



2012 Oklahoma Streams Report

Beneficial Use Monitoring Program

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OWRB

OKLAHOMA WATER RESOURCES BOARD
the water agency

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Beneficial Use Monitoring Program

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Beneficial Use Monitoring Program Goal

The goal of the Beneficial Use Monitoring Program is to document beneficial use impairments, identify impairment sources (if possible), detect water quality trends, provide needed information for the WQS, and facilitate the prioritization of pollution control activities.

EXECUTIVE SUMMARY

It is the intent of this Oklahoma Water Resources Board (OWRB) report to advance concepts and principles of the Oklahoma Comprehensive Water Plan (OCWP). Consistent with a primary OCWP initiative, this and other OWRB technical studies provide invaluable data crucial to the ongoing management of Oklahoma's water supplies as well as the future use and protection of the state's water resources. Oklahoma's decision-makers rely upon this information to address specific water supply, quality, infrastructure, and related concerns. Maintained by the OWRB and updated every 10 years, the OCWP serves as Oklahoma's official long-term water planning strategy. Recognizing the essential connection between sound science and effective public policy, incorporated in the Water Plan are a broad range of water resource development and protection strategies substantiated by hard data – such as that contained in this report – and supported by Oklahoma citizens.

The Beneficial Use Monitoring Program exists as a result of the vital economic and social importance of Oklahoma's lakes, streams, wetlands, and aquifers and the associated need for their protection and management. The data contained in this report is scientifically defensible and has been collected and analyzed following procedures outlined in Use Support Assessment Protocols (USAP), developed by OWRB with input and concurrence of Oklahoma's other environmental agencies. Specifically, USAPs establish a consistent method to determine if beneficial uses assigned for individual waters through Oklahoma Water Quality Standards (WQS) are being supported. The legitimacy of data analyzed following protocols other than those outlined in the USAP (or the Oklahoma Continuing Planning Process (CPP) document where the USAP is silent) for use support determination is not appropriate. If the BUMP report indicates that a designated beneficial use is impaired, threatened, or otherwise compromised, measures must be taken to mitigate or restore the water quality.

The OWRB has worked diligently to follow the guidelines outlined in the USAP. Recommendations in this report should be consistent with recommendations for the state's 303(d) list. Although certain inconsistencies do exist, every effort has been taken to assure compatibility between the BUMP Report and the 303(d) list. Issues regarding stream/lake segmenting additional data from non-BUMP sources and unique non-representative conditions all affect the impairment decision-making process.

Traditionally, the State of Oklahoma has utilized numerous water monitoring programs conducted by individual state and federal agencies. In general, each environmental agency designs and implements its own program with only limited participation with other state, municipal, or federal entities. These programs collect information for a specific purpose or project (e.g., development of Total Maximum Daily Loads, WQS process, lake trophic status determination, water quality impact assessments from nonpoint and point source pollution, stream flow measurement, assessment of best management practices, etc.). Therefore, the information is specific to each project's data quality objectives (DQOs) and is often limited to a very small geographic area.

To synchronize Oklahoma's monitoring efforts related to water quality, the State Legislature appropriated funds in 1998 to create the Beneficial Use Monitoring Program (BUMP) under the direction of the Oklahoma Water Resources Board, who promulgates the WQS and WQS Implementation Rule. BUMP

brings the OWRB's overall water quality management program full circle. From the promulgation of WQS, to permitting and enforcement of permits stemming from WQS-established criteria, to nonpoint source controls, all agency water quality management activities are intended to work in concert to restore, protect, and maintain designated beneficial uses.

The specific objectives of BUMP are to detect and quantify water quality trends, document and quantify impairments of assigned beneficial uses, and identify pollution problems before they become a pollution crisis. This report interprets current Oklahoma Lake data collected as part of the comprehensive, long-term program. As the program has matured, the BUMP report has become one of the most important annually published documents in Oklahoma.

Beneficial Use Monitoring Program Components

Monitoring Rivers & Streams - The OWRB is currently monitoring approximately 84 stations on a 6-week rotation. Fixed station monitoring is based largely upon the 84 planning basins as outlined in the Oklahoma Comprehensive water Plan (OCWP). In general, at least one sample station is located at the terminal end of each of the planning basins. The OWRB also conducts on-going special studies as well as 25-30 probabilistic monitoring stations annually.

Fixed Station Load Monitoring – The OWRB is currently working with several partners including the US Geological Survey (USGS), US Army Corps of Engineers (USACE), Grand River Dam Authority (GRDA) and National Weather Service to conduct flow monitoring on all our fixed station sites that are not part of the State of Oklahoma/USGS Cooperative Gaging Network. This cooperative effort will allow for loadings to be calculated, trends to be assessed statewide and provide much needed data for the Use Support Assessment process.

Fixed Station Lakes Monitoring – As part of BUMP, the OWRB conducts sampling on lakes and reservoirs across the State of Oklahoma. To accomplish this task, the OWRB has taken a probabilistic survey approach for the lakes monitoring program. This survey design allows the state's objectives to be met as well as ensure various sized waterbodies are represented adequately. The survey population includes all lakes above 50 surface acres, which encompasses approximately 206 different waterbodies. The population is then stratified into two groups – lakes greater than 500 surface acres and those below 500 surface acres. The greater than 500 surface acres group includes 68 lakes, of which approximately one-fifth are monitored annually (quarterly samples) on a randomized draw. They are then monitored again during a subsequent year in the 5-year rotation, so that each lake greater than 50 surface acres is sampled 2 non-consecutive years during each 5 year rotation. The lakes managed by our Federal partners, the USACE and Bureau of Reclamation (BoR) are included in the 68 large lakes. Additionally, ten randomly drawn lakes of less than 500 surface acres are sampled annually (quarterly samples) over the 5 year sample frame. Many of these smaller lakes have not been sampled historically through BUMP and include small municipal water supplies.

The OWRB works with other agencies, such as the USACE, for inclusion of additional information on waterbodies managed by the Corps. Data collected consists primarily of water chemistry, nutrients, and chlorophyll-a information. In general, a minimum of three to five stations per reservoir are sampled depending on the size of the reservoir. Stations are located such that they represent the lacustrine, transitional, and riverine zones of the lake. On many reservoirs, additional sites are monitored, including major arms of the reservoir as appropriate. Water quality parameters have been added to the lakes sampling effort over the years to enhance program ability to make use support determinations.

Groundwater Monitoring and Assessment Program (GMAP) – This new program was made possible as result of a \$1,500,000 increase in funding received from the Oklahoma Legislature for water quality/ quantity monitoring based on recommendations of the 2012 Update of the Oklahoma Comprehensive Water Plan. These additional monies are being utilized to restore funding levels of the Beneficial Use

Monitoring Program as well as to implement the new groundwater program. The new groundwater program prioritizes efforts on Oklahoma's 21 major groundwater aquifers and will be phased in over the next 4 years. This baseline period will focus on 4-6 aquifers per year and will assess concentrations of nutrients, metals and major ion species. By design, a minimum of 30 wells will be used to collect water quality data from each aquifer. When fully implemented, there will be 750 wells in the statewide groundwater quality network statewide. In addition, the OWRB's annual groundwater level measurement program will be doubled in capacity (from around 530 to 1100 wells) and will be spatially redistributed. For ½ of the water level network, manual measurements will become tri-annual events. Additionally, over the 4 year baseline period, the OWRB plans to install 30-50 continuous water level recorders to obtain daily or hourly measurements that are more sensitive to detecting seasonal changes (brought on by drought or variable climate conditions) than can be obtained by annual measurements. Update: The data collection phase of a groundwater assessment pilot project on the Rush Springs Aquifer was completed in April 2013. Analytical results will be available in July of 2013.

Intensive Investigations – If beneficial use impairment is identified or suspected, then all appropriate state agencies will be alerted and an investigation will be initiated to confirm if beneficial use impairment is occurring. If routine monitoring cannot definitively identify impairments, then an intensive study will be undertaken and if impairment is present, the source of the impairment will be identified if possible. One potential use for the intensive studies envisioned was identified during the data analysis phase of this reporting process. For example, monies could be spent to identify if high turbidity readings in rivers and streams are due to natural processes or do to human activities in the watershed of concern. Some potential causes of beneficial use impairment are; improper beneficial use or criteria (Oklahoma Water Resources Board jurisdiction), point source problems (Oklahoma Department of Environmental Quality or Oklahoma Department of Agriculture), non-point source problems (Oklahoma Conservation Commission, Oklahoma Department of Agriculture, Oklahoma Corporation Commission, or Oklahoma Department of Environmental Quality), oil and gas contamination (Oklahoma Corporation Commission), agricultural activities (Oklahoma Department of Agriculture), or mining activities (Oklahoma Department of Mines). All monitoring activities will be cooperative in nature with the agency with statutory authority assuming the lead role for intensive monitoring. If waterbodies are not identified for intensive study as part of this task, then monies will be reallocated for routine monitoring of beneficial use attainment. Other entities (i.e. tribal or governmental units outside of Oklahoma) will be involved as appropriate. All intensive-monitoring activities will be consistent with the OWQS and the USAP. If no protocols exist, then best professional judgment or State/Environmental Protection Agency guidance is used as appropriate.

Program History/Overview

Sampling of the numerous lakes, streams, and rivers across this state was initiated in the summer and fall of 1998. Lake sampling in connection with BUMP began in July of 1998. Sampling on numerous streams and rivers began in earnest in November of the same year. The two sampling programs, one for lakes and one for streams, had separate starting dates for a number of reasons. First, the OWRB had been conducting a lake-sampling program during the warmer summer months since 1990 as part of the Federal Clean Lakes Program. This historical lake sampling program was funded through federal dollars with the express purpose of determining lake trophic status. The trophic status of a lake can range from oligotrophic (low biological productivity) to hypereutrophic (excessive biological productivity). In general, the more productive a lake is the more water quality problems it is likely to experience. Federal dollars to fund this trophic state assessment of our state's lakes were discontinued in 1994. At that time, the OWRB searched for other funding sources, and through working with the Secretary of the Environment and the Oklahoma Conservation Commission, the OWRB was able to obtain a one-time federal CWA 319 nonpoint source grant to continue the lake trophic state assessment program. The OWRB subsequently initiated a quarterly lake sampling program in the spring of 1998 and was able to roll the existing lake program into BUMP.

For streams, no such comprehensive, statewide sampling effort was ongoing at the time the BUMP was funded. Because of this, the OWRB required a number of months to re-allocate staff and implement a monitoring regime on streams. In addition, OWRB staff greatly desired input from the other environmental agencies on the placement

of stream monitoring stations. The existence of a previous statewide stream-monitoring network greatly aided in sample site selection. This historical ambient trend stream-monitoring network existed from 1975 until 1993 and was implemented by the Oklahoma State Health Department. Although this program did not evaluate sample results through comparison with the OWQS criteria or determine use support, it did provide a framework upon which to build. The historical sampling network sampled streams on a monthly basis from 1975-1986 and on a semi-annual basis from 1987-1993. Based upon the historical program and input from other agencies, in 1998 the OWRB established an ambient monitoring network of approximately 91-120 active permanent stations with numerous rotational sites. Both the permanent and rotational networks were evaluated annually to determine if any stations should be dropped and others added. The Water Resources Board relied heavily on the other state and federal agencies for input into this process. Beginning in 2013, the OWRB reevaluated how BUMP was setup and the decision was made to redesign the monitoring network to more closely align with the OCWP. This involved locating a monitoring station at the terminal end of each of the 82 planning basins, while also keeping some additional sites as reference stations. The frequency of sampling was increased from six (6) samples a year to eight (8) and the parametric coverage was also increased. In addition, monitoring personnel with the OWRB will continue to work closely with the other state environmental agencies to avoid duplication of sampling effort (i.e. the Oklahoma Conservation Commission rotating and data gaps sampling initiatives), except on a very limited basis for quality assurance purposes. A very small number of sites that are duplicative in nature do allow for the comparison of results between sampling programs to ensure that sampling protocols and the Use Support Assessment Protocols (USAP - described below) are working effectively and that decisions on support status are being made in a consistent manner.

The OWRB has developed USAPs for lakes and streams, which are essential if the state is to be consistent in identifying waters that are not meeting their assigned beneficial uses or are threatened. The OWRB has incorporated the USAP into Oklahoma Administrative Code (OAC) 785:46 to ensure that consistent determinations for impairments are made by the all of the monitoring agencies.

The state must follow consistent procedures for listing waters as impaired. Using the OWRB Use Support Assessment Protocols, it has been possible for OWRB staff to assess whether threats or impairments are present in our waterways. With continued funding, identification of impaired waters will be accomplished on additional waters.

Results of Streams Sampling Efforts

It is essential that Oklahoma quantify impacts in a comprehensive and scientific manner and look for trends in water quality to identify waters that are not meeting their assigned beneficial uses. As a state, we must manage our water resources effectively and direct money to areas in most need of protection or remediation to ensure that we continue to have good quality and sufficient quantity of water to meet our needs well into the 21st century. Comprehensive statewide data sets on rivers and streams for accurately assessing beneficial use impairments have not existed since 1993. With the implementation of monitoring on a large scale in October of 1998, this is no longer the case. With the availability of data, it is the desire of the Oklahoma Water Resources Board to provide the legislature and professional water managers with a comprehensive and up-to-date document for their review and approval. Administrative and Technical staff at the OWRB look forward to conducting the Beneficial Use Monitoring Program far into the future and providing the state of Oklahoma with the information it needs to make informed decisions that allow us to effectively manage our precious water resources.

The BUMP permanent ambient trend stream monitoring sites and their associated beneficial uses are listed in Table 1. Beneficial uses that are not being met are shown in RED. Listed next to the support code indicating that the beneficial use was not being met is the variable code which indicates which water quality variable violated the OWQS criteria. A large number of waterbodies are deemed impaired due to their exceedance of the turbidity standard of 10 or 50 nephelometric turbidity units (NTU). The OWQS states that turbidity standards only apply during seasonal base flow conditions. In other words, the criteria should not be applied where normal in-stream conditions exceed the OWQS due to natural processes from a high-flow event. Several “quick” methods are available to assist in the determination of seasonal

base flow including the existence of a periphyton line and visual estimation of the degree of flow. However, to reliably determine base flow, a measurement of stream discharge at the time of sampling is needed. This measurement, when used in concert with the “quick” methods described above, will give a reliable indication of whether the stream is at, below, or above seasonal base flow conditions. Because the BUMP network encompasses the state’s large rivers and streams, discharge is often obtained by comparing stream stage to a continuously updated rating curve. Due to the intense nature of establishing a reliable rating curve, rated discharges are often provisional for a number of months. Therefore, the determination of the previous year’s base flow and consequently eligible turbidity values are also provisional at the publication of this report. As of the beginning of 2013, the OWRB was gaging all but 10 permanent station locations. Where permanent water-quality monitoring stations were located near a United States Geological Survey (USGS) stream-flow monitoring station, the information collected by USGS is used to determine if a high-flow event exceeding seasonal base flow had occurred at the time of sampling.

Table 1. Permanent Ambient Trend Monitoring Stations and their Beneficial Use Support Status.

Station Name	FWP	PBCR	PPWS	AG	AES
ARKANSAS RIVER, US 64, MOFFETT	S	NS (8)	S	NS(10)	NT
ARKANSAS RIVER, SH 104, HASKELL	S	S	N/A	S	NT
ARKANSAS RIVER, SH 18, RALSTON	NS (5)	NS (8)	S	S	NT
ARKANSAS RIVER, SH 97, SAND SPRINGS	NS (5)	S	N/A	S	NT
ARKANSAS RIVER, US 62, MUSKOGEE	S	NS (8)	N/A	NS (10, 11)	NT
ARKANSAS RIVER, US 64, BIXBY	NS (5)	N/A	N/A	S	NT
BARREN FORK, SH 51, ELDON	S	S	S	S	NS (14, 18)
BEAVER RIVER, OFF US 64, GUYMON	NS (1)	NS (6, 7, 8)	S	S	NT
BEAVER RIVER, US 83, TURPIN	NS (16, 18)	NS (6, 7, 8)	N/A	NS (10, 11)	NS(18)
BEAVER RIVER, SH 23, BEAVER	NS(16)	NS (6, 7, 8)	N/A	NS (10, 11, 12)	NS(18)
BEAVER RIVER, CR N1650, GATE	NS(16, 18)	NS (6, 8)	N/A	NS (10, 11)	NS(18)
BEAVER RIVER, US 183, FORT SUPPLY	S	NS (6, 8)	N/A	S	S
BIG CABIN CREEK, OFF US 69, BIG CABIN	S	N/A	S	NS (12)	S
BIRD CREEK, SH 266, PORT OF CATOOSA	NS (5)	NS (6,7, 8)	S	S	S
BLACK BEAR CREEK, SH 18, PAWNEE	NS (5)	NS (6, 8)	S	S	NT
BLUE RIVER, US 70, DURANT	S	NS (6, 8)	S	S	NS(18)
BRUSHY CREEK, OFF US 270, HAILEYVILLE	NS (1, 3, 5)	NS (6, 7, 8)	S	NS (12)	NT
CANADIAN RIVER, SH 2, WHITEFIELD	S	S	S	S	NT
CANADIAN RIVER, US 183, TALOGA	S	NS (8)	N/A	NS (10, 11,12)	NS (18)
CANADIAN RIVER, US 270, CALVIN	NS(3,5,16,18)	NS (8)	S	NS (12)	NS(17, 18)
CANADIAN RIVER, US 377, KONAWA	NS (5)	NS (8)	S	S	T (13, 17)
CANADIAN RIVER, US 66, BRIDGEPORT	NS (5)	NS (8)	N/A	S	NT
CANADIAN RIVER, US 77, PURCELL	NS (5)	N/A	N/A	S	NS (13,17,18)
CANEY CREEK, OFF SH 100, BARBER	S	S	S	S	S
CANEY RIVER, OFF US 75, RAMONA	NS (5)	NS (8)	S	S	NS(18)
CHICKASKIA RIVER, US 177, BLACKWELL	NS (5)	NS (6, 8)	S	S	NT
CIMARRON RIVER, OFF SH 8, NEAR AMES	S	NS (6, 8)	N/A	NS (10, 11, 12)	NT
CIMARRON RIVER, SH 34, BUFFALO	NS(16, 18)	NS (6, 7, 8)	N/A	NS (10,11)	S
CIMARRON RIVER, SH 99, OILTON	NS (5)	NS (6, 8)	N/A	NS(10)	NT
CIMARRON RIVER, US 77, GUTHRIE	S	NS (8)	N/A	S	T (17)
CIMARRON RIVER, US 81, DOVER	NS (3)	NS (7, 8)	N/A	NS (10, 11)	NT
CIMARRON RIVER, OFF US 64, MOCANE	NS(3)	NS (6, 8)	S	S	S
CIMARRON RIVER, SH 33, RIPLEY	NS (5)	NS (8)	N/A	NS(10)	NT
CIMARRON RIVER, US 281, NEAR WAYNOKA	NS (16)	NS (7)	N/A	NS (10, 11)	S

Table 1. Permanent Ambient Trend Monitoring Stations and their Beneficial Use Support Status.

Station Name	FWP	PBCR	PPWS	AG	AES
CLEAR BOGGY CREEK, OFF US 69, CANEY	NS (5, 16, 18)	NS (8)	S	S	NS(18)
DEEP FORK RIVER, OFF SH 16, BEGGS	NS (5)	NS (6, 8)	S	S	NS(18)
DEEP FORK RIVER, US 377, STROUD	NS (5)	NS (6, 8)	S	S	NS(13, 18)
EAST CACHE CREEK, SH 53, WALTERS	NS (5)	NS (6, 8)	S	NS(10)	T(13, 15)
ELK CREEK, OFF US 183, ROOSEVELT	NS (3, 5)	NS (8)	S	S	NT
ELK RIVER, SH 43, TIFF CITY (MO)	S	S	S	S	NT
ELM FORK RIVER, SH 30, CARL	NS(9)	NEI	NEI	NS(11)	NEI
ELM FORK RIVER, SH 9, GRANITE	NS(3)	NS (7, 8)	S	NS(11)	S
FLINT CREEK, US 412, FLINT	S	NS (8)	S	S	NS (14)
FOURCHE-MALINE CREEK, OFF US 270, RED OAK	NS (1, 3)	NS (8)	S	S	S
GLOVER RIVER, SH 3, GLOVER	NS (5)	S	S	S	NT
HONEY CREEK, OFF SH 25, GROVE	S	NS (7)	S	S	T(15)
ILLINOIS RIVER, US 59, WATTS	NS (5)	NS (8)	S	S	NS (14)
ILLINOIS RIVER, US 62, TAHLEQUAH	S	S	S	S	NS (14)
KIAMICHI RIVER, OFF US 271, TUSKAHOMA	NS (2, 3)	NS (8)	S	S	NT
KIAMICHI RIVER, SH 63, BIG CEDAR	NS (3)	NS (8)	S	S	NS(18)
KIAMICHI RIVER, US 271, ANTLERS	NS (3)	NS (8)	S	S	NS(18)
KIAMICHI RIVER, SH 109, FORT TOWSON	NS (3)	NS (8)	NS (9)	S	NT
LEE CREEK, SH 101, SHORT	NS(3)	S	S	S	S
LITTLE LEE CREEK, SH 101, NICUT	NEI	NEI	NEI	S	NEI
LITTLE RIVER, OFF SH 3, CLOUDY	NS (3, 5)	NS (8)	S	S	S
LITTLE RIVER, OFF US 70, NEAR HOLLY CREEK	NS (1, 3, 5)	S	S	S	NT
LITTLE RIVER, SH 56, SASAKWA	NS (5)	NS (6, 8)	S	S	NS(13, 18)
MOUNTAIN FORK, SH 4, SMITHVILLE	NS (2, 3)	S	S	S	S
MOUNTAIN FORK, US 70, EAGLETOWN	NS (3)	NS (8)	S	S	NT
MUD CREEK, SH 32, COURTNEY	NS (5, 16, 18)	NS (6, 8)	S	S	NS(18)
MUDDY BOGGY CREEK, US 70, UNGER	NS (5)	NS (8)	S	S	NT
MUDDY BOGGY CREEK, US 69, ATOKA	NS (3, 5)	NS (6, 8)	S	S	NS
NEOSHO RIVER, OFF US 66, COMMERCE	NS (5, 16, 18)	NS(8)	S	S	NT
NEOSHO RIVER, OFF SH 137, CONNOR BRIDGE	NS (2, 3, 5)	S	S	S	NT
NEOSHO RIVER, SH 82, LANGLEY	NS(1, 3)	S	S	S	NT
NEOSHO RIVER, US 412, CHOUTEAU	NS(1, 3)	S	NS(15)	S	T(13, 15)
NORTH CANADIAN RIVER, IND. NAT. TPK., DUSTIN	NS (5)	NS (6, 8)	S	S	T (13)
NORTH CANADIAN RIVER, SH 3E, SHAWNEE	NS (3, 4, 5)	NS (8)	N/A	NS(10)	T (13, 17)
NORTH CANADIAN RIVER, OFF US 62, HARRAH	NS (5)	NS (6, 8)	N/A	NS (10)	T (13, 17)
NORTH CANADIAN RIVER, US 270, WATONGA	S	NS (6, 7, 8)	NS (6)	S	NT
NORTH CANADIAN RIVER, US 281, SEILING	S	NS (8)	S	S	S
NORTH CANADIAN RIVER, US 75, WETUMKA	NS (5)	NS (8)	S	S	T (13, 17)
NORTH CANADIAN RIVER, US 412, WOODWARD	S	NS (8)	N/A	S	S
NORTH CANADIAN RIVER, US 81, EL RENO	NS(3)	NS (8)	S	S	T (13, 17)
NORTH FORK OF THE RED RIVER, US 62, HEADRICK	NS (3, 5)	NS (8)	S	NS (10, 11, 12)	T (17)
NORTH FORK OF THE RED RIVER, SH 34, CARTER	NS(5)	NS (8)	S	S	NT
POTEAU RIVER, OFF SH 112, POCOLA	NS (3, 5)	NS (8)	S	S	NT
POTEAU RIVER, US 59, HEAVENER	NS(3)	S	S	S	NT
RED RIVER, US 183, DAVIDSON	NS (3, 5)	NS (6, 8)	N/A	NS (10, 11, 12)	T (17)
RED RIVER, US 259, HARRIS	NS (5)	S	S	S	NT
RED RIVER, US 271, HUGO	S	NS (8)	S	NS(10, 11, 12)	NT
RED RIVER, US 81, TERRAL	NS (3, 5)	NS (8)	S	NS (11, 12)	T(13, 17)

Table 1. Permanent Ambient Trend Monitoring Stations and their Beneficial Use Support Status.

Station Name	FWP	PBCR	PPWS	AG	AES
SAGER CREEK, OFF US 412, WEST SILOAM SPRINGS	S	NS (8)	NS (15)	S	T (13, 15)
SALT FORK OF THE ARKANSAS, SH 58, INGERSOLL	NS (5, 16, 18)	NS (6, 7, 8)	S	NS(12)	NS(18)
SALT FORK OF THE ARKANSAS, US 77, TONKAWA	NS (5)	NS (8)	S	S	S
SALT FORK OF THE RED RIVER, SH 34, MANGUM	S	NS (8)	S	S	NT
SALT FORK OF THE RED RIVER, OFF US 283, ELMER	NS (3)	NS (6, 8)	NS(9)	S	NT
SANDY CREEK, SH 6, ELDORADO	NS (2, 3, 5)	NS(9)	N/A	NS (10, 11, 12)	NT
SKELETON CREEK, SH 74, LOVELL	NS (3, 5)	NS (6, 8)	S	S	NS(15, 18)
SPRING CREEK, OFF US 412, MURPHY	S	S	S	S	S
SPRING RIVER, OFF SH 137, QUAPAW	NS (3, 5)	NS (8)	S	S	NT
VERDIGRIS RIVER, US 412, INOLA	NS (5)	NS (8)	S	S	NT
VERDIGRIS RIVER, SH 10, LENEPAH	NS (5)	NS (8)	S	S	NT
VERDIGRIS RIVER, SH 20, KEETONVILLE	S	NS (8)	S	S	NT
VERDIGRIS RIVER, SH 51, WAGONER	NS (5)	NS (8)	S	S	NT
WASHITA RIVER, OFF SH 19, ALEX	NS (5)	NS (6, 8)	S	S	T (13, 17)
WASHITA RIVER, SH 152, CORDELL	NS (5, 16, 18)	NS (6, 7, 8)	S	S	TS(13, 18)
WASHITA RIVER, SH 19, PAULS VALLEY	NS (5)	NS (6, 8)	S	S	T(13, 17)
WASHITA RIVER, SH 33, MCCLURE	NS (5, 16, 18)	NS (6, 7, 8)	S	S	NT
WASHITA RIVER, US 177, DURWOOD	NS (5)	NS (6, 8)	S	S	T(13, 17)
WASHITA RIVER, US 281, ANADARKO	NS (5, 16, 18)	NS (6, 8)	S	S	NS (17, 18)
WEST CACHE CREEK, SH 5B, TAYLOR	NS (5)	NS (6, 7, 8)	S	NS (10,11)	NT
WOLF CREEK, OFF US 270, FORT SUPPLY	S	NS (8)	S	S	S
Assigned OWQS Beneficial Uses					
FWP = FISH & WILDLIFE PROPAGATION		PBCR = PRIMARY BODY CONTACT RECREATION			
PPWS = PUBLIC AND PRIVATE WATER SUPPLY		AG = AGRICULTURE			
AES = AESTHETICS					
Support Codes					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T-THREATENED (NUTRIENTS)	
NT-NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
Water Quality Variables					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— ESCHERICHIA COLI		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLLL-A (TSI)		18—SEDIMENTATION	

INTRODUCTION

Protecting Oklahoma's valuable water resources is essential to maintaining the quality of life for all Oklahomans. Used for a myriad of purposes, such as irrigation, hydropower, public/private water supply, navigation, and a variety of recreational activities, the state's surface and ground waters provide enormous benefits to Oklahoma from both an economic and recreational standpoint.

The National Recreation Lakes Study Commission (NRLSC) estimates that 32,100 people in Oklahoma are employed in support of activities related to our numerous man-made lakes. Also, according to the NRLSC, 18,718,000 visitor days are spent on Oklahoma lakes each year and recreation in and around these lakes contributes approximately \$2.2 billion each year to Oklahoma's economy. Of additional value are the recreational benefits associated with our smaller municipal/watershed projects, Oklahoma Department of Wildlife (ODWC) lakes, and rivers and streams throughout the state, which infuse millions into state economy through fishing, hunting, camping, and related activities. (In 1987, the Oklahoma Comprehensive Outdoor Recreation Plan estimated that approximately \$10.7 million was realized through camping and \$15.2 million through hunting/fishing). According to a 2011 federal study, fishing activities alone contribute \$730,503,000 dollars to Oklahoma's economy, not including the substantial ancillary costs associated with that extremely popular sport.

In addition to surface waters, abundant groundwaters also fuel the state's economy, serving as supply for thousands of municipalities, rural water districts, industrial facilities, and agricultural operations. According to the 2012 Update of the Oklahoma Comprehensive Water Plan (OCWP), groundwater represents the primary water supply for hundreds of cities and towns across Oklahoma and comprises 44 percent of the total water used in the state each year. Groundwater resources also supply approximately 90 percent of the state's irrigation needs.

Oklahoma works to protect and manage its water resources through a number of initiatives, with the OWQS serving as the cornerstone of the state's water quality management programs. The OWRB is designated by state statute as the agency responsible for promulgating water quality standards and developing or assisting the other environmental agencies with implementation framework. State agencies are responsible for implementing the WQS as outlined by the OWRB through development of implementation plans. Protecting our waters is a cooperative effort between many state agencies, and because the WQS are utilized by all agencies and represent a melding of both science and policy, they are an ideal mechanism to assess the effectiveness of our diverse water quality management activities.

The WQS are housed in OAC 785:45 and consist of three main components: beneficial uses, criteria to protect beneficial uses, and an anti-degradation policy. An additional component, which is not directly part of the WQS but necessary to water resource protection, is a monitoring program. A monitoring program is required in order to ensure that beneficial uses are maintained and protected. If uses are not being maintained, the cause of that impairment must be identified and restoration activities should be implemented to improve water quality such that it can meet its assigned beneficial uses.

All state agencies are currently required to implement Oklahoma's Water Quality Standards within the scope of their jurisdiction through the development of an implementation plan specific for their agency. This process, called WQS Implementation, allows the WQS to be utilized by other state agencies in the performance of their regulatory (statutory) responsibilities to manage water quality or to facilitate best management practice initiatives.

With the development of BUMP, the need for protocols to determine beneficial use impairment was identified. Development of these protocols would facilitate state agencies in directing their time and money to the areas in most need of protection or remediation. The OWRB, working in close concert with other state environmental agencies and concerned parties, developed USAPs to be used by all parties for assessing if waters were meeting their assigned beneficial uses. In addition, protocols were developed

that could be coupled with a trend monitoring system to detect threatened waters before they become seriously impaired. Data collection efforts connected with protocol development and/or implementation also serves a vital purpose in refining numerical criteria currently included in the WQS and in developing appropriate numerical and narrative criteria for future WQS documents. It is essential that our waters meet their assigned uses and that WQS implementation protocols are appropriate. Please see Appendix A for the applicable Oklahoma Administrative Code (OAC) 785:46 related to the USAP. Final approval of the USAP occurred in 2000, and the OWRB has constantly worked every year since then to refine the existing protocols and pursue the addition or modification of USAP protocols to further enhance its utility and effectiveness.

Work to be performed towards development and implementation of the critical fourth component of the WQS program, monitoring, is the subject of this report. All sampling activities described and conducted as part of this program were consistent with the Oklahoma USAP. It is also important to note that they are consistent with Environmental Protection Agency (EPA) reporting requirements for the “Integrated Water Quality Monitoring and Assessment Report” [305(b) Report and 303(d) list], CWA §319 Nonpoint Source (NPS) Assessment, and §314 Lake Water Quality Assessment (LWQA)

Background and Problem Definition

The State of Oklahoma has historically had numerous monitoring programs conducted by several state and federal agencies. In general, each environmental agency conducts their monitoring programs with some degree of integration and coordination with other state, municipal, or federal programs. Most water quality monitoring programs in Oklahoma are designed and implemented by each agency to collect information for one specific purpose or project (i.e., development of Total Maximum Daily Loads, the WQS process, lake trophic status determination, determining water quality impacts from point source dischargers, stream flow measurements, documenting success of best management practices, etc.). Information of this type is very specific to each individual project’s data quality objectives (DQOs) and is often limited to a very small geographic area. This document describes sampling activities the OWRB has historically conducted for lakes and efforts that are currently ongoing for lakes and streams across Oklahoma as part of a comprehensive, long-term, statewide Beneficial Use Monitoring Program (BUMP). The goal of the BUMP is to detect and quantify water quality trends, document and quantify impairments of assigned beneficial uses, and identify pollution problems before they become a pollution crisis.

STREAM MONITORING PROGRAM

The stream Beneficial Use Monitoring Program (BUMP) was initiated in November of 1998. Implementation of the program was delayed due to the relocation of the ODEQ State Environmental Laboratory to a new building and the fact that the OWRB required a few months to assemble the necessary infrastructure to implement stream sampling (purchase of equipment, database development, assignment of personnel, etc.). The BUMP streams staff began collecting monthly data in November of 1998 and changed to visiting stations on a 5-week schedule in 2003. Results of stream sampling efforts are organized by their 4-digit USGS hydrologic unit code (HUC). Stream results are discussed in alphabetical order for each HUC. Each stream station is described individually with information outlining the site location and other pertinent information followed by a brief synopsis of data results. All of the permanent monitoring sites are listed and discussed very briefly.

River and Stream Monitoring Overview

Historically, data on rivers and streams across the state has been less than uniform. Over the years, various local, tribal, state, and federal agencies have managed a number of sampling programs. These programs have varied in nature ranging from short-term, site-specific sampling to the former Oklahoma State Department of Health (OSDH) statewide sampling program. However, a comprehensive, statewide ambient trend-monitoring program had not existed since 1989, the last year that the OSDH conducted monthly sampling. Furthermore, a program with the specific intent of documenting statewide beneficial use impairments on a long-term basis had never existed until the Beneficial Use Monitoring Program (BUMP) was created. By establishing a monitoring network that evaluates general water quality through the use of an existing framework like the Oklahoma Water Quality Standards, the state of Oklahoma initiated a progressive phase in the long-term assessment of the overall health of our state's streams and rivers.

Materials & Methods for Stream Sampling

The Monitoring Network: The BUMP rivers and streams network consists of three major station classifications — permanent ambient trend, rotating, and probabilistic sites. Permanent ambient trend monitoring stations are relatively static within the program. In general, they do not change from year to year and have been chosen to allow for long-term assessment of beneficial uses and water quality trends. Since program inception a small number of sites have been dropped from the program and new sites added to more effectively assess the water quality of our major stream basins. Probabilistic stations are selected at random every two years and visited once or twice during biological index periods. Rotating stations are selected for particular purposes and typically have a finite lifespan.

With the creation of the permanent monitoring network, OWRB staff established three overarching objectives for the program:

First, the network must encompass the entire state. To accomplish this, a commitment was made to locate at least one site in each of the 8-digit USGS hydrologic units (HUC) (Table 2).

For this reporting period, all but four of these 8-digit HUCs have at least one sampling station. A map of the 8-digit USGS HUCs is included as Figure 1.

8 Digit HUC Number	Description	8 Digit HUC Number	Description
11040001	Cimarron Headwaters	11100301	Middle North Canadian
11040002	Upper Cimarron	11100302	Lower North Canadian
11040006	Upper Cimarron – Liberal	11100303	Deep Fork
11040007	Crooked	11110101	Polecat – Snake
11040008	Upper Cimarron – Bluff	11110102	Dirty – Greenleaf
11050001	Lower Cimarron – Eagle Chief	11110103	Illinois
11050002	Lower Cimarron – Skeleton	11110104	Robert S. Kerr Reservoir
11050003	Lower Cimarron	11110105	Poteau
11060001	Kaw Lake	11120105	Lower Prairie Dog Town Fk., Red
11060002	Upper Salt Fork – Arkansas	11120202	Lower Salt Fork – Red
11060003	Medicine Lodge	11120302	Middle North Fork – Red
11060004	Lower Salt Fork – Arkansas	11120303	Lower North Fork – Red
11060005	Chickaskia	11120304	Elm Fork – Red
11060006	Black Bear – Red Rock	11130101	Groesbeck – Sandy
11070103	Middle Verdigris	11130102	Blue – China
11070105	Lower Verdigris	11130201	Farmers – Mud
11070106	Caney	11130202	Cache
11070107	Bird	11130203	West Cache
11070205	Middle Neosho	11130208	Northern Beaver
11070206	Grand Lake	11130210	Lake Texoma
11070207	Spring	11130301	Washita Headwaters
11070208	Elk	11130302	Upper Washita
11070209	Lower Neosho	11130303	Middle Washita
11090103	Rita Blanca	11130304	Lower Washita
11090201	Lower Canadian – Deer	11140101	Bois D'Arc – Island
11090202	Lower Canadian – Walnut	11140102	Blue
11090203	Little	11140103	Muddy Boggy
11090204	Lower Canadian	11140104	Clear Boggy
11100101	Upper Beaver	11140105	Kiamichi
11100102	Middle Beaver	11140106	Pecan – Waterhole
11100103	Coldwater	11140107	Upper Little
11100104	Palo Duro	11140108	Mountain Fork
11100201	Lower Beaver	11140109	Lower Little
11100203	Lower Wolf		

The second objective was that the foundation of the monitoring network should be principally the state's largest rivers, the Arkansas River and the Red River, and their major tributaries, such as the Canadian River and the Washita River. For this reporting period, 59 of the 103 stations were being monitored (58%) to meet this criterion. These sites were dispersed over 20 different rivers and streams with the majority located on the Arkansas River and several tributaries including the Cimarron River, the Canadian River, the Verdigris River, and Neosho River as well as the Red River and several tributaries including the Washita River, the Kiamichi River, and the Little River. Secondary consideration was given to the major tributaries of rivers such as Canadian River and the Little River. For this reporting period, 36 of the 102 sites (35%) meet this criterion. Further consideration was given to areas of the state (e.g., the Panhandle) that were underrepresented as well as rivers and streams (e.g., The Deep Fork River) that were conspicuously missing from the network. For this reporting period, 7 of the 102 monitoring stations (7%) met one of these criteria.

The third and last objective was to seek the advice and input of other state environmental agencies and professionals before making a final determination of permanent monitoring station locations. In particular, the ODEQ and OCC continue to be very helpful in assisting with locating permanent stations.

Operating within these overarching objectives, the staff of the OWRB has selected and performed monitoring on one hundred and thirty (130) permanent ambient trend-monitoring sites since September of 1998, and as of this reporting period, was monitoring 96 permanent stations (Table 3.). The placement of a site location necessitates several considerations. Above all, a site must be accessible by vehicle and be safe for sampling personnel and other motorists. It is also essential that a site be located in an area where representative data can be acquired. The OWQS Use Support Assessment Protocols (USAP - OAC 785:46-15) set spatial limitations on the data that is collected. In summary, a site can only represent twenty-five stream miles for non-wadable streams and ten stream miles for wadable streams (with some exceptions). Furthermore, a site can only be representative of the waterbody identification number (12 digit HUC number) in which it is located and the site cannot be located within a regulatory mixing zone. This requires that monitoring sites be selected so that they represent as long a stream reach as possible while maintaining the spatial integrity outlined in USAP. Thirdly, it is important that historical data be considered. Many of the BUMP permanent monitoring sites were selected from a set of historical monitoring stations that were a part of the OSDH — the environmental Division that conducted the Ambient Program later became part of the Oklahoma Department of Environmental Quality (ODEQ) Ambient Trend Monitoring Program. Before initial sampling began in 1998, OWRB staff worked closely with the ODEQ to integrate many of the historical sites into BUMP. Although the historical data from these sites cannot be used to assess beneficial uses (USAP sets a temporal limitation of five years), the historical data set benefits the state in assessing long-term water quality trends. Lastly, it is imperative that rivers and streams which have been designated in the OWQS as Outstanding Resource Waters (ORW), High Quality Waters (HWQ), or Sensitive Water Supplies (SWS) be given unique consideration even if they do not meet the objectives as outlined. For example, Sager Creek is not a tributary of a major tributary of a major river. However, it is listed as an ORW and therefore is sampled as part of BUMP. The water quality status of each site is discussed in more detail in the individual HUC narrative sections that follow this section of the report.

Beginning in January 2013 the OWRB will be adjusting the monitoring network to more closely align with the needs of the Oklahoma Comprehensive Water Plan. The goal will be to put a permanent station at the outflow of all 82 water planning basins, while also still maintaining a small network of reference condition sites. Along with the redesigned network the frequency of the sampling will be increased from 6 samples per year to 8 samples per year.

	4-DIGIT USGS #	WBID #	STATION NAME	COUNTY	STATUS
1	1111	220200010010	Arkansas River, US 64, Moffett	Sequoyah	Active 11/98-P
2	1106	621210000030	Arkansas River, off US 77, Newkirk	Kay	Inactive 09/99-10/02
3	1111	120410010080	Arkansas River, SH 104, Haskell	Muskogee	Active 11/98-P
4	1106	621200010200	Arkansas River, SH 18, Ralston	Osage	Active 11/98-P
5	1111	120420010130	Arkansas River, SH 97, Sand Springs	Tulsa	Active 09/99-P
6	1111	121400010260	Arkansas River, US 62, Muskogee	Muskogee	Active 09/99-P
7	1111	120420010010	Arkansas River, US 64, Bixby	Tulsa	Active 11/98-P
8	1111	120400010260	Arkansas River, US 69, Muskogee	Muskogee	Inactive 11/98-12/99
9	1111	121700050010	Barren Fork, SH 51, Eldon	Cherokee	Active 11/98-P
10	1110	720500020010	Beaver River, US 183, Fort Supply	Harper	Active 10/00-P
11	1110	720500020140	Beaver River, CR N1650, Gate	Beaver	Inactive 10/00-09/07
12	1110	720510000150	Beaver River, off US 64, Guymon	Texas	Active 11/98-P
13	1110	720500020290	Beaver River, SH 23, Beaver	Beaver	Active 11/98-P
14	1110	720500020010	Beaver River, US 283, Laverne	Harper	Active 01/03-P

Table 3. Permanent Ambient Trend Monitoring Stations.

	4-DIGIT USGS #	WBID #	STATION NAME	COUNTY	STATUS
15	1110	720500020450	Beaver River, US 83, Turpin	Texas	Inactive 10/00-05/08
16	1107	121600060060	Big Cabin Creek, off US 69, Big Cabin	Craig	Active 09/99-P
17	1107	121600060010	Big Cabin Creek, SH 28, Pensacola	Mayes	Inactive 11/98-08/99
18	1107	121300010010	Bird Creek, SH 266, Port of Catoosa	Tulsa	Active 11/98-P
19	1106	621200030010	Black Bear Creek, SH 18, Pawnee	Pawnee	Active 11/98-P
20	1114	410600010010	Blue River, US 70, Durant	Bryan	Active 11/98-P
21	1109	220600030020	Brushy Creek, off US 270, Haileyville	Pittsburg	Active 11/98-P
22	1109	220600010120	Canadian River, Ind. Nat. Tpk., Hanna	McIntosh	Inactive 11/98-09/99
23	1109	220300000010	Canadian River, SH 2, Whitefield	Haskell	Active 09/99-P
24	1109	520620020120	Canadian River, US 183, Taloga	Dewey	Active 11/98-P
25	1109	220600010119	Canadian River, US 270, Calvin	Hughes	Active 11/98-P
26	1109	520600010010	Canadian River, US 377, Konawa	Seminole	Active 11/98-P
27	1109	520620010050	Canadian River, US 66, Bridgeport	Blain	Active 11/98-P
28	1109	520610010010	Canadian River, US 77, Purcell	McClain	Active 11/98-P
29	1111	121700040010	Caney Creek, off SH 100, Barber	Cherokee	Active 09/99-P
30	1107	121400010010	Caney River, off US 75, Ramona	Washington	Active 11/98-P
31	1106	621100000010	Chickaskia River, US 177, Blackwell	Kay	Active 11/98-P
32	1104	620930000010	Cimarron River, off US 64, Mocane	Beaver	Active 10/99-P
33	1105	620910020010	Cimarron River, SH 34, Buffalo	Woods	Active 11/98-P
34	1105	620900010170	Cimarron River, SH 99, Oilton	Creek	Active 11/98-P
35	1105	620920010010	Cimarron River, US 412, Ames/Orienta	Major	Active 11/98-P
36	1105	620910030010	Cimarron River, US 77, Guthrie	Logan	Active 11/98-P
37	1105	620910010010	Cimarron River, US 81, Dover	Kingfisher	Active 11/98-P
38	1105	620900030010	Cimarron River, SH 33, Ripley	Payne	Active 10/00-P
39	1105	620920020010	Cimarron River, US 281, Waynoka	Woods	Active 03/03-P
40	1114	410400030020	Clear Boggy Creek, off US 69, Caney	Atoka	Active 11/98-P
41	1110	720500020070	Clear Creek, US 283, May	Ellis	Inactive 11/98-09/00
42	1113	311200000030	Cow Creek, SH 5, Waurika	Jefferson	Inactive 11/98-09/02
43	1110	520700020010	Deep Fork River, off SH 16, Beggs	Okmulgee	Active 11/98-P
44	1110	520700040180	Deep Fork River, US 377, Stroud	Lincoln	Active 11/98-P
45	1113	311300010020	East Cache Creek, SH 53, Walters	Cotton	Active 11/98-P
46	1112	311500030010	Elk Creek, off US 183, Hobart	Kiowa	Inactive 11/98-8/06
47	1112	311500030010	Elk Creek, off SH 19, Roosevelt	Kiowa	Active 5/06-P
48	1107	121600030440	Elk River, SH 43, Tiff City (MO)	McDonald	Active 05/99-P
49	1112	311800000010	Elm Fork River, SH 30, Carl	Harmon	Active 05/06-P
50	1112	311800000010	Elm Fork River, SH 9, Mangum	Greer	Inactive 11/98-8/06
51	1112	311800000010	Elm Fork River, SH 6, Granite	Greer	Active 5/06-P
52	1111	121700060010	Flint Creek, US 412, Flint	Delaware	Active 11/98-P
53	1111	220100040020	Fourche-Maline Creek, off US 270, Red Oak	Latimer	Active 11/98-P
54	1114	410210080010	Glover River, SH 3, Glover	McCurtain	Active 11/98-P
55	1113	311100020010	Hickory Creek, off SH 32, Marietta	Love	Inactive 11/98-09/00
56	1107	121600030440	Honey Creek, off SH 25, Grove	Delaware	Inactive 11/98-06/08
57	1111	121700030350	Illinois River, US 59, Watts	Adair	Active 11/98-P
58	1111	121700030010	Illinois River, US 62, Tahlequah	Cherokee	Active 11/98-P
59	1114	410310010010	Kiamichi River, off US 271, Tuskahoma	Pushmataha	Active 11/98-P
60	1114	410310020010	Kiamichi River, SH 63, Big Cedar	LeFlore	Active 11/98-P
61	1114	410300030010	Kiamichi River, US 271, Antlers	Pushmataha	Active 11/98-P
62	1114	410300010010	Kiamichi River, SH 109, Fort Towson	Bryan	Active 10/02-P

Table 3. Permanent Ambient Trend Monitoring Stations.

4-DIGIT USGS #	WBID #	STATION NAME	COUNTY	STATUS	
63	1110	720500020130	Kiowa Creek, off US 283, Laverne	Harper	Inactive 11/98-09/00
64	1111	220200050010	Lee Creek, SH 101, near Short	Sequoyah	Active 01/03-P
65	1111	220200050040	Little Lee Creek, SH 101, Near Nicut	Sequoyah	Active 02/08-P
66	1114	410210020140	Little River, off SH 3, Cloudy	Pushmataha	Active 11/98-P
67	1109	520800010010	Little River, SH 56, Sasakwa	Seminole	Active 11/98-P
68	1114	410200010200	Little River, off US 70, near Holly Creek	McCurtain	Active 10/02-P
69	1114	410200010200	Little River, US 70, Idabel	McCurtain	Inactive 11/98-09/02
70	1114	410210060020	Mountain Fork, SH 4, Smithville	McCurtain	Active 11/98-P
71	1114	410210040010	Mountain Fork, US 70, Eagletown	McCurtain	Active 11/98-P
72	1113	311100040010	Mud Creek, SH 32, Courtney	Love	Active 11/98-P
73	1114	410400050270	Muddy Boggy Creek, SH 3, Farris	Atoka	Inactive 11/98-06/99
74	1114	410400050270	Muddy Boggy Creek, US 69, Atoka	Atoka	Active 09/99-P
75	1114	410400010070	Muddy Boggy Creek, US 70, Unger	Choctaw	Active 07/99-P
76	1107	121600040220	Neosho River, off US 66 , Commerce	Ottawa	Active 10/00-P
77	1107	121600040010	Neosho River, off SH 137, Connor Bridge	Ottawa	Inactive 11/98-03/07
78	1107	121600020170	Neosho River, SH 82, Langley	Mayes	Active 11/98-P
79	1107	121600010280	Neosho River, US 412, Chouteau	Mayes	Active 11/98-P
80	1110	520510000110	North Canadian River, US 377, Centerview	Pottawatomie	Inactive 10/00-02/02
81	1110	520500010110	North Canadian River, Ind. Nat. Tpk., Dustin	McIntosh	Inactive 11/98-05/08
82	1110	520510000110	North Canadian River, off US 62, Harrah	Oklahoma	Active 11/98-P
83	1110	720500010010	North Canadian River, US 281, Seiling	Dewey	Active 11/98-P
84	1110	520530000010	North Canadian River, US 270, Watonga	Blaine	Inactive 01/03-05/08
85	1110	520510000010	North Canadian River, US 75, Wetumka	Hughes	Active 09/99-P
86	1110	520530000010	North Canadian River, US 81, El Reno	Canadian	Active 11/98-P
87	1110	720500010140	North Canadian River, US 412, Woodward	Woodward	Active 10/00-P
88	1112	311510010010	North Fork of the Red River, SH 34, Carter	Beckham	Active 11/98-P
89	1112	311500010020	North Fork of the Red River, US 62, Headrick	Tillman	Active 11/98-P
90	1110	720500020500	Palo Duro Creek, SH 3, Bryan's Corner	Texas	Inactive 11/98-09/00
91	1111	220100010010	Poteau River, off SH 112, Pocola	LeFlore	Active 11/98-P
92	1111	220100020010	Poteau River, US 59, Heavener	LeFlore	Active 11/98-P
93	1107	121610000010	Pryor Creek, US 69A, Sportsman Acres	Mayes	Inactive 09/99-09/00
94	1113	311100010190	Red River, I-35, Gainsville	Love	Inactive 11/98-08/99
95	1113	311200000010	Red River, SH 79, Waurika	Jefferson	Inactive 11/98-10/03
96	1113	311310010010	Red River, US 183, Davidson	Tillman	Active 11/98-P
97	1114	410100010010	Red River, US 259, Harris	McCurtain	Active 11/98-P
98	1114	410400010010	Red River, US 271, Hugo	Choctaw	Active 11/98-P
99	1113	311100010190	Red River, US 81, Terral	Jefferson	Active 11/98-P
100	1111	121700060080	Sager Creek, off US 412, West Siloam Springs	Delaware	Active 11/98-P
101	1106	621010010160	Salt Fork of the Arkansas, SH 58, Ingersoll	Alfalfa	Active 11/98-P
102	1106	621000010010	Salt Fork of the Arkansas, US 77, Tonkawa	Kay	Active 10/00-P
103	1106	621000010010	Salt Fork of the Arkansas, US 177, White Eagle	Noble	Inactive 11/98-09/00
104	1112	311600020010	Salt Fork of the Red River, off US 283, Elmer	Jackson	Active 11/98-P
105	1112	311600020010	Salt Fork of the Red River, off SH 34, Mangum	Greer	Inactive 10/00-09/07
106	1113	311600010040	Sandy Creek, SH 6, Eldorado	Jackson	Active 11/98-P
107	1105	620910030010	Skeleton Creek, SH 74, Lovell	Logan	Active 11/98-P
108	1107	121600010290	Spring Creek, off US 412, Murphy	Mayes	Active 11/98-P
109	1107	121600070010	Spring River, off SH 137, Quapaw	Ottawa	Active 11/98-P
110	1107	121500020260	Verdigris River, US 412, Inola	Rogers	Active 10/00-P

4-DIGIT USGS #	WBID #	STATION NAME	COUNTY	STATUS	
111	1107	121510010010	Verdigris River, US 60, Nowata	Nowata	Inactive 02/99-09/99
112	1107	121510020010	Verdigris River, SH 10, Lenepah	Nowata	Active 11/98-P
113	1107	121500030010	Verdigris River, SH 20, Keetonville	Rogers	Active 11/98-P
114	1107	121500010200	Verdigris River, SH 51, Wagoner	Wagoner	Active 09/99-P
115	1113	311100030010	Walnut Bayou, SH 32, Burneyville	Love	Inactive 09/99-09/00
116	1113	310810020010	Washita River, off SH 19, near Alex	Grady	Inactive 01/03-05/08
117	1113	310830030060	Washita River, SH 152, Cordell	Washita	Active 11/98-P
118	1113	310810010010	Washita River, SH 19, Pauls Valley	Garvin	Active 11/98-P
119	1113	310840010010	Washita River, SH 33, McLure	Custer	Active 11/98-P
120	1113	310800020010	Washita River, US 177, Durwood	Carter	Active 11/98-P
121	1113	310830010010	Washita River, US 281, Anadarko	Caddo	Active 11/98-P
122	1113	311310020010	West Cache Creek, SH 5B, Taylor	Cotton	Active 11/98-P
123	1110	720500030040	Wolf Creek, off US 270, Fort Supply	Woodward	Active 11/98-P

Rotating site selection is not as simple of a process. The goal of the rotating portion of the program is to provide short-term assessments on priority waters as identified by a state agency or other party. Two over-arching objectives were identified to aid in the determination of what would qualify as a rotating site. First, it was determined that data collection at a particular site should be short-term in nature and not extend past one sampling year, although some stations do remain in the network for up to two years. Data collected within that year should allow water quality managers to make the appropriate decisions regarding the segment being monitored. For instance, if a stream reach is listed as impaired due to pH on the 303(d) list, measuring pH throughout one year should allow the requesting agency or entity to either de-list the segment or determine what other monitoring efforts are necessary. Secondly, the monitoring should fall within the framework of the USAP. Since the inception of the program, the staff of the OWRB has met individually with representatives of other state agencies to identify their priority short-term monitoring needs. Once the OWRB receives a list of waters for monitoring from the interested agencies, staff evaluates the nominations and notifies the nominating agency of which waters would be monitored (all of the waters requested for monitoring have been accommodated since program inception). In all, over two hundred twenty (220) monitoring stations have been or are currently being monitored. In most instances, the segments were listed for one or more variables on the state's 303d list. For a comprehensive list of historic and/or current rotational monitoring stations, please contact the Oklahoma Water Resources Board/Water Quality Programs Division at (405) 530-8800.

Probabilistic monitoring is a unique study design which selects monitoring stations at random. The OWRB has been actively involved in this type of monitoring since 2004. The latest probabilistic data report, titled *Implementation of a Stream/River Probabilistic Monitoring Network for the State of Oklahoma*, can be found at the OWRB website under Streams Studies at:

www.owrb.ok.gov/reports

Stream Monitoring Variables: The variables that are monitored were chosen to reflect both objectives of the programs — assessment of beneficial uses within the framework of USAP as well as the assessment of general water quality. Even though a variable may not be listed in the OWQS with a specific criterion (e.g., hardness), the variable is an important constituent in analyzing and understanding the general water quality of a particular segment. See Table 4 for a list of monitoring variables.

Data for general water quality, nutrient, metals, organics, chlorophyll-a, and bacteriological variables are collected in one of two ways. Some variables are monitored in situ utilizing a Hydrolab® Minisonde or YSI multi probe instrument. The measurement is taken at the deepest point of the channel at a depth of at

least 0.1 meters and no greater than one-half of the total depth. The data are uploaded from the instrument to a data recorder, transferred manually to a field log sheet, and downloaded to the OWRB monitoring database. These variables include dissolved oxygen (D.O.), %D.O. saturation, temperature, pH, salinity, total dissolved solids, and specific conductance. Data for all other variables are gathered from water quality samples collected at the station. Samples are collected either by suspending a depth integrating sampler (DH-95 with polyethylene collection bottle) from a bridge, by wading the stream with a DH-81 wadable depth integrating sampler (polyethylene collection bottle), or in rare cases as a composite or point grab sample. If sampling occurs from a bridge, the sampling is done on the down stream side of the bridge spanning the stream of interest. Samples are collected using a combination of the depth integration method and the equal-width increment method. The depth integration method involves collection of samples from the surface of the water to the bottom of the water column with water collected at a consistent rate on both the descent and the ascent. The equal-width-increments-method allows for collection of a composite sample by sampling with depth-integration at 5 to 10 equal widths across the stream. As each increment is sampled, the water is added to a polyethylene churn splitter. From this composite water sample, water quality variables are monitored in several ways. For laboratory analysis of general water quality variables and nutrients, water is aliquotted from the churn splitter to two (2) 1-liter bottles (one for sulfuric acid/ice preservation and one for ice preservation). If a sample is needed for metals analysis, water is aliquotted into a 1-liter acid washed bottle, preserved with nitric acid, and placed on ice. Sample water for the determination of nephelometric turbidity, total hardness, and total alkalinity is also aliquotted from the splitter churn. Nephelometric turbidity is determined through use of a HACH Portable turbidimeter. Total hardness and alkalinity are determined using HACH test kits. All instruments and test kits are calibrated and used according to manufacturer's instructions. Sestonic chlorophyll-a samples are also gathered from the churn and are filtered to a glass fiber filter with subsequent chemical/physical extraction. Samples for organics analysis are collected separately using Teflon and glass containers as opposed to polypropylene. Because organics have an increased affinity for polypropylene, allowing a sample to contact polypropylene sample bottles or churn splitters may cause concentrations to be significantly underestimated. Therefore, a composite sample for organics analysis is collected using a 1-liter Teflon collection bottle. At each increment, water is added to a 2-gallon glass bottle. The laboratory sample is aliquotted by inverting the glass bottle 10 times and dispensing to one-quart or one-pint clear or amber glass jars depending on the type of organic analysis. The samples are placed on ice for preservation. Bacteriological samples are collected using a composite grab sample method and are aliquotted to two 100-mL bacteria bottles for laboratory analysis.

Biological data are collected using a variety of methods. In short, fish are typically collected using seine in all waters, and where water conductivity allows, electrofishing methods are used. Benthic macroinvertebrates are collected by targeting the richest habitats in the waterbody including riffles, streamside vegetation, and woody debris. Collections are then sorted and a subsample taken for taxonomic analysis. Various habitat measures are also included during each biological sampling event. The long-form habitat classification is used during fish collections, and staff gather data various instream and riparian characteristics using both quantitative and qualitative methods. A short-form habitat classification is used during macroinvertebrate collections that focus on target habitat substrate composition. Benthic chlorophyll-a samples are gathered from the characteristic substrates of the stream.

For a more detailed discussion of water quality sampling procedures, please contact the OWRB for copy of the BUMP Standard Operating Procedures (SOP). The SOP document can be obtained by contacting the Oklahoma Water Resources Board/Water Quality Programs Division at (405) 530-8800 or by accessing and downloading the document via the web at the link below.

www.owrb.ok.gov/BUMP

SAMPLE VARIABLES		
General Water Quality Variables – Sampled 6 times annually		
Dissolved Oxygen (D. O.)	pH	Specific Conductance
Temperature	Oxidation/Reduction Potential	% D. O. Saturation
Salinity	Total Alkalinity	Total Hardness
Chloride	Nephelometric Turbidity	Sulfate
Total Dissolved Solids		
Nutrients – Sampled 6 times annually		
*Kjeldahl Nitrogen	Ortho-Phosphorus	Total Phosphorus
*Nitrate Nitrogen	*Nitrite Nitrogen	Ammonia Nitrogen
Metals – Sampled as needed		
Arsenic	Cadmium	Chromium
Copper	Lead	Mercury
Nickel	Selenium	Silver
Zinc	Thallium	
Organics – Site specific sampling as needed		
Analysis of Pesticides, Herbicides, Fungicides, and other organics		
Bacteriological Communities – Sampled 5-10 times annually (during recreational season)		
Fecal Coliform	Escherichia coli	Enterococci
Biological Communities – Sampled as described below		
Sestonic Chlorophyll-a (6 times annually)	Benthic Chlorophyll-a (as needed during summer)	Fish (once every 4-5 years)
Benthic Macroinvertebrates (2 summer/2 winter every other year)	Habitat (sampled with fish and macroinvertebrate sampling)	

Quality Assurance/Quality Control (QA/QC): QA/QC will not be discussed in detail in this report. However, for a comprehensive description of field QA/QC methods, please contact the Oklahoma Water Resources Board/Water Quality Programs Division at (405) 530-8800. For laboratory QA/QC methods please contact the Oklahoma Department of Environmental Quality/Customer Services Division at (405) 702-6100. Comprehensive QA/QC has been performed on all data collected and utilized for this report.

Permanent Stream Monitoring Station Results & Discussion

The results for the permanent monitoring stations are grouped alphabetically within their home 4-digit USGS sub-basin (Table 3). A map of the state with all of the 4-digit HUC basins is included as to aid the reader in finding a particular water body (Figure 2).

Following the HUC description will be a detailed one page analysis of each station. The analysis includes a physical, geographical, and hydrological description of the site. Directly following the descriptive information, each synopsis contains a table detailing some descriptive statistics of a large number of parameters as well as a short note about the latest assessment. Immediately following the statistical table, a use assessment table summarizes the status of all applicable beneficial uses. An assessment of impairment for all stations can be found in the Executive Summary in Table 1. Under certain circumstances, a beneficial use may not be assessed for a variety of reasons. The station may be new or inactivated before adequate data was collected for assessment, data may not be available due to laboratory, field, or equipment error, or sometimes data may not be collected due to monetary or personnel constraints. Beneficial uses that are not being met are shown in RED. Listed next to the support code indicating that the beneficial use was not being met is the variable code which indicates which water quality variable violated the OWQS criteria. When reviewing Table 1, it is apparent that an inordinate number of water bodies are deemed impaired due to turbidity and bacteria.

Many waterbodies exceed the turbidity standard of 10 or 50 nephelometric turbidity units (NTU). The OWQS states that turbidity standards only apply during seasonal base flow conditions. In other words, the criteria should

not be applied where normal in-stream conditions exceed the OWQS due to natural processes from a high-flow rain event. Several “quick” methods are available to assist in the determination of seasonal base flow including the existence of a periphyton line and visual estimation of the degree of flow. However, to reliably determine base flow, a measurement of stream discharge at the time of sampling is needed. This measurement when used in concert with the “quick” methods described above will give a reliable indication of whether the stream is at, below, or above seasonal base flow conditions. Because the BUMP network encompasses the state’s large rivers and streams, discharge is often obtained by comparing stream stage to a continuously updated rating curve. Due to the intense nature of establishing a reliable rating curve, rated discharges are often provisional for a number of months. Therefore, the determination of the previous year’s base flow and consequently turbidity values available for use support analysis are provisional at the publication of this report. As of the beginning of 2002, the OWRB began gaging all but 3 permanent station locations. Where permanent water quality monitoring stations were located near a United States Geological Survey (USGS) stream-flow monitoring station, the information collected by USGS is used to determine if a high-flow event exceeding seasonal base flow had occurred at the time of sampling.

All other stations are being rated through a cooperative effort between the OWRB Monitoring Section and the USGS. To supplement base flow determination staff use several anecdotal methods. These methods are only used in concert with another method when determining if base flow conditions existed when the sample was taken. In one method, staff determines flow condition visually by noting whether the flow is minimal, light, moderate, high, or stormwater. Also, beginning in 2002, staff began noting the presence or absence of a periphyton line as well as the color and texture of the periphyton. In most instances, if a periphyton line has been established, flow has not exceeded that level in at least seven days.

Of the 98 stations assessed for Primary Body Contact Recreation (PBCR) in this report, 86 stations (or 81%) are listed as not supporting due to the exceedance of one or more variable. Several explanations may address this inordinate number of non-supporting stations. Primarily, a valid assumption may be that the assessment of data is reflective of reality in many listings. Of the 86 non-supporting stations, 36, or 40%, have multi-variable exceedances. Furthermore, a pattern of consistency can be seen for certain variables at some stations. In other words, exceedances of the applicable screening limits are present in each recreational season during the period of record. Secondly, the high percentage of non-supporting stations may be an artifact of either the OWQS criteria and/or the USAP decision-making process. The criteria used to assess PBCR are protective of human health, and rightfully so. However, are all waterbodies assigned PBCR recreated to the same extent? In other words, should the same amount of protection apply to all waterbodies? Currently, Oklahoma has a two-tiered system—lakes/scenic rivers and all others—with more stringent criteria applied to lakes and scenic rivers. Additionally, the decision-making process in USAP may be producing some type I errors—assigning non-support status incorrectly. While maintaining the need for protection of human health, the process for assignment and assessment of the PBCR beneficial use needs to be looked over carefully so that water quality management will become more precise and accurate.

It is also imperative that the state continues to refine the minerals criteria found in OAC 45: Appendix F. The process was begun in earnest in 2005 with a major revision to Appendix F criteria, and the assessments in this report reflect these new criteria. However, some management segment values are still extrapolated from minimum data and from stations not necessarily representative of the entire management segment. By using the OWRB’s methodology for the development of site-specific minerals criteria, BUMP data as well as other water quality monitoring program data may be used to refine inconsistent criteria.

It is essential that Oklahoma quantify impacts in a comprehensive and scientific manner and look for trends in water quality to identify waters that are not meeting their assigned beneficial uses. As a state, we must manage our water resources effectively and direct money to areas in most need of protection or remediation to ensure that we continue to have good quality and sufficient quantity of water to meet our needs well into the 21st century. It is the desire of the Oklahoma Water Resources Board to provide the legislature, the general public and professional water managers with a comprehensive and up-to-date document for their review and approval. Administrative and Technical staff at the OWRB look forward to conducting the Beneficial Use Monitoring Program far into the future and providing the state of Oklahoma with the information it needs to make informed decisions related to the effective management of its precious water resources.

United States Geological Survey 4-Digit Hydrologic Units of Oklahoma

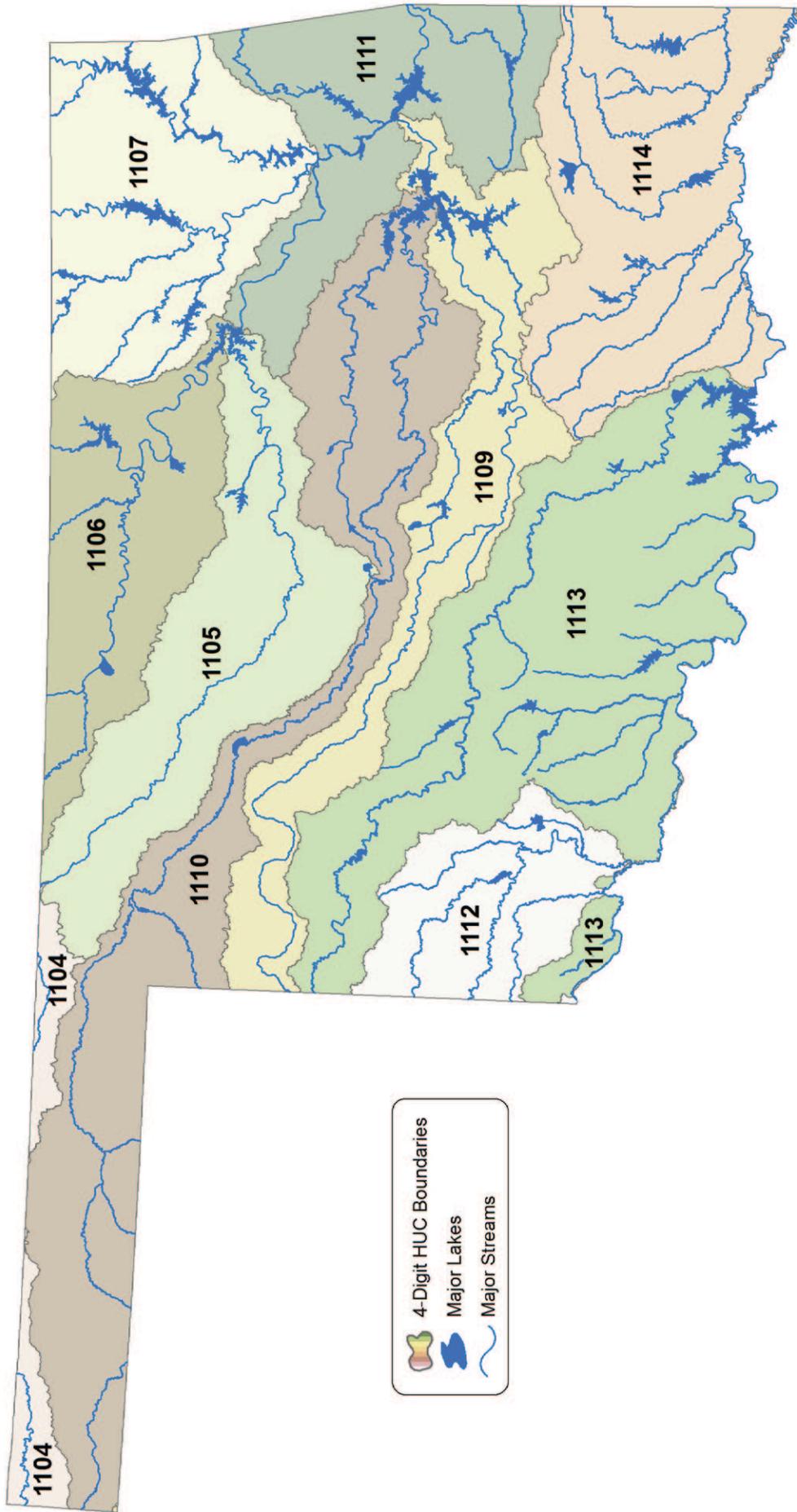


Figure 2. USGS 4-digit HUCs.

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HUC 1104

Upper Cimarron Sub-basin

The Upper Cimarron sub-basin (4-digit hydrologic unit 1104) is situated in the far northwest portion of the state. It originates in the northwestern portion of Cimarron County and continues along the northern third of the county until exiting at the northwest corner of Texas County. The sub-basin reenters Oklahoma in the upper reaches of Beaver County and terminates in the northwest section of Harper County. No major cities or County seats are located within the sub-basin. Minor cities of note include Kenton and Knowles.

The sub-basin is subdivided into four 8-digit hydrologic units (HUC) within the state. These HUC's are the Cimarron Headwaters (11040001), the Upper Cimarron (11040002), the Upper Cimarron-Liberal (11040006), and the Upper Cimarron-Bluff (11040008). The Cimarron River dominates the sub-basin. Near the headwaters of the Cimarron River, Lake Carl Etling is formed by South Carrizo Creek. There is only one water quality monitoring station in this sub-basin.

The sub-basin is dominated by two major ecoregions. The Southwestern Tablelands are prominent in the far west and appear in portions of Beaver County while the Western High Plains are foremost in the near west, central and eastern portions of the sub-basin. The Central Great Plains touches the sub-basin in the far eastern reaches of Harper County. The primary land usage in the sub-basin is rangeland with open grasslands to the west and east and sand sagebrush in portions of Beaver County. Irrigated croplands are scattered throughout the sub-basin. Other land uses of note include pastureland, woodlands, large farmsteads, and bare exposed rock.

STATION NAME	FWP	PBCR	PPWS	AG	AES
CIMARRON RIVER, OFF US 64, MOCANE	NS(3)	NS (6, 8)	S	S	S
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)	
NT—NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— <i>ESCHERICHIA COLI</i>		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLL-A (TSI)		18—SEDIMENTATION	

Cimarron River at Mocane



Sample Record	Times Visited	Station ID
October 1999 - Current	145	620930000010-001AT

Stream Data	County	Beaver	View Site Data
	Location	North of the Town of Mocane off of US 64	
	Latitude/Longitude	36.97516467, -100.3141738	
	Planning Watershed	Panhandle (8-digit HUC -11040006)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	105	18.9	18.0	-0.6/34.9	11.6/26.6
Turbidity (NTU)	105		31	16	3/1000	8/28		
pH (units)	99		8.38	8.37	7.64/9.40	8.19/8.53		
Dissolved Oxygen (mg/L)	105		10.13	9.68	5.25/21.82	8.58/11.26		
Hardness (mg/L)	105		451.1	452.0	47.0/840.0	400.0/512.0		
Minerals	Total Dissolved Solids (mg/L)	108	2715.1	2720.5	521.8/5401.0	2560.0/2914.8		
	Specific Conductivity (uS/cm)	105	4354.7	4434.0	405.0/8438.0	4187.0/4676.0		
	Chloride (mg/L)	103	1301.5	1271.0	184.0/2347.0	1184.0/1440.0		
	Sulfate (mg/L)	104	201.7	199.5	95.6/339.0	186.3/213.0		
Nutrients	Total Phosphorus (mg/L)	105	0.394	0.339	0.021/1.320	0.175/0.570		
	Total Nitrogen (mg/L)	107	1.919	1.710	<0.100/6.075	0.870/2.710		
	Nitrate/Nitrite (mg/L)	107	1.124	0.850	<0.050/5.455	<0.050/1.730		
	Chlorophyll A (mg/m ³)	20	11.6	20.3	9.8/441.0	10.5/90.7	TSI=71.3	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	645.1	104.0	<10.0/9000	40/450	Mean> OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	28	123.6	57.0	<10.0/687	31/152		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	NS						S	S	S
	Aesthetics												S
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
NS = Not Supporting
NEI = Not Enough Information

Notes
Fish consumption not supporting for Thallium
Fish & Wildlife Propagation not supporting for Selenium
Fish & Wildlife Propagation not supporting for Temperature

HUC 1105

Lower Cimarron Sub-basin

The Lower Cimarron sub-basin (4-digit hydrologic unit 1105) is situated in the near northwest and north central portions of the state. It originates in the eastern portion of Harper County, continues eastward through portions of Woodward, Woods, Alfalfa, Major, Garfield, Blaine, Kingfisher, Logan, Noble, Payne, Lincoln, and Pawnee Counties and terminates in the northern part of Creek County. Major cities and county seats located within the sub-basin include Enid, Kingfisher, Guthrie, Stillwater, and north Edmond. Minor cities of note include Buffalo, Fairview, Hennessey, Langston, Cushing, and Drumright.

The sub-basin is subdivided into three 8-digit hydrologic units (HUC) within the state. These HUC's are the Lower Cimarron – Eagle Chief (11050001), the Lower Cimarron – Skeleton (11050002), and the Lower Cimarron (11050003). The major surface water in the sub-basin is the lower Cimarron River. Major tributaries include Buffalo Creek, Eagle Chief Creek, Turkey Creek, Kingfisher Creek, Cottonwood Creek, Skeleton Creek, and Stillwater Creek. Three major lakes are located in the sub-basin—Lake Carl Blackwell formed by Stillwater Creek, Lake McMurtry formed by a tributary of Stillwater Creek, and the Cimarron River Arm of Lake Keystone. Eight permanent water quality-monitoring stations are located in the sub-basin.

The sub-basin is characterized by three ecoregions. The Central Great Plains is the primary ecoregion beginning in the far eastern portion and continuing through the central part of the sub-basin. The Central Oklahoma/Texas Plains represent the eastern quarter ($\frac{1}{4}$) of the sub-basin. The Southwestern Tablelands typify portions of Woodward and Woods Counties. The primary land usage in the sub-basin is rangeland (open grasslands). It dominates the southern portion of the sub-basin from the far western portions through Kingfisher County and is further interspersed throughout the northern portion and in parts of Payne, Creek, and Noble Counties to the east. The secondary land use is cropland, which dominates the north central portion of the sub-basin and is further interspersed in areas to the western, central, and eastern portions. The tertiary land use is pastureland (brushy or mixed) that covers much of Creek Logan, Lincoln and Payne Counties and is further interspersed throughout each of the remaining counties in the sub-basin. Other land uses of note are forestland, rangeland, farmsteads, major urban areas, wetlands, and bare sand channels.

STATION NAME	FWP	PBCR	PPWS	AG	AES
CIMARRON RIVER, OFF SH 8, NEAR AMES	S	NS (6, 8)	N/A	NS (10, 11, 12)	NT
CIMARRON RIVER, SH 34, BUFFALO	NS(16, 18)	NS (6, 7, 8)	N/A	NS (10,11)	S
CIMARRON RIVER, SH 99, OILTON	NS (5)	NS (6, 8)	N/A	NS(10)	NT
CIMARRON RIVER, US 77, GUTHRIE	S	NS (8)	N/A	S	T (17)
CIMARRON RIVER, US 81, DOVER	NS (3)	NS (7, 8)	N/A	NS (10, 11)	NT
CIMARRON RIVER, SH 33, RIPLEY	NS (5)	NS (8)	N/A	NS(10)	NT
CIMARRON RIVER, US 281, NEAR WAYNOKA	NS (16)	NS (7)	N/A	NS (10, 11)	S
SKELETON CREEK, SH 74, LOVELL	NS (3, 5)	NS (6, 8)	S	S	NS(15, 18)
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)	
NT—NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— <i>ESCHERICHIA COLI</i>		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLL-A (TSI)		18—SEDIMENTATION	

Cimarron river at Ames



Sample Record	Times Visited	Station ID
March 2003 - Current	137	620910020010-004RS

Stream Data	County	Major	View Site Data
	Location	West of the Town of Ames off State Highway 8	
	Latitude/Longitude	36.27979304, -98.31895336	
	Planning Watershed	Central (8-digit HUC - 11050002)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)		78	17.9	18.3	-0.9/39.2
Turbidity (NTU)			81	215	9	2/13748	4/25	
pH (units)			78	8.07	8.12	7.40/8.57	7.93/8.21	
Dissolved Oxygen (mg/L)			78	10.47	10.51	5.07/21.06	8.83/11.90	
Hardness (mg/L)			79	1002.6	1038.0	422/1815	768/1210	
Total Dissolved Solids (mg/L)			82	10105.1	9854.0	2050/24040	6600/13452.5	45.2% of values > OWQS of 10027.8
Minerals	Specific Conductivity (uS/cm)		78	15806.8	14913.0	3765/36987	10154/21742.5	
	Chloride (mg/L)		73	4962.1	4410.0	596/13500	2825/6305	31.0% of values > OWQS of 4217.7
	Sulfate (mg/L)		73	833.7	830.0	300/3210	673.0/922.5	50.0% of values > OWQS of 679.5
	Total Phosphorus (mg/L)		73	0.056	0.032	<0.005/0.364	0.023/0.057	
Nutrients	Total Nitrogen (mg/L)		75	1.003	0.955	0.260/2.300	0.760/1.230	
	Nitrate/Nitrite (mg/L)		75	0.359	0.260	<0.050/1.430	0.080/0.530	
	Chlorophyll A (mg/m ³)		31	9.3	12.3	1.0/64.9	6.0/20.0	TSI=58.3
	Enterococcus (cfu/100ml)(* -Geo. Mn.)		23	122.8	31.0	<10.0/1017	<10.0/134	Mean > OWQS of 33
Bacteria	E. Coli (cfu/100ml)(* -Geo. Mn.)		23	585.0	408.0	20/3255	156/813	Mean > OWQS of 126

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													NEI
Agriculture						NS		NS	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Cimarron River at Buffalo



Sample Record	Times Visited	Station ID
November 1998 - Current	133	620920030010-001AT

Stream Data	County	Woods	View Site Data
	Location	East of the Town of Buffalo on State Highway 34	
	Latitude/Longitude	36.85209062, -99.31622871	
	Planning Watershed	Panhandle (8-digit HUC - 11050001)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	110	18.1	17.9	-1.0/36.2	9.8/26.5	
	Turbidity (NTU)	110	23	7	2/715	4/18	
	pH (units)	109	8.06	8.10	7.17/8.70	7.89/8.26	
	Dissolved Oxygen (mg/L)	107	9.76	9.30	0.67/23.17	8.01/11.43	
	Hardness (mg/L)	109	1001.6	800.0	119.0/7000.0	640.0/1236.0	
	Total Dissolved Solids (mg/L)	112	10360.3	7758.5	1470.0/40000.0	4692.3/12295.0	17.1% of values > OWQS of 10353
Minerals	Specific Conductivity (uS/cm)	110	15830.9	12465.5	2030.0/61252.0	7712.5/19014.3	
	Chloride (mg/L)	110	5073.3	3890.0	630.0/24100.0	2220.0/5955.8	17.1% of values > OWQS of 4429.5
	Sulfate (mg/L)	110	612.8	497.5	196.0/1620.0	366.0/790.0	
	Total Phosphorus (mg/L)	110	0.080	0.054	<0.005/0.392	0.035/0.096	
Nutrients	Total Nitrogen (mg/L)	112	0.779	0.630	0.230/2.590	0.466/0.988	
	Nitrate/Nitrite (mg/L)	113	0.236	<0.050	<0.050/1.870	<0.050/0.268	
	Chlorophyll A (mg/m ³)						No Data
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	22	1160.5	154.5	<10.0/11000	37.5/1500
E. Coli (cfu/100ml)(* -Geo. Mn.)		22	5817.5	4242.0	<10.0/24199	413.5/7816.8	Mean > OWQS of 126

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						NS	NS
Aesthetics													S
Agriculture						S		NS	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Cimarron River at Oilton



Sample Record	Times Visited	Station ID
December 1998 - Current	178	620900010170-001AT

Stream Data	County	Creek	View Site Data
	Location	North of the Town of Oilton off State Highway 99	
	Latitude/Longitude	36.09442186, -96.5787792	
	Planning Watershed	Upper Arkansas (8-digit HUC - 11050003)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	128	17.6	17.5	-0.9/35.3	9.1/26.1	
	Turbidity (NTU)	130	307	52	4/13752	23/157	18.5% of values>OWQS of 50
	pH (units)	127	8.21	8.23	7.10/9.31	7.94/8.50	
	Dissolved Oxygen (mg/L)	128	9.75	9.13	0.72/24.36	7.23/11.57	
	Hardness (mg/L)	123	481.5	498.0	34.0/1300.0	359.0/594.0	
	Total Dissolved Solids (mg/L)	130	3166.3	3041.5	332.0/10610.0	1875.0/4137.3	19.6% of values>OWQS of 4103
Minerals	Specific Conductivity (uS/cm)	128	5108.7	5017.0	518.0/16339.0	2931.3/6850.5	
	Chloride (mg/L)	116	1463.9	1353.0	115.0/5600.0	848.3/1992.5	
	Sulfate (mg/L)	118	317.5	304.5	86.3/681.0	215.5/405.5	
	Total Phosphorus (mg/L)	119	0.365	0.268	<0.005/1.780	0.176/0.455	
Nutrients	Total Nitrogen (mg/L)	119	1.880	1.575	0.300/5.700	1.180/2.360	
	Nitrate/Nitrite (mg/L)	121	0.477	0.370	<0.050/1.860	<0.050/0.865	
	Chlorophyll A (mg/m ³)	128	17.6	17.5	-0.9/35.3	9.1/26.1	TSI=62.6
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	738.3	85.5	<10.0/6000	30.3/420.8	Mean> OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)	28	162.3	20.0	<10.0/2014	<10.0/96.5	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S							S
Aesthetics													NEI
Agriculture						S		S	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish consumption not supporting for Lead and Thallium

Cimarron River at Guthrie



Sample Record	Times Visited	Station ID
December 1998 - Current	203	620910010010-001AT

Stream Data	County	Logan	View Site Data
	Location	North of the Town of Guthrie on US 77	
	Latitude/Longitude	35.91981845, -97.4257038	
	Planning Watershed	Central (8-digit HUC -11050002)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	125	17.5	17.4	-1.1/37.3	10.0/25.0
Turbidity (NTU)	128		269	35	4/13750	15/130		
pH (units)	125		8.11	8.12	7.06/9.72	7.89/8.27		
Dissolved Oxygen (mg/L)	124		9.88	9.79	4.55/18.09	7.91/11.75		
Hardness (mg/L)	123		641.3	620.0	196.0/1890.0	484.0/770.0		
Total Dissolved Solids (mg/L)	128		4783.5	4623.5	560.0/12670.0	3100.5/6165.0		
Minerals	Specific Conductivity (uS/cm)	124	7795.1	7410.5	863.0/19499.0	5268.5/9906.5		
	Chloride (mg/L)	121	2108.8	2000.0	102.0/6500.0	1389.0/2540.0		
	Sulfate (mg/L)	120	449.6	456.0	115.0/851.0	335.3/563.0		
	Total Phosphorus (mg/L)	121	0.380	0.305	0.029/1.580	0.216/0.488		
Nutrients	Total Nitrogen (mg/L)	122	1.978	1.780	0.250/6.400	1.400/2.320		
	Nitrate/Nitrite (mg/L)	123	0.944	0.740	<0.050/4.990	0.380/1.240		
	Chlorophyll A (mg/m ³)	49	10.0	22.3	2.3/86.2	12.9/43.1	TSI=64.3	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	24	1510.8	92.5	<10.0/18000	25/375	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		24	322.0	97.5	<10.0/2415	50.5/276.3		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish Consumption not supporting for Thallium

Cimarron River at Dover



Sample Record	Times Visited	Station ID
December 1998 - Current	178	620910020010-001AT

Stream Data	County	Kingfisher	View Site Data
	Location	South of the Town of Dover on US 81	
	Latitude/Longitude	35.95153084, -97.91407037	
	Planning Watershed	Central (8-digit HUC -11050002)	

	Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	117	17.7	17.5	-0.3/37.7	9.7/25.3	
	Turbidity (NTU)	119	248	19	4/13749	11/84	
	pH (units)	117	8.04	8.08	7.00/8.56	7.91/8.20	
	Dissolved Oxygen (mg/L)	116	10.09	9.78	4.73/20.53	8.27/11.89	
	Hardness (mg/L)	119	832.7	836.0	100.0/2160.0	632.0/997.0	
Minerals	Total Dissolved Solids (mg/L)	122	7208.2	7114.5	87.0/18760.0	4826.0/9401.0	21.4% of values >OWQS of 10027.8
	Specific Conductivity (uS/cm)	117	11376.2	11352.0	134.0/28860.0	7765.0/14831.5	
	Chloride (mg/L)	118	3461.5	2948.5	46.6/10300.0	2165.3/4785.0	19.0% of values >OWQS of 5902.3
	Sulfate (mg/L)	119	611.7	639.0	95.5/1025.0	489.0/741.0	
Nutrients	Total Phosphorus (mg/L)	119	0.195	0.084	<0.005/2.350	0.051/0.197	
	Total Nitrogen (mg/L)	120	1.472	1.115	0.565/7.540	0.875/1.534	
	Nitrate/Nitrite (mg/L)	121	0.541	0.325	<0.050/3.890	0.120/0.813	
	Chlorophyll A (mg/m ³)	29	9.7	18.1	1.3/46.5	5.9/31.3	TSI=60.5
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	27	4634.3	60.0	<10.0/87000	<10.0/600	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)	27	1390.2	487.0	<10.0/9208	183/1483	Mean > OWQS of 126

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	S	S	S	NS						S	S
Aesthetics													NEI
Agriculture						S		NS	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish consumption not supporting for Thallium
 Fish & Wildlife Propagation not supporting for Selenium

Cimarron River at Ripley



Sample Record	Times Visited	Station ID
October 2000 - Current	212	620900030010-001AT

Stream Data	County	Payne	View Site Data
	Location	South of the Town of Ripley on State Highway 33	
	Latitude/Longitude	35.98570275, -96.91305015	
	Planning Watershed	Upper Arkansas (8-digit HUC - 11050003)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	127	17.7	18.6	-1.0/35.5	9.1/25.5	29.0% of values > OWQS of 50
		Turbidity (NTU)	129	194	43	5/1001	15/132	
		pH (units)	126	8.16	8.18	6.90/9.18	7.89/8.44	
		Dissolved Oxygen (mg/L)	127	9.91	9.65	4.44/16.91	7.38/11.98	
		Hardness (mg/L)	126	513.7	504.5	142.0/1050.0	409.8/649.5	
		Total Dissolved Solids (mg/L)	128	3767.0	3952.5	470.0/8777.0	2370.5/5153.0	26.9% of values > OWQS of 4103
Minerals	Specific Conductivity (uS/cm)	127	5937.6	5950.0	465.0/13560.0	3847.0/8255.0		
	Chloride (mg/L)	90	1666.7	1619.0	168.0/4490.0	1075.0/2205.0		
	Sulfate (mg/L)	119	344.9	322.0	61.3/660.0	251.0/449.0		
	Total Phosphorus (mg/L)	90	0.361	0.282	0.112/1.270	0.194/0.448		
Nutrients	Total Nitrogen (mg/L)	89	1.915	1.685	0.830/6.270	1.230/2.160		
	Nitrate/Nitrite (mg/L)	90	0.528	0.290	<0.050/4.960	<0.050/0.906		
	Chlorophyll A (mg/m ³)	29	9.1	23.9	0.7/474.0	12.1/46.1	TSI=70.8	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	59	817.3	60.0	<10.0/18000	<10.0/300	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	59	250.8	20.0	<10.0/3654	<10.0/120		

Beneficial Uses	Click to learn more about Beneficial Uses												
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	
Fish & Wildlife Propagation	NS	S	S	S						S	S	S	
Aesthetics												NEI	
Agriculture					S		S	NS					
Primary Body Contact Recreation									NS				
Public & Private Water Supply				S		S			S				
Fish Consumption				NS									

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish Consumption not supporting for Thallium

Cimarron River at Waynoka



Sample Record	Times Visited	Station ID
March 2003 - Current	102	620920020010-001RS

Stream Data	County	Woods	View Site Data
	Location	South of the Town of Waynoka on State Highway 281	
	Latitude/Longitude	36.516709, -98.87990179	
	Planning Watershed	Central (8-digit HUC - 11050001)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	66	18.2	19.2	-1.5/35.7	10.9/25.3
Turbidity (NTU)	67		13	5	2/134	3/13		
pH (units)	64		7.89	7.91	7.28/8.27	7.75/8.06		
Dissolved Oxygen (mg/L)	65		8.72	8.45	3.70/13.52	7.68/9.79		
Hardness (mg/L)	66		1432.4	1445.0	162.0/2700.0	1133.3/1703.8		
Total Dissolved Solids (mg/L)	70		23864.7	21600.0	4923/64000	16660/30725	72.7% of values>OWQS	
Minerals	Specific Conductivity (uS/cm)	66	36859.1	34198.0	7575/100000	25495/44708		
	Chloride (mg/L)	70	12675.3	11800.0	804/33200	7350/15625	79.4% of values>OWQS	
	Sulfate (mg/L)	70	1098.4	1070.0	426.0/1800.0	865.3/1322.5		
	Total Phosphorus (mg/L)	69	0.039	0.033	<0.005/0.189	0.0200/0.043		
Nutrients	Total Nitrogen (mg/L)	74	0.671	0.600	0.160/1.600	0.469/0.779		
	Nitrate/Nitrite (mg/L)	74	0.136	<0.050	<0.050/0.990	<0.050/0.115		
	Chlorophyll A (mg/m ³)	14	10.9	4.6	0.9/26.0	3.0/14.0	TSI=51.3	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	14	49.5	20.0	<10.0/197	<10.0/80.5	
E. Coli (cfu/100ml)(* -Geo. Mn.)		14	1615.1	1073.0	52/7270	453/2333.8	Mean> OWQS of 126	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	S	S	S	S							NS
Aesthetics													S
Agriculture						S		NS	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					S								
<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes											

Skeleton Creek at Lovell



Sample Record	Times Visited	Station ID
December 1998 - Current	142	620910030010-001AT

Stream Data	County	Logan	View Site Data
	Location	East of the Town of Lovell on State Highway 74	
	Latitude/Longitude	36.06098714, -97.58584155	
	Planning Watershed	Upper Arkansas (8-digit HUC -11050002)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	119	17.0	17.9	-1.4/33.9	7.9/24.9
Turbidity (NTU)	119		138	73	4/1000	39/147	44.4% of values > OWQS of 50	
pH (units)	119		8.18	8.17	7.51/8.79	8.01/8.39		
Dissolved Oxygen (mg/L)	118		10.18	9.99	2.69/19.68	7.53/12.36		
Hardness (mg/L)	119		386.7	408.0	100.0/690.0	300.0/475.0		
Total Dissolved Solids (mg/L)	123		1010.9	1040.0	216.3/1824.0	779.0/1219.0		
Minerals	Specific Conductivity (uS/cm)	119	1629.0	1682.0	338.0/2904.0	1287.0/1978.0		
	Chloride (mg/L)	120	237.9	242.0	53.3/458.0	186.3/276.8		
	Sulfate (mg/L)	120	202.3	204.5	64.3/440.0	156.0/240.5		
	Total Phosphorus (mg/L)	121	0.520	0.448	0.078/1.560	0.329/0.703		
Nutrients	Total Nitrogen (mg/L)	122	4.405	3.805	0.290/15.510	2.725/5.433		
	Nitrate/Nitrite (mg/L)	123	3.201	2.480	<0.050/14.550	1.440/4.220	20.9% of values > OWQS of 4.65	
	Chlorophyll A (mg/m ³)						No Data	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	27	3439.0	300.0	20/41000	63/2000	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	27	532.9	61.0	<10.0/9804	20/213		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	NS						S	S	S
	Aesthetics												NS
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		NS			S			
	Fish Consumption				NS								

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Notes

Fish Consumption not supporting for Thallium
 Fish & Wildlife Propagation not supporting for Selenium

HUC 1106

Upper Arkansas Sub-basin

The Upper Arkansas sub-basin (4-digit hydrologic unit 1106) is situated in the north central portion of the state. It originates in the northeast portion of Woods County, continues eastward through portions of Alfalfa, Grant, Garfield, Kay, Noble, and Payne Counties and terminates in the western part of Osage County and northern one-half ($\frac{1}{2}$) of Pawnee County. Major cities and County seats located within the sub-basin include Alva, Ponca City, Perry, Pawnee, Tonkawa, Blackwell, and Cleveland. Minor cities of note include Cherokee, Medford, and Ralston.

The sub-basin is subdivided into six 8-digit hydrologic units (HUC) within the state. These HUC's are the Kaw Lake (11060001), the Upper Salt Fork of the Arkansas (11060002), the Medicine Lodge (11060003), the Lower Salt Fork of the Arkansas (11060004), the Chickaskia (11060005), and the Black Bear-Red Rock (11060006). The major surface water in the sub-basin is the upper Arkansas River. Major tributaries include the Salt Fork of the Arkansas River, the Chickaskia River, Black Bear Creek, Beaver Creek, Salt Creek, Sand Creek, Pond Creek, Deer Creek, Bois d'Arc Creek, and Red Rock Creek. Three major lakes are located in the sub-basin—the Great Salt Plains Lake formed by the Salt Fork of the Arkansas River, Kaw Lake formed by the Arkansas River and Beaver Creek, Sooner Lake formed by Greasy Creek, and the Arkansas River arm of Keystone Lake. Five active permanent water quality-monitoring stations are located in the sub-basin. Two inactive water quality-monitoring stations (Salt Fork of the Arkansas river, US 177, White Eagle and Arkansas River, off US 277, Newkirk) are located in the sub-basin. These stations were last assessed in the 2001 and 2003 BUMP reports, respectively.

The sub-basin is characterized by four ecoregions. The Central Great Plains is the primary ecoregion beginning in the far western portion and continuing through the east part of the sub-basin. The Central Oklahoma/Texas Plains represent the eastern quarter ($\frac{1}{4}$) of the sub-basin. The Flint Hills characterize the northeast portion of Kay County and part of Osage County. The Southwestern Tablelands typify portions of Woods County. The primary land usage in the sub-basin is cropland. It dominates the central part of the sub-basin from eastern Woods County to the east central parts of Kay and Noble Counties. Cropland is further interspersed through the far western and eastern portions. The secondary land use is rangeland (open grasslands, sand sagebrush, upland shrubs, eastern red cedar, and post oak-blackjack oak). Rangeland dominates the far western and eastern portions of the sub-basin as well the northeastern portion of Alfalfa County and the southern portion of Payne and Pawnee Counties. It is further interspersed throughout the sub-basin. The tertiary land use is forestland (bottomland hardwoods and post oak-blackjack oak) that dominates the eastern portion of Payne County and the north and eastern portions of Pawnee County. Forestland is also present in portions of Kay and Osage Counties. Other land uses of note are pastureland, woodlands, farmsteads, major urban areas, wetlands, and confined animal feeding operations.

STATION NAME	FWP	PBCR	PPWS	AG	AES
ARKANSAS RIVER, SH 18, RALSTON	NS (5)	NS (8)	S	S	NT
BLACK BEAR CREEK, SH 18, PAWNEE	NS (5)	NS (6, 8)	S	S	NT
CHICKASKIA RIVER, US 177, BLACKWELL	NS (5)	NS (6, 8)	S	S	NT
SALT FORK OF THE ARKANSAS, SH 58, INGERSOLL	NS (5, 16, 18)	NS (6, 7, 8)	S	NS(12)	NS(18)
SALT FORK OF THE ARKANSAS, US 77, TONKAWA	NS (5)	NS (8)	S	S	S
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING	NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)		
NT—NOT THREATENED (NUTRIENTS)	NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE		
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN	2—METALS (ACUTE)		3—METALS (CHRONIC)		
4—PH	5—TURBIDITY		6—FECAL COLIFORM		
7— <i>ESCHERICHIA COLI</i>	8— ENTEROCOCCI		9—METALS		
10— TOTAL DISSOLVED SOLIDS	11— CHLORIDES		12— SULFATES		
13— TOTAL PHOSPHORUS (TP)	14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE		
16—BIOCRITERIA	17—SESTONIC CHLOROPHYLL-A (TSI)		18—SEDIMENTATION		

Arkansas River at Ralston



Sample Record	Times Visited	Station ID
December 1998 - Current	162	621200010200-001AT

Stream Data	County	Pawnee	View Site Data
	Location	East of the Town of Ralston on State Highway 18	
	Latitude/Longitude	36.50481274, -96.72547095	
	Planning Watershed	Upper Arkansas (8-digit HUC - 11060006)	

	Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	127	18.0	18.8	-0.4/38.0	10.1/25.0	
		Turbidity (NTU)	128	247	37	3/13749	14/153	32.1% of values > OWQS of 50
		pH (units)	127	8.18	8.21	6.96/8.88	8.00/8.40	
		Dissolved Oxygen (ppm)	127	10.03	9.63	1.73/26.76	8.12/11.57	
		Hardness (ppm)	126	261.6	250.0	82.0/635.0	195.5/324.3	
	Minerals	Total Dissolved Solids (ppm)	129	720.4	643.0	119.1/3173.0	476.6/832.0	
		Specific Conductivity (uS/cm)	127	1161.3	1036.0	186.1/4882.0	742.4/1429.0	
		Chloride (ppm)	120	238.9	206.5	18.4/1380.0	143.0/279.3	
		Sulfate (ppm)	120	111.9	106.5	37.3/268.0	87.0/134.8	
	Nutrients	Total Phosphorus (ppm)	120	0.253	0.194	0.020/1.390	0.128/0.277	
Total Nitrogen (ppm)		121	1.426	1.290	0.350/5.780	0.870/1.753		
Nitrate/Nitrite (ppm)		122	0.568	0.518	<0.050/2.040	0.165/0.830		
Chlorophyll A (mg/m ³)		15	10.1	14.2	3.8/113.0	7.1/39.2	TSI=61.81	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	24	3049.80	69.00	<10.0/65000	12.5/450	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	24	496.60	20.00	<10.0/9804	<10.0/167.5		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium and Lead

Black Bear Creek at Pawnee



Sample Record	Times Visited	Station ID
December 1998 - Current	153	621200030010-001AT

Stream Data	County	Pawnee	View Site Data
	Location	North of the Town of Pawnee on State Highway 18	
	Latitude/Longitude	36.34341161, -96.79985204	
	Planning Watershed	Upper Arkansas (8-digit HUC - 11060006)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	122	17.2	17.3	-0.3/33.3	9.5/24.9
Turbidity (NTU)	121		208	54	5/8256	21/172	27.6% of values > OWQS of 50	
pH (units)	122		7.94	7.98	6.26/8.70	7.68/8.17		
Dissolved Oxygen (ppm)	122		9.14	8.35	1.70/30.01	7.02/10.34		
Hardness (ppm)	121		226.7	219.0	42.0/442.0	153.5/295.5		
Minerals	Total Dissolved Solids (ppm)	124	491.7	460.5	100.0/1329.0	278.0/659.8		
	Specific Conductivity (uS/cm)	121	814.2	758.0	158.0/2076.0	431.6/1096.0		
	Chloride (ppm)	121	138.1	123.0	<10.0/460.0	63.9/197.0		
	Sulfate (ppm)	121	47.0	42.3	10.3/145.0	32.2/57.7		
Nutrients	Total Phosphorus (ppm)	121	0.228	0.188	0.030/1.330	0.125/0.288		
	Total Nitrogen (ppm)	122	1.545	1.405	0.470/4.920	0.908/1.933		
	Nitrate/Nitrite (ppm)	123	0.427	0.350	<0.050/2.690	<0.050/0.580		
	Chlorophyll A (mg/m ³)	2	9.5	13.3	10.7/15.9	NEI	TSI=56.0	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	27	1338.7	200.0	<10.0/19000	40/1100	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	27	551.0	63.0	<10.0/10462	<10.0/173		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	S						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead

Chikaskia River at Blackwell



Sample Record	Times Visited	Station ID
December 1998 - Current	198	621100000010-001AT

Stream Data	County	Kay	View Site Data
	Location	East of the Town of Blackwell on State Highway 177	
	Latitude/Longitude	36.81155311, -97.27808293	
	Planning Watershed	Upper Arkansas (8-digit HUC - 11060005)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	124	16.5	16.6	-0.9/34.0	9.1/25.9
Turbidity (NTU)	125		239	45	6/13753	22/111	20.0% of values > OWQS of 50	
pH (units)	122		8.01	8.03	6.79/9.29	7.85/8.22		
Dissolved Oxygen (mg/L)	124		10.72	9.76	2.53/48.86	8.01/12.42		
Hardness (mg/L)	122		357.1	313.0	80.0/3720.0	228.0/390.0		
Total Dissolved Solids (mg/L)	126		633.9	555.0	90.0/3840.0	409.3/662.0		
Minerals	Specific Conductivity (uS/cm)	123	1018.5	885.0	114.0/6238.0	652.0/1080.0		
	Chloride (mg/L)	117	156.5	112.0	11.8/1970.0	64.2/152.5		
	Sulfate (mg/L)	117	116.6	103.0	30.0/765.0	80.2/126.5		
	Total Phosphorus (mg/L)	117	0.205	0.155	0.020/1.240	0.098/0.253		
Nutrients	Total Nitrogen (mg/L)	118	1.860	1.810	0.150/6.630	1.220/2.304		
	Nitrate/Nitrite (mg/L)	119	1.021	0.915	<0.050/3.670	0.375/1.485		
	Chlorophyll A (mg/m ³)	49	9.1	10.0	0.1/138.0	2.8/29.8	TSI=57.6	
	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	6267.6	130.5	20/147000	54.5/1475	Mean > OWQS of 33	
Bacteria	E. Coli (cfu/100ml)(* -Geo. Mn.)	28	372.9	20.0	<10.0/3968	<10.0/247.5		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	S						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead and Thallium

Salt Fork of the Arkansas River at Ingersol



Sample Record	Times Visited	Station ID
December 1998 - Current	186	621010010160-001AT

Stream Data	County	Alfalfa	View Site Data
	Location	Northeast of the town of Ingersol on State Highway 58	
	Latitude/Longitude	36.82018011, -98.35994081	
	Planning Watershed	Upper Arkansas (8-digit HUC - 11060002)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	127	17.5	18.0	-0.8/36.7	9.5/25.1
Turbidity (NTU)	127		103	49	1/1000	14/97	19.2% of values > OWQS of 50	
pH (units)	123		7.91	7.91	7.15/8.42	7.80/8.06		
Dissolved Oxygen (mg/L)	126		9.69	9.27	4.49/26.91	7.98/11.21		
Hardness (mg/L)	123		892.3	900.0	432.0/1660.0	804.0/980.0		
Minerals	Total Dissolved Solids (mg/L)	128	1357.7	1376.0	520.0/3170.0	1219.3/1510.0		
	Specific Conductivity (uS/cm)	126	1988.1	2014.5	905.0/3688.0	1809.5/2170.3		
	Chloride (mg/L)	111	160.0	154.0	28.8/591.0	125.0/190.0		
	Sulfate (mg/L)	112	741.1	737.5	150.0/1130.0	664.3/831.3	81.4% of values > OWQS of 639	
Nutrients	Total Phosphorus (mg/L)	125	0.109	0.059	<0.005/1.710	0.028/0.112		
	Total Nitrogen (mg/L)	128	1.120	0.805	<0.050/18.710	0.611/1.058		
	Nitrate/Nitrite (mg/L)	129	0.328	0.300	<0.050/0.970	0.178/0.458		
	Chlorophyll A (mg/m ³)	20	9.5	4.6	0.1/53.4	2.4/8.6	TSI=50.5	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	36	4810.3	1200.0	50/46080	300/6500	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	36	1061.7	162.0	<10.0/19863	88.8/495.5	Mean > OWQS of 126	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	S						NS	S	NS
	Aesthetics												NS
	Agriculture					NS		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Salt Fork Of The Arkansas River at Tonkawa



Sample Record	Times Visited	Station ID
October 2000 - Current	190	621000010010-001AT

Stream Data	County	Kay	View Site Data
	Location	South of the Town of Tonkawa on US 77	
	Latitude/Longitude	36.67070374, -97.30951657	
	Planning Watershed	Upper Arkansas (8-digit HUC -11060004)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	139	17.6	17.9	-0.9/36.6
	Turbidity (NTU)		142	161	61	6/1000	24/205	36.0% of values > OWQS of 50
	pH (units)		139	8.11	8.15	6.79/9.45	7.95/8.34	
	Dissolved Oxygen (mg/L)		139	10.39	10.21	1.69/24.35	7.92/12.28	
	Hardness (mg/L)		136	443.2	446.0	126.0/927.0	360.0/520.0	
Minerals		Total Dissolved Solids (mg/L)	141	2162.1	1909.0	101.0/10230.0	1275.0/2850.5	
		Specific Conductivity (uS/cm)	139	3462.9	3120.0	158.0/15758.0	2119.0/4588.0	
		Chloride (mg/L)	117	965.7	872.0	58.8/4860.0	504.5/1270.0	
		Sulfate (mg/L)	118	261.1	246.5	49.0/637.0	191.3/305.8	
Nutrients		Total Phosphorus (mg/L)	118	0.247	0.217	0.033/0.975	0.149/0.311	
		Total Nitrogen (mg/L)	119	1.423	1.345	<0.050/3.890	1.040/1.680	
		Nitrate/Nitrite (mg/L)	120	0.284	<0.050	<0.050/3.790	<0.050/0.366	
		Chlorophyll A (mg/m ³)	26	10.3	42.0	2.7/124.0	23.9/67.0	TSI=67.9
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	24	8036.9	734.0	20/161000	181.3/1800	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	25	499.7	31.0	<10.0/9804	<10.0/116	

Beneficial Uses	Click to learn more about Beneficial Uses												
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	
Fish & Wildlife Propagation	NS	S	S	S						S	S	S	
Aesthetics												S	
Agriculture					S		S	S					
Primary Body Contact Recreation									NS				
Public & Private Water Supply				S		S			S				
Fish Consumption				NS									

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Lead and Thallium

HUC 1107

Neosho/Grand Sub-basin

The Neosho/Grand sub-basin (4-digit hydrologic unit 1107) is situated in the northeast portion of the state. It originates in the west central portion of Osage County, continues eastward through portions of Washington, Tulsa, Nowata, Rogers, Wagoner, Muskogee, Craig, Mayes, and Cherokee Counties and terminates in Ottawa and Delaware Counties. Major cities and County seats located within the basin include Pawhuska, Dewey, Bartlesville, Skiatook, Collinsville, Sperry, Owasso, Tulsa, Nowata, Oologah, Port of Catoosa, Claremore, Pryor, Chouteau, Locust Grove, Wagoner, Fort Gibson, Vinita, Langley, Miami, Grove, and Jay. Minor cities of note include South Coffeyville, Adair, Quapaw, Afton, and Ketchum.

The sub-basin is subdivided into nine 8-digit hydrologic units (HUC) within the state. These HUC's are the Middle Verdigris (11070103), the Lower Verdigris (11070103), the Caney (11070106), the Bird (11070107), the Middle Neosho (11070205), the Grand Lake (11070206), the Spring (11070207), the Elk (11070208), and the Lower Neosho (11070209). The major surface waters in the basin are the Verdigris and Grand/Neosho Rivers. Major tributaries include Caney River, Little Caney River, Spring River, Elk River, Sand Creek, Bird Creek, Big Creek, Dog Creek, Tar Creek, Honey Creek, Big Cabin Creek, Spavinaw Creek, Pryor Creek, and Spring Creek. Nine major lakes are located in the basin—Hulah Lake formed by the Caney River, Copan Lake formed the Little Caney River, Bluestem Lake formed by the headwaters of Bird Creek, Skiatook Lake formed by Hominy Creek, Oologah Lake formed by the Verdigris River, Grand Lake formed by the Neosho, Spring, and Elk Rivers (among other creeks), Lake Eucha formed by Spavinaw Creek, Spavinaw Lake formed by Spavinaw Creek, Lake Hudson formed by the Neosho River and Spavinaw, Rock, and Saline Creek, and Fort Gibson Lake formed by the Neosho River and Clear and Fourteen Mile Creek. Fifteen active permanent water quality-monitoring stations are located in the basin. Three inactive water quality-monitoring stations (Verdigris River near Nowata, Big Cabin Creek near Pensacola, and Pryor Creek near Sportsman Acres) are located in the sub-basin. Verdigris River near Nowata and Big Cabin Creek near Pensacola were last assessed in the 1999 BUMP report while Pryor Creek near Sportsman Acres was last assessed in the 2000 BUMP report.

The sub-basin is characterized by four ecoregions. The Central Irregular Plains is the primary ecoregion covering the central portion of the sub-basin, the majority of Ottawa and Cherokee Counties, and part of Delaware County. The Central Oklahoma/Texas Plains covers the majority of Osage County and parts of Tulsa and Washington Counties. The Ozark Highlands typify the majority of Delaware County, one-quarter (¼) of Ottawa County, and a small part of western Mayes County. The Boston Mountains ecoregion is represented in a small part of eastern Cherokee County. The primary land usage in the sub-basin is rangeland (open grasslands and woody areas). It dominates the western and north central portions of the sub-basin and is further interspersed throughout the southern, central and east central portions of the sub-basin. The secondary land uses are pastureland and forestland. Pastureland is interspersed throughout the eastern, central, and southern portions of the sub-basin with concentrations in Ottawa, Cherokee, Delaware, Craig, Rogers, Tulsa, and Washington Counties. Forestland (post oak–blackjack oak, hickory, and bottomland hardwoods) is interspersed throughout the entire sub-basin with heavy concentrations in Cherokee and Delaware Counties. The tertiary land use is cropland with heaviest concentrations in the central and east central portions of the sub-basing. Other land uses of note include farmsteads, major urban areas, wetlands, and confined animal feeding operations.

STATION NAME	FWP	PBCR	PPWS	AG	AES
BIG CABIN CREEK, OFF US 69, BIG CABIN	S	N/A	S	NS (12)	S
BIRD CREEK, SH 266, PORT OF CATOOSA	NS (5)	NS (6,7, 8)	S	S	S
CANEY RIVER, OFF US 75, RAMONA	NS (5)	NS (8)	S	S	NS(18)
ELK RIVER, SH 43, TIFF CITY (MO)	S	S	S	S	NT
HONEY CREEK, OFF SH 25, GROVE	S	NS (7)	S	S	T(15)
NEOSHO RIVER, OFF US 66, COMMERCE	NS (5, 16, 18)	NS(8)	S	S	NT
NEOSHO RIVER, OFF SH 137, CONNOR BRIDGE	NS (2, 3, 5)	S	S	S	NT
NEOSHO RIVER, SH 82, LANGLEY	NS(1, 3)	S	S	S	NT
NEOSHO RIVER, US 412, CHOUTEAU	NS(1, 3)	S	NS(15)	S	T(13, 15)
SPRING CREEK, OFF US 412, MURPHY	S	S	S	S	S
SPRING RIVER, OFF SH 137, QUAPAW	NS (3, 5)	NS (8)	S	S	NT
VERDIGRIS RIVER, US 412, INOLA	NS (5)	NS (8)	S	S	NT
VERDIGRIS RIVER, SH 10, LENEPAH	NS (5)	NS (8)	S	S	NT
VERDIGRIS RIVER, SH 20, KEETONVILLE	S	NS (8)	S	S	NT
VERDIGRIS RIVER, SH 51, WAGONER	NS (5)	NS (8)	S	S	NT

ASSIGNED OWQS BENEFICIAL USES

FWP = FISH & WILDLIFE PROPAGATION	PBCR = PRIMARY BODY CONTACT RECREATION
PPWS = PUBLIC AND PRIVATE WATER SUPPLY	AG = AGRICULTURE
AES = AESTHETICS	

SUPPORT CODES

S—FULLY SUPPORTING	NS—NOT SUPPORTING	T—THREATENED (NUTRIENTS)
NT—NOT THREATENED (NUTRIENTS)	NEI—NOT ENOUGH INFORMATION	N/A—NOT APPLICABLE

WATER QUALITY VARIABLES

1—DISSOLVED OXYGEN	2—METALS (ACUTE)	3—METALS (CHRONIC)
4—PH	5—TURBIDITY	6—FECAL COLIFORM
7— ESCHERICHIA COLI	8— ENTEROCOCCI	9—METALS
10— TOTAL DISSOLVED SOLIDS	11— CHLORIDES	12— SULFATES
13— TOTAL PHOSPHORUS (TP)	14—TP OK SCENIC RIVER CRITERION	15— NITRITE + NITRATE
16—BIOCRITERIA	17—SESTONIC CHLOROPHYLLL-A (TSI)	18—SEDIMENTATION

Big Cabin Creek at Big Cabin



Sample Record	Times Visited	Station ID
September 1999 - Current	188	121600060060-001AT

Stream Data	County	Craig	View Site Data
	Location	Northeast of the Town of Big Cabin on road 310	
	Latitude/Longitude	36.56838771, -95.15177919	
	Planning Watershed	Grand (8-digit HUC - 11070209)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	108	16.9	17.2	0.3/32.4	9.9/24.5
Turbidity (NTU)	107		41	24	7/755	18/40		
pH (units)	108		7.60	7.56	6.78/8.79	7.39/7.81		
Dissolved Oxygen (ppm)	108		7.84	7.37	3.08/18.5	5.84/9.59		
Hardness (ppm)	106		244.1	218.0	13.0/671.0	174.8/294.8		
Minerals	Total Dissolved Solids (ppm)		111	360.5	356.0	105.8/964.0	281.1/422.0	
	Specific Conductivity (uS/cm)	107	567.7	557.0	165.3/1385.0	440.8/674.5		
	Chloride (ppm)	109	21.3	<10.0	<10.0/84.6	<10.0/25.9		
	Sulfate (ppm)	110	161.0	140.0	33.8/538.0	95.7/200.0	83.0% of values > OWQS of 59.4	
Nutrients	Total Phosphorus (ppm)	110	0.195	0.142	0.026/1.090	0.094/0.217		
	Total Nitrogen (ppm)	112	1.685	1.260	<0.050/11.160	0.889/1.854		
	Nitrate/Nitrite (ppm)	113	0.765	0.355	<0.050/10.100	0.143/0.805		
	Chlorophyll A (mg/m ³)	47	9.9	8.0	1.2/76.6	3.3/24.0	TSI=55.9	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	31	15901.1	52.0	<10.0/437000	20/616		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	31	1558.0	110.0	<10.0/24196	31/847		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	S						S	S	S
	Aesthetics												S
	Agriculture					NS		S	S				
	Primary Body Contact Recreation									S			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Bird Creek at Port of Catoosa



Sample Record	Times Visited	Station ID
November 1998 - Current	206	121300010010-001AT

Stream Data	County	Tulsa	View Site Data
	Location	Northwest of the Town of Catoosa on State Highway 266	
	Latitude/Longitude	36.22311412, -95.81921244	
	Planning Watershed	Middle Arkansas (8-digit HUC - 11070107)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	136	17.7	18.1	2.8/31.0	11.0/24.6	
	Turbidity (NTU)	136	92	36	6/1000	22/79	21.4% of values > OWQS of 50
	pH (units)	133	7.54	7.48	6.88/9.12	7.36/7.68	
	Dissolved Oxygen (ppm)	136	8.01	7.54	0/19.26	6.39/9.54	
	Hardness (ppm)	136	130.3	125.0	58.0/294.0	105.0/156.8	
Minerals	Total Dissolved Solids (ppm)	138	244.8	231.2	17.0/1008.0	195.6/284.9	
	Specific Conductivity (uS/cm)	135	387.8	377.0	26.0/1570.0	306.0/457.3	
	Chloride (ppm)	102	40.5	37.5	<10.0/219.0	27.8/47.3	
	Sulfate (ppm)	102	45.3	38.1	18.6/293.0	27.9/47.3	
Nutrients	Total Phosphorus (ppm)	115	0.399	0.382	0.050/0.953	0.249/0.500	
	Total Nitrogen (ppm)	119	2.543	2.485	<0.100/6.170	1.520/3.510	
	Nitrate/Nitrite (ppm)	111	1.743	1.520	0.155/4.990	0.625/2.650	
	Chlorophyll A (mg/m ³)	42	11.0	5.6	1.7/86.4	3.7/8.2	TSI=52.3
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	26	4608.9	155.0	<10.0/73000	30/782	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)	26	968.6	79.0	<10.0/17329	41/494.5	Mean > OWQS of 126

	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S							S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead

Elk River at Tiff City (MO)



Sample Record	Times Visited	Station ID
May 1999 – December 2012	197	121600030440-001AT

Stream Data	County	McDonald	View Site Data
	Location	Southeast of the Town of Tiff City (MO) on SH 43	
	Latitude/Longitude	36.6314, -94.5867	
	Planning Watershed	Grand (8-digit HUC -11070208)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	114	17.5	17.0	4.1/32.9	11.2/24.0	
		Turbidity (NTU)	111	4	2	1/26	2/4	
		pH (units)	113	7.95	7.91	6.64/8.89	7.74/8.18	
		Dissolved Oxygen (mg/L)	114	9.63	9.58	0.02/19.55	7.68/11.25	
		Hardness (mg/L)	113	139.3	139.0	15.0/240.0	126.5/152.5	
		Total Dissolved Solids (mg/L)	114	185.2	179.5	105.0/331.0	167.0/201.3	
Minerals	Specific Conductivity (uS/cm)	113	291.8	285.3	3.0/790.0	261.2/316.0		
	Chloride (mg/L)	100	11.0	<10.0	<10.0/19.0	<10.0/10.3		
	Sulfate (mg/L)	100	10.8	<10.0	<10.0/22.7	<10.0/10.6		
	Total Phosphorus (mg/L)	114	0.101	0.056	<0.005/0.559	0.031/0.122		
Nutrients	Total Nitrogen (mg/L)	116	1.694	1.650	<0.050/4.520	1.044/2.168		
	Nitrate/Nitrite (mg/L)	110	1.528	1.528	<0.050/4.280	0.901/2.016		
	Chlorophyll A (mg/m ³)	50	11.2	1.2	0.1/37.4	0.7/2.0	TSI=40.8	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	32	112.6	45.5	<10.0/1300	<10.0/90.8	
E. Coli (cfu/100ml)(* -Geo. Mn.)		32	79.6	25.5	<10.0/563	<10.0/51.8		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								
<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes <i>Fish Consumption not supporting for Thallium</i>											

Honey Creek at Grove



Sample Record	Times Visited	Station ID
December 1998-June 2006	146	121600030290-001AT

Stream Data	County	Delaware	View Site Data
	Location	Southeast of the city of Grove on County Road N4670	
	Latitude/Longitude	36.54773713, -94.12072263	
	Planning Watershed	Grand (8-digit HUC - 11070206)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	88	16.69	16.79	6/27	11.89/21.62	
		Turbidity (NTU)	88	3.5	2.0	1/24	1.4/3.8	
		pH (units)	88	7.69	7.65	6.29/9.04	7.49/7.89	
		Dissolved Oxygen (mg/L)	87	8.63	8.34	4.38/13.89	7.36/10.01	
		Hardness (mg/L)	88	149.3	149.5	17.5/260	128/168.8	
		Minerals	Total Dissolved Solids (mg/L)	89	311.3	285.1	102/593	229/397.5
Specific Conductivity (uS/cm)	88		494.5	449.4	181.6/929	369.3/626.2		
Chloride (mg/L)	86		57.9	45.5	<10.0/148	26.6/92.3		
Sulfate (mg/L)	86		35.6	27.7	<10.0/112	17.3/50.3		
Nutrients	Total Phosphorus (mg/L)	89	0.090	0.074	0.025/0.403	0.05/0.1		
	Total Nitrogen (mg/L)	87	2.857	2.705	0.19/9	2.05/3.18		
	Nitrate/Nitrite (mg/L)	88	2.538	2.285	<0.050/8.71	1.669/2.883		
	Chlorophyll A (mg/m ³)	28	2.33	0.72	<0.10/17.9	0.43/1.2	TSI=38.9	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	2107.2	200.0	41/35000	89.5/700		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	28	211.2	103.0	<10.0/2046	46.5/210.5	Mean > OWQS of 126	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					S								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Neosho River at Commerce



Sample Record	Times Visited	Station ID
October 2000 - Current	178	121600040220-001AT

Stream Data	County	Ottawa	View Site Data
	Location	West of the Town of Commerce on County Road E60	
	Latitude/Longitude	36.92899836, -94.95707349	
	Planning Watershed	Grand (8-digit HUC - 11070206)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	97	16.9	17.8	0.3/33.2	8.7/25.5	
	Turbidity (NTU)	96	98	43	5/1000	25/94	33.3% of values>OWQS of 50
	pH (units)	98	7.91	7.94	6.53/9.05	7.70/8.14	
	Dissolved Oxygen (mg/L)	98	9.01	8.25	3.34/15.43	6.97/11.38	
	Hardness (mg/L)	98	176.6	177.5	15.0/294.0	148.8/218.0	
	Total Dissolved Solids (mg/L)	98	247.2	251.9	51.6/456.0	194.0/298.7	
Minerals	Specific Conductivity (uS/cm)	98	383.4	388.7	80.6/701.0	303.8/461.3	
	Chloride (mg/L)	84	11.6	<10.0	<10.0/19.7	<10.0/13.3	
	Sulfate (mg/L)	84	61.4	57.0	21.7/166.0	39.2/77.2	
	Total Phosphorus (mg/L)	98	0.196	0.147	0.038/1.040	0.102/0.239	
Nutrients	Total Nitrogen (mg/L)	102	1.273	0.970	<0.100/4.420	0.660/1.740	
	Nitrate/Nitrite (mg/L)	94	0.435	0.253	<0.050/3.590	<0.050/0.670	
	Chlorophyll A (mg/m ³)	49	8.7	12.9	0.1/200.0	5.2/27.1	TSI=62.5
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	29	10157.1	41.0	<10.0/282000	<10.0/295	Mean> OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)	29	433.1	20.0	<10.0/8074	<10.0/73.5	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S							NS
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead and Thallium

Neosho River at Connor Bridge



Sample Record	Times Visited	Station ID
December 1998 – March 2007	105	121600040010-001AT

Stream Data	County	Ottawa	View Site Data
	Location	Northeast of the Town of Fairland on County Road S 590	
	Latitude/Longitude	36.79864906, -94.81927419	
	Planning Watershed	Grand (8-digit HUC -11070206)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	68	17.47	17.97	2.92/33.05	8.29/24.46	
	Turbidity (NTU)	68	87.4	36.5	4/1000	17.3/97.5	16.7% of values >OWQS of 50
	pH (units)	67	7.83	7.80	6.66/9.33	7.43/8.2	
	Dissolved Oxygen (mg/L)	68	8.54	8.35	1.69/13.58	6.59/11.03	
	Hardness (mg/L)	69	181.0	191.0	76/277	135.5/217.5	
	Total Dissolved Solids (mg/L)	69	233.3	235.0	88/413.3	192.7/272.9	
Minerals	Specific Conductivity (uS/cm)	68	375.9	377.4	137/860	301.3/448.8	
	Chloride (mg/L)	69	11.6	<10.0	<10.0/30.5	<10.0/11.6	
	Sulfate (mg/L)	69	66.4	67.4	<10.0/117	46.5/85.5	
	Total Phosphorus (mg/L)	70	0.198	0.163	0.047/0.89	0.118/0.251	
Nutrients	Total Nitrogen (mg/L)	68	1.285	1.180	0.31/3.14	0.77/1.543	
	Nitrate/Nitrite (mg/L)	69	0.438	0.300	<0.050/1.63	0.123/0.718	
	Chlorophyll A (mg/m ³)	15	13.88	11.40	0.86/45.4	4.6/18	TSI=56.4
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	23	1697.0	<10.0	<10.0/37000	<10.0/30	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	23	152.0	<10.0	<10.0/2359	<10.0/52	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	NS						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					S								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish & Wildlife Propagation not supporting for Lead and Zinc

Neosho River at Langley



Sample Record	Times Visited	Station ID
December 1998 - Current	192	121600020170-001AT

Stream Data	County	Mayes	View Site Data
	Location	South of the Town of Langley on State Highway 82	
	Latitude/Longitude	36.44372767, -95.05554329	
	Planning Watershed	Grand (8-digit HUC - 11070209)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	110	16.3	16.7	2.1/27.1	10.8/23.2
Turbidity (NTU)	110		11	7	1/59	5/11		
pH (units)	110		7.72	7.76	6.89/9.26	7.50/7.96		
Dissolved Oxygen (mg/L)	111		7.98	7.67	2.12/15.73	5.76/9.85	See Notes	
Hardness (mg/L)	112		124.4	122.0	11.0/236.0	107.3/135.8		
Minerals	Total Dissolved Solids (mg/L)	111	169.9	168.6	75.0/308.0	148.5/190.0		
	Specific Conductivity (uS/cm)	111	264.4	265.5	116.0/475.0	232.0/295.0		
	Chloride (mg/L)	101	10.6	<10.0	<10.0/64.7	<10.0/<10.0		
	Sulfate (mg/L)	101	27.5	26.3	17.1/61.2	22.8/30.6		
Nutrients	Total Phosphorus (mg/L)	114	0.094	0.082	0.030/0.251	0.067/0.120		
	Total Nitrogen (mg/L)	117	1.027	0.910	<0.050/3.560	0.625/1.378		
	Nitrate/Nitrite (mg/L)	111	0.553	0.405	<0.050/3.140	0.170/0.760		
	Chlorophyll A (mg/m ³)	46	10.8	4.1	0.6/23.2	2.2/9.0	TSI=48.5	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	29	44.3	<10.0	<10.0/300	<10.0/60.5		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	29	16.6	<10.0	<10.0/86	<10.0/15		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	NS	NS						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Upstream Water Quality Probes (~1.0 mile) show 13.7% of real-time samples exceed OWQS criterion
 Fish consumption not supporting for Thallium
 Fish and wildlife propagation not supporting for Lead

Neosho River at Chouteau



Sample Record	Times Visited	Station ID
November 1998 - Current	171	121600010280-001AT

Stream Data	County	Mayes	View Site Data
	Location	East of the Town of Chouteau on US 412	
	Latitude/Longitude	36.17655098, -95.27570708	
	Planning Watershed	Grand (8-digit HUC - 11070209)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	103	17.8	17.9	4.0/35.3	10.4/25.1	
	Turbidity (NTU)	102	16	12	4/72	9/19	
	pH (units)	103	7.94	7.89	7.11/9.41	7.61/8.22	
	Dissolved Oxygen (mg/L)	103	9.43	9.19	2.45/17.25	7.43/11.35	See Notes
	Hardness (mg/L)	104	125.3	124.4	74.8/200.0	109.5/139.5	
Minerals	Total Dissolved Solids (mg/L)	104	180.9	174.0	90.0/347.0	152.4/204.2	
	Specific Conductivity (uS/cm)	103	281.1	276.2	141.0/535.0	241.0/315.0	
	Chloride (mg/L)	72	12.9	<10.0	<10.0/25.6	<10.0/15.2	
	Sulfate (mg/L)	72	34.8	30.9	21.7/157.0	26.6/35.5	
Nutrients	Total Phosphorus (mg/L)	106	0.258	0.143	0.049/1.380	0.107/0.332	
	Total Nitrogen (mg/L)	109	1.185	1.145	<0.100/2.410	0.800/1.510	
	Nitrate/Nitrite (mg/L)	101	0.556	0.490	<0.050/1.370	0.270/0.840	
	Chlorophyll A (mg/m ³)	36	10.4	12.6	1.5/70.0	6.1/19.6	TSI=58.82
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	26	86.8	<10.0	<10.0/1400	<10.0/56	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	26	59.2	<10.0	<10.0/882	<10.0/33.5	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	S	S	NS	NS							S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					S								
<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes Upstream (~6.0 miles) water quality probes show 13.7% of real-time samples exceed OWQS criterion and numerous samples were below the OWQS acute criterion of 2mg/l Fish and Wildlife Propagation not supporting for Lead											

Spring Creek at Murphy



Sample Record	Times Visited	Station ID
November 1998 - Current	222	121600010290-001AT

Stream Data	County	Mayes	View Site Data
	Location	South of the Town of Locust Grove off State Highway 82	
	Latitude/Longitude	36.13104241, -95.19015604	
	Planning Watershed	Grand (8-digit HUC -11070209)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	118	16.5	16.5	7.2/26.8	12.2/21.1	
	Turbidity (NTU)	115	2	1	1/15	1/2	
	pH (units)	117	7.46	7.46	6.8/8.59	7.21/7.68	
	Dissolved Oxygen (mg/L)	118	9.00	8.86	2.68/13.82	7.65/10.49	
	Hardness (mg/L)	118	84.7	78.0	10.0/728.0	69.8/88.0	
	Total Dissolved Solids (mg/L)	120	107.1	99.9	20.5/498.0	87.3/116.0	
Minerals	Specific Conductivity (uS/cm)	117	160.8	156.0	32.2/425.0	137.8/177.7	
	Chloride (mg/L)	111	10.8	<10.0	<10.0/95.9	<10.0/<10.0	
	Sulfate (mg/L)	110	10.5	<10.0	<10.0/39.6	<10.0/<10.0	
	Total Phosphorus (mg/L)	123	0.022	0.013	<0.005/0.392	0.010/0.019	
Nutrients	Total Nitrogen (mg/L)	128	0.634	0.533	<0.100/3.005	0.366/0.760	
	Nitrate/Nitrite (mg/L)	119	0.462	0.420	<0.050/1.500	0.260/0.570	
	Chlorophyll A (mg/m ³)	53	12.2	0.4	0.1/29.5	0.2/0.7	TSI=35.0
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	38	220.5	30.5	<10.0/3000	<10.0/125	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	38	137.8	<10.0	<10.0/4352	<10.0/31	

Beneficial Uses	Beneficial Use Support												
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	
Click to learn more about Beneficial Uses													
Fish & Wildlife Propagation	S	S	S	S						S	S	S	
Aesthetics												S	
Agriculture					S		S	S					
Primary Body Contact Recreation									S				
Public & Private Water Supply				S		S			S				
Fish Consumption				S									

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Spring River at Quapaw



Sample Record	Times Visited	Station ID
December 1998 - Current	179	121600070010-001AT

Stream Data	County	Ottawa	View Site Data
	Location	East of the Town of Quapaw near State Highway 137	
	Latitude/Longitude	36.93462871, -94.74614371	
	Planning Watershed	Grand (8-digit HUC -11070207)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)		119	17.8	17.9	2.5/32.1
Turbidity (NTU)			116	30	15	1/436	10/25	68.8% of values >OWQS of 10
pH (units)			118	7.87	7.91	6.64/8.92	7.70/8.06	
Dissolved Oxygen (mg/L)			119	8.95	8.95	0.16/14.47	7.14/10.68	
Hardness (mg/L)			118	152.9	156.0	16.9/258.0	135.3/174.3	
Total Dissolved Solids (mg/L)			119	224.4	225.4	71.0/384.0	191.0/254.0	
Minerals	Specific Conductivity (uS/cm)		119	358.6	358.0	110.6/827.0	304.9/407.0	
	Chloride (mg/L)		105	14.2	11.9	<10.0/35.5	<10.0/16.1	
	Sulfate (mg/L)		104	34.9	33.4	17.8/75.4	27.2/40.8	
	Total Phosphorus (mg/L)		118	0.204	0.195	0.048/0.640	0.134/0.251	
Nutrients	Total Nitrogen (mg/L)		121	2.050	2.100	<0.050/4.755	1.613/2.493	
	Nitrate/Nitrite (mg/L)		122	1.420	1.503	<0.050/3.370	0.875/1.898	
	Chlorophyll A (mg/m ³)		29	11.7	8.8	1.6/37.4	3.6/14.0	TSI=53.0
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)		30	1966.1	<10.0	<10.0/33000	<10.0/40.3
E. Coli (cfu/100ml)(* -Geo. Mn.)			30	202.7	20.0	<10.0/3448	<10.0/65.8	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	NS						S	S	S
	Aesthetics												S
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium and Lead
 Fish & Wildlife Propagation not supporting for Lead

Verdigris River at Inola



Sample Record	Times Visited	Station ID
November 2000 - Current	111	121500020260-001AT

Stream Data	County	Rogers	View Site Data
	Location	West of Inola on US 412	
	Latitude/Longitude	36.16167837, -95.49637137	
	Planning Watershed	Middle Arkansas (8-digit HUC -11070105)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	63	17.1	17.3	3.3/32.4	9.3/25.2	
	Turbidity (NTU)	63	200	42	3/8256	22/81	23.8% of values > OWQS of 50
	pH (units)	63	7.83	7.79	7.14/8.71	7.63/8.00	
	Dissolved Oxygen (mg/L)	62	9.11	8.66	3.71/18.73	7.12/10.88	
	Hardness (mg/L)	63	148.4	141.0	76.0/301.0	123.0/160.0	
	Total Dissolved Solids (mg/L)	66	225.4	211.7	100.8/392.0	181.6/270.3	
Minerals	Specific Conductivity (uS/cm)	63	356.9	322.8	157.5/626.0	283.0/436.0	
	Chloride (mg/L)	57	26.6	18.2	<10.0/145.0	12.2/37.4	
	Sulfate (mg/L)	57	45.6	40.7	20.0/129.0	33.4/53.5	
	Total Phosphorus (mg/L)	66	0.257	0.198	0.069/1.039	0.134/0.288	
Nutrients	Total Nitrogen (mg/L)	67	1.779	1.450	<0.100/4.44	1.030/2.350	
	Nitrate/Nitrite (mg/L)	62	0.958	0.653	0.105/2.940	0.419/1.545	
	Chlorophyll A (mg/m ³)	28	9.3	6.5	1.2/76.7	3.9/13.1	TSI=51.3
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	20	6867.15	40.0	<10.0/81000.0	<10.0/375.0
E. Coli (cfu/100ml)(* -Geo. Mn.)		20	639.5	20.0	<10.0/7270.0	<10.0/63.25	

Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Click to learn more about Beneficial Uses												
Fish & Wildlife Propagation	NS	S	S	S						S	S	S
Aesthetics												NEI
Agriculture					S		S	S				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Verdigris River at Lenepah



Sample Record	Times Visited	Station ID
December 1998 - Current	193	121510020010-001AT

Stream Data	County	Nowata	View Site Data
	Location	East of the Town of Lenepah on State Highway 10	
	Latitude/Longitude	36.85121639, -95.58531345	
	Planning Watershed	Middle Arkansas (8-digit HUC -11070103)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	115	17.0	18.0	1.5/33.7	10.0/25.2	
		Turbidity (NTU)	118	125	43	6/1002	18/106	36.0% of values > OWQS of 50
		pH (units)	115	7.80	7.81	4.98/8.55	7.60/8.07	
		Dissolved Oxygen (mg/L)	115	8.79	8.35	3.83/16.8	6.79/10.67	
		Hardness (mg/L)	118	157.7	159.5	10.0/300.0	131.5/187.3	
		Total Dissolved Solids (mg/L)	117	232.7	227.2	64.0/490.0	175.0/293.0	
Minerals	Specific Conductivity (uS/cm)	114	361.5	357.1	35.0/764.0	263.8/447.4		
	Chloride (mg/L)	102	21.1	14.4	<10.0/123.0	<10.0/22.6		
	Sulfate (mg/L)	101	35.9	32.2	12.3/96.5	26.9/41.8		
	Total Phosphorus (mg/L)	118	0.173	0.108	0.019/1.220	0.069/0.183		
Nutrients	Total Nitrogen (mg/L)	120	1.116	0.933	<0.100/3.970	0.669/1.318		
	Nitrate/Nitrite (mg/L)	112	0.355	0.320	<0.050/1.400	0.096/0.464		
	Chlorophyll A (mg/m ³)	48	10.0	8.3	0.1/173.0	4.6/14.8	TSI=57.6	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	115	17.0	18.0	1.5/33.7	10/25.2	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	22	722.8	52.0	<10.0/6294	27.5/443.3		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Lead and Thallium

Verdigris River at Keetonville



Sample Record	Times Visited	Station ID
November 1998 - Current	183	121500030010-001AT

Stream Data	County	Rogers	View Site Data
	Location	East of the Town of Keetonville on State Highway 20	
	Latitude/Longitude	36.30724953, -95.69794268	
	Planning Watershed	Middle Arkansas (8-digit HUC -11070105)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	112	17.5	18.0	1.8/32.0	10.1/25.8	
		Turbidity (NTU)	114	68	32	3/919	20/70	
		pH (units)	112	7.83	7.84	5.09/8.76	7.69/8.04	
		Dissolved Oxygen (mg/L)	112	8.78	8.14	3.38/16.05	6.70/10.34	
		Hardness (mg/L)	113	155.8	152.0	16.2/320.0	126.5/186.5	
		Minerals	Total Dissolved Solids (mg/L)	114	234.1	225.4	14.0/695.0	181.8/280.4
Specific Conductivity (uS/cm)	110		370.3	352.9	21.0/1072.0	284.6/443.5		
Chloride (mg/L)	102		22.9	14.8	<10.0/120.0	<10.0/30.9		
Sulfate (mg/L)	102		46.3	40.9	13.0/173.0	33.4/52.9		
Nutrients	Total Phosphorus (mg/L)	116	0.110	0.086	0.022/0.590	0.058/0.131		
	Total Nitrogen (mg/L)	118	0.864	0.760	0.280/2.530	0.604/0.996		
	Nitrate/Nitrite (mg/L)	110	0.262	0.225	<0.050/1.200	0.089/0.356		
	Chlorophyll A (mg/m ³)	45	10.1	5.0	0.5/50.2	3.0/12.6	TSI=52.0	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	21	5094.2	41.0	<10.0/89000	15/359	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	21	592.2	20.0	<10.0/7915	<10.0/62.5		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Verdigris River at Wagoner



Sample Record	Times Visited	Station ID
September 1999 - Current	115	121500010200-001AT

Stream Data	County	Wagoner	View Site Data
	Location	West of the Town of Wagoner on US 51	
	Latitude/Longitude	35.95547322, -95.49477619	
	Planning Watershed	Middle Arkansas (8-digit HUC -11070105)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	71	18.5	19.9	3.4/32.8	11.4/26.0	
		Turbidity (NTU)	72	200	38	6/10324	21/72	19.0% of values > OWQS of 50
		pH (units)	70	7.79	7.77	7.09/8.84	7.55/7.95	
		Dissolved Oxygen (mg/L)	70	8.64	8.12	4.57/16.44	6.98/10.17	
		Hardness (mg/L)	70	143.9	139.0	56.0/740.0	114.8/157.8	
		Minerals	Total Dissolved Solids (mg/L)	74	204.6	200.1	108.1/351.0	169.5/232.0
Specific Conductivity (uS/cm)	71		328.4	315.8	200.2/615.5	271.0/364.6		
Chloride (mg/L)	74		21.5	15.0	<10.0/143.0	11.4/25.6		
Sulfate (mg/L)	73		44.9	40.4	18.0/132.0	33.3/51.1		
Nutrients	Total Phosphorus (mg/L)	74	0.167	0.144	0.055/0.570	0.102/0.199		
	Total Nitrogen (mg/L)	75	1.376	1.125	0.480/4.400	0.815/1.560		
	Nitrate/Nitrite (mg/L)	71	0.720	0.475	<0.050/3.020	0.315/0.890		
	Chlorophyll A (mg/m ³)	27	11.4	4.6	0.1/16.1	2.7/9.0	TSI=47.8	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	20	6442.5	90.0	<10.0/82000	12.5/1250	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	20	351.5	57.0	<10.0/3130	12.5/160		

Beneficial Uses	Click to learn more about Beneficial Uses												
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	
Fish & Wildlife Propagation	NS	S	S	S						S	S	S	
Aesthetics												NEI	
Agriculture					S		S	S					
Primary Body Contact Recreation									NS				
Public & Private Water Supply				S		S			S				
Fish Consumption				S									

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 NEI = Not Enough Information

Notes

HUC 1109

Canadian Sub-basin

The Canadian sub-basin (4-digit hydrologic unit 1109) begins in the central west and runs to the east central portion of the state. It originates in the southern portion of Ellis and the northern portion of Roger-Mills Counties, continues eastward through portions of Ellis, Roger Mills, Dewey, Custer, Blaine, Caddo, Canadian, Grady, Cleveland, McClain, Pottawatomie, Pontotoc, Seminole, Hughes, McIntosh, and Muskogee Counties and terminates in Pittsburg, Haskell, and Latimer Counties. Major cities and County seats located within the basin include Arnett, Taloga, Weatherford, Mustang, Moore, Norman, Noble, Oklahoma City, Purcell, Ada, Tecumseh, Holdenville, McAlester, and Stigler. Minor cities of note include Newcastle, Lexington, Konawa, and Hartshorne.

The basin is subdivided into five 8-digit hydrologic units (HUC) within the state. These HUC's are the Rita Blanca (11090103), the Lower Canadian-Deer (11090201), the Lower Canadian-Walnut (11090202), the Little (11090203), and the Lower Canadian (11090204). The major surface water in the basin is the Canadian River. Major tributaries include Little River, Deer Creek, Walnut Creek, Canadian Sandy Creek, Salt Creek, Coal Creek, Gaines Creek, and Brushy Creek. Five major lakes are located in the basin—Lake Stanley Draper formed by East Elm Creek, Lake Thunderbird formed by the Little River, Lake Konawa formed by Jumper Creek, Lake McAlester formed by a tributary of Coal Creek, and the lower half of Lake Eufaula formed by the Canadian River and Coal, Brushy, and Gaines Creeks (among others). Eight permanent water quality-monitoring stations are located in the basin. One inactive water quality-monitoring station (North Canadian River, IND. NAT, TPK, Hanna) is located in the sub-basin. This station was last assessed in the 2000 BUMP report.

The basin is characterized by five ecoregions. The Central Great Plains is one of two primary ecoregions beginning in western Dewey County and continuing to eastern Cleveland and McClain Counties. The other primary ecoregion is the Central Oklahoma/Texas Plains beginning where the Central Great Plains ends and continues through the majority of Pittsburg and McIntosh counties. The Southwestern Tablelands cover an area beginning in the west and ending in the western part of Dewey County. The Arkansas Valley covers the rest of McIntosh, the eastern portions of Pittsburg County, and parts of Haskell and Latimer Counties. The Ouachita Mountains extend over the bottom part of Pittsburg and Latimer Counties. The primary land usage in the sub-basin is rangeland (open grasslands and woody areas). It dominates the western portion of the sub-basin, is prevalent in the central and east central portions, and is further interspersed throughout the remainder of the sub-basin. The secondary land use is pastureland, which is prevalent in the central and eastern portions. The tertiary land uses are cropland and forestland (post oak-blackjack oak and bottomland hardwoods). Cropland is prevalent in the west central portion of the sub-basin and is interspersed throughout the remainder of the sub-basin. Forestland is prevalent in the east central and eastern portions of the sub-basin. Other land uses of note are woodlands, bottom woodlands, farmsteads, major urban areas, and confined animal feeding operations.

STATION NAME	FWP	PBCR	PPWS	AG	AES
BRUSHY CREEK, OFF US 270, HAILEYVILLE	NS (1, 3, 5)	NS (6, 7, 8)	S	NS (12)	NT
CANADIAN RIVER, SH 2, WHITEFIELD	S	S	S	S	NT
CANADIAN RIVER, US 183, TALOGA	S	NS (8)	N/A	NS (10, 11,12)	NS (18)
CANADIAN RIVER, US 270, CALVIN	NS(3,5,16,18)	NS (8)	S	NS (12)	NS(17, 18)
CANADIAN RIVER, US 377, KONAWA	NS (5)	NS (8)	S	S	T (13, 17)
CANADIAN RIVER, US 66, BRIDGEPORT	NS (5)	NS (8)	N/A	S	NT
CANADIAN RIVER, US 77, PURCELL	NS (5)	N/A	N/A	S	NS (13,17,18)
LITTLE RIVER, SH 56, SASAKWA	NS (5)	NS (6, 8)	S	S	NS(13, 18)
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)	
NT—NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— <i>ESCHERICHIA COLI</i>		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLLL-A (TSI)		18—SEDIMENTATION	

Brushy Creek at Haileyville



Sample Record	Times Visited	Station ID
November 1998 - Current	172	220600030010-001AT

Stream Data	County	Pittsburg	View Site Data
	Location	Southwest of the Town of Haileyville on State Highway 63	
	Latitude/Longitude	34.843370, -95.614373	
	Planning Watershed	Eufaula (8-digit HUC - 11090204)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	117	17.9	18.6	1.9/33.0	10.9/24.9	
	Turbidity (NTU)	116	72	41	4/1000	22/78	30.3% of values > OWQS of 50
	pH (units)	117	7.37	7.33	6.31/8.57	7.08/7.68	
	Dissolved Oxygen (ppm)	117	7.19	6.60	1.41/26.38	5.10/8.41	15.0% of values < OWQS of 5
	Hardness (ppm)	117	96.6	74.0	10.0/693.0	52.0/98.5	
Minerals	Total Dissolved Solids (ppm)	118	177.9	116.5	11.0/826.0	92.5/158.0	
	Specific Conductivity (uS/cm)	117	275.6	178.7	18.0/1291.0	123.0/251.6	
	Chloride (ppm)	104	26.8	<10.0	<10.0/178	<10.0/18.1	
	Sulfate (ppm)	105	63.3	34.1	12.0/369.0	26.4/50.1	
Nutrients	Total Phosphorus (ppm)	120	0.116	0.077	0.007/1.060	0.053/0.122	
	Total Nitrogen (ppm)	122	0.901	0.805	0.150/3.390	0.581/1.081	
	Nitrate/Nitrite (ppm)	123	0.174	0.090	<0.050/1.510	<0.050/0.230	
	Chlorophyll A (mg/m ³)	24	10.9	3.4	0.5/33.3	1.4/4.9	TSI=50.0
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	26	943.7	36.0	<10.0/14136	<10.0/197.5	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)	26	1000.5	68.0	<10.0/19863	<10.0/273	

Beneficial Uses	Beneficial Use Monitoring Program											
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Click to learn more about Beneficial Uses												
Fish & Wildlife Propagation	NS	S	NS	S						S	S	S
Aesthetics												NEI
Agriculture					NS		S	S				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

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 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Lead

Canadian River at Whitefield



Sample Record	Times Visited	Station ID
September 1999 - Current	151	220300000010-001AT

Stream Data	County	Haskell	View Site Data
	Location	North of the Town of Whitefield on State Highway 2	
	Latitude/Longitude	35.26306098, -95.23915454	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11090204)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	106	18.0	19.9	1.3/33.0	11.4/23.6	
		Turbidity (NTU)	105	20	6	1/812	3/13	
		pH (units)	105	7.89	7.92	6.39/8.64	7.71/8.16	
		Dissolved Oxygen (mg/L)	105	8.76	8.58	2.25/18.95	6.86/10.39	
		Hardness (mg/L)	106	152.8	147.0	93.0/317.0	132.0/165.3	
		Minerals	Total Dissolved Solids (mg/L)	110	268.3	261.0	126.3/480.0	226.8/318.3
Specific Conductivity (uS/cm)	105		438.9	440.0	197.4/720.0	377.3/509.7		
Chloride (mg/L)	107		44.8	41.0	17.3/73.6	33.3/57.5		
Sulfate (mg/L)	107		49.5	49.7	24.7/99.8	39.1/57.7		
Nutrients	Total Phosphorus (mg/L)	109	0.064	0.050	<0.005/0.950	0.028/0.073		
	Total Nitrogen (mg/L)	111	0.613	0.580	<0.050/2.710	0.395/0.795		
	Nitrate/Nitrite (mg/L)	112	0.176	0.138	<0.050/0.535	<0.050/0.265		
	Chlorophyll A (mg/m ³)	26	11.4	3.9	0.4/10.7	2/5.8	TSI=44.0	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	19	396.5	<10.0	<10.0/6867	<10.0/30		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	19	142.5	30.0	<10.0/1860	<10.0/74		

Beneficial Uses	Click to learn more about Beneficial Uses												
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	
Fish & Wildlife Propagation	S	S	S	S						S	S	S	
Aesthetics												NEI	
Agriculture					S		S	S					
Primary Body Contact Recreation									S				
Public & Private Water Supply				S		S			S				
Fish Consumption				NS									

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish Consumption not supporting for Thallium

Canadian River at Taloga



Sample Record	Times Visited	Station ID
November 1998 - Current	110	520620020010-001AT

Stream Data	County	Dewey	View Site Data
	Location	North of the Town of Taloga on State Highway 183	
	Latitude/Longitude	36.05419703, -98.96894778	
	Planning Watershed	West-Central (8-digit HUC - 11090201)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	96	14.8	15.2	-0.5/32.6
	Turbidity (NTU)		95	47	19	2/1000	9/36	
	pH (units)		93	8.08	8.08	7.36/8.70	7.94/8.25	
	Dissolved Oxygen (mg/L)		94	10.14	9.47	0.62/21.02	8.21/11.94	
	Hardness (mg/L)		94	709.4	678.0	58.0/1425.0	560.0/793.3	
Minerals			Total Dissolved Solids (mg/L)	98	1584.6	1581.0	615.0/3410.0	1420.0/1748.0
		Specific Conductivity (uS/cm)	96	2337.4	2399.5	711.0/4187.0	2101.5/2594.5	
		Chloride (mg/L)	94	371.4	387.5	65.5/749.0	293.5/444.8	26.5% of values > OWQS of 336
		Sulfate (mg/L)	95	550.3	462.0	141.0/1681.0	382.0/590.0	14.7% of values > OWQS of 568
Nutrients		Total Phosphorus (mg/L)	95	0.072	0.031	<0.005/1.890	0.017/0.056	
		Total Nitrogen (mg/L)	98	1.023	0.700	0.160/9.050	0.470/0.981	
		Nitrate/Nitrite (mg/L)	99	0.379	0.130	<0.050/6.690	<0.050/0.330	
		Chlorophyll A (mg/m ³)		No Data	No Data	No Data	No Data	
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	17	307.6	50.0	<10.0/3000	<10.0/350	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	17	42.1	20.0	<10.0/253	<10.0/36	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													NS
Agriculture						NS		NS	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish Consumption not supporting for Thallium

Canadian River at Calvin



Sample Record	Times Visited	Station ID
December 1998 - Current	202	220600010119-001AT

Stream Data	County	Hughes	View Site Data
	Location	North of the Town of Calvin on State Highway 270	
	Latitude/Longitude	34.97589666, -96.24231022	
	Planning Watershed	Central (8-digit HUC - 11090202)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	128	18.5	19.1	0/36.3	12.0/26.0
Turbidity (NTU)	124		164	42	7/1001	24/174	32.0% of values > OWQS of 50	
pH (units)	127		8.24	8.26	7.19/9.04	8.04/8.40		
Dissolved Oxygen (ppm)	127		9.63	9.33	3.79/23.59	7.86/11.22		
Hardness (ppm)	129		330.7	325.0	99.0/727.0	241.5/410.5		
Minerals	Total Dissolved Solids (ppm)	132	637.4	629.0	207.0/1119.0	459.8/830.5		
	Specific Conductivity (uS/cm)	127	998.2	982.0	318.0/1749.0	717.4/1288.0		
	Chloride (ppm)	125	131.9	134.0	24.1/253.0	96.5/170.5		
	Sulfate (ppm)	126	175.0	156.0	31.8/473.0	104.0/223.0	18.6% of values > OWQS of 247.7	
Nutrients	Total Phosphorus (ppm)	130	0.241	0.172	0.023/1.160	0.128/0.285	23.3% of values > OWQS of 0.360	
	Total Nitrogen (ppm)	132	1.356	1.233	<0.050/6.360	0.834/1.778		
	Nitrate/Nitrite (ppm)	133	0.249	<0.050	<0.050/1.435	<0.050/0.410		
	Chlorophyll A (mg/m ³)	45	12.0	25.3	3.4/115.0	15.1/46.9	TSI=66.0	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	30	1115.0	50.0	<10.0/24192	17.5/457.8	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	30	86.0	<10.0	<10.0/794	<10.0/102.8		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	NS						NS	S	NS
	Aesthetics												NS
	Agriculture					NS		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish and wildlife Propagation not supporting for Lead
 Fish consumption not supporting for Lead and Thallium

Canadian River at Konawa



Sample Record	Times Visited	Station ID
November 1998 - Current	189	520600010010-001AT

Stream Data	County	Seminole	View Site Data
	Location	East of the Town of Konawa on State Highway 377	
	Latitude/Longitude	34.93343848, -96.6830356	
	Planning Watershed	Central (8-digit HUC - 11090202)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	114	17.6	17.8	0/34.8	10.6/26.4
Turbidity (NTU)	114		173	41	6/1001	22/199	25.9% of values > OWQS of 50	
pH (units)	114		8.26	8.26	7.43/9.15	8.02/8.45		
Dissolved Oxygen (ppm)	112		9.86	9.38	4.49/32.28	8.05/11.21		
Hardness (ppm)	115		364.5	355.0	89.0/674.0	267.0/462.0		
Minerals	Total Dissolved Solids (ppm)	119	691.1	700.0	131.0/1160.0	477.0/880.0		
	Specific Conductivity (uS/cm)	113	1080.1	1116.0	206.0/1722.0	790.8/1369.5		
	Chloride (ppm)	114	121.9	120.0	17.6/282.0	80.5/160.3		
	Sulfate (ppm)	114	246.1	227.0	41.3/3090.0	146.5/276.0		
Nutrients	Total Phosphorus (ppm)	116	0.331	0.266	0.026/1.260	0.180/0.369		
	Total Nitrogen (ppm)	119	1.743	1.620	0.540/6.550	1.170/2.170		
	Nitrate/Nitrite (ppm)	120	0.411	0.168	<0.050/2.570	<0.050/0.689		
	Chlorophyll A (mg/m ³)	44	10.6	30.0	5.3/135.0	16.8/48.3	TSI=67.3	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	29	914.9	120.0	<10.0/9100	25.5/500	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	29	433.2	20.0	<10.0/5794	<10.0/73		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	S						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead and Thallium

Canadian River at Bridgeport



Sample Record	Times Visited	Station ID
February 1999 - Current	159	520610020150-001AT

Stream Data	County	Blaine	View Site Data
	Location	East of the Town of Bridgeport on U.S. Highway 281	
	Latitude/Longitude	35.54292908, -98.31831715	
	Planning Watershed	West Central (8-digit HUC - 11090202)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	112	16.9	16.9	-0.6/36.3
	Turbidity (NTU)		109	75	31	4/1000	14/73	19.2% of values > OWQS of 50
	pH (units)		108	8.11	8.12	7.60/8.60	7.95/8.27	
	Dissolved Oxygen (ppm)		111	9.55	9.50	0.38/19.77	8.07/10.49	
	Hardness (ppm)		111	581.6	569.0	126.0/2100.0	463.0/654.0	
Minerals		Total Dissolved Solids (ppm)	116	998.5	1057.5	213.6/1634.0	729.0/1260.0	
		Specific Conductivity (uS/cm)	112	1487.3	1524.5	333.7/2552.0	1068.5/1907.0	
		Chloride (ppm)	111	155.8	184.0	12.0/472.0	31.9/234.0	
		Sulfate (ppm)	113	416.8	412.0	106.0/752.0	356.0/478.5	
Nutrients		Total Phosphorus (ppm)	113	0.155	0.098	0.010/2.140	0.063/0.167	
		Total Nitrogen (ppm)	114	1.279	1.125	0.360/7.470	0.823/1.501	
		Nitrate/Nitrite (ppm)	115	0.455	0.400	<0.050/2.600	0.080/0.670	
		Chlorophyll A (mg/m ³)	22	9.9	13.6	2.6/84.4	5.4/24.6	TSI=60.0
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	26	765.6	100.0	<10.0/12033	38.5/387.5	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	26	1019.3	36.0	<10.0/24192	<10.0/94.5	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			NS			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Canadian River at Purcell



Sample Record	Times Visited	Station ID
February 1999 - Current	194	510610010010-001AT

Stream Data	County	McClain	View Site Data
	Location	East of the Town of Purcell on State Highway 77	
	Latitude/Longitude	35.01433266, -97.35035449	
	Planning Watershed	Central (8-digit HUC - 11090202)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	124	17.4	18.6	-2.3/34.1
	Turbidity (NTU)		122	145	42	4/1000	19/150	24.0% of values > OWQS of 50
	pH (units)		123	8.33	8.25	7.36/9.85	8.06/8.55	
	Dissolved Oxygen (ppm)		123	10.24	9.87	4.21/26.87	8.12/11.95	
	Hardness (ppm)		125	420.2	419.0	74.0/990.0	279.5/553.5	
Minerals		Total Dissolved Solids (ppm)	129	807.4	769.0	194.0/1804.0	562.0/1058.5	
		Specific Conductivity (uS/cm)	124	1239.8	1210.0	303.0/2215.0	879.5/1609.8	
		Chloride (ppm)	118	137.8	128.5	19.7/419.0	81.1/189.3	
		Sulfate (ppm)	118	282.5	280.0	40.8/972.0	182.8/356.3	
Nutrients		Total Phosphorus (ppm)	129	0.525	0.383	0.013/2.765	0.247/0.614	55.6% of values > OWQS of 0.360
		Total Nitrogen (ppm)	129	2.617	2.370	0.080/10.430	1.615/3.030	
		Nitrate/Nitrite (ppm)	130	1.009	0.725	<0.050/8.880	0.136/1.235	
		Chlorophyll A (mg/m ³)	48	10.4	43.6	0.5/191.0	9.4/88.7	TSI=70.2
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	20	3201.1	167.0	<10.0/31700	20.3/675	Mean > OWQS of 165
		E. Coli (cfu/100ml)(* -Geo. Mn.)	20	1088.4	25.0	<10.0/19863	<10.0/214	

Beneficial Uses	Supportability											
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Click to learn more about Beneficial Uses												
Fish & Wildlife Propagation	NS	S	S	S						S	S	S
Aesthetics												NS
Agriculture					S		S	S				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

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 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead and Thallium

Little River at Sasakwa



Sample Record	Times Visited	Station ID
November 1998 - Current	154	520800010010-001AT

Stream Data	County	Seminole	View Site Data
	Location	North of the Town of Sasakwa on State Highway 56	
	Latitude/Longitude	34.96534987, -96.5120113	
	Planning Watershed	Central (8-digit HUC - 11090204)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	115	17.8	19.0	0.3/32.3	10.8/26.2	
		Turbidity (NTU)	112	164	42	2/1001	17/146	18.2% of values > OWQS of 50
		pH (units)	114	8.05	8.06	6.84/8.67	7.91/8.26	
		Dissolved Oxygen (mg/L)	115	8.96	8.63	3.88/17.75	7.38/10.19	
		Hardness (mg/L)	115	311.2	302.0	72.0/980.0	220.0/372.0	
		Total Dissolved Solids (mg/L)	119	704.1	694.0	130.3/2818.0	448.0/870.0	
Minerals	Specific Conductivity (uS/cm)	115	1173.8	1183.0	203.5/4335.0	710.0/1549.0		
	Chloride (mg/L)	115	245.4	227.0	29.2/1360.0	139.0/290.0		
	Sulfate (mg/L)	114	41.5	35.8	10.3/261.0	28.6/43.1		
	Total Phosphorus (mg/L)	117	0.141	0.060	<0.005/2.05	0.034/0.126		
Nutrients	Total Nitrogen (mg/L)	120	0.855	0.590	<0.100/6.850	0.390/0.910		
	Nitrate/Nitrite (mg/L)	121	0.201	0.050	<0.050/6.470	<0.050/0.1600		
	Chlorophyll A (mg/m ³)	14	10.8	3.0	0.1/90.3	1.3/8.7	TSI=53.5	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	29	3826.3	74.0	<10.0/93000	25/350	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		29	409.8	41.0	<10.0/5794	20/151.5		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S						S	S
Aesthetics													NS
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead and Thallium

HUC 1110

Beaver/North Canadian Sub-basin

The Beaver/North Canadian sub-basin (4-digit hydrologic unit 1110) is situated in the Panhandle, northwest, and central portions of the state. It originates in Cimarron County, continues eastward through portions of Texas, Beaver, Harper, Ellis, Woodward, Major, Dewey, Blaine, Canadian, Oklahoma, Logan, Lincoln, Pottawatomie, Seminole, Creek, Okfuskee, Hughes, and Okmulgee Counties and terminates in the central part of McIntosh County. Major cities and County seats located within the basin include Boise City, Guymon, Beaver, Woodward, Watonga, El Reno, Yukon, Oklahoma City, Midwest City, Del City, Choctaw, Harrah, Edmond, Chandler, Shawnee, Tecumseh, Seminole, Bristow, Okemah, Wewoka, Okmulgee, Henryetta, and Eufaula. Minor cities of note include Goodwell, Laverne, Shattuck, Seiling, Meeker, Stroud, Prague, Wetumka, and Beggs.

The sub-basin is subdivided into nine 8-digit hydrologic units (HUC) within the state. These HUC's are the Upper Beaver (11100101), the Middle Beaver (11100102), the Coldwater (11100103), the Palo Duro (11100104), the Lower Beaver (11100201), the Lower Wolf (11100203), the Middle North Canadian (11100301), the Lower North Canadian (11100302), and the Deep Fork (11100303). The major surface water in the sub-basin is the Beaver/North Canadian River. Major tributaries include Goff Creek, Palo Duro Creek, Kiowa Creek, Clear Creek, Wolf Creek, Wewoka Creek, the Deep Fork River, and Little Deep Fork Creek. Ten major lakes are located in the sub-basin—Optima Lake formed by the Beaver River and Coldwater Creek, Fort Supply Lake formed by Wolf Creek, Canton Lake formed by the North Canadian River, Lake Overholser formed by the North Canadian River, Lake Hefner, Lake Arcadia formed by the Deep Fork River, Wes Watkins Lake formed by North Deer Creek, the Shawnee Twin Lakes, Bell Cow Lake formed by Bell Cow Creek, and the upper portion of Eufaula Lake formed by the North Canadian and Deep Fork Rivers. Fourteen active permanent water quality-monitoring stations are located in the basin. Three inactive water quality-monitoring stations (Palo Duro Creek near Bryans Corner, Kiowa Creek near Laverne, and Clear Creek near May) are located in the sub-basin and were last assessed in the 2000 BUMP report.

The basin is characterized by five ecoregions. The Western High Plains cover all Cimarron County, most of Texas County, and half of Beaver County. The Southwestern Tablelands begin in Texas County and terminate in Ellis and Woodward Counties. The Central Great Plains begins in Ellis County and terminates in western Oklahoma County. The Central Oklahoma/Texas Plains begin in eastern Oklahoma County and end in western Okmulgee and McIntosh Counties. The Central Irregular Plains cover eastern Okmulgee and McIntosh Counties. The primary land usage in the sub-basin is rangeland (open grasslands and woody areas). It is prevalent throughout the sub-basin with areas of concentration west central and central portions. The secondary land use is cropland, which is prevalent in the western and central portions and is interspersed throughout the eastern portion. The tertiary land uses is pastureland (brushy or mixed) and forestland (post oak, blackjack oak and bottomland hardwoods). Pastureland is prevalent in the eastern portion and is interspersed through the rest of the sub-basin. Forestland is prevalent in the eastern part of the sub-basin. Other land uses of note are farmsteads, major urban areas, wetlands, and confined animal feeding operations.

STATION NAME	FWP	PBCR	PPWS	AG	AES
BEAVER RIVER, OFF US 64, GUYMON	NS (1)	NS (6, 7, 8)	S	S	NT
BEAVER RIVER, US 83, TURPIN	NS (16, 18)	NS (6, 7, 8)	N/A	NS (10, 11)	NS(18)
BEAVER RIVER, SH 23, BEAVER	NS(16)	NS (6, 7, 8)	N/A	NS (10, 11, 12)	NS(18)
BEAVER RIVER, CR N1650, GATE	NS(16, 18)	NS (6, 8)	N/A	NS (10, 11)	NS(18)
BEAVER RIVER, US 183, FORT SUPPLY	S	NS (6, 8)	N/A	S	S
DEEP FORK RIVER, OFF SH 16, BEGGS	NS (5)	NS (6, 8)	S	S	NS(18)
DEEP FORK RIVER, US 377, STROUD	NS (5)	NS (6, 8)	S	S	NS(13, 18)
NORTH CANADIAN RIVER, SH 3E, SHAWNEE	NS (3, 4, 5)	NS (8)	N/A	NS(10)	T (13, 17)
NORTH CANADIAN RIVER, OFF US 62, HARRAH	NS (5)	NS (6, 8)	N/A	NS (10)	T (13, 17)
NORTH CANADIAN RIVER, US 281, SEILING	S	NS (8)	S	S	S
NORTH CANADIAN RIVER, US 75, WETUMKA	NS (5)	NS (8)	S	S	T (13, 17)
NORTH CANADIAN RIVER, IND. NAT. TPK., DUSTIN	NS (5)	NS (6, 8)	S	S	T (13)
NORTH CANADIAN RIVER, US 412, WOODWARD	S	NS (8)	N/A	S	S
NORTH CANADIAN RIVER, US 81, EL RENO	NS(3)	NS (8)	S	S	T (13, 17)
WOLF CREEK, OFF US 270, FORT SUPPLY	S	NS (8)	S	S	S
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)	
NT—NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— <i>ESCHERICHIA COLI</i>		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLL-A (TSI)		18—SEDIMENTATION	

Beaver River at Guymon



Sample Record	Times Visited	Station ID
April 1999 - Current	149	720510000190-001AT

Stream Data	County	Texas	View Site Data
	Location	West of the Town of Guymon off State Highway 64	
	Latitude/Longitude	36.70576142, -101.6365036	
	Planning Watershed	Panhandle (8-digit HUC - 11100101)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	113	15.2	15.9	-0.2/32.0
	Turbidity (NTU)		113	20	14	2/110	8/25	
	pH (units)		109	8.00	8.00	7.21/8.90	7.76/8.18	
	Dissolved Oxygen (ppm)		113	8.11	8.01	0.06/30.97	5.99/9.82	13.6% of values < OWQS of 5
	Hardness (ppm)		113	264.7	228.0	70.0/1263.0	204.5/267.5	
Minerals		Total Dissolved Solids (ppm)	113	303.4	298.0	110.0/434.0	288.6/320.8	
		Specific Conductivity (uS/cm)	112	482.4	478.4	170.0/668.0	451.6/523.6	
		Chloride (ppm)	99	11.7	10.8	<10.0/24.8	<10.0/12.7	
		Sulfate (ppm)	99	30.5	30.2	17.0/80.5	26.5/32.6	
Nutrients		Total Phosphorus (ppm)	113	0.053	0.035	<0.005/0.504	0.018/0.056	
		Total Nitrogen (ppm)	115	0.540	0.490	<0.050/5.140	0.360/0.660	
		Nitrate/Nitrite (ppm)	108	0.140	<0.050	<0.050/0.760	<0.050/0.174	
		Chlorophyll A (mg/m ³)	20	7.3	2.4	0.2/24.9	1.6/4.4	TSI=44.1
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	22	1841.60	233.00	31/21000	132.3/1325	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	22	1375.80	233.00	74/24192	152/448.3	Mean > OWQS of 126

Beneficial Uses	Click to learn more about Beneficial Uses											
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Fish & Wildlife Propagation	S	S	NS	S						S	S	S
Aesthetics												NS
Agriculture					S		S	S				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Beaver River at Turpin



Sample Record	Times Visited	Station ID
November 2000 – May 2008	91	720500020450-001AT

Stream Data	County	Beaver	View Site Data
	Location	South of the Town of Turpin on State Highway 83	
	Latitude/Longitude	36.75941268, -100.8439297	
	Planning Watershed	Panhandle (8-digit HUC - 11100102)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	59	14.95	15.68	-0.18/28.91
	Turbidity (NTU)		59	5.60	3.00	1/32	2/7	
	pH (units)		58	7.87	7.87	7.27/8.65	7.66/8.11	
	Dissolved Oxygen (ppm)		58	10.89	11.05	4.53/20.14	8.65/12.71	
	Hardness (ppm)		59	1176.7	1169.0	207/1850	1039/1335	
Minerals		Total Dissolved Solids (ppm)	64	6103.9	5973.0	2749/8509	5590.8/6739	97.7% of values > OWQS of 3010.0
		Specific Conductivity (uS/cm)	59	9287.9	9337.0	4295/12796	8582/10421	
		Chloride (ppm)	63	2674.0	2610.0	729/4595	2320/2870	100% of Values > OWQS of 945.0
		Sulfate (ppm)	64	685.80	664.00	229/1600	587.3/760.5	
Nutrients		Total Phosphorus (ppm)	59	0.04	0.02	0.011/0.263	0.018/0.034	
		Total Nitrogen (ppm)	59	0.85	0.69	0.33/3.86	0.58/0.93	
		Nitrate/Nitrite (ppm)	59	0.06	<0.050	<0.050/0.2	<0.050/<0.050	
		Chlorophyll A (mg/m ³)	15	17.70	7.50	<0.10/78	2.65/19	TSI=58.2
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	19	2249.9	500.00	<10.0/24000	30/1300	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	19	1108.0	259.00	<10.0/6867	41/911	Mean > OWQS of 126

Beneficial Uses	Beneficial Use Monitoring Program - Oklahoma Water Resources Board											
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Click to learn more about Beneficial Uses												
Fish & Wildlife Propagation	S	S	S	S						NS	S	NS
Aesthetics												NS
Agriculture					S		NS	NS				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

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 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Beaver River at Beaver



Sample Record	Times Visited	Station ID
November 1998 - Current	114	720500020290-001AT

Stream Data	County	Beaver	View Site Data
	Location	North of the Town of Beaver on State Highway 23	
	Latitude/Longitude	36.82280124, -100.5193698	
	Planning Watershed	Panhandle (8-digit HUC - 11100102)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	94	16.2	15.2	0/32.0
	Turbidity (NTU)		93	20	7	1/808	4/15	
	pH (units)		91	7.72	7.70	6.93/9.10	7.42/7.99	
	Dissolved Oxygen (ppm)		93	9.10	9.02	0.16/20.28	7.12/11.21	
	Hardness (ppm)		93	1558.0	1373.0	201.0/3510.0	1090.0/2030.0	
Minerals		Total Dissolved Solids (ppm)	97	5545.7	5070.0	751.8/11150.0	4342.0/6785.0	
		Specific Conductivity (uS/cm)	94	8547.6	8062.0	451.0/17157.0	6880.0/10301.3	
		Chloride (ppm)	94	2448.1	2220.0	177.0/6510.0	1866.3/2960.0	92.9% of values > OWQS of 944.7
		Sulfate (ppm)	94	884.8	821.5	103.0/2620.0	608.8/1065.0	38.1% of values > OWQS of 977.3
Nutrients		Total Phosphorus (ppm)	94	0.082	0.036	0.008/2.119	0.023/0.070	
		Total Nitrogen (ppm)	98	1.068	0.805	0.180/12.110	0.580/1.103	
		Nitrate/Nitrite (ppm)	98	0.126	<0.050	<0.050/3.960	<0.050/<0.050	
		Chlorophyll A (mg/m ³)		No data	No data	No data	No data	
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	23	1319.80	199.00	20/9208	100/1100	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	23	1285.00	221.00	<10.0/5794	63/2987	Mean > OWQS of 126

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	S						S	NS	NS
	Aesthetics												NS
	Agriculture					NS		NS	NS				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

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Notes

Fish Consumption not supporting for Thallium and Lead

Beaver River at Gate



Sample Record	Times Visited	Station ID
October 2000 – September 2007	46	720500020140-001AT

Stream Data	County	Beaver	View Site Data
	Location	South of the Town of Gate on County Road N 1650	
	Latitude/Longitude	36.78998597, -100.0574831	
	Planning Watershed	Panhandle (8-digit HUC -11100201)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	37	20.04	21.15	2/34.27
	Turbidity (NTU)		37	11.00	6.00	1/103	3.5/11	
	pH (units)		35	8.03	8.08	7.38/8.6	7.83/8.25	
	Dissolved Oxygen (ppm)		37	9.99	9.96	5.61/18.98	7.91/11.36	
	Hardness (ppm)		37	650.50	625.00	320/1050	508/777.5	
Minerals		Total Dissolved Solids (ppm)	37	2376.90	2265.00	781/6971	1700.5/2733.5	
		Specific Conductivity (uS/cm)	37	3679.50	3477.00	1897/10893	2525/4217	
		Chloride (ppm)	37	963.50	878.00	368/2860	630.5/1195	44.4% of Values > OWQS of 944.7
		Sulfate (ppm)	37	364.70	330.00	175/1230	268/430	
Nutrients		Total Phosphorus (ppm)	37	0.05	0.03	0.009/0.272	0.019/0.061	
		Total Nitrogen (ppm)	37	0.73	0.67	0.24/1.79	0.423/1.03	
		Nitrate/Nitrite (ppm)	37	0.06	<0.050	<0.050/0.2	<0.050/<0.050	
		Chlorophyll A (mg/m ³)						No Data
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	12	621.80	150.50	<10.0/2900	43.3/775	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	12	138.30	75.50	<10.0/496	<10.0/251.3	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						NS	NS
Aesthetics													NS
Agriculture						S		NS	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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Notes

Fish Consumption not supporting for Thallium and Lead

Beaver River at Ft. Supply



Sample Record	Times Visited	Station ID
November 1998 - Current	138	720500020010-002AT

Stream Data	County	Harper	View Site Data
	Location	Northwest of the Town of Ft. Supply on State Highway 183	
	Latitude/Longitude	36.5908354, -99.59121563	
	Planning Watershed	Panhandle (8-digit HUC - 11100201)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	95	18.0	18.8	-0.1/36.0
	Turbidity (NTU)		95	15	8	1/65	5/16	
	pH (units)		91	8.05	8.05	7.26/8.58	7.90/8.23	
	Dissolved Oxygen (ppm)		94	10.19	10.40	0/16.50	8.27/12.01	
	Hardness (ppm)		95	561.8	505.0	238.0/1260.0	440.0/620.0	
Minerals		Total Dissolved Solids (ppm)	98	1099.4	1025.0	401.0/2188.0	901.6/1202.3	
		Specific Conductivity (uS/cm)	95	1686.4	1565.0	650.0/3419.0	1387.0/1840.0	
		Chloride (ppm)	95	250.3	221.0	69.0/786.0	201.0/246.0	
		Sulfate (ppm)	94	320.0	271.0	47.0/1170.0	225.3/327.8	
Nutrients		Total Phosphorus (ppm)	95	0.043	0.028	<0.005/0.169	0.020/0.051	
		Total Nitrogen (ppm)	99	0.594	0.550	0.200/1.600	0.390/0.720	
		Nitrate/Nitrite (ppm)	99	0.103	<0.050	<0.050/1.170	<0.050/0.095	
		Chlorophyll A (mg/m ³)	19	10.0	4.8	0.6/28.4	2.5/12.0	TSI=49.7
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	22	524.10	210.00	20/3000	86/611	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	22	131.00	85.00	<10.0/437	20/174	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	S						S	S	S
	Aesthetics												S
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

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Notes

Fish Consumption not supporting for Thallium

Deep Fork River at Beggs



Sample Record	Times Visited	Station ID
November 1998 - Current	147	520700020010-001AT

Stream Data	County	Okmulgee	View Site Data
	Location	South of the Town of Beggs off of State Highway 16	
	Latitude/Longitude	35.67424336, -96.06876654	
	Planning Watershed	Eufaula (8-digit HUC -11100303)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	111	17.9	18.0	1.5/33.0	10.4/25.0	
		Turbidity (NTU)	112	179	93	9/1000	51/225	59.1% of values >OWQS of 50
		pH (units)	111	7.82	7.84	6.82/8.89	7.61/8.02	
		Dissolved Oxygen (mg/L)	111	8.15	7.85	3.73/13.52	6.12/10.07	
		Hardness (mg/L)	109	226.4	204.0	27.0/1500.0	148.0/278.5	
		Minerals	Total Dissolved Solids (mg/L)	116	395.0	358.5	50.0/836.2	263.7/522.0
Specific Conductivity (uS/cm)	111		658.6	590.0	90.0/1469.0	420.8/899.3		
Chloride (mg/L)	112		97.6	91.2	<10.0/273.0	46.8/135.0		
Sulfate (mg/L)	112		45.7	41.0	<10.0/129.0	31.0/58.4		
Nutrients	Total Phosphorus (mg/L)	111	0.180	0.156	0.014/0.790	0.098/0.221		
	Total Nitrogen (mg/L)	112	1.071	0.910	0.230/3.260	0.664/1.274		
	Nitrate/Nitrite (mg/L)	114	0.271	0.205	<0.050/2.660	<0.050/0.343		
	Chlorophyll A (mg/m ³)	6	10.4	10.0	8.3/13.3	8.5/12.9		
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	27	4568.8	100.0	<10.0/113000	20/400	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	27	654.9	41.0	<10.0/14136	<10.0/171		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S						S	S
Aesthetics													NS
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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Notes Fish consumption not supporting for Lead

Deep Fork River at Stroud



Sample Record	Times Visited	Station ID
November 1998 – December 2012	159	520700040010-001AT

Stream Data	County	Lincoln	View Site Data
	Location	South of the Town of Stroud on US 377	
	Latitude/Longitude	35.68609365, -96.6622792	
	Planning Watershed	Central (8-digit HUC -11100303)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	110	17.8	18.0	-0.3/39.3	11.0/24.7
Turbidity (NTU)	108		162	27	4/1001	14/195	16.7% of values >OWQS of 50	
pH (units)	109		8.21	8.23	7.02/9.65	8.04/8.47		
Dissolved Oxygen (mg/L)	110		9.15	9.12	4.50/14.65	7.63/10.26		
Hardness (mg/L)	110		262.9	284.0	63.0/541.0	196.0/320.0		
Total Dissolved Solids (mg/L)	116		483.2	501.5	11.2/1260.0	330.2/596.3		
Minerals	Specific Conductivity (uS/cm)	110	803.3	838.0	17.7/1990.0	549.0/1015.3		
	Chloride (mg/L)	114	111.5	108.0	<10.0/500.0	54.5/144.5		
	Sulfate (mg/L)	114	54.4	47.0	18.9/174.0	35.7/59.7		
	Total Phosphorus (mg/L)	114	0.298	0.215	0.017/1.767	0.141/0.371		
Nutrients	Total Nitrogen (mg/L)	115	1.222	0.990	0.080/5.210	0.650/1.580		
	Nitrate/Nitrite (mg/L)	116	0.407	0.230	<0.050/4.590	<0.050/0.478		
	Chlorophyll A (mg/m ³)	16	11.0	8.9	1.4/35.0	2.2/14.9	TSI=54.1	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	817.7	282.5	<10.0/6131	88.8/990	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		28	201.9	63.0	<10.0/1785	20/238.8		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S							S
Aesthetics													NS
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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Notes Fish consumption not supporting for Thallium and Lead

North Canadian River at Shawnee



Sample Record	Times Visited	Station ID
February 2002 - Current	229	520510000110-005AT

Stream Data	County	Pottawatomie	View Site Data
	Location	East of the Town of Shawnee on State Highway 3E	
	Latitude/Longitude	35.41056345, -96.78883533	
	Planning Watershed	Central (8-digit HUC - 11100302)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	137	18.1	19.0	-0.4/34.4	11.2/25.2
Turbidity (NTU)	137		159	71	3/1001	33/145	39.1% of values > OWQS of 50	
pH (units)	133		8.32	8.25	7.26/9.98	7.90/8.64	12.2% of values > OWQS of 9.0	
Dissolved Oxygen (mg/L)	136		10.03	9.34	2.64/25.01	7.82/12.05		
Hardness (mg/L)	136		269.0	246.0	92.0/3320.0	198.0/295.3		
Total Dissolved Solids (mg/L)	143		535.5	560.5	127.0/980.5	456.2/630.3	16.7% of values > OWQS of 700.0	
Minerals	Specific Conductivity (uS/cm)	137	842.7	867.0	199.1/1532.0	705.0/1010.5		
	Chloride (mg/L)	97	118.8	127.0	17.5/181.0	96.2/148.0		
	Sulfate (mg/L)	96	113.6	108.0	55.4/266.0	78.7/134.3		
	Total Phosphorus (mg/L)	136	0.836	0.750	0.101/2.470	0.535/1.014		
Nutrients	Total Nitrogen (mg/L)	136	3.635	3.378	<0.050/9.395	2.554/4.403		
	Nitrate/Nitrite (mg/L)	136	1.736	1.263	<0.050/7.790	0.723/2.278		
	Chlorophyll A (mg/m ³)	46	11.2	63.0	0.1/408.0	42.0/134.1	TSI=75.9	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	67	1377.6	132.0	<10.0/24192	70/700	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		67	559.8	20.0	<10.0/24192	<10.0/74		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	NS	S	S						S	S	S
	Aesthetics												NS
	Agriculture					S		S	NS				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

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Notes

Fish Consumption not supporting for Thallium and Lead

North Canadian River at Harrah



Sample Record	Times Visited	Station ID
November 1998 - Current	125	520510000110-001AT

Stream Data	County	Oklahoma	View Site Data
	Location	North of the Town of Harrah on State Highway 62	
	Latitude/Longitude	35.50033302, -97.19429527	
	Planning Watershed	Central (8-digit HUC - 11100302)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	80	19.80	20.29	1.35/34.33	12.71/26.46	
	Turbidity (NTU)	79	119.4	46.0	6/1000	20/91	12.0% of values > OWQS of 50
	pH (units)	79	8.20	8.11	7.25/9.6	7.84/8.44	
	Dissolved Oxygen (mg/L)	80	9.82	9.36	5.22/20	7.83/11.22	
	Hardness (mg/L)	79	313.5	254.0	80/3950	201/328	
	Total Dissolved Solids (mg/L)	80	579.2	591.5	98/892	470.8/683.9	25.3% of values > OWQS
Minerals	Specific Conductivity (uS/cm)	80	933.9	955.0	153/1394	738.3/1125	
	Chloride (mg/L)	81	130.6	137.0	20.8/290	97.9/163.5	
	Sulfate (mg/L)	80	127.9	118.0	39.6/240	88.4/167.8	
	Total Phosphorus (mg/L)	81	1.028	0.900	0.285/3.12	0.573/1.315	
Nutrients	Total Nitrogen (mg/L)	80	4.304	3.715	0.91/11.65	2.64/5.296	
	Nitrate/Nitrite (mg/L)	81	2.760	2.010	0.14/10.11	0.905/3.775	
	Chlorophyll A (mg/m ³)	24	45.44	36.00	2.6/157	22.25/64.75	TSI=68.0
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	27	1470.4	298.0	40/12000	85/1182	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)	27	914.9	74.0	<10.0/10462	20/305	

Beneficial Uses	Click to learn more about Beneficial Uses												
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	
Fish & Wildlife Propagation	NS	S	S	S						S	S	S	
Aesthetics												NEI	
Agriculture					S		S	S					
Primary Body Contact Recreation									NS				
Public & Private Water Supply				S		NS			S				
Fish Consumption				NS									

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium and Dieldrin
 Fish and Wildlife Propagation not supporting for Dieldrin

North Canadian River at Seiling



Sample Record	Times Visited	Station ID
November 1998 - Current	161	720500010010-001AT

Stream Data	County	Major	View Site Data
	Location	North of the Town of Seiling on US 281	
	Latitude/Longitude	36.18359095, -98.92046478	
	Planning Watershed	Panhandle (8-digit HUC -11100301)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	128	16.4	16.6	-0.5/36.5
	Turbidity (NTU)		128	46	23	1/1000	10/45	
	pH (units)		124	8.12	8.16	6.62/9.1	8.0/8.3	
	Dissolved Oxygen (mg/L)		127	9.90	9.74	1.20/21.73	8.39/11.35	
	Hardness (mg/L)		126	511.5	508.0	40.0/2098.0	410.8/565.0	
Minerals			Total Dissolved Solids (mg/L)	131	967.4	968.5	350.0/1384.5	886.8/1050.0
		Specific Conductivity (uS/cm)	127	1498.9	1495.0	547.0/3250.0	1381.0/1620.0	
		Chloride (mg/L)	114	187.7	181.5	<10.0/540.0	164.8/208.0	
		Sulfate (mg/L)	115	318.3	315.0	106.0/669.0	275.0/361.0	
Nutrients		Total Phosphorus (mg/L)	114	0.114	0.093	0.016/0.363	0.054/0.146	
		Total Nitrogen (mg/L)	118	1.130	1.068	0.290/2.880	0.854/1.400	
		Nitrate/Nitrite (mg/L)	118	0.354	0.280	<0.050/1.190	<0.050/0.576	
		Chlorophyll A (mg/m ³)	5	9.4	16.0	3.7/42.8	9.2/34	
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	27	3200.5	180.0	<10.0/76000	20/583	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	27	171.5	31.0	<10.0/3130	<10.0/93	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

North Canadian River at Wetumka



Sample Record	Times Visited	Station ID
September 1999 - Current	228	520510000010-001AT

Stream Data	County	Hughes	View Site Data
	Location	Northeast of the Town of Wetumka on US 75	
	Latitude/Longitude	35.26449455, -96.20706383	
	Planning Watershed	Central (8-digit HUC -11100302)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	146	19.1	20.0	2.7/36.2
	Turbidity (NTU)		144	223	101	13/1001	55/239	66.7% of values >OWQS of 50
	pH (units)		142	8.39	8.32	7.28/9.90	8.03/8.69	
	Dissolved Oxygen (mg/L)		145	9.87	9.89	4.64/19.46	7.86/11.95	
	Hardness (mg/L)		145	237.8	210.0	60.0/2500.0	171.0/263.5	
	Total Dissolved Solids (mg/L)		149	466.0	461.0	158.0/773.0	379.9/553.0	
Minerals		Specific Conductivity (uS/cm)	145	744.1	739.8	244.0/1208.0	607.5/902.0	
		Chloride (mg/L)	107	105.4	109.0	20.2/260.0	82.3/127.0	
		Sulfate (mg/L)	106	97.8	92.2	22.7/247.0	66.1/122.3	
		Total Phosphorus (mg/L)	141	0.566	0.470	0.049/1.880	0.390/0.670	95.3% of values >OWQS of 0.36
Nutrients		Total Nitrogen (mg/L)	143	2.562	2.400	0.500/6.170	1.690/3.360	
		Nitrate/Nitrite (mg/L)	144	0.746	0.375	<0.050/4.890	<0.050/1.208	
		Chlorophyll A (mg/m ³)	43	12.3	77.5	5.1/502.0	31.0/122.0	TSI=76.9
	Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	48	5121.4	100.0	<10.0/87000	20/575
		E. Coli (cfu/100ml)(* -Geo. Mn.)	48	605.6	15.0	<10.0/7701	<10.0/120.3	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium and Lead

North Canadian River at Dustin



Sample Record	Times Visited	Station ID
November 1998 – May 2008	122	520500010110-001AT

Stream Data	County	McIntosh	View Site Data
	Location	North of the Town of Dustin on State Highway 84	
	Latitude/Longitude	35.31617996, -95.95493326	
	Planning Watershed	Eufaula (8-digit HUC - 11100302)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	86	18.15	18.18	-0.49/34.41
	Turbidity (NTU)		85	245.7	133.0	21/>1000.0	55.5/294.5	64.3% of values>OWQS of 50
	pH (units)		85	8.27	8.23	7.02/9.48	7.94/8.58	
	Dissolved Oxygen (mg/L)		85	9.18	8.98	3.89/16.8	7.22/10.99	
	Hardness (mg/L)		87	242.4	210.0	89/1900	162.5/260	
Minerals		Total Dissolved Solids (mg/L)	86	454.8	451.0	127.1/800	367/581	
		Specific Conductivity (uS/cm)	85	724.8	709.7	198.6/1271	586.5/921.2	
		Chloride (mg/L)	90	107.2	112.5	14.7/218	72.8/137.3	
		Sulfate (mg/L)	89	98.1	89.0	33.9/316	60.8/118.5	
Nutrients		Total Phosphorus (mg/L)	90	0.475	0.394	0.147/1.22	0.323/0.598	67.3% of values>OWQS of 0.360
		Total Nitrogen (mg/L)	88	2.312	2.075	0.585/5.44	1.599/2.858	
		Nitrate/Nitrite (mg/L)	90	0.593	0.280	<0.050/3.49	<0.050/0.756	
		Chlorophyll A (mg/m ³)	13	93.63	50.30	11.53/287.48	21.1/148	TSI=75.1
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	25	860.7	200.0	<10.0/12000	20/536.5	Mean> OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	25	74.9	<10.0	<10.0/528	<10.0/79.5	

Beneficial Uses	Click to learn more about Beneficial Uses											
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Fish & Wildlife Propagation	NS	S	S	S						S	S	S
Aesthetics												NEI
Agriculture					S		S	S				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead and Thallium

North Canadian River at Woodward



Sample Record	Times Visited	Station ID
October 2000 - Current	158	720500010140-001AT

Stream Data	County	Woodward	View Site Data
	Location	East of the Town of Woodward on US 412	
	Latitude/Longitude	36.43687215, -99.27835799	
	Planning Watershed	Panhandle (8-digit HUC -11100301)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	94	17.9	19.1	0.3/33.0	11.9/25.1
Turbidity (NTU)	94		24	15	2/125	6/32		
pH (units)	90		8.17	8.16	7.40/9.06	7.97/8.35		
Dissolved Oxygen (mg/L)	92		10.35	9.93	4.67/23.29	8.54/11.70		
Hardness (mg/L)	94		509.5	459.5	188.0/3620.0	392.8/541.5		
Total Dissolved Solids (mg/L)	105		1055.1	1044.0	384.0/1638.0	858.5/1215.0		
Minerals	Specific Conductivity (uS/cm)	94	1616.9	1620.5	650.0/2560.0	1366.3/1886.5		
	Chloride (mg/L)	103	244.2	235.0	94.9/487.0	203.0/269.0		
	Sulfate (mg/L)	102	288.4	261.5	78.4/743.0	201.0/358.5		
	Total Phosphorus (mg/L)	96	0.134	0.099	0.009/0.459	0.080/0.161		
Nutrients	Total Nitrogen (mg/L)	99	1.727	1.460	0.150/10.560	1.170/1.840		
	Nitrate/Nitrite (mg/L)	99	0.825	0.570	<0.050/9.690	0.280/0.910		
	Chlorophyll A (mg/m ³)	30	11.9	12.3	3.7/489.0	5.8/26.0	TSI=65.4	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	2928.6	199.5	<10.0/65000	30.3/1102	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		28	764.4	41.0	<10.0/19862.8	20/80.3		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	S						S	S	S
	Aesthetics												S
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

North Canadian River at El Reno



Sample Record	Times Visited	Station ID
November 1998 - Current	187	520530000010-001AT

Stream Data	County	Canadian	View Site Data
	Location	North of the Town of El Reno on US 81	
	Latitude/Longitude	35.56261214, -97.95884556	
	Planning Watershed	Central (8-digit HUC -11100301)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	113	17.8	18.0	-0.3/34.8	9.0/25.0	
		Turbidity (NTU)	112	53	19	2/1000	7/49	
		pH (units)	110	8.21	8.24	7.1/9.30	8.08/8.39	
		Dissolved Oxygen (mg/L)	113	9.79	9.39	0.34/18.69	8.01/11.53	
		Hardness (mg/L)	113	436.1	430.0	10.0/1080.0	378.5/477.5	
		Total Dissolved Solids (mg/L)	116	837.9	889.0	291.0/1170.0	759.3/944.0	
Minerals	Specific Conductivity (uS/cm)	113	1323.4	1363.0	455.0/2270.0	1211.0/1489.5		
	Chloride (mg/L)	113	154.3	161.0	34.6/239.0	130.0/185.0		
	Sulfate (mg/L)	113	262.6	267.0	111.0/474.0	225.5/296.0		
	Total Phosphorus (mg/L)	113	0.156	0.118	0.008/1.450	0.064/0.216		
Nutrients	Total Nitrogen (mg/L)	116	1.031	0.890	<0.050/4.700	0.650/1.339		
	Nitrate/Nitrite (mg/L)	116	0.181	<0.050	<0.050/3.340	<0.050/0.218		
	Chlorophyll A (mg/m ³)	42	9.0	18.6	0.6/70.4	7.0/33.3	TSI=60.6	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	394.7	135.0	<10.0/6000	41/287.5	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	28	87.1	31.0	<10.0/763	<10.0/116		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	NS						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish and Wildlife Propagation not supporting for Cadmium and Lead
 Fish consumption not supporting for Thallium

Wolf Creek at Ft. Supply



Sample Record	Times Visited	Station ID
November 1998 - Current	149	720500030010-001AT

Stream Data	County	Woodward	View Site Data
	Location	East of the Town of Ft. Supply off US 270	
	Latitude/Longitude	36.44954552, -99.58872133	
	Planning Watershed	Panhandle (8-digit HUC -11100203)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	117	17.7	18.9	-0.1/34.0	10.9/25.1
Turbidity (NTU)	117		21	13	2/75	9/29		
pH (units)	113		8.16	8.18	7.33/9.00	8.03/8.31		
Dissolved Oxygen (mg/L)	115		10.06	10.03	0.12/26.42	8.59/11.18		
Hardness (mg/L)	117		317.2	305.0	163.0/615.0	278.5/342.0		
Total Dissolved Solids (mg/L)	119		605.6	607.4	220.0/1172.0	574.6/637.0		
Minerals	Specific Conductivity (uS/cm)	115	967.3	961.0	463.8/1835.0	898.0/1033.0		
	Chloride (mg/L)	117	132.3	129.0	88.6/186.0	121.5/143.0		
	Sulfate (mg/L)	117	103.9	103.0	47.6/164.0	90.0/116.5		
	Total Phosphorus (mg/L)	117	0.057	0.042	<0.005/0.228	0.028/0.073		
Nutrients	Total Nitrogen (mg/L)	120	1.199	1.183	<0.100/5.470	0.850/1.524		
	Nitrate/Nitrite (mg/L)	115	0.729	0.665	<0.050/4.670	0.385/0.985		
	Chlorophyll A (mg/m ³)	6	10.9	5.3	2.4/21.4	2.5/20.6		
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	23	1156.2	100.0	<10.0/10000	20/900	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		23	185.1	74.0	<10.0/2282	30/85		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

HUC 1111

Lower Arkansas Sub-basin

The Lower Arkansas sub-basin (4-digit hydrologic unit 1111) is situated in the central eastern portion of the state. It originates in the western portion of Creek and Tulsa Counties, continues eastward through portions of Okmulgee, Wagoner, Muskogee, McIntosh, Cherokee, Delaware, Haskell, and Latimer Counties, and terminates in the eastern parts of Adair, Sequoyah, and LeFlore Counties. Major cities and County seats located within the basin include Sand Springs, Tulsa, Broken Arrow, Sapulpa, Jenks, Glenpool, Bixby, Coweta, Muskogee, Tahlequah, Stillwell, Sallisaw, Wilburton, and Poteau. Minor cities of note include Kellyville, Haskell, Checotah, Warner, Gore, Roland, Heavener, and Spiro.

The basin is subdivided into five 8-digit hydrologic units (HUC) within the state. These HUC's are the Polecat–Snake (11110101), the Dirty–Greenleaf (11110102), the Illinois (11110103), the Robert S. Kerr Reservoir (11110104), and the Poteau (11110105). The major surface water in the basin is the lower Arkansas River (McClellan-Kerr Navigational System). Major tributaries include the Illinois River, the Poteau River, Polecat Creek, Bayou Manard, Greenleaf Creek, Sager Creek, Flint Creek, Barren Fork, Caney Creek, Dirty Creek, Sallisaw Creek, Big Skin Bayou, Lee Creek, Cache Creek, San Bois Creek, Brazil Creek, Fourche-Maline Creek, Caston Creek, Black Fork, and James Fork. Five major lakes are located in the basin—Heyburn Lake formed by Polecat Creek, Webbers Falls Reservoir formed by the Arkansas River and Greenleaf Creek, Tenkiller Ferry Lake formed by the Illinois River and Caney Creek, Robert S. Kerr Reservoir formed by the Arkansas River and several tributaries, and Wister Lake formed by the Poteau River and Fourche-Maline Creek. Sixteen active permanent monitoring stations are located in the basin. One inactive water quality-monitoring station (Arkansas River, US 69, Muskogee) is located in the sub-basin. This station was last assessed in the 2000 BUMP Report.

The basin is characterized by five ecoregions. The Central Irregular Plains begins in eastern Okmulgee County, covers the majority of Muskogee County, and continues through parts of McIntosh, Delaware, Sequoyah and eastern Cherokee Counties. The Ozark Highlands begins in Delaware County, continuing through the northern one-half ($\frac{1}{2}$) of Adair County, and is also in northern Cherokee County. The Boston Mountains begin in eastern Cherokee County, continue through the southern one-half ($\frac{1}{2}$) of Adair County, and end in northern Sequoyah County. The Arkansas Valley covers the southern three-quarters ($\frac{3}{4}$) of Sequoyah County, southeast Muskogee County, Haskell County, the northern one-half ($\frac{1}{2}$) of Latimer County, and the northern one-third of LeFlore County. The Ouachita Mountains cover the southern one-half ($\frac{1}{2}$) of Latimer County and the southern two-thirds of LeFlore County. The primary land uses in the sub-basin are forestland (post oak–blackjack oak, hickory–oak, bottomland hardwoods, and shortleaf pine) and pastureland (brushy and mixed). Forestland is prevalent throughout the sub-basin with concentrations in the central, northeast and southeast portions. Pastureland is prevalent in the northwest and central eastern portions. Rangeland (post – blackjack oak scrub and open grasslands) is the secondary land use. It is prevalent in the western portion of the sub-basin and is interspersed throughout the central and eastern portions. The tertiary land use is cropland in the northern portion of the sub-basin. Other land uses of note are farmsteads, major urban areas, wetlands, and confined animal feeding operations.

STATION NAME	FWP	PBCR	PPWS	AG	AES
ARKANSAS RIVER, US 64, MOFFETT	S	NS (8)	S	NS(10)	NT
ARKANSAS RIVER, SH 104, HASKELL	S	S	N/A	S	NT
ARKANSAS RIVER, SH 97, SAND SPRINGS	NS (5)	S	N/A	S	NT
ARKANSAS RIVER, US 62, MUSKOGEE	S	NS (8)	N/A	NS (10, 11)	NT
ARKANSAS RIVER, US 64, BIXBY	NS (5)	N/A	N/A	S	NT
BARREN FORK, SH 51, ELDON	S	S	S	S	NS (14, 18)
CANEY CREEK, OFF SH 100, BARBER	S	S	S	S	S
FLINT CREEK, US 412, FLINT	S	NS (8)	S	S	NS (14)
FOURCHE-MALINE CREEK, OFF US 270, RED OAK	NS (1, 3)	NS (8)	S	S	S
ILLINOIS RIVER, US 59, WATTS	NS (5)	NS (8)	S	S	NS (14)
ILLINOIS RIVER, US 62, TAHLEQUAH	S	S	S	S	NS (14)
LEE CREEK, SH 101, SHORT	NS(3)	S	S	S	S
LITTLE LEE CREEK, SH 101, NICUT	NEI	NEI	NEI	S	NEI
POTEAU RIVER, OFF SH 112, POCOLA	NS (3, 5)	NS (8)	S	S	NT
POTEAU RIVER, US 59, HEAVENER	NS(3)	S	S	S	NT
SAGER CREEK, OFF US 412, WEST SILOAM SPRINGS	S	NS (8)	NS (15)	S	T (13, 15)
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)	
NT—NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— <i>ESCHERICHIA COLI</i>		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLL-A (TSI)		18—SEDIMENTATION	

Arkansas River at Moffett



Sample Record	Times Visited	Station ID
November 1998 - Current	79	220200010010-001AT

Stream Data	County	Sequoyah	View Site Data
	Location	East of the Town of Moffett on State Highway 64	
	Latitude/Longitude	35.39242903, -94.43267795	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110104)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	51	19.45	19.99	5.42/30.93
	Turbidity (NTU)		54	38.20	21.50	7/194	15/45.3	
	pH (units)		51	7.88	7.85	6.87/8.79	7.71/8.1	
	Dissolved Oxygen (ppm)		51	8.83	8.75	5.35/13.58	7.26/10.08	
	Hardness (ppm)		51	174.70	150.00	39/658	125/190	
Minerals		Total Dissolved Solids (ppm)	54	396.20	368.00	127/833.1	294/477.7	16.3% of values > OWQS of 620
		Specific Conductivity (uS/cm)	50	631.60	604.00	195/1333	476.9/746.5	
		Chloride (ppm)	55	110.80	105.00	13.4/293	66/144	
		Sulfate (ppm)	55	58.10	54.60	22.3/116	41.8/73.5	
Nutrients		Total Phosphorus (ppm)	55	0.13	0.11	0.054/0.33	0.095/0.139	
		Total Nitrogen (ppm)	54	0.94	0.82	0.45/2.82	0.628/1.128	
		Nitrate/Nitrite (ppm)	55	0.32	0.26	<0.050/1.145	0.11/0.49	
		Chlorophyll A (mg/m ³)	13	9.90	8.00	<0.10/34.7	5.05/12.35	TSI=54.4
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	18	1270.10	<10.0	<10.0/12000	<10.0/55.8	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	18	185.40	<10.0	<10.0/2035	<10.0/32.8	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	S						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	NS				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Arkansas River at Haskell



Sample Record	Times Visited	Station ID
November 1998 - Current	165	120410010080-001AT

Stream Data	County	Muskogee	View Site Data
	Location	East of the Town of Haskell on State Highway 104	
	Latitude/Longitude	35.82095549, -95.63995264	
	Planning Watershed	Middle Arkansas (8-digit HUC - 11110101)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	114	17.3	17.6	2.5/32.6
	Turbidity (NTU)		114	50	23	4/944	12/52	
	pH (units)		113	8.11	8.05	7.15/9.16	7.83/8.37	
	Dissolved Oxygen (ppm)		113	9.73	9.75	4.51/16.94	8.30/11.02	
	Hardness (ppm)		114	237.3	233.0	140.0/490.0	189.8/280.3	
Minerals		Total Dissolved Solids (ppm)	117	929.7	832.0	209.0/2233.0	666.1/1158.0	
		Specific Conductivity (uS/cm)	112	1502.8	1379.0	411.0/3436.0	1068.0/1814.8	
		Chloride (ppm)	116	315.1	266.5	25.7/815.0	217.3/393.5	
		Sulfate (ppm)	116	109.8	110.0	27.4/205.0	81.4/126.0	
Nutrients		Total Phosphorus (ppm)	117	0.208	0.182	0.073/0.810	0.152/0.232	
		Total Nitrogen (ppm)	118	1.263	1.250	0.100/3.180	0.980/1.578	
		Nitrate/Nitrite (ppm)	112	0.558	0.625	<0.050/1.350	0.210/0.815	
		Chlorophyll A (mg/m ³)	24	9.9	7.7	1.3/140.0	4.5/27.3	TSI=60.4
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	27	135.78	20.00	10/158	10/1401	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	27	91.22	10.00	10/52	10/1515	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	S						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									S			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Arkansas River at Sand Springs



Sample Record	Times Visited	Station ID
September 1999 - Current	155	120420010130-001AT

Stream Data	County	Tulsa	View Site Data
	Location	South of the Town of Sand Springs on State Highway 97	
	Latitude/Longitude	36.12393866, -96.11578343	
	Planning Watershed	Middle Arkansas (8-digit HUC - 11110101)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	102	17.3	19.1	0.5/33.0	9.3/24.6	
		Turbidity (NTU)	103	32	15	3/735	8/30	14.3% of values > OWQS of 50
		pH (units)	101	7.87	7.87	7.16/8.63	7.69/8.03	
		Dissolved Oxygen (ppm)	102	8.92	9.00	2.84/15.85	6.98/10.51	
		Hardness (ppm)	104	242.9	237.5	59.0/412.0	196.3/287.5	
		Minerals	Total Dissolved Solids (ppm)	108	1006.4	959.5	115.0/2651.0	706.8/1227.8
Specific Conductivity (uS/cm)	102		1645.8	1563.5	179.0/4080.0	1127.5/1995.3		
Chloride (ppm)	104		367.0	309.0	91.3/1100.0	238.3/468.3		
Sulfate (ppm)	105		114.7	112.0	29.2/228.0	84.6/136.5		
Nutrients	Total Phosphorus (ppm)	105	0.138	0.140	0.016/0.281	0.109/0.164		
	Total Nitrogen (ppm)	106	1.081	1.090	<0.100/2.200	0.718/1.398		
	Nitrate/Nitrite (ppm)	101	0.532	0.540	<0.050/1.360	0.243/0.773		
	Chlorophyll A (mg/m ³)	26	9.3	4.3	0.7/18.7	2.8/6.7	TSI=46.5	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	25	67.40	20.00	<10.0/400	<10.0/87		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	25	28.20	20.00	<10.0/119	<10.0/36		

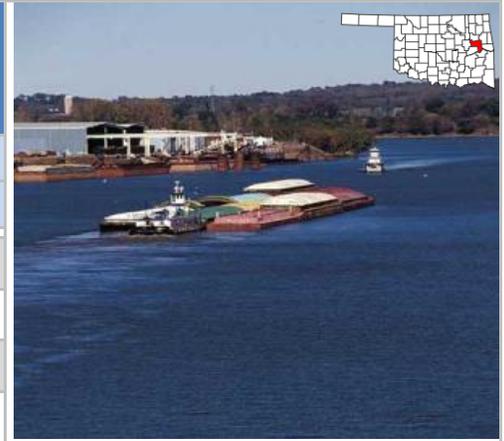
Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													S
Agriculture						S		S	S				
Secondary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Thallium
 Fish and Wildlife Propagation not supporting for Cadmium

Arkansas River at Muskogee



Sample Record	Times Visited	Station ID
November 1998 - Current	145	121400010260-001AT

Stream Data	County	Muskogee	View Site Data
	Location	East of the Town of Muskogee on State Highway 62	
	Latitude/Longitude	35.77016066, -95.30031102	
	Planning Watershed	Middle Arkansas (8-digit HUC - 11110102)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	100	17.7	17.4	3.5/32.4
	Turbidity (NTU)		101	46	25	6/387	17/46	
	pH (units)		98	8.05	8.02	7.22/9.48	7.74/8.32	
	Dissolved Oxygen (ppm)		100	8.71	8.53	4.20/13.88	7.13/10.44	
	Hardness (ppm)		98	192.1	175.0	92.0/418.0	145.4/222.5	
Minerals			Total Dissolved Solids (ppm)	105	578.2	486.0	160.7/1759.0	307.5/703.5
		Specific Conductivity (uS/cm)	100	966.4	861.7	231.1/2746.0	481.7/1255.5	
		Chloride (ppm)	89	179.1	154.0	11.3/713.0	84.2/219.0	40.0% of Values > OWQS of 135
		Sulfate (ppm)	90	79.3	74.0	28.5/202.0	45.9/104.0	
Nutrients		Total Phosphorus (ppm)	103	0.167	0.144	0.053/0.705	0.116/0.178	
		Total Nitrogen (ppm)	103	1.139	1.080	<0.100/3.875	0.890/1.340	
		Nitrate/Nitrite (ppm)	99	0.464	0.465	<0.050/1.210	0.220/0.660	
		Chlorophyll A (mg/m ³)	25	10.8	13.7	0.1/90.0	8.3/25.4	TSI=60.3
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	18	5815.56	50.00	10/75000	10/200	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	18	608.28	31.00	10/5492	10/74	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	S						S	S	S
	Aesthetics												S
	Agriculture					S		NS	NS				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Arkansas River at Bixby



Sample Record	Times Visited	Station ID
November 1998 - Current	195	120420010010-001AT

Stream Data	County	Tulsa	View Site Data
	Location	North of the Town of Bixby on State Highway 64	
	Latitude/Longitude	35.95585307, -95.88622562	
	Planning Watershed	Middle Arkansas (8-digit HUC - 11110101)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	128	17.0	18.2	1.6/34.1
	Turbidity (NTU)		129	42	19	4/638	11/37	18.5% of values > OWQS of 50
	pH (units)		125	8.02	8.01	7.15/9.15	7.75/8.27	
	Dissolved Oxygen (ppm)		128	9.77	9.35	3.90/23.03	7.33/11.44	
	Hardness (ppm)		129	241.0	239.0	85.0/442.0	195.5/283.5	
Minerals		Total Dissolved Solids (ppm)	134	937.2	914.0	59.0/2096.0	661.5/1190.8	
		Specific Conductivity (uS/cm)	128	1520.3	1464.0	92.2/3275.0	1036.3/1886.5	
		Chloride (ppm)	119	323.3	274.0	66.2/863.0	220.0/392.0	
		Sulfate (ppm)	119	124.5	113.0	28.9/1580.0	86.9/132.0	
Nutrients		Total Phosphorus (ppm)	133	0.230	0.192	0.064/2.532	0.156/0.235	
		Total Nitrogen (ppm)	133	1.342	1.300	0.120/3.560	1.058/1.625	
		Nitrate/Nitrite (ppm)	128	0.676	0.633	<0.050/2.350	0.401/0.916	
		Chlorophyll A (mg/m ³)	27	8.8	8.5	0.9/167.0	5.1/14.5	TSI=59.1
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	357.54	109.00	33.5/310.5	10/4000	
		E. Coli (cfu/100ml)(* -Geo. Mn.)	28	127.21	46.00	12.5/164.8	10/836	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Secondary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Barren Fork at Eldon



Sample Record	Times Visited	Station ID
November 1998 - Current	222	121700050010-001AT

Stream Data	County	Cherokee	View Site Data
	Location	South of the Town of Eldon on State Highway 51	
	Latitude/Longitude	35.92173377, -94.83726494	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110103)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	107	17.4	17.9	6.1/28.6
	Turbidity (NTU)		106	4	3	1/40	2/3	
	pH (units)		106	7.59	7.54	6.37/8.82	7.34/7.87	
	Dissolved Oxygen (ppm)		107	9.36	9.55	4.40/13.93	7.74/10.98	
	Hardness (ppm)		108	97.3	95.5	46.0/159.0	88.0/104.0	
Minerals		Total Dissolved Solids (ppm)	110	124.3	121.0	12.9/545.0	106.2/134.5	
		Specific Conductivity (uS/cm)	107	194.9	191.2	20.2/713.0	168.0/212.0	
		Chloride (ppm)	99	10.3	<10.0	<10.0/43.7	<10.0/<10.0	
		Sulfate (ppm)	99	11.1	<10.0	<10.0/40.0	<10.0/<10.0	
Nutrients		Total Phosphorus (ppm)	113	0.035	0.028	<0.005/0.217	0.023/0.035	See Notes
		Total Nitrogen (ppm)	115	1.372	1.295	<0.050/3.950	0.790/1.815	
		Nitrate/Nitrite (ppm)	116	1.205	1.193	<0.050/3.83	0.625/1.625	
		Chlorophyll A (mg/m ³)	46	11.6	1.1	0.1/11.7	0.6/1.7	TSI=36.3
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	65	211.70	20.00	<10.0/3900	<10.0/87	
		E. Coli (cfu/100ml)(* -Geo. Mn.)	65	50.90	20.00	<10.0/389	<10.0/52	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	Total Phosphorus
	Fish & Wildlife Propagation		S	S	S	S						S	S	S
Aesthetics													NS	NS
Agriculture						S		S	S					
Primary Body Contact Recreation										S				
Public & Private Water Supply					S		S			S				
Fish Consumption					S									
<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes 40.0%(22 of 55) of 3-month rolling Geo. Mean exceed OWQS criterion of 0.037 ppm												

Caney Creek at Barber



Sample Record		Times Visited	Station ID
September 1999 - Current		202	121700040010-001AT

Stream Data	County	Cherokee	View Site Data
	Location	North of the Town of Barber off State Highway 100	
	Latitude/Longitude	35.72381643, -94.85787184	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110103)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	99	18.1	17.6	4.1/29.3	13.0/23.3
Turbidity (NTU)	98		4	2	1/103	1/3		
pH (units)	97		7.77	7.76	6.46/9.06	7.56/8.02		
Dissolved Oxygen (mg/L)	99		9.66	9.42	3.94/15.6	8.29/11.12		
Hardness (mg/L)	99		109.5	109.0	64.0/174.0	98.0/120.0		
Minerals	Total Dissolved Solids (mg/L)	102	140.7	139.8	78.4/254.0	128.0/155.9		
	Specific Conductivity (uS/cm)	99	219.0	218.1	122.6/391.0	200.0/243.0		
	Chloride (mg/L)	90	10.3	<10.0	<10.0/36.8	<10.0/<10.0		
	Sulfate (mg/L)	90	10.5	<10.0	<10.0/32.5	<10.0/<10.0		
Nutrients	Total Phosphorus (mg/L)	105	0.060	0.037	<0.005/1.532	0.030/0.047		
	Total Nitrogen (mg/L)	107	1.091	1.015	<0.050/7.035	0.640/1.360		
	Nitrate/Nitrite (mg/L)	108	0.920	0.858	<0.050/6.655	0.490/1.135		
	Chlorophyll A (mg/m ³)	46	13.0	0.8	0.1/12.1	0.5/1.2	TSI=34.03	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	46	94.3	20.0	<10.0/1408	<10.0/52		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	46	123.9	15.0	<10.0/2382	<10.0/41		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chloride	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	S						S	S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					S								
S = Fully Supporting NS = Not Supporting NEI = Not Enough Information		Notes											

Flint Creek at Flint



Sample Record	Times Visited	Station ID
November 1998 - Current	217	121700060010-001AT

Stream Data	County	Delaware	View Site Data
	Location	North of the Town of Flint on county road	
	Latitude/Longitude	36.1867733, -94.70680493	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110103)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	107	17.0	16.4	5.3/28.7	11.2/22.4
Turbidity (NTU)	106		3	1	1/58	1/2		
pH (units)	106		7.64	7.64	6.44/8.79	7.37/7.88		
Dissolved Oxygen (mg/L)	107		9.27	9.10	4.97/14.94	7.81/10.60		
Hardness (mg/L)	108		112.3	113.0	10.0/218.0	101.0/123.0		
Minerals	Total Dissolved Solids (mg/L)		109	187.6	188.0	97.5/552.0	158.0/211.0	
	Specific Conductivity (uS/cm)	105	288.5	290.0	152.3/452.2	248.7/320.0		
	Chloride (mg/L)	100	15.2	13.7	<10.0/43.3	<10.0/18.0		
	Sulfate (mg/L)	100	17.5	15.1	<10.0/69.0	11.4/19.9		
Nutrients	Total Phosphorus (mg/L)	114	0.213	0.166	0.074/1.450	0.143/0.200	See Notes	
	Total Nitrogen (mg/L)	116	3.006	2.935	<0.050/7.92 5	2.410/3.705		
	Nitrate/Nitrite (mg/L)	117	2.768	2.695	<0.050/7.52 5	2.250/3.403		
	Chlorophyll A (mg/m ³)	46	11.2	0.7	0.1/4.2	0.5/1.2	TSI=29.9	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	56	596.9	60.0	<10.0/18000	20/139.5	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	56	177.1	30.5	<10.0/4611	12.5/74		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	Total Phosphorus
	Fish & Wildlife Propagation	S	S	S	S						S	S	S	
	Aesthetics												S	NS
	Agriculture					S		S	S					
	Primary Body Contact Recreation									NS				
	Public & Private Water Supply				S					S				
	Fish Consumption				S									

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 NEI = Not Enough Information

Notes

100%(54 of 54) of rolling Geo. Mean exceed OWQS criterion of 0.037 ppm

Fourche-Maline Creek at Red Oak



Sample Record	Times Visited	Station ID
November 1998 - Current	149	220100040020-001AT

Stream Data	County	Latimer	View Site Data
	Location	S.E. of the Town of Red Oak off US Highway 270	
	Latitude/Longitude	34.91232472, -95.15608416	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110105)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	119	17.3	18.4	1.0/31.6	10.0/24.1	
		Turbidity (NTU)	119	39	28	5/390	16/43	
		pH (units)	119	7.11	7.02	5.77/8.70	6.81/7.47	
		Dissolved Oxygen (mg/L)	118	6.08	6.09	0.84/15.69	3.04/8.58	23.29% of values < OWQS of 5.00
		Hardness (mg/L)	119	51.5	46.0	10.0/212.0	32.0/62.0	
		Total Dissolved Solids (mg/L)	119	98.8	92.0	7.0/307.0	68.0/124.0	
Minerals	Specific Conductivity (uS/cm)	118	153.5	131.0	11.0/760.0	94.8/195.0		
	Chloride (mg/L)	100	10.8	<10.0	<10.0/22.3	<10.0/<10.0		
	Sulfate (mg/L)	101	21.6	21.2	<10.0/48.5	15.5/25.1		
	Total Phosphorus (mg/L)	118	0.087	0.071	<0.005/0.867	0.048/0.096		
Nutrients	Total Nitrogen (mg/L)	119	0.742	0.690	<0.050/3.460	0.500/0.920		
	Nitrate/Nitrite (mg/L)	117	0.135	0.115	<0.050/0.560	<0.050/0.195		
	Chlorophyll A (mg/m ³)	2	10.0	0.7	0.7/0.7	NEI		
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	24	537.2	97.5	<10.0/8000	45.8/242	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	24	168.3	79.5	<10.0/1396	20/147.5		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	S	S	NS	NS							S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								
<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes <i>Fish and Wildlife Propagation not supporting for Lead</i> <i>Fish Consumption not supporting for Lead</i>											

Illinois River at Watts



Sample Record	Times Visited	Station ID
November 1998 - Current	215	121700030350-001AT

Stream Data	County	Adair	View Site Data
	Location	North of the Town of Watts on US Highway 59	
	Latitude/Longitude	36.12994064, -94.57151225	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110103)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	108	17.3	16.6	4.3/31.5
	Turbidity (NTU)		108	11	7	2/78	4/13	11.5% of values > OWQS of 10
	pH (units)		107	7.88	7.91	6.51/9.03	7.67/8.10	
	Dissolved Oxygen (mg/L)		108	10.38	9.89	4.51/18.88	8.56/11.76	
	Hardness (mg/L)		109	124.9	126.0	10.0/215.0	113.0/136.0	
Minerals		Total Dissolved Solids (mg/L)	111	192.7	195.0	95.4/566.0	168.0/212.0	
		Specific Conductivity (uS/cm)	108	301.4	306.1	149.1/713.0	267.5/331.0	
		Chloride (mg/L)	99	14.1	12.6	<10.0/28.3	<10.3/16.8	
		Sulfate (mg/L)	99	16.2	14.1	<10.0/96.8	11.7/17.9	
Nutrients		Total Phosphorus (mg/L)	113	0.168	0.122	0.008/1.153	0.072/0.227	See Notes
		Total Nitrogen (mg/L)	115	2.344	2.390	<0.050/5.035	1.900/2.830	
		Nitrate/Nitrite (mg/L)	116	2.012	2.028	<0.050/4.615	1.556/2.498	
		Chlorophyll A (mg/m ³)	46	11.0	2.4	0.1/13.0	1.4/3.4	TSI=39.8
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	56	603.4	20.0	<10.0/15531	<10.0/106	Mean > OWQS of 31
		E. Coli (cfu/100ml)(* -Geo. Mn.)	56	380.7	20.0	<10.0/12997	<10.0/63	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	Total Phosphorus
		Fish & Wildlife Propagation	NS	S	S	S						S	S	S
Aesthetics													S	NS
Agriculture						S		S	S					
Primary Body Contact Recreation										NS				
Public & Private Water Supply					S					S				
Fish Consumption					S									

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

100%(53 of 53) of rolling Geo. Mean exceed OWQS criterion of 0.037 ppm

Illinois River at Tahlequah



Sample Record		Times Visited	Station ID
November 1998 - Current		212	121700030010-001AT
Stream Data	County	Cherokee	View Site Data
	Location	East of the town of Tahlequah on US Highway 62	
	Latitude/Longitude	35.92606447, -94.92380373	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110103)	

Parameters	In-Situ	Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		Water Temperature (°C)	108	17.7	17.5	5.0/31.7	11.1/23.9	
	Turbidity (NTU)	108	7	4	1/84	3/7		
	pH (units)	106	7.85	7.80	6.47/9.29	7.56/8.10		
	Dissolved Oxygen (mg/L)	108	9.77	9.87	4.66/15.88	7.61/11.68		
	Hardness (mg/L)	108	112.4	112.0	69.4/161.0	104.0/119.0		
	Minerals	Total Dissolved Solids (mg/L)	111	167.0	167.0	42.0/565.0	140.0/185.0	
		Specific Conductivity (uS/cm)	107	256.9	264.0	66.0/441.0	235.0/288.1	
		Chloride (mg/L)	100	12.1	10.3	<10.0/23.5	<10.0/13.5	
		Sulfate (mg/L)	100	14.1	12.5	<10.0/47.9	10.7/14.8	
	Nutrients	Total Phosphorus (mg/L)	115	0.090	0.080	<0.005/0.438	0.055/0.121	See Notes
		Total Nitrogen (mg/L)	117	1.638	1.560	<0.050/4.320	0.960/2.240	
		Nitrate/Nitrite (mg/L)	118	1.399	1.410	<0.050/3.610	0.823/1.891	
		Chlorophyll A (mg/m ³)	46	11.1	2.1	0.2/14.2	1.4/3.1	TSI=42.1
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	55	164.1	20.0	<10.0/2500	<10.0/100	
		E. Coli (cfu/100ml)(* -Geo. Mn.)	55	64.9	<10.0	<10.0/884	<10.0/41	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	Total Phosphorus
	Fish & Wildlife Propagation	S	S	S	S						S	S	S	
	Aesthetics												S	NS
	Agriculture					S		S	S					
	Primary Body Contact Recreation									S				
	Public & Private Water Supply				S									
	Fish Consumption				S									
	<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes 93.0%(50 of 54) of 3-month rolling Geo. Mean above OWQS Criterion of 0.037 ppm											

Lee Creek at Short



Sample Record	Times Visited	Station ID
January 2003 - Present	207	220200050010-001AT

Stream Data	County	Sequoyah	View Site Data
	Location	West of the town of Short on State Highway 101	
	Latitude/Longitude	35.56589868, -94.53152717	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110104)	

	Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	103	17.0	16.0	0.2/32.3	10.2/24.2	
		Turbidity (NTU)	101	8.07	5.00	1/93	4/8	
		pH (units)	103	7.53	7.56	6.31/8.48	7.26/7.80	
		Dissolved Oxygen (mg/L)	103	9.23	9.04	5.23/13.94	7.37/11.08	
		Hardness (mg/L)	102	47.15	43.0	21.0/130.0	35.0/54.0	
	Minerals	Total Dissolved Solids (mg/L)	103	58.45	57.0	4.0/173.0	42.9/67.0	
		Specific Conductivity (uS/cm)	103	91.14	90.0	6.3/266.0	68.0/105.0	
		Chloride (mg/L)	73	<10.0	<10.0	<10.0/<10.0	<10.0/<10.0	
		Sulfate (mg/L)	73	10.9	<10.0	<10.0/49.0	<10.0/<10.0	
	Nutrients	Total Phosphorus (mg/L)	103	0.010	0.010	<0.005/0.149	0.007/0.015	See Notes
Total Nitrogen (mg/L)		109	0.310	0.220	<0.050/2.240	0.150/0.350		
Nitrate/Nitrite (mg/L)		106	0.140	<0.050	<0.050/1.620	<0.050/0.180		
Chlorophyll A (mg/m ³)		60	3.3	0.9	<0.1/92.0	0.4/1.6	TSI=41.5	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	43	471.9	<10.0	<10.0/7100	<10.0/62		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	43	125.3	<10.0	<10.0/2359	<10.0/52		

Beneficial Uses	Click to learn more about Beneficial Uses													
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	Total Phosphorus	
Fish & Wildlife Propagation	S	S	S	NS						S	S	S		
Aesthetics												S	S	
Agriculture					S		S	S						
Primary Body Contact Recreation									S					
Public & Private Water Supply				S										
Fish Consumption				S										

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

0.0%(0 of 52) of 3-month rolling Geo. Mean exceed OWQS of 0.037 ppm
 Fish & Wildlife Propagation not supporting for Lead

Little Lee Creek at Nicut



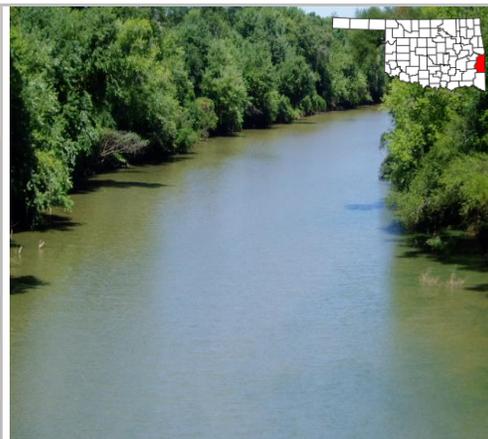
Sample Record	Times Visited	Station ID
February 2008 - Current	93	220200050040-001AT

Stream Data	County	Sequoyah	View Site Data
	Location	West of the town of Short on State Highway 101	
	Latitude/Longitude	35.58, -94.56	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110104)	

		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	59	16.3	15.8	0.3/31.4
	Turbidity (NTU)		59	11	4	1/168	2/5	
	pH (units)		59	7.51	7.53	6.3/8.35	7.33/7.80	
	Dissolved Oxygen (mg/L)		59	9.66	9.59	5.01/13.8	8.17/11.60	
	Hardness (mg/L)		59	64.6	63.0	36.0/140.0	53.0/72.0	
Minerals		Total Dissolved Solids (mg/L)	58	88.6	82.0	50.0/204.0	72.8/98.3	
		Specific Conductivity (uS/cm)	59	139.2	129.0	81.0/314.0	113.0/154.0	
		Chloride (mg/L)	28	<10.0	<10.0	<10.0/<10.0	<10.0/<10.0	
		Sulfate (mg/L)	28	10.3	<10.0	<10.0/15.4	<10.0/<10.0	
Nutrients		Total Phosphorus (mg/L)	57	0.020	0.006	<0.005/0.259	<0.005/0.010	
		Total Nitrogen (mg/L)	63	0.314	0.190	<0.050/1.490	0.150/0.370	
		Nitrate/Nitrite (mg/L)	56	0.174	0.055	<0.050/1.490	<0.050/0.160	
		Chlorophyll A (mg/m ³)	23	9.1	0.6	0.1/4.4	0.3/1.1	TSI=26.0
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	5	113.8	<10.0	<10.0/529	<10.0/269.5	
		E. Coli (cfu/100ml)(* -Geo. Mn.)	5	1324.2	40.0	<10.0/6488	<10.0/3280.5	

	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	Total Phosphorus
		Fish & Wildlife Propagation		S	S	S	NEI						S	S
Aesthetics													S	NEI
Agriculture						S		S	S					
Primary Body Contact Recreation										NEI				
Public & Private Water Supply					NEI					NEI				
Fish Consumption					NEI									
<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes												

Poteau River at Pocola



Sample Record	Times Visited	Station ID
November 1998 - Current	200	220100010010-001AT

Stream Data	County	LeFlore	View Site Data
	Location	West of the Town of Pocola on County Road E 1220	
	Latitude/Longitude	35.23864842, -94.52021262	
	Planning Watershed	Lower Arkansas (8-digit HUC -11110105)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	131	18.0	18.0	1.5/34.6	10.8/25.9	
		Turbidity (NTU)	132	80	61	12/476	35/92	42.9% of values >OWQS of 50
		pH (units)	130	7.19	7.20	4.86/8.99	6.86/7.60	
		Dissolved Oxygen (mg/L)	131	7.76	7.37	3.31/15.94	5.76/9.59	
		Hardness (mg/L)	133	50.8	43.0	7.5/414.0	30.3/58.8	
		Minerals	Total Dissolved Solids (mg/L)	132	85.8	71.0	0.1/345.0	42.8/121.5
Specific Conductivity (uS/cm)	129		129.4	103.0	0.1/530.0	63.0/176.9		
Chloride (mg/L)	81		11.2	<10.0	<10.0/33.2	<10.0/<10.0		
Sulfate (mg/L)	81		36.8	34.1	<10.0/87.7	24.4/45.9		
Nutrients	Total Phosphorus (mg/L)	136	0.155	0.122	0.017/1.01	0.091/0.181		
	Total Nitrogen (mg/L)	136	1.022	0.880	<0.050/6.450	0.670/1.151		
	Nitrate/Nitrite (mg/L)	138	0.396	0.210	<0.050/4.960	0.084/0.419		
	Chlorophyll A (mg/m ³)	23	10.8	10.3	4.2/77.3	6.2/25.8	TSI=59.6	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	45	1194.7	31.0	<10.0/46000	<10.0/90	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	45	185.4	31.0	<10.0/3873	<10.0/79		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	NS						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Lead
 Fish and Wildlife Propagation not supporting for Lead

Poteau River at Heavener



Sample Record	Times Visited	Station ID
November 1998 - Current	158	220100020010-001AT

Stream Data	County	LeFlore	View Site Data
	Location	South of the Town of Heavener on State Highway 59	
	Latitude/Longitude	34.85833476, -94.62923436	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110105)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	118	19.0	19.2	1.8/34.9	12.1/25.8	
	Turbidity (NTU)	117	23	16	3/152	10/24	
	pH (units)	118	7.27	7.25	5.96/8.97	6.92/7.63	
	Dissolved Oxygen (mg/L)	118	8.19	7.80	3.77/16.00	6.58/9.79	
	Hardness (mg/L)	118	48.0	35.0	10.0/188.0	21.4/62.3	
	Total Dissolved Solids (mg/L)	119	88.3	67.0	0.1/311.0	41.0/117.0	
Minerals	Specific Conductivity (uS/cm)	118	135.7	102.2	0.1/486.0	56.8/180.0	
	Chloride (mg/L)	77	11.8	<10.0	<10.0/105.0	<10.0/<10.0	
	Sulfate (mg/L)	78	35.5	21.4	10.2/146.0	15.8/40.7	
	Total Phosphorus (mg/L)	114	0.075	0.054	0.008/0.430	0.038/0.087	
Nutrients	Total Nitrogen (mg/L)	115	0.764	0.605	<0.050/5.870	0.450/0.780	
	Nitrate/Nitrite (mg/L)	116	0.255	0.163	<0.050/4.230	<0.050/0.285	
	Chlorophyll A (mg/m ³)	16	12.1	3.2	0.1/29.7	0.9/11.8	TSI=48.9
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	64.5	20.0	<10.0/400	<10.0/80	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	28	58.4	31.0	<10.0/393	12.5/51.8	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	S	S	S	NS						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Lead
 Fish and Wildlife Propagation not supporting for Lead

Sager Creek at West Siloam Springs



Sample Record	Times Visited	Station ID
November 1998 - Current	218	121700060080-001AT

Stream Data	County	Delaware	View Site Data
	Location	West of the town of West Siloam Springs off US Highway 412	
	Latitude/Longitude	36.20164298, -94.60538182	
	Planning Watershed	Lower Arkansas (8-digit HUC - 11110103)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	107	17.4	17.2	5.9/29.2	12.0/22.1
Turbidity (NTU)	106		3	1	1/55	1/2		
pH (units)	106		7.70	7.71	6.59/8.65	7.45/7.95		
Dissolved Oxygen (mg/L)	107		9.07	8.72	4.66/15.35	8.04/10.19		
Hardness (mg/L)	107		131.8	134.0	10.0/198.0	120.0/146.0		
Total Dissolved Solids (mg/L)	110		272.8	271.0	118.0/657.0	222.0/317.3		
Minerals	Specific Conductivity (uS/cm)	107	425.1	427.0	164.0/713.0	355.0/496.0		
	Chloride (mg/L)	100	36.4	34.0	<10.0/95.1	23.0/47.2		
	Sulfate (mg/L)	100	24.7	21.3	<10.0/63.7	15.6/29.5		
	Total Phosphorus (mg/L)	114	1.117	1.040	0.012/3.965	0.644/1.501		
Nutrients	Total Nitrogen (mg/L)	116	7.066	7.163	<0.050/17.550	4.599/8.961		
	Nitrate/Nitrite (mg/L)	117	6.634	6.300	<0.050/17.500	4.113/8.585	100% of values > OWQS of 2.4	
	Chlorophyll A (mg/m ³)	47	12.0	0.9	0.1/8.3	0.4/2.4	TSI=35.2	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	56	512.3	109.0	<10.0/9700	33.5/475	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		56	217.9	31.0	<10.0/4360	<10.0/98		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	S						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		NS			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

HUC 1112

North Fork of the Red Sub-basin

The North Fork of the Red sub-basin (4-digit hydrologic unit 1112) is situated in the southwestern tip of the state. It originates in the western portions of Roger Mills, Beckham and Harmon Counties, continues eastward through portions of Greer, Washita, Kiowa, Jackson, and Tillman Counties and terminates in the northeastern tip of Comanche County. Major cities and County seats located within the basin include Elk City, Sayre, Mangum, Altus, and Hobart. Minor cities of note include Granite, Lone Wolf, Duke, Headrick, and Snyder.

The basin is subdivided into five 8-digit hydrologic units (HUC) within the state. These HUC's are the Lower Prairie Dog Town Fork of the Red (11120105), the Lower Salt Fork of the Red (11120202), the Middle North Fork of the Red (11120302), Lower North Fork of the Red (11120303), and Elm Fork of the Red (11120304). The major surface water in the sub-basin is the North Fork of the Red River. Major tributaries include the Elm Fork of the Red River, the Salt Fork of the Red River, Elk Creek, Turkey Creek, and Otter Creek. Two major lakes are located in the basin—Altus Reservoir formed by the North Fork of the Red River and Tom Steed Reservoir formed by Otter Creek. Seven permanent water quality-monitoring stations are located in the basin.

The sub-basin is characterized by two ecoregions. The Central Great Plains are the primary ecoregion covering all but a small portion of the sub-basin. The Southwestern Tablelands cover a small portion of the east central portion in Beckham, Greer, and Harmon Counties. The primary land usage in the sub-basin is cropland. It dominates the central south and central east portions of the sub-basin and is interspersed throughout the remainder of the sub-basin. The secondary land use is rangeland (open grassland and mesquite) that dominates the southern part of Beckham County and is prevalent in other southern portions of the sub-basin. It is interspersed throughout the remainder of the sub-basin. The tertiary land use is pastureland, which is dominant in northeastern Greer County and is sparsely interspersed throughout the remainder of the sub-basin. Other land uses of note are woodlands, bottom woodlands, farmsteads, major urban areas, and confined animal feeding operations.

STATION NAME	FWP	PBCR	PPWS	AG	AES
ELK CREEK, OFF US 183, ROOSEVELT	NS (3, 5)	NS (8)	S	S	NT
ELM FORK RIVER, SH 30, CARL	NS(9)	NEI	NEI	NS(11)	NEI
ELM FORK RIVER, SH 9, GRANITE	NS(3)	NS (7, 8)	S	NS(11)	S
NORTH FORK OF THE RED RIVER, US 62, HEADRICK	NS (3, 5)	NS (8)	S	NS (10, 11, 12)	T (17)
NORTH FORK OF THE RED RIVER, SH 34, CARTER	NS(5)	NS (8)	S	S	NT
SALT FORK OF THE RED RIVER, SH 34, MANGUM	S	NS (8)	S	S	NT
SALT FORK OF THE RED RIVER, OFF US 283, ELMER	NS (3)	NS (6, 8)	NS(9)	S	NT
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)	
NT—NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— <i>ESCHERICHIA COLI</i>		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLL-A (TSI)		18—SEDIMENTATION	

Elk Creek at Roosevelt



Sample Record	Times Visited	Station ID
March 2006 - Current	223	311500030010-002AT

Stream Data	County	Kiowa	View Site Data
	Location	West of the Town of Roosevelt off State Highway 19	
	Latitude/Longitude	34.91426897, -99.1137584	
	Planning Watershed	Southwest (8-digit HUC -11120303)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)		157	17.8	18.5	-0.7/33.0
Turbidity (NTU)			158	127	42	3/1000	21/77	28.1% of values > OWQS of 50
pH (units)			153	8.13	8.16	7.39/9.36	8.00/8.30	
Dissolved Oxygen (mg/L)			157	9.54	8.87	0.92/26.35	7.14/11.83	
Hardness (mg/L)			162	709.0	700.0	185.0/1980.0	483.8/896.0	
Total Dissolved Solids (mg/L)			172	1155.8	1105.0	200.0/10850.0	813.0/1396.5	
Minerals	Specific Conductivity (uS/cm)		157	1596.5	1640.0	321.0/2865.0	1205.5/2020.0	
	Chloride (mg/L)		171	124.5	117.0	16.9/428.0	85.1/159.0	
	Sulfate (mg/L)		171	470.7	479.0	67.2/1070.0	290.0/616.0	
	Total Phosphorus (mg/L)		130	0.180	0.119	0.015/1.934	0.079/0.190	
Nutrients	Total Nitrogen (mg/L)		132	1.449	1.238	0.200/6.970	0.921/1.666	
	Nitrate/Nitrite (mg/L)		128	0.420	0.218	<0.050/2.620	<0.050/0.665	
	Chlorophyll A (mg/m ³)		27	10.7	30.8	1.8/91.7	12.8/58.4	TSI=66.1
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)		27	1330.0	100.0	<10.0/24192	63/600	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)		27	591.0	52.0	<10.0/12997	20/185	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	NS						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish consumption not supporting for Thallium and Lead
 Fish & Wildlife Propagation not supporting for Selenium

Elm Fork of the Red River at Carl



Sample Record	Times Visited	Station ID
May 2006 - Current	97	31180000010-002RS

Stream Data	County	Harmon	View Site Data
	Location	North of the Town of Carl on State Highway 30	
	Latitude/Longitude	35.011719, -99.903717	
	Planning Watershed	Southwest (8-digit HUC -11120304)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	86	18.9	21.6	-0.9/34.7	10.0/27.8
Turbidity (NTU)	87		29.03	4.00	1/1000	3/8		
pH (units)	84		7.83	7.91	6.87/8.19	7.73/8.02		
Dissolved Oxygen (mg/L)	86		7.79	7.77	2.27/13.18	6.08/9.45		
Hardness (mg/L)	88		4053.88	3125.0	870/13670	2589/4349		
Minerals	Total Dissolved Solids (mg/L)	95	41704.08	24700.0	900/266000	16700/47200	11.3% of values>OWQS of 58087	
	Specific Conductivity (uS/cm)	86	55289.81	35688.5	1678/169119	26430/75144		
	Chloride (mg/L)	93	25931.49	13400.0	313/181000	7360/26000	95.8% of values>OWQS of 1356	
	Sulfate (mg/L)	92	4430.11	1875.0	138/231001	1543/2225	11.3% of values>OWQS of 2401	
Nutrients	Total Phosphorus (mg/L)	36	0.017	0.009	<0.005/0.110	<0.005/0.020		
	Total Nitrogen (mg/L)	41	1.312	1.160	0.200/3.450	0.920/1.585		
	Nitrate/Nitrite (mg/L)	33	0.339	0.190	<0.050/1.480	0.085/0.465		
	Chlorophyll A (mg/m ³)	2	2.50	2.50	2.3/2.7	NEI		
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)						No Data	
	E. Coli (cfu/100ml)(* -Geo. Mn.)						No data	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	NS						NEI	S
Aesthetics													NEI
Agriculture						S		NS	S				
Primary Body Contact Recreation										NEI			
Public & Private Water Supply					NEI		NEI			NEI			
Fish Consumption					NEI								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Public & Private Water Supply not supporting for Selenium
 Fish & Wildlife Propagation not supporting for Selenium

Elm Fork of the Red River at Granite



Sample Record	Times Visited	Station ID
June 2004 - Current	250	31180000010-002AT

Stream Data	County	Bryan	View Site Data
	Location	South of the city of Granite on State Highway 6	
	Latitude/Longitude	34.92637482, -99.50197667	
	Planning Watershed	Southwest (8-digit HUC - 11120304)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	169	18.1	20.2	-0.1/35.3	10.0/25.0
Turbidity (NTU)	174		95	13	1/1001	5/42		
pH (units)	166		7.82	7.86	6.92/8.43	7.68/8.00		
Dissolved Oxygen (mg/L)	169		8.92	8.73	2.24/16.20	7.46/10.46		
Hardness (mg/L)	173		2123.4	2125.0	0/7140.0	1693.5/2505.0		
Total Dissolved Solids (mg/L)	180		12732.9	12200.0	890/120300	7630/16390		
Minerals	Specific Conductivity (uS/cm)	169	20331.4	19152.0	1413/181518	12736/25765		
	Chloride (mg/L)	177	6111.2	5971.0	161/16200	3014/7995	90.85% of values>OWQS	
	Sulfate (mg/L)	176	1413.0	1456.5	126/2520	1280/1630		
	Total Phosphorus (mg/L)	129	0.112	0.034	<0.005/4.130	0.020/0.070		
Nutrients	Total Nitrogen (mg/L)	138	1.148	0.980	0.190/7.100	0.698/1.349		
	Nitrate/Nitrite (mg/L)	135	0.398	0.210	<0.050/2.205	<0.050/0.610		
	Chlorophyll A (mg/m ³)	45	10.0	4.0	0.5/45.6	1.8/7.4	TSI=48.6	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	30	571.2	164.0	<10.0/6000	86/498	Mean> OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		30	2180.7	1267.0	85/15531	639/2490.5	Mean> OWQS of 126	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		S	S	S	NS						NS	S
Aesthetics													S
Agriculture						S		NS	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish consumption not supporting for Thallium
 Fish & Wildlife Propagation not supporting for Selenium

North Fork of the Red River at Headrick



Sample Record	Times Visited	Station ID
November 1998 - Current	234	311500010020-001AT

Stream Data	County	Tillman	View Site Data
	Location	East of the Town of Headrick on US 62	
	Latitude/Longitude	34.6379245, -99.10311528	
	Planning Watershed	Southwest (8-digit HUC -11120303)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	153	19.6	20.7	-1.2/35.3	12.2/27.0
Turbidity (NTU)	158		138	15	1/1000	7/54	11.5% of values >OWQS of 50	
pH (units)	150		8.06	8.12	6.8.0/8.85	7.88/8.23		
Dissolved Oxygen (mg/L)	153		9.48	9.03	3.57/15.21	8.09/10.94		
Hardness (mg/L)	156		1109.8	1117.5	100.0/4154.0	836.3/1336.3		
Minerals	Total Dissolved Solids (mg/L)	166	5003.2	5058.0	684.0/11180.0	3477.5/6243.0		
	Specific Conductivity (uS/cm)	153	8021.9	7950.0	1073.0/17470.0	5593.0/9956.0		
	Chloride (mg/L)	164	2257.7	2200.0	151.1/9620.0	1405.0/2877.5	96.6% of values >OWQS of 353	
	Sulfate (mg/L)	165	792.0	767.0	33.6/2702.0	611.0/933.0	17.0% of values >OWQS of 1040	
Nutrients	Total Phosphorus (mg/L)	122	0.157	0.049	<0.005/2.461	0.029/0.094		
	Total Nitrogen (mg/L)	125	1.085	0.760	0.190/7.930	0.598/1.180		
	Nitrate/Nitrite (mg/L)	126	0.290	<0.050	<0.050/6.900	<0.050/0.356		
	Chlorophyll A (mg/m ³)	48	12.2	14.2	0.2/269.0	8.6/27.4	TSI=63.5	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	21	1145.7	109.0	<10.0/19863	36/225	Mean> OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	21	541.8	131.0	<10.0/8164	41/203		

Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Fish & Wildlife Propagation	NS	S	S	NS						S	S	S
Aesthetics												NEI
Agriculture					NS		NS	NS				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium
 Fish and Wildlife Propagation not supporting for Temperature and Selenium

North Fork of the Red River at Carter



Sample Record	Times Visited	Station ID
November 1998 - Current	168	311510010010-001AT

Stream Data	County	Beckham	View Site Data
	Location	South of the Town of Carter on State Highway 34	
	Latitude/Longitude	35.16712931, -99.50730365	
	Planning Watershed	Southwest (8-digit HUC -11120302)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	113	17.8	18.1	-0.9/36.5	9.9/24.8	
		Turbidity (NTU)	114	62	18	0/1000	9/45	14.7% of values >OWQS of 50
		pH (units)	111	8.07	8.09	7.61/8.55	7.92/8.23	
		Dissolved Oxygen (mg/L)	113	9.54	9.05	5.33/17.00	7.90/10.94	
		Hardness (mg/L)	114	916.9	910.0	89.0/1960.0	783.0/1061.0	
		Minerals	Total Dissolved Solids (mg/L)	115	1776.6	1790.0	620.0/2690.0	1610.0/1987.0
Specific Conductivity (uS/cm)	113		2675.1	2693.0	970.0/4319.0	2433.0/3005.5		
Chloride (mg/L)	116		377.5	373.0	38.7/1100.0	291.8/455.5		
Sulfate (mg/L)	116		718.3	717.5	63.8/1240.0	579.3/868.5		
Nutrients	Total Phosphorus (mg/L)	110	0.090	0.038	<0.005/1.333	0.023/0.073		
	Total Nitrogen (mg/L)	114	1.087	1.008	0.340/3.145	0.674/1.263		
	Nitrate/Nitrite (mg/L)	110	0.383	0.290	<0.050/2.745	0.104/0.593		
	Chlorophyll A (mg/m ³)	30	9.9	9.0	1.4/70.7	4.7/17.0	TSI=53.1	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	23	140.6	30.0	<10.0/2100	<10.0/74	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	23	75.3	20.0	<10.0/479	20/73		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Salt Fork Of The Red River at Mangum



Sample Record	Times Visited	Station ID
October 2000 – September 2007	54	311600020010-001AT

Stream Data	County	Greer	View Site Data
	Location	South of the Town of Mangum on State Highway 34	
	Latitude/Longitude	34.85764987, -99.50925729	
	Planning Watershed	Southwest (8-digit HUC -11120202)	

	Parameter <i>(Descriptions)</i>	Mean	Median	Range	Comments	
Parameters	In-Situ	Water Temperature (C°)	18.6	18.9	2.7/37.0	
		Turbidity (NTU)	9	6	1/30	
		pH (units)	7.93	7.96	6.60/8.56	
		Dissolved Oxygen (ppm)	8.61	8.22	5.62/12.84	
		Hardness (ppm)	1531.9	1500.5	660.0/2380.0	
	Minerals	Total Dissolved Solids (ppm)	2216.4	2115.0	798.6/8895.0	
		Specific Conductivity (uS)	3584.3	3238.0	1369.0/21559	
		Chloride (ppm)	278.2	270.0	63.1/464.0	
		Sulfate (ppm)	1254.3	1300.0	471.0/1800.0	
	Nutrients	Total Phosphorus (ppm)	0.028	0.016	0.007/0.154	
Nitrate/Nitrite (ppm)		0.258	0.210	0.050/0.970		
Chlorophyll A (mg/m ³)		54.3	38.4	6.0/175.0	TSI=69.8	
Bacteria	Fecal Coliform (cfu/100ml)(* -Geo. Mn.)	271.1*	310.0	<10/3400	45.5% of values > OWQS of 400	
	Enterococcus (cfu/100ml)(* -Geo. Mn.)	240.7*	167.5	<10/11000	Mean > OWQS of 33	
	E. Coli (MPN/100ml)(* -Geo. Mean)	84.9*	74.0	<10/1785		

	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Fish & Wildlife Propagation		S	S	S	S						S	S	S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish consumption not supporting for Thallium

Salt Fork Of The Red River at Elmer



Sample Record	Times Visited	Station ID
November 1998 - Current	286	311600020010-002AT

Stream Data	County	Jackson	View Site Data
	Location	West of the Town of Elmer near US 283	
	Latitude/Longitude	34.47893211, -99.38286717	
	Planning Watershed	Southwest (8-digit HUC -11120202)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	201	19.3	19.5	0.5/37.0	11.9/26.8
Turbidity (NTU)	204		76	20	1/1000	10/48		
pH (units)	194		8.05	8.06	7.33/8.56	7.90/8.19		
Dissolved Oxygen (mg/L)	201		9.78	9.79	3.95/17.59	7.98/11.41		
Hardness (mg/L)	206		1501.0	1544.5	200.0/2513.0	1182.5/1886.3		
Minerals	Total Dissolved Solids (mg/L)	212	2603.1	2545.0	240.0/5827.0	2036.5/3301.5		
	Specific Conductivity (uS/cm)	201	3712.5	3712.0	356.0/9105.0	3051.0/4314.5		
	Chloride (mg/L)	214	520.1	494.5	19.0/2097.0	282.8/691.3		
	Sulfate (mg/L)	213	1262.4	1270.0	87.2/3485.0	986.0/1550.0		
Nutrients	Total Phosphorus (mg/L)	174	0.090	0.051	<0.005/0.722	0.024/0.114		
	Total Nitrogen (mg/L)	177	1.757	1.510	<0.100/7.140	0.940/2.268		
	Nitrate/Nitrite (mg/L)	176	0.896	0.573	<0.050/5.930	0.210/1.215		
	Chlorophyll A (mg/m ³)	43	11.9	31.5	2.2/175.0	11.0/51.5	TSI= 63.0	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	40	2564.2	167.5	<10.0/51800	64.8/975	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	40	303.4	57.0	<10.0/5172	22.5/189		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	NS						S	S	S
	Aesthetics												S
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				NS		S			S			
	Fish Consumption				NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes Fish Consumption not supporting for Thallium
 Fish & Wildlife Propagation not supporting for Selenium
 Public & Private Water Supply not supporting for Selenium

HUC 1113

Upper Red Sub-basin

The Upper Red sub-basin (4-digit hydrologic unit 1113) is situated in the southwestern portion of the state. It originates in the western portion of Roger Mills County, continues eastward through portions of Beckham, Dewey, Custer, Washita, Kiowa, Caddo, Comanche, Tillman, Cotton, Grady, Stephens, Jefferson, McClain, Garvin, Murray, Pontotoc, Carter, Johnston, and Love Counties and terminates in the western part of Marshall and Bryan Counties, briefly touching Harmon and Jackson Counties. Major cities and County seats located within the basin include Cheyenne, Hollis, Arapaho, Clinton, Frederick, Anadarko, Lawton, Walters, Chickasha, Marlow, Duncan, Waurika, Lindsay, Pauls Valley, Sulphur, Lone Grove, Ardmore, Marietta, Madill, and Tishomingo. Minor cities of note include Hammon, Fort Cobb, Binger, Rush Springs, Davis, and Wynnewood.

The basin is subdivided into eleven 8-digit hydrologic units (HUC) within the state. These HUC's are the Groesbeck–Sandy (11130101), the Blue–China (11130102), the Farmer's–Mud (11130201), the Cache (11130202), the West Cache (11130203), the Northern Beaver (11130208), the Lake Texoma (11130210), the Washita Headwaters (11130301), the Upper Washita (11130302), the Middle Washita (11130303), and the Lower Washita (11130304). The major surface water in the basin is the upper Red River. Major tributaries include the Prairie Dog Town Fork of the Red River, the Washita River, the Little Washita River, Barnitz Creek, Cobb Creek, Bitter Creek, Rush Creek, Wildhorse Creek, Rock Creek, Caddo Creek, Mill Creek, Sandy Creek, Deep Red Creek, West Cache Creek, East Cache Creek, Cow Creek, Beaver Creek, Mud Creek, Walnut Bayou, and Hickory Creek. Eight major lakes are located in the basin—Foss Reservoir formed by the Washita River, Fort Cobb Reservoir formed by Cobb Creek, Lake Ellsworth formed by East Cache Creek, Lake Lawtonka formed by Medicine Creek, Waurika Lake formed by Beaver Creek, Lake of the Arbuckles formed by Rock Creek, Lake Murray formed by Anadarche Creek, and Lake Texoma formed by the Red and Washita Rivers and Hickory Creek. Eleven active permanent water quality-monitoring stations are located in the basin. Four inactive water quality-monitoring stations are in this sub-basin (Cow Creek near Waurika, Walnut Bayou near Burneyville, Red River near Gainsville, and Hickory Creek near Marietta). Walnut Bayou near Burneyville and Hickory Creek near Marietta were last assessed in the 2000 BUMP report while Red River near Gainsville was last assessed in the 1999 BUMP report. Cow Creek near Waurika was last assessed in the 2003 BUMP report.

The basin is characterized by three ecoregions. The Central Great Plains is the primary ecoregion beginning in the western portion of Roger Mills County and continuing through the western parts of Grady, Stephens, and Jefferson Counties. The Central Oklahoma/Texas Plains begins in the eastern parts of Grady, Stephens, and Jefferson Counties and continues eastward over the rest of the sub-basin. The Southwestern Tablelands typify portions of Roger Mills, Custer, and Beckham Counties. The primary land usage in the sub-basin is rangeland (open grasslands, mesquite, and other woody areas). It is prevalent in the western, southern and central portions of the sub-basin and is interspersed throughout the sub-basin. The secondary land use is cropland, which dominates the southwestern portion and is interspersed throughout the sub-basin. The tertiary land uses are pastureland (brushy or mixed) and forestland (post oak–blackjack oak, hickory–oak, and bottomland hardwoods). Other land uses of note are woodlands, bottom woodlands, farmsteads, major urban areas, and wetlands.

STATION NAME	FWP	PBCR	PPWS	AG	AES
EAST CACHE CREEK, SH 53, WALTERS	NS (5)	NS (6, 8)	S	NS(10)	T(13, 15)
MUD CREEK, SH 32, COURTNEY	NS (5, 16, 18)	NS (6, 8)	S	S	NS(18)
RED RIVER, US 183, DAVIDSON	NS (3, 5)	NS (6, 8)	N/A	NS (10, 11, 12)	T (17)
RED RIVER, US 81, TERRAL	NS (3, 5)	NS (8)	S	NS (11, 12)	T(13, 17)
SANDY CREEK, SH 6, ELDERADO	NS (2, 3, 5)	NS(9)	N/A	NS (10, 11, 12)	NT
WASHITA RIVER, SH 152, CORDELL	NS (5, 16, 18)	NS (6, 7, 8)	S	S	TS(13, 18)
WASHITA RIVER, SH 19, PAULS VALLEY	NS (5)	NS (6, 8)	S	S	T(13, 17)
WASHITA RIVER, SH 33, MCCLURE	NS (5, 16, 18)	NS (6, 7, 8)	S	S	NT
WASHITA RIVER, US 177, DURWOOD	NS (5)	NS (6, 8)	S	S	T(13, 17)
WASHITA RIVER, OFF SH 19, ALEX	NS (5)	NS (6, 8)	S	S	T(13, 17)
WASHITA RIVER, US 281, ANADARKO	NS (5, 16, 18)	NS (6, 8)	S	S	NS (17, 18)
WEST CACHE CREEK, SH 5B, TAYLOR	NS (5)	NS (6, 7, 8)	S	NS (10,11)	NT
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)	
NT—NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— <i>ESCHERICHIA COLI</i>		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLL-A (TSI)		18—SEDIMENTATION	

East Cache Creek at Walters



Sample Record	Times Visited	Station ID
November 1998 - Current	159	311300010020-001AT

Stream Data	County	Cotton	View Site Data
	Location	East of the Town of Walters on State Highway 53	
	Latitude/Longitude	34.36188194, -98.28233417	
	Planning Watershed	Beaver-Cache (8-digit HUC -11130202)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	117	18.3	18.9	2.1/35.4	11.1/26.2
Turbidity (NTU)	115		87	54	4/809	28/89	39.4% of values >OWQS of 50	
pH (units)	116		7.88	7.87	7.37/8.52	7.70/8.03		
Dissolved Oxygen (mg/L)	117		8.20	7.47	3.39/16.1	6.46/9.99		
Hardness (mg/L)	118		218.7	200.5	95.0/638.0	174.0/246.5		
Total Dissolved Solids (mg/L)	123		461.5	464.0	100.0/1539.5	370.0/529.0	15.9% of values >OWQS of 560	
Minerals	Specific Conductivity (uS/cm)	116	722.3	738.0	160.0/1893.0	565.8/829.8		
	Chloride (mg/L)	121	70.5	74.4	<10.0/164.0	43.3/90.7		
	Sulfate (mg/L)	121	88.6	83.3	31.4/326.0	65.4/101.0		
	Total Phosphorus (mg/L)	121	0.996	0.920	0.047/3.580	0.449/1.440		
Nutrients	Total Nitrogen (mg/L)	123	3.494	2.850	0.150/11.650	1.650/5.030		
	Nitrate/Nitrite (mg/L)	123	2.283	1.775	<0.050/9.900	0.665/3.610		
	Chlorophyll A (mg/m ³)	15	11.1	7.1	1.0/39.0	2.6/9.3	TSI=51.9	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	24	2455.1	435.0	109/43000	200/950	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		24	333.6	109.0	<10.0/4352	54.8/193		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					S								
<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes											

Mud Creek at Courtney



Sample Record	Times Visited	Station ID
November 1998 - Current	142	311100040010-001AT

Stream Data	County	Love	View Site Data
	Location	Near the town of Courtney on State Highway 32	
	Latitude/Longitude	34.004167, -97.566667	
	Planning Watershed	Lower Washita (8-digit HUC - 11130201)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)		119	19.2	19.5	3.4/32.6
Turbidity (NTU)			118	205	89	15/1000	47/278	62.5% of values > OWQS of 50
pH (units)			118	7.87	7.90	7.14/8.81	7.66/8.07	
Dissolved Oxygen (mg/L)			119	6.73	6.54	1.42/17.43	5.2/8.1	
Hardness (mg/L)			118	240.5	218.0	30.0/670.0	137.5/297.0	
Minerals	Total Dissolved Solids (mg/L)		121	452.5	403.0	85.0/1246.0	254.5/572.0	
	Specific Conductivity (uS/cm)		118	733.4	667.5	90.0/1972.0	371.8/898.0	
	Chloride (mg/L)		118	91.9	70.6	<10.0/384.0	31.6/129.8	
	Sulfate (mg/L)		117	69.7	61.9	19.9/246.5	41.7/91.4	
Nutrients	Total Phosphorus (mg/L)		119	0.236	0.165	0.024/1.609	0.102/0.323	18.6% of values > OWQS of 0.360
	Total Nitrogen (mg/L)		120	1.219	1.030	0.080/3.550	0.735/1.585	
	Nitrate/Nitrite (mg/L)		119	0.180	0.095	<0.050/0.970	<0.050/0.280	
	Chlorophyll A (mg/m ³)							No Data
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)		26	1007.5	197.0	<10.0/17000	37.8/600	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)		26	242.7	63.0	<10.0/1986	20/287	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						NS	S
Aesthetics													NS
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead

Red River at Davidson



Sample Record	Times Visited	Station ID
November 1998 - Current	223	311310010010-001AT

Stream Data	County	Tillman	View Site Data
	Location	South of the Town of Davidson on State Highway 183	
	Latitude/Longitude	34.2115454, -99.08155505	
	Planning Watershed	Beaver-Cache (8-digit HUC - 11130102)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	148	17.9	18.3	-0.8/32.2	10.7/25.0
Turbidity (NTU)	150		231	57	5/1002	23/248	24.0% of values > OWQS of 50	
pH (units)	146		8.06	8.09	6.98/9.12	7.91/8.21		
Dissolved Oxygen (mg/L)	148		9.97	9.57	0.48/21.97	8.22/11.73		
Hardness (mg/L)	149		1363.7	1350.0	277.0/2700.0	1037.5/1682.0		
Minerals	Total Dissolved Solids (mg/L)	156	4923.7	5110.0	520.0/13600.0	3745.0/6009.8		
	Specific Conductivity (uS/cm)	149	7643.5	8078.0	1261/21375	5766.0/9375.0		
	Chloride (mg/L)	157	2015.0	2035.0	219.0/5980.0	1425.0/2476.5	96.6% of values > OWQS of 285.0	
	Sulfate (mg/L)	157	1163.1	1090.0	182.0/6680.0	864.5/1335.0	100.0% of values > OWQS of 78.5	
Nutrients	Total Phosphorus (mg/L)	119	0.282	0.140	<0.005/2.780	0.092/0.242		
	Total Nitrogen (mg/L)	120	2.031	1.325	0.150/34.950	1.076/1.993		
	Nitrate/Nitrite (mg/L)	121	0.427	0.210	<0.050/2.900	<0.050/0.665		
	Chlorophyll A (mg/m ³)	45	10.7	44.3	1.6/192.0	21.0/70.3	TSI=68.4	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	23	2111.4	52.0	<10.0/21000	<10.0/300	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	23	1388.7	63.0	<10.0/17329	<10.0/197		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	NS						S	S	S
	Aesthetics												NEI
	Agriculture					NS		NS	NS				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								
	<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes <i>Fish Consumption not supporting for Thallium</i> <i>Fish and Wildlife Propagation not supporting for Selenium</i>										

Red River at Terral



Sample Record	Times Visited	Station ID
December 1998 - Current	170	311100010190-001AT

Stream Data	County	Jefferson	View Site Data
	Location	South of the Town of Terral on State Highway 81	
	Latitude/Longitude	33.8786094, -97.93457247	
	Planning Watershed	Lower Washita (8-digit HUC - 11130201)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	115	20.0	21.4	3.1/33.5
	Turbidity (NTU)		117	294	100	1/1002	43/462	60.0% of values > OWQS of 50
	pH (units)		114	8.21	8.23	6.73/9.11	7.97/8.46	
	Dissolved Oxygen (mg/L)		115	10.44	10.26	3.42/20.13	7.97/12.72	
	Hardness (mg/L)		119	804.4	816.0	168.0/2075.0	531.0/1024.0	
Minerals		Total Dissolved Solids (mg/L)	119	3023.8	3149.0	100.0/9253.0	2110.0/3971.0	
		Specific Conductivity (uS/cm)	114	4845.8	5016.5	157.0/14458	3299.3/6344.5	
		Chloride (mg/L)	117	1195.0	1190.0	151.0/4200.0	799.5/1538.5	30.2% of values > OWQS of 1007.25
		Sulfate (mg/L)	117	623.0	629.0	95.5/2110.0	388.0/787.5	37.2% of values > OWQS of 484.75
Nutrients		Total Phosphorus (mg/L)	118	0.426	0.271	0.021/4.210	0.199/0.417	
		Total Nitrogen (mg/L)	121	1.784	1.580	0.120/8.070	1.185/2.115	
		Nitrate/Nitrite (mg/L)	120	0.339	0.163	<0.050/1.460	<0.050/0.530	
		Chlorophyll A (mg/m ³)	29	13.0	46.9	2.5/163.0	22.7/79.7	TSI=71.0
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	25	330.2	31.0	<10.0/3654	<10.0/184.5	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	25	107.0	20.0	<10.0/1106	<10.0/74	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	NS						S	S	S
	Aesthetics												NEI
	Agriculture					NS		NS	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium
 Fish and Wildlife Propagation not supporting for Selenium

Sandy Creek at Eldorado



Sample Record	Times Visited	Station ID
November 1998 - Current	133	311600010040-001AT

Stream Data	County	Jackson	View Site Data
	Location	Southwest of the Town of Eldorado on State Highway 6	
	Latitude/Longitude	34.46433562, -99.66255838	
	Planning Watershed	Southwest (8-digit HUC -11130101)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	115	18.7	20.0	2.7/33.2
	Turbidity (NTU)		117	73	45	4/1000	21/72	51.3% of values > OWQS of 50
	pH (units)		112	7.77	7.78	7.09/8.44	7.57/7.96	
	Dissolved Oxygen (mg/L)		115	11.66	11.85	3.46/22.54	8.56/14.88	
	Hardness (mg/L)		116	2324.3	2447.5	190.0/3974.0	2045.3/2692.5	
Minerals		Total Dissolved Solids (mg/L)	119	5669.3	6035.0	514.1/7080.0	5577.0/6430.0	90.7% of values > OWQS of 3969.0
		Specific Conductivity (uS/cm)	115	8473.7	9209.0	803.3/11175	8340.0/9510.0	
		Chloride (mg/L)	118	2006.7	2082.0	159.0/3750.0	1890.0/2220.0	95.5% of Values > OWQS of 909.5
		Sulfate (mg/L)	119	1877.0	1950.0	191.0/3680.0	1670.0/2140.0	54.5% of Values > OWQS of 1934.5
Nutrients		Total Phosphorus (mg/L)	118	0.130	0.093	0.013/1.356	0.044/0.157	
		Total Nitrogen (mg/L)	120	3.513	3.530	0.080/8.380	3.048/4.195	
		Nitrate/Nitrite (mg/L)	118	2.237	2.170	<0.050/4.715	1.453/3.123	
		Chlorophyll A (mg/m ³)						No Data
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	19	2837.2	300.0	<10.0/37300	74/1100	Mean > OWQS of 165
		E. Coli (cfu/100ml)(* -Geo. Mn.)	19	317.9	119.0	<10.0/3448	31/209	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	NS						S	S	S
	Aesthetics												S
	Agriculture					NS		NS	NS				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				NS		S			S			
	Fish Consumption				NS								
	<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes Fish Consumption not supporting for Thallium Public & Private Water Supply not supporting for Selenium Fish & Wildlife Propagation not supporting for Selenium										

Washita River at Alex



Sample Record	Times Visited	Station ID
January 2003 – May 2008	97	310810020010-001AT

Stream Data	County	Grady	View Site Data
	Location	North of the Town of Alex on Highway 19C	
	Latitude/Longitude	34.9261546, -97.77397966	
	Planning Watershed	Lower Washita (8-digit HUC -11130303)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	50	18.22	19.58	0.31/33.63
	Turbidity (NTU)		50	267.4	95.5	8/>1000.0	25/466.3	36.7% of values > OWQS of 50
	pH (units)		49	8.09	8.07	7.22/9.26	7.87/8.25	
	Dissolved Oxygen (mg/L)		50	9.28	8.33	4.59/15.76	7.5/11.45	
	Hardness (mg/L)		50	799.4	844.5	248/1668	593.8/994	
Minerals		Total Dissolved Solids (mg/L)	50	1050.1	1136.0	226/1670	846.6/1304.3	
		Specific Conductivity (uS/cm)	49	1617.6	1762.0	353/2690	1316.5/1980	
		Chloride (mg/L)	50	84.0	83.9	10.6/202	55.7/106.3	
		Sulfate (mg/L)	50	617.7	654.5	151/1260	454.3/811.8	
Nutrients		Total Phosphorus (mg/L)	50	0.429	0.202	0.01/2.06	0.117/0.531	
		Total Nitrogen (mg/L)	50	1.917	1.405	0.68/5.77	1.015/2.453	
		Nitrate/Nitrite (mg/L)	50	0.410	0.385	<0.050/1.8	<0.050/0.666	
		Chlorophyll A (mg/m ³)	29	37.87	30.70	5.86/144	10.36/40.65	TSI=66.3
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	20	1342.1	139.5	<10.0/11000	33.5/2602.5	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	20	692.1	57.5	<10.0/9208	<10.0/572.8	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium and Lead
 Public and Private Water Supply not supporting for Chromium

Washita River at Anadarko



Sample Record	Times Visited	Station ID
February 1999 - Current	211	310830010010-001AT

Stream Data	County	Caddo	View Site Data
	Location	North of the Town of Anadarko on US 281	
	Latitude/Longitude	35.08448153, -98.24330303	
	Planning Watershed	Lower Washita (8-digit HUC -11130302)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)		137	18.3	20.3	-0.1/33.5
Turbidity (NTU)			135	168	43	4/1002	18/146	36.7% of values > OWQS of 50
pH (units)			133	8.11	8.10	7.01/8.88	7.90/8.28	
Dissolved Oxygen (mg/L)			137	9.73	9.57	1.33/19.66	8.02/11.60	
Hardness (mg/L)			136	856.1	890.0	185.0/1580.0	670.3/1066.0	
Minerals	Total Dissolved Solids (mg/L)			140	1207.1	1266.5	150.0/2575.0	961.0/1472.3
	Specific Conductivity (uS/cm)		136	1775.8	1921.5	144.0/4023.0	1403.3/2139.8	
	Chloride (mg/L)		139	85.0	85.1	<10.0/198.0	52.4/111.0	
	Sulfate (mg/L)		138	713.0	757.0	55.8/2330.0	547.3/869.3	
Nutrients	Total Phosphorus (mg/L)		140	0.284	0.181	0.034/3.297	0.095/0.273	
	Total Nitrogen (mg/L)		141	1.485	1.240	0.150/7.100	0.925/1.718	
	Nitrate/Nitrite (mg/L)		141	0.429	0.275	<0.050/2.280	<0.050/0.685	
	Chlorophyll A (mg/m ³)		46	9.9	21.8	3.5/597.0	13.6/46.0	TSI=69.3
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)		26	1351.4	300.0	<10.0/12997	64.3/1525	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)		26	348.8	101.5	<10.0/2723	<10.0/226.5	

Beneficial Uses	Click to learn more about Beneficial Uses											
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Fish & Wildlife Propagation	NS	S	S	S						NS	S	NS
Aesthetics												NS
Agriculture					S		S	S				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Lead and Thallium

Washita River at Cordell



Sample Record	Times Visited	Station ID
November 1998 - Current	273	310830030010-001AT

Stream Data	County	Washita	View Site Data
	Location	East of the Town of Cordell on State Highway 152	
	Latitude/Longitude	35.29115498, -98.83671818	
	Planning Watershed	West Central (8-digit HUC -11130302)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	168	16.9	17.4	-1/33.8	9.1/24.0
Turbidity (NTU)	164		116	25	3/1000	10/100	34.2% of values > OWQS of 50	
pH (units)	165		7.99	8.00	5.93/8.72	7.87/8.14		
Dissolved Oxygen (mg/L)	167		9.80	9.83	1.95/22.10	7.80/11.47		
Hardness (mg/L)	166		1225.7	1272.0	210.0/2835.0	1067.5/1412.5		
Total Dissolved Solids (mg/L)	171		1655.8	1717.0	219.0/2620.0	1390.0/1977.0		
Minerals	Specific Conductivity (uS/cm)	168	2171.6	2242.0	348.0/3430.0	1851.8/2546.0		
	Chloride (mg/L)	163	86.4	71.3	<10.0/588.0	51.0/107.0		
	Sulfate (mg/L)	163	1024.9	1066.0	63.3/1880.0	877.0/1210.0		
	Total Phosphorus (mg/L)	164	0.293	0.177	0.023/3.330	0.112/0.300		
Nutrients	Total Nitrogen (mg/L)	165	1.863	1.715	0.150/8.680	1.255/2.228		
	Nitrate/Nitrite (mg/L)	166	0.802	0.700	<0.050/2.520	0.309/1.196		
	Chlorophyll A (mg/m ³)	26	9.1	9.2	2.6/95.9	5.2/17.2	TSI=58.9	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	78	1759.7	251.0	<10.0/24192	74/1223.5	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		77	1316.6	126.0	<10.0/24192	36/331	Mean > OWQS of 126	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	S						NS	S	NS
	Aesthetics												NS
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Washita River at Durwood



Sample Record	Times Visited	Station ID
November 1998 - Current	127	310800020010-001AT

Stream Data	County	Carter	View Site Data
	Location	Northwest of the Town of Durwood on US 177	
	Latitude/Longitude	34.23354963, -96.97638301	
	Planning Watershed	Lower Washita (8-digit HUC -11130303)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	88	19.53	20.30	3.77/33.65
	Turbidity (NTU)		87	331.2	90.0	7.8/>1000.0	44/614	44.8% of values > OWQS of 50
	pH (units)		87	8.07	8.03	7.1/8.86	7.88/8.27	
	Dissolved Oxygen (mg/L)		88	8.92	8.45	3.45/19.04	7.14/10.22	
	Hardness (mg/L)		87	523.5	532.0	195/885	396/632	
Minerals			Total Dissolved Solids (mg/L)	88	766.4	785.5	231/1407	569/993.1
		Specific Conductivity (uS/cm)	87	1168.5	1224.0	355/2037	817/1513	
		Chloride (mg/L)	87	73.8	74.3	10.4/163	43.3/102	
		Sulfate (mg/L)	88	359.5	340.5	26.3/787	231.3/472.3	
Nutrients		Total Phosphorus (mg/L)	88	0.444	0.234	0.025/4.183	0.14/0.438	
		Total Nitrogen (mg/L)	87	1.700	1.195	0.39/7.42	0.81/2.25	
		Nitrate/Nitrite (mg/L)	88	0.304	0.218	<0.050/1.04	<0.050/0.48	
		Chlorophyll A (mg/m ³)	23	20.04	17.70	<0.10/91.5	2.5/29.6	TSI=61.2
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	23	317.1	100.0	<10.0/1900	20/419	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	23	436.2	41.0	<10.0/8164	<10.0/143	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	S						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

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Notes

Fish Consumption not supporting for Thallium and Lead

Washita River at McClure



Sample Record	Times Visited	Station ID
November 1998 - Current	238	310840010010-003RS

Stream Data	County	Custer	View Site Data
	Location	North of the Town of McClure off of State Highway 33	
	Latitude/Longitude	35.656289, -99.306207	
	Planning Watershed	West Central (8-digit HUC -11130301)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	141	15.9	16.0	-0.8/33.3	8.4/23.2
Turbidity (NTU)	141		101	35	1/1000	12/104	32.0% of values>OWQS of 50	
pH (units)	139		8.03	8.02	7.14/8.64	7.89/8.19		
Dissolved Oxygen (mg/L)	140		9.73	9.66	3.80/19.85	7.91/11.13		
Hardness (mg/L)	140		1136.6	1080.0	176/2349	880/1400		
Total Dissolved Solids (mg/L)	145		1522.2	1510.0	299.7/2672.0	1230.5/1816.5		
Minerals	Specific Conductivity (uS/cm)	141	2033.6	2088.0	467.4/2958.0	1761.5/2402.0		
	Chloride (mg/L)	142	61.8	63.1	11.1/409.0	52.3/69.1		
	Sulfate (mg/L)	141	936.3	915.0	170/1760	695/1173		
	Total Phosphorus (mg/L)	142	0.151	0.063	0.005/1.840	0.041/0.165		
Nutrients	Total Nitrogen (mg/L)	146	1.260	0.958	0.150/5.490	0.740/1.430		
	Nitrate/Nitrite (mg/L)	147	0.435	0.265	<0.050/4.960	0.165/0.415		
	Chlorophyll A (mg/m ³)	41	8.4	8.6	0.1/103.0	4.7/16.0	TSI=54.4	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	55	1264.7	399.0	<10.0/17900	130/1081	Mean>OWQS of 33.0
E. Coli (cfu/100ml)(* -Geo. Mn.)		55	661.9	130.0	<10.0/24192	52/226	Mean>OWQS of 126.0	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						NS	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation													
Public & Private Water Supply					S		S						
Fish Consumption					NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium and Lead

Washita River at Pauls Valley



Sample Record	Times Visited	Station ID
December 1998 - Current	175	310810010010-001AT

Stream Data	County	Garvin	County
	Location	East of the Town of Pauls Valley on county road E1570	
	Latitude/Longitude	34.73848401, -97. 16538162	
	Planning Watershed	Lower Washita (8-digit HUC -11130303)	

Parameters		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	120	18.2	19.0	0.1/33.0
	Turbidity (NTU)		120	305	81	8/1002	47/451	65.4% of values > OWQS of 50
	pH (units)		119	8.08	8.08	7.01/8.74	7.90/8.25	
	Dissolved Oxygen (mg/L)		120	10.59	8.96	3.83/149.2	7.23/11.36	
	Hardness (mg/L)		118	640.2	647.0	171.0/1210.0	498.0/801.3	
Minerals			Total Dissolved Solids (mg/L)	122	932.4	995.5	250.0/1490.0	704.7/1175.3
		Specific Conductivity (uS/cm)	120	1406.1	1499.5	304.0/2237.0	1107.3/1783.3	
		Chloride (mg/L)	123	74.5	70.3	<10.0/238.0	45.7/98.2	
		Sulfate (mg/L)	120	494.9	523.0	93.7/1240.0	321.0/648.3	
Nutrients		Total Phosphorus (mg/L)	122	0.438	0.198	0.046/3.160	0.114/0.505	
		Total Nitrogen (mg/L)	123	1.803	1.400	<0.100/7.2	0.910/2.310	
		Nitrate/Nitrite (mg/L)	118	0.379	0.158	<0.050/5.340	<0.050/0.578	
		Chlorophyll A (mg/m ³)	30	9.4	32.4	10.4/783.0	19.2/55.8	TSI=74.0
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	22	1149.1	200.0	<10.0/10462	25.8/925	28.0% of values > OWQS of 400
		E. Coli (cfu/100ml)(* -Geo. Mn.)	22	334.7	31.0	<10.0/3873	<10.0/149.5	Mean > OWQS of 33

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Lead

West Cache Creek at Taylor



Sample Record	Times Visited	Station ID
November 1998 - Current	149	311310020010-001AT

Stream Data	County	Cotton	View Site Data
	Location	North of the Town of Taylor on State Highway 5B	
	Latitude/Longitude	34.2095473, -98.33061891	
	Planning Watershed	Beaver-Cache (8-digit HUC - 11130203)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	104	18.7	20.0	2.6/35.2	9.9/26.3	
		Turbidity (NTU)	105	143	41	3/1000	15/104	12.9% of values > OWQS of 50
		pH (units)	103	8.02	8.03	6.51/8.78	7.83/8.20	
		Dissolved Oxygen (mg/L)	104	8.71	8.66	3.71/15.3	6.68/10.50	
		Hardness (mg/L)	108	271.0	218.0	90.0/790.0	157.0/332.0	
		Minerals	Total Dissolved Solids (mg/L)	109	676.4	527.8	144.0/2919.0	366.0/817.5
Specific Conductivity (uS/cm)	103		1129.8	893.0	137.0/4559.0	617.0/1439.0		
Chloride (mg/L)	110		213.0	142.5	<10.0/1010.0	89.5/274.3	23.8% of values > OWQS of 285	
Sulfate (mg/L)	110		89.3	62.3	23.0/300.0	45.5/112.3	19.0% of values > OWQS of 118	
Nutrients	Total Phosphorus (mg/L)	110	0.210	0.138	0.039/1.204	0.098/0.244		
	Total Nitrogen (mg/L)	114	1.148	0.755	<0.100/6.330	0.530/1.378		
	Nitrate/Nitrite (mg/L)	112	0.358	0.060	<0.050/5.230	<0.050/0.459		
	Chlorophyll A (mg/m ³)	15	9.9	9.3	1.1/55.1	2.7/21.1	TSI=56.5	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	20	1081.8	280.0	<10.0/10000	170/827	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	20	285.4	104.5	<10.0/1553	54.8/269.3	Mean > OWQS of 126	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		NS	NS				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

HUC 1114

Lower Red Sub-basin

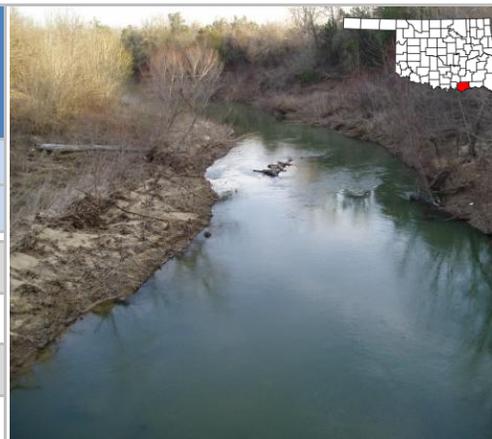
The Lower Red sub-basin (4-digit hydrologic unit 1114) is situated in the southeastern portion of the state. It originates in the central portion of Pontotoc County, continues eastward through portions of Murray, Johnston, Bryan, Hughes, Coal, Atoka, Pittsburg, Latimer, Pushmataha, and Choctaw Counties, and terminates in the eastern parts of LeFlore and McCurtain Counties. Major cities and County seats located within the basin include Coalgate, Atoka, Durant, Antlers, Hugo, Broken Bow, and Idabel. Minor cities of note include Kiowa, Fort Towson, Rattan, Clayton, Talihina, Smithville, and Valliant.

The basin is subdivided into nine 8-digit hydrologic units (HUC) that are all contained wholly within the state. These HUC's are the Bois D'Arc-Island (11140101), the Blue (11140102), the Muddy Boggy (11140103), the Clear Boggy (11140104), the Kiamichi (11140105), the Pecan-Waterhole (11140106), the Upper Little (11140107), the Mountain Fork (11140108), and Lower Little (11140109). The major surface water in the basin is the lower Red River. Major tributaries include the Blue River, the Kiamichi River, the Little River, the Glover River, the Mountain Fork River, Island Bayou, Whitegrass Creek, Clear Boggy Creek, Muddy Boggy Creek, Jackfork Creek, Cedar Creek, Buzzard Creek, Black Fork, Lukfata Creek, and Big Eagle Creek. Six major lakes are located in the basin—Atoka Reservoir formed by North Boggy Creek, McGee Creek Reservoir formed by McGee Creek, Sardis Lake formed by Jackfork and Buffalo Creeks, Hugo Lake formed by the Kiamichi River, Pine Creek Lake formed by the Little River, and Broken Bow Lake formed by the Mountain Fork River. Sixteen active permanent water quality-monitoring stations are located in the basin. Two inactive water quality-monitoring stations (Muddy Boggy near Farris and Little River near Idabel) are located in the sub-basin. Muddy Boggy near Farris was last assessed in the 1999 BUMP report. Little River near Idabel was last included in the 2003 BUMP report, but will not be assessed further. Because the station is located within a regulatory mixing zone, the OWRB cannot support previously collected data and will not include in future federal and state lists. Little River near Holly Creek was established in the beginning of 2003 and will replace the Idabel station.

The basin is characterized by three ecoregions. The Central Oklahoma/Texas Plains is the primary ecoregion beginning in the northwestern portion and continuing through the southern one-half ($\frac{1}{2}$) of the sub-basin. The Ouachita Mountains cover the remainder of the northern one-half ($\frac{1}{2}$) of the sub-basin. The South Central Plains cover the southeastern quarter ($\frac{1}{4}$) of the McCurtain County. The primary land usage in the sub-basin is forestland (shortleaf pine, loblolly pine, pine plantations, and oak-hickory). It dominates the central and most of the eastern portions and is further interspersed throughout the sub-basin. The secondary land use is pastureland (brushy and mixed) that dominates parts of the western portion of the sub-basin and is interspersed throughout the sub-basin with areas of concentration in Pushmataha and southern McCurtain Counties. The tertiary land use is rangeland (open grasslands and woody areas) that is prevalent in the northwestern portion and is interspersed throughout the central and southern portions of the sub-basin. Other land uses of note are cropland, bottom woodlands, farmsteads, major urban areas, wetlands, and confined animal feeding operations.

STATION NAME	FWP	PBCR	PPWS	AG	AES
BLUE RIVER, US 70, DURANT	S	NS (6, 8)	S	S	NS(18)
CLEAR BOGGY CREEK, OFF US 69, CANEY	NS (5, 16, 18)	NS (8)	S	S	NS(18)
GLOVER RIVER, SH 3, GLOVER	NS (5)	S	S	S	NT
KIAMICHI RIVER, OFF US 271, TUSKAHOMA	NS (2, 3)	NS (8)	S	S	NT
KIAMICHI RIVER, SH 63, BIG CEDAR	NS (3)	NS (8)	S	S	NS(18)
KIAMICHI RIVER, US 271, ANTLERS	NS (3)	NS (8)	S	S	NS(18)
KIAMICHI RIVER, SH 109, FORT TOWSON	NS (3)	NS (8)	NS (9)	S	NT
LITTLE RIVER, OFF SH 3, CLOUDY	NS (3, 5)	NS (8)	S	S	S
LITTLE RIVER, OFF US 70, NEAR HOLLY CREEK	NS (1, 3, 5)	S	S	S	NT
LITTLE RIVER, SH 56, SASAKWA	NS (5)	NS (6, 8)	S	S	NS(13, 18)
MOUNTAIN FORK, SH 4, SMITHVILLE	NS (2, 3)	S	S	S	S
MOUNTAIN FORK, US 70, EAGLETOWN	NS (3)	NS (8)	S	S	NT
MUDDY BOGGY CREEK, US 70, UNGER	NS (5)	NS (8)	S	S	NT
MUDDY BOGGY CREEK, US 69, ATOKA	NS (3, 5)	NS (6, 8)	S	S	NS
RED RIVER, US 259, HARRIS	NS (5)	S	S	S	NT
RED RIVER, US 271, HUGO	S	NS (8)	S	NS(10, 11, 12)	NT
ASSIGNED OWQS BENEFICIAL USES					
FWP = FISH & WILDLIFE PROPAGATION			PBCR = PRIMARY BODY CONTACT RECREATION		
PPWS = PUBLIC AND PRIVATE WATER SUPPLY			AG = AGRICULTURE		
AES = AESTHETICS					
SUPPORT CODES					
S—FULLY SUPPORTING		NS—NOT SUPPORTING		T—THREATENED (NUTRIENTS)	
NT—NOT THREATENED (NUTRIENTS)		NEI—NOT ENOUGH INFORMATION		N/A—NOT APPLICABLE	
WATER QUALITY VARIABLES					
1—DISSOLVED OXYGEN		2—METALS (ACUTE)		3—METALS (CHRONIC)	
4—PH		5—TURBIDITY		6—FECAL COLIFORM	
7— <i>ESCHERICHIA COLI</i>		8— ENTEROCOCCI		9—METALS	
10— TOTAL DISSOLVED SOLIDS		11— CHLORIDES		12— SULFATES	
13— TOTAL PHOSPHORUS (TP)		14—TP OK SCENIC RIVER CRITERION		15— NITRITE + NITRATE	
16—BIOCRITERIA		17—SESTONIC CHLOROPHYLL-A (TSI)		18—SEDIMENTATION	

Blue River at Durant



Sample Record	Times Visited	Station ID
November 1998 - Current	156	410600010010-001AT

Stream Data	County	Bryan	View Site Data
	Location	East of the Town of Durant off State Highway 70	
	Latitude/Longitude	33.99732546, -96.24093554	
	Planning Watershed	Blue-Boggy (8-digit HUC - 11140102)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
In-Situ	Water Temperature (°C)	116	19.1	18.4	3.1/33.0	12.6/26.8	
	Turbidity (NTU)	117	62	27	3/536	14/54	
	pH (units)	114	8.00	8.03	7.06/8.80	7.83/8.18	
	Dissolved Oxygen (ppm)	116	8.43	8.03	4.14/20.41	6.88/9.82	
	Hardness (ppm)	117	218.7	230.0	68.0/346.0	185.0/252.0	
	Total Dissolved Solids (ppm)	118	245.4	252.4	68.0/386.0	212.5/287.9	
Minerals	Specific Conductivity (uS/cm)	116	395.2	411.1	138.6/596.0	337.3/458.0	
	Chloride (ppm)	103	10.5	<10.0	<10.0/62.9	<10.0/<10.0	
	Sulfate (ppm)	102	18.8	16.2	<10.0/81.5	11.2/21.3	
	Total Phosphorus (ppm)	119	0.092	0.061	<0.005/0.497	0.036/0.113	
Nutrients	Total Nitrogen (ppm)	120	0.805	0.480	<0.050/7.190	0.310/0.906	
	Nitrate/Nitrite (ppm)	120	0.272	0.108	<0.050/2.780	<0.050/0.224	
	Chlorophyll A (mg/m ³)	15	12.6	3.2	0.2/29.0	0.7/6.9	TSI=45.10
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	482.7	90.5	<10.0/5000	<10.0/327.5	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)	28	195.6	97.0	<10.0/933	51.3/243.5	

Beneficial Uses	Supportability											
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Fish & Wildlife Propagation	S	S	S	S						S	S	S
Aesthetics												NS
Agriculture					S		S	S				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				S								

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Notes

Clear Boggy Creek at Caney



Sample Record	Times Visited	Station ID
November 1998 - Current	138	410400030010-001AT

Stream Data	County	Atoka	View Site Data
	Location	North of the Town of Caney on US 69	
	Latitude/Longitude	34.25148276, -96.2052689	
	Planning Watershed	Blue-Boggy (8-digit HUC -11140104)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)		114	18.5	18.2	3.0/31.8
Turbidity (NTU)			115	89	41	4/879	19/92	20.6% of values >OWQS of 50
pH (units)			113	7.90	7.92	6.48/9.32	7.74/8.11	
Dissolved Oxygen (mg/L)			114	8.59	8.08	4.73/22.11	6.89/9.79	
Hardness (mg/L)			115	203.6	208.0	63.0/320.0	166.0/250.0	
Total Dissolved Solids (mg/L)			116	286.4	288.0	75.0/750.0	220.4/343.3	
Minerals	Specific Conductivity (uS/cm)		114	458.1	469.6	117.0/1154.0	335.1/555.6	
	Chloride (mg/L)		102	28.0	22.5	<10.0/233.0	13.0/36.2	
	Sulfate (mg/L)		102	30.5	28.3	13.7/100.5	23.5/34.3	
	Total Phosphorus (mg/L)		117	0.160	0.101	<0.005/1.081	0.063/0.163	
Nutrients	Total Nitrogen (mg/L)		118	0.781	0.595	<0.100/3.080	0.379/1.003	
	Nitrate/Nitrite (mg/L)		114	0.179	0.055	<0.050/2.400	<0.050/0.166	
	Chlorophyll A (mg/m ³)		1	12.0	18.2	18.2/18.2	0/0	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)		22	527.1	96.5	<10.0/5000	17.5/400	Mean > OWQS of 33
	E. Coli (cfu/100ml)(* -Geo. Mn.)		22	134.4	57.5	<10.0/619	<10.0/176	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						NS	NS
Aesthetics													NS
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NEI = Not Enough Information

Notes Fish consumption not supporting for Lead and Thallium

Glover River at Glover



Sample Record	Times Visited	Station ID
November 1998 - Current	202	410210080010-001AT

Stream Data	County	McCurtain	View Site Data
	Location	West of the Town of Broken Bow on State Highway 3	
	Latitude/Longitude	34.09774144, -94.90248786	
	Planning Watershed	Southeast (8-digit HUC - 11140107)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	128	19.6	19.9	1.8/34.0	12.1/27.1	
		Turbidity (NTU)	129	11	7	1/89	4/11	17.1% of values > OWQS of 10
		pH (units)	127	7.27	7.18	5.07/9.26	6.98/7.50	
		Dissolved Oxygen (mg/L)	127	8.51	8.71	2.52/14.41	6.99/9.89	
		Hardness (mg/L)	129	27.3	16.0	10.0/231.0	12.0/29.8	
		Minerals	Total Dissolved Solids (mg/L)	129	37.3	31.0	0.1/284.0	23.0/46.5
Specific Conductivity (uS/cm)	128		53.1	43.0	0.1/437.0	31.7/64.8		
Chloride (mg/L)	86		10.1	<10.0	<10.0/18.1	<10.0/<10.0		
Sulfate (mg/L)	86		10.9	<10.0	<10.0/33.5	<10.0/<10.0		
Nutrients	Total Phosphorus (mg/L)	118	0.030	0.019	<0.005/0.500	0.013/0.029		
	Total Nitrogen (mg/L)	118	0.519	0.385	<0.100/3.520	0.279/0.549		
	Nitrate/Nitrite (mg/L)	115	0.169	<0.050	<0.050/1.420	<0.050/0.225		
	Chlorophyll A (mg/m ³)	44	12.1	1.7	0.1/8.0	0.7/2.5	TSI=36.8	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	31	50.4	20.0	<10.0/400	<10.0/63		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	31	41.6	20.0	<10.0/354	<10.0/41		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
		Fish & Wildlife Propagation	NS	S	S	S						S	S
Aesthetics													S
Agriculture						S		S	S				
Primary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Thallium

Kiamichi River at Antlers



Sample Record	Times Visited	Station ID
November 1998 - Current	189	410300030010-001AT

Stream Data	County	Pushmataha	View Site Data
	Location	North of the Town of Antlers on US Highway 271	
	Latitude/Longitude	34.24876734, -95.60509256	
	Planning Watershed	Southeast (8-digit HUC - 11140105)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	120	19.0	19.0	4.4/34.0	12.0/25.7
Turbidity (NTU)	120		26	17	2/173	10/28		
pH (units)	119		7.26	7.24	5.04/9.31	6.87/7.65		
Dissolved Oxygen (mg/L)	119		8.25	7.85	2.47/20.26	6.98/9.35		
Hardness (mg/L)	122		23.5	16.2	10.0/324.0	12.5/24.0		
Total Dissolved Solids (mg/L)	123		38.9	39.0	0.1/253.0	24.0/53.6		
Minerals	Specific Conductivity (uS/cm)	120	51.4	47.4	0.1/390.0	28.0/67.6		
	Chloride (mg/L)	108	<10.0	<10.0	<10.0/<10.0	<10.0/<10.0		
	Sulfate (mg/L)	108	13.3	10.7	<10.0/33.2	<10.0/14.4		
	Total Phosphorus (mg/L)	124	0.049	0.037	<0.005/0.328	0.025/0.055		
Nutrients	Total Nitrogen (mg/L)	124	0.564	0.475	<0.100/2.540	0.330/0.668		
	Nitrate/Nitrite (mg/L)	119	0.133	<0.050	<0.050/2.540	<0.050/0.135		
	Chlorophyll A (mg/m ³)	41	12.0	4.2	0.6/520.0	2.5/7.0	TSI=62.3	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	29	406.6	20.0	<10.0/6000	<10.0/250	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		29	321.9	31.0	<10.0/4106	<10.0/85.5		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	NS						S	S	S
	Aesthetics												NS
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead
 Fish and Wildlife Propagation not supporting for Copper and Lead

Kiamichi River at Big Cedar



Sample Record	Times Visited	Station ID
November 1998 - Current	160	410310020010-001AT

Stream Data	County	LeFlore	View Site Data
	Location	East of the Town of Big Cedar on State Highway 63	
	Latitude/Longitude	34.63884253, -94.61226313	
	Planning Watershed	Southeast (8-digit HUC - 11140105)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	124	16.9	16.7	4.2/33.5	10.7/22.5
Turbidity (NTU)	124		8	6	1/64	4/8		
pH (units)	124		6.98	6.86	5.71/9.02	6.59/7.37		
Dissolved Oxygen (mg/L)	124		8.47	8.59	3.02/15.05	6.87/10.13		
Hardness (mg/L)	122		16.2	10.0	2.9/134.0	10.0/12.0		
Minerals	Total Dissolved Solids (mg/L)		125	15.5	14.0	0.1/105.0	4.9/19.5	
	Specific Conductivity (uS/cm)	122	19.8	19.5	0.1/163.0	2.8/26.1		
	Chloride (mg/L)	82	<10.0	<10.0	<10.0/<10.0	<10.0/<10.0		
	Sulfate (mg/L)	82	10.3	<10.0	<10.0/23.3	<10.0/<10.0		
Nutrients	Total Phosphorus (mg/L)	114	0.016	0.012	<0.005/0.076	0.008/0.020		
	Total Nitrogen (mg/L)	113	0.317	0.230	<0.100/1.880	0.150/0.410		
	Nitrate/Nitrite (mg/L)	106	0.066	<0.050	<0.050/0.675	<0.050/<0.050		
	Chlorophyll A (mg/m ³)	15	10.7	0.9	0.1/7.0	0.3/1.7	TSI=35.8	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	28	1074.0	30.0	<10.0/24000	<10.0/82	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	28	114.3	<10.0	<10.0/1317	<10.0/30.8		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	NS						S	S	S
	Aesthetics												NS
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				S								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish and Wildlife Propagation not supporting for Copper, Lead, Silver, and Zinc

Kiamichi River at Tuskahoma



Sample Record	Times Visited	Station ID
December 1998 - Current	170	410310010010-001AT

Stream Data	County	Pushmataha	View Site Data
	Location	South of the Town of Tuskahoma off US Highway 271	
	Latitude/Longitude	34.61236033, -95.27727429	
	Planning Watershed	Southeast (8-digit HUC - 11140105)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	114	19.0	18.9	0.5/34.0	12.3/26.5
Turbidity (NTU)	113		20	12	1/154	10/23		
pH (units)	114		7.23	7.19	5.47/8.72	6.91/7.62		
Dissolved Oxygen (mg/L)	114		8.48	8.40	3.08/17.75	7.06/9.67		
Hardness (mg/L)	116		19.9	15.0	10.0/144.0	11.0/22.0		
Minerals	Total Dissolved Solids (mg/L)	115	29.5	30.0	0.1/129.0	14.0/40.0		
	Specific Conductivity (uS/cm)	113	41.8	41.0	0.1/200.0	18.9/55.0		
	Chloride (mg/L)	83	<10.0	<10.0	<10.0/<10.0	<10.0/<10.0		
	Sulfate (mg/L)	82	12.5	<10.0	<10.0/41.2	<10.0/12.7		
Nutrients	Total Phosphorus (mg/L)	119	0.042	0.032	<0.005/0.506	0.024/0.047		
	Total Nitrogen (mg/L)	118	0.433	0.360	<0.100/1.720	0.244/0.513		
	Nitrate/Nitrite (mg/L)	110	0.088	<0.050	<0.050/0.760	<0.050/0.088		
	Chlorophyll A (mg/m ³)	23	12.3	2.5	0.3/32.4	1.2/4.8	TSI=44.2	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	26	1539.2	45.5	<10.0/35000	<10.0/88	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	26	318.7	41.0	<10.0/4611	17.5/92		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	NS						S	S	S
	Aesthetics												S
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

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 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Lead
 Fish and Wildlife Propagation not supporting for Copper and Lead

Kiamichi River at Fort Towson



Sample Record	Times Visited	Station ID
February 2002 - Current	137	410300010010-002AT

Stream Data	County	Bryan	View Site Data
	Location	South of the Town of Fort Towson on State Highway 109	
	Latitude/Longitude	33.96940193, -95.27829905	
	Planning Watershed	Southeast (8-digit HUC - 11140150)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	84	18.9	19.3	5.5/30.9	11.7/26.3
Turbidity (NTU)	83		40	33	7/260	22/48		
pH (units)	84		7.59	7.64	6.43/8.60	7.23/7.92		
Dissolved Oxygen (mg/L)	84		8.79	8.54	4.13/15.07	6.79/10.39		
Hardness (mg/L)	84		41.2	31.5	12.0/235.0	23.3/44.3		
Total Dissolved Solids (mg/L)	85		52.7	50.0	0.1/194.0	34.5/65.8		
Minerals	Specific Conductivity (uS/cm)	84	76.6	74.0	0.1/299.0	50.9/94.4		
	Chloride (mg/L)	70	11.3	<10.0	<10.0/68.6	<10.0/<10.0		
	Sulfate (mg/L)	70	18.4	16.7	<10.0/56.1	13/21.7		
	Total Phosphorus (mg/L)	86	0.069	0.061	0.022/0.259	0.043/0.081		
Nutrients	Total Nitrogen (mg/L)	87	0.649	0.560	0.130/1.730	0.480/0.73		
	Nitrate/Nitrite (mg/L)	83	0.098	<0.050	<0.050/0.640	<0.050/0.120		
	Chlorophyll A (mg/m ³)	25	11.7	7.3	1/31.7	2.7/13.2	TSI=49.9	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	24	418.8	<10.0	<10.0/6700	<10.0/65	Mean > OWQS of 31
E. Coli (cfu/100ml)(* -Geo. Mn.)		24	60.3	30.5	<10.0/528	<10.0/71.3		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	NS						S	S	S
	Aesthetics												S
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				NS		S			S			
	Fish Consumption				NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes
 Fish consumption not supporting for Lead
 Fish and Wildlife Propagation not supporting for Lead
 Public and Private Water Supply not supporting for Lead

Little River at Cloudy



Sample Record	Times Visited	Station ID
November 1998 - Current	179	410210020140-001AT

Stream Data	County	Pushmataha	View Site Data
	Location	East of the Town of cloudy on Cloudy Road	
	Latitude/Longitude	34.32564049, -95.19911409	
	Planning Watershed	southeast (8-digit HUC - 11140107)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	117	19.4	19.8	2.0/36.3	12.0/26.6
Turbidity (NTU)	116		12	9	1/91	5/15	25.0% of values > OWQS of 10	
pH (units)	116		7.23	7.17	5.16/8.63	6.9./7.48		
Dissolved Oxygen (mg/L)	116		8.96	8.92	2.81/14.13	7.63/10.33		
Hardness (mg/L)	118		16.7	10.0	8.9/200.0	10.0/13.3		
Total Dissolved Solids (mg/L)	122		24.7	23.1	0.1/94.0	14.8/32.1		
Minerals	Specific Conductivity (uS/cm)	117	29.3	31.2	0.1/130.0	14.2/40.0		
	Chloride (mg/L)	93	10.1	<10.0	<10.0/16.7	<10.0/<10.0		
	Sulfate (mg/L)	93	11.3	<10.0	<10.0/46.2	<10.0/10.3		
	Total Phosphorus (mg/L)	114	0.031	0.019	<0.005/1.043	0.012/0.026		
Nutrients	Total Nitrogen (mg/L)	115	0.392	0.340	<0.100/1.430	0.240/0.475		
	Nitrate/Nitrite (mg/L)	108	0.101	<0.050	<0.050/0.815	<0.050/0.109		
	Chlorophyll A (mg/m ³)	31	12.0	1.3	0.3/45.4	0.7/2.6	TSI=45.0	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	30	264.8	70.0	<10.0/2800	<10.0/245	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	30	130.1	15.0	<10.0/1012	<10.0/106.3		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	NS						S	S	S
	Aesthetics												S
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead
 Fish and Wildlife Propagation not supporting for Copper and Lead,

Little River at Holly Creek



Sample Record	Times Visited	Station ID
November 2003 - Current	104	410200010200-002AT

Stream Data	County	McCurtain	View Site Data
	Location	North of the Town of Idabel on County Road 4615	
	Latitude/Longitude	33.93595796, -94.82864529	
	Planning Watershed	Southeast (8-digit HUC - 11140107)	

	Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments	
Parameters	In-Situ	Water Temperature (°C)	67	18.3	17.9	4.2/31.4	11.8/25.7	
		Turbidity (NTU)	66	16	12	4/65	9/20	69.0% of values > OWQS of 10
		pH (units)	67	7.29	7.23	6.49/8.37	6.94/7.57	
		Dissolved Oxygen (mg/L)	66	7.74	7.27	3.72/12.64	5.77/9.93	19.0% of values < OWQS of 6.0
		Hardness (mg/L)	67	37.6	24.0	10.0/251.0	17.0/43.0	
		Minerals	Total Dissolved Solids (mg/L)	67	63.6	54.0	0.1/166.0	34.0/88.0
Specific Conductivity (uS/cm)	67		93.6	74.0	0.1/257.0	43.0/133.0		
Chloride (mg/L)	52		13.0	<10.0	<10.0/31.3	<10.0/12.8		
Sulfate (mg/L)	51		12.0	10.5	<10.0/22.1	<10.0/13.2		
Nutrients	Total Phosphorus (mg/L)	69	0.039	0.035	<0.005/0.140	0.026/0.046		
	Total Nitrogen (mg/L)	69	0.558	0.480	<0.100/2.180	0.335/0.665		
	Nitrate/Nitrite (mg/L)	62	0.133	0.100	<0.050/0.690	<0.050/0.180		
	Chlorophyll A (mg/m ³)	23	11.8	4.9	0.4/13.5	1.9/9.3	TSI=45.6	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	13	194.2	20.0	<10.0/2200	15/41		
	E. Coli (cfu/100ml)(* -Geo. Mn.)	13	133.9	20.0	<10.0/1296	<10.0/52		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	NS	NS						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										S			
Public & Private Water Supply					S		S			S			
Fish Consumption					S								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish and Wildlife Propagation not supporting for Lead

Little River at Sasakwa



Sample Record	Times Visited	Station ID
November 1998 - Current	154	520800010010-001AT

Stream Data	County	Seminole	View Site Data
	Location	North of the Town of Sasakwa on State Highway 56	
	Latitude/Longitude	34.96534987, -96.5120113	
	Planning Watershed	Central (8-digit HUC - 11090204)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)		115	17.8	19.0	0.3/32.3
Turbidity (NTU)			112	164	42	2/1001	17/146	18.2% of values > OWQS of 50
pH (units)			114	8.05	8.06	6.84/8.67	7.91/8.26	
Dissolved Oxygen (mg/L)			115	8.96	8.63	3.88/17.75	7.38/10.19	
Hardness (mg/L)			115	311.2	302.0	72.0/980.0	220.0/372.0	
Total Dissolved Solids (mg/L)			119	704.1	694.0	130.3/2818.0	448.0/870.0	
Minerals	Specific Conductivity (uS/cm)		115	1173.8	1183.0	203.5/4335.0	710.0/1549.0	
	Chloride (mg/L)		115	245.4	227.0	29.2/1360.0	139.0/290.0	
	Sulfate (mg/L)		114	41.5	35.8	10.3/261.0	28.6/43.1	
	Total Phosphorus (mg/L)		117	0.141	0.060	<0.005/2.05	0.034/0.126	
Nutrients	Total Nitrogen (mg/L)		120	0.855	0.590	<0.100/6.850	0.390/0.910	
	Nitrate/Nitrite (mg/L)		121	0.201	0.050	<0.050/6.470	<0.050/0.1600	
	Chlorophyll A (mg/m ³)		14	10.8	3.0	0.1/90.3	1.3/8.7	TSI=53.5
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)		29	3826.3	74.0	<10.0/93000	25/350
E. Coli (cfu/100ml)(* -Geo. Mn.)			29	409.8	41.0	<10.0/5794	20/151.5	

Beneficial Uses	Click to learn more about Beneficial Uses												
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved Solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	
Fish & Wildlife Propagation	NS	S	S	S						S	S	S	
Aesthetics												NS	
Agriculture					S		S	S					
Primary Body Contact Recreation									NS				
Public & Private Water Supply				S		S			S				
Fish Consumption				NS									

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 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead and Thallium

Mountain Fork River at Eagletown



Sample Record	Times Visited	Station ID
November 1998 - Current	171	410210040010-001AT

Stream Data	County	McCurtain	View Site Data
	Location	East of the town of Broken Bow on US Highway 70	
	Latitude/Longitude	34.04168908, -94.62071144	
	Planning Watershed	Southeast (8-digit HUC - 11140108)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	118	16.5	16.9	2.6/29.5	12.1/21.0
Turbidity (NTU)	119		4	3	1/22	2/5		
pH (units)	116		7.24	7.18	4.68/9.3.0	6.88/7.71		
Dissolved Oxygen (mg/L)	117		9.12	9.06	4.99/12.85	7.96/10.3.0		
Hardness (mg/L)	118		14.4	10.0	6.5/93.0	10.0/12.1		
Total Dissolved Solids (mg/L)	118		20.1	19.8	0.1/118.0	6.1/26.3		
Minerals	Specific Conductivity (uS/cm)	117	24.0	27.5	0.1/181.0	6.2/34.0		
	Chloride (mg/L)	105	10.2	<10.0	<10.0/26.6	<10.0/<10.0		
	Sulfate (mg/L)	105	10.1	<10.0	<10.0/15.3	<10.0/<10.0		
	Total Phosphorus (mg/L)	120	0.021	0.011	<0.005/0.808	0.007/0.017		
Nutrients	Total Nitrogen (mg/L)	122	0.437	0.345	0.080/6.195	0.259/0.451		
	Nitrate/Nitrite (mg/L)	122	0.147	0.133	<0.050/0.475	0.095/0.171		
	Chlorophyll A (mg/m ³)	31	12.1	1.2	0.4/28.3	0.9/1.8	TSI=34.2	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	31	419.6	41.0	<10.0/4000	<10.0/200	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		31	92.6	20.0	<10.0/1956	<10.0/31		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	S	S	S	NS						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S								
	Fish Consumption				S								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish & Wildlife Propagation not supporting for Lead and Thallium
 Not supporting for OWQS Trout fisheries temperature criterion

Mountain Fork River at Smithville



Sample Record	Times Visited	Station ID
November 1998 - Current	279	410210060010-001AT

Stream Data	County	McCurtain	View Site Data
	Location	East of the town of Smithville on State Highway 4	
	Latitude/Longitude	34.4616061, -94.63230583	
	Planning Watershed	Southeast (8-digit HUC - 11140108)	

		Parameter <i>(Descriptions)</i>	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	168	18.5	19.2	0.5/33.5
	Turbidity (NTU)		168	16	8	1/261	5/13	
	pH (units)		166	7.11	7.07	4.63/8.71	6.78/7.49	
	Dissolved Oxygen (mg/L)		167	8.79	8.61	3.66/14.16	7.25/10.2	
	Hardness (mg/L)		169	15.3	10.0	2.8/135.0	10.0/13.7	
Minerals		Total Dissolved Solids (mg/L)	168	22.6	23.5	0.1/116.0	15.1/28.1	
		Specific Conductivity (uS/cm)	167	31.0	33.1	0.1/180.0	18.8/41.0	
		Chloride (mg/L)	87	10.2	10.0	<10.0/28.0	<10.0/<10.0	
		Sulfate (mg/L)	86	10.5	<10.0	10/28.0	<10.0/<10.0	
Nutrients		Total Phosphorus (mg/L)	146	0.032	0.021	<0.005/0.281	0.015/0.034	See Notes
		Total Nitrogen (mg/L)	149	0.629	0.430	<0.100/6.87	0.300/0.610	
		Nitrate/Nitrite (mg/L)	145	0.251	0.050	<0.050/6.430	<0.050/0.185	
		Chlorophyll A (mg/m ³)	67	11.1	1.9	0.1/15.8	0.9/3.6	TSI=37.9
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	45	1433.5	<10.0	<10.0/57000	<10.0/51	
		E. Coli (cfu/100ml)(* -Geo. Mn.)	45	43.2	<10.0	<10.0/397	<10.0/41	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment	Total Phosphorus	
	Fish & Wildlife Propagation		S	S	S	NS						S	S	S	
Aesthetics													S	S	
Agriculture						S		S	S						
Primary Body Contact Recreation										S					
Public & Private Water Supply					S										
Fish Consumption					S										
<i>S = Fully Supporting</i> <i>NS = Not Supporting</i> <i>NEI = Not Enough Information</i>		Notes		9.55%(6 of 63) of rolling Geo. Mean exceed OWQS criterion of 0.037 ppm Fish and Wildlife Propagation not supporting for Copper and Lead											

Muddy Boggy Creek at Atoka



Sample Record	Times Visited	Station ID
November 1998 - Current	162	410400050270-001AT

Stream Data	County	Atoka	View Site Data
	Location	North of the Town of Atoka on US 69	
	Latitude/Longitude	34.39420542, -96.12436418	
	Planning Watershed	Blue-Boggy (8-digit HUC -11140103)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	115	17.8	17.7	4.4/31.3
	Turbidity (NTU)		115	127	70	5/1002	33/147	35.7% of values >OWQS of 50
	pH (units)		116	7.30	7.33	6.13/8.25	7.06/7.56	
	Dissolved Oxygen (mg/L)		115	7.43	6.63	2.97/34.62	5.17/9.15	
	Hardness (mg/L)		114	85.8	84.5	10.0/197.0	57.8/108.0	
Minerals		Total Dissolved Solids (mg/L)	116	168.9	157.5	8.0/484.6	99.3/213.5	
		Specific Conductivity (uS/cm)	113	255.2	227.0	61.9/757.1	147.9/329.3	
		Chloride (mg/L)	102	22.4	14.6	<10.0/148.0	<10.0/24.1	
		Sulfate (mg/L)	102	52.1	45.3	<10.0/134.0	33.5/63.8	
Nutrients		Total Phosphorus (mg/L)	118	0.139	0.101	<0.005/0.565	0.066/0.172	
		Total Nitrogen (mg/L)	119	0.987	0.930	<0.050/2.220	0.690/1.270	
		Nitrate/Nitrite (mg/L)	117	0.168	0.130	<0.050/0.750	<0.050/0.233	
		Chlorophyll A (mg/m ³)	16	11.0	4.0	0.3/42.5	1.6/17.2	TSI=53.8
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	35	944.8	80.0	<10.0/19863	40/400	Mean > OWQS of 33
		E. Coli (cfu/100ml)(* -Geo. Mn.)	35	983.3	52.0	<10.0/19863	<10.0/292	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	NS						S	S	S
	Aesthetics												NS
	Agriculture					S		S	S				
	Primary Body Contact Recreation									NS			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

S = Fully Supporting
 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead
 Fish and Wildlife Propagation not supporting for Copper and Lead

Muddy Boggy Creek at Unger



Sample Record	Times Visited	Station ID
July 1999 - Current	152	410400010070-001AT

Stream Data	County	Choctaw	View Site Data
	Location	East of the Town of Unger on US 70	
	Latitude/Longitude	34.02512076, -95.7511845	
	Planning Watershed	Blue-Boggy (8-digit HUC -11140103)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	109	19.0	18.9	5.0/36.3	11.9/26.5
Turbidity (NTU)	107		117	59	3/857	35/123	47.6% of values >OWQS of 50	
pH (units)	108		7.65	7.69	6.71/8.21	7.49/7.86		
Dissolved Oxygen (mg/L)	109		8.24	7.59	3.87/40.07	6.14/9.96		
Hardness (mg/L)	110		130.8	132.0	21.0/246.0	97.5/166.3		
Total Dissolved Solids (mg/L)	110		228.3	234.5	64.0/476.0	147.7/291.5		
Minerals	Specific Conductivity (uS/cm)	108	356.7	367.5	99.7/732.0	228.3/459.0		
	Chloride (mg/L)	94	40.8	30.4	<10.0/181.0	13.6/59.2		
	Sulfate (mg/L)	94	34.6	28.8	12.6/134.0	21.8/41.1		
	Total Phosphorus (mg/L)	111	0.144	0.098	<0.005/1.017	0.071/0.169		
Nutrients	Total Nitrogen (mg/L)	112	0.839	0.695	<0.050/2.870	0.540/1.055		
	Nitrate/Nitrite (mg/L)	106	0.148	0.110	<0.050/1.140	<0.050/0.203		
	Chlorophyll A (mg/m ³)	17	11.9	7.1	1.0/20.2	2.7/15.3	TSI=52.1	
	Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	27	623.1	41.0	<10.0/8000	<10.0/300	Mean > OWQS of 33
E. Coli (cfu/100ml)(* -Geo. Mn.)		27	283.6	63.0	<10.0/2755	<10.0/160		

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation		NS	S	S	S						S	S
Aesthetics													NEI
Agriculture						S		S	S				
Primary Body Contact Recreation										NS			
Public & Private Water Supply					S		S			S			
Fish Consumption					NS								

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 NEI = Not Enough Information

Notes

Fish consumption not supporting for Lead

Red River at Harris



Sample Record	Times Visited	Station ID
November 1998 - Current	168	410100010010-001AT

Stream Data	County	McCurtain	View Site Data
	Location	South of the Town of Harris on State Highway 259	
	Latitude/Longitude	33.68687568, -94.69422864	
	Planning Watershed	Southeast (8-digit HUC - 11140106)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ		Water Temperature (°C)	116	19.4	20.3	3.0/33.0
	Turbidity (NTU)		117	72	42	10/614	23/84	22.2% of values > OWQS of 50
	pH (units)		115	7.99	8.02	7.10/8.74	7.77/8.19	
	Dissolved Oxygen (mg/L)		115	8.47	8.31	4.17/13.86	6.86/10.15	
	Hardness (mg/L)		117	285.6	288.0	14.1/758.0	222.5/335.0	
Minerals		Total Dissolved Solids (mg/L)	121	693.1	717.4	112.0/1575.0	452.7/921.0	
		Specific Conductivity (uS/cm)	116	1122.2	1124.0	190.0/2423.0	720.1/1507.3	
		Chloride (mg/L)	116	184.5	188.0	<10.0/395.0	123.0/253.8	
		Sulfate (mg/L)	116	161.9	163.5	37.7/308.0	115.3/210.5	
Nutrients		Total Phosphorus (mg/L)	117	0.138	0.103	0.022/0.715	0.077/0.160	
		Total Nitrogen (mg/L)	119	0.882	0.830	<0.100/2.810	0.630/1.060	
		Nitrate/Nitrite (mg/L)	111	0.125	0.050	<0.050/0.580	<0.050/0.190	
		Chlorophyll A (mg/m ³)	23	12.5	21.8	2.9/87.8	12.3/34.4	TSI=62.2
Bacteria		Enterococcus (cfu/100ml)(* -Geo. Mn.)	29	60.2	<10.0	<10.0/600	<10.0/45.5	
		E. Coli (cfu/100ml)(* -Geo. Mn.)	29	23.3	<10.0	<10.0/134	<10.0/20	

Beneficial Uses	Click to learn more about Beneficial Uses	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
	Fish & Wildlife Propagation	NS	S	S	S						S	S	S
	Aesthetics												NEI
	Agriculture					S		S	S				
	Primary Body Contact Recreation									S			
	Public & Private Water Supply				S		S			S			
	Fish Consumption				NS								

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 NS = Not Supporting
 NEI = Not Enough Information

Notes

Fish Consumption not supporting for Thallium

Red River at Hugo



Sample Record	Times Visited	Station ID
November 1998 - Current	169	410400010010-001AT

Stream Data	County	Choctaw	View Site Data
	Location	South of the Town of Hugo on State Highway 271	
	Latitude/Longitude	33.87545921, -95.50182137	
	Planning Watershed	Blue-Boggy (8-digit HUC - 11140101)	

Parameters		Parameter (<i>Descriptions</i>)	n	Mean	Median	Min./Max	p25/p75	Comments
		In-Situ	Water Temperature (°C)	112	19.4	19.5	4.1/34.4	12.3/27.2
Turbidity (NTU)	113		90	33	7/766	23/75		
pH (units)	111		8.00	8.02	6.79/8.73	7.76/8.23		
Dissolved Oxygen (mg/L)	112		9.30	9.05	4.18/39.16	7.36/10.67		
Hardness (mg/L)	114		296.3	306.0	72.0/480.0	237.5/352.3		
Minerals	Total Dissolved Solids (mg/L)		117	729.9	737.1	130.0/1779.0	529.0/934.5	
	Specific Conductivity (uS/cm)	112	1177.3	1179.0	210.0/2739.0	868.0/1547.8		
	Chloride (mg/L)	115	196.4	205.0	<10.0/394.0	137.0/266.0	88.4% of values > OWQS of 72	
	Sulfate (mg/L)	115	167.2	173.0	31.6/320.0	120.0/209.0	93.0% of values > OWQS of 51.5	
Nutrients	Total Phosphorus (mg/L)	116	0.135	0.087	0.013/0.925	0.065/0.147		
	Total Nitrogen (mg/L)	116	0.905	0.765	<0.050/2.870	0.570/1.025		
	Nitrate/Nitrite (mg/L)	111	0.172	0.125	<0.050/0.820	<0.050/0.235		
	Chlorophyll A (mg/m ³)	25	12.3	13.5	2.9/45.0	8.3/26.7	TSI=60.4	
Bacteria	Enterococcus (cfu/100ml)(* -Geo. Mn.)	29	290.6	20.0	<10.0/3300	<10.0/240	Mean > OWQS of 33	
	E. Coli (cfu/100ml)(* -Geo. Mn.)	29	98.8	<10.0	<10.0/1607	<10.0/68.5		

Beneficial Uses	Click to learn more about Beneficial Uses											
	Turbidity	pH	Dissolved Oxygen	Metals	Sulfates	Nitrates	Chlorides	Total Dissolved solids	Bacteria	Bio. Fish	Bio. BMI	Sediment
Fish & Wildlife Propagation	S	S	S	S						S	S	S
Aesthetics												NEI
Agriculture					NS		NS	NS				
Primary Body Contact Recreation									NS			
Public & Private Water Supply				S		S			S			
Fish Consumption				NS								

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 NS = Not Supporting
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Notes

Fish Consumption not supporting for Thallium

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APPENDIX A

OKLAHOMA'S USE SUPPORT ASSESSMENT PROTOCOLS

[UNOFFICIAL]

Amendments effective as of 07/01/2013

**TITLE 785. OKLAHOMA WATER RESOURCES BOARD
CHAPTER 46. IMPLEMENTATION OF OKLAHOMA'S WATER QUALITY STANDARDS
SUBCHAPTER 15. USE SUPPORT ASSESSMENT PROTOCOLS**

Available online:

http://www.owrb.ok.gov/util/rules/pdf_rul/current/Ch46.pdf