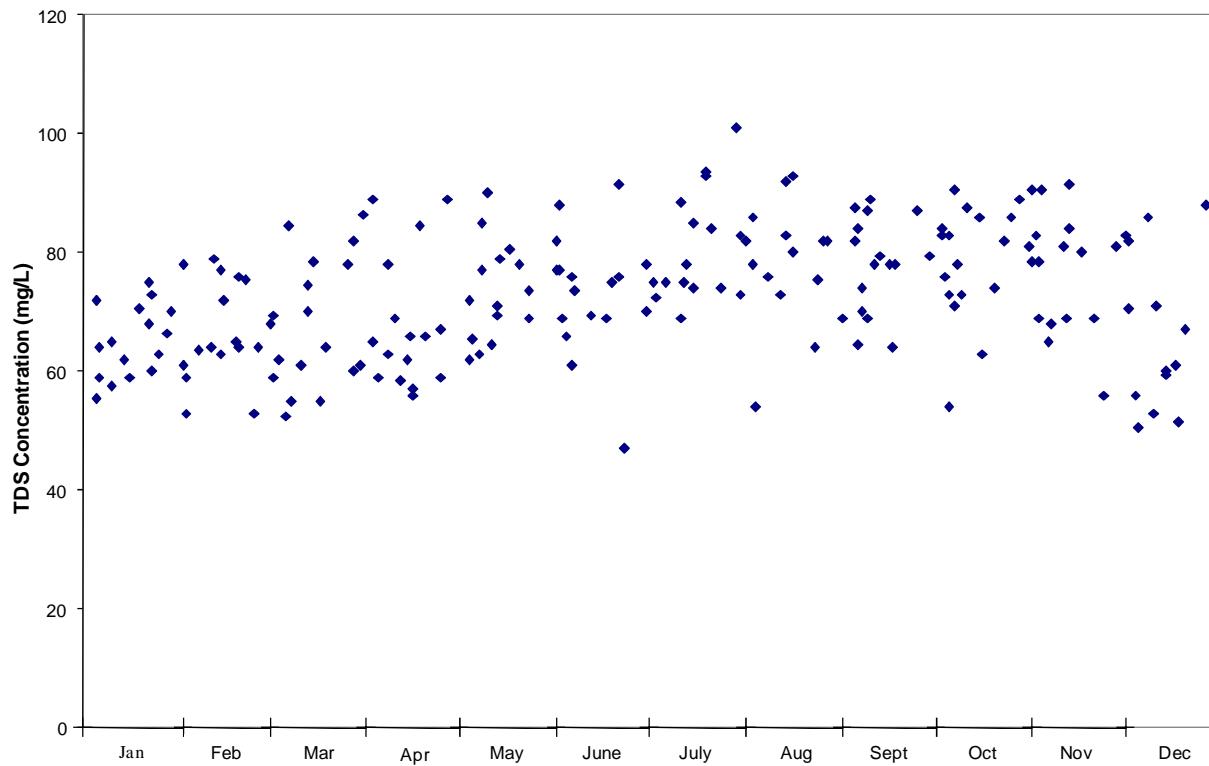
## **Appendix E**

### **Total Dissolved Solids Figures for the Saline River Basin**

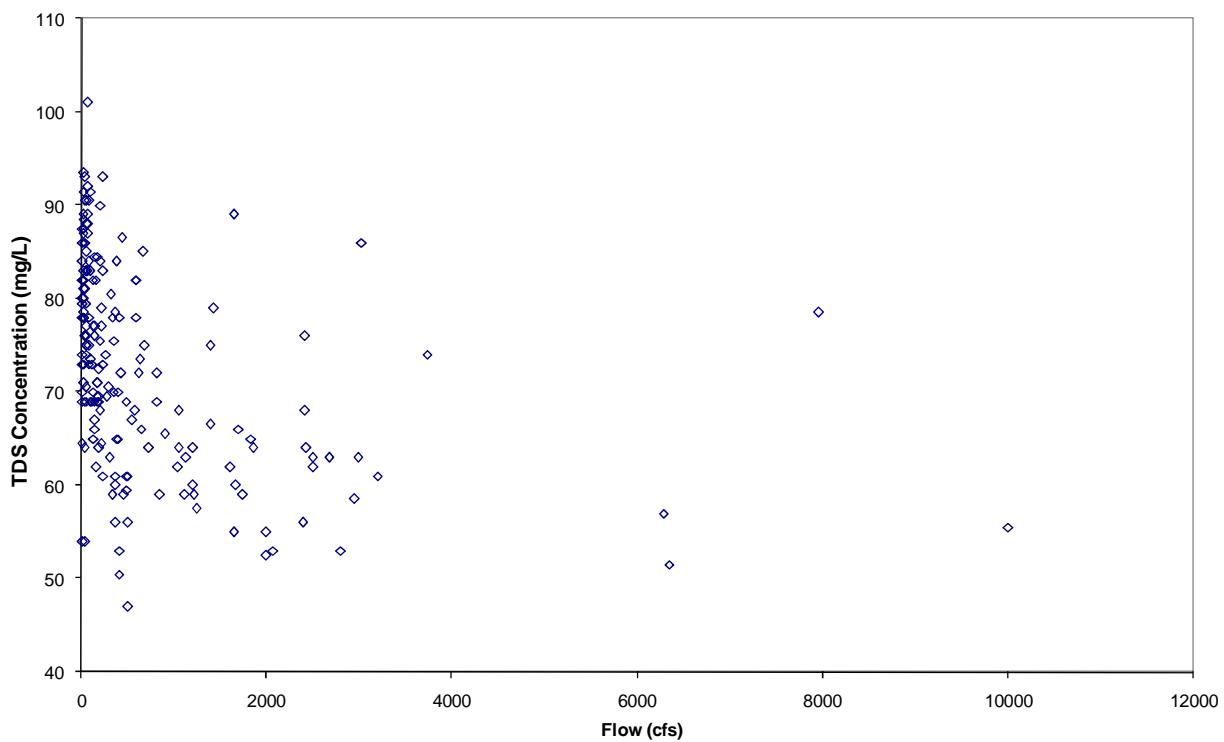
Figure E-1. Time series TDS observations at the Saline River near Benton, Arkansas (station OUA0026).....	2
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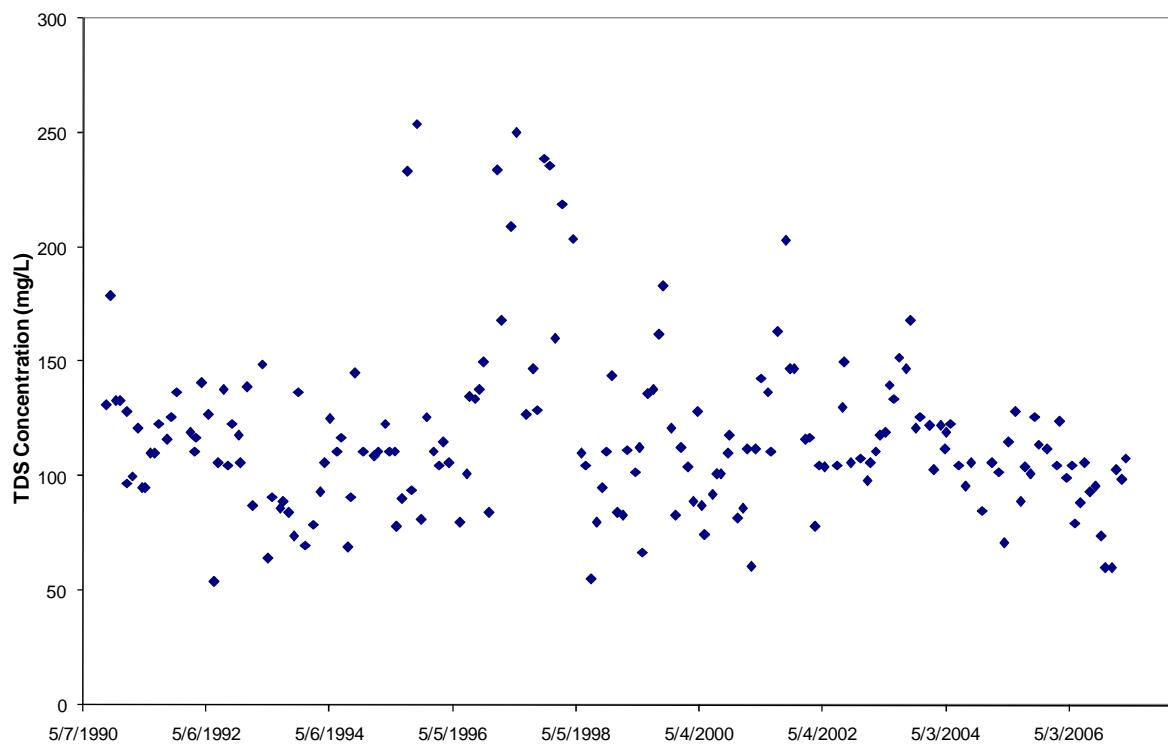
**Figure E-1. Time series TDS observations at the Saline River near Benton, Arkansas (station OUA0026).**



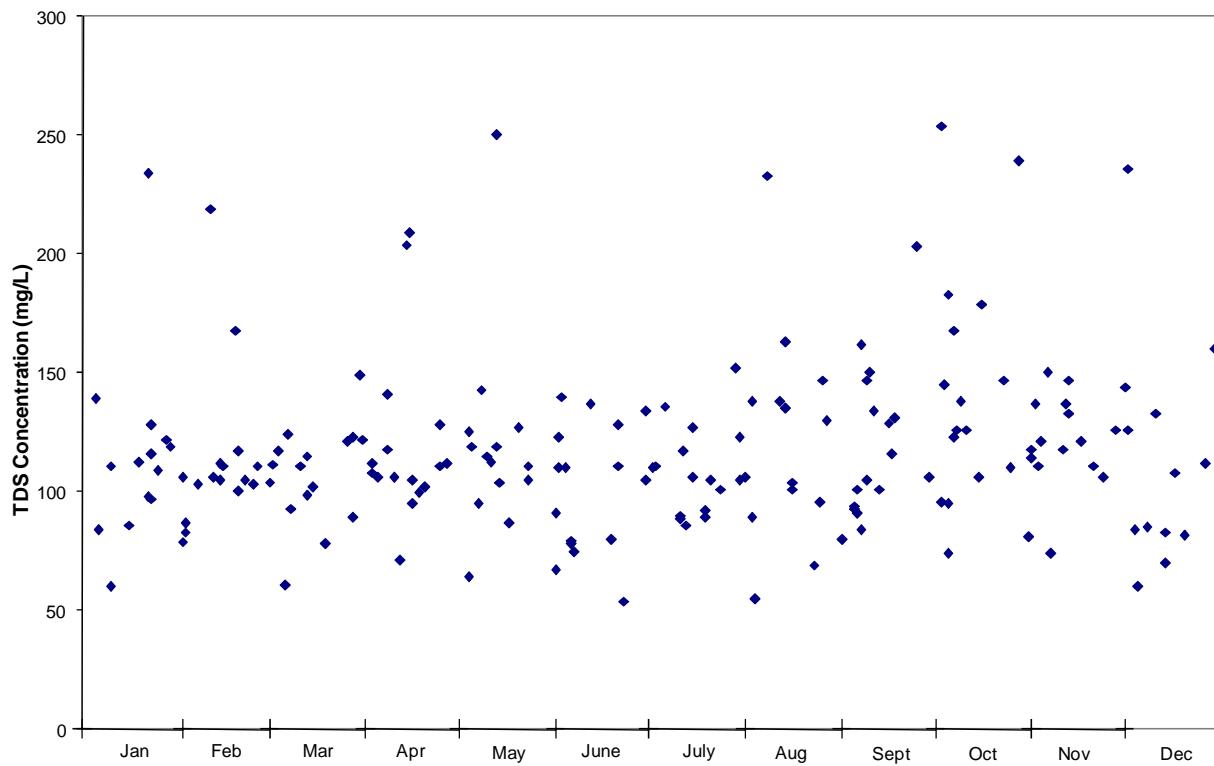
**Figure E-2. Seasonal TDS observations at the Saline River near Benton, Arkansas (station OUA0026).**



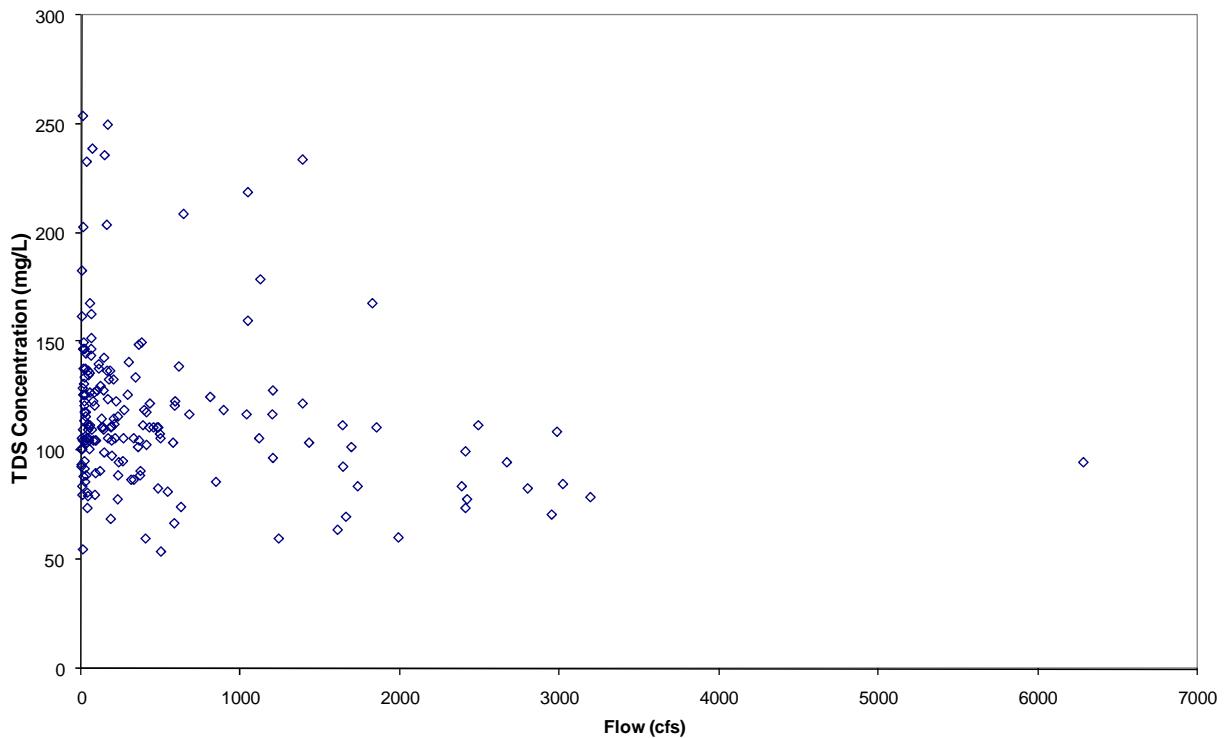
**Figure E-3. TDS versus flow at the Saline River near Benton, Arkansas (station OUA0026).**



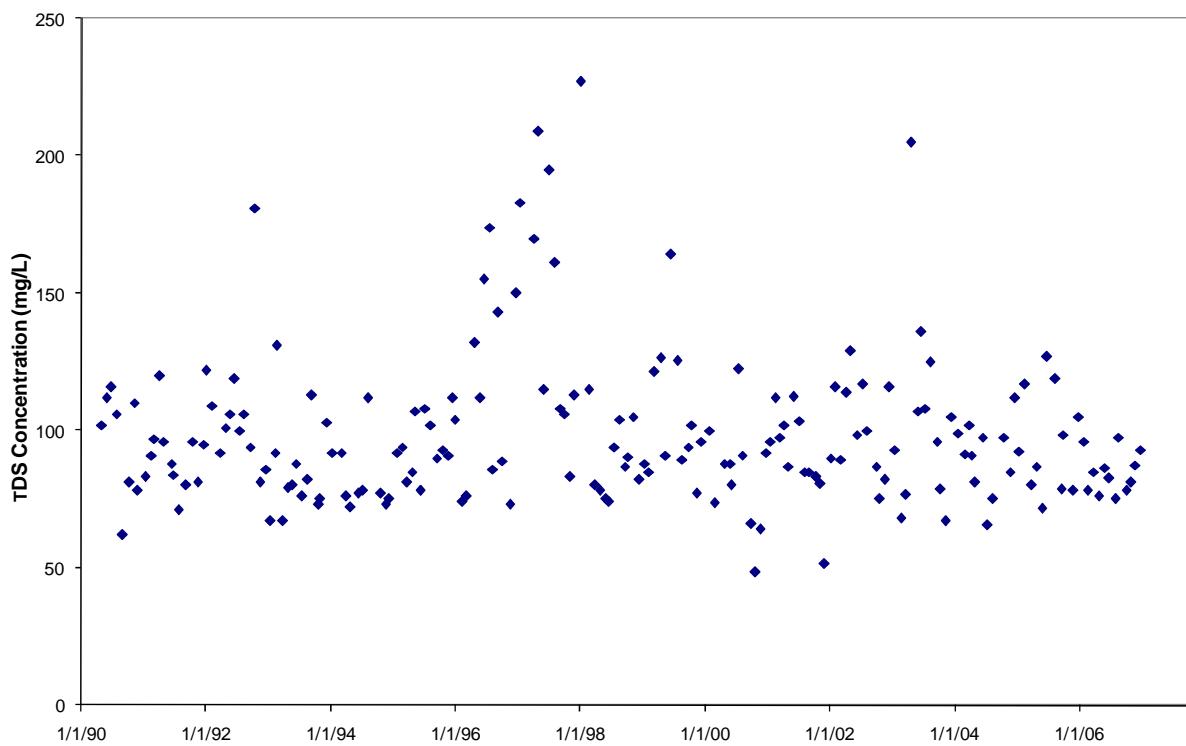
**Figure E-4. Time series TDS observations at the Saline River downstream of Benton, Arkansas (station OUA0041).**



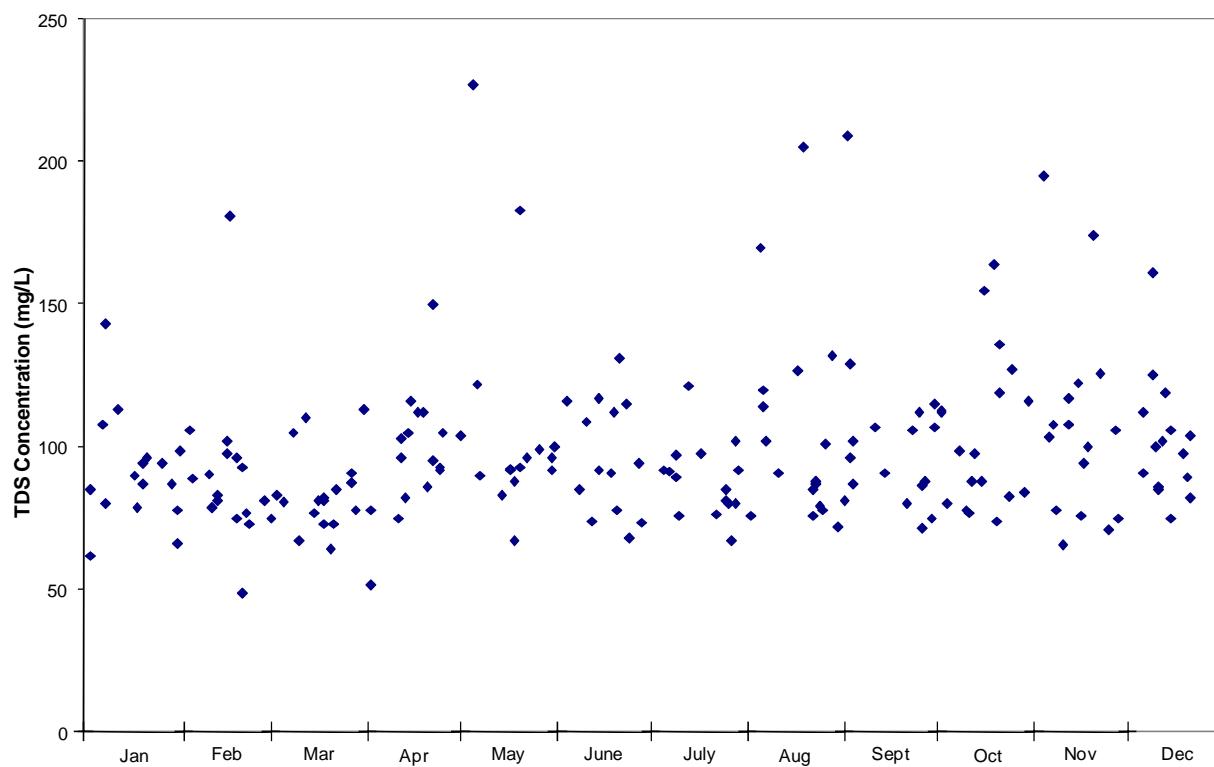
**Figure E-5. Seasonal TDS observations at the Saline River downstream of Benton, Arkansas (station OUA0041).**



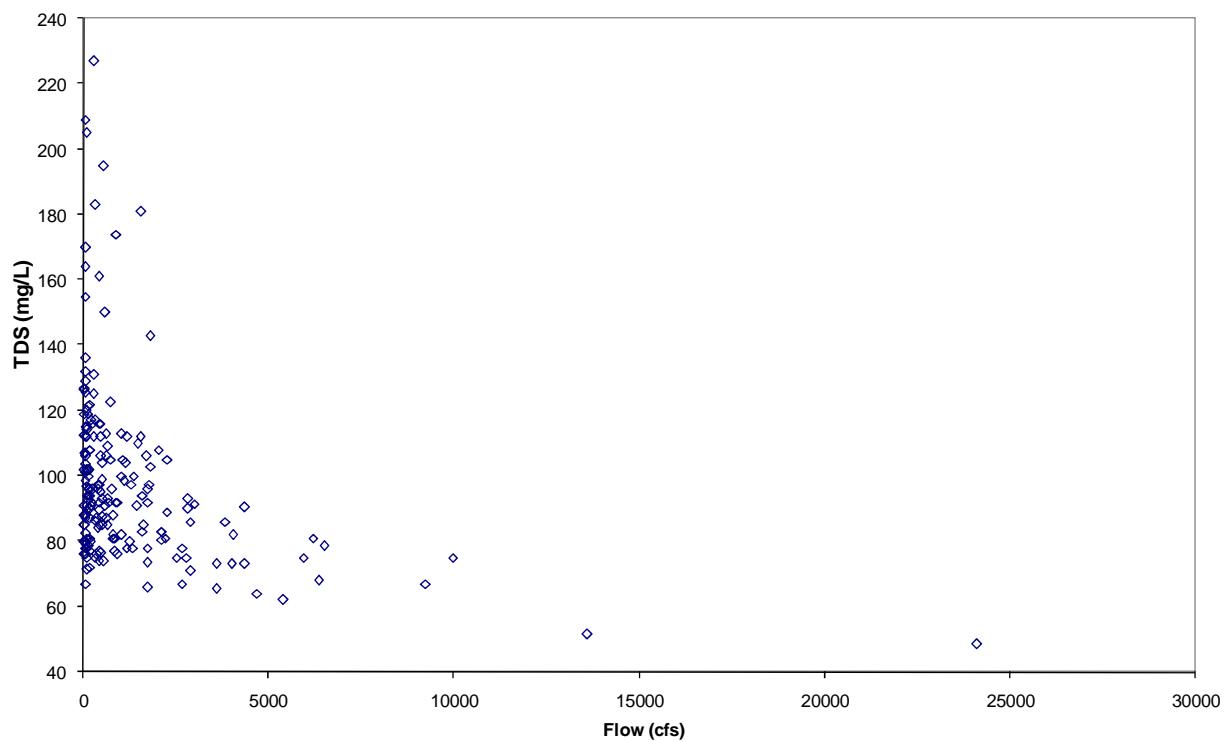
**Figure E-6. TDS versus flow at the Saline River downstream of Benton, Arkansas (station OUA0041).**



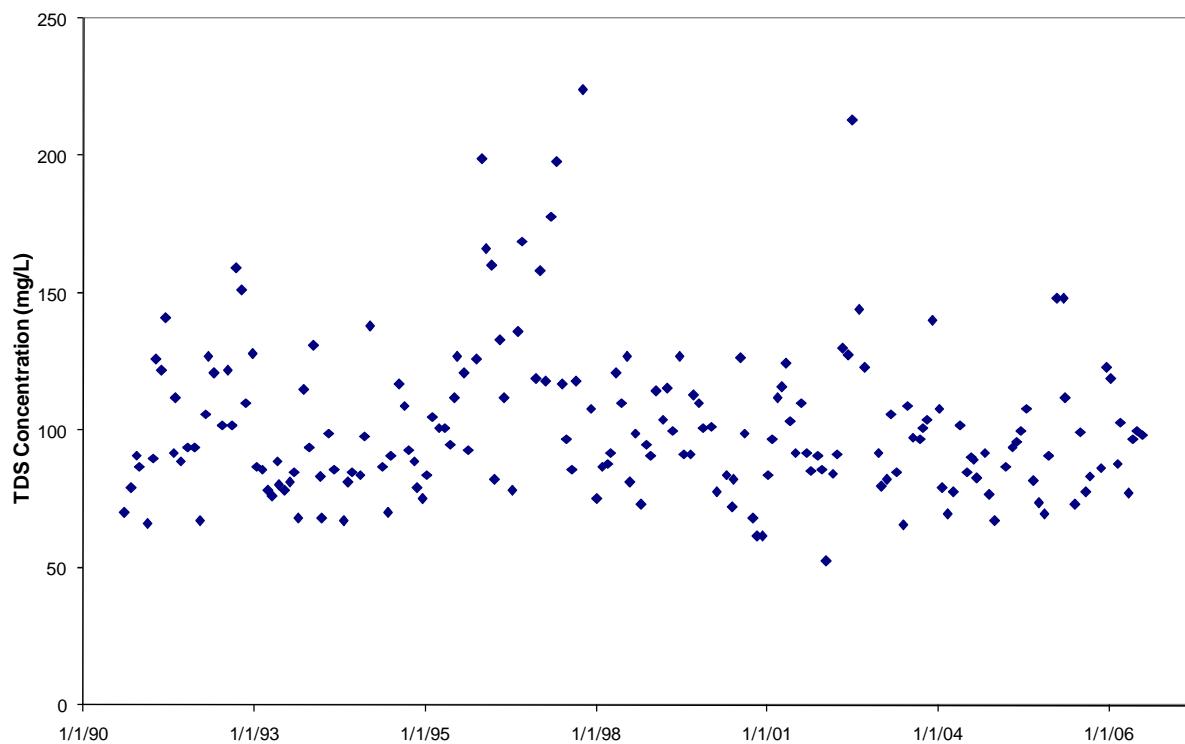
**Figure E-7. Time series TDS observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



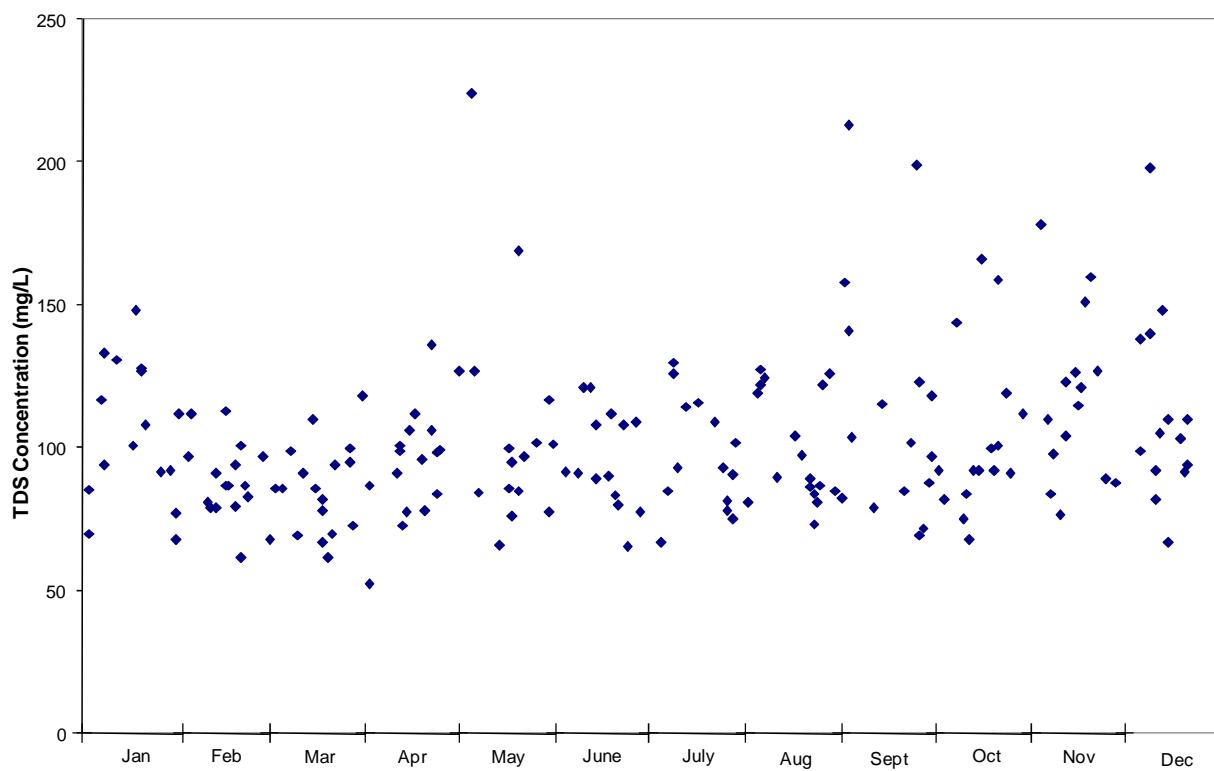
**Figure E-8. Seasonal TDS observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



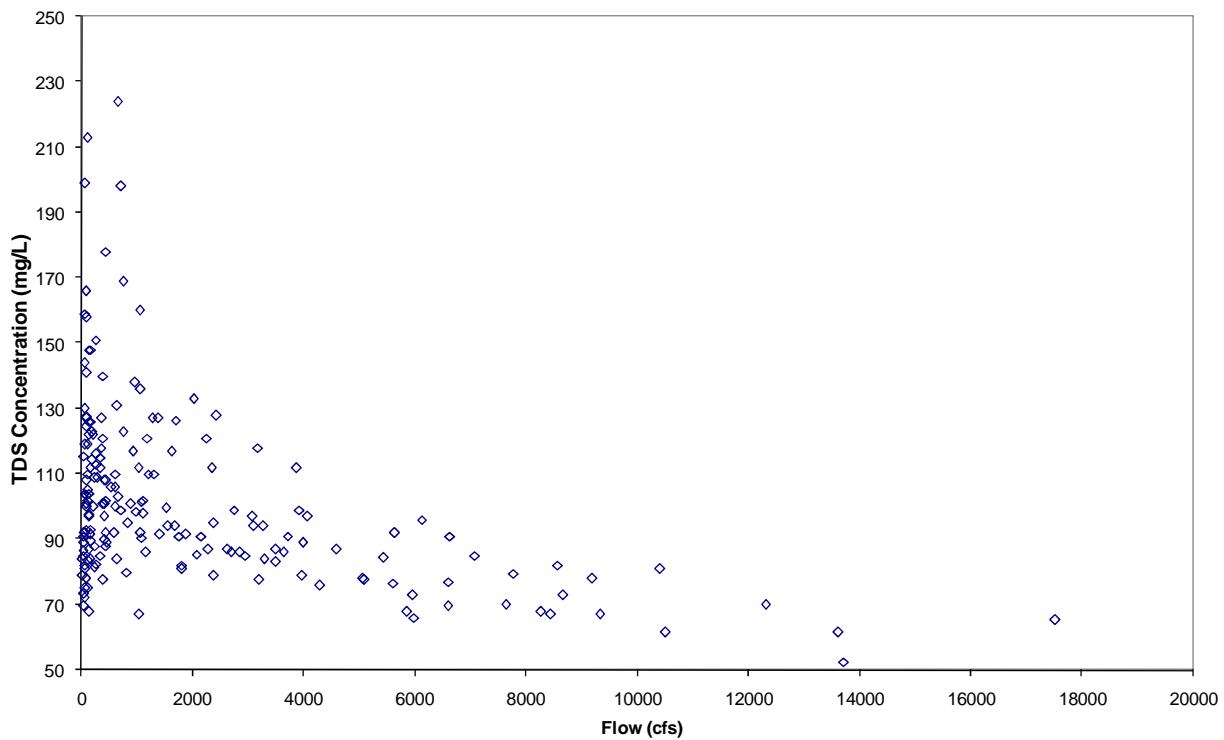
**Figure E-9. TDS versus flow observations at the Saline River at Highway 167, Arkansas (station OUA0042).**



**Figure E-10. Time series TDS observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



**Figure E-11. Seasonal TDS observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



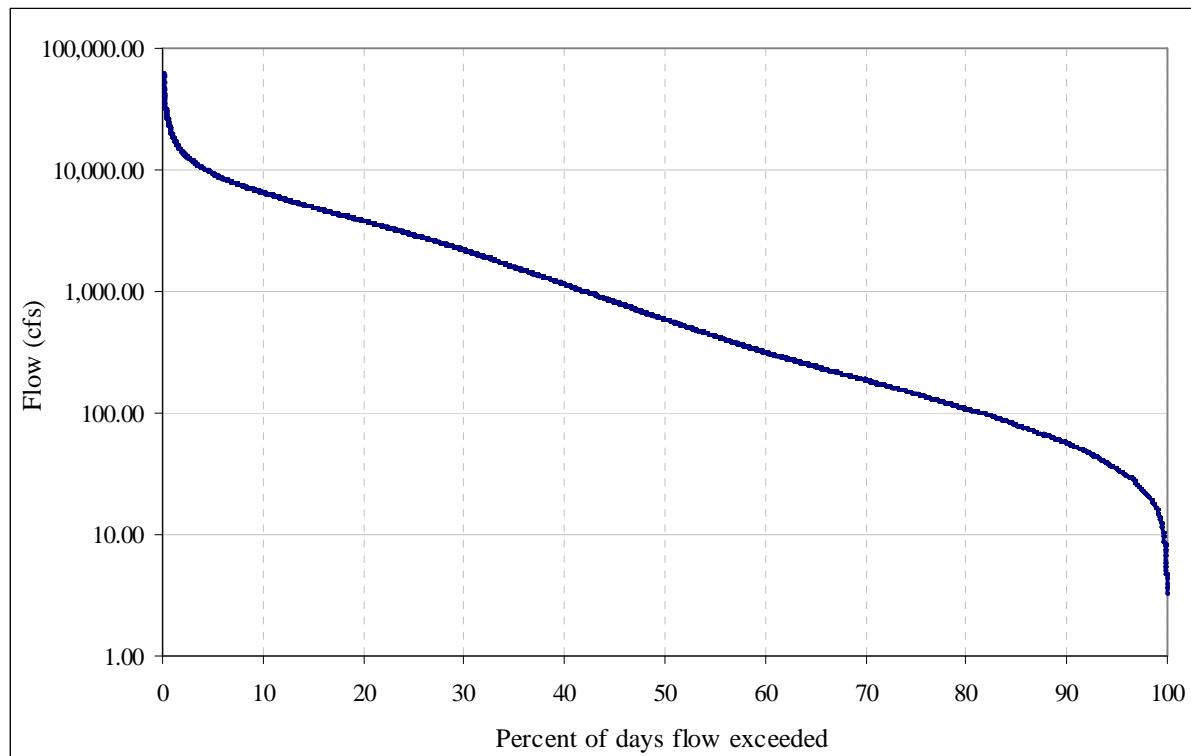
**Figure E-12. TDS versus flow observations at the Saline River at Highway 79 bridge south of Rison, Arkansas (station OUA0118).**



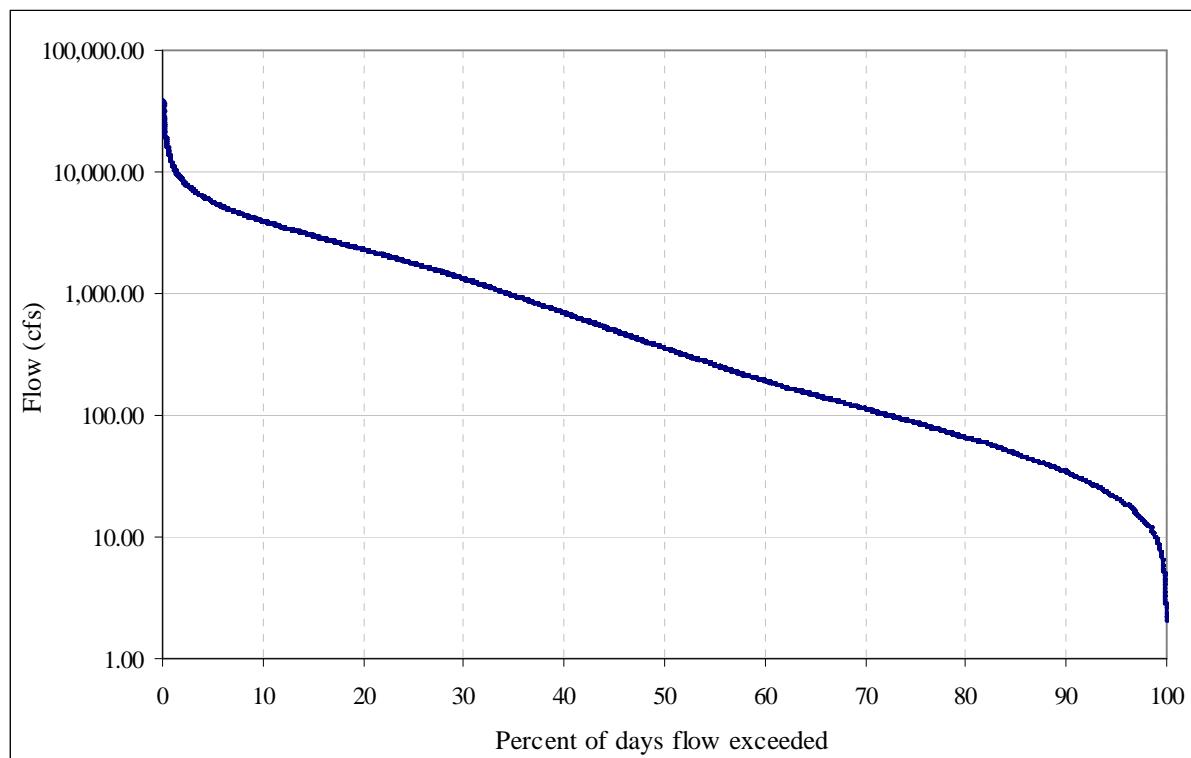
## **Appendix F**

### **Flow Duration Curves for the Saline River Basin**

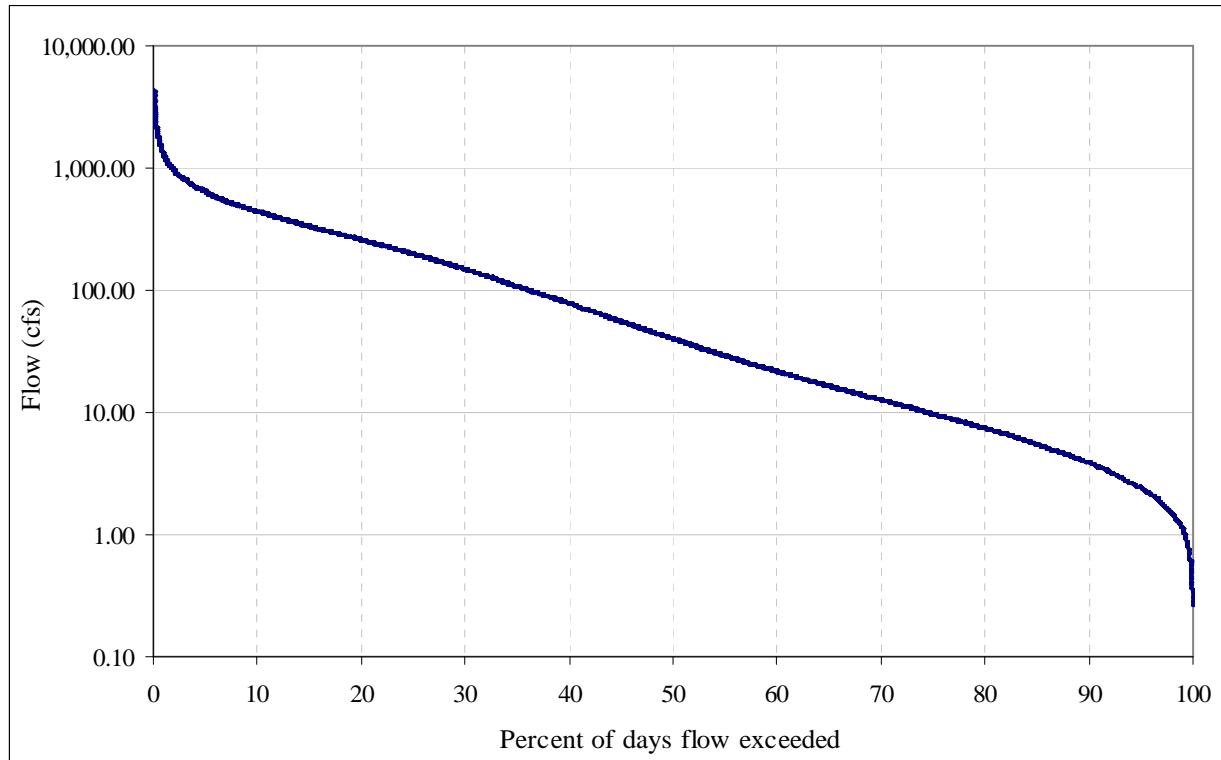
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Figure F-5. Flow duration curve for segment 08040203-010 in the Saline River Basin.....	6



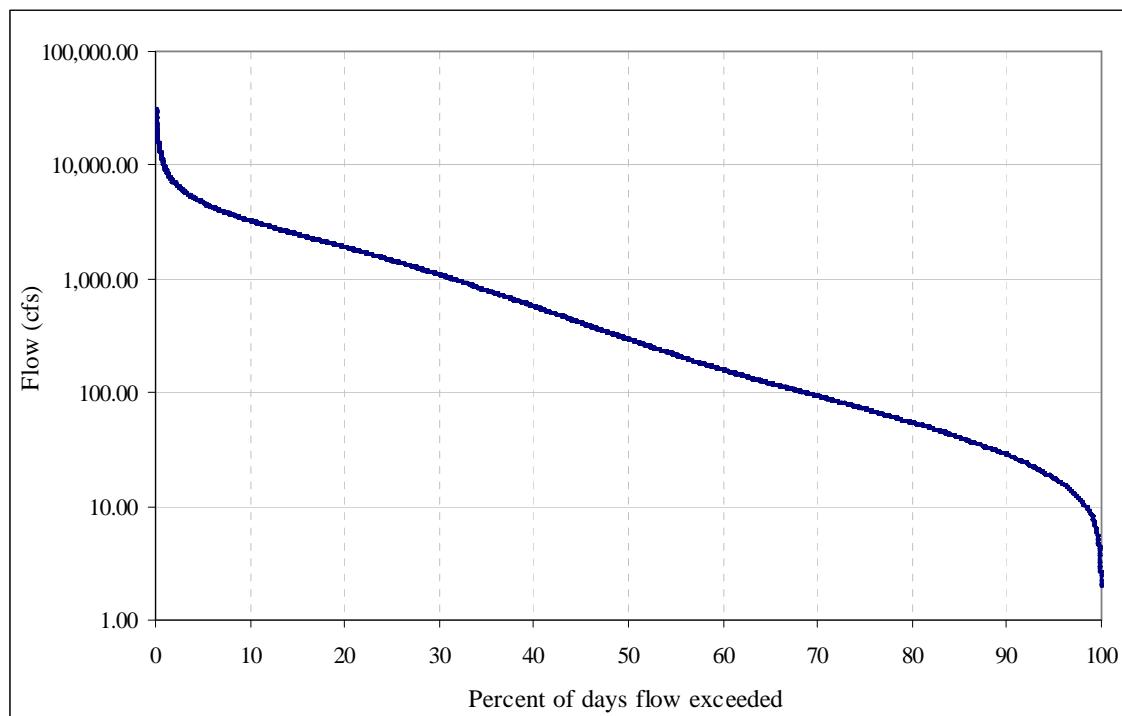
**Figure F-1. Flow duration curve for segment 08040204-006 in the Saline River Basin.**



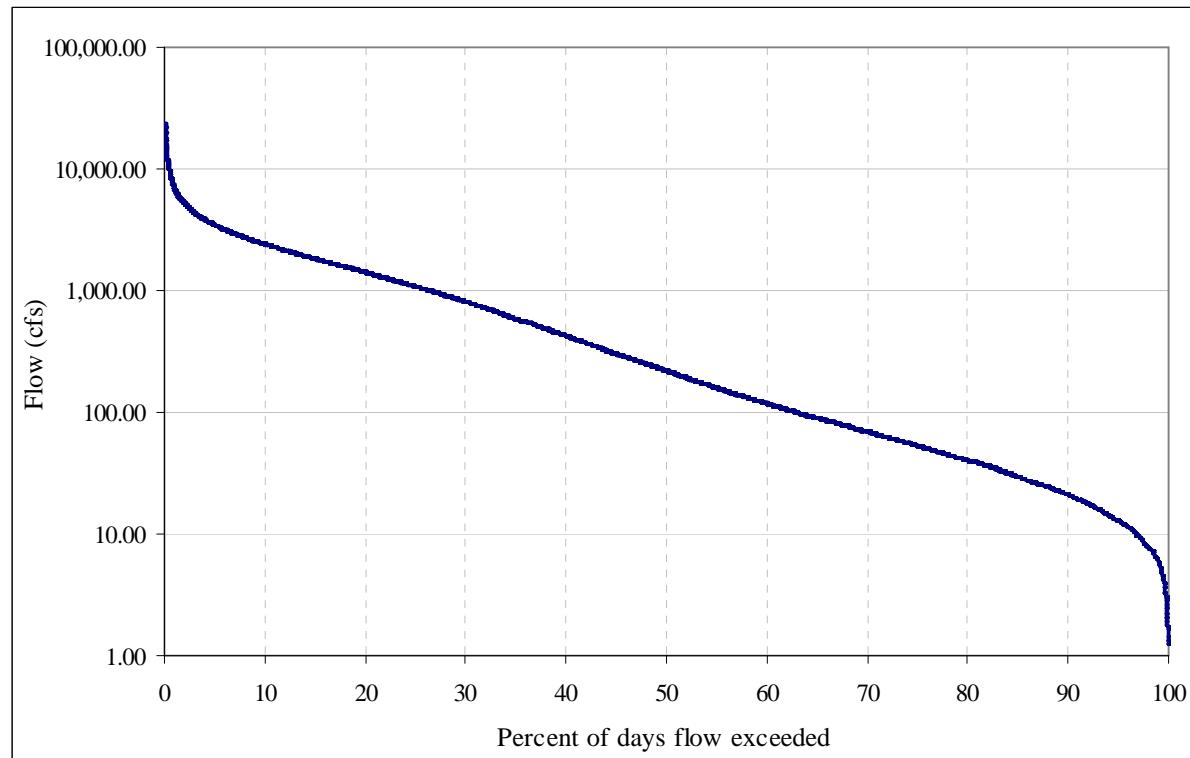
**Figure F-2. Flow duration curve for segment 08040203-007 in the Saline River Basin.**



**Figure F-3. Flow duration curve for segment 08040203-008 in the Saline River Basin.**



**Figure F-4. Flow duration curve for segment 08040203-009 in the Saline River Basin.**



**Figure F-5. Flow duration curve for segment 08040203-010 in the Saline River Basin.**

## **Appendix G**

### **Load Duration Curve Calculations for All TMDLs**

### **(CD-ROM)**

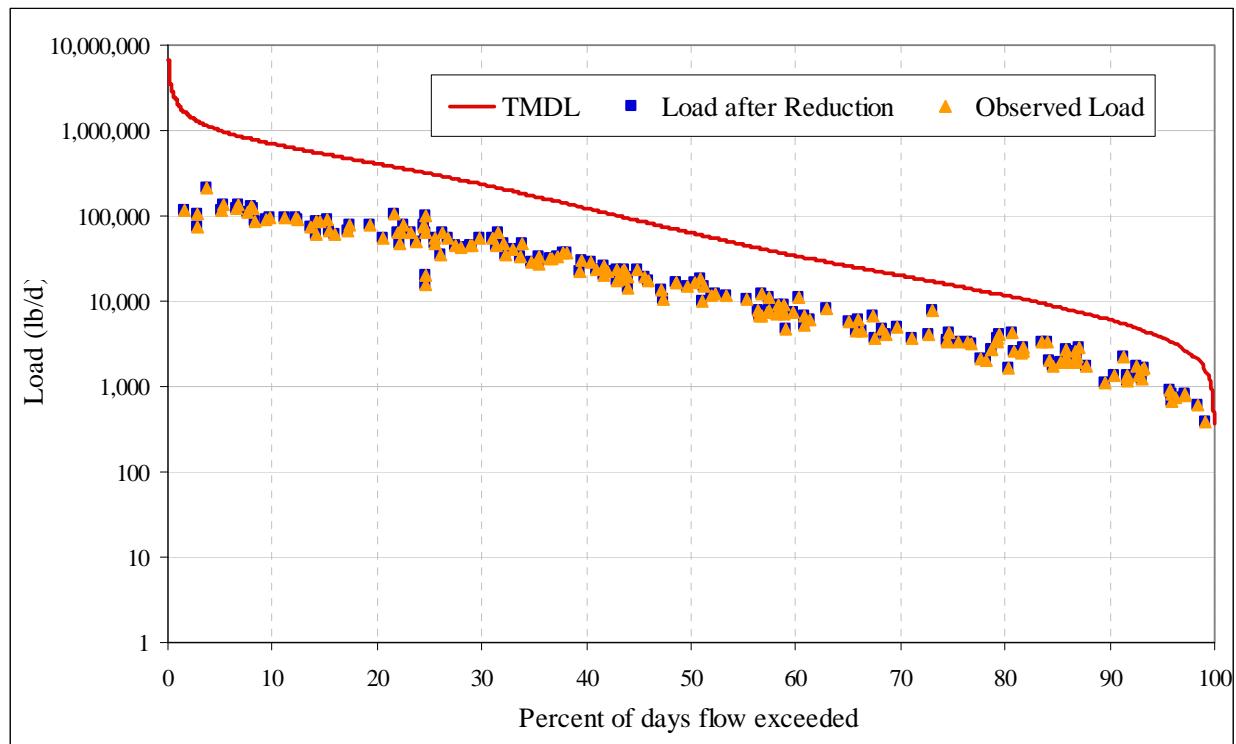
This appendix contains extremely large files, which are included only on a CD-ROM. To obtain a copy of this appendix, please contact EPA.



## Appendix H

### Load Duration Curve Summaries and Plots for Chloride

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Table H-9. Allowable chloride load for Saline River (HUC/reach 08040203-008).....	19
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**Figure H-1. Chloride load duration curve for station OUA0118 for Saline River (HUC/reach 08040204-006)**

**Table H-1. Allowable chloride load for station OUA0118 for Saline River (HUC/reach 08040204-006)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>247,663.6</b>
9/16/1954	3.8	100.000	3.335	0.00	359.7665	0.00E+00
9/17/1954	3.8	100.000	3.335	0.00	359.7665	0.00E+00
9/20/1954	3.8	100.000	3.335	0.00	359.7665	0.00E+00
9/26/1954	3.8	100.000	3.335	0.00	359.7665	0.00E+00
9/27/1954	3.8	100.000	3.335	0.00	359.7665	0.00E+00
9/15/1954	4.1	100.000	3.598	0.00	388.1691	0.00E+00
9/18/1954	4.1	100.000	3.598	0.00	388.1691	0.00E+00
9/19/1954	4.1	100.000	3.598	0.00	388.1691	0.00E+00
9/21/1954	4.1	100.000	3.598	0.00	388.1691	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
2/1/1949	54800	0.100	48094.430	0.00	5188211.7354	0.00E+00
1/1/1988	59400	0.100	52131.554	0.00	5623718.5600	0.00E+00
5/6/1958	59600	0.100	52307.081	0.00	5642653.6393	0.00E+00
5/20/1968	59600	0.100	52307.081	0.00	5642653.6393	0.00E+00
12/30/1987	61500	0.100	53974.588	0.00	5822536.8929	0.00E+00
5/5/1958	65900	0.100	57836.185	0.00	6239108.6381	0.00E+00
12/31/1987	67000	0.100	58801.584	0.00	6343251.5744	0.00E+00
5/4/1958	68500	0.100	60118.038	0.00	6485264.6693	0.00E+00
5/3/1958	69500	0.100	60995.673	0.00	6579940.0659	0.00E+00
5/19/1968	71500	0.100	62750.944	0.10	6769290.8592	6.77E+03
5/18/1968	72500	0.000	63628.580	0.00	6863966.2558	0.00E+00

**Table H-2. Existing load for chloride for station OUA0118 for Saline River (HUC/reach 08040204-006)**

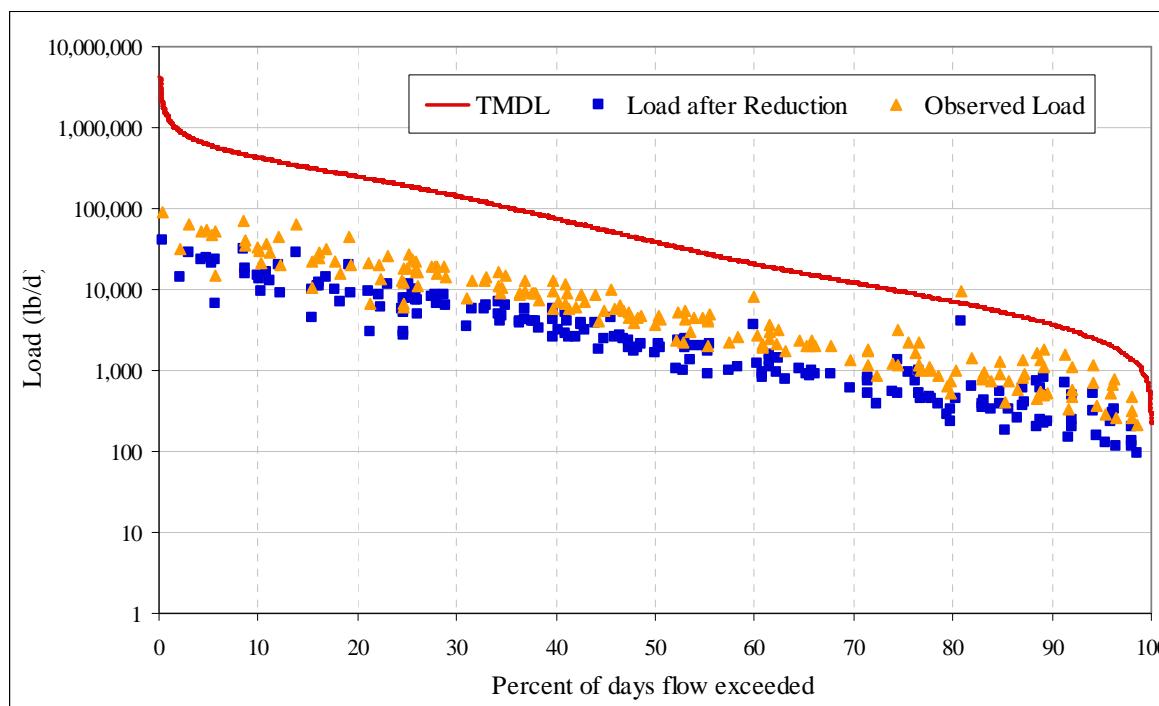
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
9/26/2006	8.75	162.363	73.1	7.663E+03	7.663E+03	1.576E+04	Yes
10/3/2000	7.94	52.658	91.3	2.255E+03	2.255E+03	5.112E+03	Yes
7/31/2000	7.3	71.088	87	2.799E+03	2.799E+03	6.902E+03	Yes
10/10/1995	7.286	107.949	80.6	4.242E+03	4.242E+03	1.048E+04	Yes
9/3/2002	7.1	87.764	84.1	3.361E+03	3.361E+03	8.521E+03	Yes
9/26/2005	7	43.004	93.3	1.624E+03	1.624E+03	4.175E+03	Yes
10/8/2002	6.84	47.392	92.5	1.748E+03	1.748E+03	4.601E+03	Yes
8/5/1997	6.628	91.274	83.5	3.263E+03	3.263E+03	8.862E+03	Yes
9/26/2000	6.57	44.759	93.1	1.586E+03	1.586E+03	4.346E+03	Yes
9/2/1997	6.49	72.844	86.7	2.550E+03	2.550E+03	7.072E+03	Yes
1/17/2006	6.49	114.093	79.5	3.994E+03	3.994E+03	1.108E+04	Yes
9/30/1997	6.43	312.438	60.3	1.084E+04	1.084E+04	3.033E+04	Yes
10/19/1999	6.32	78.110	85.8	2.663E+03	2.663E+03	7.583E+03	Yes
11/4/1997	5.96	386.160	56.7	1.241E+04	1.241E+04	3.749E+04	Yes
10/2/2001	5.96	25.451	97.2	8.182E+02	8.182E+02	2.471E+03	Yes
5/5/1998	5.82	571.341	50.9	1.794E+04	1.794E+04	5.547E+04	Yes
10/21/2003	5.82	71.966	86.9	2.259E+03	2.259E+03	6.987E+03	Yes
8/22/2000	5.81	19.308	98.4	6.051E+02	6.051E+02	1.875E+03	Yes
4/16/1996	5.721	2053.667	31.5	6.337E+04	6.337E+04	1.994E+05	Yes
11/12/2003	5.72	116.726	79.2	3.601E+03	3.601E+03	1.133E+04	Yes
2/20/1996	5.671	367.729	57.5	1.125E+04	1.125E+04	3.570E+04	Yes
8/22/2006	5.57	25.451	97.2	7.646E+02	7.646E+02	2.471E+03	Yes
11/17/1992	5.55	218.531	67.3	6.542E+03	6.542E+03	2.122E+04	Yes
6/10/1997	5.546	272.945	62.9	8.165E+03	8.165E+03	2.650E+04	Yes
8/17/1999	5.51	46.515	92.7	1.382E+03	1.382E+03	4.516E+03	Yes
3/27/2007	5.42	525.704	24.7	1.537E+04	1.537E+04	5.104E+04	Yes
8/19/2003	5.36	116.726	79.2	3.375E+03	3.375E+03	1.133E+04	Yes
2/3/1998	5.34	3563.200	21.6	1.026E+05	1.026E+05	3.459E+05	Yes
8/6/2002	5.32	77.232	85.9	2.216E+03	2.216E+03	7.498E+03	Yes
12/19/2006	5.3	584.505	50.4	1.671E+04	1.671E+04	5.675E+04	Yes
12/6/1994	5.25	847.796	44.9	2.401E+04	2.401E+04	8.231E+04	Yes
11/6/2001	5.24	101.806	81.8	2.877E+03	2.877E+03	9.884E+03	Yes
12/13/2005	5.19	149.198	74.7	4.177E+03	4.177E+03	1.449E+04	Yes
4/25/2006	5.13	1334.006	38.1	3.691E+04	3.691E+04	1.295E+05	Yes
7/9/2002	5.12	43.882	93.1	1.212E+03	1.212E+03	4.260E+03	Yes
8/22/1995	5.105	32.473	95.8	8.941E+02	8.941E+02	3.153E+03	Yes
10/20/1992	5.01	50.903	91.7	1.376E+03	1.376E+03	4.942E+03	Yes
1/7/1997	4.957	1772.824	33.9	4.740E+04	4.740E+04	1.721E+05	Yes
11/22/1999	4.92	73.721	86.5	1.956E+03	1.956E+03	7.157E+03	Yes
12/9/2003	4.9	341.400	58.9	9.023E+03	9.023E+03	3.315E+04	Yes
10/15/1996	4.896	71.966	86.9	1.900E+03	1.900E+03	6.987E+03	Yes
3/22/2005	4.87	1369.112	37.7	3.596E+04	3.596E+04	1.329E+05	Yes
1/11/1994	4.84	561.687	51.2	1.466E+04	1.466E+04	5.453E+04	Yes
9/11/1995	4.822	14.920	99.1	3.880E+02	3.880E+02	1.449E+03	Yes
2/15/2000	4.8	233.451	65.9	6.044E+03	6.044E+03	2.267E+04	Yes
9/21/1993	4.79	31.595	96	8.163E+02	8.163E+02	3.067E+03	Yes
1/20/2004	4.79	352.810	58.4	9.115E+03	9.115E+03	3.425E+04	Yes
5/17/2005	4.77	193.080	69.7	4.968E+03	4.968E+03	1.875E+04	Yes
4/2/1991	4.76	3071.725	24.4	7.886E+04	7.886E+04	2.982E+05	Yes
1/19/1993	4.75	2123.878	31	5.441E+04	5.441E+04	2.062E+05	Yes
5/20/1997	4.746	659.104	48.6	1.687E+04	1.687E+04	6.399E+04	Yes
7/26/1993	4.74	67.578	87.8	1.728E+03	1.728E+03	6.561E+03	Yes
11/19/1996	4.681	921.517	43.6	2.327E+04	2.327E+04	8.947E+04	Yes
9/22/1992	4.66	101.806	81.8	2.559E+03	2.559E+03	9.884E+03	Yes
1/19/1999	4.66	1219.913	39.6	3.066E+04	3.066E+04	1.184E+05	Yes
10/11/1994	4.65	135.156	76.5	3.390E+03	3.390E+03	1.312E+04	Yes
7/8/1997	4.649	428.286	55.3	1.074E+04	1.074E+04	4.158E+04	Yes
10/24/2006	4.59	50.903	91.7	1.260E+03	1.260E+03	4.942E+03	Yes
7/13/1999	4.56	164.995	72.7	4.058E+03	4.058E+03	1.602E+04	Yes
12/12/1995	4.543	106.194	80.9	2.602E+03	2.602E+03	1.031E+04	Yes
10/25/2005	4.54	29.840	96.3	7.307E+02	7.307E+02	2.897E+03	Yes
4/21/1992	4.53	478.311	53.4	1.169E+04	1.169E+04	4.644E+04	Yes
12/21/1998	4.53	1149.703	40.4	2.809E+04	2.809E+04	1.116E+05	Yes

**Table H-2. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
8/7/2001	4.53	78.110	85.8	1.909E+03	1.909E+03	7.583E+03	Yes
11/12/2002	4.53	660.860	48.5	1.615E+04	1.615E+04	6.416E+04	Yes
12/14/1992	4.5	1053.163	41.6	2.556E+04	2.556E+04	1.022E+05	Yes
2/21/1995	4.491	1992.233	32.1	4.826E+04	4.826E+04	1.934E+05	Yes
7/22/2003	4.47	243.983	65.1	5.882E+03	5.882E+03	2.369E+04	Yes
2/16/1993	4.45	2299.405	29.7	5.519E+04	5.519E+04	2.232E+05	Yes
3/8/1999	4.45	618.733	49.6	1.485E+04	1.485E+04	6.007E+04	Yes
2/22/1994	4.44	3071.725	24.4	7.356E+04	7.356E+04	2.982E+05	Yes
11/8/1994	4.44	974.175	42.9	2.333E+04	2.333E+04	9.458E+04	Yes
5/30/1995	4.437	812.691	45.5	1.945E+04	1.945E+04	7.890E+04	Yes
2/27/2007	4.43	2694.341	24.7	6.438E+04	6.438E+04	2.616E+05	Yes
1/6/1998	4.42	1421.770	37.3	3.390E+04	3.390E+04	1.380E+05	Yes
6/23/1998	4.399	80.742	85.2	1.916E+03	1.916E+03	7.839E+03	Yes
1/25/2000	4.38	133.401	76.8	3.152E+03	3.152E+03	1.295E+04	Yes
9/24/1996	4.374	56.169	90.5	1.325E+03	1.325E+03	5.453E+03	Yes
4/22/1997	4.346	930.294	43.5	2.181E+04	2.181E+04	9.032E+04	Yes
7/25/1995	4.342	151.831	74.4	3.556E+03	3.556E+03	1.474E+04	Yes
4/24/2007	4.34	858.328	24.7	2.009E+04	2.009E+04	8.333E+04	Yes
11/17/1998	4.33	344.033	58.6	8.035E+03	8.035E+03	3.340E+04	Yes
2/4/1997	4.324	3396.450	22.5	7.921E+04	7.921E+04	3.298E+05	Yes
7/9/1991	4.31	143.055	75.5	3.326E+03	3.326E+03	1.389E+04	Yes
6/20/2006	4.31	103.561	81.5	2.408E+03	2.408E+03	1.005E+04	Yes
1/28/2003	4.3	516.927	52.3	1.199E+04	1.199E+04	5.019E+04	Yes
7/28/1998	4.28	50.903	91.7	1.175E+03	1.175E+03	4.942E+03	Yes
6/27/1995	4.256	208.877	68.2	4.795E+03	4.795E+03	2.028E+04	Yes
5/5/1992	4.24	326.480	59.7	7.466E+03	7.466E+03	3.170E+04	Yes
7/9/1996	4.232	86.886	84.3	1.983E+03	1.983E+03	8.436E+03	Yes
4/11/2000	4.21	781.973	46	1.776E+04	1.776E+04	7.592E+04	Yes
9/30/2003	4.2	118.481	78.8	2.684E+03	2.684E+03	1.150E+04	Yes
8/27/1996	4.155	118.481	78.8	2.655E+03	2.655E+03	1.150E+04	Yes
3/31/1998	4.143	2782.105	26.2	6.217E+04	6.217E+04	2.701E+05	Yes
8/10/2004	4.14	150.953	74.5	3.371E+03	3.371E+03	1.466E+04	Yes
4/15/2003	4.04	528.337	52	1.151E+04	1.151E+04	5.130E+04	Yes
1/7/1992	4.02	1474.428	36.7	3.197E+04	3.197E+04	1.431E+05	Yes
6/19/2001	4.02	302.784	60.9	6.565E+03	6.565E+03	2.940E+04	Yes
3/16/1993	4.01	1018.057	42.1	2.202E+04	2.202E+04	9.884E+04	Yes
8/23/2005	3.96	31.595	96	6.748E+02	6.748E+02	3.067E+03	Yes
1/31/2006	3.95	895.188	44	1.907E+04	1.907E+04	8.691E+04	Yes
4/30/1996	3.942	1114.597	40.9	2.370E+04	2.370E+04	1.082E+05	Yes
4/11/1995	3.941	1895.693	32.9	4.030E+04	4.030E+04	1.840E+05	Yes
2/12/1991	3.94	2079.996	31.4	4.420E+04	4.420E+04	2.019E+05	Yes
11/16/1993	3.88	296.641	61.4	6.208E+03	6.208E+03	2.880E+04	Yes
1/16/1996	3.87	342.278	58.9	7.145E+03	7.145E+03	3.323E+04	Yes
11/14/2000	3.87	1483.204	36.6	3.096E+04	3.096E+04	1.440E+05	Yes
8/6/1991	3.86	180.793	71.1	3.764E+03	3.764E+03	1.755E+04	Yes
9/4/2001	3.85	85.131	84.5	1.768E+03	1.768E+03	8.265E+03	Yes
3/18/2003	3.83	1588.520	35.4	3.282E+04	3.282E+04	1.542E+05	Yes
6/18/1991	3.82	369.485	57.5	7.613E+03	7.613E+03	3.587E+04	Yes
2/18/1992	3.75	2711.894	26.7	5.485E+04	5.485E+04	2.633E+05	Yes
1/2/1991	3.73	10794.918	3.7	2.172E+05	2.172E+05	1.048E+06	Yes
7/17/2001	3.72	227.308	66.4	4.561E+03	4.561E+03	2.207E+04	Yes
7/26/2005	3.7	202.734	68.7	4.046E+03	4.046E+03	1.968E+04	Yes
5/30/2000	3.68	939.070	43.4	1.864E+04	1.864E+04	9.117E+04	Yes
6/14/1993	3.66	397.569	56.3	7.848E+03	7.848E+03	3.860E+04	Yes
10/20/1998	3.63	375.628	57.2	7.355E+03	7.355E+03	3.647E+04	Yes
5/22/2001	3.63	354.565	58.2	6.942E+03	6.942E+03	3.442E+04	Yes
7/27/2004	3.62	947.846	43.4	1.851E+04	1.851E+04	9.202E+04	Yes
10/12/2004	3.6	930.294	43.5	1.806E+04	1.806E+04	9.032E+04	Yes
2/15/2005	3.6	4028.347	19.3	7.822E+04	7.822E+04	3.911E+05	Yes
2/12/2002	3.58	3256.028	23.3	6.287E+04	6.287E+04	3.161E+05	Yes
8/31/2004	3.58	236.084	65.7	4.559E+03	4.559E+03	2.292E+04	Yes
6/11/1996	3.505	1044.386	41.7	1.974E+04	1.974E+04	1.014E+05	Yes
12/21/1993	3.48	2869.868	25.6	5.387E+04	5.387E+04	2.786E+05	Yes

**Table H-2. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
3/5/2002	3.48	2360.840	29.1	4.431E+04	4.431E+04	2.292E+05	Yes
12/5/2000	3.46	3440.331	22.3	6.421E+04	6.421E+04	3.340E+05	Yes
8/24/1993	3.42	60.557	89.5	1.117E+03	1.117E+03	5.879E+03	Yes
4/12/1994	3.4	2404.722	28.9	4.410E+04	4.410E+04	2.335E+05	Yes
1/2/2002	3.38	1816.706	33.6	3.312E+04	3.312E+04	1.764E+05	Yes
12/11/2001	3.37	4941.088	15.3	8.981E+04	8.981E+04	4.797E+05	Yes
6/14/2005	3.35	390.548	56.6	7.057E+03	7.057E+03	3.792E+04	Yes
11/7/1995	3.342	563.442	51.1	1.016E+04	1.016E+04	5.470E+04	Yes
5/18/1999	3.34	732.826	47.1	1.320E+04	1.320E+04	7.115E+04	Yes
6/4/2002	3.34	1228.690	39.4	2.214E+04	2.214E+04	1.193E+05	Yes
6/9/1992	3.31	1983.456	32.2	3.541E+04	3.541E+04	1.926E+05	Yes
11/25/1991	3.3	3492.990	22	6.217E+04	6.217E+04	3.391E+05	Yes
12/20/1999	3.26	1649.955	34.8	2.901E+04	2.901E+04	1.602E+05	Yes
11/28/2006	3.26	385.282	56.8	6.775E+03	6.775E+03	3.741E+04	Yes
4/20/1993	3.25	4440.836	17.3	7.785E+04	7.785E+04	4.312E+05	Yes
7/28/1992	3.24	391.425	56.6	6.840E+03	6.840E+03	3.800E+04	Yes
5/25/2004	3.24	974.175	42.9	1.702E+04	1.702E+04	9.458E+04	Yes
8/30/1994	3.2	301.907	60.9	5.211E+03	5.211E+03	2.931E+04	Yes
8/2/1994	3.18	1579.744	35.5	2.710E+04	2.710E+04	1.534E+05	Yes
1/30/2007	3.18	5792.395	24.7	9.935E+04	9.935E+04	5.624E+05	Yes
5/20/2003	3.16	2589.025	27.5	4.413E+04	4.413E+04	2.514E+05	Yes
9/29/1998	3.15	215.021	67.6	3.653E+03	3.653E+03	2.088E+04	Yes
12/10/1996	3.141	7512.561	7.9	1.273E+05	1.273E+05	7.294E+05	Yes
1/30/2001	3.14	5134.168	14.5	8.695E+04	8.695E+04	4.985E+05	Yes
5/17/1994	3.12	2501.261	28.1	4.209E+04	4.209E+04	2.428E+05	Yes
3/18/1997	3.12	8065.471	6.8	1.357E+05	1.357E+05	7.831E+05	Yes
8/25/1992	3.08	121.991	78.2	2.027E+03	2.027E+03	1.184E+04	Yes
4/24/2001	3.05	2878.645	25.6	4.736E+04	4.736E+04	2.795E+05	Yes
10/12/1993	3.04	126.380	77.7	2.072E+03	2.072E+03	1.227E+04	Yes
3/12/1991	3.03	5818.724	12.2	9.510E+04	9.510E+04	5.649E+05	Yes
5/14/1991	3.03	5248.261	14.1	8.577E+04	8.577E+04	5.095E+05	Yes
12/14/2004	3.03	7407.244	8.1	1.211E+05	1.211E+05	7.192E+05	Yes
3/3/1998	2.929	3185.817	23.8	5.033E+04	5.033E+04	3.093E+05	Yes
7/5/1994	2.85	912.741	43.9	1.403E+04	1.403E+04	8.862E+04	Yes
3/9/2004	2.85	5783.619	12.4	8.891E+04	8.891E+04	5.615E+05	Yes
8/25/1998	2.84	109.704	80.3	1.680E+03	1.680E+03	1.065E+04	Yes
7/6/2004	2.84	6204.884	11.2	9.505E+04	9.505E+04	6.024E+05	Yes
4/13/2004	2.79	4458.389	17.2	6.709E+04	6.709E+04	4.329E+05	Yes
3/17/1992	2.77	8179.564	6.6	1.222E+05	1.222E+05	7.941E+05	Yes
2/9/1999	2.77	9127.410	5.3	1.364E+05	1.364E+05	8.862E+05	Yes
5/18/1993	2.72	3765.057	20.6	5.524E+04	5.524E+04	3.655E+05	Yes
6/21/1993	2.68	712.640	47.4	1.030E+04	1.030E+04	6.919E+04	Yes
4/13/1999	2.68	7600.324	7.7	1.099E+05	1.099E+05	7.379E+05	Yes
5/30/2006	2.63	335.257	59.1	4.756E+03	4.756E+03	3.255E+04	Yes
3/21/1995	2.578	6696.360	9.7	9.311E+04	9.311E+04	6.501E+05	Yes
4/19/2005	2.55	5371.130	13.6	7.388E+04	7.388E+04	5.215E+05	Yes
11/9/2004	2.53	4923.536	15.4	6.719E+04	6.719E+04	4.780E+05	Yes
2/18/2003	2.51	6819.228	9.4	9.232E+04	9.232E+04	6.621E+05	Yes
2/10/2004	2.46	3475.437	22.1	4.611E+04	4.611E+04	3.374E+05	Yes
3/20/2001	2.37	9215.174	5.2	1.178E+05	1.178E+05	8.947E+05	Yes
5/7/2002	2.33	4774.338	15.9	6.000E+04	6.000E+04	4.635E+05	Yes
6/27/2000	2.32	2808.434	26	3.514E+04	3.514E+04	2.727E+05	Yes
3/1/1994	2.17	7249.270	8.4	8.485E+04	8.485E+04	7.038E+05	Yes
3/28/2006	2.15	5230.708	14.1	6.066E+04	6.066E+04	5.078E+05	Yes
4/2/2002	1.64	12023.608	2.9	1.064E+05	1.064E+05	1.167E+06	Yes
6/24/2003	1.42	15358.623	1.6	1.176E+05	1.176E+05	1.491E+06	Yes
2/20/2001	1.17	11935.844	2.9	7.532E+04	7.532E+04	1.159E+06	Yes



**Figure H-2. Chloride load duration curve for station OUA0042 for Saline River (HUC/reach 08040203-007)**

**Table H-3. Allowable chloride load for station OUA0042 for Saline River (HUC/reach 08040203-007)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>150,902.7</b>
9/14/1954	3.8	100.000	2.032	0.00	219.2076	0.00E+00
9/15/1954	3.8	100.000	2.032	0.00	219.2076	0.00E+00
9/18/1954	3.8	100.000	2.032	0.00	219.2076	0.00E+00
9/24/1954	3.8	100.000	2.032	0.00	219.2076	0.00E+00
9/25/1954	3.8	100.000	2.032	0.00	219.2076	0.00E+00
9/13/1954	4.1	100.000	2.192	0.00	236.5134	0.00E+00
9/16/1954	4.1	100.000	2.192	0.00	236.5134	0.00E+00
9/17/1954	4.1	100.000	2.192	0.00	236.5134	0.00E+00
9/19/1954	4.1	100.000	2.192	0.00	236.5134	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/29/1949	53600	0.100	28662.485	0.00	3091980.5505	0.00E+00
1/30/1949	54800	0.100	29304.183	0.00	3161203.9956	0.00E+00
12/30/1987	59400	0.100	31764.023	0.00	3426560.5354	0.00E+00
5/4/1958	59600	0.100	31870.972	0.00	3438097.7763	0.00E+00
5/18/1968	59600	0.100	31870.972	0.00	3438097.7763	0.00E+00
12/28/1987	61500	0.100	32886.993	0.00	3547701.5644	0.00E+00
5/3/1958	65900	0.100	35239.884	0.00	3801520.8634	0.00E+00
12/29/1987	67000	0.100	35828.107	0.00	3864975.6881	0.00E+00
5/2/1958	68500	0.100	36630.228	0.00	3951504.9945	0.00E+00
5/1/1958	69500	0.100	37164.976	0.00	4009191.1988	0.00E+00
5/17/1968	71500	0.100	38234.472	0.10	4124563.6074	4.12E+03
5/16/1968	72500	0.000	38769.220	0.00	4182249.8117	0.00E+00

**Table H-4. Existing load for chloride for station OUA0042 for Saline River (HUC/reach 08040203-007)**

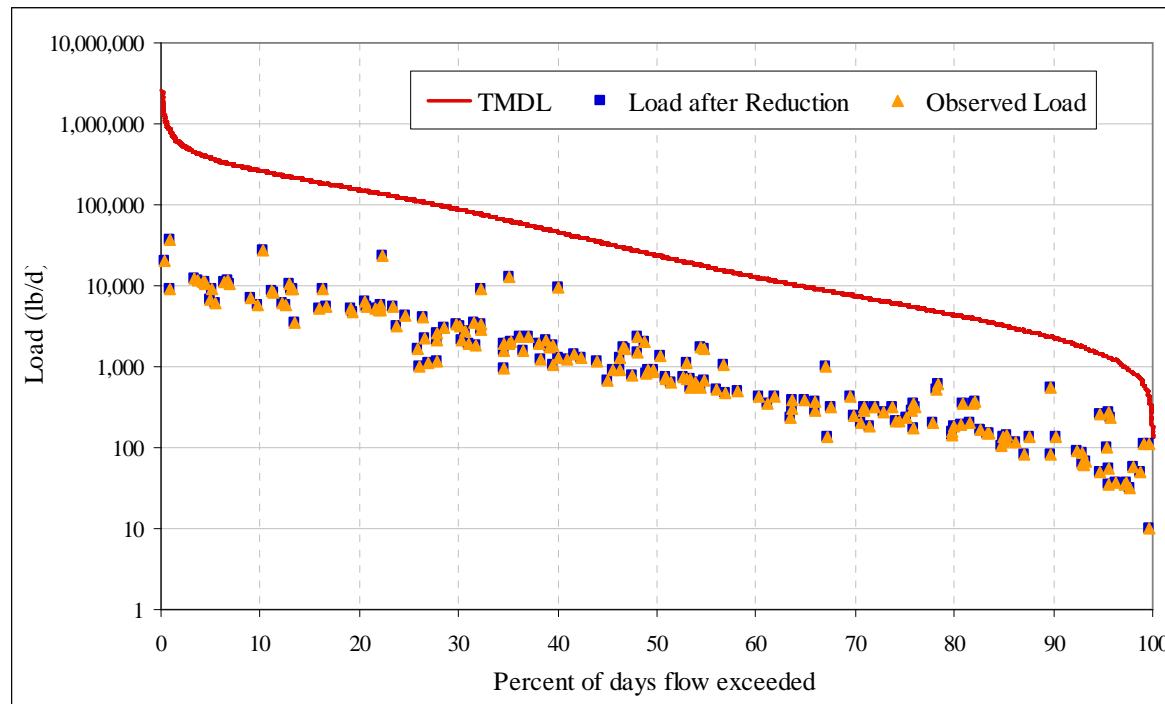
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
8/19/2003	40.5	42.780	80.9	9.345E+03	4.153E+03	4.153E+03	Yes
10/19/1999	10.2	20.284	89.1	1.116E+03	4.960E+02	1.969E+03	Yes
10/21/2003	9.01	33.689	88.4	1.637E+03	7.277E+02	3.271E+03	Yes
10/2/2001	8.95	9.625	98	4.647E+02	2.065E+02	9.345E+02	Yes
9/26/2006	8.88	171.119	59.9	8.196E+03	3.643E+03	1.661E+04	Yes
10/3/2000	8.87	39.037	89.1	1.868E+03	8.301E+02	3.790E+03	Yes
9/26/2000	8.75	6.571	98.1	3.101E+02	1.378E+02	6.380E+02	Yes
8/5/1997	8.524	27.426	84.7	1.261E+03	5.604E+02	2.663E+03	Yes
7/25/2006	7.54	18.716	96.3	7.612E+02	3.383E+02	1.817E+03	Yes
9/2/1997	7.4	22.855	87.3	9.122E+02	4.054E+02	2.219E+03	Yes
8/22/2000	7.36	6.571	98.1	2.609E+02	1.159E+02	6.380E+02	Yes
8/22/2006	7.04	17.647	96.1	6.701E+02	2.978E+02	1.713E+03	Yes
9/11/1995	6.592	6.000	98.6	2.133E+02	9.481E+01	5.825E+02	Yes
8/17/1999	6.42	16.284	92	5.639E+02	2.506E+02	1.581E+03	Yes
11/12/2003	6.33	90.907	74.5	3.104E+03	1.379E+03	8.826E+03	Yes
10/25/2005	6.32	15.508	96	5.286E+02	2.349E+02	1.506E+03	Yes
8/23/2005	6.06	21.390	94.1	6.992E+02	3.107E+02	2.077E+03	Yes
10/10/1995	5.978	27.426	84.7	8.843E+02	3.930E+02	2.663E+03	Yes
5/20/1997	5.916	167.415	52.3	5.342E+03	2.374E+03	1.625E+04	Yes
9/3/2002	5.9	35.293	92	1.123E+03	4.992E+02	3.427E+03	Yes
1/17/2006	5.85	68.982	75.5	2.177E+03	9.674E+02	6.697E+03	Yes
11/6/2001	5.8	31.015	83.1	9.703E+02	4.312E+02	3.011E+03	Yes
7/8/1997	5.79	95.992	61.5	2.998E+03	1.332E+03	9.320E+03	Yes
11/4/1997	5.61	291.405	44	8.818E+03	3.919E+03	2.829E+04	Yes
7/13/1999	5.54	76.851	65.7	2.296E+03	1.021E+03	7.461E+03	Yes
9/21/1993	5.46	12.285	94.5	3.618E+02	1.608E+02	1.193E+03	Yes
11/22/1999	5.45	25.712	85.7	7.558E+02	3.359E+02	2.496E+03	Yes
5/5/1998	5.42	152.273	53.9	4.452E+03	1.978E+03	1.478E+04	Yes
2/15/2000	5.42	69.423	67.8	2.030E+03	9.020E+02	6.740E+03	Yes
9/26/2005	5.42	54.010	91.4	1.579E+03	7.017E+02	5.244E+03	Yes
10/24/2006	5.4	27.807	87	8.099E+02	3.600E+02	2.700E+03	Yes
10/30/1990	5.35	138.274	55.3	3.990E+03	1.773E+03	1.342E+04	Yes
10/20/1992	5.25	16.284	92	4.611E+02	2.049E+02	1.581E+03	Yes
10/2/1990	5.22	30.855	83	8.687E+02	3.861E+02	2.996E+03	Yes
8/22/1995	5.21	9.428	96.5	2.649E+02	1.177E+02	9.153E+02	Yes
1/7/1997	5.182	957.064	25.2	2.675E+04	1.189E+04	9.292E+04	Yes
8/27/1996	5.181	35.426	80.4	9.900E+02	4.400E+02	3.439E+03	Yes
7/9/2002	5.13	42.780	94.1	1.184E+03	5.261E+02	4.153E+03	Yes
7/31/2000	5.09	19.427	89.6	5.334E+02	2.370E+02	1.886E+03	Yes
5/17/2005	5.08	66.843	71.4	1.832E+03	8.140E+02	6.490E+03	Yes
10/15/1996	5.04	20.570	88.9	5.592E+02	2.485E+02	1.997E+03	Yes
12/13/2005	5.04	60.427	76.3	1.643E+03	7.301E+02	5.867E+03	Yes
11/19/1996	4.979	471.390	36.9	1.266E+04	5.626E+03	4.577E+04	Yes
1/25/2000	4.97	43.711	76.6	1.172E+03	5.208E+02	4.244E+03	Yes
12/12/1995	4.964	43.711	76.6	1.170E+03	5.202E+02	4.244E+03	Yes
7/27/2004	4.92	82.886	52.9	2.200E+03	9.776E+02	8.047E+03	Yes
1/11/1994	4.88	322.830	42.5	8.497E+03	3.777E+03	3.134E+04	Yes
9/24/1996	4.867	41.139	77.7	1.080E+03	4.800E+02	3.994E+03	Yes
8/6/2002	4.86	51.871	88.9	1.360E+03	6.043E+02	5.036E+03	Yes
10/11/1994	4.79	95.135	61.6	2.458E+03	1.092E+03	9.236E+03	Yes
8/7/2001	4.79	53.475	87	1.382E+03	6.140E+02	5.192E+03	Yes
9/4/1990	4.75	11.142	95.4	2.855E+02	1.269E+02	1.082E+03	Yes
9/22/1992	4.75	29.140	83.8	7.466E+02	3.318E+02	2.829E+03	Yes
11/17/1992	4.73	78.851	65.3	2.012E+03	8.941E+02	7.655E+03	Yes
6/10/1997	4.724	77.422	65.6	1.973E+03	8.768E+02	7.517E+03	Yes
9/4/2001	4.71	86.629	76.6	2.201E+03	9.781E+02	8.411E+03	Yes
7/27/1993	4.68	30.855	83	7.789E+02	3.462E+02	2.996E+03	Yes
12/6/1994	4.64	248.837	46.5	6.228E+03	2.768E+03	2.416E+04	Yes
6/20/2006	4.64	56.149	81.9	1.405E+03	6.245E+02	5.451E+03	Yes
2/20/1996	4.636	357.113	41.1	8.930E+03	3.969E+03	3.467E+04	Yes
1/20/2004	4.63	408.013	45.5	1.019E+04	4.529E+03	3.961E+04	Yes
11/12/2002	4.62	173.793	55.3	4.331E+03	1.925E+03	1.687E+04	Yes
12/9/2003	4.57	145.451	61.5	3.585E+03	1.593E+03	1.412E+04	Yes

**Table H-4. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
3/27/2007	4.57	276.999	24.7	6.828E+03	3.035E+03	2.689E+04	Yes
7/25/1995	4.536	50.853	73.9	1.244E+03	5.530E+02	4.937E+03	Yes
12/19/2006	4.51	227.803	53	5.542E+03	2.463E+03	2.212E+04	Yes
10/8/2002	4.5	20.320	89.1	4.932E+02	2.192E+02	1.973E+03	Yes
9/30/2003	4.5	21.390	79.8	5.192E+02	2.307E+02	2.077E+03	Yes
3/8/1999	4.49	388.539	39.8	9.410E+03	4.182E+03	3.772E+04	Yes
3/22/2005	4.49	273.791	21.2	6.631E+03	2.947E+03	2.658E+04	Yes
4/2/1991	4.48	922.781	25.9	2.230E+04	9.910E+03	8.959E+04	Yes
6/23/1998	4.468	23.998	86.5	5.783E+02	2.570E+02	2.330E+03	Yes
1/6/1998	4.44	1079.911	23	2.586E+04	1.149E+04	1.048E+05	Yes
5/5/1992	4.39	90.564	62.3	2.144E+03	9.531E+02	8.793E+03	Yes
7/9/1991	4.37	49.139	74.5	1.158E+03	5.148E+02	4.771E+03	Yes
12/21/1998	4.37	614.235	33	1.448E+04	6.435E+03	5.963E+04	Yes
8/6/1991	4.36	43.425	76.8	1.021E+03	4.539E+02	4.216E+03	Yes
2/22/1994	4.34	1916.985	12	4.487E+04	1.994E+04	1.861E+05	Yes
4/25/2006	4.29	566.833	39.7	1.312E+04	5.829E+03	5.503E+04	Yes
4/16/1996	4.253	822.789	28	1.887E+04	8.389E+03	7.988E+04	Yes
2/16/1993	4.25	831.360	27.8	1.906E+04	8.470E+03	8.072E+04	Yes
11/27/1990	4.24	257.979	45.9	5.900E+03	2.622E+03	2.505E+04	Yes
4/22/1997	4.218	317.117	42.9	7.215E+03	3.207E+03	3.079E+04	Yes
6/19/2001	4.17	143.847	62.4	3.235E+03	1.438E+03	1.397E+04	Yes
5/30/2006	4.16	91.442	55.3	2.052E+03	9.119E+02	8.878E+03	Yes
4/21/1992	4.14	242.551	46.8	5.416E+03	2.407E+03	2.356E+04	Yes
10/12/1993	4.13	39.140	78.6	8.719E+02	3.875E+02	3.800E+03	Yes
1/28/2003	4.12	194.113	53	4.314E+03	1.917E+03	1.885E+04	Yes
1/19/1993	4.1	845.644	27.5	1.870E+04	8.312E+03	8.210E+04	Yes
6/18/1991	4.08	114.848	58.4	2.527E+03	1.123E+03	1.115E+04	Yes
1/16/1996	4.069	98.563	60.9	2.163E+03	9.614E+02	9.569E+03	Yes
7/5/1994	4.06	234.838	47.3	5.143E+03	2.286E+03	2.280E+04	Yes
4/24/2007	4.04	276.999	24.7	6.036E+03	2.683E+03	2.689E+04	Yes
4/11/2000	4.02	216.554	48.5	4.696E+03	2.087E+03	2.102E+04	Yes
4/15/2003	3.99	226.733	55.5	4.880E+03	2.169E+03	2.201E+04	Yes
8/10/2004	3.98	46.523	77.9	9.987E+02	4.439E+02	4.517E+03	Yes
4/11/1995	3.973	1485.592	16.8	3.184E+04	1.415E+04	1.442E+05	Yes
6/27/1995	3.972	62.852	69.7	1.347E+03	5.985E+02	6.102E+03	Yes
11/14/2000	3.97	394.109	42.5	8.439E+03	3.751E+03	3.826E+04	Yes
8/24/1993	3.96	21.141	88.4	4.516E+02	2.007E+02	2.053E+03	Yes
7/17/2001	3.96	212.295	54.7	4.534E+03	2.015E+03	2.061E+04	Yes
11/7/1995	3.886	98.278	60.9	2.060E+03	9.155E+02	9.542E+03	Yes
3/16/1993	3.86	437.107	38	9.101E+03	4.045E+03	4.244E+04	Yes
2/21/1995	3.808	445.677	37.7	9.154E+03	4.068E+03	4.327E+04	Yes
9/30/1997	3.8	57.710	71.4	1.183E+03	5.257E+02	5.603E+03	Yes
6/14/1993	3.78	471.390	36.9	9.611E+03	4.272E+03	4.577E+04	Yes
4/30/1996	3.772	273.406	44.9	5.563E+03	2.472E+03	2.654E+04	Yes
11/8/1994	3.77	622.806	32.8	1.266E+04	5.629E+03	6.047E+04	Yes
2/12/1991	3.76	454.248	37.5	9.212E+03	4.094E+03	4.410E+04	Yes
12/10/2002	3.76	721.910	34.9	1.464E+04	6.507E+03	7.009E+04	Yes
7/9/1996	3.756	36.568	79.8	7.408E+02	3.293E+02	3.550E+03	Yes
3/31/1998	3.725	557.097	34.3	1.119E+04	4.975E+03	5.409E+04	Yes
6/14/2005	3.72	118.714	64.5	2.382E+03	1.059E+03	1.153E+04	Yes
7/28/1998	3.71	16.570	91.7	3.316E+02	1.474E+02	1.609E+03	Yes
1/31/2006	3.68	582.875	40.9	1.157E+04	5.142E+03	5.659E+04	Yes
6/21/1993	3.67	155.130	53.5	3.071E+03	1.365E+03	1.506E+04	Yes
11/17/1998	3.63	87.707	63.1	1.717E+03	7.632E+02	8.515E+03	Yes
1/7/1992	3.61	668.516	31.5	1.302E+04	5.785E+03	6.490E+04	Yes
2/18/1992	3.61	925.638	25.9	1.802E+04	8.010E+03	8.987E+04	Yes
8/31/2004	3.59	87.699	71.5	1.698E+03	7.547E+02	8.514E+03	Yes
3/20/2001	3.56	2502.620	5.4	4.805E+04	2.136E+04	2.430E+05	Yes
7/26/2005	3.56	104.811	66.1	2.013E+03	8.945E+02	1.018E+04	Yes
12/21/1993	3.54	551.383	34.5	1.053E+04	4.679E+03	5.353E+04	Yes
8/2/1994	3.53	196.270	50	3.737E+03	1.661E+03	1.906E+04	Yes
8/30/1994	3.53	99.135	60.8	1.888E+03	8.389E+02	9.625E+03	Yes
12/20/1999	3.53	231.981	47.4	4.417E+03	1.963E+03	2.252E+04	Yes

**Table H-4. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
1/2/2002	3.53	344.912	40.9	6.567E+03	2.919E+03	3.349E+04	Yes
2/15/2005	3.5	695.172	24.4	1.312E+04	5.833E+03	6.749E+04	Yes
5/30/1995	3.495	488.531	36.4	9.209E+03	4.093E+03	4.743E+04	Yes
12/5/2000	3.49	313.362	39.8	5.899E+03	2.622E+03	3.042E+04	Yes
4/24/2001	3.49	371.115	40.3	6.986E+03	3.105E+03	3.603E+04	Yes
7/28/1992	3.43	119.704	57.5	2.215E+03	9.843E+02	1.162E+04	Yes
5/22/2001	3.43	127.805	52.2	2.364E+03	1.051E+03	1.241E+04	Yes
3/12/1991	3.42	779.936	28.9	1.439E+04	6.394E+03	7.572E+04	Yes
4/12/1994	3.42	971.348	25	1.792E+04	7.964E+03	9.431E+04	Yes
4/13/2004	3.42	1203.183	15.4	2.219E+04	9.864E+03	1.168E+05	Yes
3/18/2003	3.41	422.986	31	7.780E+03	3.458E+03	4.107E+04	Yes
5/25/2004	3.4	263.096	50.3	4.825E+03	2.144E+03	2.554E+04	Yes
6/4/2002	3.39	241.171	48.3	4.410E+03	1.960E+03	2.341E+04	Yes
4/20/1993	3.38	1539.873	16.1	2.807E+04	1.248E+04	1.495E+05	Yes
2/12/2002	3.36	844.902	28.1	1.531E+04	6.805E+03	8.203E+04	Yes
1/19/1999	3.34	331.401	42.1	5.970E+03	2.653E+03	3.218E+04	Yes
2/3/1998	3.33	914.210	26	1.642E+04	7.298E+03	8.876E+04	Yes
2/4/1997	3.325	1197.044	21.1	2.147E+04	9.541E+03	1.162E+05	Yes
1/2/1991	3.32	2885.476	5.6	5.167E+04	2.296E+04	2.801E+05	Yes
5/17/1994	3.31	928.495	25.8	1.658E+04	7.367E+03	9.015E+04	Yes
12/10/1996	3.293	2051.259	10.8	3.643E+04	1.619E+04	1.992E+05	Yes
5/14/1991	3.27	1125.621	22.2	1.985E+04	8.824E+03	1.093E+05	Yes
11/16/1993	3.24	488.531	36.4	8.537E+03	3.794E+03	4.743E+04	Yes
3/5/2002	3.24	1122.971	28.8	1.962E+04	8.722E+03	1.090E+05	Yes
7/22/2003	3.24	247.054	50.6	4.317E+03	1.919E+03	2.399E+04	Yes
2/9/1999	3.23	2331.236	8.6	4.061E+04	1.805E+04	2.263E+05	Yes
3/1/1994	3.22	3171.167	4.7	5.508E+04	2.448E+04	3.079E+05	Yes
10/20/1998	3.19	225.696	47.9	3.883E+03	1.726E+03	2.191E+04	Yes
12/11/2001	3.18	866.292	5.6	1.486E+04	6.604E+03	8.411E+04	Yes
1/30/2001	3.17	925.114	18.3	1.582E+04	7.030E+03	8.982E+04	Yes
8/25/1992	3.16	37.425	79.4	6.379E+02	2.835E+02	3.634E+03	Yes
10/12/2004	3.16	951.851	34.3	1.622E+04	7.211E+03	9.241E+04	Yes
5/18/1999	3.15	431.393	38.3	7.330E+03	3.258E+03	4.188E+04	Yes
1/30/2007	3.15	705.867	24.7	1.199E+04	5.330E+03	6.853E+04	Yes
6/9/1992	3.09	351.400	41.3	5.857E+03	2.603E+03	3.412E+04	Yes
11/28/2006	3.09	165.237	60.2	2.754E+03	1.224E+03	1.604E+04	Yes
5/30/2000	3.05	554.240	34.4	9.118E+03	4.052E+03	5.381E+04	Yes
4/19/2005	3.03	631.002	15.5	1.031E+04	4.583E+03	6.126E+04	Yes
3/17/1992	2.96	3314.012	4.2	5.291E+04	2.352E+04	3.218E+05	Yes
11/25/1991	2.93	1548.444	16	2.447E+04	1.088E+04	1.503E+05	Yes
5/18/1993	2.9	1417.026	17.7	2.217E+04	9.851E+03	1.376E+05	Yes
9/29/1998	2.9	54.567	72.4	8.535E+02	3.793E+02	5.298E+03	Yes
8/25/1998	2.89	26.569	85.2	4.142E+02	1.841E+02	2.580E+03	Yes
7/6/2004	2.87	1598.896	16.2	2.475E+04	1.100E+04	1.552E+05	Yes
12/14/2004	2.85	1336.870	12.3	2.055E+04	9.134E+03	1.298E+05	Yes
4/13/1999	2.84	2154.108	10	3.300E+04	1.467E+04	2.091E+05	Yes
11/9/2004	2.82	1919.745	11.2	2.920E+04	1.298E+04	1.864E+05	Yes
3/18/1997	2.815	2328.379	8.6	3.535E+04	1.571E+04	2.261E+05	Yes
3/28/2006	2.81	1427.777	10.2	2.164E+04	9.618E+03	1.386E+05	Yes
5/20/2003	2.8	1513.336	25.5	2.286E+04	1.016E+04	1.469E+05	Yes
2/27/2007	2.79	1181.793	24.7	1.778E+04	7.904E+03	1.147E+05	Yes
3/21/1995	2.607	2136.966	10.1	3.005E+04	1.336E+04	2.075E+05	Yes
6/11/1996	2.598	288.548	44.3	4.043E+03	1.797E+03	2.801E+04	Yes
5/7/2002	2.54	1507.989	19.4	2.066E+04	9.182E+03	1.464E+05	Yes
2/18/2003	2.49	5326.089	8.5	7.153E+04	3.179E+04	5.171E+05	Yes
3/9/2004	2.4	4935.723	13.9	6.389E+04	2.840E+04	4.792E+05	Yes
2/10/2004	2.37	3470.514	19.2	4.436E+04	1.972E+04	3.369E+05	Yes
3/3/1998	2.297	1117.051	22.4	1.384E+04	6.151E+03	1.085E+05	Yes
6/27/2000	2.27	917.067	26	1.123E+04	4.990E+03	8.904E+04	Yes
6/24/2003	1.77	3390.301	2.1	3.237E+04	1.439E+04	3.292E+05	Yes
4/2/2002	1.65	7272.571	3.1	6.472E+04	2.877E+04	7.061E+05	Yes
2/20/2001	1.33	12887.423	0.4	9.245E+04	4.109E+04	1.251E+06	Yes



**Figure H-3. Chloride load duration curve for station OUA0026 for Saline River (HUC/reach 08040203-010)**

**Table H-5. Allowable chloride load for OUA0026 Saline River (HUC/reach 08040203-010)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>92,250.1</b>
9/12/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/13/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/16/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/22/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/23/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/11/1954	4.1	100.000	1.340	0.00	144.5858	0.00E+00
9/14/1954	4.1	100.000	1.340	0.00	144.5858	0.00E+00
9/15/1954	4.1	100.000	1.340	0.00	144.5858	0.00E+00
9/17/1954	4.1	100.000	1.340	0.00	144.5858	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/28/1949	54800	0.100	17914.282	0.00	1932512.4779	0.00E+00
12/28/1987	59400	0.100	19418.035	0.00	2094730.6785	0.00E+00
5/2/1958	59600	0.100	19483.416	0.00	2101783.6438	0.00E+00
5/16/1968	59600	0.100	19483.416	0.00	2101783.6438	0.00E+00
12/26/1987	61500	0.100	20104.531	0.00	2168786.8136	0.00E+00
5/1/1958	65900	0.100	21542.904	0.00	2323952.0491	0.00E+00
12/27/1987	67000	0.100	21902.498	0.00	2362743.3580	0.00E+00
4/30/1958	68500	0.100	22392.852	0.00	2415640.5973	0.00E+00
4/29/1958	69500	0.100	22719.755	0.00	2450905.4236	0.00E+00
5/15/1968	71500	0.100	23373.561	0.10	2521435.0760	2.52E+03
5/14/1968	72500	0.000	23700.464	0.00	2556699.9023	0.00E+00

**Table H-6. Existing load for chloride for Saline River (HUC/reach 08040203-010) (OUA0026)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
6/1/1999	8.83	191.601	32.3	9.125E+03	9.125E+03	1.860E+04	Yes
1/9/1996	7.045	43.281	54.7	1.645E+03	1.645E+03	4.202E+03	Yes
11/13/1990	6.33	67.146	48	2.293E+03	2.293E+03	6.519E+03	Yes
12/17/2002	6.2	162.144	16.7	5.422E+03	5.422E+03	1.574E+04	Yes
9/5/1995	5.423	1.711	98.8	5.004E+01	5.004E+01	1.661E+02	Yes
10/31/2000	4.9	10.461	95.6	2.765E+02	2.765E+02	1.016E+03	Yes
10/24/2000	4.56	4.577	99.6	1.126E+02	1.126E+02	4.443E+02	Yes
12/11/1990	4.32	57.822	50.3	1.347E+03	1.347E+03	5.614E+03	Yes
7/15/1997	4.243	18.989	69.5	4.346E+02	4.346E+02	1.844E+03	Yes
9/5/2006	4.07	1.635	96.3	3.588E+01	3.588E+01	1.587E+02	Yes
10/23/2001	3.97	6.211	67.2	1.330E+02	1.330E+02	6.030E+02	Yes
11/13/2001	3.89	4.904	84.7	1.029E+02	1.029E+02	4.761E+02	Yes
11/2/1993	3.88	15.311	73.7	3.204E+02	3.204E+02	1.487E+03	Yes
10/31/1995	3.859	13.771	75.7	2.866E+02	2.866E+02	1.337E+03	Yes
1/21/1997	3.768	454.196	16.3	9.231E+03	9.231E+03	4.410E+04	Yes
11/28/1995	3.718	10.093	81.5	2.024E+02	2.024E+02	9.799E+02	Yes
10/15/2002	3.7	11.769	75.2	2.349E+02	2.349E+02	1.143E+03	Yes
9/18/1990	3.68	6.757	87.5	1.341E+02	1.341E+02	6.561E+02	Yes
2/1/2005	3.68	108.205	27.8	2.148E+03	2.148E+03	1.051E+04	Yes
8/16/2005	3.64	12.095	95.8	2.375E+02	2.375E+02	1.174E+03	Yes
10/3/1995	3.628	4.448	92.9	8.704E+01	8.704E+01	4.318E+02	Yes
9/25/2001	3.58	5.230	95.4	1.010E+02	1.010E+02	5.078E+02	Yes
12/14/1993	3.56	543.153	13	1.043E+04	1.043E+04	5.273E+04	Yes
11/4/2003	3.56	28.441	89.8	5.461E+02	5.461E+02	2.761E+03	Yes
2/13/1996	3.559	16.851	71.9	3.235E+02	3.235E+02	1.636E+03	Yes
3/7/2006	3.51	55.574	39.6	1.052E+03	1.052E+03	5.396E+03	Yes
4/18/2006	3.42	48.055	46.2	8.865E+02	8.865E+02	4.666E+03	Yes
10/3/2006	3.41	7.846	79.7	1.443E+02	1.443E+02	7.617E+02	Yes
4/16/1991	3.4	2052.863	0.8	3.765E+04	3.765E+04	1.993E+05	Yes
10/7/2003	3.4	18.960	81.9	3.477E+02	3.477E+02	1.841E+03	Yes
11/1/2005	3.4	7.192	90.3	1.319E+02	1.319E+02	6.982E+02	Yes
12/27/2005	3.39	18.960	80.8	3.467E+02	3.467E+02	1.841E+03	Yes
10/4/1994	3.35	10.521	80.6	1.901E+02	1.901E+02	1.021E+03	Yes
9/13/2005	3.35	3.269	98	5.907E+01	5.907E+01	3.174E+02	Yes
7/23/1996	3.333	17.791	70.9	3.198E+02	3.198E+02	1.727E+03	Yes
1/4/1993	3.3	201.010	31.5	3.578E+03	3.578E+03	1.952E+04	Yes
12/2/2003	3.3	96.109	54.4	1.711E+03	1.711E+03	9.331E+03	Yes
2/21/2006	3.3	63.419	53	1.129E+03	1.129E+03	6.157E+03	Yes
10/8/1996	3.27	9.494	82.6	1.675E+02	1.675E+02	9.218E+02	Yes
10/16/1990	3.26	367.805	20.6	6.467E+03	6.467E+03	3.571E+04	Yes
10/11/2005	3.26	5.230	92.3	9.197E+01	9.197E+01	5.078E+02	Yes
7/18/2000	3.24	7.955	85.2	1.390E+02	1.390E+02	7.723E+02	Yes
9/10/2002	3.22	6.211	99.1	1.079E+02	1.079E+02	6.030E+02	Yes
9/7/1993	3.2	3.250	95.6	5.610E+01	5.610E+01	3.156E+02	Yes
11/5/1996	3.195	124.883	38.8	2.152E+03	2.152E+03	1.212E+04	Yes
8/13/1996	3.181	15.995	72.9	2.744E+02	2.744E+02	1.553E+03	Yes
11/10/1992	3.18	8.040	85	1.379E+02	1.379E+02	7.806E+02	Yes
3/15/2005	3.17	117.358	48.7	2.007E+03	2.007E+03	1.139E+04	Yes
6/6/1995	3.142	75.699	46.2	1.283E+03	1.283E+03	7.349E+03	Yes
7/13/1993	3.12	8.981	83.3	1.511E+02	1.511E+02	8.720E+02	Yes
3/28/1995	3.111	193.311	32.2	3.244E+03	3.244E+03	1.877E+04	Yes
3/8/1994	3.1	537.166	13.2	8.982E+03	8.982E+03	5.215E+04	Yes
8/8/1995	3.096	12.232	77.8	2.043E+02	2.043E+02	1.188E+03	Yes
9/8/1992	3.08	10.863	80	1.805E+02	1.805E+02	1.055E+03	Yes
2/14/1995	3.077	140.279	37	2.328E+03	2.328E+03	1.362E+04	Yes
2/11/2003	3.07	70.284	27.8	1.164E+03	1.164E+03	6.824E+03	Yes
10/28/1997	3.05	23.950	64.9	3.940E+02	3.940E+02	2.325E+03	Yes
9/28/2004	3.05	15.691	94.7	2.581E+02	2.581E+02	1.523E+03	Yes
9/16/1997	3.01	4.191	93.3	6.805E+01	6.805E+01	4.069E+02	Yes
11/3/1998	2.97	17.706	70.9	2.836E+02	2.836E+02	1.719E+03	Yes
7/29/2003	2.96	21.902	75.9	3.497E+02	3.497E+02	2.126E+03	Yes
10/6/1992	2.95	7.356	86.2	1.170E+02	1.170E+02	7.142E+02	Yes
3/12/1996	2.912	42.768	54.8	6.717E+02	6.717E+02	4.152E+03	Yes

**Table H-6. (continued)**

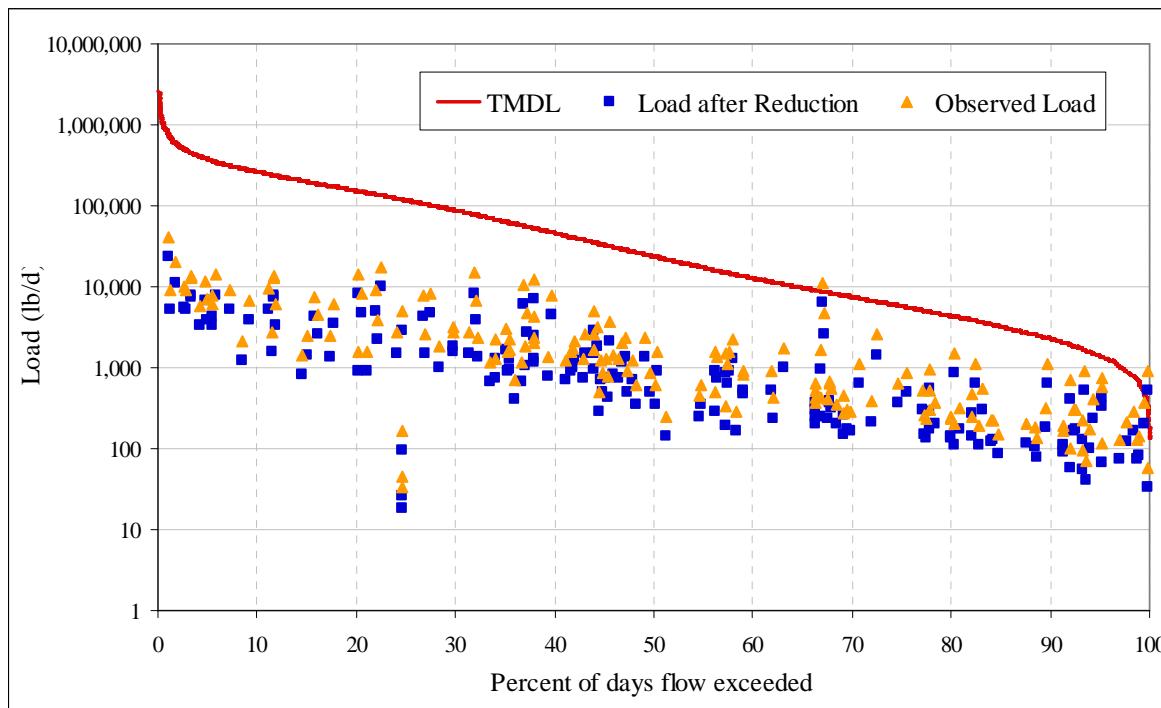
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/19/1992	2.88	28.056	61.8	4.358E+02	4.358E+02	2.724E+03	Yes
10/5/1999	2.88	2.395	97.3	3.720E+01	3.720E+01	2.325E+02	Yes
4/25/1995	2.879	148.833	36.1	2.311E+03	2.311E+03	1.445E+04	Yes
12/2/1997	2.872	48.927	52.7	7.579E+02	7.579E+02	4.750E+03	Yes
3/30/1993	2.87	118.895	39.6	1.841E+03	1.841E+03	1.154E+04	Yes
6/25/2002	2.87	9.807	83.5	1.518E+02	1.518E+02	9.522E+02	Yes
12/30/1997	2.849	342.144	21.9	5.258E+03	5.258E+03	3.322E+04	Yes
8/1/2006	2.84	2.288	95.6	3.505E+01	3.505E+01	2.222E+02	Yes
8/27/2002	2.83	40.536	78.4	6.188E+02	6.188E+02	3.936E+03	Yes
9/10/1996	2.822	7.955	85.2	1.211E+02	1.211E+02	7.723E+02	Yes
6/21/2005	2.81	33.671	78.2	5.103E+02	5.103E+02	3.269E+03	Yes
1/28/1992	2.8	130.015	38.1	1.964E+03	1.964E+03	1.262E+04	Yes
2/19/1991	2.78	787.786	6.8	1.181E+04	1.181E+04	7.648E+04	Yes
3/26/1991	2.78	192.456	32.2	2.886E+03	2.886E+03	1.869E+04	Yes
4/24/2000	2.78	46.788	53.3	7.016E+02	7.016E+02	4.543E+03	Yes
9/9/2003	2.78	21.576	76.1	3.235E+02	3.235E+02	2.095E+03	Yes
6/17/1997	2.772	267.728	26.5	4.003E+03	4.003E+03	2.599E+04	Yes
7/12/1994	2.77	222.394	29.8	3.323E+03	3.323E+03	2.159E+04	Yes
5/7/1996	2.764	216.406	30.2	3.226E+03	3.226E+03	2.101E+04	Yes
4/5/1994	2.76	365.239	20.7	5.437E+03	5.437E+03	3.546E+04	Yes
12/1/1998	2.75	21.042	67.5	3.121E+02	3.121E+02	2.043E+03	Yes
1/22/2002	2.75	76.168	26.9	1.130E+03	1.130E+03	7.395E+03	Yes
5/10/2005	2.75	67.669	67.1	1.004E+03	1.004E+03	6.570E+03	Yes
12/19/2000	2.74	178.162	27.8	2.633E+03	2.633E+03	1.730E+04	Yes
2/10/1998	2.73	342.144	21.9	5.038E+03	5.038E+03	3.322E+04	Yes
8/23/1994	2.71	61.415	49.2	8.977E+02	8.977E+02	5.963E+03	Yes
8/4/1998	2.71	4.448	92.9	6.502E+01	6.502E+01	4.318E+02	Yes
3/30/2004	2.71	141.549	30.4	2.069E+03	2.069E+03	1.374E+04	Yes
7/2/1991	2.69	14.969	74.1	2.172E+02	2.172E+02	1.453E+03	Yes
1/18/2000	2.69	14.712	74.5	2.135E+02	2.135E+02	1.428E+03	Yes
3/3/1992	2.67	339.578	22.1	4.890E+03	4.890E+03	3.297E+04	Yes
11/12/1991	2.65	60.132	49.6	8.595E+02	8.595E+02	5.838E+03	Yes
8/26/1997	2.646	8.040	85	1.148E+02	1.148E+02	7.806E+02	Yes
7/11/1995	2.642	30.451	60.3	4.339E+02	4.339E+02	2.956E+03	Yes
8/3/1999	2.63	5.731	89.8	8.130E+01	8.130E+01	5.564E+02	Yes
2/19/2002	2.63	392.284	23.4	5.565E+03	5.565E+03	3.809E+04	Yes
1/21/2003	2.63	63.746	49.7	9.043E+02	9.043E+02	6.189E+03	Yes
8/3/1993	2.62	10.949	79.8	1.547E+02	1.547E+02	1.063E+03	Yes
8/15/2000	2.62	2.224	97.7	3.143E+01	3.143E+01	2.159E+02	Yes
9/1/1998	2.61	3.593	94.7	5.057E+01	5.057E+01	3.488E+02	Yes
3/27/2000	2.61	121.461	39.2	1.710E+03	1.710E+03	1.179E+04	Yes
6/30/1998	2.604	4.277	93.1	6.007E+01	6.007E+01	4.152E+02	Yes
2/25/1992	2.6	605.595	11.1	8.493E+03	8.493E+03	5.880E+04	Yes
9/7/1999	2.59	2.481	97.2	3.465E+01	3.465E+01	2.408E+02	Yes
5/8/2001	2.59	47.728	45.1	6.668E+02	6.668E+02	4.634E+03	Yes
7/20/2004	2.58	25.825	65.9	3.594E+02	3.594E+02	2.507E+03	Yes
2/13/2001	2.57	813.988	4.5	1.128E+04	1.128E+04	7.903E+04	Yes
6/21/1994	2.56	45.420	53.9	6.272E+02	6.272E+02	4.410E+03	Yes
7/19/2005	2.54	76.495	56.7	1.048E+03	1.048E+03	7.427E+03	Yes
7/11/2006	2.53	5.884	87	8.030E+01	8.030E+01	5.713E+02	Yes
2/18/1997	2.527	597.041	11.3	8.138E+03	8.138E+03	5.797E+04	Yes
1/13/1998	2.527	816.869	6.3	1.113E+04	1.113E+04	7.931E+04	Yes
12/3/1996	2.526	780.088	6.9	1.063E+04	1.063E+04	7.574E+04	Yes
6/3/2003	2.51	36.940	58.2	5.001E+02	5.001E+02	3.586E+03	Yes
4/9/1996	2.503	55.855	50.8	7.541E+02	7.541E+02	5.423E+03	Yes
5/16/2000	2.5	103.499	41.6	1.396E+03	1.396E+03	1.005E+04	Yes
7/14/1992	2.48	87.247	44	1.167E+03	1.167E+03	8.471E+03	Yes
6/6/2006	2.48	15.038	70.5	2.012E+02	2.012E+02	1.460E+03	Yes
4/7/1992	2.47	98.366	42.3	1.310E+03	1.310E+03	9.550E+03	Yes
12/5/2006	2.46	132.723	46.6	1.761E+03	1.761E+03	1.289E+04	Yes
7/6/1999	2.44	18.647	69.9	2.454E+02	2.454E+02	1.810E+03	Yes
6/12/2001	2.43	53.939	53.1	7.070E+02	7.070E+02	5.237E+03	Yes
3/2/1999	2.41	62.783	49	8.161E+02	8.161E+02	6.096E+03	Yes

**Table H-6. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/23/1995	2.407	45,077	54	5.852E+02	5.852E+02	4.376E+03	Yes
8/11/1992	2.4	37,208	56.9	4.817E+02	4.817E+02	3.612E+03	Yes
3/2/1993	2.4	396,032	19.2	5.127E+03	5.127E+03	3.845E+04	Yes
6/1/2004	2.4	72,572	34.6	9.395E+02	9.395E+02	7.046E+03	Yes
4/15/1997	2.398	210,419	30.7	2.722E+03	2.722E+03	2.043E+04	Yes
1/5/1993	2.39	237,790	28.6	3.065E+03	3.065E+03	2.309E+04	Yes
6/1/1993	2.39	39,518	56	5.094E+02	5.094E+02	3.837E+03	Yes
8/23/2004	2.38	114,089	48	1.465E+03	1.465E+03	1.108E+04	Yes
10/5/1993	2.36	13,686	75.9	1.742E+02	1.742E+02	1.329E+03	Yes
11/21/1994	2.36	156,531	35.2	1.993E+03	1.993E+03	1.520E+04	Yes
6/2/1998	2.35	22,838	65.9	2.895E+02	2.895E+02	2.217E+03	Yes
1/15/2001	2.32	276,887	13.4	3.465E+03	3.465E+03	2.688E+04	Yes
4/8/2003	2.32	134,684	46.8	1.685E+03	1.685E+03	1.308E+04	Yes
5/13/1997	2.304	55,427	50.9	6.888E+02	6.888E+02	5.381E+03	Yes
2/24/2004	2.29	134,684	25.9	1.664E+03	1.664E+03	1.308E+04	Yes
11/7/2006	2.29	787,836	40	9.731E+03	9.731E+03	7.649E+04	Yes
12/14/1999	2.28	158,242	35.1	1.946E+03	1.946E+03	1.536E+04	Yes
4/3/2001	2.28	127,492	36.5	1.568E+03	1.568E+03	1.238E+04	Yes
5/23/2006	2.27	31,383	63.7	3.842E+02	3.842E+02	3.047E+03	Yes
6/18/1996	2.257	28,997	61.2	3.530E+02	3.530E+02	2.815E+03	Yes
1/22/1991	2.25	393,465	19.3	4.775E+03	4.775E+03	3.820E+04	Yes
4/14/1998	2.25	53,374	51.5	6.478E+02	6.478E+02	5.182E+03	Yes
7/30/2002	2.24	29,748	82.1	3.594E+02	3.594E+02	2.888E+03	Yes
7/30/1991	2.22	25,490	63.6	3.052E+02	3.052E+02	2.475E+03	Yes
9/5/2000	2.2	0.855	99.7	1.015E+01	1.015E+01	8.305E+01	Yes
11/23/1992	2.18	163,374	34.6	1.921E+03	1.921E+03	1.586E+04	Yes
1/27/2004	2.16	454,395	21.6	5.294E+03	5.294E+03	4.412E+04	Yes
6/4/1991	2.15	46,874	53.3	5.436E+02	5.436E+02	4.551E+03	Yes
3/11/2003	2.15	158,875	31.8	1.842E+03	1.842E+03	1.542E+04	Yes
10/5/1998	2.11	77,838	45.6	8.859E+02	8.859E+02	7.557E+03	Yes
12/7/2004	2.11	987,247	4.2	1.124E+04	1.124E+04	9.585E+04	Yes
2/2/1993	2.09	108,631	40.9	1.225E+03	1.225E+03	1.055E+04	Yes
3/19/2002	2.08	791,105	0.8	8.875E+03	8.875E+03	7.681E+04	Yes
5/13/2003	2.08	88,918	26	9.976E+02	9.976E+02	8.633E+03	Yes
3/11/1997	2,073	1111,968	3.3	1.243E+04	1.243E+04	1.080E+05	Yes
2/1/1994	2.07	1043,539	3.7	1.165E+04	1.165E+04	1.013E+05	Yes
5/11/1999	2.05	69,028	47.5	7.633E+02	7.633E+02	6.702E+03	Yes
5/14/2002	2.04	467,471	15.9	5.144E+03	5.144E+03	4.539E+04	Yes
4/16/2002	2.03	119,320	40	1.306E+03	1.306E+03	1.158E+04	Yes
8/14/2001	2	21,902	63.4	2.363E+02	2.363E+02	2.126E+03	Yes
6/30/2003	1.99	112,128	38.3	1.204E+03	1.204E+03	1.089E+04	Yes
1/9/2007	1.99	405,360	24.7	4.351E+03	4.351E+03	3.936E+04	Yes
1/5/1999	1.98	567,104	12.2	6.056E+03	6.056E+03	5.506E+04	Yes
4/26/2004	1.97	536,121	22.1	5.697E+03	5.697E+03	5.205E+04	Yes
5/4/2004	1.97	292,578	23.7	3.109E+03	3.109E+03	2.841E+04	Yes
1/24/1995	1.964	975,110	4.4	1.033E+04	1.033E+04	9.467E+04	Yes
4/20/1999	1.95	554,273	12.6	5.830E+03	5.830E+03	5.381E+04	Yes
12/10/1991	1.94	675,734	9.1	7.071E+03	7.071E+03	6.561E+04	Yes
5/19/1998	1.94	17,107	71.5	1.790E+02	1.790E+02	1.661E+03	Yes
10/19/2004	1.92	1219,348	35.1	1.263E+04	1.263E+04	1.184E+05	Yes
3/6/2001	1.9	650,537	5	6.667E+03	6.667E+03	6.316E+04	Yes
6/22/1992	1.8	164,229	34.6	1.594E+03	1.594E+03	1.594E+04	Yes
2/2/1999	1.79	915,235	5.1	8.836E+03	8.836E+03	8.886E+04	Yes
12/18/2001	1.77	2072,565	0.4	1.979E+04	1.979E+04	2.012E+05	Yes
4/12/2005	1.74	964,364	13.3	9.051E+03	9.051E+03	9.363E+04	Yes
6/6/2000	1.71	205,286	31.1	1.893E+03	1.893E+03	1.993E+04	Yes
11/2/2004	1.71	2602,147	22.4	2.400E+04	2.400E+04	2.526E+05	Yes
3/17/1998	1.65	651,784	9.8	5.801E+03	5.801E+03	6.328E+04	Yes
7/3/2001	1.65	62,112	54.4	5.528E+02	5.528E+02	6.030E+03	Yes
5/4/1994	1.53	265,162	26.6	2.188E+03	2.188E+03	2.574E+04	Yes
1/4/2005	1.53	3269,029	10.3	2.698E+04	2.698E+04	3.174E+05	Yes
5/7/1991	1.28	872,467	5.5	6.024E+03	6.024E+03	8.471E+04	Yes

**Table H-6. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/23/1995	2.407	45,077	54	5.852E+02	5.852E+02	4.376E+03	Yes
8/11/1992	2.4	37,208	56.9	4.817E+02	4.817E+02	3.612E+03	Yes
3/2/1993	2.4	396,032	19.2	5.127E+03	5.127E+03	3.845E+04	Yes
6/1/2004	2.4	72,572	34.6	9.395E+02	9.395E+02	7.046E+03	Yes
4/15/1997	2.398	210,419	30.7	2.722E+03	2.722E+03	2.043E+04	Yes
1/5/1993	2.39	237,790	28.6	3.065E+03	3.065E+03	2.309E+04	Yes
6/1/1993	2.39	39,518	56	5.094E+02	5.094E+02	3.837E+03	Yes
8/23/2004	2.38	114,089	48	1.465E+03	1.465E+03	1.108E+04	Yes
10/5/1993	2.36	13,686	75.9	1.742E+02	1.742E+02	1.329E+03	Yes
11/21/1994	2.36	156,531	35.2	1.993E+03	1.993E+03	1.520E+04	Yes
6/2/1998	2.35	22,838	65.9	2.895E+02	2.895E+02	2.217E+03	Yes
1/15/2001	2.32	276,887	13.4	3.465E+03	3.465E+03	2.688E+04	Yes
4/8/2003	2.32	134,684	46.8	1.685E+03	1.685E+03	1.308E+04	Yes
5/13/1997	2.304	55,427	50.9	6.888E+02	6.888E+02	5.381E+03	Yes
2/24/2004	2.29	134,684	25.9	1.664E+03	1.664E+03	1.308E+04	Yes
11/7/2006	2.29	787,836	40	9.731E+03	9.731E+03	7.649E+04	Yes
12/14/1999	2.28	158,242	35.1	1.946E+03	1.946E+03	1.536E+04	Yes
4/3/2001	2.28	127,492	36.5	1.568E+03	1.568E+03	1.238E+04	Yes
5/23/2006	2.27	31,383	63.7	3.842E+02	3.842E+02	3.047E+03	Yes
6/18/1996	2.257	28,997	61.2	3.530E+02	3.530E+02	2.815E+03	Yes
1/22/1991	2.25	393,465	19.3	4.775E+03	4.775E+03	3.820E+04	Yes
4/14/1998	2.25	53,374	51.5	6.478E+02	6.478E+02	5.182E+03	Yes
7/30/2002	2.24	29,748	82.1	3.594E+02	3.594E+02	2.888E+03	Yes
7/30/1991	2.22	25,490	63.6	3.052E+02	3.052E+02	2.475E+03	Yes
9/5/2000	2.2	0.855	99.7	1.015E+01	1.015E+01	8.305E+01	Yes
11/23/1992	2.18	163,374	34.6	1.921E+03	1.921E+03	1.586E+04	Yes
1/27/2004	2.16	454,395	21.6	5.294E+03	5.294E+03	4.412E+04	Yes
6/4/1991	2.15	46,874	53.3	5.436E+02	5.436E+02	4.551E+03	Yes
3/11/2003	2.15	158,875	31.8	1.842E+03	1.842E+03	1.542E+04	Yes
10/5/1998	2.11	77,838	45.6	8.859E+02	8.859E+02	7.557E+03	Yes
12/7/2004	2.11	987,247	4.2	1.124E+04	1.124E+04	9.585E+04	Yes
2/2/1993	2.09	108,631	40.9	1.225E+03	1.225E+03	1.055E+04	Yes
3/19/2002	2.08	791,105	0.8	8.875E+03	8.875E+03	7.681E+04	Yes
5/13/2003	2.08	88,918	26	9.976E+02	9.976E+02	8.633E+03	Yes
3/11/1997	2,073	1111,968	3.3	1.243E+04	1.243E+04	1.080E+05	Yes
2/1/1994	2.07	1043,539	3.7	1.165E+04	1.165E+04	1.013E+05	Yes
5/11/1999	2.05	69,028	47.5	7.633E+02	7.633E+02	6.702E+03	Yes
5/14/2002	2.04	467,471	15.9	5.144E+03	5.144E+03	4.539E+04	Yes
4/16/2002	2.03	119,320	40	1.306E+03	1.306E+03	1.158E+04	Yes
8/14/2001	2	21,902	63.4	2.363E+02	2.363E+02	2.126E+03	Yes
6/30/2003	1.99	112,128	38.3	1.204E+03	1.204E+03	1.089E+04	Yes
1/9/2007	1.99	405,360	24.7	4.351E+03	4.351E+03	3.936E+04	Yes
1/5/1999	1.98	567,104	12.2	6.056E+03	6.056E+03	5.506E+04	Yes
4/26/2004	1.97	536,121	22.1	5.697E+03	5.697E+03	5.205E+04	Yes
5/4/2004	1.97	292,578	23.7	3.109E+03	3.109E+03	2.841E+04	Yes
1/24/1995	1.964	975,110	4.4	1.033E+04	1.033E+04	9.467E+04	Yes
4/20/1999	1.95	554,273	12.6	5.830E+03	5.830E+03	5.381E+04	Yes
12/10/1991	1.94	675,734	9.1	7.071E+03	7.071E+03	6.561E+04	Yes
5/19/1998	1.94	17,107	71.5	1.790E+02	1.790E+02	1.661E+03	Yes
10/19/2004	1.92	1219,348	35.1	1.263E+04	1.263E+04	1.184E+05	Yes
3/6/2001	1.9	650,537	5	6.667E+03	6.667E+03	6.316E+04	Yes
6/22/1992	1.8	164,229	34.6	1.594E+03	1.594E+03	1.594E+04	Yes
2/2/1999	1.79	915,235	5.1	8.836E+03	8.836E+03	8.886E+04	Yes
12/18/2001	1.77	2072,565	0.4	1.979E+04	1.979E+04	2.012E+05	Yes
4/12/2005	1.74	964,364	13.3	9.051E+03	9.051E+03	9.363E+04	Yes
6/6/2000	1.71	205,286	31.1	1.893E+03	1.893E+03	1.993E+04	Yes
11/2/2004	1.71	2602,147	22.4	2.400E+04	2.400E+04	2.526E+05	Yes
3/17/1998	1.65	651,784	9.8	5.801E+03	5.801E+03	6.328E+04	Yes
7/3/2001	1.65	62,112	54.4	5.528E+02	5.528E+02	6.030E+03	Yes
5/4/1994	1.53	265,162	26.6	2.188E+03	2.188E+03	2.574E+04	Yes
1/4/2005	1.53	3269,029	10.3	2.698E+04	2.698E+04	3.174E+05	Yes
5/7/1991	1.28	872,467	5.5	6.024E+03	6.024E+03	8.471E+04	Yes



**Figure H-4. Chloride load duration curve for station OUA0041 for Saline River (HUC/reach 08040203-010)**

**Table H-7. Allowable chloride load for station OUA0041 for Saline River (HUC/reach 08040203-010)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
					<b>92,250.1</b>	
9/16/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/17/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/20/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/26/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/27/1954	3.8	100.000	1.242	0.00	134.0063	0.00E+00
9/15/1954	4.1	100.000	1.340	0.00	144.5858	0.00E+00
9/18/1954	4.1	100.000	1.340	0.00	144.5858	0.00E+00
9/19/1954	4.1	100.000	1.340	0.00	144.5858	0.00E+00
9/21/1954	4.1	100.000	1.340	0.00	144.5858	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/31/1949	53600	0.100	17521.998	0.00	1890194.6864	0.00E+00
2/1/1949	54800	0.100	17914.282	0.00	1932512.4779	0.00E+00
1/1/1988	59400	0.100	19418.035	0.00	2094730.6785	0.00E+00
5/6/1958	59600	0.100	19483.416	0.00	2101783.6438	0.00E+00
5/20/1968	59600	0.100	19483.416	0.00	2101783.6438	0.00E+00
12/30/1987	61500	0.100	20104.531	0.00	2168786.8136	0.00E+00
5/5/1958	65900	0.100	21542.904	0.00	2323952.0491	0.00E+00
12/31/1987	67000	0.100	21902.498	0.00	2362743.3580	0.00E+00
5/4/1958	68500	0.100	22392.852	0.00	2415640.5973	0.00E+00
5/3/1958	69500	0.100	22719.755	0.00	2450905.4236	0.00E+00
5/19/1968	71500	0.100	23373.561	0.10	2521435.0760	2.52E+03
5/18/1968	72500	0.000	23700.464	0.00	2556699.9023	0.00E+00

**Table H-8. Existing load for chloride for station OUA0041 for Saline River (HUC/reach 08040203-010)**

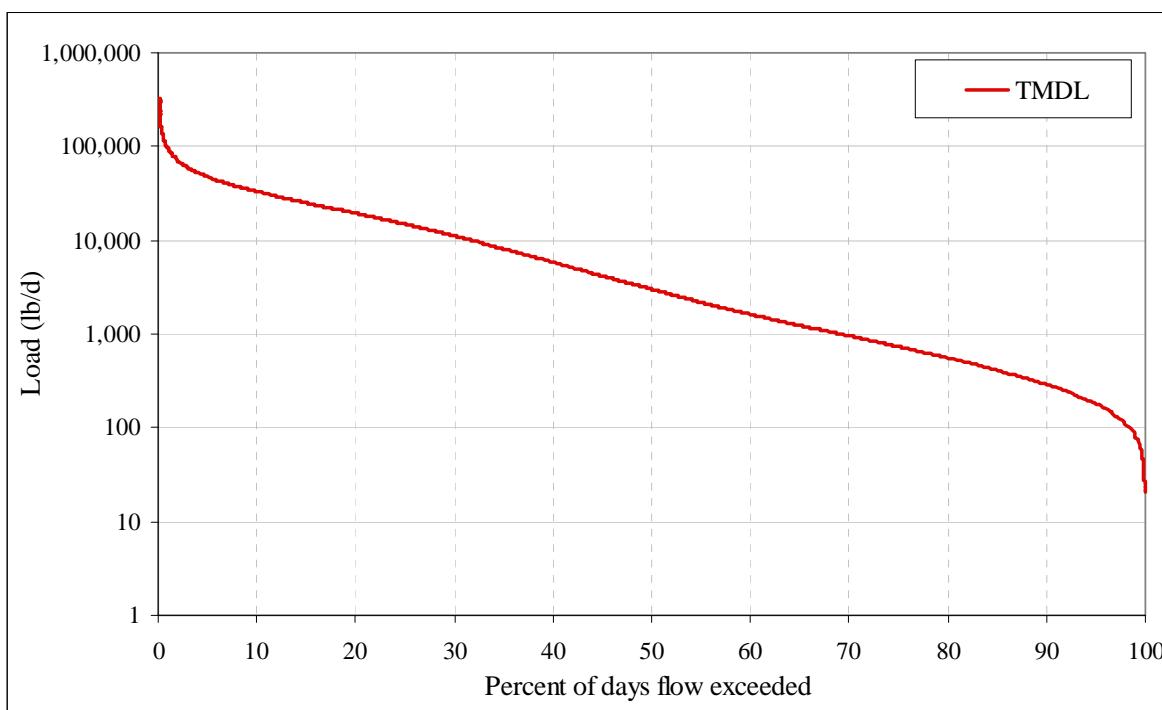
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
9/16/1997	31.5	4.191	92.1	7.121E+02	4.069E+02	4.069E+02	Yes
10/31/2000	16	10.461	99.9	9.028E+02	5.159E+02	1.016E+03	Yes
10/24/2000	14.57	4.577	99.5	3.597E+02	2.055E+02	4.443E+02	Yes
8/1/2006	14.3	2.288	93.9	1.765E+02	1.009E+02	2.222E+02	Yes
9/5/1995	13.838	1.711	98.8	1.277E+02	7.296E+01	1.661E+02	Yes
9/5/2000	12.8	0.855	99.8	5.905E+01	3.375E+01	8.305E+01	Yes
9/13/2005	12.2	3.269	97.7	2.151E+02	1.229E+02	3.174E+02	Yes
10/5/1999	11.1	2.395	99	1.434E+02	8.194E+01	2.325E+02	Yes
9/25/2001	10.92	5.230	92.5	3.081E+02	1.760E+02	5.078E+02	Yes
8/15/2000	10.85	2.224	96.9	1.302E+02	7.437E+01	2.159E+02	Yes
10/7/2003	10.8	18.960	82.4	1.104E+03	6.311E+02	1.841E+03	Yes
11/1/2005	10.4	7.192	94.3	4.034E+02	2.305E+02	6.982E+02	Yes
10/3/1995	9.214	4.448	93.3	2.211E+02	1.263E+02	4.318E+02	Yes
9/28/2004	8.76	15.691	95.2	7.414E+02	4.237E+02	1.523E+03	Yes
9/7/1999	8.75	2.481	95.2	1.171E+02	6.690E+01	2.408E+02	Yes
8/16/2005	8.74	12.095	95.2	5.702E+02	3.258E+02	1.174E+03	Yes
9/10/2002	8.51	6.211	98.4	2.851E+02	1.629E+02	6.030E+02	Yes
11/13/2001	8.39	4.904	84.3	2.219E+02	1.268E+02	4.761E+02	Yes
9/5/2006	8.17	1.635	93.7	7.203E+01	4.116E+01	1.587E+02	Yes
8/8/1995	8.063	12.232	77.1	5.320E+02	3.040E+02	1.188E+03	Yes
10/23/2001	7.43	6.211	51.3	2.489E+02	1.422E+02	6.030E+02	Yes
11/4/2003	7.35	28.441	89.8	1.128E+03	6.443E+02	2.761E+03	Yes
10/11/2005	7.17	5.230	87.5	2.023E+02	1.156E+02	5.078E+02	Yes
11/13/1990	7.11	67.146	43.1	2.575E+03	1.471E+03	6.519E+03	Yes
6/30/1998	6.991	4.277	91.3	1.613E+02	9.215E+01	4.152E+02	Yes
10/3/2006	6.91	7.846	69.8	2.924E+02	1.671E+02	7.617E+02	Yes
10/28/1997	6.56	23.950	75.6	8.474E+02	4.842E+02	2.325E+03	Yes
10/4/1994	6.34	10.521	78.4	3.598E+02	2.056E+02	1.021E+03	Yes
8/3/1999	6.01	5.731	88.4	1.858E+02	1.062E+02	5.564E+02	Yes
12/2/1997	5.981	48.927	57.7	1.578E+03	9.019E+02	4.750E+03	Yes
1/21/1997	5.962	454.196	32	1.461E+04	8.346E+03	4.410E+04	Yes
6/25/2002	5.82	9.807	77.8	3.079E+02	1.759E+02	9.522E+02	Yes
8/26/1997	5.787	8.040	82.1	2.510E+02	1.434E+02	7.806E+02	Yes
5/13/1997	5.714	55.427	41.9	1.708E+03	9.762E+02	5.381E+03	Yes
11/28/1995	5.703	10.093	80.9	3.105E+02	1.774E+02	9.799E+02	Yes
2/10/1998	5.68	342.144	36.8	1.048E+04	5.990E+03	3.322E+04	Yes
7/18/2000	5.65	7.955	80	2.424E+02	1.385E+02	7.723E+02	Yes
11/3/1998	5.57	17.706	66.3	5.319E+02	3.040E+02	1.719E+03	Yes
8/4/1998	5.55	4.448	88.7	1.331E+02	7.609E+01	4.318E+02	Yes
7/29/2003	5.51	21.902	67.8	6.509E+02	3.720E+02	2.126E+03	Yes
9/10/1996	5.465	7.955	80	2.345E+02	1.340E+02	7.723E+02	Yes
9/9/2003	5.46	21.576	74.7	6.354E+02	3.631E+02	2.095E+03	Yes
9/7/1993	5.4	3.250	93.3	9.467E+01	5.410E+01	3.156E+02	Yes
11/2/1993	5.4	15.311	69.1	4.460E+02	2.548E+02	1.487E+03	Yes
12/11/1990	5.33	57.822	44	1.662E+03	9.499E+02	5.614E+03	Yes
8/3/1993	5.32	10.949	89.5	3.142E+02	1.795E+02	1.063E+03	Yes
1/9/1996	5.309	43.281	41.2	1.239E+03	7.082E+02	4.202E+03	Yes
10/15/2002	5.3	11.769	57.2	3.364E+02	1.922E+02	1.143E+03	Yes
9/18/1990	5.29	6.757	91.3	1.928E+02	1.102E+02	6.561E+02	Yes
12/27/2005	5.24	18.960	83.1	5.359E+02	3.062E+02	1.841E+03	Yes
4/24/2000	5.22	46.788	56.4	1.317E+03	7.528E+02	4.543E+03	Yes
6/21/2005	5.22	33.671	77.9	9.480E+02	5.417E+02	3.269E+03	Yes
10/8/1996	5.203	9.494	69.1	2.665E+02	1.523E+02	9.218E+02	Yes
9/1/1998	5.15	3.593	92	9.979E+01	5.702E+01	3.488E+02	Yes
11/10/1992	5.05	8.040	84	2.190E+02	1.251E+02	7.806E+02	Yes
4/15/1997	5.028	210.419	4.3	5.707E+03	3.261E+03	2.043E+04	Yes
3/7/2006	5.02	55.574	57.2	1.505E+03	8.599E+02	5.396E+03	Yes
4/14/1998	4.967	53.374	46	1.430E+03	8.171E+02	5.182E+03	Yes
12/1/1998	4.94	21.042	67.9	5.607E+02	3.204E+02	2.043E+03	Yes
10/6/1992	4.92	7.356	82.8	1.952E+02	1.115E+02	7.142E+02	Yes
7/23/1996	4.846	17.791	82.1	4.650E+02	2.657E+02	1.727E+03	Yes
8/13/1996	4.83	15.995	62.1	4.167E+02	2.381E+02	1.553E+03	Yes
7/11/2006	4.79	5.884	84.7	1.520E+02	8.687E+01	5.713E+02	Yes

**Table H-8. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/8/2001	4.75	47.728	44.7	1.223E+03	6.987E+02	4.634E+03	Yes
5/10/2005	4.7	67.669	63.1	1.715E+03	9.803E+02	6.570E+03	Yes
2/21/2006	4.7	63.419	56.2	1.608E+03	9.187E+02	6.157E+03	Yes
6/3/2003	4.62	36.940	59	9.205E+02	5.260E+02	3.586E+03	Yes
1/4/1993	4.56	201.010	43.9	4.944E+03	2.825E+03	1.952E+04	Yes
5/19/1998	4.56	17.107	66.4	4.208E+02	2.404E+02	1.661E+03	Yes
2/13/1996	4.532	16.851	67.5	4.119E+02	2.354E+02	1.636E+03	Yes
12/2/2003	4.51	96.109	47.1	2.338E+03	1.336E+03	9.331E+03	Yes
12/30/1997	4.478	342.144	27.4	8.264E+03	4.722E+03	3.322E+04	Yes
10/16/1990	4.45	367.805	21.9	8.828E+03	5.045E+03	3.571E+04	Yes
7/6/1999	4.39	18.647	54.6	4.415E+02	2.523E+02	1.810E+03	Yes
7/20/2004	4.39	25.825	48.3	6.115E+02	3.494E+02	2.507E+03	Yes
1/18/2000	4.35	14.712	68.4	3.452E+02	1.973E+02	1.428E+03	Yes
4/18/2006	4.33	48.055	57.5	1.122E+03	6.413E+02	4.666E+03	Yes
8/14/2001	4.32	21.902	77.9	5.104E+02	2.916E+02	2.126E+03	Yes
2/14/1995	4.274	140.279	44.3	3.234E+03	1.848E+03	1.362E+04	Yes
8/27/2002	4.23	40.536	93.5	9.249E+02	5.285E+02	3.936E+03	Yes
5/19/1992	4.19	28.056	66.4	6.341E+02	3.623E+02	2.724E+03	Yes
7/30/2002	4.18	29.748	67.8	6.707E+02	3.833E+02	2.888E+03	Yes
2/18/1997	4.162	597.041	11.7	1.340E+04	7.659E+03	5.797E+04	Yes
4/9/1996	4.157	55.855	47.9	1.252E+03	7.156E+02	5.423E+03	Yes
3/30/1993	4.15	118.895	31.4	2.661E+03	1.521E+03	1.154E+04	Yes
2/11/2003	4.1	70.284	41.6	1.554E+03	8.882E+02	6.824E+03	Yes
9/8/1992	4.08	10.863	77.4	2.391E+02	1.366E+02	1.055E+03	Yes
11/5/1996	4.075	124.883	29.7	2.745E+03	1.568E+03	1.212E+04	Yes
3/15/2005	4.07	117.358	44	2.576E+03	1.472E+03	1.139E+04	Yes
7/13/1993	4.06	8.981	80.3	1.967E+02	1.124E+02	8.720E+02	Yes
4/7/1992	3.99	98.366	42	2.117E+03	1.210E+03	9.550E+03	Yes
6/12/2001	3.96	53.939	36.7	1.152E+03	6.583E+02	5.237E+03	Yes
10/31/1995	3.954	13.771	92.3	2.937E+02	1.678E+02	1.337E+03	Yes
4/3/2007	3.92	7.846	24.7	1.659E+02	9.479E+01	7.617E+02	Yes
2/13/2001	3.9	813.988	22.6	1.712E+04	9.784E+03	7.903E+04	Yes
2/1/2005	3.9	108.205	34	2.276E+03	1.301E+03	1.051E+04	Yes
1/22/2002	3.89	76.168	35.3	1.598E+03	9.132E+02	7.395E+03	Yes
7/12/1994	3.87	222.394	67.2	4.642E+03	2.653E+03	2.159E+04	Yes
3/12/1996	3.859	42.768	47.3	8.902E+02	5.087E+02	4.152E+03	Yes
2/25/1992	3.82	605.595	37.9	1.248E+04	7.130E+03	5.880E+04	Yes
3/2/1999	3.79	62.783	45.3	1.283E+03	7.334E+02	6.096E+03	Yes
3/28/1995	3.78	193.311	22.2	3.941E+03	2.252E+03	1.877E+04	Yes
2/19/2002	3.75	392.284	39.7	7.935E+03	4.534E+03	3.809E+04	Yes
6/21/1994	3.72	45.420	61.8	9.113E+02	5.208E+02	4.410E+03	Yes
7/2/1991	3.71	14.969	69.5	2.995E+02	1.712E+02	1.453E+03	Yes
1/21/2003	3.71	63.746	46.5	1.276E+03	7.289E+02	6.189E+03	Yes
3/13/2007	3.7	1.635	24.7	3.262E+01	1.864E+01	1.587E+02	Yes
4/16/1991	3.65	2052.863	1.1	4.042E+04	2.309E+04	1.993E+05	Yes
5/23/2006	3.65	31.383	54.8	6.178E+02	3.531E+02	3.047E+03	Yes
6/1/2004	3.63	72.572	14.5	1.421E+03	8.120E+02	7.046E+03	Yes
3/26/1991	3.62	192.456	45.5	3.758E+03	2.147E+03	1.869E+04	Yes
10/5/1998	3.62	77.838	80.4	1.520E+03	8.685E+02	7.557E+03	Yes
1/22/1991	3.59	393.465	5.5	7.619E+03	4.354E+03	3.820E+04	Yes
6/30/2003	3.58	112.128	8.5	2.165E+03	1.237E+03	1.089E+04	Yes
6/6/2006	3.58	15.038	58.4	2.904E+02	1.659E+02	1.460E+03	Yes
2/6/2007	3.58	2.288	24.7	4.419E+01	2.525E+01	2.222E+02	Yes
11/12/1991	3.56	60.132	33.5	1.155E+03	6.598E+02	5.838E+03	Yes
10/5/1993	3.54	13.686	77.3	2.613E+02	1.493E+02	1.329E+03	Yes
7/14/1992	3.52	87.247	66.9	1.656E+03	9.466E+02	8.471E+03	Yes
7/15/1997	3.507	18.989	66.4	3.592E+02	2.053E+02	1.844E+03	Yes
5/23/1995	3.502	45.077	49.7	8.515E+02	4.866E+02	4.376E+03	Yes
3/27/2000	3.49	121.461	37.9	2.286E+03	1.307E+03	1.179E+04	Yes
6/2/1998	3.48	22.838	66.9	4.287E+02	2.450E+02	2.217E+03	Yes
8/11/1992	3.47	37.208	36	6.964E+02	3.979E+02	3.612E+03	Yes
2/24/2004	3.47	134.684	15	2.521E+03	1.440E+03	1.308E+04	Yes
4/5/1994	3.43	365.239	9.2	6.757E+03	3.861E+03	3.546E+04	Yes

**Table H-8. (continued)**

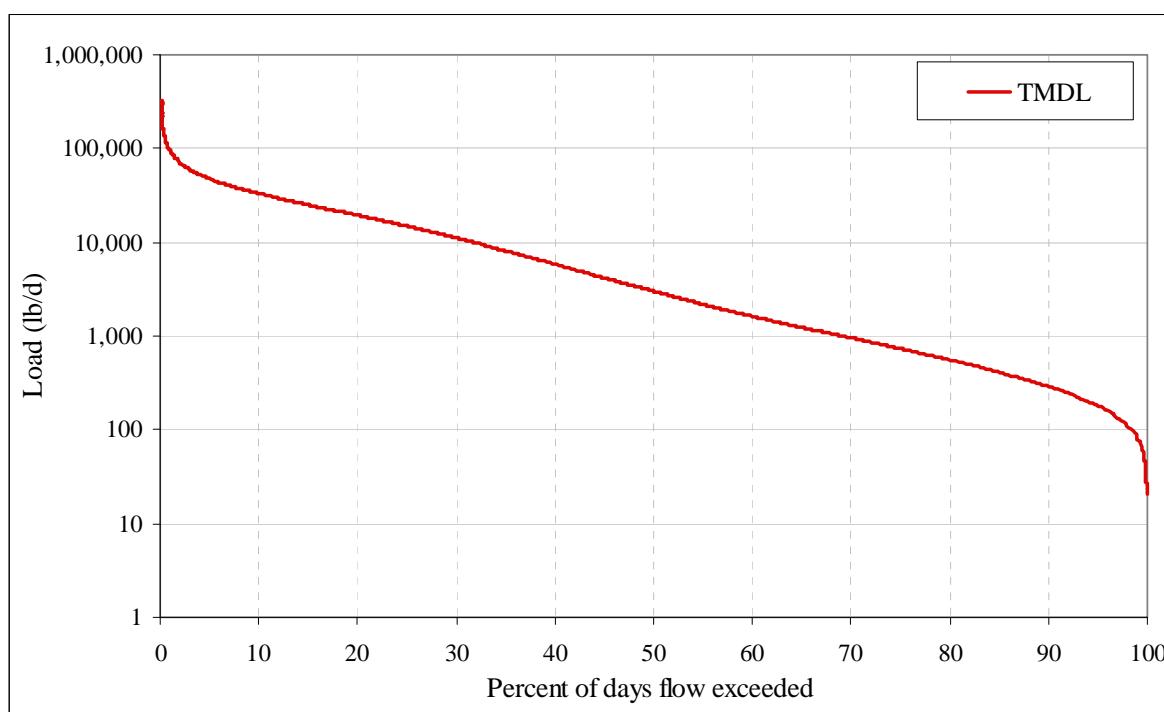
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
1/28/1992	3.42	130.015	32.2	2.398E+03	1.370E+03	1.262E+04	Yes
5/11/1999	3.42	69.028	34	1.273E+03	7.276E+02	6.702E+03	Yes
3/30/2004	3.4	141.549	26.9	2.596E+03	1.483E+03	1.374E+04	Yes
12/17/2002	3.38	162.144	35.1	2.956E+03	1.689E+03	1.574E+04	Yes
3/3/1992	3.37	339.578	17.8	6.173E+03	3.527E+03	3.297E+04	Yes
12/19/2000	3.37	178.162	29.8	3.238E+03	1.851E+03	1.730E+04	Yes
2/19/1991	3.32	787.786	20.3	1.411E+04	8.061E+03	7.648E+04	Yes
6/6/1995	3.301	75.699	39.3	1.348E+03	7.702E+02	7.349E+03	Yes
4/8/2003	3.3	134.684	49.2	2.397E+03	1.370E+03	1.308E+04	Yes
5/13/2003	3.3	88.918	20.2	1.583E+03	9.044E+02	8.633E+03	Yes
3/11/1997	3.285	1111.968	1.8	1.970E+04	1.126E+04	1.080E+05	Yes
5/16/2000	3.27	103.499	37	1.825E+03	1.043E+03	1.005E+04	Yes
4/3/2001	3.27	127.492	35.5	2.249E+03	1.285E+03	1.238E+04	Yes
1/15/2001	3.22	276.887	37.3	4.809E+03	2.748E+03	2.688E+04	Yes
3/11/2003	3.18	158.875	11.6	2.725E+03	1.557E+03	1.542E+04	Yes
3/8/1994	3.16	537.166	7.3	9.156E+03	5.232E+03	5.215E+04	Yes
11/21/1994	3.16	156.531	24.1	2.668E+03	1.525E+03	1.520E+04	Yes
6/18/1996	3.15	28.997	56.2	4.927E+02	2.815E+02	2.815E+03	Yes
1/27/2004	3.12	454.395	26.7	7.647E+03	4.370E+03	4.412E+04	Yes
12/3/1996	3.057	780.088	11.7	1.286E+04	7.350E+03	7.574E+04	Yes
12/14/1993	3.04	543.153	2.9	8.906E+03	5.089E+03	5.273E+04	Yes
7/11/1995	3.029	30.451	44.5	4.975E+02	2.843E+02	2.956E+03	Yes
6/4/1991	3.02	46.874	45.4	7.635E+02	4.363E+02	4.551E+03	Yes
4/25/1995	3.002	148.833	17.3	2.410E+03	1.377E+03	1.445E+04	Yes
5/4/1994	2.98	265.162	37.9	4.262E+03	2.435E+03	2.574E+04	Yes
11/23/1992	2.89	163.374	72.6	2.547E+03	1.455E+03	1.586E+04	Yes
6/1/1993	2.89	39.518	50.2	6.160E+02	3.520E+02	3.837E+03	Yes
12/5/2006	2.85	132.723	37.9	2.040E+03	1.166E+03	1.289E+04	Yes
5/4/2004	2.83	292.578	16.1	4.466E+03	2.552E+03	2.841E+04	Yes
1/22/1991	2.79	393.465	5.5	5.921E+03	3.383E+03	3.820E+04	Yes
4/16/2002	2.78	119.320	28.3	1.789E+03	1.022E+03	1.158E+04	Yes
8/24/2004	2.78	86.302	42.9	1.294E+03	7.395E+02	8.379E+03	Yes
7/30/1991	2.76	25.490	71.9	3.795E+02	2.168E+02	2.475E+03	Yes
4/20/1999	2.76	554.273	20.5	8.251E+03	4.715E+03	5.381E+04	Yes
7/19/2005	2.7	76.495	70.7	1.114E+03	6.366E+02	7.427E+03	Yes
2/2/1993	2.66	108.631	21.1	1.559E+03	8.906E+02	1.055E+04	Yes
1/24/1995	2.643	975.110	5.8	1.390E+04	7.943E+03	9.467E+04	Yes
11/7/2006	2.63	787.836	67.1	1.118E+04	6.386E+03	7.649E+04	Yes
8/23/1994	2.59	61.415	44.8	8.580E+02	4.903E+02	5.963E+03	Yes
12/14/1999	2.59	158.242	58	2.211E+03	1.263E+03	1.536E+04	Yes
7/3/2001	2.49	62.112	59	8.342E+02	4.767E+02	6.030E+03	Yes
1/5/1999	2.46	567.104	15.8	7.525E+03	4.300E+03	5.506E+04	Yes
12/7/2004	2.46	987.247	3.3	1.310E+04	7.485E+03	9.585E+04	Yes
2/1/1994	2.45	1043.539	3.3	1.379E+04	7.880E+03	1.013E+05	Yes
2/2/1999	2.4	915.235	4.7	1.185E+04	6.770E+03	8.886E+04	Yes
5/14/2002	2.35	467.471	11.9	5.925E+03	3.386E+03	4.539E+04	Yes
4/26/2004	2.35	536.121	32.1	6.796E+03	3.883E+03	5.205E+04	Yes
3/19/2002	2.29	791.105	2.6	9.772E+03	5.584E+03	7.681E+04	Yes
1/9/2007	2.26	405.360	24.7	4.941E+03	2.824E+03	3.936E+04	Yes
3/6/2001	1.97	650.537	5	6.912E+03	3.950E+03	6.316E+04	Yes
5/7/1991	1.9	872.467	1.3	8.941E+03	5.109E+03	8.471E+04	Yes
6/22/1992	1.85	164.229	35.5	1.639E+03	9.364E+02	1.594E+04	Yes
6/6/2000	1.82	205.286	46.8	2.015E+03	1.152E+03	1.993E+04	Yes
4/12/2005	1.79	964.364	11.1	9.311E+03	5.320E+03	9.363E+04	Yes
6/1/1999	1.52	191.601	50.3	1.571E+03	8.976E+02	1.860E+04	Yes



**Figure H-5. Chloride load duration curve for Saline River (HUC/reach 08040203-008)**

**Table H-9. Allowable chloride load for Saline River (HUC/reach 08040203-008)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>3,038.7</b>
9/16/1954	3.8	100.000	0.267	0.00	20.1752	0.00E+00
9/17/1954	3.8	100.000	0.267	0.00	20.1752	0.00E+00
9/20/1954	3.8	100.000	0.267	0.00	20.1752	0.00E+00
9/26/1954	3.8	100.000	0.267	0.00	20.1752	0.00E+00
9/27/1954	3.8	100.000	0.267	0.00	20.1752	0.00E+00
9/15/1954	4.1	100.000	0.285	0.00	21.5259	0.00E+00
9/18/1954	4.1	100.000	0.285	0.00	21.5259	0.00E+00
9/19/1954	4.1	100.000	0.285	0.00	21.5259	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/31/1949	53600	0.100	3195.896	0.00	241331.2623	0.00E+00
2/1/1949	54800	0.100	3267.445	0.00	246734.1324	0.00E+00
1/1/1988	59400	0.100	3541.716	0.00	267445.1343	0.00E+00
5/6/1958	59600	0.100	3553.641	0.00	268345.6127	0.00E+00
5/20/1968	59600	0.100	3553.641	0.00	268345.6127	0.00E+00
12/30/1987	61500	0.100	3666.927	0.00	276900.1569	0.00E+00
5/5/1958	65900	0.100	3929.273	0.00	296710.6805	0.00E+00
12/31/1987	67000	0.100	3994.860	0.00	301663.3114	0.00E+00
5/4/1958	68500	0.100	4084.296	0.00	308416.8990	0.00E+00
5/3/1958	69500	0.100	4143.920	0.00	312919.2907	0.00E+00
5/19/1968	71500	0.100	4263.169	0.10	321924.0741	3.22E+02
5/18/1968	72500	0.000	4322.793	0.00	326426.4659	0.00E+00

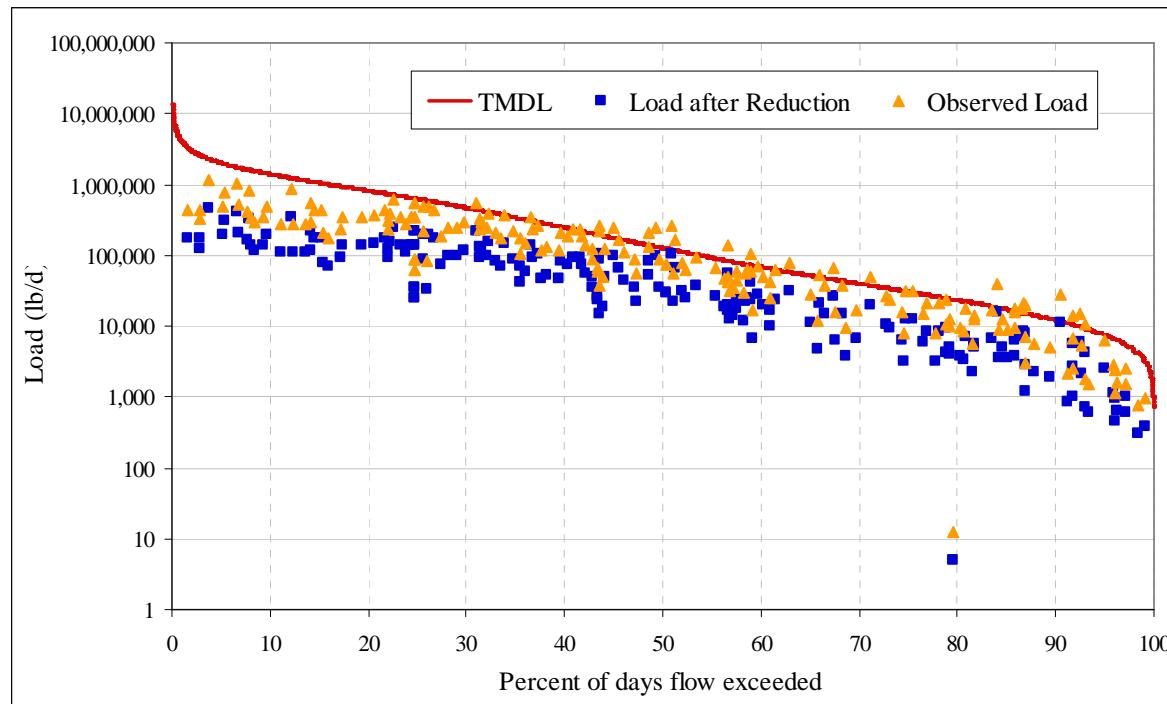
**Figure H-6. Chloride load duration curve for Saline River (HUC/reach 08040203-009)****Table H-10. Allowable chloride load for Saline River (HUC/reach 08040203-009)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>31,950.7</b>
9/16/1954	3.8	100.000	1.966	0.00	212.1329	0.00E+00
9/17/1954	3.8	100.000	1.966	0.00	212.1329	0.00E+00
9/20/1954	3.8	100.000	1.966	0.00	212.1329	0.00E+00
9/26/1954	3.8	100.000	1.966	0.00	212.1329	0.00E+00
9/27/1954	3.8	100.000	1.966	0.00	212.1329	0.00E+00
9/15/1954	4.1	100.000	2.098	0.00	226.3350	0.00E+00
9/18/1954	4.1	100.000	2.098	0.00	226.3350	0.00E+00
9/19/1954	4.1	100.000	2.098	0.00	226.3350	0.00E+00
9/21/1954	4.1	100.000	2.098	0.00	226.3350	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/31/1949	53600	0.100	23522.335	0.00	2537484.1612	0.00E+00
2/1/1949	54800	0.100	24048.948	0.00	2594292.7864	0.00E+00
1/1/1988	59400	0.100	26067.630	0.00	2812059.1827	0.00E+00
5/6/1958	59600	0.100	26155.399	0.00	2821527.2869	0.00E+00
5/20/1968	59600	0.100	26155.399	0.00	2821527.2869	0.00E+00
12/30/1987	61500	0.100	26989.202	0.00	2911474.2767	0.00E+00
5/5/1958	65900	0.100	28920.116	0.00	3119772.5688	0.00E+00
12/31/1987	67000	0.100	29402.844	0.00	3171847.1418	0.00E+00
5/4/1958	68500	0.100	30061.110	0.00	3242857.9232	0.00E+00
5/3/1958	69500	0.100	30499.954	0.00	3290198.4442	0.00E+00
5/19/1968	71500	0.100	31377.642	0.10	3384879.4860	3.38E+03
5/18/1968	72500	0.000	31816.486	0.00	3432220.0070	0.00E+00

## **Appendix I**

### **Load Duration Curve Summaries and Plots for Sulfate**

Figure I-1. Sulfate load duration curve for station OUA0118 for Saline River (HUC/reach 08040204-006) .....	2
Figure I-2. Sulfate load duration curve for station OUA0042 for Saline River (HUC/reach 08040203-007) .....	6
Figure I-3. Sulfate load duration curve for station OUA0026 for Saline River (HUC/reach 08040203-010) .....	10
Figure I-4. Sulfate load duration curve for station OUA0041 for Saline River (HUC/reach 08040203-010) .....	14
Figure I-5. Sulfate load duration curve for Saline River (HUC/reach 08040203-008) .....	18
Figure I-6. Sulfate load duration curve for Saline River (HUC/reach 08040203-009) .....	19
Table I-1. Allowable sulfate load for station OUA0118 for Saline River (HUC/reach 08040204-006) .....	2
Table I-2. Existing load for sulfate for station OUA0118 for Saline River (HUC/reach 08040204-006) .....	3
Table I-3. Allowable sulfate load for station OUA0042 for Saline River (HUC/reach 08040203-007) .....	6
Table I-4. Existing load for sulfate for station OUA0042 for Saline River (HUC/reach 08040203-007) .....	7
Table I-5. Allowable sulfate load for station OUA0026 for Saline River (HUC/reach 08040203-010) .....	10
Table I-6. Existing load for sulfate for station OUA0026 for Saline River (HUC/reach 08040203-010) .....	11
Table I-7. Allowable sulfate load for station OUA0041 for Saline River (HUC/reach 08040203-010) .....	14
Table I-8. Existing load for sulfate for station OUA0041 for Saline River (HUC/reach 08040203-010) .....	15
Table I-9. Allowable Sulfate load for Saline River (HUC/reach 08040203-008) .....	18
Table I-10. Allowable Sulfate load for Saline River (HUC/reach 08040203-009) .....	19



**Figure I-1. Sulfate load duration curve for station OUA0118 for Saline River (HUC/reach 08040204-006)**

**Table I-1. Allowable sulfate load for station OUA0118 for Saline River (HUC/reach 08040204-006)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>495,327.2</b>
9/16/1954	3.8	100.000	3.335	0.00	719.5330	0.00E+00
9/17/1954	3.8	100.000	3.335	0.00	719.5330	0.00E+00
9/20/1954	3.8	100.000	3.335	0.00	719.5330	0.00E+00
9/26/1954	3.8	100.000	3.335	0.00	719.5330	0.00E+00
9/27/1954	3.8	100.000	3.335	0.00	719.5330	0.00E+00
9/15/1954	4.1	100.000	3.598	0.00	776.3383	0.00E+00
9/18/1954	4.1	100.000	3.598	0.00	776.3383	0.00E+00
9/19/1954	4.1	100.000	3.598	0.00	776.3383	0.00E+00
9/21/1954	4.1	100.000	3.598	0.00	776.3383	0.00E+00
For brevity, most of the cells in the spreadsheet have been hidden						
2/1/1949	54800	0.100	48094.430	0.00	10376423.4709	0.00E+00
1/1/1988	59400	0.100	52131.554	0.00	11247437.1199	0.00E+00
5/6/1958	59600	0.100	52307.081	0.00	11285307.2786	0.00E+00
5/20/1968	59600	0.100	52307.081	0.00	11285307.2786	0.00E+00
12/30/1987	61500	0.100	53974.588	0.00	11645073.7858	0.00E+00
5/5/1958	65900	0.100	57836.185	0.00	12478217.2761	0.00E+00
12/31/1987	67000	0.100	58801.584	0.00	12686503.1487	0.00E+00
5/4/1958	68500	0.100	60118.038	0.00	12970529.3386	0.00E+00
5/3/1958	69500	0.100	60995.673	0.00	13159880.1319	0.00E+00
5/19/1968	71500	0.100	62750.944	0.10	13538581.7184	1.35E+04
5/18/1968	72500	0.000	63628.580	0.00	13727932.5117	0.00E+00

**Table I-2. Existing load for sulfate for station OUA0118 for Saline River (HUC/reach 08040204-006)**

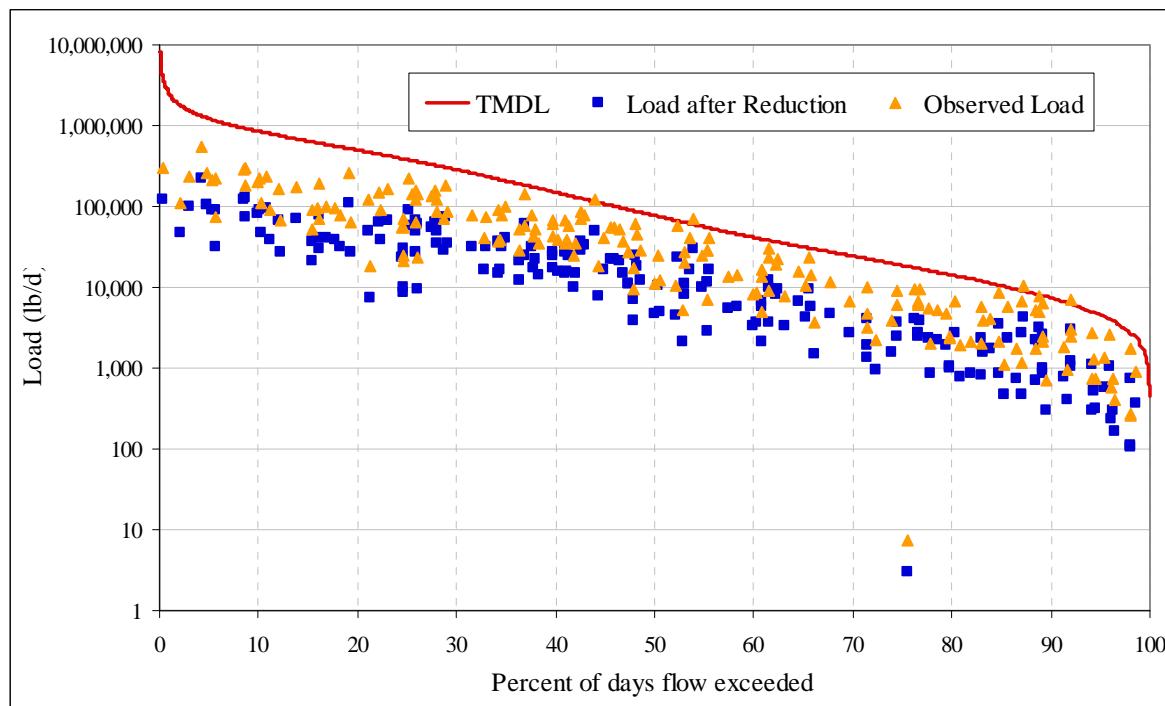
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
9/24/1996	90.1	56.169	90.5	2.730E+04	1.091E+04	1.091E+04	Yes
5/5/1998	86.91	571.341	50.9	2.678E+05	1.070E+05	1.109E+05	Yes
9/3/2002	83	87.764	84.1	3.929E+04	1.570E+04	1.704E+04	Yes
12/9/1997	73.164	630.142	49.2	2.487E+05	9.936E+04	1.224E+05	Yes
11/4/1997	66.2	386.160	56.7	1.379E+05	5.509E+04	7.498E+04	Yes
10/8/2002	57.9	47.392	92.5	1.480E+04	5.914E+03	9.202E+03	Yes
5/20/1997	57.7	659.104	48.6	2.051E+05	8.196E+04	1.280E+05	Yes
12/9/2003	57.5	341.400	58.9	1.059E+05	4.231E+04	6.629E+04	Yes
11/17/1992	56.1	218.531	67.3	6.613E+04	2.642E+04	4.243E+04	Yes
6/10/1997	54.5	272.945	62.9	8.024E+04	3.206E+04	5.300E+04	Yes
9/2/1997	54.3	72.844	86.7	2.133E+04	8.524E+03	1.414E+04	Yes
1/11/1994	53.7	561.687	51.2	1.627E+05	6.500E+04	1.091E+05	Yes
12/6/1994	52.6	847.796	44.9	2.405E+05	9.611E+04	1.646E+05	Yes
11/19/1996	52.4	921.517	43.6	2.605E+05	1.041E+05	1.789E+05	Yes
10/20/1992	50.8	50.903	91.7	1.395E+04	5.573E+03	9.884E+03	Yes
10/15/1996	50.5	71.966	86.9	1.960E+04	7.832E+03	1.397E+04	Yes
8/6/1991	50	180.793	71.1	4.876E+04	1.948E+04	3.511E+04	Yes
1/19/1993	48.9	2123.878	31	5.602E+05	2.238E+05	4.124E+05	Yes
11/22/1999	44	73.721	86.5	1.750E+04	6.991E+03	1.431E+04	Yes
7/9/2002	43.62	43.882	93.1	1.032E+04	4.125E+03	8.521E+03	Yes
4/22/1997	43.1	930.294	43.5	2.163E+05	8.641E+04	1.806E+05	Yes
11/14/2000	42.3	1483.204	36.6	3.384E+05	1.352E+05	2.880E+05	Yes
8/6/2002	41.78	77.232	85.9	1.740E+04	6.954E+03	1.500E+04	Yes
2/15/2000	41.27	233.451	65.9	5.197E+04	2.076E+04	4.533E+04	Yes
7/9/1991	41	143.055	75.5	3.164E+04	1.264E+04	2.778E+04	Yes
12/14/1992	40.7	1053.163	41.6	2.312E+05	9.238E+04	2.045E+05	Yes
5/5/1992	39.9	326.480	59.7	7.026E+04	2.807E+04	6.339E+04	Yes
1/7/1997	39.1	1772.824	33.9	3.739E+05	1.494E+05	3.442E+05	Yes
12/13/2005	38.8	149.198	74.7	3.122E+04	1.248E+04	2.897E+04	Yes
8/7/2001	38.47	78.110	85.8	1.621E+04	6.476E+03	1.517E+04	Yes
5/30/1995	38.3	812.691	45.5	1.679E+05	6.708E+04	1.578E+05	Yes
4/30/1996	38.1	1114.597	40.9	2.291E+05	9.152E+04	2.164E+05	Yes
11/16/1993	37.9	296.641	61.4	6.064E+04	2.423E+04	5.760E+04	Yes
11/12/2002	36.8	660.860	48.5	1.312E+05	5.241E+04	1.283E+05	Yes
8/27/1996	36	118.481	78.8	2.301E+04	9.192E+03	2.301E+04	Yes
6/9/1992	35.9	1983.456	32.2	3.841E+05	1.535E+05	3.851E+05	Yes
4/21/1992	35.6	478.311	53.4	9.184E+04	3.670E+04	9.288E+04	Yes
1/6/1998	34.82	1421.770	37.3	2.670E+05	1.067E+05	2.761E+05	Yes
2/4/1997	33.5	3396.450	22.5	6.137E+05	2.452E+05	6.595E+05	Yes
6/27/1995	33.4	208.877	68.2	3.763E+04	1.504E+04	4.056E+04	Yes
9/14/1999	33.4	35.983	95	6.482E+03	2.590E+03	6.987E+03	Yes
8/5/1997	33.2	91.274	83.5	1.634E+04	6.531E+03	1.772E+04	Yes
11/17/1998	33.2	344.033	58.6	6.161E+04	2.462E+04	6.680E+04	Yes
3/31/1998	32.73	2782.105	26.2	4.911E+05	1.962E+05	5.402E+05	Yes
8/25/1992	32.7	121.991	78.2	2.152E+04	8.597E+03	2.369E+04	Yes
6/11/1996	32.7	1044.386	41.7	1.842E+05	7.360E+04	2.028E+05	Yes
1/19/1999	32	1219.913	39.6	2.106E+05	8.413E+04	2.369E+05	Yes
1/16/1996	31.9	342.278	58.9	5.889E+04	2.353E+04	6.646E+04	Yes
12/21/1993	31.7	2869.868	25.6	4.907E+05	1.961E+05	5.573E+05	Yes
12/12/1995	31.6	106.194	80.9	1.810E+04	7.232E+03	2.062E+04	Yes
12/21/1998	30.3	1149.703	40.4	1.879E+05	7.508E+04	2.232E+05	Yes
7/17/2001	30.29	227.308	66.4	3.714E+04	1.484E+04	4.414E+04	Yes
7/13/1999	30.1	164.995	72.7	2.679E+04	1.070E+04	3.204E+04	Yes
1/20/2004	30	352.810	58.4	5.709E+04	2.281E+04	6.851E+04	Yes
2/18/1992	29.9	2711.894	26.7	4.374E+05	1.747E+05	5.266E+05	Yes
9/30/1997	29.7	312.438	60.3	5.005E+04	2.000E+04	6.067E+04	Yes
1/7/1992	29.1	1474.428	36.7	2.314E+05	9.247E+04	2.863E+05	Yes
2/12/1991	29	2079.996	31.4	3.254E+05	1.300E+05	4.039E+05	Yes
2/20/1996	29	367.729	57.5	5.752E+04	2.298E+04	7.140E+04	Yes
7/8/1997	29	428.286	55.3	6.699E+04	2.677E+04	8.316E+04	Yes
1/25/2000	28.65	133.401	76.8	2.061E+04	8.237E+03	2.590E+04	Yes
3/12/1991	28	5818.724	12.2	8.788E+05	3.511E+05	1.130E+06	Yes
9/4/2001	27.9	85.131	84.5	1.281E+04	5.119E+03	1.653E+04	Yes

**Table I-2. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
4/15/2003	27.2	528.337	52	7.751E+04	3.097E+04	1.026E+05	Yes
9/26/2006	26.5	162.363	73.1	2.321E+04	9.273E+03	3.153E+04	Yes
3/8/1999	26.3	618.733	49.6	8.777E+04	3.507E+04	1.201E+05	Yes
4/11/2000	26.3	781.973	46	1.109E+05	4.432E+04	1.518E+05	Yes
4/16/1996	26.2	2053.667	31.5	2.902E+05	1.160E+05	3.988E+05	Yes
6/19/2001	26.2	302.784	60.9	4.279E+04	1.710E+04	5.879E+04	Yes
1/31/2006	26	895.188	44	1.255E+05	5.016E+04	1.738E+05	Yes
11/6/2001	25.79	101.806	81.8	1.416E+04	5.658E+03	1.977E+04	Yes
3/16/1993	25.2	1018.057	42.1	1.384E+05	5.529E+04	1.977E+05	Yes
12/20/1999	24.98	1649.955	34.8	2.223E+05	8.882E+04	3.204E+05	Yes
11/8/1994	24	974.175	42.9	1.261E+05	5.039E+04	1.892E+05	Yes
7/28/1992	23.9	391.425	56.6	5.046E+04	2.016E+04	7.601E+04	Yes
10/24/2006	23.9	50.903	91.7	6.562E+03	2.622E+03	9.884E+03	Yes
12/19/2006	23.9	584.505	50.4	7.535E+04	3.011E+04	1.135E+05	Yes
2/27/2007	23.9	2694.341	24.7	3.473E+05	1.388E+05	5.232E+05	Yes
12/19/2006	23.9	584.505	50.4	7.535E+04	3.011E+04	1.135E+05	Yes
2/27/2007	23.9	2694.341	24.7	3.473E+05	1.388E+05	5.232E+05	Yes
3/17/1992	23.8	8179.564	6.6	1.050E+06	4.195E+05	1.588E+06	Yes
9/22/1992	23.5	101.806	81.8	1.290E+04	5.156E+03	1.977E+04	Yes
2/21/1995	23.4	1992.233	32.1	2.514E+05	1.005E+05	3.868E+05	Yes
2/16/1993	23.2	2299.405	29.7	2.877E+05	1.150E+05	4.465E+05	Yes
2/3/1998	23	3563.200	21.6	4.420E+05	1.766E+05	6.919E+05	Yes
10/19/1999	23	78.110	85.8	9.690E+03	3.872E+03	1.517E+04	Yes
3/27/2007	22.6	525.704	24.7	6.408E+04	2.560E+04	1.021E+05	Yes
3/27/2007	22.6	525.704	24.7	6.408E+04	2.560E+04	1.021E+05	Yes
6/14/1993	22.4	397.569	56.3	4.803E+04	1.919E+04	7.720E+04	Yes
1/28/2003	22.4	516.927	52.3	6.246E+04	2.495E+04	1.004E+05	Yes
6/18/1991	22	369.485	57.5	4.384E+04	1.752E+04	7.175E+04	Yes
5/18/1999	21.9	732.826	47.1	8.656E+04	3.459E+04	1.423E+05	Yes
8/17/1999	21.8	46.515	92.7	5.469E+03	2.185E+03	9.032E+03	Yes
2/22/1994	21.4	3071.725	24.4	3.546E+05	1.417E+05	5.965E+05	Yes
3/26/1996	21.1	2079.996	31.4	2.367E+05	9.458E+04	4.039E+05	Yes
7/22/2003	21.1	243.983	65.1	2.777E+04	1.109E+04	4.738E+04	Yes
4/2/1991	21	3071.725	24.4	3.479E+05	1.390E+05	5.965E+05	Yes
10/11/1994	21	135.156	76.5	1.531E+04	6.117E+03	2.624E+04	Yes
12/10/1996	20.5	7512.561	7.9	8.307E+05	3.319E+05	1.459E+06	Yes
3/18/2003	20.5	1588.520	35.4	1.756E+05	7.018E+04	3.085E+05	Yes
12/5/2000	20.42	3440.331	22.3	3.789E+05	1.514E+05	6.680E+05	Yes
4/11/1995	20.3	1895.693	32.9	2.076E+05	8.293E+04	3.681E+05	Yes
6/23/1998	20.212	80.742	85.2	8.802E+03	3.517E+03	1.568E+04	Yes
1/2/1991	20	10794.918	3.7	1.165E+06	4.653E+05	2.096E+06	Yes
2/12/2002	19.94	3256.028	23.3	3.502E+05	1.399E+05	6.322E+05	Yes
8/19/2003	19.5	116.726	79.2	1.228E+04	4.905E+03	2.267E+04	Yes
6/14/2005	19.5	390.548	56.6	4.108E+04	1.641E+04	7.583E+04	Yes
3/5/2002	19.37	2360.840	29.1	2.467E+05	9.855E+04	4.584E+05	Yes
7/25/1995	19.2	151.831	74.4	1.572E+04	6.282E+03	2.948E+04	Yes
5/14/1991	19	5248.261	14.1	5.379E+05	2.149E+05	1.019E+06	Yes
4/24/2007	19	858.328	24.7	8.796E+04	3.515E+04	1.667E+05	Yes
4/24/2007	19	858.328	24.7	8.796E+04	3.515E+04	1.667E+05	Yes
5/17/1994	18.7	2501.261	28.1	2.523E+05	1.008E+05	4.857E+05	Yes
7/9/1996	18.6	86.886	84.3	8.717E+03	3.483E+03	1.687E+04	Yes
5/18/1993	18.5	3765.057	20.6	3.757E+05	1.501E+05	7.311E+05	Yes
4/25/2006	18.5	1334.006	38.1	1.331E+05	5.319E+04	2.590E+05	Yes
10/2/2001	18.37	25.451	97.2	2.522E+03	1.008E+03	4.942E+03	Yes
11/7/1995	18.1	563.442	51.1	5.501E+04	2.198E+04	1.094E+05	Yes
10/21/2003	17.8	71.966	86.9	6.909E+03	2.761E+03	1.397E+04	Yes
6/4/2002	17.7	1228.690	39.4	1.173E+05	4.687E+04	2.386E+05	Yes
10/20/1998	17.6	375.628	57.2	3.566E+04	1.425E+04	7.294E+04	Yes
1/2/2002	17.39	1816.706	33.6	1.704E+05	6.809E+04	3.528E+05	Yes
6/8/1999	17.3	1535.862	36	1.433E+05	5.726E+04	2.982E+05	Yes
1/30/2007	17.2	5792.395	24.7	5.374E+05	2.147E+05	1.125E+06	Yes
1/30/2007	17.2	5792.395	24.7	5.374E+05	2.147E+05	1.125E+06	Yes

**Table I-2. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/25/2004	17.1	974.175	42.9	8.985E+04	3.590E+04	1.892E+05	Yes
9/30/2003	17	118.481	78.8	1.086E+04	4.341E+03	2.301E+04	Yes
12/11/2001	16.53	4941.088	15.3	4.405E+05	1.760E+05	9.594E+05	Yes
11/25/1991	16.5	3492.990	22	3.109E+05	1.242E+05	6.783E+05	Yes
8/25/1998	16.3	109.704	80.3	9.645E+03	3.854E+03	2.130E+04	Yes
3/22/2005	16.2	1369.112	37.7	1.196E+05	4.780E+04	2.658E+05	Yes
8/22/1995	16.1	32.473	95.8	2.820E+03	1.127E+03	6.305E+03	Yes
11/12/2003	15.9	116.726	79.2	1.001E+04	4.000E+03	2.267E+04	Yes
5/17/2005	15.8	193.080	69.7	1.645E+04	6.575E+03	3.749E+04	Yes
7/26/1993	15.7	67.578	87.8	5.723E+03	2.287E+03	1.312E+04	Yes
2/15/2005	15.7	4028.347	19.3	3.411E+05	1.363E+05	7.822E+05	Yes
3/3/1998	15.676	3185.817	23.8	2.694E+05	1.076E+05	6.186E+05	Yes
8/30/1994	15.4	301.907	60.9	2.508E+04	1.002E+04	5.862E+04	Yes
2/9/1999	15.4	9127.410	5.3	7.582E+05	3.029E+05	1.772E+06	Yes
1/30/2001	15.4	5134.168	14.5	4.265E+05	1.704E+05	9.969E+05	Yes
5/22/2001	15.27	354.565	58.2	2.920E+04	1.167E+04	6.885E+04	Yes
8/24/1993	15	60.557	89.5	4.899E+03	1.958E+03	1.176E+04	Yes
11/28/2006	14.9	385.282	56.8	3.096E+04	1.237E+04	7.481E+04	Yes
4/20/1993	14.7	4440.836	17.3	3.521E+05	1.407E+05	8.623E+05	Yes
4/24/2001	14.45	2878.645	25.6	2.244E+05	8.965E+04	5.590E+05	Yes
6/21/1993	14.2	712.640	47.4	5.458E+04	2.181E+04	1.384E+05	Yes
10/10/1995	14.2	107.949	80.6	8.268E+03	3.304E+03	2.096E+04	Yes
9/21/1993	13.8	31.595	96	2.352E+03	9.397E+02	6.135E+03	Yes
3/21/1995	13.8	6696.360	9.7	4.984E+05	1.992E+05	1.300E+06	Yes
9/29/1998	13.5	215.021	67.6	1.566E+04	6.256E+03	4.175E+04	Yes
5/30/2000	13.3	939.070	43.4	6.737E+04	2.692E+04	1.823E+05	Yes
5/20/2003	13.2	2589.025	27.5	1.843E+05	7.365E+04	5.027E+05	Yes
2/10/2004	12.5	3475.437	22.1	2.343E+05	9.362E+04	6.748E+05	Yes
8/2/1994	12.2	1579.744	35.5	1.040E+05	4.154E+04	3.067E+05	Yes
9/11/1995	12.1	14.920	99.1	9.737E+02	3.891E+02	2.897E+03	Yes
3/18/1997	11.7	8065.471	6.8	5.090E+05	2.034E+05	1.566E+06	Yes
10/12/1993	11.5	126.380	77.7	7.839E+03	3.132E+03	2.454E+04	Yes
7/27/2004	11.5	947.846	43.4	5.879E+04	2.349E+04	1.840E+05	Yes
8/22/2006	11.2	25.451	97.2	1.538E+03	6.143E+02	4.942E+03	Yes
3/28/2006	10.5	5230.708	14.1	2.962E+05	1.184E+05	1.016E+06	Yes
6/20/2006	10.3	103.561	81.5	5.753E+03	2.299E+03	2.011E+04	Yes
10/25/2005	10.2	29.840	96.3	1.642E+03	6.559E+02	5.794E+03	Yes
3/20/2001	10.1	9215.174	5.2	5.020E+05	2.006E+05	1.789E+06	Yes
4/13/1999	10	7600.324	7.7	4.099E+05	1.638E+05	1.476E+06	Yes
7/5/1994	9.8	912.741	43.9	4.825E+04	1.928E+04	1.772E+05	Yes
4/19/2005	9.76	5371.130	13.6	2.828E+05	1.130E+05	1.043E+06	Yes
8/10/2004	9.54	150.953	74.5	7.768E+03	3.104E+03	2.931E+04	Yes
4/13/2004	9.52	4458.389	17.2	2.289E+05	9.147E+04	8.657E+05	Yes
2/18/2003	9.48	6819.228	9.4	3.487E+05	1.393E+05	1.324E+06	Yes
5/30/2006	9.47	335.257	59.1	1.712E+04	6.842E+03	6.510E+04	Yes
8/31/2004	9.34	236.084	65.7	1.189E+04	4.752E+03	4.584E+04	Yes
7/28/1998	9.16	50.903	91.7	2.515E+03	1.005E+03	9.884E+03	Yes
3/9/2004	8.99	5783.619	12.4	2.804E+05	1.121E+05	1.123E+06	Yes
12/14/2004	8.47	7407.244	8.1	3.384E+05	1.352E+05	1.438E+06	Yes
7/26/2005	8.45	202.734	68.7	9.240E+03	3.692E+03	3.937E+04	Yes
7/6/2004	8.17	6204.884	11.2	2.734E+05	1.093E+05	1.205E+06	Yes
7/31/2000	7.66	71.088	87	2.937E+03	1.174E+03	1.380E+04	Yes
11/9/2004	7.59	4923.536	15.4	2.016E+05	8.054E+04	9.560E+05	Yes
10/3/2000	7.53	52.658	91.3	2.139E+03	8.545E+02	1.022E+04	Yes
8/22/2000	7.45	19.308	98.4	7.759E+02	3.100E+02	3.749E+03	Yes
3/1/1994	7.42	7249.270	8.4	2.901E+05	1.159E+05	1.408E+06	Yes
9/26/2000	7.38	44.759	93.1	1.782E+03	7.119E+02	8.691E+03	Yes
10/12/2004	7.28	930.294	43.5	3.653E+04	1.460E+04	1.806E+05	Yes
8/23/2005	6.83	31.595	96	1.164E+03	4.651E+02	6.135E+03	Yes
5/7/2002	6.63	4774.338	15.9	1.707E+05	6.822E+04	9.271E+05	Yes
4/2/2002	6.62	12023.608	2.9	4.293E+05	1.715E+05	2.335E+06	Yes
9/26/2005	6.5	43.004	93.3	1.508E+03	6.024E+02	8.350E+03	Yes
6/27/2000	5.53	2808.434	26	8.377E+04	3.347E+04	5.453E+05	Yes
6/24/2003	5.13	15358.623	1.6	4.250E+05	1.698E+05	2.982E+06	Yes
2/20/2001	4.95	11935.844	2.9	3.187E+05	1.273E+05	2.318E+06	Yes
1/17/2006	0.02	114.093	79.5	1.231E+01	4.918E+00	2.215E+04	Yes



**Figure I-2. Sulfate load duration curve for station OUA0042 for Saline River (HUC/reach 08040203-007)**

**Table I-3. Allowable sulfate load for station OUA0042 for Saline River (HUC/reach 08040203-007)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>301,805.4</b>
9/14/1954	3.8	100.000	2.032	0.00	438.4152	0.00E+00
9/15/1954	3.8	100.000	2.032	0.00	438.4152	0.00E+00
9/18/1954	3.8	100.000	2.032	0.00	438.4152	0.00E+00
9/24/1954	3.8	100.000	2.032	0.00	438.4152	0.00E+00
9/25/1954	3.8	100.000	2.032	0.00	438.4152	0.00E+00
9/13/1954	4.1	100.000	2.192	0.00	473.0269	0.00E+00
9/16/1954	4.1	100.000	2.192	0.00	473.0269	0.00E+00
9/17/1954	4.1	100.000	2.192	0.00	473.0269	0.00E+00
9/19/1954	4.1	100.000	2.192	0.00	473.0269	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/30/1949	54800	0.100	29304.183	0.00	6322407.9913	0.00E+00
12/30/1987	59400	0.100	31764.023	0.00	6853121.0708	0.00E+00
5/4/1958	59600	0.100	31870.972	0.00	6876195.5526	0.00E+00
5/18/1968	59600	0.100	31870.972	0.00	6876195.5526	0.00E+00
12/28/1987	61500	0.100	32886.993	0.00	7095403.1289	0.00E+00
5/3/1958	65900	0.100	35239.884	0.00	7603041.7267	0.00E+00
12/29/1987	67000	0.100	35828.107	0.00	7729951.3762	0.00E+00
5/2/1958	68500	0.100	36630.228	0.00	7903009.9891	0.00E+00
5/1/1958	69500	0.100	37164.976	0.00	8018382.3977	0.00E+00
5/17/1968	71500	0.100	38234.472	0.10	8249127.2149	8.25E+03
5/16/1968	72500	0.000	38769.220	0.00	8364499.6235	0.00E+00

**Table I-4. Existing load for sulfate for station OUA0042 for Saline River (HUC/reach 08040203-007)**

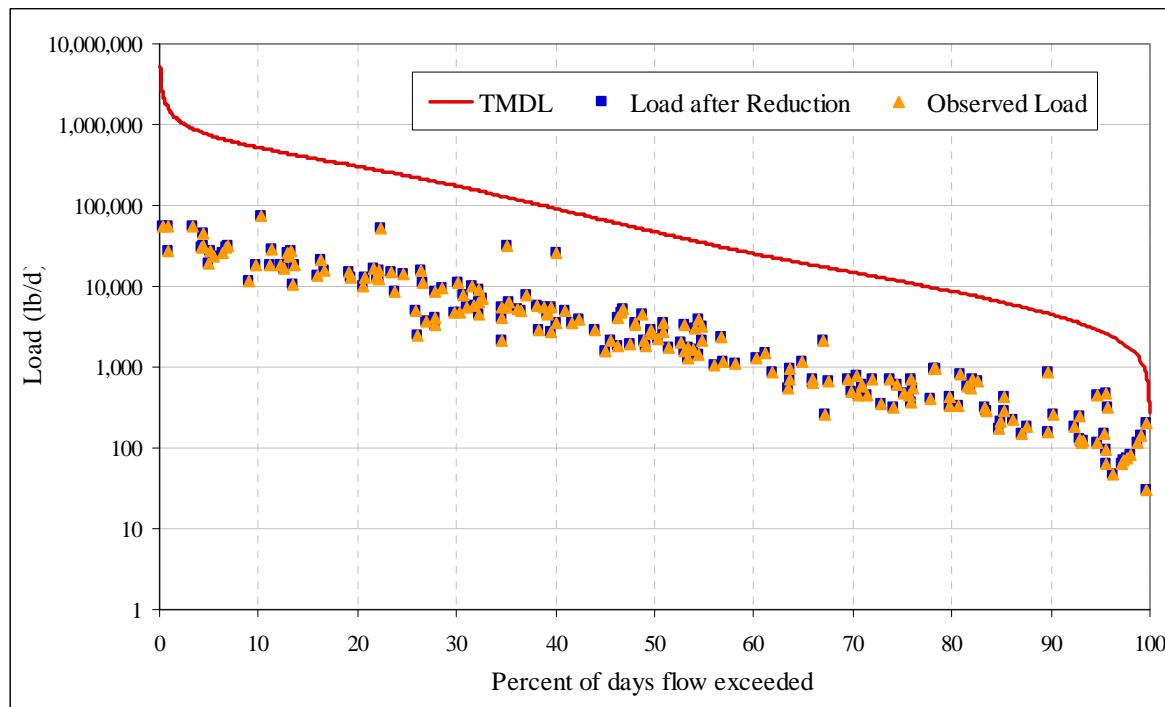
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/5/1998	87.08	152,273	53.9	7,152E+04	2,957E+04	2,957E+04	Yes
9/2/1997	84.1	22,855	87.3	1,037E+04	4,286E+03	4,438E+03	Yes
11/4/1997	77.4	291,405	44	1,217E+05	5,029E+04	5,658E+04	Yes
5/20/1997	62.9	167,415	52.3	5,680E+04	2,348E+04	3,251E+04	Yes
10/19/1999	58.6	20,284	89.1	6,411E+03	2,651E+03	3,939E+03	Yes
8/5/1997	58.3	27,426	84.7	8,624E+03	3,565E+03	5,326E+03	Yes
11/19/1996	56.6	471,390	36.9	1,439E+05	5,949E+04	9,153E+04	Yes
6/10/1997	56.2	77,422	65.6	2,347E+04	9,702E+03	1,503E+04	Yes
12/9/1997	50,492	222,267	48.1	6,053E+04	2,503E+04	4,316E+04	Yes
6/21/1993	47.9	155,130	53.5	4,008E+04	1,657E+04	3,012E+04	Yes
4/22/1997	46.1	317,117	42.9	7,885E+04	3,260E+04	6,158E+04	Yes
7/8/1997	46	95,992	61.5	2,382E+04	9,846E+03	1,864E+04	Yes
10/15/1996	45.4	20,570	88.9	5,037E+03	2,082E+03	3,994E+03	Yes
1/7/1997	43.4	957,064	25.2	2,240E+05	9,262E+04	1,858E+05	Yes
3/12/1991	43	779,936	28.9	1,809E+05	7,478E+04	1,514E+05	Yes
11/14/2000	41.3	394,109	42.5	8,779E+04	3,629E+04	7,653E+04	Yes
11/22/1999	41.28	25,712	85.7	5,725E+03	2,367E+03	4,993E+03	Yes
1/11/1994	40.6	322,830	42.5	7,070E+04	2,923E+04	6,269E+04	Yes
8/6/1991	40	43,425	76.8	9,369E+03	3,873E+03	8,432E+03	Yes
5/5/1992	39.9	90,564	62.3	1,949E+04	8,058E+03	1,759E+04	Yes
11/27/1990	39	257,979	45.9	5,427E+04	2,243E+04	5,009E+04	Yes
12/6/1994	38.5	248,837	46.5	5,167E+04	2,136E+04	4,832E+04	Yes
10/30/1990	38	138,274	55.3	2,834E+04	1,172E+04	2,685E+04	Yes
12/9/2003	37.8	145,451	61.5	2,966E+04	1,226E+04	2,824E+04	Yes
9/3/2002	37.6	35,293	92	7,158E+03	2,959E+03	6,853E+03	Yes
6/4/2002	34.53	241,171	48.3	4,492E+04	1,857E+04	4,683E+04	Yes
8/27/1996	34.3	35,426	80.4	6,554E+03	2,709E+03	6,879E+03	Yes
8/17/1999	34.3	16,284	92	3,013E+03	1,245E+03	3,162E+03	Yes
2/16/1993	34.2	831,360	27.8	1,534E+05	6,340E+04	1,614E+05	Yes
10/2/2001	34.09	9,625	98	1,770E+03	7,317E+02	1,869E+03	Yes
10/2/1990	34	30,855	83	5,658E+03	2,339E+03	5,991E+03	Yes
7/13/1999	34	76,851	65.7	1,409E+04	5,826E+03	1,492E+04	Yes
4/15/2003	32.8	226,733	55.5	4,011E+04	1,658E+04	4,403E+04	Yes
2/18/1992	31.9	925,638	25.9	1,593E+05	6,584E+04	1,797E+05	Yes
3/8/1999	31.5	388,539	39.8	6,601E+04	2,729E+04	7,544E+04	Yes
9/30/1997	31.4	57,710	71.4	9,774E+03	4,041E+03	1,121E+04	Yes
2/12/1991	31	454,248	37.5	7,595E+04	3,140E+04	8,820E+04	Yes
6/9/1992	31	351,400	41.3	5,876E+04	2,429E+04	6,823E+04	Yes
2/15/2000	30.91	69,423	67.8	1,157E+04	4,785E+03	1,348E+04	Yes
11/7/1995	30.7	98,278	60.9	1,627E+04	6,728E+03	1,908E+04	Yes
11/12/2002	30.4	173,793	55.3	2,850E+04	1,178E+04	3,375E+04	Yes
10/25/2005	30.3	15,508	96	2,534E+03	1,048E+03	3,011E+03	Yes
3/17/1992	30.1	3314,012	4.2	5,380E+05	2,224E+05	6,435E+05	Yes
3/31/1998	30.067	557,097	34.3	9,035E+04	3,735E+04	1,082E+05	Yes
12/13/2005	29.7	60,427	76.3	9,680E+03	4,002E+03	1,173E+04	Yes
2/3/1998	29.49	914,210	26	1,454E+05	6,012E+04	1,775E+05	Yes
1/19/1993	29.3	845,644	27.5	1,336E+05	5,525E+04	1,642E+05	Yes
6/19/2001	29	143,847	62.4	2,250E+04	9,302E+03	2,793E+04	Yes
10/21/2003	29	33,689	88.4	5,270E+03	2,179E+03	6,542E+03	Yes
10/20/1992	28.6	16,284	92	2,512E+03	1,039E+03	3,162E+03	Yes
4/21/1992	28.2	242,551	46.8	3,689E+04	1,525E+04	4,710E+04	Yes
1/6/1998	28.06	1079,911	23	1,634E+05	6,757E+04	2,097E+05	Yes
9/11/1995	27.8	6,000	98.6	8,996E+02	3,719E+02	1,165E+03	Yes
12/12/1995	27.7	43,711	76.6	6,531E+03	2,700E+03	8,488E+03	Yes
8/6/2002	27.21	51,871	88.9	7,613E+03	3,147E+03	1,007E+04	Yes
4/16/1996	27	822,789	28	1,198E+05	4,954E+04	1,598E+05	Yes
4/30/1996	27	273,406	44.9	3,982E+04	1,646E+04	5,309E+04	Yes
9/22/1992	26.3	29,140	83.8	4,134E+03	1,709E+03	5,658E+03	Yes
1/25/2000	25.87	43,711	76.6	6,099E+03	2,522E+03	8,488E+03	Yes
1/16/1996	25.7	98,563	60.9	1,366E+04	5,648E+03	1,914E+04	Yes
12/21/1993	25.6	551,383	34.5	7,614E+04	3,148E+04	1,071E+05	Yes
12/10/2002	25.3	721,910	34.9	9,851E+04	4,073E+04	1,402E+05	Yes
10/12/1993	25.2	39,140	78.6	5,320E+03	2,199E+03	7,600E+03	Yes

**Table I-4. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
9/24/1996	25.2	41.139	77.7	5.592E+03	2.312E+03	7.988E+03	Yes
6/14/2005	25.1	118.714	64.5	1.607E+04	6.644E+03	2.305E+04	Yes
12/5/2000	25.08	313.362	39.8	4.239E+04	1.752E+04	6.085E+04	Yes
5/14/1991	25	1125.621	22.2	1.518E+05	6.275E+04	2.186E+05	Yes
11/17/1992	24.8	78.851	65.3	1.055E+04	4.360E+03	1.531E+04	Yes
4/11/2000	24.8	216.554	48.5	2.897E+04	1.198E+04	4.205E+04	Yes
1/20/2004	24.8	408.013	45.5	5.458E+04	2.256E+04	7.923E+04	Yes
2/9/1999	24.4	2331.236	8.6	3.068E+05	1.268E+05	4.527E+05	Yes
5/17/1994	24.3	928.495	25.8	1.217E+05	5.031E+04	1.803E+05	Yes
6/14/1993	23.2	471.390	36.9	5.899E+04	2.439E+04	9.153E+04	Yes
11/6/2001	23.15	31.015	83.1	3.873E+03	1.601E+03	6.022E+03	Yes
8/25/1992	23.1	37.425	79.4	4.663E+03	1.928E+03	7.267E+03	Yes
9/4/1990	23	11.142	95.4	1.382E+03	5.714E+02	2.163E+03	Yes
6/18/1991	23	114.848	58.4	1.425E+04	5.890E+03	2.230E+04	Yes
7/9/1991	23	49.139	74.5	6.096E+03	2.520E+03	9.542E+03	Yes
4/20/1993	22.8	1539.873	16.1	1.894E+05	7.829E+04	2.990E+05	Yes
12/21/1998	22.8	614.235	33	7.554E+04	3.123E+04	1.193E+05	Yes
8/7/2001	22.72	53.475	87	6.553E+03	2.709E+03	1.038E+04	Yes
3/16/1993	22.6	437.107	38	5.328E+04	2.203E+04	8.488E+04	Yes
10/8/2002	22.4	20.320	89.1	2.455E+03	1.015E+03	3.946E+03	Yes
9/30/2003	21.8	21.390	79.8	2.515E+03	1.040E+03	4.153E+03	Yes
12/20/1999	21.74	231.981	47.4	2.720E+04	1.125E+04	4.505E+04	Yes
1/7/1992	21.7	668.516	31.5	7.825E+04	3.235E+04	1.298E+05	Yes
12/19/2006	21.7	227.803	53	2.666E+04	1.102E+04	4.423E+04	Yes
7/5/1994	21.5	234.838	47.3	2.723E+04	1.126E+04	4.560E+04	Yes
12/10/1996	21.3	2051.259	10.8	2.357E+05	9.743E+04	3.983E+05	Yes
1/31/2006	21.1	582.875	40.9	6.634E+04	2.742E+04	1.132E+05	Yes
7/17/2001	21.07	212.295	54.7	2.413E+04	9.974E+03	4.122E+04	Yes
7/28/1992	20.4	119.704	57.5	1.317E+04	5.445E+03	2.324E+04	Yes
3/26/1996	20.3	768.508	29.1	8.415E+04	3.479E+04	1.492E+05	Yes
5/30/1995	19.9	488.531	36.4	5.244E+04	2.168E+04	9.486E+04	Yes
6/27/1995	19.8	62.852	69.7	6.712E+03	2.775E+03	1.220E+04	Yes
2/20/1996	19.7	357.113	41.1	3.795E+04	1.569E+04	6.934E+04	Yes
1/19/1999	19.7	331.401	42.1	3.521E+04	1.456E+04	6.435E+04	Yes
4/25/2006	19.7	566.833	39.7	6.023E+04	2.490E+04	1.101E+05	Yes
3/21/1995	19.3	2136.966	10.1	2.225E+05	9.197E+04	4.149E+05	Yes
1/2/2002	19.26	344.912	40.9	3.583E+04	1.481E+04	6.697E+04	Yes
4/24/2001	18.92	371.115	40.3	3.787E+04	1.566E+04	7.206E+04	Yes
1/28/2003	18.9	194.113	53	1.979E+04	8.181E+03	3.769E+04	Yes
2/4/1997	18.8	1197.044	21.1	1.214E+05	5.018E+04	2.324E+05	Yes
1/30/2007	18.7	705.867	24.7	7.120E+04	2.943E+04	1.371E+05	Yes
2/12/2002	18.63	844.902	28.1	8.490E+04	3.510E+04	1.641E+05	Yes
9/14/1999	18.5	12.570	94.3	1.254E+03	5.186E+02	2.441E+03	Yes
11/12/2003	18	90.907	74.5	8.826E+03	3.649E+03	1.765E+04	Yes
2/21/1995	17.8	445.677	37.7	4.279E+04	1.769E+04	8.654E+04	Yes
10/11/1994	17.7	95.135	61.6	9.083E+03	3.755E+03	1.847E+04	Yes
5/25/2004	17.5	263.096	50.3	2.483E+04	1.027E+04	5.109E+04	Yes
5/20/2003	17.2	1513.336	25.5	1.404E+05	5.804E+04	2.939E+05	Yes
4/13/1999	17	2154.108	10	1.975E+05	8.166E+04	4.183E+05	Yes
11/17/1998	16.7	87.707	63.1	7.900E+03	3.266E+03	1.703E+04	Yes
4/24/2007	16.6	276.999	24.7	2.480E+04	1.025E+04	5.379E+04	Yes
12/11/2001	16.01	866.292	5.6	7.481E+04	3.093E+04	1.682E+05	Yes
3/20/2001	15.9	2502.620	5.4	2.146E+05	8.873E+04	4.859E+05	Yes
2/22/1994	15.6	1916.985	12	1.613E+05	6.668E+04	3.722E+05	Yes
1/30/2001	15.6	925.114	18.3	7.784E+04	3.218E+04	1.796E+05	Yes
5/22/2001	15.43	127.805	52.2	1.064E+04	4.397E+03	2.482E+04	Yes
4/19/2005	15.3	631.002	15.5	5.207E+04	2.153E+04	1.225E+05	Yes
3/3/1998	15.216	1117.051	22.4	9.168E+04	3.790E+04	2.169E+05	Yes
5/18/1999	15.1	431.393	38.3	3.514E+04	1.453E+04	8.377E+04	Yes
8/24/1993	15	21.141	88.4	1.710E+03	7.071E+02	4.105E+03	Yes
3/1/1994	14.9	3171.167	4.7	2.549E+05	1.054E+05	6.158E+05	Yes
2/15/2005	14.8	695.172	24.4	5.549E+04	2.294E+04	1.350E+05	Yes
3/28/2006	14.6	1427.777	10.2	1.124E+05	4.648E+04	2.772E+05	Yes

**Table I-4. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/30/2006	14.3	91.442	55.3	7.053E+03	2.916E+03	1.776E+04	Yes
10/10/1995	14.2	27.426	84.7	2.101E+03	8.684E+02	5.326E+03	Yes
3/18/1997	14.2	2328.379	8.6	1.783E+05	7.373E+04	4.521E+05	Yes
9/4/2001	14.2	86.629	76.6	6.635E+03	2.743E+03	1.682E+04	Yes
6/8/1999	14.1	225.124	47.9	1.712E+04	7.078E+03	4.371E+04	Yes
2/10/2004	14.1	3470.514	19.2	2.639E+05	1.091E+05	6.739E+05	Yes
1/2/1991	14	2885.476	5.6	2.179E+05	9.008E+04	5.603E+05	Yes
7/25/1995	14	50.853	73.9	3.840E+03	1.588E+03	9.874E+03	Yes
4/13/2004	14	1203.183	15.4	9.086E+04	3.756E+04	2.336E+05	Yes
3/27/2007	13.9	276.999	24.7	2.077E+04	8.586E+03	5.379E+04	Yes
6/23/1998	13.647	23.998	86.5	1.766E+03	7.303E+02	4.660E+03	Yes
12/14/1992	13.4	337.115	41.9	2.437E+04	1.007E+04	6.546E+04	Yes
5/30/2000	13.2	554.240	34.4	3.946E+04	1.631E+04	1.076E+05	Yes
5/17/2005	13.1	66.843	71.4	4.723E+03	1.953E+03	1.298E+04	Yes
4/2/1991	13	922.781	25.9	6.470E+04	2.675E+04	1.792E+05	Yes
5/18/1993	12.2	1417.026	17.7	9.325E+04	3.855E+04	2.752E+05	Yes
4/11/1995	12.2	1485.592	16.8	9.776E+04	4.041E+04	2.885E+05	Yes
3/22/2005	12.1	273.791	21.2	1.787E+04	7.387E+03	5.316E+04	Yes
7/27/1993	12	30.855	83	1.997E+03	8.256E+02	5.991E+03	Yes
11/8/1994	12	622.806	32.8	4.031E+04	1.667E+04	1.209E+05	Yes
6/11/1996	12	288.548	44.3	1.868E+04	7.721E+03	5.603E+04	Yes
7/9/1996	12	36.568	79.8	2.367E+03	9.785E+02	7.101E+03	Yes
7/9/2002	11.87	42.780	94.1	2.739E+03	1.132E+03	8.307E+03	Yes
7/27/2004	11.7	82.886	52.9	5.231E+03	2.162E+03	1.609E+04	Yes
3/5/2002	11.68	1122.971	28.8	7.075E+04	2.925E+04	2.181E+05	Yes
11/25/1991	11.6	1548.444	16	9.688E+04	4.005E+04	3.007E+05	Yes
9/21/1993	11.3	12.285	94.5	7.487E+02	3.095E+02	2.385E+03	Yes
11/16/1993	11	488.531	36.4	2.899E+04	1.198E+04	9.486E+04	Yes
7/28/1998	10.8	16.570	91.7	9.653E+02	3.990E+02	3.218E+03	Yes
8/2/1994	10.7	196.270	50	1.133E+04	4.683E+03	3.811E+04	Yes
2/18/2003	10.1	5326.089	8.5	2.902E+05	1.200E+05	1.034E+06	Yes
10/3/2000	9.82	39.037	89.1	2.068E+03	8.548E+02	7.580E+03	Yes
11/28/2006	9.73	165.237	60.2	8.672E+03	3.585E+03	3.209E+04	Yes
8/30/1994	9.4	99.135	60.8	5.026E+03	2.078E+03	1.925E+04	Yes
12/14/2004	9.35	1336.870	12.3	6.742E+04	2.787E+04	2.596E+05	Yes
7/22/2003	9.09	247.054	50.6	1.211E+04	5.008E+03	4.797E+04	Yes
11/9/2004	8.91	1919.745	11.2	9.226E+04	3.814E+04	3.728E+05	Yes
9/26/2006	8.91	171.119	59.9	8.224E+03	3.400E+03	3.323E+04	Yes
2/27/2007	8.73	1181.793	24.7	5.565E+04	2.301E+04	2.295E+05	Yes
7/6/2004	8.35	1598.896	16.2	7.201E+04	2.977E+04	3.105E+05	Yes
8/19/2003	8.28	42.780	80.9	1.911E+03	7.899E+02	8.307E+03	Yes
8/10/2004	8.22	46.523	77.9	2.063E+03	8.527E+02	9.034E+03	Yes
8/22/1995	8	9.428	96.5	4.068E+02	1.682E+02	1.831E+03	Yes
5/7/2002	7.95	1507.989	19.4	6.466E+04	2.673E+04	2.928E+05	Yes
8/25/1998	7.86	26.569	85.2	1.126E+03	4.657E+02	5.159E+03	Yes
10/20/1998	7.84	225.696	47.9	9.544E+03	3.946E+03	4.382E+04	Yes
10/24/2006	7.71	27.807	87	1.156E+03	4.781E+02	5.399E+03	Yes
9/29/1998	7.7	54.567	72.4	2.266E+03	9.369E+02	1.060E+04	Yes
8/22/2000	7.58	6.571	98.1	2.686E+02	1.111E+02	1.276E+03	Yes
9/26/2000	7.21	6.571	98.1	2.555E+02	1.056E+02	1.276E+03	Yes
7/25/2006	7.2	18.716	96.3	7.268E+02	3.005E+02	3.634E+03	Yes
10/12/2004	7.04	951.851	34.3	3.614E+04	1.494E+04	1.848E+05	Yes
6/20/2006	6.87	56.149	81.9	2.081E+03	8.601E+02	1.090E+04	Yes
7/31/2000	6.82	19.427	89.6	7.146E+02	2.954E+02	3.772E+03	Yes
8/31/2004	6.8	87.699	71.5	3.217E+03	1.330E+03	1.703E+04	Yes
3/9/2004	6.54	4935.723	13.9	1.741E+05	7.198E+04	9.584E+05	Yes
7/26/2005	6.34	104.811	66.1	3.584E+03	1.482E+03	2.035E+04	Yes
9/26/2005	6.34	54.010	91.4	1.847E+03	7.635E+02	1.049E+04	Yes
8/23/2005	6.29	21.390	94.1	7.257E+02	3.000E+02	4.153E+03	Yes
6/24/2003	6.13	3390.301	2.1	1.121E+05	4.634E+04	6.583E+05	Yes
4/2/2002	6.11	7272.571	3.1	2.397E+05	9.908E+04	1.412E+06	Yes
8/22/2006	5.99	17.647	96.1	5.701E+02	2.357E+02	3.427E+03	Yes
6/27/2000	4.66	917.067	26	2.305E+04	9.529E+03	1.781E+05	Yes
2/20/2001	4.26	12887.423	0.4	2.961E+05	1.224E+05	2.502E+06	Yes
1/17/2006	0.02	68.982	75.5	7.442E+00	3.076E+00	1.339E+04	Yes



**Figure I-3. Sulfate load duration curve for station OUA0026 for Saline River (HUC/reach 08040203-010)**

**Table I-5. Allowable sulfate load for station OUA0026 for Saline River (HUC/reach 08040203-010)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>184,500.2</b>
9/12/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/13/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/16/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/22/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/23/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/11/1954	4.1	100.000	1.340	0.00	289.1716	0.00E+00
9/14/1954	4.1	100.000	1.340	0.00	289.1716	0.00E+00
9/15/1954	4.1	100.000	1.340	0.00	289.1716	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/27/1949	53600	0.100	17521.998	0.00	3780389.3727	0.00E+00
1/28/1949	54800	0.100	17914.282	0.00	3865024.9557	0.00E+00
12/28/1987	59400	0.100	19418.035	0.00	4189461.3571	0.00E+00
5/2/1958	59600	0.100	19483.416	0.00	4203567.2876	0.00E+00
5/16/1968	59600	0.100	19483.416	0.00	4203567.2876	0.00E+00
12/26/1987	61500	0.100	20104.531	0.00	4337573.6273	0.00E+00
5/1/1958	65900	0.100	21542.904	0.00	4647904.0982	0.00E+00
12/27/1987	67000	0.100	21902.498	0.00	4725486.7159	0.00E+00
4/30/1958	68500	0.100	22392.852	0.00	4831281.1946	0.00E+00
4/29/1958	69500	0.100	22719.755	0.00	4901810.8471	0.00E+00
5/15/1968	71500	0.100	23373.561	0.10	5042870.1521	5.04E+03
5/14/1968	72500	0.000	23700.464	0.00	5113399.8045	0.00E+00

**Table I-6. Existing load for sulfate for station OUA0026 for Saline River (HUC/reach 08040203-010)**

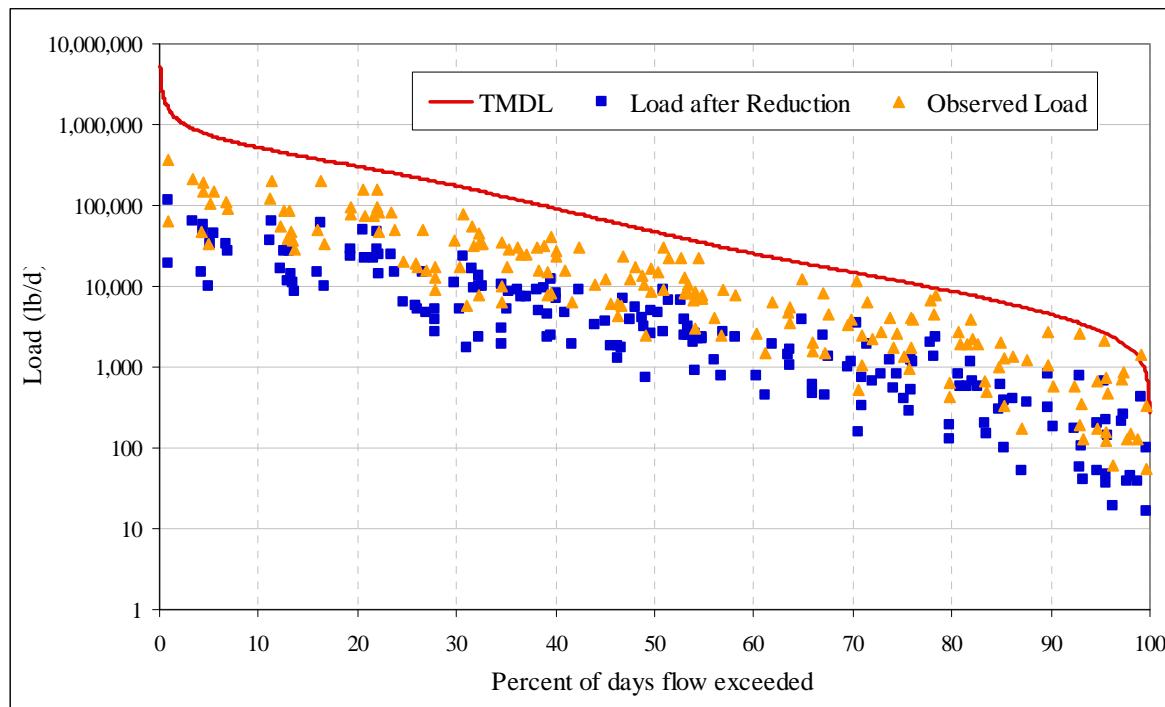
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
12/17/2002	18	162,144	16.7	1.574E+04	1.574E+04	3.148E+04	Yes
1/9/1996	13.6	43,281	54.7	3.175E+03	3.175E+03	8.404E+03	Yes
10/8/1996	13.4	9,494	82.6	6.862E+02	6.862E+02	1.844E+03	Yes
9/5/1995	12.8	1,711	98.8	1.181E+02	1.181E+02	3.322E+02	Yes
5/23/1995	12.2	45,077	54	2.966E+03	2.966E+03	8.753E+03	Yes
4/9/1996	11.6	55,855	50.8	3.495E+03	3.495E+03	1.085E+04	Yes
6/17/1997	11	267,728	26.5	1.588E+04	1.588E+04	5.199E+04	Yes
11/28/1995	10.5	10,093	81.5	5.716E+02	5.716E+02	1.960E+03	Yes
10/3/1995	10.3	4,448	92.9	2.471E+02	2.471E+02	8.637E+02	Yes
2/14/1995	10.1	140,279	37	7.642E+03	7.642E+03	2.724E+04	Yes
9/10/1996	10.1	7,955	85.2	4.334E+02	4.334E+02	1.545E+03	Yes
6/6/1995	9.9	75,699	46.2	4.042E+03	4.042E+03	1.470E+04	Yes
2/21/2006	9.89	63,419	53	3.383E+03	3.383E+03	1.231E+04	Yes
6/18/1996	9.6	28,997	61.2	1.501E+03	1.501E+03	5.630E+03	Yes
5/7/1996	9.5	216,406	30.2	1.109E+04	1.109E+04	4.202E+04	Yes
1/4/1993	9.31	201,010	31.5	1.009E+04	1.009E+04	3.903E+04	Yes
5/13/1997	9.3	55,427	50.9	2.780E+03	2.780E+03	1.076E+04	Yes
3/7/2006	9.27	55,574	39.6	2.779E+03	2.779E+03	1.079E+04	Yes
3/11/1997	9.2	1111,968	3.3	5.518E+04	5.518E+04	2.159E+05	Yes
3/12/1996	9.1	42,768	54.8	2.099E+03	2.099E+03	8.305E+03	Yes
1/22/2002	9.02	76,168	26.9	3.706E+03	3.706E+03	1.479E+04	Yes
11/13/1990	9	67,146	48	3.260E+03	3.260E+03	1.304E+04	Yes
10/28/1997	8.88	23,950	64.9	1.147E+03	1.147E+03	4.651E+03	Yes
12/14/1993	8.87	543,153	13	2.599E+04	2.599E+04	1.055E+05	Yes
11/12/1991	8.79	60,132	49.6	2.851E+03	2.851E+03	1.168E+04	Yes
12/19/2000	8.74	178,162	27.8	8.399E+03	8.399E+03	3.459E+04	Yes
3/30/1993	8.7	118,895	39.6	5.579E+03	5.579E+03	2.309E+04	Yes
3/28/1995	8.7	193,311	32.2	9.071E+03	9.071E+03	3.754E+04	Yes
2/18/1997	8.7	597,041	11.3	2.802E+04	2.802E+04	1.159E+05	Yes
11/2/1993	8.62	15,311	73.7	7.119E+02	7.119E+02	2.973E+03	Yes
2/11/2003	8.61	70,284	27.8	3.264E+03	3.264E+03	1.365E+04	Yes
10/31/2000	8.54	10,461	95.6	4.819E+02	4.819E+02	2.031E+03	Yes
1/21/1997	8.5	454,196	16.3	2.082E+04	2.082E+04	8.819E+04	Yes
2/2/1993	8.4	108,631	40.9	4.922E+03	4.922E+03	2.109E+04	Yes
1/24/1995	8.4	975,110	4.4	4.418E+04	4.418E+04	1.893E+05	Yes
11/5/1996	8.2	124,883	38.8	5.523E+03	5.523E+03	2.425E+04	Yes
1/28/1992	8.16	130,015	38.1	5.722E+03	5.722E+03	2.525E+04	Yes
10/24/2000	8.01	4,577	99.6	1.977E+02	1.977E+02	8.887E+02	Yes
5/4/1994	7.92	265,162	26.6	1.133E+04	1.133E+04	5.149E+04	Yes
3/8/1994	7.9	537,166	13.2	2.289E+04	2.289E+04	1.043E+05	Yes
11/1/1994	7.9	18,219	70.4	7.763E+02	7.763E+02	3.538E+03	Yes
10/3/2006	7.88	7,846	79.7	3.335E+02	3.335E+02	1.523E+03	Yes
12/27/2005	7.86	18,960	80.8	8.038E+02	8.038E+02	3.682E+03	Yes
10/23/2001	7.84	6,211	67.2	2.627E+02	2.627E+02	1.206E+03	Yes
7/11/1995	7.8	30,451	60.3	1.281E+03	1.281E+03	5.913E+03	Yes
1/18/2000	7.77	14,712	74.5	6.166E+02	6.166E+02	2.857E+03	Yes
12/2/1997	7.737	48,927	52.7	2.042E+03	2.042E+03	9.500E+03	Yes
11/21/1994	7.7	156,531	35.2	6.501E+03	6.501E+03	3.039E+04	Yes
2/13/1996	7.6	16,851	71.9	6.908E+02	6.908E+02	3.272E+03	Yes
12/3/1996	7.5	780,088	6.9	3.156E+04	3.156E+04	1.515E+05	Yes
1/21/2003	7.49	63,746	49.7	2.575E+03	2.575E+03	1.238E+04	Yes
12/2/2003	7.47	96,109	54.4	3.872E+03	3.872E+03	1.866E+04	Yes
1/5/1993	7.41	237,790	28.6	9.504E+03	9.504E+03	4.617E+04	Yes
8/3/1993	7.41	10,949	79.8	4.376E+02	4.376E+02	2.126E+03	Yes
10/15/2002	7.29	11,769	75.2	4.627E+02	4.627E+02	2.285E+03	Yes
4/8/2003	7.28	134,684	46.8	5.289E+03	5.289E+03	2.615E+04	Yes
4/7/1992	7.25	98,366	42.3	3.847E+03	3.847E+03	1.910E+04	Yes
3/15/2005	7.24	117,358	48.7	4.583E+03	4.583E+03	2.279E+04	Yes
2/10/1998	7.21	342,144	21.9	1.331E+04	1.331E+04	6.644E+04	Yes
2/13/2001	7.21	813,988	4.5	3.166E+04	3.166E+04	1.581E+05	Yes
2/19/2002	7.15	392,284	23.4	1.513E+04	1.513E+04	7.617E+04	Yes
4/3/2001	7.11	127,492	36.5	4.889E+03	4.889E+03	2.476E+04	Yes
9/6/1994	7.1	122,316	39.1	4.684E+03	4.684E+03	2.375E+04	Yes

**Table I-6. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
1/15/2001	7.09	276.887	13.4	1.059E+04	1.059E+04	5.376E+04	Yes
2/1/2005	7.05	108.205	27.8	4.115E+03	4.115E+03	2.101E+04	Yes
2/29/2000	7.02	189.035	32.6	7.158E+03	7.158E+03	3.671E+04	Yes
12/11/1990	7	57.822	50.3	2.183E+03	2.183E+03	1.123E+04	Yes
2/19/1991	7	787.786	6.8	2.974E+04	2.974E+04	1.530E+05	Yes
7/15/1997	7	18.989	69.5	7.170E+02	7.170E+02	3.687E+03	Yes
4/18/2006	6.98	48.055	46.2	1.809E+03	1.809E+03	9.331E+03	Yes
12/30/1997	6.967	342.144	21.9	1.286E+04	1.286E+04	6.644E+04	Yes
3/27/2000	6.92	121.461	39.2	4.534E+03	4.534E+03	2.358E+04	Yes
4/15/1997	6.9	210.419	30.7	7.831E+03	7.831E+03	4.086E+04	Yes
3/2/1993	6.87	396.032	19.2	1.468E+04	1.468E+04	7.690E+04	Yes
1/27/2004	6.84	454.395	21.6	1.676E+04	1.676E+04	8.823E+04	Yes
2/24/2004	6.73	134.684	25.9	4.889E+03	4.889E+03	2.615E+04	Yes
4/24/2000	6.72	46.788	53.3	1.696E+03	1.696E+03	9.085E+03	Yes
3/11/2003	6.71	158.875	31.8	5.750E+03	5.750E+03	3.085E+04	Yes
12/5/2006	6.7	132.723	46.6	4.796E+03	4.796E+03	2.577E+04	Yes
3/3/1992	6.66	339.578	22.1	1.220E+04	1.220E+04	6.594E+04	Yes
6/21/1994	6.6	45.420	53.9	1.617E+03	1.617E+03	8.819E+03	Yes
9/5/2000	6.6	0.855	99.7	3.045E+01	3.045E+01	1.661E+02	Yes
7/18/2000	6.59	7.955	85.2	2.828E+02	2.828E+02	1.545E+03	Yes
12/14/1999	6.57	158.242	35.1	5.608E+03	5.608E+03	3.073E+04	Yes
11/1/2005	6.56	7.192	90.3	2.545E+02	2.545E+02	1.396E+03	Yes
7/13/1993	6.54	8.981	83.3	3.168E+02	3.168E+02	1.744E+03	Yes
3/19/2002	6.5	791.105	0.8	2.774E+04	2.774E+04	1.536E+05	Yes
10/11/2005	6.49	5.230	92.3	1.831E+02	1.831E+02	1.016E+03	Yes
11/13/2001	6.47	4.904	84.7	1.711E+02	1.711E+02	9.522E+02	Yes
4/5/1994	6.4	365.239	20.7	1.261E+04	1.261E+04	7.092E+04	Yes
4/25/1995	6.4	148.833	36.1	5.138E+03	5.138E+03	2.890E+04	Yes
7/23/1996	6.4	17.791	70.9	6.142E+02	6.142E+02	3.455E+03	Yes
3/2/1999	6.4	62.783	49	2.167E+03	2.167E+03	1.219E+04	Yes
1/9/2007	6.38	405.360	24.7	1.395E+04	1.395E+04	7.871E+04	Yes
5/4/1993	6.33	526.046	13.6	1.796E+04	1.796E+04	1.021E+05	Yes
5/16/2000	6.33	103.499	41.6	3.534E+03	3.534E+03	2.010E+04	Yes
8/8/1995	6.3	12.232	77.8	4.156E+02	4.156E+02	2.375E+03	Yes
11/23/1992	6.29	163.374	34.6	5.543E+03	5.543E+03	3.172E+04	Yes
3/30/2004	6.23	141.549	30.4	4.757E+03	4.757E+03	2.749E+04	Yes
8/15/2000	6.22	2.224	97.7	7.461E+01	7.461E+01	4.318E+02	Yes
9/1/1998	6.14	3.593	94.7	1.190E+02	1.190E+02	6.976E+02	Yes
11/7/2006	6.06	787.836	40	2.575E+04	2.575E+04	1.530E+05	Yes
7/14/1992	6.04	87.247	44	2.842E+03	2.842E+03	1.694E+04	Yes
1/22/1991	6	393.465	19.3	1.273E+04	1.273E+04	7.640E+04	Yes
3/26/1991	6	192.456	32.2	6.228E+03	6.228E+03	3.737E+04	Yes
5/8/2001	6	47.728	45.1	1.545E+03	1.545E+03	9.268E+03	Yes
1/5/1999	5.98	567.104	12.2	1.829E+04	1.829E+04	1.101E+05	Yes
12/1/1998	5.96	21.042	67.5	6.764E+02	6.764E+02	4.086E+03	Yes
4/14/1998	5.921	53.374	51.5	1.705E+03	1.705E+03	1.036E+04	Yes
1/13/1998	5.911	816.869	6.3	2.604E+04	2.604E+04	1.586E+05	Yes
11/3/1998	5.91	17.706	70.9	5.644E+02	5.644E+02	3.438E+03	Yes
10/31/1995	5.9	13.771	75.7	4.382E+02	4.382E+02	2.674E+03	Yes
7/29/2003	5.89	21.902	75.9	6.958E+02	6.958E+02	4.253E+03	Yes
8/11/1992	5.87	37.208	56.9	1.178E+03	1.178E+03	7.225E+03	Yes
5/19/1992	5.83	28.056	61.8	8.822E+02	8.822E+02	5.448E+03	Yes
10/4/1994	5.8	10.521	80.6	3.291E+02	3.291E+02	2.043E+03	Yes
10/6/1992	5.75	7.356	86.2	2.281E+02	2.281E+02	1.428E+03	Yes
5/10/2005	5.71	67.669	67.1	2.084E+03	2.084E+03	1.314E+04	Yes
11/4/2003	5.68	28.441	89.8	8.713E+02	8.713E+02	5.522E+03	Yes
8/23/2004	5.68	114.089	48	3.495E+03	3.495E+03	2.215E+04	Yes
6/2/1998	5.67	22.838	65.9	6.985E+02	6.985E+02	4.435E+03	Yes
2/25/1992	5.66	605.595	11.1	1.849E+04	1.849E+04	1.176E+05	Yes
12/7/2004	5.65	987.247	4.2	3.009E+04	3.009E+04	1.917E+05	Yes
4/20/1999	5.62	554.273	12.6	1.680E+04	1.680E+04	1.076E+05	Yes
3/6/2001	5.55	650.537	5	1.947E+04	1.947E+04	1.263E+05	Yes
9/7/1993	5.54	3.250	95.6	9.713E+01	9.713E+01	6.311E+02	Yes

**Table I-6. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/4/2004	5.54	292.578	23.7	8.743E+03	8.743E+03	5.681E+04	Yes
7/19/2005	5.54	76.495	56.7	2.286E+03	2.286E+03	1.485E+04	Yes
5/23/2006	5.52	31.383	63.7	9.344E+02	9.344E+02	6.094E+03	Yes
9/16/1997	5.51	4.191	93.3	1.246E+02	1.246E+02	8.138E+02	Yes
4/16/2002	5.51	119.320	40	3.546E+03	3.546E+03	2.317E+04	Yes
10/5/1999	5.49	2.395	97.3	7.092E+01	7.092E+01	4.651E+02	Yes
4/26/2004	5.48	536.121	22.1	1.585E+04	1.585E+04	1.041E+05	Yes
2/2/1999	5.47	915.235	5.1	2.700E+04	2.700E+04	1.777E+05	Yes
6/3/2003	5.47	36.940	58.2	1.090E+03	1.090E+03	7.173E+03	Yes
6/1/2004	5.47	72.572	34.6	2.141E+03	2.141E+03	1.409E+04	Yes
9/28/2004	5.41	15.691	94.7	4.579E+02	4.579E+02	3.047E+03	Yes
8/23/1994	5.4	61.415	49.2	1.789E+03	1.789E+03	1.193E+04	Yes
6/6/2006	5.4	15.038	70.5	4.380E+02	4.380E+02	2.920E+03	Yes
9/5/2006	5.38	1.635	96.3	4.743E+01	4.743E+01	3.174E+02	Yes
6/12/2001	5.34	53.939	53.1	1.554E+03	1.554E+03	1.047E+04	Yes
5/14/2002	5.34	467.471	15.9	1.346E+04	1.346E+04	9.077E+04	Yes
8/4/1998	5.3	4.448	92.9	1.272E+02	1.272E+02	8.637E+02	Yes
9/25/2001	5.3	5.230	95.4	1.495E+02	1.495E+02	1.016E+03	Yes
10/7/2003	5.3	18.960	81.9	5.420E+02	5.420E+02	3.682E+03	Yes
6/25/2002	5.28	9.807	83.5	2.793E+02	2.793E+02	1.904E+03	Yes
5/11/1999	5.27	69.028	47.5	1.962E+03	1.962E+03	1.340E+04	Yes
6/30/1998	5.164	4.277	93.1	1.191E+02	1.191E+02	8.305E+02	Yes
6/21/2005	5.15	33.671	78.2	9.353E+02	9.353E+02	6.538E+03	Yes
4/12/2005	5.11	964.364	13.3	2.658E+04	2.658E+04	1.873E+05	Yes
3/17/1998	5.09	651.784	9.8	1.789E+04	1.789E+04	1.266E+05	Yes
5/13/2003	5.07	88.918	26	2.432E+03	2.432E+03	1.727E+04	Yes
10/5/1998	5.06	77.838	45.6	2.124E+03	2.124E+03	1.511E+04	Yes
8/1/2006	5.05	2.288	95.6	6.233E+01	6.233E+01	4.443E+02	Yes
6/6/2000	5.04	205.286	31.1	5.581E+03	5.581E+03	3.986E+04	Yes
9/18/1990	5	6.757	87.5	1.822E+02	1.822E+02	1.312E+03	Yes
10/16/1990	5	367.805	20.6	9.919E+03	9.919E+03	7.142E+04	Yes
4/16/1991	5	2052.863	0.8	5.536E+04	5.536E+04	3.986E+05	Yes
5/7/1991	5	872.467	5.5	2.353E+04	2.353E+04	1.694E+05	Yes
6/4/1991	5	46.874	53.3	1.264E+03	1.264E+03	9.102E+03	Yes
7/30/1991	5	25.490	63.6	6.874E+02	6.874E+02	4.949E+03	Yes
5/19/1998	4.97	17.107	71.5	4.586E+02	4.586E+02	3.322E+03	Yes
6/1/1993	4.96	39.518	56	1.057E+03	1.057E+03	7.673E+03	Yes
10/5/1993	4.96	13.686	75.9	3.661E+02	3.661E+02	2.657E+03	Yes
8/3/1999	4.96	5.731	89.8	1.533E+02	1.533E+02	1.113E+03	Yes
7/6/1999	4.93	18.647	69.9	4.958E+02	4.958E+02	3.621E+03	Yes
8/26/1997	4.905	8.040	85	2.127E+02	2.127E+02	1.561E+03	Yes
9/7/1999	4.82	2.481	97.2	6.449E+01	6.449E+01	4.817E+02	Yes
6/30/2003	4.82	112.128	38.3	2.915E+03	2.915E+03	2.177E+04	Yes
9/9/2003	4.81	21.576	76.1	5.598E+02	5.598E+02	4.189E+03	Yes
12/18/2001	4.8	2072.565	0.4	5.366E+04	5.366E+04	4.024E+05	Yes
10/19/2004	4.78	1219.348	35.1	3.144E+04	3.144E+04	2.368E+05	Yes
8/16/2005	4.77	12.095	95.8	3.112E+02	3.112E+02	2.349E+03	Yes
9/13/2005	4.75	3.269	98	8.375E+01	8.375E+01	6.348E+02	Yes
8/14/2001	4.7	21.902	63.4	5.552E+02	5.552E+02	4.253E+03	Yes
7/20/2004	4.69	25.825	65.9	6.533E+02	6.533E+02	5.015E+03	Yes
7/11/2006	4.67	5.884	87	1.482E+02	1.482E+02	1.143E+03	Yes
6/22/1992	4.66	164.229	34.6	4.128E+03	4.128E+03	3.189E+04	Yes
7/30/2002	4.5	29.748	82.1	7.220E+02	7.220E+02	5.776E+03	Yes
8/27/2002	4.33	40.536	78.4	9.467E+02	9.467E+02	7.871E+03	Yes
9/10/2002	4.31	6.211	99.1	1.444E+02	1.444E+02	1.206E+03	Yes
6/1/1999	4.3	191.601	32.3	4.444E+03	4.444E+03	3.720E+04	Yes
1/4/2005	4.24	3269.029	10.3	7.476E+04	7.476E+04	6.348E+05	Yes
7/3/2001	4.18	62.112	54.4	1.400E+03	1.400E+03	1.206E+04	Yes
7/2/1991	4	14.969	74.1	3.230E+02	3.230E+02	2.907E+03	Yes
7/12/1994	4	222.394	29.8	4.798E+03	4.798E+03	4.318E+04	Yes
8/13/1996	4	15.995	72.9	3.451E+02	3.451E+02	3.106E+03	Yes
11/2/2004	3.73	2602.147	22.4	5.235E+04	5.235E+04	5.053E+05	Yes
12/10/1991	3.21	675.734	9.1	1.170E+04	1.170E+04	1.312E+05	Yes



**Figure I-4. Sulfate load duration curve for station OUA0041 for Saline River (HUC/reach 08040203-010)**

**Table I-7. Allowable sulfate load for station OUA0041 for Saline River (HUC/reach 08040203-010)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>184,500.2</b>
9/12/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/13/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/16/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/22/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/23/1954	3.8	100.000	1.242	0.00	268.0127	0.00E+00
9/11/1954	4.1	100.000	1.340	0.00	289.1716	0.00E+00
9/14/1954	4.1	100.000	1.340	0.00	289.1716	0.00E+00
9/15/1954	4.1	100.000	1.340	0.00	289.1716	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/28/1949	54800	0.100	17914.282	0.00	3865024.9557	0.00E+00
12/28/1987	59400	0.100	19418.035	0.00	4189461.3571	0.00E+00
5/2/1958	59600	0.100	19483.416	0.00	4203567.2876	0.00E+00
5/16/1968	59600	0.100	19483.416	0.00	4203567.2876	0.00E+00
12/26/1987	61500	0.100	20104.531	0.00	4337573.6273	0.00E+00
5/1/1958	65900	0.100	21542.904	0.00	4647904.0982	0.00E+00
12/27/1987	67000	0.100	21902.498	0.00	4725486.7159	0.00E+00
4/30/1958	68500	0.100	22392.852	0.00	4831281.1946	0.00E+00
4/29/1958	69500	0.100	22719.755	0.00	4901810.8471	0.00E+00
5/15/1968	71500	0.100	23373.561	0.10	5042870.1521	5.04E+03
5/14/1968	72500	0.000	23700.464	0.00	5113399.8045	0.00E+00

**Table I-8. Existing load for sulfate for station OUA0041 for Saline River (HUC/reach 08040203-010)**

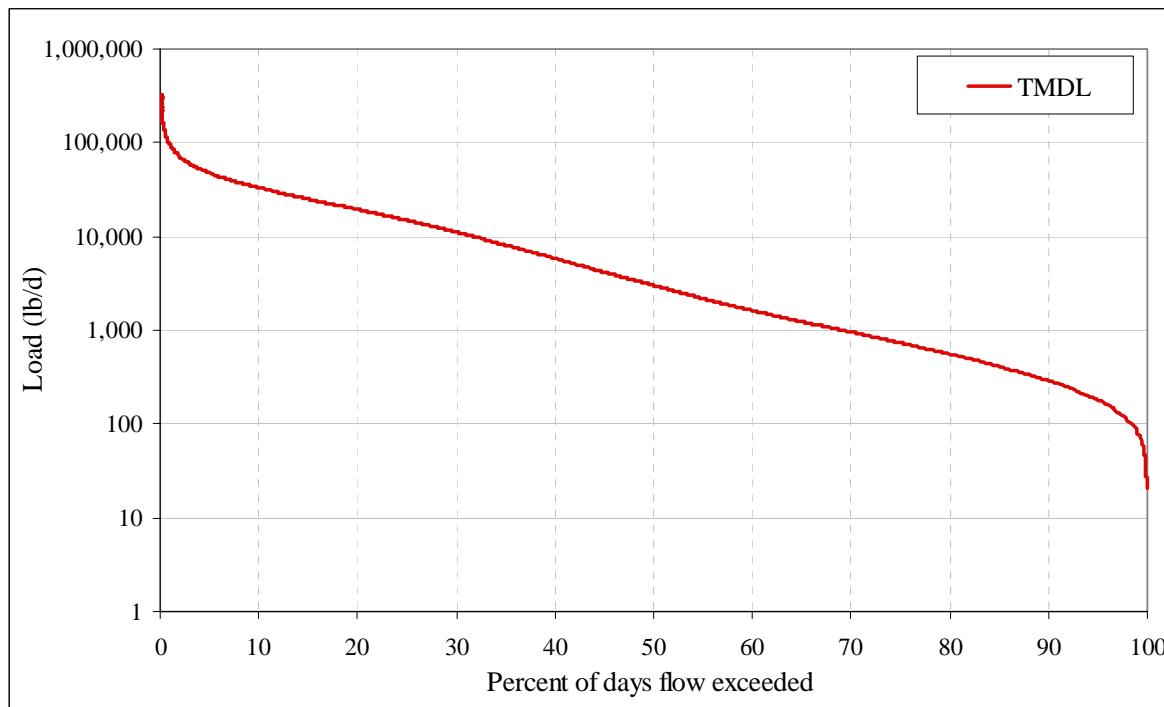
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
11/1/1994	119	18.219	70.4	1.169E+04	3.538E+03	3.538E+03	Yes
10/3/1995	109	4,448	92.9	2.615E+03	7.911E+02	8.637E+02	Yes
5/13/1997	100.6	55.427	50.9	3.008E+04	9.099E+03	1.076E+04	Yes
8/8/1995	100	12.232	77.8	6.597E+03	1.996E+03	2.375E+03	Yes
10/28/1997	96.9	23.950	64.9	1.252E+04	3.787E+03	4.651E+03	Yes
2/10/1998	86.55	342.144	21.9	1.597E+05	4.832E+04	6.644E+04	Yes
12/2/1997	84.514	48.927	52.7	2.230E+04	6.747E+03	9.500E+03	Yes
1/21/1997	83.3	454.196	16.3	2.041E+05	6.174E+04	8.819E+04	Yes
10/16/1990	81	367.805	20.6	1.607E+05	4.861E+04	7.142E+04	Yes
9/25/2001	76.7	5,230	95.4	2.164E+03	6.546E+02	1.016E+03	Yes
4/14/1998	75.788	53.374	51.5	2.182E+04	6.601E+03	1.036E+04	Yes
5/19/1998	68.2	17.107	71.5	6.293E+03	1.904E+03	3.322E+03	Yes
4/15/1997	67.6	210.419	30.7	7.672E+04	2.321E+04	4.086E+04	Yes
10/5/1999	65.8	2,395	97.3	8.500E+02	2.571E+02	4.651E+02	Yes
2/18/1997	64.1	597.041	11.3	2.064E+05	6.245E+04	1.159E+05	Yes
3/30/1993	63.3	118.895	39.6	4.059E+04	1.228E+04	2.309E+04	Yes
4/7/1992	57	98.366	42.3	3.024E+04	9.149E+03	1.910E+04	Yes
9/7/1999	53.3	2,481	97.2	7.131E+02	2.157E+02	4.817E+02	Yes
1/4/1993	51.1	201.010	31.5	5.540E+04	1.676E+04	3.903E+04	Yes
12/30/1997	50.998	342.144	21.9	9.411E+04	2.847E+04	6.644E+04	Yes
11/12/1991	50.8	60.132	49.6	1.648E+04	4.984E+03	1.168E+04	Yes
11/2/1993	49.5	15.311	73.7	4.088E+03	1.237E+03	2.973E+03	Yes
11/13/1990	49	67.146	48	1.775E+04	5.369E+03	1.304E+04	Yes
12/11/1990	49	57.822	50.3	1.528E+04	4.623E+03	1.123E+04	Yes
5/8/2001	47.36	47.728	45.1	1.219E+04	3.688E+03	9.268E+03	Yes
10/4/1994	47.1	10.521	80.6	2.673E+03	8.086E+02	2.043E+03	Yes
8/26/1997	46.078	8,040	85	1.998E+03	6.045E+02	1.561E+03	Yes
11/5/1996	45.9	124.883	38.8	3.092E+04	9.353E+03	2.425E+04	Yes
8/11/1992	45.6	37.208	56.9	9.152E+03	2.769E+03	7.225E+03	Yes
10/23/2001	45.01	6.211	67.2	1.508E+03	4.562E+02	1.206E+03	Yes
1/22/1991	44	393.465	19.3	9.338E+04	2.825E+04	7.640E+04	Yes
3/3/1992	43.8	339.578	22.1	8.022E+04	2.427E+04	6.594E+04	Yes
6/12/2001	43.75	53.939	53.1	1.273E+04	3.851E+03	1.047E+04	Yes
3/26/1991	43	192.456	32.2	4.464E+04	1.350E+04	3.737E+04	Yes
9/10/2002	42.96	6,211	99.1	1.439E+03	4.354E+02	1.206E+03	Yes
1/28/1992	42.9	130.015	38.1	3.008E+04	9.101E+03	2.525E+04	Yes
12/2/2003	42.2	96.109	54.4	2.188E+04	6.618E+03	1.866E+04	Yes
5/19/1992	41.9	28.056	61.8	6.341E+03	1.918E+03	5.448E+03	Yes
4/24/2000	41.4	46.788	53.3	1.045E+04	3.161E+03	9.085E+03	Yes
8/14/2001	40.64	21.902	63.4	4.801E+03	1.452E+03	4.253E+03	Yes
7/30/1991	40	25.490	63.6	5.499E+03	1.664E+03	4.949E+03	Yes
12/1/1998	39.7	21.042	67.5	4.506E+03	1.363E+03	4.086E+03	Yes
11/23/1992	39.4	163.374	34.6	3.472E+04	1.050E+04	3.172E+04	Yes
2/19/2002	38.74	392.284	23.4	8.197E+04	2.480E+04	7.617E+04	Yes
6/3/2003	38.4	36.940	58.2	7.651E+03	2.315E+03	7.173E+03	Yes
7/6/1999	38.3	18.647	69.9	3.852E+03	1.165E+03	3.621E+03	Yes
11/13/2001	38.24	4,904	84.7	1.011E+03	3.060E+02	9.522E+02	Yes
1/22/2002	37.96	76.168	26.9	1.560E+04	4.718E+03	1.479E+04	Yes
10/8/1996	37.9	9.494	82.6	1.941E+03	5.872E+02	1.844E+03	Yes
10/7/2003	37.6	18.960	81.9	3.845E+03	1.163E+03	3.682E+03	Yes
4/25/1995	37.5	148.833	36.1	3.010E+04	9.107E+03	2.890E+04	Yes
12/17/2002	37.4	162.144	16.7	3.271E+04	9.895E+03	3.148E+04	Yes
4/5/1994	37.2	365.239	20.7	7.328E+04	2.217E+04	7.092E+04	Yes
2/25/1992	36.9	605.595	11.1	1.205E+05	3.646E+04	1.176E+05	Yes
3/11/2003	36.9	158.875	31.8	3.162E+04	9.566E+03	3.085E+04	Yes
1/24/1995	36.7	975.110	4.4	1.930E+05	5.839E+04	1.893E+05	Yes
1/22/1991	36	393.465	19.3	7.640E+04	2.311E+04	7.640E+04	Yes
4/16/2002	35.84	119.320	40	2.307E+04	6.978E+03	2.317E+04	Yes
3/11/1997	35.8	1111.968	3.3	2.147E+05	6.496E+04	2.159E+05	Yes
11/28/1995	35.7	10,093	81.5	1.944E+03	5.880E+02	1.960E+03	Yes
5/13/2003	35.7	88.918	26	1.712E+04	5.180E+03	1.727E+04	Yes
4/3/2001	35.69	127.492	36.5	2.454E+04	7.425E+03	2.476E+04	Yes
5/4/1994	35	265.162	26.6	5.006E+04	1.514E+04	5.149E+04	Yes

**Table I-8. (continued)**

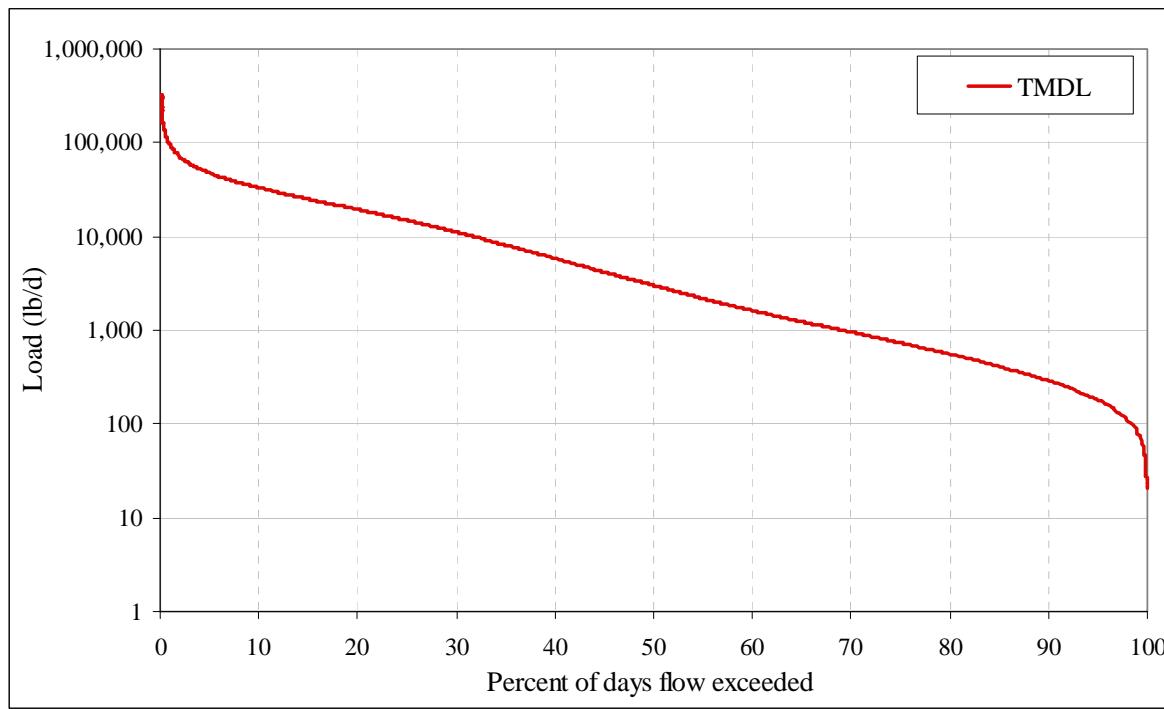
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
8/27/2002	34.97	40,536	78.4	7,646E+03	2,313E+03	7,871E+03	Yes
5/23/1995	34.8	45,077	54	8,461E+03	2,560E+03	8,753E+03	Yes
10/6/1992	34.2	7,356	86.2	1,357E+03	4,105E+02	1,428E+03	Yes
4/16/1991	34	2052,863	0.8	3,765E+05	1,139E+05	3,986E+05	Yes
2/13/2001	33.99	813,988	4.5	1,492E+05	4,515E+04	1,581E+05	Yes
8/3/1999	33.8	5,731	89.8	1,045E+03	3,161E+02	1,113E+03	Yes
7/29/2003	33.6	21,902	75.9	3,969E+03	1,201E+03	4,253E+03	Yes
11/21/1994	33.5	156,531	35.2	2,828E+04	8,556E+03	3,039E+04	Yes
5/11/1999	33.5	69,028	47.5	1,247E+04	3,773E+03	1,340E+04	Yes
1/18/2000	33.41	14,712	74.5	2,651E+03	8,021E+02	2,857E+03	Yes
9/9/2003	33.3	21,576	76.1	3,875E+03	1,172E+03	4,189E+03	Yes
9/18/1990	33	6,757	87.5	1,203E+03	3,639E+02	1,312E+03	Yes
7/15/1997	33	18,989	69.5	3,380E+03	1,023E+03	3,687E+03	Yes
1/9/1996	32.8	43,281	54.7	7,657E+03	2,316E+03	8,404E+03	Yes
2/29/2000	32.8	189,035	32.6	3,344E+04	1,012E+04	3,671E+04	Yes
2/14/1995	32.5	140,279	37	2,459E+04	7,439E+03	2,724E+04	Yes
5/7/1991	32	872,467	5.5	1,506E+05	4,556E+04	1,694E+05	Yes
6/4/1991	32	46,874	53.3	8,090E+03	2,448E+03	9,102E+03	Yes
4/8/2003	31.8	134,684	46.8	2,310E+04	6,989E+03	2,615E+04	Yes
3/28/1995	31.6	193,311	32.2	3,295E+04	9,968E+03	3,754E+04	Yes
3/12/1996	31.2	42,768	54.8	7,197E+03	2,177E+03	8,305E+03	Yes
5/4/2004	31.1	292,578	23.7	4,908E+04	1,485E+04	5,681E+04	Yes
3/2/1999	31	62,783	49	1,050E+04	3,176E+03	1,219E+04	Yes
8/13/1996	30.8	15,995	72.9	2,657E+03	8,039E+02	3,106E+03	Yes
3/8/1994	30.3	537,166	13.2	8,779E+04	2,656E+04	1,043E+05	Yes
1/27/2004	30.1	454,395	21.6	7,377E+04	2,232E+04	8,823E+04	Yes
7/12/1994	30	222,394	29.8	3,599E+04	1,089E+04	4,318E+04	Yes
9/10/1996	29.8	7,955	85.2	1,279E+03	3,868E+02	1,545E+03	Yes
4/20/1999	29.4	554,273	12.6	8,789E+04	2,659E+04	1,076E+05	Yes
4/9/1996	29.3	55,855	50.8	8,827E+03	2,670E+03	1,085E+04	Yes
6/21/1994	27.1	45,420	53.9	6,639E+03	2,008E+03	8,819E+03	Yes
2/24/2004	26.8	134,684	25.9	1,947E+04	5,890E+03	2,615E+04	Yes
3/7/2006	26.8	55,574	39.6	8,033E+03	2,430E+03	1,079E+04	Yes
6/30/2003	26.6	112,128	38.3	1,609E+04	4,867E+03	2,177E+04	Yes
2/2/1993	26.3	108,631	40.9	1,541E+04	4,662E+03	2,109E+04	Yes
2/19/1991	26	787,786	6.8	1,105E+05	3,342E+04	1,530E+05	Yes
6/1/2004	25.7	72,572	34.6	1,006E+04	3,043E+03	1,409E+04	Yes
1/21/2003	25.5	63,746	49.7	8,768E+03	2,652E+03	1,238E+04	Yes
11/3/1998	25.2	17,706	70.9	2,407E+03	7,281E+02	3,438E+03	Yes
1/15/2001	24.86	276,887	13.4	3,713E+04	1,123E+04	5,376E+04	Yes
2/13/1996	24.4	16,851	71.9	2,218E+03	6,709E+02	3,272E+03	Yes
2/21/2006	24.3	63,419	53	8,312E+03	2,515E+03	1,231E+04	Yes
6/21/2005	24.2	33,671	78.2	4,395E+03	1,330E+03	6,538E+03	Yes
10/5/1993	23.5	13,686	75.9	1,735E+03	5,248E+02	2,657E+03	Yes
2/11/2003	23.4	70,284	27.8	8,871E+03	2,684E+03	1,365E+04	Yes
7/14/1992	22.8	87,247	44	1,073E+04	3,246E+03	1,694E+04	Yes
3/27/2000	22.4	121,461	39.2	1,467E+04	4,439E+03	2,358E+04	Yes
3/30/2004	22.2	141,549	30.4	1,695E+04	5,128E+03	2,749E+04	Yes
7/2/1991	22	14,969	74.1	1,776E+03	5,374E+02	2,907E+03	Yes
5/10/2005	21.9	67,669	67.1	7,993E+03	2,418E+03	1,314E+04	Yes
2/2/1999	21.8	915,235	5.1	1,076E+05	3,256E+04	1,777E+05	Yes
2/1/2005	21.8	108,205	27.8	1,272E+04	3,849E+03	2,101E+04	Yes
7/3/2001	21.45	62,112	54.4	7,186E+03	2,174E+03	1,206E+04	Yes
12/3/1996	21	780,088	6.9	8,836E+04	2,673E+04	1,515E+05	Yes
5/23/2006	21	31,383	63.7	3,555E+03	1,075E+03	6,094E+03	Yes
3/15/2005	20.9	117,358	48.7	1,323E+04	4,002E+03	2,279E+04	Yes
10/15/2002	20.8	11,769	75.2	1,320E+03	3,994E+02	2,285E+03	Yes
10/11/2005	20.7	5,230	92.3	5,840E+02	1,767E+02	1,016E+03	Yes
5/14/2002	19.98	467,471	15.9	5,038E+04	1,524E+04	9,077E+04	Yes
12/14/1999	19.84	158,242	35.1	1,693E+04	5,123E+03	3,073E+04	Yes
6/1/1993	19	39,518	56	4,050E+03	1,225E+03	7,673E+03	Yes
12/27/2005	19	18,960	80.8	1,943E+03	5,878E+02	3,682E+03	Yes
12/19/2000	18.2	178,162	27.8	1,749E+04	5,291E+03	3,459E+04	Yes

**Table I-8. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
1/5/1999	18.1	567.104	12.2	5.536E+04	1.675E+04	1.101E+05	Yes
11/4/2003	17.7	28.441	89.8	2.715E+03	8.214E+02	5.522E+03	Yes
4/26/2004	16.4	536.121	22.1	4.742E+04	1.435E+04	1.041E+05	Yes
4/18/2006	16.1	48.055	46.2	4.173E+03	1.262E+03	9.331E+03	Yes
7/11/1995	16	30.451	60.3	2.628E+03	7.950E+02	5.913E+03	Yes
6/2/1998	15.97	22.838	65.9	1.967E+03	5.951E+02	4.435E+03	Yes
11/1/2005	15.2	7.192	90.3	5.896E+02	1.784E+02	1.396E+03	Yes
3/19/2002	15.03	791.105	0.8	6.413E+04	1.940E+04	1.536E+05	Yes
6/30/1998	14.948	4.277	93.1	3.448E+02	1.043E+02	8.305E+02	Yes
6/6/1995	14.8	75.699	46.2	6.043E+03	1.828E+03	1.470E+04	Yes
10/5/1998	14.5	77.838	45.6	6.088E+03	1.842E+03	1.511E+04	Yes
7/30/2002	14.1	29.748	82.1	2.262E+03	6.844E+02	5.776E+03	Yes
7/13/1993	13.8	8.981	83.3	6.685E+02	2.022E+02	1.744E+03	Yes
9/5/1995	13.8	1.711	98.8	1.273E+02	3.852E+01	3.322E+02	Yes
10/24/2000	13.43	4.577	99.6	3.315E+02	1.003E+02	8.887E+02	Yes
12/14/1993	13.2	543.153	13	3.867E+04	1.170E+04	1.055E+05	Yes
10/31/2000	13.08	10.461	95.6	7.380E+02	2.233E+02	2.031E+03	Yes
10/31/1995	12.5	13.771	75.7	9.285E+02	2.809E+02	2.674E+03	Yes
9/6/1994	11.7	122.316	39.1	7.719E+03	2.335E+03	2.375E+04	Yes
9/5/2000	11.7	0.855	99.7	5.398E+01	1.633E+01	1.661E+02	Yes
7/23/1996	11.2	17.791	70.9	1.075E+03	3.251E+02	3.455E+03	Yes
5/16/2000	11.2	103.499	41.6	6.252E+03	1.891E+03	2.010E+04	Yes
7/20/2004	11.2	25.825	65.9	1.560E+03	4.720E+02	5.015E+03	Yes
8/15/2000	10.87	2.224	97.7	1.304E+02	3.945E+01	4.318E+02	Yes
8/3/1993	10.8	10.949	79.8	6.378E+02	1.929E+02	2.126E+03	Yes
5/4/1993	10	526.046	13.6	2.837E+04	8.584E+03	1.021E+05	Yes
10/3/2006	9.94	7.846	79.7	4.206E+02	1.273E+02	1.523E+03	Yes
8/1/2006	9.69	2.288	95.6	1.196E+02	3.618E+01	4.443E+02	Yes
6/18/1996	9.6	28.997	61.2	1.501E+03	4.542E+02	5.630E+03	Yes
1/9/2007	9.43	405.360	24.7	2.062E+04	6.237E+03	7.871E+04	Yes
3/6/2001	9.34	650.537	5	3.277E+04	9.914E+03	1.263E+05	Yes
6/25/2002	9.32	9.807	83.5	4.930E+02	1.491E+02	1.904E+03	Yes
12/7/2004	9.05	987.247	4.2	4.819E+04	1.458E+04	1.917E+05	Yes
9/1/1998	9.04	3.593	94.7	1.752E+02	5.299E+01	6.976E+02	Yes
4/12/2005	8.87	964.364	13.3	4.614E+04	1.396E+04	1.873E+05	Yes
9/7/1993	8.75	3.250	95.6	1.534E+02	4.641E+01	6.311E+02	Yes
9/13/2005	8.55	3.269	98	1.508E+02	4.561E+01	6.348E+02	Yes
12/5/2006	7.91	132.723	46.6	5.663E+03	1.713E+03	2.577E+04	Yes
9/28/2004	7.9	15.691	94.7	6.686E+02	2.023E+02	3.047E+03	Yes
7/18/2000	7.88	7.955	85.2	3.381E+02	1.023E+02	1.545E+03	Yes
8/4/1998	7.8	4.448	92.9	1.871E+02	5.661E+01	8.637E+02	Yes
6/1/1999	7.46	191.601	32.3	7.710E+03	2.332E+03	3.720E+04	Yes
6/22/1992	7.33	164.229	34.6	6.493E+03	1.964E+03	3.189E+04	Yes
8/23/1994	7.3	61.415	49.2	2.418E+03	7.316E+02	1.193E+04	Yes
8/16/2005	7.28	12.095	95.8	4.749E+02	1.437E+02	2.349E+03	Yes
9/5/2006	7.04	1.635	96.3	6.207E+01	1.878E+01	3.174E+02	Yes
6/6/2006	6.52	15.038	70.5	5.288E+02	1.600E+02	2.920E+03	Yes
11/7/2006	6.51	787.836	40	2.766E+04	8.369E+03	1.530E+05	Yes
8/24/2004	6.49	86.302	54.1	3.021E+03	9.139E+02	1.676E+04	Yes
7/19/2005	6.11	76.495	56.7	2.521E+03	7.626E+02	1.485E+04	Yes
9/16/1997	5.82	4.191	93.3	1.316E+02	3.980E+01	8.138E+02	Yes
7/11/2006	5.38	5.884	87	1.708E+02	5.166E+01	1.143E+03	Yes
6/6/2000	5.18	205.286	31.1	5.736E+03	1.735E+03	3.986E+04	Yes

**Figure I-5. Sulfate load duration curve for Saline River (HUC/reach 08040203-008)****Table I-9. Allowable Sulfate load for Saline River (HUC/reach 08040203-008)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>65,115.3</b>
9/16/1954	3.8	100.000	0.267	0.00	432.3261	0.00E+00
9/17/1954	3.8	100.000	0.267	0.00	432.3261	0.00E+00
9/20/1954	3.8	100.000	0.267	0.00	432.3261	0.00E+00
9/26/1954	3.8	100.000	0.267	0.00	432.3261	0.00E+00
9/27/1954	3.8	100.000	0.267	0.00	432.3261	0.00E+00
9/15/1954	4.1	100.000	0.285	0.00	461.2700	0.00E+00
9/18/1954	4.1	100.000	0.285	0.00	461.2700	0.00E+00
9/19/1954	4.1	100.000	0.285	0.00	461.2700	0.00E+00
9/21/1954	4.1	100.000	0.285	0.00	461.2700	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/31/1949	53600	0.100	3195.896	0.00	5171384.1931	0.00E+00
2/1/1949	54800	0.100	3267.445	0.00	5287159.9802	0.00E+00
1/1/1988	59400	0.100	3541.716	0.00	5730967.1641	0.00E+00
5/6/1958	59600	0.100	3553.641	0.00	5750263.1286	0.00E+00
5/20/1968	59600	0.100	3553.641	0.00	5750263.1286	0.00E+00
12/30/1987	61500	0.100	3666.927	0.00	5933574.7915	0.00E+00
5/5/1958	65900	0.100	3929.273	0.00	6358086.0108	0.00E+00
12/31/1987	67000	0.100	3994.860	0.00	6464213.8157	0.00E+00
5/4/1958	68500	0.100	4084.296	0.00	6608933.5495	0.00E+00
5/3/1958	69500	0.100	4143.920	0.00	6705413.3721	0.00E+00
5/19/1968	71500	0.100	4263.169	0.10	6898373.0173	6.90E+03
5/18/1968	72500	0.000	4322.793	0.00	6994852.8399	0.00E+00

**Figure I-6. Sulfate load duration curve for Saline River (HUC/reach 08040203-009)****Table I-10. Allowable Sulfate load for Saline River (HUC/reach 08040203-009)**

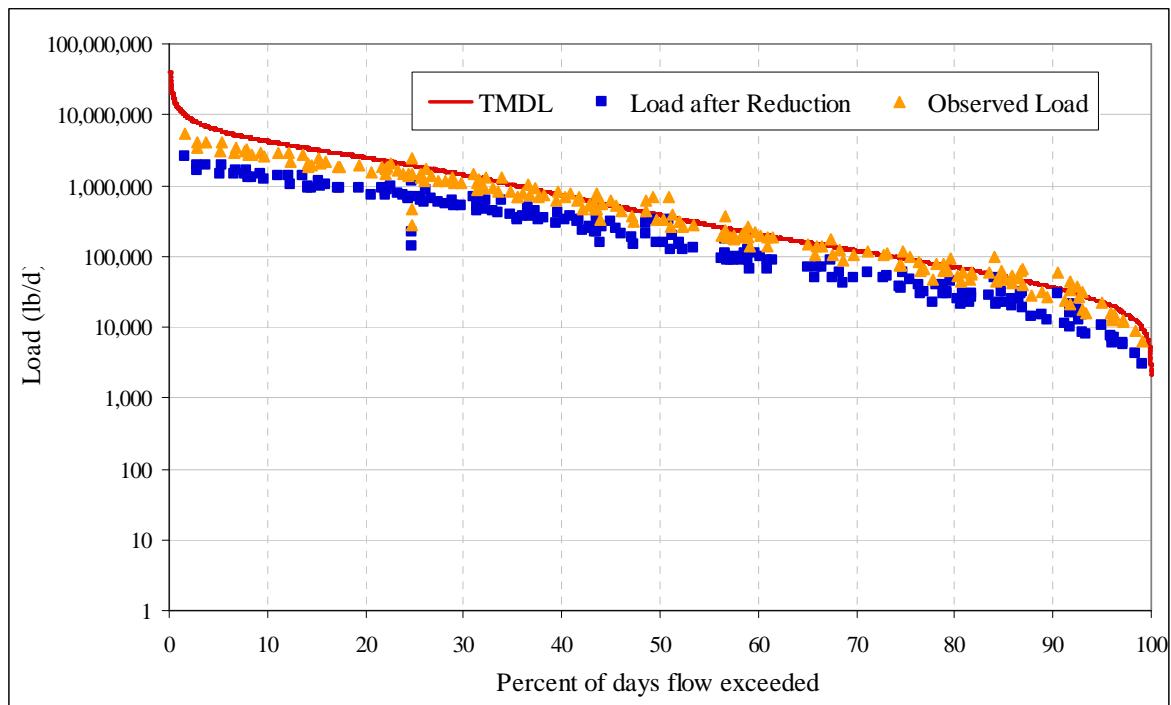
Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>63,901.3</b>
9/16/1954	3.8	100.000	1.966	0.00	424.2657	0.00E+00
9/17/1954	3.8	100.000	1.966	0.00	424.2657	0.00E+00
9/20/1954	3.8	100.000	1.966	0.00	424.2657	0.00E+00
9/26/1954	3.8	100.000	1.966	0.00	424.2657	0.00E+00
9/27/1954	3.8	100.000	1.966	0.00	424.2657	0.00E+00
9/15/1954	4.1	100.000	2.098	0.00	452.6701	0.00E+00
9/18/1954	4.1	100.000	2.098	0.00	452.6701	0.00E+00
9/19/1954	4.1	100.000	2.098	0.00	452.6701	0.00E+00
9/21/1954	4.1	100.000	2.098	0.00	452.6701	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/31/1949	53600	0.100	23522.335	0.00	5074968.3225	0.00E+00
2/1/1949	54800	0.100	24048.948	0.00	5188585.5727	0.00E+00
1/1/1988	59400	0.100	26067.630	0.00	5624118.3654	0.00E+00
5/6/1958	59600	0.100	26155.399	0.00	5643054.5737	0.00E+00
5/20/1968	59600	0.100	26155.399	0.00	5643054.5737	0.00E+00
12/30/1987	61500	0.100	26989.202	0.00	5822948.5533	0.00E+00
5/5/1958	65900	0.100	28920.116	0.00	6239545.1376	0.00E+00
12/31/1987	67000	0.100	29402.844	0.00	6343694.2836	0.00E+00
5/4/1958	68500	0.100	30061.110	0.00	6485715.8465	0.00E+00
5/3/1958	69500	0.100	30499.954	0.00	6580396.8883	0.00E+00
5/19/1968	71500	0.100	31377.642	0.10	6769758.9721	6.77E+03
5/18/1968	72500	0.000	31816.486	0.00	6864440.0140	0.00E+00



## **Appendix J**

### **Load Duration Curve Summaries and Plots for TDS**

Figure J-1. TDS load duration curve for station OUA0118 for Saline River (HUC/reach 08040204-006).....	2
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Table J-2. Existing load for TDS for station OUA0118 for Saline River (HUC/reach 08040204-006) (OUA0118).....	3
Table J-3. Allowable TDS load for station OUA0042 for Saline River (HUC/reach 08040203-007) .....	6
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**Figure J-1. TDS load duration curve for station OUA0118 for Saline River (HUC/reach 08040204-006)**

**Table J-1. Allowable TDS load for station OUA0118 for Saline River (HUC/reach 08040204-006)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>1,485,981.5</b>
9/16/1954	3.8	100.000	3.335	0.00	2158.5990	0.00E+00
9/17/1954	3.8	100.000	3.335	0.00	2158.5990	0.00E+00
9/20/1954	3.8	100.000	3.335	0.00	2158.5990	0.00E+00
9/26/1954	3.8	100.000	3.335	0.00	2158.5990	0.00E+00
9/27/1954	3.8	100.000	3.335	0.00	2158.5990	0.00E+00
9/15/1954	4.1	100.000	3.598	0.00	2329.0148	0.00E+00
9/18/1954	4.1	100.000	3.598	0.00	2329.0148	0.00E+00
9/19/1954	4.1	100.000	3.598	0.00	2329.0148	0.00E+00
9/21/1954	4.1	100.000	3.598	0.00	2329.0148	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
2/1/1949	54800	0.100	48094.430	0.00	31129270.4127	0.00E+00
1/1/1988	59400	0.100	52131.554	0.00	33742311.3597	0.00E+00
5/6/1958	59600	0.100	52307.081	0.00	33855921.8357	0.00E+00
5/20/1968	59600	0.100	52307.081	0.00	33855921.8357	0.00E+00
12/30/1987	61500	0.100	53974.588	0.00	34935221.3573	0.00E+00
5/5/1958	65900	0.100	57836.185	0.00	37434651.8284	0.00E+00
12/31/1987	67000	0.100	58801.584	0.00	38059509.4462	0.00E+00
5/4/1958	68500	0.100	60118.038	0.00	38911588.0159	0.00E+00
5/3/1958	69500	0.100	60995.673	0.00	39479640.3957	0.00E+00
5/19/1968	71500	0.100	62750.944	0.10	40615745.1552	4.06E+04
5/18/1968	72500	0.000	63628.580	0.00	41183797.5350	0.00E+00

**Table J-2. Existing load for TDS for station OUA0118 for Saline River (HUC/reach 08040204-006) (OUA0118)**

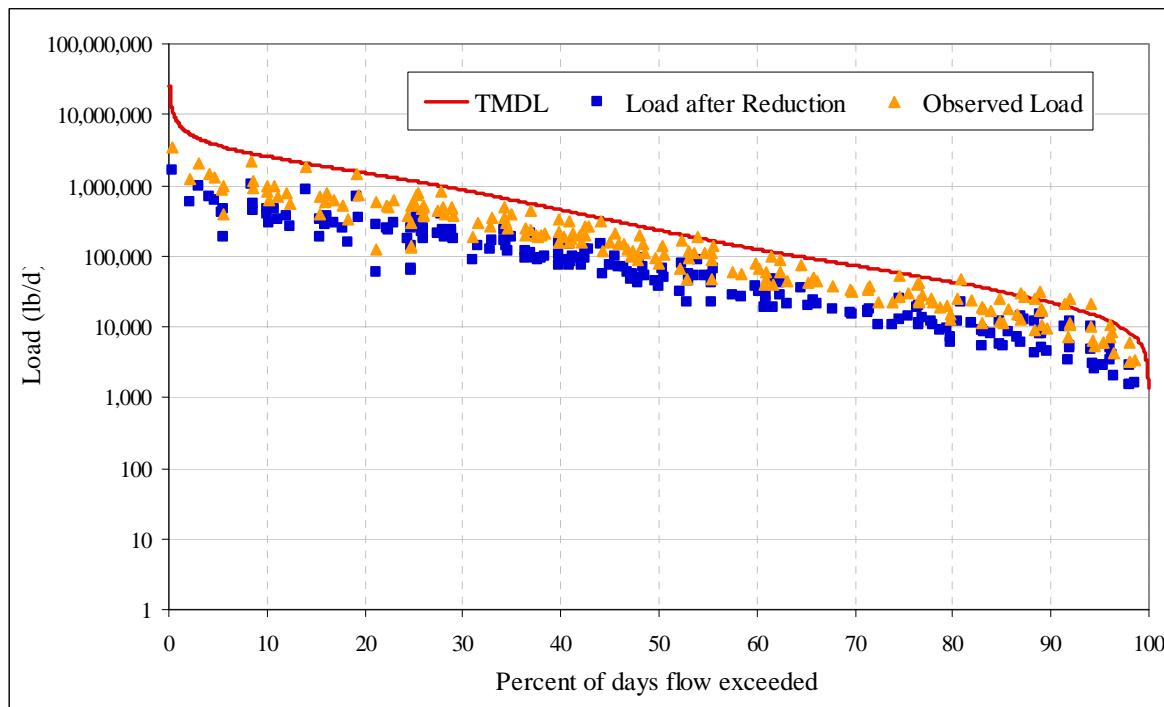
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/5/1998	224	571.341	50.9	6.903E+05	3.328E+05	3.328E+05	Yes
9/3/2002	213	87.764	84.1	1.008E+05	4.861E+04	5.112E+04	Yes
9/24/1996	199	56.169	90.5	6.029E+04	2.907E+04	3.272E+04	Yes
12/9/1997	198	630.142	49.2	6.730E+05	3.245E+05	3.671E+05	Yes
11/4/1997	178	386.160	56.7	3.707E+05	1.788E+05	2.249E+05	Yes
5/20/1997	169	659.104	48.6	6.008E+05	2.897E+05	3.839E+05	Yes
10/15/1996	166	71.966	86.9	6.444E+04	3.107E+04	4.192E+04	Yes
11/19/1996	160	921.517	43.6	7.953E+05	3.834E+05	5.368E+05	Yes
10/20/1992	159	50.903	91.7	4.365E+04	2.105E+04	2.965E+04	Yes
9/2/1997	158	72.844	86.7	6.208E+04	2.993E+04	4.243E+04	Yes
11/17/1992	151	218.531	67.3	1.780E+05	8.581E+04	1.273E+05	Yes
12/13/2005	148	149.198	74.7	1.191E+05	5.742E+04	8.691E+04	Yes
1/17/2006	148	114.093	79.5	9.108E+04	4.391E+04	6.646E+04	Yes
10/8/2002	144	47.392	92.5	3.681E+04	1.775E+04	2.761E+04	Yes
9/3/1991	141	83.375	84.8	6.341E+04	3.057E+04	4.857E+04	Yes
12/9/2003	140	341.400	58.9	2.578E+05	1.243E+05	1.989E+05	Yes
12/6/1994	138	847.796	44.9	6.310E+05	3.043E+05	4.939E+05	Yes
4/22/1997	136	930.294	43.5	6.824E+05	3.290E+05	5.419E+05	Yes
1/7/1997	133	1772.824	33.9	1.272E+06	6.132E+05	1.033E+06	Yes
1/11/1994	131	561.687	51.2	3.969E+05	1.914E+05	3.272E+05	Yes
7/9/2002	130	43.882	93.1	3.077E+04	1.484E+04	2.556E+04	Yes
1/19/1993	128	2123.878	31	1.466E+06	7.070E+05	1.237E+06	Yes
8/6/2002	127.5	77.232	85.9	5.311E+04	2.561E+04	4.499E+04	Yes
5/5/1992	127	326.480	59.7	2.236E+05	1.078E+05	1.902E+05	Yes
4/30/1996	127	1114.597	40.9	7.635E+05	3.681E+05	6.493E+05	Yes
1/19/1999	127	1219.913	39.6	8.357E+05	4.029E+05	7.106E+05	Yes
11/22/1999	127	73.721	86.5	5.050E+04	2.435E+04	4.294E+04	Yes
11/14/2000	126.5	1483.204	36.6	1.012E+06	4.879E+05	8.640E+05	Yes
7/9/1991	126	143.055	75.5	9.722E+04	4.687E+04	8.333E+04	Yes
8/27/1996	126	118.481	78.8	8.052E+04	3.882E+04	6.902E+04	Yes
8/7/2001	124.5	78.110	85.8	5.245E+04	2.529E+04	4.550E+04	Yes
11/12/2002	123	660.860	48.5	4.384E+05	2.114E+05	3.850E+05	Yes
9/26/2006	123	162.363	73.1	1.077E+05	5.193E+04	9.458E+04	Yes
8/6/1991	122	180.793	71.1	1.190E+05	5.736E+04	1.053E+05	Yes
8/25/1992	122	121.991	78.2	8.028E+04	3.870E+04	7.106E+04	Yes
6/9/1992	121	1983.456	32.2	1.294E+06	6.241E+05	1.155E+06	Yes
6/11/1996	121	1044.386	41.7	6.816E+05	3.286E+05	6.084E+05	Yes
11/17/1998	121	344.033	58.6	2.245E+05	1.083E+05	2.004E+05	Yes
8/5/1997	119	91.274	83.5	5.859E+04	2.825E+04	5.317E+04	Yes
10/24/2006	119	50.903	91.7	3.267E+04	1.575E+04	2.965E+04	Yes
9/30/1997	118	312.438	60.3	1.989E+05	9.588E+04	1.820E+05	Yes
3/31/1998	118	2782.105	26.2	1.771E+06	8.537E+05	1.621E+06	Yes
5/30/1995	117	812.691	45.5	5.129E+05	2.473E+05	4.734E+05	Yes
1/6/1998	117	1421.770	37.3	8.972E+05	4.326E+05	8.282E+05	Yes
7/17/2001	116	227.308	66.4	1.422E+05	6.857E+04	1.324E+05	Yes
9/14/1999	115.5	35.983	95	2.242E+04	1.081E+04	2.096E+04	Yes
11/16/1993	115	296.641	61.4	1.840E+05	8.872E+04	1.728E+05	Yes
7/13/1999	114.5	164.995	72.7	1.019E+05	4.913E+04	9.611E+04	Yes
2/15/2000	113	233.451	65.9	1.423E+05	6.860E+04	1.360E+05	Yes
10/29/1991	112	136.034	76.4	8.218E+04	3.962E+04	7.924E+04	Yes
4/16/1996	112	2053.667	31.5	1.241E+06	5.982E+05	1.196E+06	Yes
2/4/1997	112	3396.450	22.5	2.052E+06	9.893E+05	1.979E+06	Yes
6/19/2001	112	302.784	60.9	1.829E+05	8.819E+04	1.764E+05	Yes
1/31/2006	112	895.188	44	5.408E+05	2.607E+05	5.215E+05	Yes
12/14/1992	110	1053.163	41.6	6.249E+05	3.013E+05	6.135E+05	Yes
12/21/1998	110	1149.703	40.4	6.821E+05	3.289E+05	6.697E+05	Yes
3/14/2000	110	533.602	51.9	3.166E+05	1.526E+05	3.108E+05	Yes
11/6/2001	110	101.806	81.8	6.040E+04	2.912E+04	5.930E+04	Yes
6/27/1995	109	208.877	68.2	1.228E+05	5.921E+04	1.217E+05	Yes
7/22/2003	109	243.983	65.1	1.434E+05	6.916E+04	1.421E+05	Yes
6/23/1998	108	80.742	85.2	4.703E+04	2.268E+04	4.703E+04	Yes
1/20/2004	108	352.810	58.4	2.055E+05	9.909E+04	2.055E+05	Yes
6/14/2005	108	390.548	56.6	2.275E+05	1.097E+05	2.275E+05	Yes

**Table J-2. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
4/21/1992	106	478.311	53.4	2.735E+05	1.319E+05	2.786E+05	Yes
4/15/2003	106	528.337	52	3.021E+05	1.456E+05	3.078E+05	Yes
12/12/1995	105	106.194	80.9	6.014E+04	2.900E+04	6.186E+04	Yes
8/17/1999	104	46.515	92.7	2.609E+04	1.258E+04	2.710E+04	Yes
11/12/2003	104	116.726	79.2	6.548E+04	3.157E+04	6.800E+04	Yes
9/4/2001	103.5	85.131	84.5	4.752E+04	2.291E+04	4.959E+04	Yes
12/19/2006	103	584.505	50.4	3.247E+05	1.566E+05	3.405E+05	Yes
7/28/1992	102	391.425	56.6	2.153E+05	1.038E+05	2.280E+05	Yes
9/22/1992	102	101.806	81.8	5.601E+04	2.700E+04	5.930E+04	Yes
5/25/2004	102	974.175	42.9	5.360E+05	2.584E+05	5.675E+05	Yes
5/30/2000	101.5	939.070	43.4	5.141E+05	2.479E+05	5.470E+05	Yes
1/16/1996	101	342.278	58.9	1.865E+05	8.990E+04	1.994E+05	Yes
2/20/1996	101	367.729	57.5	2.003E+05	9.659E+04	2.142E+05	Yes
4/11/2000	101	781.973	46	4.260E+05	2.054E+05	4.555E+05	Yes
10/21/2003	101	71.966	86.9	3.921E+04	1.890E+04	4.192E+04	Yes
10/19/1999	100	78.110	85.8	4.213E+04	2.031E+04	4.550E+04	Yes
5/17/2005	100	193.080	69.7	1.041E+05	5.021E+04	1.125E+05	Yes
3/27/2007	100	525.704	24.7	2.836E+05	1.367E+05	3.062E+05	Yes
4/25/2006	99.5	1334.006	38.1	7.159E+05	3.452E+05	7.771E+05	Yes
4/12/1994	99	2404.722	28.9	1.284E+06	6.191E+05	1.401E+06	Yes
3/8/1999	99	618.733	49.6	3.304E+05	1.593E+05	3.604E+05	Yes
12/5/2000	99	3440.331	22.3	1.837E+06	8.857E+05	2.004E+06	Yes
4/24/2007	98.5	858.328	24.7	4.560E+05	2.199E+05	5.000E+05	Yes
11/8/1994	98	974.175	42.9	5.149E+05	2.483E+05	5.675E+05	Yes
8/19/2003	97.5	116.726	79.2	6.139E+04	2.960E+04	6.800E+04	Yes
2/3/1998	97	3563.200	21.6	1.864E+06	8.988E+05	2.076E+06	Yes
5/22/2001	97	354.565	58.2	1.855E+05	8.944E+04	2.065E+05	Yes
9/30/2003	97	118.481	78.8	6.199E+04	2.989E+04	6.902E+04	Yes
2/27/2007	97	2694.341	24.7	1.410E+06	6.797E+05	1.570E+06	Yes
4/19/2005	96	5371.130	13.6	2.781E+06	1.341E+06	3.129E+06	Yes
3/26/1996	95	2079.996	31.4	1.066E+06	5.139E+05	1.212E+06	Yes
5/18/1999	95	732.826	47.1	3.755E+05	1.810E+05	4.269E+05	Yes
1/7/1992	94	1474.428	36.7	7.476E+05	3.604E+05	8.589E+05	Yes
2/18/1992	94	2711.894	26.7	1.375E+06	6.629E+05	1.580E+06	Yes
12/21/1993	94	2869.868	25.6	1.455E+06	7.015E+05	1.672E+06	Yes
3/22/2005	94	1369.112	37.7	6.942E+05	3.347E+05	7.975E+05	Yes
7/25/1995	93	151.831	74.4	7.616E+04	3.672E+04	8.845E+04	Yes
7/9/1996	93	86.886	84.3	4.358E+04	2.101E+04	5.061E+04	Yes
10/15/1991	92	63.190	88.9	3.136E+04	1.512E+04	3.681E+04	Yes
10/20/1998	92	375.628	57.2	1.864E+05	8.987E+04	2.188E+05	Yes
10/2/2001	92	25.451	97.2	1.263E+04	6.089E+03	1.483E+04	Yes
12/11/2001	92	4941.088	15.3	2.452E+06	1.182E+06	2.878E+06	Yes
1/28/2003	92	516.927	52.3	2.565E+05	1.237E+05	3.011E+05	Yes
10/12/2004	92	930.294	43.5	4.616E+05	2.226E+05	5.419E+05	Yes
12/20/1999	91.5	1649.955	34.8	8.143E+05	3.926E+05	9.611E+05	Yes
1/25/2000	91.5	133.401	76.8	6.584E+04	3.174E+04	7.771E+04	Yes
6/4/2002	91.5	1228.690	39.4	6.064E+05	2.924E+05	7.157E+05	Yes
3/12/1991	91	5818.724	12.2	2.856E+06	1.377E+06	3.390E+06	Yes
4/11/1995	91	1895.693	32.9	9.305E+05	4.486E+05	1.104E+06	Yes
6/8/1999	91	1535.862	36	7.539E+05	3.635E+05	8.947E+05	Yes
2/12/2002	91	3256.028	23.3	1.598E+06	7.705E+05	1.897E+06	Yes
10/25/2005	91	29.840	96.3	1.465E+04	7.062E+03	1.738E+04	Yes
7/27/2004	90.5	947.846	43.4	4.627E+05	2.231E+05	5.521E+05	Yes
6/18/1991	90	369.485	57.5	1.794E+05	8.648E+04	2.152E+05	Yes
8/10/2004	89.5	150.953	74.5	7.287E+04	3.513E+04	8.793E+04	Yes
11/25/1991	89	3492.990	22	1.677E+06	8.085E+05	2.035E+06	Yes
6/14/1993	89	397.569	56.3	1.909E+05	9.202E+04	2.316E+05	Yes
8/22/1995	89	32.473	95.8	1.559E+04	7.516E+03	1.892E+04	Yes
9/29/1998	88	215.021	67.6	1.021E+05	4.921E+04	1.253E+05	Yes
11/28/2006	88	385.282	56.8	1.829E+05	8.817E+04	2.244E+05	Yes
4/2/1991	87	3071.725	24.4	1.441E+06	6.950E+05	1.789E+06	Yes
2/16/1993	87	2299.405	29.7	1.079E+06	5.202E+05	1.339E+06	Yes
2/21/1995	87	1992.233	32.1	9.349E+05	4.507E+05	1.161E+06	Yes

**Table J-2. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
8/25/1998	87	109.704	80.3	5.148E+04	2.482E+04	6.391E+04	Yes
2/15/2005	87	4028.347	19.3	1.890E+06	9.114E+05	2.347E+06	Yes
8/22/2006	86.5	25.451	97.2	1.187E+04	5.725E+03	1.483E+04	Yes
3/16/1993	86	1018.057	42.1	4.722E+05	2.277E+05	5.930E+05	Yes
5/17/1994	86	2501.261	28.1	1.160E+06	5.594E+05	1.457E+06	Yes
3/3/1998	86	3185.817	23.8	1.478E+06	7.125E+05	1.856E+06	Yes
3/5/2002	86	2360.840	29.1	1.095E+06	5.280E+05	1.375E+06	Yes
1/2/2002	85.5	1816.706	33.6	8.378E+05	4.039E+05	1.058E+06	Yes
9/21/1993	85	31.595	96	1.449E+04	6.984E+03	1.840E+04	Yes
8/30/1994	85	301.907	60.9	1.384E+05	6.674E+04	1.759E+05	Yes
5/20/2003	85	2589.025	27.5	1.187E+06	5.723E+05	1.508E+06	Yes
7/6/2004	85	6204.884	11.2	2.845E+06	1.372E+06	3.615E+06	Yes
5/7/2002	84.5	4774.338	15.9	2.176E+06	1.049E+06	2.781E+06	Yes
10/11/1994	84	135.156	76.5	6.124E+04	2.952E+04	7.873E+04	Yes
11/7/1995	84	563.442	51.1	2.553E+05	1.231E+05	3.282E+05	Yes
8/22/2000	84	19.308	98.4	8.748E+03	4.218E+03	1.125E+04	Yes
4/24/2001	84	2878.645	25.6	1.304E+06	6.288E+05	1.677E+06	Yes
6/20/2006	83.5	103.561	81.5	4.664E+04	2.249E+04	6.033E+04	Yes
2/22/1994	83	3071.725	24.4	1.375E+06	6.630E+05	1.789E+06	Yes
8/31/2004	82.5	236.084	65.7	1.051E+05	5.065E+04	1.375E+05	Yes
12/10/1996	82	7512.561	7.9	3.323E+06	1.602E+06	4.376E+06	Yes
10/3/2000	82	52.658	91.3	2.329E+04	1.123E+04	3.067E+04	Yes
3/18/2003	82	1588.520	35.4	7.026E+05	3.387E+05	9.254E+05	Yes
7/26/2005	81.5	202.734	68.7	8.912E+04	4.297E+04	1.181E+05	Yes
8/24/1993	81	60.557	89.5	2.646E+04	1.276E+04	3.528E+04	Yes
8/2/1994	81	1579.744	35.5	6.902E+05	3.328E+05	9.202E+05	Yes
2/9/1999	81	9127.410	5.3	3.988E+06	1.923E+06	5.317E+06	Yes
6/21/1993	80	712.640	47.4	3.075E+05	1.483E+05	4.151E+05	Yes
2/18/2003	79.5	6819.228	9.4	2.924E+06	1.410E+06	3.972E+06	Yes
2/12/1991	79	2079.996	31.4	8.863E+05	4.273E+05	1.212E+06	Yes
9/11/1995	79	14.920	99.1	6.357E+03	3.065E+03	8.691E+03	Yes
2/10/2004	79	3475.437	22.1	1.481E+06	7.140E+05	2.025E+06	Yes
4/20/1993	78	4440.836	17.3	1.868E+06	9.008E+05	2.587E+06	Yes
7/26/1993	78	67.578	87.8	2.843E+04	1.371E+04	3.937E+04	Yes
3/18/1997	78	8065.471	6.8	3.393E+06	1.636E+06	4.698E+06	Yes
6/27/2000	77.5	2808.434	26	1.174E+06	5.660E+05	1.636E+06	Yes
4/13/2004	77.5	4458.389	17.2	1.864E+06	8.986E+05	2.597E+06	Yes
5/30/2006	77.5	335.257	59.1	1.401E+05	6.757E+04	1.953E+05	Yes
1/30/2007	77	5792.395	24.7	2.406E+06	1.160E+06	3.374E+06	Yes
11/9/2004	76.5	4923.536	15.4	2.032E+06	9.795E+05	2.868E+06	Yes
5/18/1993	76	3765.057	20.6	1.543E+06	7.441E+05	2.193E+06	Yes
10/10/1995	75	107.949	80.6	4.367E+04	2.105E+04	6.288E+04	Yes
7/28/1998	75	50.903	91.7	2.059E+04	9.928E+03	2.965E+04	Yes
8/23/2005	73.5	31.595	96	1.253E+04	6.039E+03	1.840E+04	Yes
4/13/1999	73	7600.324	7.7	2.993E+06	1.443E+06	4.427E+06	Yes
3/28/2006	73	5230.708	14.1	2.060E+06	9.930E+05	3.047E+06	Yes
9/26/2000	72	44.759	93.1	1.738E+04	8.381E+03	2.607E+04	Yes
1/2/1991	70	10794.918	3.7	4.076E+06	1.965E+06	6.288E+06	Yes
3/21/1995	70	6696.360	9.7	2.528E+06	1.219E+06	3.901E+06	Yes
3/9/2004	69.5	5783.619	12.4	2.168E+06	1.045E+06	3.369E+06	Yes
9/26/2005	69.5	43.004	93.3	1.612E+04	7.733E+03	2.505E+04	Yes
10/12/1993	68	126.380	77.7	4.635E+04	2.235E+04	7.362E+04	Yes
3/1/1994	68	7249.270	8.4	2.659E+06	1.282E+06	4.223E+06	Yes
1/30/2001	68	5134.168	14.5	1.883E+06	9.079E+05	2.991E+06	Yes
3/17/1992	67	8179.564	6.6	2.956E+06	1.425E+06	4.765E+06	Yes
7/5/1994	67	912.741	43.9	3.298E+05	1.590E+05	5.317E+05	Yes
12/14/2004	67	7407.244	8.1	2.677E+06	1.291E+06	4.315E+06	Yes
5/14/1991	66	5248.261	14.1	1.868E+06	9.008E+05	3.057E+06	Yes
6/24/2003	65.5	15358.623	1.6	5.426E+06	2.616E+06	8.947E+06	Yes
2/20/2001	61.5	11935.844	2.9	3.959E+06	1.909E+06	6.953E+06	Yes
3/20/2001	61.5	9215.174	5.2	3.057E+06	1.474E+06	5.368E+06	Yes
4/2/2002	52.5	12023.608	2.9	3.405E+06	1.642E+06	7.004E+06	Yes



**Figure J-2. TDS load duration curve for station OUA0042 for Saline River (HUC/reach 08040203-007)**

**Table J-3. Allowable TDS load for station OUA0042 for Saline River (HUC/reach 08040203-007)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>905,416.2</b>
9/14/1954	3.8	100.000	2.032	0.00	1315.2455	0.00E+00
9/15/1954	3.8	100.000	2.032	0.00	1315.2455	0.00E+00
9/18/1954	3.8	100.000	2.032	0.00	1315.2455	0.00E+00
9/24/1954	3.8	100.000	2.032	0.00	1315.2455	0.00E+00
9/25/1954	3.8	100.000	2.032	0.00	1315.2455	0.00E+00
9/13/1954	4.1	100.000	2.192	0.00	1419.0806	0.00E+00
9/16/1954	4.1	100.000	2.192	0.00	1419.0806	0.00E+00
9/17/1954	4.1	100.000	2.192	0.00	1419.0806	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
1/30/1949	54800	0.100	29304.183	0.00	18967223.9738	0.00E+00
12/30/1987	59400	0.100	31764.023	0.00	20559363.2125	0.00E+00
5/4/1958	59600	0.100	31870.972	0.00	20628586.6577	0.00E+00
5/18/1968	59600	0.100	31870.972	0.00	20628586.6577	0.00E+00
12/28/1987	61500	0.100	32886.993	0.00	21286209.3867	0.00E+00
5/3/1958	65900	0.100	35239.884	0.00	22809125.1802	0.00E+00
12/29/1987	67000	0.100	35828.107	0.00	23189854.1286	0.00E+00
5/2/1958	68500	0.100	36630.228	0.00	23709029.9673	0.00E+00
5/1/1958	69500	0.100	37164.976	0.00	24055147.1931	0.00E+00
5/17/1968	71500	0.100	38234.472	0.10	24747381.6447	2.47E+04
5/16/1968	72500	0.000	38769.220	0.00	25093498.8705	0.00E+00

**Table J-4. Existing load for TDS for station OUA0042 for Saline River (HUC/reach 08040203-007)**

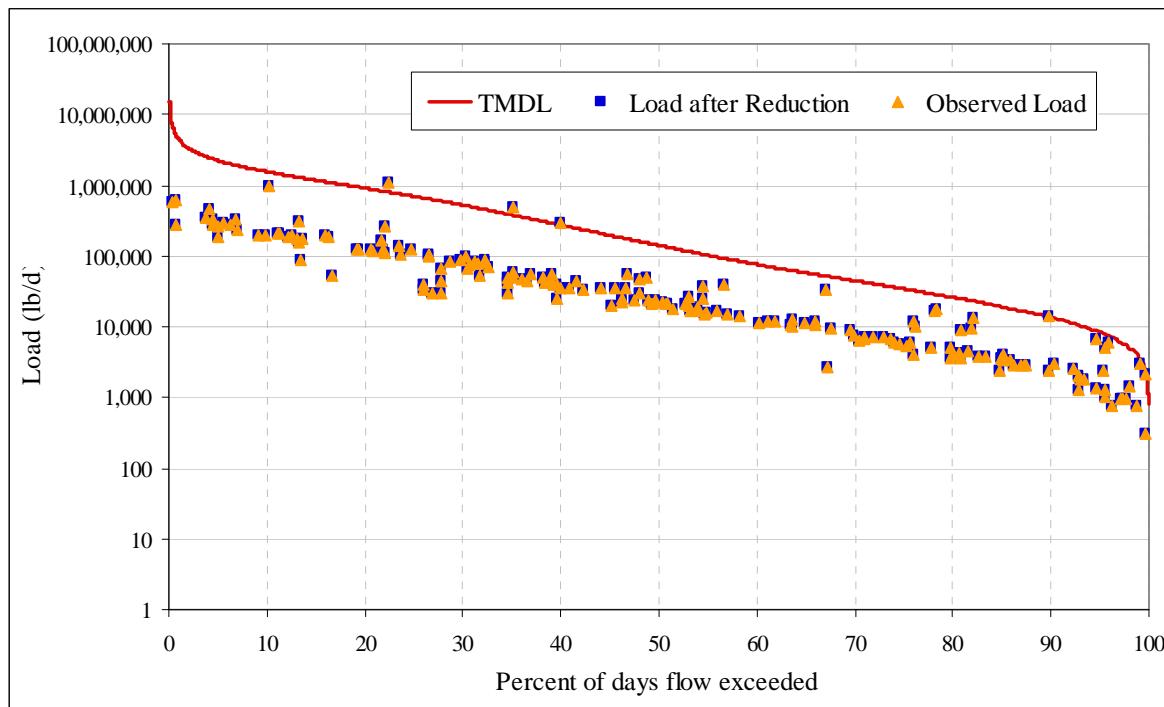
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
5/5/1998	227	152.273	53.9	1.864E+05	8.870E+04	8.870E+04	Yes
9/2/1997	209	22.855	87.3	2.576E+04	1.226E+04	1.331E+04	Yes
8/19/2003	205	42.780	80.9	4.730E+04	2.251E+04	2.492E+04	Yes
11/4/1997	195	291.405	44	3.065E+05	1.458E+05	1.698E+05	Yes
5/20/1997	183	167.415	52.3	1.652E+05	7.862E+04	9.752E+04	Yes
2/16/1993	181	831.360	27.8	8.116E+05	3.862E+05	4.843E+05	Yes
11/19/1996	174	471.390	36.9	4.424E+05	2.105E+05	2.746E+05	Yes
8/5/1997	170	27.426	84.7	2.515E+04	1.196E+04	1.598E+04	Yes
10/19/1999	164	20.284	89.1	1.794E+04	8.537E+03	1.182E+04	Yes
12/9/1997	161	222.267	48.1	1.930E+05	9.183E+04	1.295E+05	Yes
10/15/1996	155	20.570	88.9	1.720E+04	8.182E+03	1.198E+04	Yes
4/22/1997	150	317.117	42.9	2.566E+05	1.221E+05	1.847E+05	Yes
1/7/1997	143	957.064	25.2	7.382E+05	3.512E+05	5.575E+05	Yes
10/21/2003	136	33.689	88.4	2.471E+04	1.176E+04	1.962E+04	Yes
8/27/1996	132	35.426	80.4	2.522E+04	1.200E+04	2.064E+04	Yes
6/21/1993	131	155.130	53.5	1.096E+05	5.215E+04	9.037E+04	Yes
9/3/2002	129	35.293	92	2.456E+04	1.168E+04	2.056E+04	Yes
10/25/2005	127	15.508	96	1.062E+04	5.054E+03	9.034E+03	Yes
8/17/1999	126.5	16.284	92	1.111E+04	5.286E+03	9.486E+03	Yes
11/22/1999	125.5	25.712	85.7	1.741E+04	8.281E+03	1.498E+04	Yes
12/9/2003	125	145.451	61.5	9.807E+04	4.666E+04	8.473E+04	Yes
11/14/2000	122.5	394.109	42.5	2.604E+05	1.239E+05	2.296E+05	Yes
5/5/1992	122	90.564	62.3	5.959E+04	2.835E+04	5.276E+04	Yes
7/13/1999	121.5	76.851	65.7	5.036E+04	2.396E+04	4.477E+04	Yes
8/6/1991	120	43.425	76.8	2.811E+04	1.337E+04	2.530E+04	Yes
10/20/1992	119	16.284	92	1.045E+04	4.973E+03	9.486E+03	Yes
12/13/2005	119	60.427	76.3	3.879E+04	1.845E+04	3.520E+04	Yes
11/12/2002	117	173.793	55.3	1.097E+05	5.218E+04	1.012E+05	Yes
6/14/2005	117	118.714	64.5	7.492E+04	3.564E+04	6.915E+04	Yes
10/30/1990	116	138.274	55.3	8.652E+04	4.116E+04	8.055E+04	Yes
6/4/2002	116	241.171	48.3	1.509E+05	7.179E+04	1.405E+05	Yes
4/15/2003	116	226.733	55.5	1.419E+05	6.749E+04	1.321E+05	Yes
9/30/1997	115	57.710	71.4	3.580E+04	1.703E+04	3.362E+04	Yes
6/23/1998	115	23.998	86.5	1.489E+04	7.082E+03	1.398E+04	Yes
8/6/2002	114	51.871	88.9	3.189E+04	1.517E+04	3.022E+04	Yes
1/11/1994	113	322.830	42.5	1.968E+05	9.361E+04	1.881E+05	Yes
3/31/1998	113	557.097	34.3	3.395E+05	1.615E+05	3.245E+05	Yes
10/2/2001	112.5	9.625	98	5.841E+03	2.779E+03	5.607E+03	Yes
10/2/1990	112	30.855	83	1.864E+04	8.868E+03	1.797E+04	Yes
12/6/1994	112	248.837	46.5	1.503E+05	7.152E+04	1.450E+05	Yes
4/16/1996	112	822.789	28	4.970E+05	2.365E+05	4.793E+05	Yes
9/24/1996	112	41.139	77.7	2.485E+04	1.182E+04	2.396E+04	Yes
6/19/2001	112	143.847	62.4	8.690E+04	4.134E+04	8.379E+04	Yes
4/19/2005	112	631.002	15.5	3.812E+05	1.814E+05	3.676E+05	Yes
10/2/1990	112	30.855	83	1.864E+04	8.868E+03	1.797E+04	Yes
3/12/1991	110	779.936	28.9	4.627E+05	2.202E+05	4.543E+05	Yes
6/9/1992	109	351.400	41.3	2.066E+05	9.829E+04	2.047E+05	Yes
11/7/1995	108	98.278	60.9	5.725E+04	2.724E+04	5.725E+04	Yes
1/6/1998	108	1079.911	23	6.291E+05	2.993E+05	6.291E+05	Yes
11/12/2003	108	90.907	74.5	5.296E+04	2.519E+04	5.296E+04	Yes
9/11/1995	107	6.000	98.6	3.463E+03	1.647E+03	3.495E+03	Yes
9/30/2003	107	21.390	79.8	1.234E+04	5.873E+03	1.246E+04	Yes
11/27/1990	106	257.979	45.9	1.475E+05	7.017E+04	1.503E+05	Yes
9/22/1992	106	29.140	83.8	1.666E+04	7.927E+03	1.698E+04	Yes
12/14/1992	106	337.115	41.9	1.927E+05	9.170E+04	1.964E+05	Yes
2/3/1998	106	914.210	26	5.227E+05	2.487E+05	5.326E+05	Yes
3/8/1999	105	388.539	39.8	2.200E+05	1.047E+05	2.263E+05	Yes
4/13/2004	105	1203.183	15.4	6.814E+05	3.242E+05	7.009E+05	Yes
4/25/2006	105	566.833	39.7	3.210E+05	1.527E+05	3.302E+05	Yes
4/30/1996	104	273.406	44.9	1.534E+05	7.297E+04	1.593E+05	Yes
12/21/1998	104	614.235	33	3.446E+05	1.639E+05	3.578E+05	Yes
11/6/2001	103.5	31.015	83.1	1.731E+04	8.238E+03	1.807E+04	Yes
4/12/1994	103	971.348	25	5.396E+05	2.567E+05	5.658E+05	Yes
9/4/1990	102	11.142	95.4	6.130E+03	2.916E+03	6.490E+03	Yes
12/12/1995	102	43.711	76.6	2.405E+04	1.144E+04	2.546E+04	Yes
2/15/2000	102	69.423	67.8	3.819E+04	1.817E+04	4.044E+04	Yes
8/7/2001	102	53.475	87	2.942E+04	1.400E+04	3.115E+04	Yes
7/27/2004	102	82.886	52.9	4.560E+04	2.170E+04	4.828E+04	Yes

**Table J-4. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
9/4/1990	102	11.142	95.4	6.130E+03	2.916E+03	6.490E+03	Yes
8/25/1992	101	37.425	79.4	2.039E+04	9.700E+03	2.180E+04	Yes
11/17/1992	100	78.851	65.3	4.253E+04	2.023E+04	4.593E+04	Yes
5/30/2000	100	554.240	34.4	2.989E+05	1.422E+05	3.229E+05	Yes
12/10/2002	100	721.910	34.9	3.894E+05	1.853E+05	4.205E+05	Yes
5/25/2004	99	263.096	50.3	1.405E+05	6.684E+04	1.533E+05	Yes
10/8/2002	98.5	20.320	89.1	1.080E+04	5.136E+03	1.184E+04	Yes
1/31/2006	98.5	582.875	40.9	3.097E+05	1.473E+05	3.395E+05	Yes
7/17/2001	97.5	212.295	54.7	1.116E+05	5.312E+04	1.237E+05	Yes
10/12/2004	97.5	951.851	34.3	5.006E+05	2.382E+05	5.545E+05	Yes
2/15/2005	97.5	695.172	24.4	3.656E+05	1.739E+05	4.050E+05	Yes
12/19/2006	97.5	227.803	53	1.198E+05	5.700E+04	1.327E+05	Yes
7/9/1991	97	49.139	74.5	2.571E+04	1.223E+04	2.862E+04	Yes
9/3/1991	96	63.423	69.5	3.284E+04	1.562E+04	3.695E+04	Yes
2/18/1992	96	925.638	25.9	4.793E+05	2.280E+05	5.392E+05	Yes
4/11/2000	96	216.554	48.5	1.121E+05	5.335E+04	1.261E+05	Yes
5/22/2001	96	127.805	52.2	6.618E+04	3.149E+04	7.445E+04	Yes
1/20/2004	96	408.013	45.5	2.113E+05	1.005E+05	2.377E+05	Yes
5/30/2006	96	91.442	55.3	4.735E+04	2.253E+04	5.327E+04	Yes
4/21/1992	95	242.551	46.8	1.243E+05	5.913E+04	1.413E+05	Yes
1/19/1993	94	845.644	27.5	4.288E+05	2.040E+05	4.926E+05	Yes
6/27/1995	94	62.852	69.7	3.187E+04	1.516E+04	3.661E+04	Yes
11/17/1998	94	87.707	63.1	4.447E+04	2.116E+04	5.109E+04	Yes
1/25/2000	94	43.711	76.6	2.216E+04	1.054E+04	2.546E+04	Yes
2/20/1996	93	357.113	41.1	1.791E+05	8.523E+04	2.080E+05	Yes
5/20/2003	93	1513.336	25.5	7.591E+05	3.612E+05	8.816E+05	Yes
4/24/2007	93	276.999	24.7	1.389E+05	6.611E+04	1.614E+05	Yes
5/17/2005	92.5	66.843	71.4	3.335E+04	1.587E+04	3.894E+04	Yes
7/28/1992	92	119.704	57.5	5.940E+04	2.826E+04	6.973E+04	Yes
6/14/1993	92	471.390	36.9	2.339E+05	1.113E+05	2.746E+05	Yes
5/17/1994	92	928.495	25.8	4.607E+05	2.192E+05	5.409E+05	Yes
7/5/1994	92	234.838	47.3	1.165E+05	5.544E+04	1.368E+05	Yes
5/30/1995	92	488.531	36.4	2.424E+05	1.153E+05	2.846E+05	Yes
4/24/2001	92	371.115	40.3	1.842E+05	8.762E+04	2.162E+05	Yes
7/6/2004	91.5	1598.896	16.2	7.891E+05	3.754E+05	9.314E+05	Yes
6/18/1991	91	114.848	58.4	5.637E+04	2.682E+04	6.690E+04	Yes
3/26/1996	91	768.508	29.1	3.772E+05	1.795E+05	4.477E+05	Yes
9/14/1999	91	12.570	94.3	6.170E+03	2.935E+03	7.323E+03	Yes
12/5/2000	91	313.362	39.8	1.538E+05	7.318E+04	1.825E+05	Yes
8/10/2004	91	46.523	77.9	2.284E+04	1.086E+04	2.710E+04	Yes
2/9/1999	90.5	2331.236	8.6	1.138E+06	5.414E+05	1.358E+06	Yes
1/16/1996	90	98.563	60.9	4.785E+04	2.276E+04	5.742E+04	Yes
5/7/2002	90	1507.989	19.4	7.320E+05	3.483E+05	8.784E+05	Yes
12/20/1999	89.5	231.981	47.4	1.120E+05	5.328E+04	1.351E+05	Yes
7/9/2002	89.5	42.780	94.1	2.065E+04	9.825E+03	2.492E+04	Yes
2/4/1997	89	1197.044	21.1	5.746E+05	2.734E+05	6.973E+05	Yes
10/15/1991	88	19.427	89.6	9.221E+03	4.387E+03	1.132E+04	Yes
10/12/1993	88	39.140	78.6	1.858E+04	8.839E+03	2.280E+04	Yes
5/18/1999	88	431.393	38.3	2.048E+05	9.742E+04	2.513E+05	Yes
8/22/2000	88	6.571	98.1	3.119E+03	1.484E+03	3.828E+03	Yes
9/26/2000	88	6.571	98.1	3.119E+03	1.484E+03	3.828E+03	Yes
3/27/2007	87.5	276.999	24.7	1.307E+05	6.220E+04	1.614E+05	Yes
1/19/1999	87	331.401	42.1	1.555E+05	7.399E+04	1.931E+05	Yes
9/4/2001	87	86.629	76.6	4.065E+04	1.934E+04	5.046E+04	Yes
1/28/2003	87	194.113	53	9.109E+04	4.334E+04	1.131E+05	Yes
8/23/2005	87	21.390	94.1	1.004E+04	4.776E+03	1.246E+04	Yes
9/26/2006	86.5	171.119	59.9	7.984E+04	3.798E+04	9.968E+04	Yes
4/20/1993	86	1539.873	16.1	7.143E+05	3.398E+05	8.970E+05	Yes
12/10/1996	86	2051.259	10.8	9.515E+05	4.527E+05	1.195E+06	Yes
8/22/1995	85	9.428	96.5	4.322E+03	2.056E+03	5.492E+03	Yes
6/8/1999	85	225.124	47.9	1.032E+05	4.911E+04	1.311E+05	Yes
12/11/2001	85	866.292	5.6	3.972E+05	1.890E+05	5.046E+05	Yes
1/2/2002	85	344.912	40.9	1.581E+05	7.523E+04	2.009E+05	Yes
3/22/2005	85	273.791	21.2	1.255E+05	5.972E+04	1.595E+05	Yes
7/25/2006	85	18.716	96.3	8.581E+03	4.083E+03	1.090E+04	Yes

**Table J-4. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
10/29/1991	84	199.983	49.6	9.061E+04	4.311E+04	1.165E+05	Yes
5/14/1991	83	1125.621	22.2	5.039E+05	2.398E+05	6.557E+05	Yes
3/3/1998	83	1117.051	22.4	5.001E+05	2.379E+05	6.507E+05	Yes
2/12/2002	83	844.902	28.1	3.782E+05	1.800E+05	4.922E+05	Yes
10/24/2006	82.5	27.807	87	1.237E+04	5.887E+03	1.620E+04	Yes
12/21/1993	82	551.383	34.5	2.439E+05	1.160E+05	3.212E+05	Yes
4/13/1999	82	2154.108	10	9.527E+05	4.533E+05	1.255E+06	Yes
3/18/2003	82	422.986	31	1.871E+05	8.901E+04	2.464E+05	Yes
2/12/1991	81	454.248	37.5	1.985E+05	9.442E+04	2.646E+05	Yes
3/17/1992	81	3314.012	4.2	1.448E+06	6.889E+05	1.931E+06	Yes
3/16/1993	81	437.107	38	1.910E+05	9.086E+04	2.546E+05	Yes
7/25/1995	81	50.853	73.9	2.222E+04	1.057E+04	2.962E+04	Yes
8/31/2004	81	87.699	71.5	3.832E+04	1.823E+04	5.109E+04	Yes
2/27/2007	81	1181.793	24.7	5.163E+05	2.457E+05	6.884E+05	Yes
3/5/2002	80.5	1122.971	28.8	4.876E+05	2.320E+05	6.542E+05	Yes
1/7/1992	80	668.516	31.5	2.885E+05	1.372E+05	3.894E+05	Yes
9/21/1993	80	12.285	94.5	5.301E+03	2.522E+03	7.156E+03	Yes
7/28/1998	80	16.570	91.7	7.150E+03	3.402E+03	9.653E+03	Yes
10/3/2000	80	39.037	89.1	1.684E+04	8.014E+03	2.274E+04	Yes
7/26/2005	80	104.811	66.1	4.523E+04	2.152E+04	6.106E+04	Yes
8/24/1993	79	21.141	88.4	9.008E+03	4.286E+03	1.232E+04	Yes
2/10/2004	78.5	3470.514	19.2	1.469E+06	6.991E+05	2.022E+06	Yes
1/17/2006	78.5	68.982	75.5	2.921E+04	1.390E+04	4.018E+04	Yes
4/2/1991	78	922.781	25.9	3.882E+05	1.847E+05	5.375E+05	Yes
11/8/1994	78	622.806	32.8	2.620E+05	1.247E+05	3.628E+05	Yes
10/10/1995	78	27.426	84.7	1.154E+04	5.490E+03	1.598E+04	Yes
8/25/1998	78	26.569	85.2	1.118E+04	5.318E+03	1.548E+04	Yes
3/28/2006	78	1427.777	10.2	6.007E+05	2.858E+05	8.317E+05	Yes
6/20/2006	78	56.149	81.9	2.362E+04	1.124E+04	3.271E+04	Yes
1/30/2007	78	705.867	24.7	2.970E+05	1.413E+05	4.112E+05	Yes
10/11/1994	77	95.135	61.6	3.951E+04	1.880E+04	5.542E+04	Yes
2/21/1995	77	445.677	37.7	1.851E+05	8.806E+04	2.596E+05	Yes
3/14/2000	77	236.266	47.1	9.813E+04	4.669E+04	1.376E+05	Yes
7/22/2003	76.5	247.054	50.6	1.019E+05	4.850E+04	1.439E+05	Yes
11/16/1993	76	488.531	36.4	2.003E+05	9.528E+04	2.846E+05	Yes
8/2/1994	76	196.270	50	8.046E+04	3.828E+04	1.143E+05	Yes
7/9/1996	76	36.568	79.8	1.499E+04	7.132E+03	2.130E+04	Yes
8/22/2006	76	17.647	96.1	7.234E+03	3.442E+03	1.028E+04	Yes
3/1/1994	75	3171.167	4.7	1.283E+06	6.103E+05	1.847E+06	Yes
4/11/1995	75	1485.592	16.8	6.010E+05	2.859E+05	8.654E+05	Yes
9/29/1998	75	54.567	72.4	2.207E+04	1.050E+04	3.179E+04	Yes
2/18/2003	75	5326.089	8.5	2.155E+06	1.025E+06	3.103E+06	Yes
12/14/2004	75	1336.870	12.3	5.408E+05	2.573E+05	7.788E+05	Yes
11/28/2006	75	165.237	60.2	6.684E+04	3.180E+04	9.626E+04	Yes
6/11/1996	74	288.548	44.3	1.152E+05	5.479E+04	1.681E+05	Yes
10/20/1998	74	225.696	47.9	9.008E+04	4.286E+04	1.315E+05	Yes
6/27/2000	73.5	917.067	26	3.636E+05	1.730E+05	5.342E+05	Yes
2/22/1994	73	1916.985	12	7.548E+05	3.591E+05	1.117E+06	Yes
3/21/1995	73	2136.966	10.1	8.414E+05	4.003E+05	1.245E+06	Yes
3/18/1997	73	2328.379	8.6	9.168E+05	4.362E+05	1.356E+06	Yes
8/30/1994	72	99.135	60.8	3.850E+04	1.832E+04	5.775E+04	Yes
9/26/2005	71.5	54.010	91.4	2.083E+04	9.910E+03	3.146E+04	Yes
11/25/1991	71	1548.444	16	5.930E+05	2.821E+05	9.020E+05	Yes
6/24/2003	68	3390.301	2.1	1.243E+06	5.916E+05	1.975E+06	Yes
5/18/1993	67	1417.026	17.7	5.121E+05	2.436E+05	8.255E+05	Yes
7/27/1993	67	30.855	83	1.115E+04	5.305E+03	1.797E+04	Yes
3/9/2004	67	4935.723	13.9	1.784E+06	8.486E+05	2.875E+06	Yes
1/30/2001	66	925.114	18.3	3.293E+05	1.567E+05	5.389E+05	Yes
11/9/2004	65.5	1919.745	11.2	6.782E+05	3.227E+05	1.118E+06	Yes
3/20/2001	64	2502.620	5.4	8.639E+05	4.110E+05	1.458E+06	Yes
1/2/1991	62	2885.476	5.6	9.649E+05	4.591E+05	1.681E+06	Yes
4/2/2002	51.5	7272.571	3.1	2.020E+06	9.611E+05	4.236E+06	Yes
2/20/2001	48.5	12887.423	0.4	3.371E+06	1.604E+06	7.507E+06	Yes



**Figure J-3. TDS load duration curve for station OUA0026 for Saline River (HUC/reach 08040203-010)**

**Table J-5. Allowable TDS load for station OUA0026 for Saline River (HUC/reach 08040203-010)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>553,500.5</b>
9/12/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/13/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/16/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/22/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/23/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/11/1954	4.1	100.000	1.340	0.00	867.5147	0.00E+00
9/14/1954	4.1	100.000	1.340	0.00	867.5147	0.00E+00
9/15/1954	4.1	100.000	1.340	0.00	867.5147	0.00E+00
9/17/1954	4.1	100.000	1.340	0.00	867.5147	0.00E+00
For brevity, most cells of this spreadsheet have been hidden						
1/28/1949	54800	0.100	17914.282	0.00	11595074.8671	0.00E+00
12/28/1987	59400	0.100	19418.035	0.00	12568384.0713	0.00E+00
5/2/1958	59600	0.100	19483.416	0.00	12610701.8628	0.00E+00
5/16/1968	59600	0.100	19483.416	0.00	12610701.8628	0.00E+00
12/26/1987	61500	0.100	20104.531	0.00	13012720.8819	0.00E+00
5/1/1958	65900	0.100	21542.904	0.00	13943712.2946	0.00E+00
12/27/1987	67000	0.100	21902.498	0.00	14176460.1477	0.00E+00
4/30/1958	68500	0.100	22392.852	0.00	14493843.5839	0.00E+00
4/29/1958	69500	0.100	22719.755	0.00	14705432.5413	0.00E+00
5/15/1968	71500	0.100	23373.561	0.10	15128610.4562	1.51E+04
5/14/1968	72500	0.000	23700.464	0.00	15340199.4136	0.00E+00

**Table J-6. Existing load for TDS for station OUA0026 for Saline River (HUC/reach 08040203-010)**

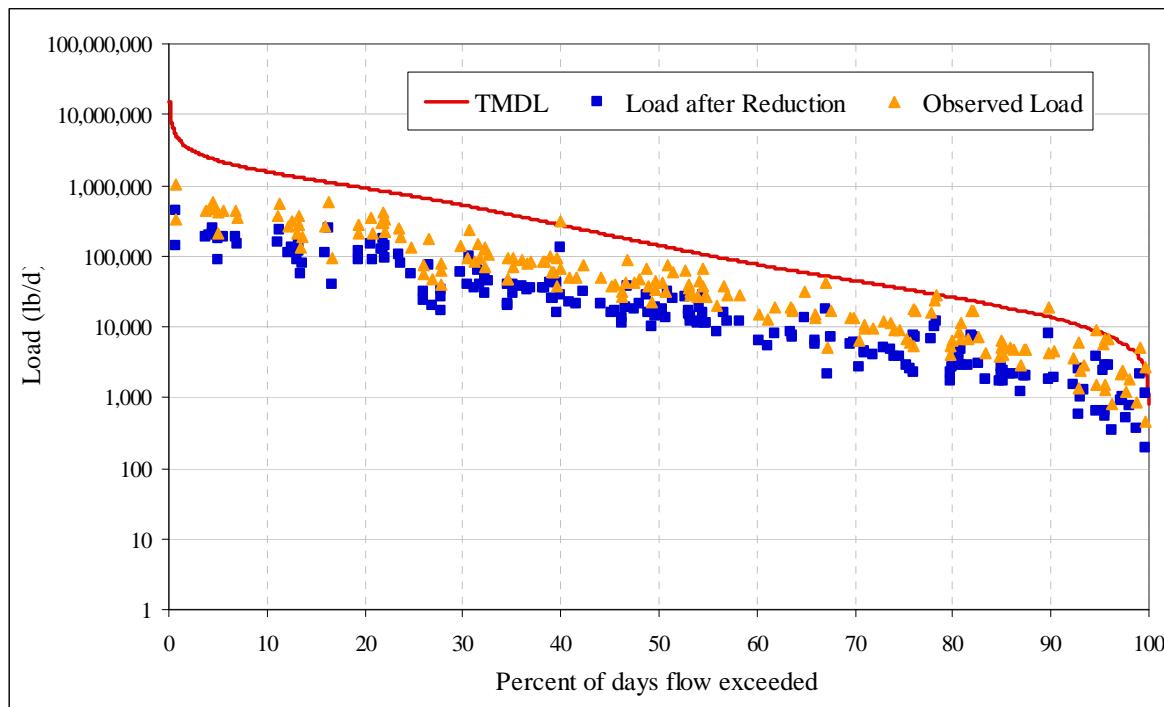
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
7/29/2003	101	21.902	75.9	1.193E+04	1.193E+04	1.276E+04	Yes
7/18/2000	93.5	7.955	85.2	4.012E+03	4.012E+03	4.634E+03	Yes
7/19/2005	93	76.495	56.7	3.837E+04	3.837E+04	4.456E+04	Yes
8/16/2005	93	12.095	95.8	6.067E+03	6.067E+03	7.046E+03	Yes
8/14/2001	92	21.902	63.4	1.087E+04	1.087E+04	1.276E+04	Yes
11/13/2001	91.5	4.904	84.7	2.420E+03	2.420E+03	2.856E+03	Yes
6/21/2005	91.5	33.671	78.2	1.662E+04	1.662E+04	1.961E+04	Yes
10/31/2000	90.5	10.461	95.6	5.106E+03	5.106E+03	6.094E+03	Yes
10/7/2003	90.5	18.960	81.9	9.255E+03	9.255E+03	1.104E+04	Yes
11/4/2003	90.5	28.441	89.8	1.388E+04	1.388E+04	1.657E+04	Yes
5/10/2005	90	67.669	67.1	3.285E+04	3.285E+04	3.942E+04	Yes
10/28/1997	89	23.950	64.9	1.150E+04	1.150E+04	1.395E+04	Yes
9/10/2002	89	6.211	99.1	2.982E+03	2.982E+03	3.618E+03	Yes
4/26/2004	89	536.121	22.1	2.574E+05	2.574E+05	3.123E+05	Yes
7/11/2006	88.5	5.884	87	2.809E+03	2.809E+03	3.428E+03	Yes
6/2/1998	88	22.838	65.9	1.084E+04	1.084E+04	1.330E+04	Yes
12/27/2005	88	18.960	80.8	9.000E+03	9.000E+03	1.104E+04	Yes
10/11/2005	87.5	5.230	92.3	2.469E+03	2.469E+03	3.047E+03	Yes
9/5/2006	87.5	1.635	96.3	7.714E+02	7.714E+02	9.522E+02	Yes
9/25/2001	87	5.230	95.4	2.454E+03	2.454E+03	3.047E+03	Yes
9/9/2003	87	21.576	76.1	1.012E+04	1.012E+04	1.257E+04	Yes
3/30/2004	86.5	141.549	30.4	6.604E+04	6.604E+04	8.246E+04	Yes
8/3/1993	86	10.949	79.8	5.079E+03	5.079E+03	6.378E+03	Yes
10/24/2000	86	4.577	99.6	2.123E+03	2.123E+03	2.666E+03	Yes
10/15/2002	86	11.769	75.2	5.459E+03	5.459E+03	6.855E+03	Yes
12/7/2004	86	987.247	4.2	4.579E+05	4.579E+05	5.751E+05	Yes
5/7/1996	85	216.406	30.2	9.922E+04	9.922E+04	1.261E+05	Yes
7/15/1997	85	18.989	69.5	8.706E+03	8.706E+03	1.106E+04	Yes
3/7/2006	84.5	55.574	39.6	2.533E+04	2.533E+04	3.237E+04	Yes
4/18/2006	84.5	48.055	46.2	2.190E+04	2.190E+04	2.799E+04	Yes
11/13/1990	84	67.146	48	3.042E+04	3.042E+04	3.911E+04	Yes
9/6/1994	84	122.316	39.1	5.542E+04	5.542E+04	7.125E+04	Yes
10/3/1995	84	4.448	92.9	2.015E+03	2.015E+03	2.591E+03	Yes
7/20/2004	84	25.825	65.9	1.170E+04	1.170E+04	1.504E+04	Yes
11/2/1993	83	15.311	73.7	6.854E+03	6.854E+03	8.919E+03	Yes
8/13/1996	83	15.995	72.9	7.161E+03	7.161E+03	9.318E+03	Yes
10/5/1998	83	77.838	45.6	3.485E+04	3.485E+04	4.534E+04	Yes
12/1/1998	83	21.042	67.5	9.420E+03	9.420E+03	1.226E+04	Yes
7/30/2002	83	29.748	82.1	1.332E+04	1.332E+04	1.733E+04	Yes
10/3/2006	83	7.846	79.7	3.512E+03	3.512E+03	4.570E+03	Yes
3/28/1995	82	193.311	32.2	8.550E+04	8.550E+04	1.126E+05	Yes
9/5/1995	82	1.711	98.8	7.566E+02	7.566E+02	9.965E+02	Yes
8/26/1997	82	8.040	85	3.556E+03	3.556E+03	4.684E+03	Yes
12/2/1997	82	48.927	52.7	2.164E+04	2.164E+04	2.850E+04	Yes
6/1/1999	82	191.601	32.3	8.474E+04	8.474E+04	1.116E+05	Yes
10/23/2001	82	6.211	67.2	2.747E+03	2.747E+03	3.618E+03	Yes
8/27/2002	82	40.536	78.4	1.793E+04	1.793E+04	2.361E+04	Yes
8/1/2006	82	2.288	95.6	1.012E+03	1.012E+03	1.333E+03	Yes
11/10/1992	81	8.040	85	3.513E+03	3.513E+03	4.684E+03	Yes
10/31/1995	81	13.771	75.7	6.017E+03	6.017E+03	8.022E+03	Yes
11/28/1995	81	10.093	81.5	4.410E+03	4.410E+03	5.880E+03	Yes
5/16/2000	80.5	103.499	41.6	4.494E+04	4.494E+04	6.029E+04	Yes
11/17/1999	80	7.613	85.8	3.285E+03	3.285E+03	4.435E+03	Yes
8/15/2000	80	2.224	97.7	9.596E+02	9.596E+02	1.296E+03	Yes
9/28/2004	79.5	15.691	94.7	6.729E+03	6.729E+03	9.141E+03	Yes
9/13/2005	79.5	3.269	98	1.402E+03	1.402E+03	1.904E+03	Yes
5/14/2002	79	467.471	15.9	1.992E+05	1.992E+05	2.723E+05	Yes
2/11/2003	79	70.284	27.8	2.995E+04	2.995E+04	4.094E+04	Yes
11/2/2004	78.5	2602.147	22.4	1.102E+06	1.102E+06	1.516E+06	Yes
3/15/2005	78.5	117.358	48.7	4.969E+04	4.969E+04	6.836E+04	Yes
11/1/2005	78.5	7.192	90.3	3.045E+03	3.045E+03	4.189E+03	Yes
9/18/1990	78	6.757	87.5	2.843E+03	2.843E+03	3.936E+03	Yes
3/26/1991	78	192.456	32.2	8.097E+04	8.097E+04	1.121E+05	Yes
10/8/1991	78	6.843	87.3	2.879E+03	2.879E+03	3.986E+03	Yes
5/19/1992	78	28.056	61.8	1.180E+04	1.180E+04	1.634E+04	Yes
7/13/1993	78	8.981	83.3	3.779E+03	3.779E+03	5.232E+03	Yes
9/10/1996	78	7.955	85.2	3.347E+03	3.347E+03	4.634E+03	Yes
9/16/1997	78	4.191	93.3	1.763E+03	1.763E+03	2.442E+03	Yes

**Table J-6. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
6/30/1998	78	4.277	93.1	1.799E+03	1.799E+03	2.491E+03	Yes
8/3/1999	78	5.731	89.8	2.411E+03	2.411E+03	3.338E+03	Yes
4/8/2003	78	134.684	46.8	5.666E+04	5.666E+04	7.846E+04	Yes
2/1/2005	78	108.205	27.8	4.552E+04	4.552E+04	6.303E+04	Yes
6/1/1993	77	39.518	56	1.641E+04	1.641E+04	2.302E+04	Yes
2/13/1996	77	16.851	71.9	6.998E+03	6.998E+03	9.816E+03	Yes
5/8/2001	77	47.728	45.1	1.982E+04	1.982E+04	2.780E+04	Yes
6/1/2004	77	72.572	34.6	3.014E+04	3.014E+04	4.228E+04	Yes
2/19/1991	76	787.786	6.8	3.229E+05	3.229E+05	4.589E+05	Yes
6/21/1994	76	45.420	53.9	1.862E+04	1.862E+04	2.646E+04	Yes
10/4/1994	76	10.521	80.6	4.313E+03	4.313E+03	6.129E+03	Yes
8/8/1995	76	12.232	77.8	5.014E+03	5.014E+03	7.125E+03	Yes
6/6/2006	76	15.038	70.5	6.164E+03	6.164E+03	8.760E+03	Yes
8/23/2004	75.5	114.089	48	4.646E+04	4.646E+04	6.646E+04	Yes
2/21/2006	75.5	63.419	53	2.583E+04	2.583E+04	3.694E+04	Yes
7/2/1991	75	14.969	74.1	6.055E+03	6.055E+03	8.720E+03	Yes
7/12/1994	75	222.394	29.8	8.997E+04	8.997E+04	1.296E+05	Yes
6/18/1996	75	28.997	61.2	1.173E+04	1.173E+04	1.689E+04	Yes
1/21/1997	75	454.196	16.3	1.837E+05	1.837E+05	2.646E+05	Yes
7/6/1999	75	18.647	69.9	7.543E+03	7.543E+03	1.086E+04	Yes
7/14/1992	74	87.247	44	3.482E+04	3.482E+04	5.082E+04	Yes
9/7/1993	74	3.250	95.6	1.297E+03	1.297E+03	1.893E+03	Yes
7/23/1996	74	17.791	70.9	7.101E+03	7.101E+03	1.036E+04	Yes
10/19/2004	74	1219.348	35.1	4.867E+05	4.867E+05	7.103E+05	Yes
6/6/2000	73.5	205.286	31.1	8.138E+04	8.138E+04	1.196E+05	Yes
5/23/2006	73.5	31.383	63.7	1.244E+04	1.244E+04	1.828E+04	Yes
7/30/1991	73	25.490	63.6	1.004E+04	1.004E+04	1.485E+04	Yes
8/11/1992	73	37.208	56.9	1.465E+04	1.465E+04	2.167E+04	Yes
10/8/1996	73	9.494	82.6	3.738E+03	3.738E+03	5.531E+03	Yes
10/5/1999	73	2.395	97.3	9.430E+02	9.430E+02	1.395E+03	Yes
1/2/2002	73	76.168	26.9	2.999E+04	2.999E+04	4.437E+04	Yes
7/3/2001	72.5	62.112	54.4	2.429E+04	2.429E+04	3.618E+04	Yes
1/4/1993	72	201.010	31.5	7.806E+04	7.806E+04	1.171E+05	Yes
5/4/1994	72	265.162	26.6	1.030E+05	1.030E+05	1.545E+05	Yes
2/14/1995	72	140.279	37	5.448E+04	5.448E+04	8.172E+04	Yes
12/11/1990	71	57.822	50.3	2.214E+04	2.214E+04	3.368E+04	Yes
10/6/1992	71	7.356	86.2	2.817E+03	2.817E+03	4.285E+03	Yes
5/13/1997	71	55.427	50.9	2.123E+04	2.123E+04	3.229E+04	Yes
1/18/2000	70.5	14.712	74.5	5.594E+03	5.594E+03	8.570E+03	Yes
12/2/2003	70.5	96.109	54.4	3.655E+04	3.655E+04	5.599E+04	Yes
1/28/1992	70	130.015	38.1	4.909E+04	4.909E+04	7.574E+04	Yes
3/12/1996	70	42.768	54.8	1.615E+04	1.615E+04	2.491E+04	Yes
9/7/1999	70	2.481	97.2	9.366E+02	9.366E+02	1.445E+03	Yes
6/30/2003	70	112.128	38.3	4.234E+04	4.234E+04	6.532E+04	Yes
3/2/1999	69.5	62.783	49	2.354E+04	2.354E+04	3.657E+04	Yes
6/12/2001	69.5	53.939	53.1	2.022E+04	2.022E+04	3.142E+04	Yes
5/13/2003	69.5	88.918	26	3.333E+04	3.333E+04	5.180E+04	Yes
11/12/1991	69	60.132	49.6	2.238E+04	2.238E+04	3.503E+04	Yes
9/8/1992	69	10.863	80	4.043E+03	4.043E+03	6.328E+03	Yes
11/21/1994	69	156.531	35.2	5.826E+04	5.826E+04	9.118E+04	Yes
5/23/1995	69	45.077	54	1.678E+04	1.678E+04	2.626E+04	Yes
7/11/1995	69	30.451	60.3	1.133E+04	1.133E+04	1.774E+04	Yes
4/9/1996	69	55.855	50.8	2.079E+04	2.079E+04	3.254E+04	Yes
6/17/1997	69	267.728	26.5	9.964E+04	9.964E+04	1.560E+05	Yes
9/1/1998	69	3.593	94.7	1.337E+03	1.337E+03	2.093E+03	Yes
11/3/1998	69	17.706	70.9	6.590E+03	6.590E+03	1.031E+04	Yes
6/3/2003	69	36.940	58.2	1.375E+04	1.375E+04	2.152E+04	Yes
12/30/1997	68	342.144	21.9	1.255E+05	1.255E+05	1.993E+05	Yes
2/29/2000	68	189.035	32.6	6.933E+04	6.933E+04	1.101E+05	Yes
1/21/2003	68	63.746	49.7	2.338E+04	2.338E+04	3.713E+04	Yes
11/7/2006	68	787.836	40	2.890E+05	2.890E+05	4.589E+05	Yes
4/24/2000	67	46.788	53.3	1.691E+04	1.691E+04	2.726E+04	Yes
12/19/2000	67	178.162	27.8	6.438E+04	6.438E+04	1.038E+05	Yes
1/27/2004	66.5	454.395	21.6	1.630E+05	1.630E+05	2.647E+05	Yes
6/4/1991	66	46.874	53.3	1.669E+04	1.669E+04	2.731E+04	Yes
4/15/1997	66	210.419	30.7	7.491E+04	7.491E+04	1.226E+05	Yes

**Table J-6. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
4/20/1999	66	554.273	12.6	1.973E+05	1.973E+05	3.229E+05	Yes
5/4/2004	65.5	292.578	23.7	1.034E+05	1.034E+05	1.704E+05	Yes
1/9/1996	65	43.281	54.7	1.517E+04	1.517E+04	2.521E+04	Yes
11/5/1996	65	124.883	38.8	4.378E+04	4.378E+04	7.275E+04	Yes
2/18/1997	65	597.041	11.3	2.093E+05	2.093E+05	3.478E+05	Yes
4/3/2001	65	127.492	36.5	4.470E+04	4.470E+04	7.427E+04	Yes
5/11/1999	64.5	69.028	47.5	2.401E+04	2.401E+04	4.021E+04	Yes
9/5/2000	64.5	0.855	99.7	2.976E+02	2.976E+02	4.983E+02	Yes
9/17/1991	64	10.435	80.8	3.602E+03	3.602E+03	6.079E+03	Yes
2/25/1992	64	605.595	11.1	2.091E+05	2.091E+05	3.528E+05	Yes
1/5/1993	64	237.790	28.6	8.209E+04	8.209E+04	1.385E+05	Yes
8/23/1994	64	61.415	49.2	2.120E+04	2.120E+04	3.578E+04	Yes
2/10/1998	64	342.144	21.9	1.181E+05	1.181E+05	1.993E+05	Yes
2/19/2002	64	392.284	23.4	1.354E+05	1.354E+05	2.285E+05	Yes
3/19/2002	64	791.105	0.8	2.731E+05	2.731E+05	4.608E+05	Yes
10/16/1990	63	367.805	20.6	1.250E+05	1.250E+05	2.143E+05	Yes
5/7/1991	63	872.467	5.5	2.965E+05	2.965E+05	5.082E+05	Yes
4/7/1992	63	98.366	42.3	3.343E+04	3.343E+04	5.730E+04	Yes
1/24/1995	63	975.110	4.4	3.314E+05	3.314E+05	5.680E+05	Yes
2/13/2001	63	813.988	4.5	2.766E+05	2.766E+05	4.742E+05	Yes
3/3/1992	62	339.578	22.1	1.136E+05	1.136E+05	1.978E+05	Yes
5/4/1993	62	526.046	13.6	1.759E+05	1.759E+05	3.064E+05	Yes
1/13/1998	62	816.869	6.3	2.732E+05	2.732E+05	4.758E+05	Yes
4/14/1998	62	53.374	51.5	1.785E+04	1.785E+04	3.109E+04	Yes
3/30/1993	61	118.895	39.6	3.912E+04	3.912E+04	6.926E+04	Yes
2/1/1994	61	1043.539	3.7	3.433E+05	3.433E+05	6.079E+05	Yes
6/6/1995	61	75.699	46.2	2.491E+04	2.491E+04	4.410E+04	Yes
12/17/2002	61	162.144	16.7	5.335E+04	5.335E+04	9.445E+04	Yes
3/11/2003	61	158.875	31.8	5.227E+04	5.227E+04	9.255E+04	Yes
1/22/1991	60	393.465	19.3	1.273E+05	1.273E+05	2.292E+05	Yes
12/14/1993	60	543.153	13	1.758E+05	1.758E+05	3.164E+05	Yes
3/27/2000	60	121.461	39.2	3.931E+04	3.931E+04	7.075E+04	Yes
12/14/1999	59.5	158.242	35.1	5.078E+04	5.078E+04	9.218E+04	Yes
2/2/1993	59	108.631	40.9	3.457E+04	3.457E+04	6.328E+04	Yes
3/2/1993	59	396.032	19.2	1.260E+05	1.260E+05	2.307E+05	Yes
4/5/1994	59	365.239	20.7	1.162E+05	1.162E+05	2.128E+05	Yes
4/25/1995	59	148.833	36.1	4.736E+04	4.736E+04	8.670E+04	Yes
1/5/1999	59	567.104	12.2	1.805E+05	1.805E+05	3.304E+05	Yes
1/15/2001	59	276.887	13.4	8.811E+04	8.811E+04	1.613E+05	Yes
4/12/2005	58.5	964.364	13.3	3.043E+05	3.043E+05	5.618E+05	Yes
1/9/2007	57.5	405.360	24.7	1.257E+05	1.257E+05	2.361E+05	Yes
4/16/1991	57	2052.863	0.8	6.311E+05	6.311E+05	1.196E+06	Yes
11/23/1992	56	163.374	34.6	4.935E+04	4.935E+04	9.517E+04	Yes
12/3/1996	56	780.088	6.9	2.356E+05	2.356E+05	4.544E+05	Yes
4/16/2002	56	119.320	40	3.604E+04	3.604E+04	6.951E+04	Yes
1/4/2005	55.5	3269.029	10.3	9.786E+05	9.786E+05	1.904E+06	Yes
3/8/1994	55	537.166	13.2	1.594E+05	1.594E+05	3.129E+05	Yes
3/17/1998	55	651.784	9.8	1.934E+05	1.934E+05	3.797E+05	Yes
10/5/1993	54	13.686	75.9	3.986E+03	3.986E+03	7.972E+03	Yes
8/4/1998	54	4.448	92.9	1.296E+03	1.296E+03	2.591E+03	Yes
12/10/1991	53	675.734	9.1	1.932E+05	1.932E+05	3.936E+05	Yes
2/2/1999	53	915.235	5.1	2.616E+05	2.616E+05	5.331E+05	Yes
2/24/2004	53	134.684	25.9	3.850E+04	3.850E+04	7.846E+04	Yes
3/6/2001	52.5	650.537	5	1.842E+05	1.842E+05	3.790E+05	Yes
12/18/2001	51.5	2072.565	0.4	5.757E+05	5.757E+05	1.207E+06	Yes
12/5/2006	50.5	132.723	46.6	3.615E+04	3.615E+04	7.731E+04	Yes
6/22/1992	47	164.229	34.6	4.163E+04	4.163E+04	9.567E+04	Yes



**Figure J-4. TDS load duration curve for station OUA0041 for Saline River (HUC/reach 08040203-010)**

**Table J-7. Allowable TDS load for station OUA0041 for Saline River (HUC/reach 08040203-010)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>553,500.5</b>
9/12/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/13/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/16/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/22/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/23/1954	3.8	100.000	1.242	0.00	804.0380	0.00E+00
9/11/1954	4.1	100.000	1.340	0.00	867.5147	0.00E+00
9/14/1954	4.1	100.000	1.340	0.00	867.5147	0.00E+00
9/15/1954	4.1	100.000	1.340	0.00	867.5147	0.00E+00
9/17/1954	4.1	100.000	1.340	0.00	867.5147	0.00E+00
For brevity, most cells of this spreadsheet have been hidden						
1/28/1949	54800	0.100	17914.282	0.00	11595074.8671	0.00E+00
12/28/1987	59400	0.100	19418.035	0.00	12568384.0713	0.00E+00
5/2/1958	59600	0.100	19483.416	0.00	12610701.8628	0.00E+00
5/16/1968	59600	0.100	19483.416	0.00	12610701.8628	0.00E+00
12/26/1987	61500	0.100	20104.531	0.00	13012720.8819	0.00E+00
5/1/1958	65900	0.100	21542.904	0.00	13943712.2946	0.00E+00
12/27/1987	67000	0.100	21902.498	0.00	14176460.1477	0.00E+00
4/30/1958	68500	0.100	22392.852	0.00	14493843.5839	0.00E+00
4/29/1958	69500	0.100	22719.755	0.00	14705432.5413	0.00E+00
5/15/1968	71500	0.100	23373.561	0.10	15128610.4562	1.51E+04
5/14/1968	72500	0.000	23700.464	0.00	15340199.4136	0.00E+00

**Table J-8. Existing load for TDS for station OUA0041 for Saline River (HUC/reach 08040203-010)**

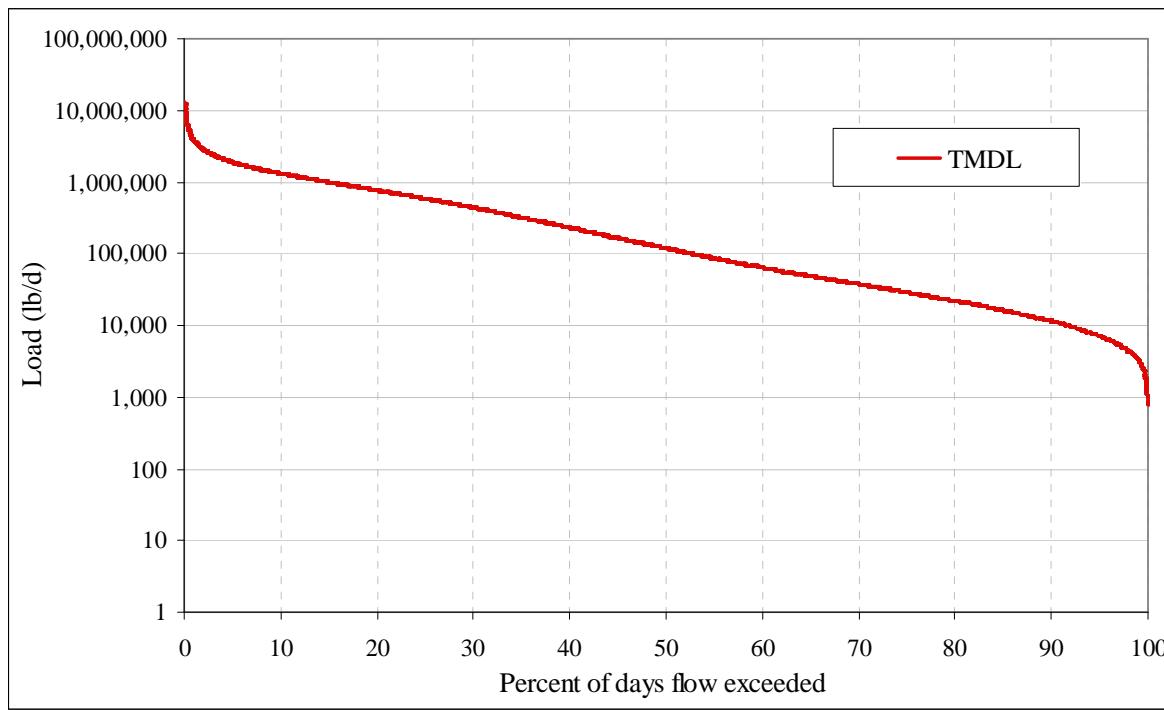
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
10/3/1995	254	4.448	92.9	6.094E+03	2.591E+03	2.591E+03	Yes
5/13/1997	250	55.427	50.9	7.474E+04	3.178E+04	3.229E+04	Yes
10/28/1997	239	23.950	64.9	3.087E+04	1.313E+04	1.395E+04	Yes
12/2/1997	236	48.927	52.7	6.228E+04	2.648E+04	2.850E+04	Yes
1/21/1997	234	454.196	16.3	5.733E+05	2.437E+05	2.646E+05	Yes
8/8/1995	233	12.232	77.8	1.537E+04	6.536E+03	7.125E+03	Yes
2/10/1998	219	342.144	21.9	4.042E+05	1.718E+05	1.993E+05	Yes
4/15/1997	209	210.419	30.7	2.372E+05	1.009E+05	1.226E+05	Yes
4/14/1998	204	53.374	51.5	5.873E+04	2.497E+04	3.109E+04	Yes
9/25/2001	203	5.230	95.4	5.727E+03	2.435E+03	3.047E+03	Yes
10/5/1999	183	2.395	97.3	2.364E+03	1.005E+03	1.395E+03	Yes
10/16/1990	179	367.805	20.6	3.551E+05	1.510E+05	2.143E+05	Yes
2/18/1997	168	597.041	11.3	5.410E+05	2.300E+05	3.478E+05	Yes
10/7/2003	168	18.960	81.9	1.718E+04	7.305E+03	1.104E+04	Yes
8/14/2001	163	21.902	63.4	1.926E+04	8.188E+03	1.276E+04	Yes
9/7/1999	162	2.481	97.2	2.167E+03	9.216E+02	1.445E+03	Yes
12/30/1997	160	342.144	21.9	2.953E+05	1.255E+05	1.993E+05	Yes
7/29/2003	152	21.902	75.9	1.796E+04	7.635E+03	1.276E+04	Yes
11/5/1996	150	124.883	38.8	1.010E+05	4.296E+04	7.275E+04	Yes
9/10/2002	150	6.211	99.1	5.025E+03	2.137E+03	3.618E+03	Yes
3/30/1993	149	118.895	39.6	9.555E+04	4.063E+04	6.926E+04	Yes
8/26/1997	147	8.040	85	6.375E+03	2.711E+03	4.684E+03	Yes
10/23/2001	147	6.211	67.2	4.925E+03	2.094E+03	3.618E+03	Yes
11/13/2001	147	4.904	84.7	3.888E+03	1.653E+03	2.856E+03	Yes
9/9/2003	147	21.576	76.1	1.711E+04	7.274E+03	1.257E+04	Yes
10/4/1994	145	10.521	80.6	8.228E+03	3.499E+03	6.129E+03	Yes
12/1/1998	144	21.042	67.5	1.634E+04	6.949E+03	1.226E+04	Yes
5/8/2001	143	47.728	45.1	3.681E+04	1.565E+04	2.780E+04	Yes
4/7/1992	141	98.366	42.3	7.481E+04	3.181E+04	5.730E+04	Yes
6/3/2003	140	36.940	58.2	2.789E+04	1.186E+04	2.152E+04	Yes
1/4/1993	139	201.010	31.5	1.507E+05	6.408E+04	1.171E+05	Yes
8/11/1992	138	37.208	56.9	2.770E+04	1.178E+04	2.167E+04	Yes
10/8/1996	138	9.494	82.6	7.067E+03	3.005E+03	5.531E+03	Yes
8/3/1999	138	5.731	89.8	4.266E+03	1.814E+03	3.338E+03	Yes
11/12/1991	137	60.132	49.6	4.443E+04	1.889E+04	3.503E+04	Yes
11/2/1993	137	15.311	73.7	1.131E+04	4.811E+03	8.919E+03	Yes
6/12/2001	137	53.939	53.1	3.986E+04	1.695E+04	3.142E+04	Yes
7/6/1999	136	18.647	69.9	1.368E+04	5.816E+03	1.086E+04	Yes
8/13/1996	135	15.995	72.9	1.165E+04	4.952E+03	9.318E+03	Yes
9/10/1996	134	7.955	85.2	5.749E+03	2.445E+03	4.634E+03	Yes
6/30/2003	134	112.128	38.3	8.104E+04	3.446E+04	6.532E+04	Yes
11/13/1990	133	67.146	48	4.817E+04	2.048E+04	3.911E+04	Yes
12/11/1990	133	57.822	50.3	4.148E+04	1.764E+04	3.368E+04	Yes
9/18/1990	131	6.757	87.5	4.775E+03	2.030E+03	3.936E+03	Yes
8/27/2002	130	40.536	78.4	2.842E+04	1.209E+04	2.361E+04	Yes
9/16/1997	129	4.191	93.3	2.916E+03	1.240E+03	2.442E+03	Yes
1/22/1991	128	393.465	19.3	2.716E+05	1.155E+05	2.292E+05	Yes
4/24/2000	128	46.788	53.3	3.230E+04	1.374E+04	2.726E+04	Yes
6/21/2005	128	33.671	78.2	2.325E+04	9.884E+03	1.961E+04	Yes
5/19/1992	127	28.056	61.8	1.922E+04	8.172E+03	1.634E+04	Yes
7/15/1997	127	18.989	69.5	1.301E+04	5.531E+03	1.106E+04	Yes
10/8/1991	126	6.843	87.3	4.651E+03	1.977E+03	3.986E+03	Yes
11/28/1995	126	10.093	81.5	6.860E+03	2.917E+03	5.880E+03	Yes
12/2/2003	126	96.109	54.4	6.532E+04	2.777E+04	5.599E+04	Yes
10/11/2005	126	5.230	92.3	3.555E+03	1.511E+03	3.047E+03	Yes
5/4/1994	125	265.162	26.6	1.788E+05	7.602E+04	1.545E+05	Yes
3/7/2006	124	55.574	39.6	3.717E+04	1.580E+04	3.237E+04	Yes
7/30/1991	123	25.490	63.6	1.691E+04	7.190E+03	1.485E+04	Yes
10/6/1992	123	7.356	86.2	4.880E+03	2.075E+03	4.285E+03	Yes
3/28/1995	123	193.311	32.2	1.282E+05	5.453E+04	1.126E+05	Yes
6/1/2004	123	72.572	34.6	4.815E+04	2.047E+04	4.228E+04	Yes
1/27/2004	122	454.395	21.6	2.990E+05	1.271E+05	2.647E+05	Yes
3/30/2004	122	141.549	30.4	9.314E+04	3.960E+04	8.246E+04	Yes
3/26/1991	121	192.456	32.2	1.256E+05	5.341E+04	1.121E+05	Yes
11/17/1999	121	7.613	85.8	4.968E+03	2.113E+03	4.435E+03	Yes
11/4/2003	121	28.441	89.8	1.856E+04	7.892E+03	1.657E+04	Yes

**Table J-8. (continued)**

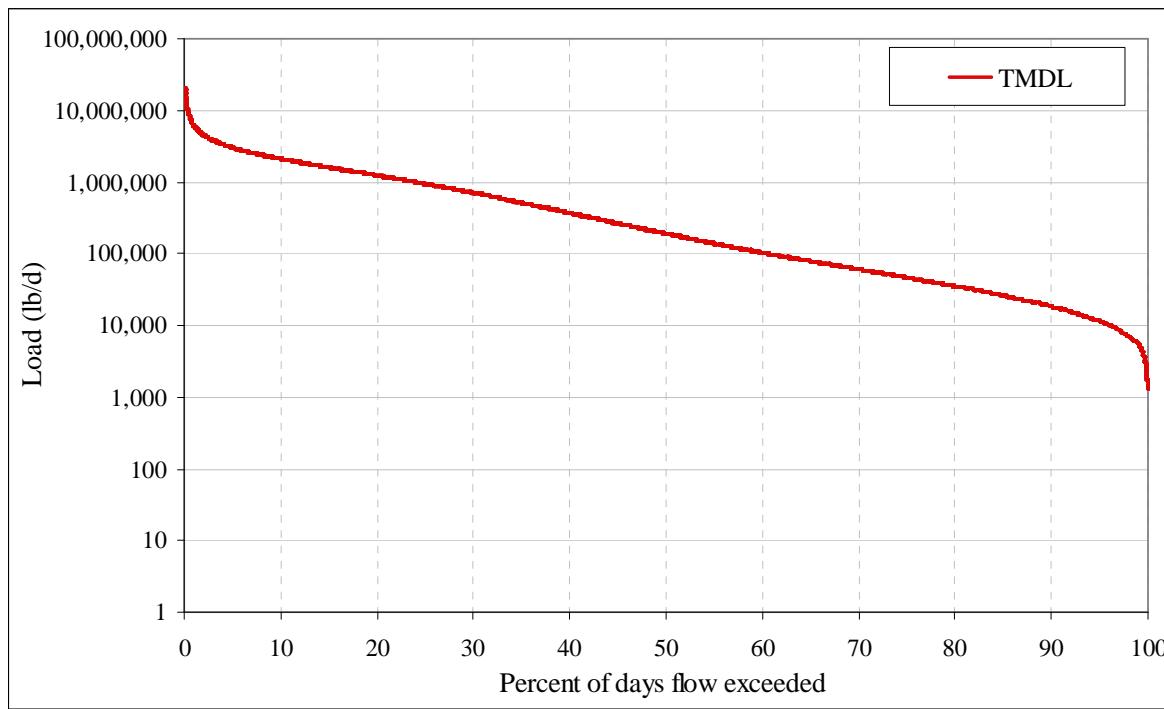
Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
1/28/1992	119	130.015	38.1	8.345E+04	3.548E+04	7.574E+04	Yes
5/13/2003	119	88.918	26	5.707E+04	2.427E+04	5.180E+04	Yes
5/4/2004	119	292.578	23.7	1.878E+05	7.985E+04	1.704E+05	Yes
11/10/1992	118	8.040	85	5.117E+03	2.176E+03	4.684E+03	Yes
10/31/2000	118	10.461	95.6	6.658E+03	2.831E+03	6.094E+03	Yes
4/8/2003	118	134.684	46.8	8.572E+04	3.645E+04	7.846E+04	Yes
3/3/1992	117	339.578	22.1	2.143E+05	9.112E+04	1.978E+05	Yes
7/12/1994	117	222.394	29.8	1.403E+05	5.967E+04	1.296E+05	Yes
2/19/2002	117	392.284	23.4	2.476E+05	1.053E+05	2.285E+05	Yes
9/17/1991	116	10.435	80.8	6.529E+03	2.776E+03	6.079E+03	Yes
1/22/2002	116	76.168	26.9	4.766E+04	2.026E+04	4.437E+04	Yes
3/12/1996	115	42.768	54.8	2.653E+04	1.128E+04	2.491E+04	Yes
5/10/2005	115	67.669	67.1	4.197E+04	1.785E+04	3.942E+04	Yes
11/1/2005	114	7.192	90.3	4.422E+03	1.880E+03	4.189E+03	Yes
5/11/1999	112.5	69.028	47.5	4.189E+04	1.781E+04	4.021E+04	Yes
1/18/2000	112.5	14.712	74.5	8.927E+03	3.796E+03	8.570E+03	Yes
2/13/2001	112	813.988	4.5	4.917E+05	2.091E+05	4.742E+05	Yes
4/3/2001	112	127.492	36.5	7.702E+04	3.275E+04	7.427E+04	Yes
4/26/2004	112	536.121	22.1	3.239E+05	1.377E+05	3.123E+05	Yes
12/27/2005	112	18.960	80.8	1.145E+04	4.870E+03	1.104E+04	Yes
3/2/1999	111.5	62.783	49	3.776E+04	1.605E+04	3.657E+04	Yes
2/25/1992	111	605.595	11.1	3.626E+05	1.542E+05	3.528E+05	Yes
6/21/1994	111	45.420	53.9	2.719E+04	1.156E+04	2.646E+04	Yes
11/21/1994	111	156.531	35.2	9.372E+04	3.985E+04	9.118E+04	Yes
2/14/1995	111	140.279	37	8.399E+04	3.571E+04	8.172E+04	Yes
4/25/1995	111	148.833	36.1	8.911E+04	3.789E+04	8.670E+04	Yes
5/23/1995	111	45.077	54	2.699E+04	1.148E+04	2.626E+04	Yes
1/9/1996	111	43.281	54.7	2.591E+04	1.102E+04	2.521E+04	Yes
11/3/1998	111	17.706	70.9	1.060E+04	4.507E+03	1.031E+04	Yes
7/3/2001	111	62.112	54.4	3.719E+04	1.581E+04	3.618E+04	Yes
3/11/2003	111	158.875	31.8	9.512E+04	4.044E+04	9.255E+04	Yes
6/4/1991	110	46.874	53.3	2.781E+04	1.183E+04	2.731E+04	Yes
7/2/1991	110	14.969	74.1	8.881E+03	3.776E+03	8.720E+03	Yes
6/2/1998	110	22.838	65.9	1.355E+04	5.762E+03	1.330E+04	Yes
10/24/2000	110	4.577	99.6	2.715E+03	1.155E+03	2.666E+03	Yes
1/24/1995	109	975.110	4.4	5.733E+05	2.438E+05	5.680E+05	Yes
12/17/2002	108	162.144	16.7	9.445E+04	4.016E+04	9.445E+04	Yes
7/14/1992	106	87.247	44	4.988E+04	2.121E+04	5.082E+04	Yes
11/23/1992	106	163.374	34.6	9.341E+04	3.972E+04	9.517E+04	Yes
4/5/1994	106	365.239	20.7	2.088E+05	8.879E+04	2.128E+05	Yes
4/9/1996	106	55.855	50.8	3.193E+04	1.358E+04	3.254E+04	Yes
10/15/2002	106	11.769	75.2	6.729E+03	2.861E+03	6.855E+03	Yes
2/11/2003	106	70.284	27.8	4.018E+04	1.709E+04	4.094E+04	Yes
9/28/2004	106	15.691	94.7	8.971E+03	3.815E+03	9.141E+03	Yes
2/1/2005	106	108.205	27.8	6.187E+04	2.630E+04	6.303E+04	Yes
8/1/2006	106	2.288	95.6	1.308E+03	5.563E+02	1.333E+03	Yes
9/8/1992	105	10.863	80	6.152E+03	2.616E+03	6.328E+03	Yes
2/13/1996	105	16.851	71.9	9.543E+03	4.058E+03	9.816E+03	Yes
6/30/1998	105	4.277	93.1	2.422E+03	1.030E+03	2.491E+03	Yes
4/16/2002	105	119.320	40	6.758E+04	2.873E+04	6.951E+04	Yes
7/30/2002	105	29.748	82.1	1.685E+04	7.164E+03	1.733E+04	Yes
7/20/2004	105	25.825	65.9	1.463E+04	6.219E+03	1.504E+04	Yes
2/21/2006	105	63.419	53	3.592E+04	1.527E+04	3.694E+04	Yes
5/23/2006	105	31.383	63.7	1.777E+04	7.557E+03	1.828E+04	Yes
2/29/2000	104	189.035	32.6	1.060E+05	4.509E+04	1.101E+05	Yes
5/14/2002	104	467.471	15.9	2.622E+05	1.115E+05	2.723E+05	Yes
8/16/2005	104	12.095	95.8	6.785E+03	2.885E+03	7.046E+03	Yes
2/24/2004	103	134.684	25.9	7.482E+04	3.182E+04	7.846E+04	Yes
4/20/1999	102	554.273	12.6	3.049E+05	1.297E+05	3.229E+05	Yes
3/15/2005	102	117.358	48.7	6.457E+04	2.745E+04	6.836E+04	Yes
7/23/1996	101	17.791	70.9	9.692E+03	4.121E+03	1.036E+04	Yes
8/15/2000	101	2.224	97.7	1.212E+03	5.151E+02	1.296E+03	Yes
9/5/2000	101	0.855	99.7	4.660E+02	1.981E+02	4.983E+02	Yes
9/13/2005	101	3.269	98	1.781E+03	7.572E+02	1.904E+03	Yes
2/19/1991	100	787.786	6.8	4.249E+05	1.807E+05	4.589E+05	Yes
4/18/2006	99.5	48.055	46.2	2.579E+04	1.097E+04	2.799E+04	Yes
1/21/2003	98	63.746	49.7	3.370E+04	1.433E+04	3.713E+04	Yes

**Table J-8. (continued)**

Date	Observed Concentration (mg/L)	Flow/unit area on sampling day (cfs)	Percent exceedance for flow on sampling day	Current load (lbs/day)	Reduced load (lbs/day)	Allowable load with MOS incorporated (lbs/day)	Reduced load less than or equal to allow load?
1/22/1991	97	393.465	19.3	2.059E+05	8.753E+04	2.292E+05	Yes
8/24/2004	95.5	86.302	54.1	4.445E+04	1.890E+04	5.027E+04	Yes
10/3/2006	95.5	7.846	79.7	4.041E+03	1.718E+03	4.570E+03	Yes
4/16/1991	95	2052.863	0.8	1.052E+06	4.473E+05	1.196E+06	Yes
5/7/1991	95	872.467	5.5	4.471E+05	1.901E+05	5.082E+05	Yes
10/5/1998	95	77.838	45.6	3.988E+04	1.696E+04	4.534E+04	Yes
9/5/1995	94	1.711	98.8	8.674E+02	3.688E+02	9.965E+02	Yes
3/8/1994	93	537.166	13.2	2.695E+05	1.146E+05	3.129E+05	Yes
9/5/2006	93	1.635	96.3	8.199E+02	3.486E+02	9.522E+02	Yes
7/18/2000	92	7.955	85.2	3.947E+03	1.678E+03	4.634E+03	Yes
6/1/1993	91	39.518	56	1.940E+04	8.247E+03	2.302E+04	Yes
9/6/1994	91	122.316	39.1	6.004E+04	2.553E+04	7.125E+04	Yes
7/11/1995	90	30.451	60.3	1.478E+04	6.285E+03	1.774E+04	Yes
8/3/1993	89	10.949	79.8	5.256E+03	2.235E+03	6.378E+03	Yes
3/27/2000	89	121.461	39.2	5.831E+04	2.479E+04	7.075E+04	Yes
7/19/2005	89	76.495	56.7	3.672E+04	1.561E+04	4.456E+04	Yes
7/11/2006	88.5	5.884	87	2.809E+03	1.194E+03	3.428E+03	Yes
2/2/1993	87	108.631	40.9	5.098E+04	2.167E+04	6.328E+04	Yes
5/16/2000	87	103.499	41.6	4.857E+04	2.065E+04	6.029E+04	Yes
7/13/1993	86	8.981	83.3	4.166E+03	1.771E+03	5.232E+03	Yes
1/15/2001	86	276.887	13.4	1.284E+05	5.461E+04	1.613E+05	Yes
12/7/2004	85	987.247	4.2	4.526E+05	1.925E+05	5.751E+05	Yes
9/7/1993	84	3.250	95.6	1.473E+03	6.262E+02	1.893E+03	Yes
12/3/1996	84	780.088	6.9	3.534E+05	1.503E+05	4.544E+05	Yes
1/5/1999	84	567.104	12.2	2.569E+05	1.093E+05	3.304E+05	Yes
2/2/1999	83	915.235	5.1	4.097E+05	1.742E+05	5.331E+05	Yes
12/14/1999	83	158.242	35.1	7.084E+04	3.012E+04	9.218E+04	Yes
12/19/2000	81.5	178.162	27.8	7.832E+04	3.330E+04	1.038E+05	Yes
10/31/1995	81	13.771	75.7	6.017E+03	2.558E+03	8.022E+03	Yes
6/18/1996	80	28.997	61.2	1.251E+04	5.320E+03	1.689E+04	Yes
9/1/1998	80	3.593	94.7	1.550E+03	6.591E+02	2.093E+03	Yes
6/6/2006	79.5	15.038	70.5	6.448E+03	2.742E+03	8.760E+03	Yes
2/1/1994	79	1043.539	3.7	4.447E+05	1.891E+05	6.079E+05	Yes
6/6/1995	78	75.699	46.2	3.185E+04	1.354E+04	4.410E+04	Yes
3/19/2002	78	791.105	0.8	3.328E+05	1.415E+05	4.608E+05	Yes
6/6/2000	74.5	205.286	31.1	8.249E+04	3.508E+04	1.196E+05	Yes
10/5/1993	74	13.686	75.9	5.463E+03	2.323E+03	7.972E+03	Yes
11/7/2006	74	787.836	40	3.145E+05	1.337E+05	4.589E+05	Yes
4/12/2005	71	964.364	13.3	3.693E+05	1.570E+05	5.618E+05	Yes
12/14/1993	70	543.153	13	2.051E+05	8.720E+04	3.164E+05	Yes
8/23/1994	69	61.415	49.2	2.286E+04	9.719E+03	3.578E+04	Yes
6/1/1999	67	191.601	32.3	6.924E+04	2.944E+04	1.116E+05	Yes
5/4/1993	64	526.046	13.6	1.816E+05	7.721E+04	3.064E+05	Yes
3/6/2001	60.5	650.537	5	2.123E+05	9.026E+04	3.790E+05	Yes
12/5/2006	60	132.723	46.6	4.295E+04	1.826E+04	7.731E+04	Yes
1/9/2007	60	405.360	24.7	1.312E+05	5.578E+04	2.361E+05	Yes
8/4/1998	55	4.448	92.9	1.319E+03	5.610E+02	2.591E+03	Yes
6/22/1992	54	164.229	34.6	4.783E+04	2.034E+04	9.567E+04	Yes

**Figure J-5. TDS load duration curve for Saline River (HUC/reach 08040203-008)****Table J-9. Allowable TDS load for Saline River (HUC/reach 08040203-008)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
						<b>119,378.1</b>
9/16/1954	3.8	100.000	0.267	0.00	792.5978	0.00E+00
9/17/1954	3.8	100.000	0.267	0.00	792.5978	0.00E+00
9/20/1954	3.8	100.000	0.267	0.00	792.5978	0.00E+00
9/26/1954	3.8	100.000	0.267	0.00	792.5978	0.00E+00
9/27/1954	3.8	100.000	0.267	0.00	792.5978	0.00E+00
9/15/1954	4.1	100.000	0.285	0.00	845.6617	0.00E+00
9/18/1954	4.1	100.000	0.285	0.00	845.6617	0.00E+00
9/19/1954	4.1	100.000	0.285	0.00	845.6617	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
2/1/1949	54800	0.100	3267.445	0.00	9693126.6303	0.00E+00
1/1/1988	59400	0.100	3541.716	0.00	10506773.1341	0.00E+00
5/6/1958	59600	0.100	3553.641	0.00	10542149.0691	0.00E+00
5/20/1968	59600	0.100	3553.641	0.00	10542149.0691	0.00E+00
12/30/1987	61500	0.100	3666.927	0.00	10878220.4510	0.00E+00
5/5/1958	65900	0.100	3929.273	0.00	11656491.0199	0.00E+00
12/31/1987	67000	0.100	3994.860	0.00	11851058.6621	0.00E+00
5/4/1958	68500	0.100	4084.296	0.00	12116378.1742	0.00E+00
5/3/1958	69500	0.100	4143.920	0.00	12293257.8489	0.00E+00
5/19/1968	71500	0.100	4263.169	0.10	12647017.1984	1.26E+04
5/18/1968	72500	0.000	4322.793	0.00	12823896.8731	0.00E+00

**Figure J-6. TDS load duration curve for Saline River (HUC/reach 08040203-009)****Table J-10. Allowable TDS load for Saline River (HUC/reach 08040203-009)**

Date	Observed flow (cfs)	Percent exceedance for observed flow	Adjusted flow for entire basin (cfs)	Width for area under curves (%)	Allowable load to meet standard (lb/day)	Area under TMDL curve (lb/day)
<b>191,703.9</b>						
9/16/1954	3.8	100.000	1.966	0.00	1272.7972	0.00E+00
9/17/1954	3.8	100.000	1.966	0.00	1272.7972	0.00E+00
9/20/1954	3.8	100.000	1.966	0.00	1272.7972	0.00E+00
9/26/1954	3.8	100.000	1.966	0.00	1272.7972	0.00E+00
9/27/1954	3.8	100.000	1.966	0.00	1272.7972	0.00E+00
9/15/1954	4.1	100.000	2.098	0.00	1358.0102	0.00E+00
9/18/1954	4.1	100.000	2.098	0.00	1358.0102	0.00E+00
9/19/1954	4.1	100.000	2.098	0.00	1358.0102	0.00E+00
For brevity, most cells in this spreadsheet have been hidden						
2/1/1949	54800	0.100	24048.948	0.00	15565756.7182	0.00E+00
1/1/1988	59400	0.100	26067.630	0.00	16872355.0961	0.00E+00
5/6/1958	59600	0.100	26155.399	0.00	16929163.7212	0.00E+00
5/20/1968	59600	0.100	26155.399	0.00	16929163.7212	0.00E+00
12/30/1987	61500	0.100	26989.202	0.00	17468845.6599	0.00E+00
5/5/1958	65900	0.100	28920.116	0.00	18718635.4127	0.00E+00
12/31/1987	67000	0.100	29402.844	0.00	19031082.8509	0.00E+00
5/4/1958	68500	0.100	30061.110	0.00	19457147.5394	0.00E+00
5/3/1958	69500	0.100	30499.954	0.00	19741190.6650	0.00E+00
5/19/1968	71500	0.100	31377.642	0.10	20309276.9163	2.03E+04
5/18/1968	72500	0.000	31816.486	0.00	20593320.0419	0.00E+00