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OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

PUBLIC NOTICE[1]

Revision - Public Comment Ending Period Extended to March 7, 2016

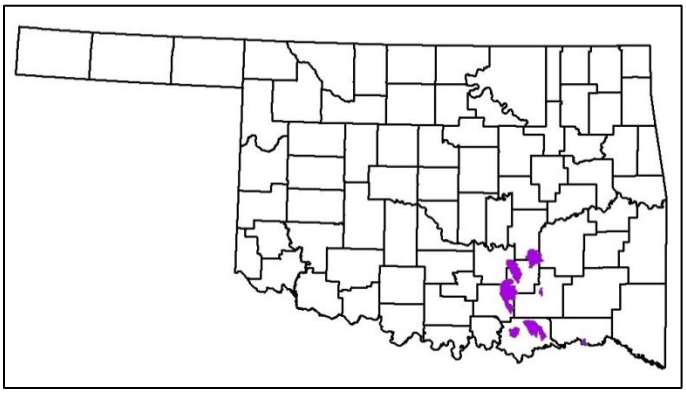
December 22, 2015

Availability of Draft Bacterial TMDLs for the Lower Red River Study Area

Proposed Modification to Incorporate Lower Red River Study Area Bacterial TMDLs into Oklahoma's Water Quality Management Plan

Request for Public Comments

Public Comment Period Ends on Monday, March 7, 2016



The Oklahoma Department of Environmental Quality (DEQ) is seeking comments on a draft Total Maximum Daily Load (TMDL) report describing reductions of bacteria needed to improve water quality in the Lower Red River Study Area. This Study Area is in the south central portion of Oklahoma in the Blue (USGS HUC 11140102), Muddy Boggy (USGS HUC 11140103), and Clear Boggy (USGS HUC 11140104) watersheds. The Study Area covers portions of Atoka, Bryan, Coal, Johnston, Hughes, Pittsburg, and Pontotoc counties.

DEQ is also proposing to incorporate these TMDLs into Oklahoma's Water Quality Management Plan (208 Plan). The "**208 Factsheet Regarding Bacterial TMDLs in the Lower Red River Study Area**" is attached. The full TMDL report can be found on-line at: www.deq.state.ok.us/WQDnew/tmdl/index.html.

Background: The Federal Clean Water Act requires states to develop Water Quality Standards (WQS)[2] which provide goals and pollution control targets for improving water quality where the standards are not met. The waterbodies where standards are not met are considered to be "impaired." Impaired waterbodies are listed on what is known as the 303(d) list, which refers to Section 303(d) of the Clean Water Act. The plan to improve water quality for impaired waterbodies is accomplished by establishing limits known as Total Maximum Daily Loads (TMDLs) for each pollutant not meeting the standards. TMDLs set levels for pollutants

[1] As a convenience, this DEQ public notice includes links to third-party sites. DEQ's inclusion of a linked site does NOT constitute an endorsement, recommendation, or favoring of the contents. Please be aware that we do not control or guarantee the accuracy, relevance, timeliness, or completeness of this outside information. Further, the inclusion of third-party sites is not intended to reflect their importance, nor is it intended to endorse any views expressed by the author or organization of the reference. The purpose of providing these links is to ensure that the recipient or reader of this notice has additional useful information and references to assess this TMDL report.

[2] A PowerPoint presentation on "Implementation of Water Quality Standards" can be found at the Oklahoma Water Resources Board's (OWRB) website. It can be found at: www.owrb.ok.gov/supply/ocwp/pdf_ocwp/WaterPlanUpdate/watersciencesseminar/SmolenWQImplementation.pdf

that allow waterbodies to achieve their WQS for beneficial uses. Beneficial uses include water for drinking, recreation, aesthetics, agriculture, fishing, and swimming. The beneficial uses are all described in in the Oklahoma Water Quality Standards (OWQS) [Title 785, Chapter 45]. All waterbodies and their designated beneficial uses can be found in Appendix A of the OWQS. The assessment on whether the waterbodies are meeting their designated beneficial uses along with the current 303(d) list of impaired waterbodies is in a document entitled the "Integrated Report". States are required to develop these Integrated Reports every two years. The assessment of all Oklahoma waterbodies for their beneficial uses can be found in Appendix B (Comprehensive Waterbody Assessment) of Oklahoma's Integrated Report.

Beneficial Uses: The designated beneficial uses for the waterbodies in the Lower Red River Study Area are:

- Aesthetics (AES)
- Agriculture (AG)
- Fish & Wildlife Propagation
  - Warm Water Aquatic Community Subcategory (WWAC)
- Fish Consumption (FISH)
- Primary Body Contact Recreation (PBCR)
- Public & Private Water Supply (PPWS)

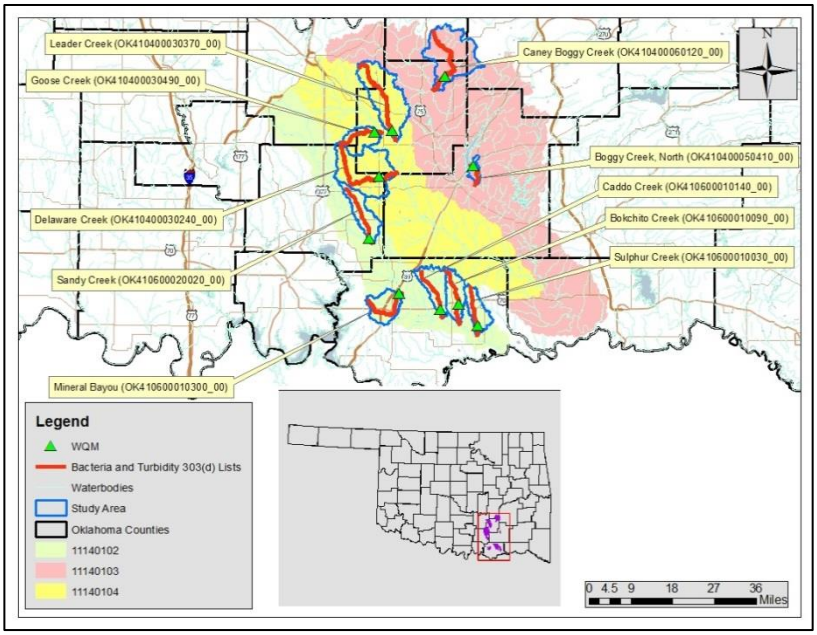


Table 1 is an assessment from Oklahoma's 2014 Integrated Report on whether or not the waterbodies in the Study Area met their designated beneficial uses. The designated beneficial uses addressed in the Lower Red River TMDL Report were PBCR:

Table 1: Assessed Beneficial Uses for Waterbodies in the Study Area

Waterbody Identification	Waterbody Name	AES	AG	WWAC	FISH	PBCR	PPWS
OK410400030240_00	Delaware Creek	I	F	F	X	N	X
OK410400030370_00	Leader Creek	I	F	N	X	N	
OK410400030490_00	Goose Creek	F	F	N	X	N	
OK410400050410_00	Boggy Creek, North	F	N	N	X	N	X
OK410400060120_00	Caney Boggy Creek	F	F	N	X	N	X
OK410600010030_00	Sulphur Creek	F	F	N	X	N	
OK410600010090_00	Bokchito Creek	F	F	F	X	N	
OK410600010140_00	Caddo Creek	F	F	N	X	N	
OK410600010300_00	Mineral Bayou	F	F	N	X	N	F
OK410600020020_00	Sandy Creek	I	F	N	X	N	X

F – Fully supporting that designated use; N – Not supporting that use; I – Insufficient information; X – Not assessed

Impairments:

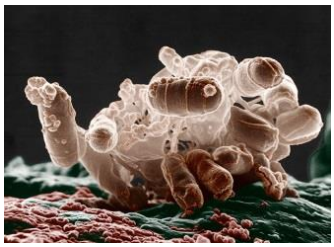
- **Bacteria:** The PBCR beneficial use includes swimming. If the PBCR beneficial use is not met, that means there is too much bacteria in that waterbody. Many types of bacteria are pathogens which are things that can cause disease in animals or plants. According to the OWQS, bacterial testing is done for *Escherichia coli* (*E. coli*) and Enterococci. They may be found in fecal matter entering waterbodies from sources such as sewage discharges, leaking septic tanks, or runoff from animal feedlots. Therefore, they are used as a surrogate for pathogen bacteria in this TMDL. Enterococci impair 7,442 miles of

streams in Oklahoma, and *E. coli* impair 4,006 miles of streams.[3]

Enterococci
Photo courtesy of the U.S. Dept. of Energy's Lawrence Berkeley National Laboratory

TMDL Study: The TMDL study evaluated 10 waterbodies in the Lower Red River Study Area that DEQ designated as impaired in the 2014 Integrated Report 303(d) list for nonsupport of the PBCR beneficial use. The criteria to determine if a stream is listed on the 303(d) list can be found in Implementation of Oklahoma's Water Quality Standards (Title 785, Chapter 46).

The Oklahoma WQS used to contain three bacterial indicators (fecal coliform, *E. coli* and Enterococci). In keeping with EPA's recommended Recreational Water Quality Criteria for States, the Oklahoma WQS were revised on July 1, 2011 to contain only *E. coli* and Enterococci. No more fecal coliform TMDLs have been developed since then. The WQS for *E. coli* and Enterococci bacteria are listed in the *Assessment of Primary Body Contact Recreation support* [OAC 785:46-15-6(b-c)]. The PBCR season every year is May 1 – September 30. An "**x**" indicates that the impaired waterbody is on the 303(d) list for Enterococci or *E. coli*.



E. coli
Photo courtesy of USDA ARS

Water quality monitoring is conducted to see whether or not the waterbodies are impaired. In Oklahoma, water quality monitoring is conducted by several different agencies including the Oklahoma Conservation Commission (OCC), the Oklahoma Water Resources Board (OWRB), and the U.S. Geological Survey (USGS). Between 2004 – 2013, 215 bacterial samples were collected for the waterbodies in the Study Area. For this study, the water quality data generated by all of these samples was analyzed to find out if the waterbodies in the Study Area were impaired for bacteria thus necessitating a TMDL. The water quality data examined to make these determinations can be found in Appendix A of the "**2015 Bacterial TMDLs for Oklahoma Streams in the Lower Red River Study Area**".

The results of the data analyses are also summarized in **Table 2**. An "**x**" in the half of the table with the yellow header indicates that sampling data showed the waterbody to be impaired for bacteria. TMDLs were developed for these waterbodies.

Table 2: Assessed Impairments and Actual Impairments in the Study Area

WBID	Waterbody Name	Waterbody impairments from the 2014 303(d) List		TMDLs needed after sampling results analyzed	
		Enterococci	*E. coli*	Enterococci	*E. coli*
OK410400030240_00	Delaware Creek	X		X	
OK410400030370_00	Leader Creek	X		X	
OK410400030490_00	Goose Creek	X		X	
OK410400050410_00	Boggy Creek, North	X		X	
OK410400060120_00	Caney Boggy Creek	X		X	
OK410600010030_00	Sulphur Creek	X	X	X	X
OK410600010090_00	Bokchito Creek	X		X	
OK410600010140_00	Caddo Creek	X		X	
OK410600010300_00	Mineral Bayou	X		X	
OK410600020020_00	Sandy Creek	X		X	

TMDLs:

A TMDL is a plan of action to reduce pollutant loads so that impaired waterbodies will be able to meet their beneficial uses. TMDLs calculate the maximum amount of a pollutant allowed to enter a waterbody so that the waterbody will be able to meet water quality standards for that particular pollutant. The TMDL report uses scientific data collection, analysis, and water quality modeling to determine the sources and amounts of the pollutants entering the waterbodies. Then the TMDL allocates loads to point sources (these are known as waste load allocation or WLA) and nonpoint sources (NPS) which are given a load allocation or LA.

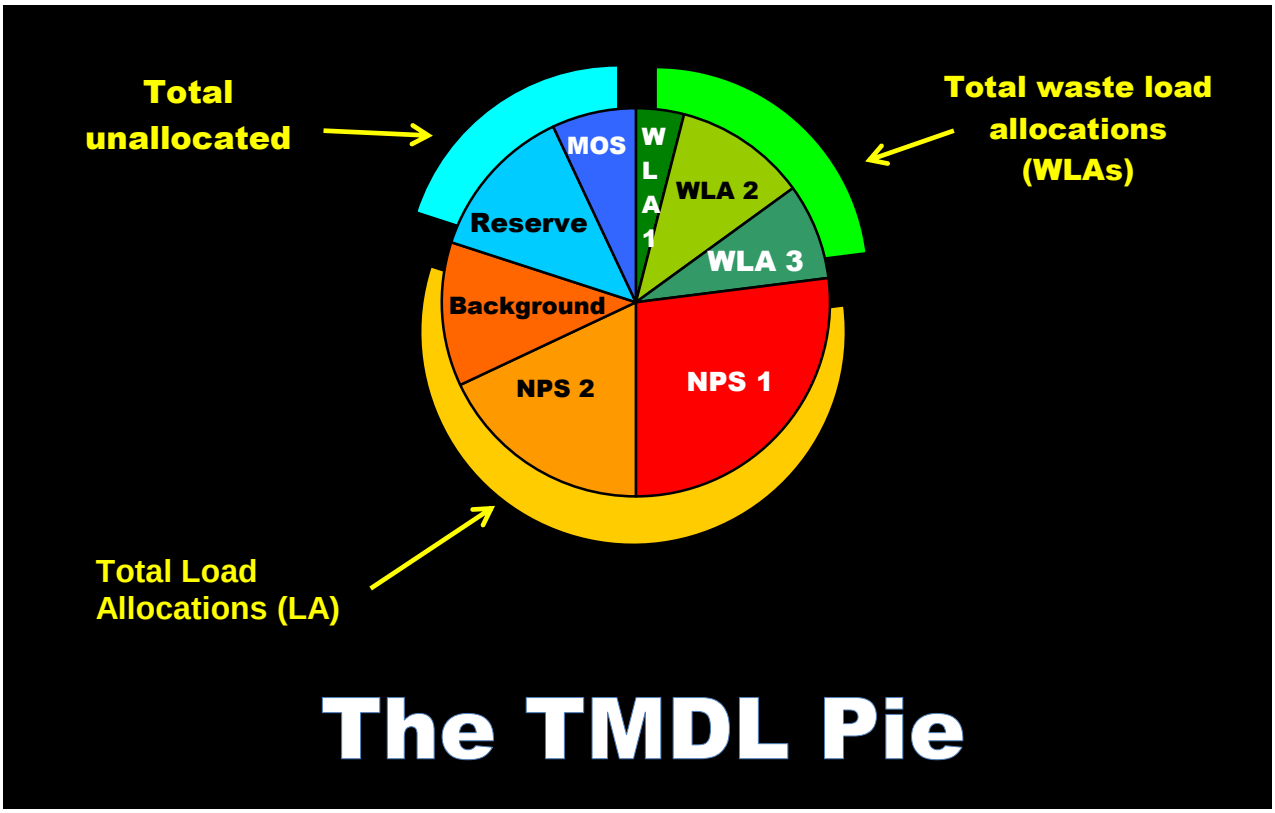
The National Pollutant Discharge Elimination System (NPDES) program regulates point source discharges.

[3] Table 6 of DEQ's 2014 Oklahoma Integrated Report.

The NPDES Program in Oklahoma, in accordance with an agreement between DEQ and EPA, is implemented via the Oklahoma Pollutant Discharge Elimination System (OPDES) Act [Title 252, Chapter 606 (http://www.deq.state.ok.us/rules/606.pdf)]. A point source is described as a "discernable, confined, and discrete conveyance from which pollutants are or may be discharged to surface waters." These are usually, but not always, discharges from a pipe. TMDLs must provide WLAs for all NPDES regulated point sources. Nonpoint sources (NPS) are ones, like agricultural runoff, that cannot be identified as entering a waterbody at a single location.

An important part of TMDL analysis is the identification of all sources of pollutants (both point and nonpoint) in the watershed. Once identified, all contributing sources of the pollutants are allocated a portion of the allowable load. This usually requires a reduction in the amount of pollution the source is discharging in order to help the waterbody no longer be impaired. Natural background sources, seasonal variations, and a margin of safety (usually at least 10%) are all taken into account in the allocations. The TMDL equation is as follows:

TMDL = WLA (waste load allocations from point sources) **+ LA** (from nonpoint sources) **+ MOS** (Margin of safety)



Point Source Discharges in the Lower Red River Study Area:

- **OPDES regulated municipal and industrial wastewater treatment facilities (WWTF):** There are five municipal OPDES-permitted facilities that discharge wastewater to waters in the Lower Red River Study Area. One industrial facility in the Study Area is inactive. Municipal wastewater treatment plants are not considered a potential source of turbidity because they discharge organic TSS and filter back wash operation is cosidered as turbidity/TSS point source, not considered as bacterial point source. All of these facilities are listed in Table 3-1 of the TMDL report and displayed in Figure 3-1.
- **OPDES regulated stormwater discharges:** DEQ regulates stormwater discharges from Municipal Separate Storm Sewer Systems (MS4s) for bacteria. Stormwater runoff from MS4 areas can contain high fecal coliform concentrations. But DEQ's stormwater program does not include discharges from Indian Country lands, discharges related to oil & gas extraction, or discharges associated with agricultural purposes. For details about DEQ's Stormwater Program, go to http://www.deq.state.ok.us/WQDnew/stormwater/

- **OPDES regulated stormwater discharges through Municipal Separate Storm Sewer Systems (MS4s):** Polluted stormwater runoff is commonly transported through MS4s, from which it is often discharged untreated into local waterbodies. Cities and towns in urbanized areas must use Best Management Practices (BMPs) to prevent harmful pollutants from being washed or dumped into local streams and lakes. MS4s outline these BMPs in their stormwater management program. They must also obtain an MS4 Permit from DEQ (OKR04). The Lower Red River Study Area does not have any MS4s.

DEQ file photo of storm drain marker

- **No-Discharge Facilities**: Certain municipal facilities are classified as no-discharge. These facilities are required to sign an affidavit of no discharge. For the purposes of these TMDLs, it is assumed that no-discharge facilities (such as towns with total retention lagoons) do not contribute to bacteria getting into the waterbodies. However, it is possible that the wastewater collection systems associated with these no-discharge facilities could be a source of bacteria, or that discharges from the wastewater plant may occur during large rainfall events that exceed the systems' storage capacities. There are three facilities in the Lower Red River Study Area.


DEQ file photo of land application

- **Sanitary Sewer Overflows (SSO)**: The sanitary sewer system is the network of underground pipes that carry wastewater from sinks, toilets, showers, bathtubs, and interior floor drains to the wastewater treatment plant where it is cleaned and treated before being discharged into local waterbodies. Although infrequent, sanitary sewer overflows (SSO) from wastewater collection systems can be a major source of harmful bacteria into streams. Most overflows are caused by blockage of sewer pipes by grease, tree roots, trash, and other debris that clog sewer lines; by sewer line breaks and leaks; by cross connections with storm sewers; excessive rain; and by inflow and infiltration of groundwater into sanitary sewers.


Photo courtesy of the City of Raleigh, NC

SSOs are a common result of the aging wastewater infrastructure around Oklahoma. Oklahoma has been ahead of other states and, in some cases EPA itself, in its handling of SSOs. Due to the widespread nature of the SSO problem, DEQ has focused its limited resources to first target SSOs that result in definitive environmental harm (such as fish kills) or lead to citizen complaints.[4] All SSOs falling into these two categories are addressed through DEQ's formal enforcement process. While not all sewer overflows are reported, DEQ has some data. For example in the Lower Red River Study Area between 1992 and 2014, 113 SSO occurrences were reported with amounts ranging from a minimal amount to over 1 million gallons. Details about these SSOs are summarized in Table 3-3 of the TMDL report with specific details in Appendix E.

- **NPDES regulated Animal Feeding Operations (AFOs):** The Agricultural Environmental Management Services (AEMS) is a program within the Oklahoma Department of Agriculture, Food and Forestry (ODAFF). Through regulations established by the Oklahoma Concentrated Animal Feeding Operation (CAFO) Act, Swine Feeding Operation (SFO) Act, and the Poultry Feeding Operation (PFO) Registration Act, AEMS helps develop, coordinate, and oversee environmental policies and programs aimed at protecting the Oklahoma environment from pollutants associated with agricultural animals and their waste. This is done through the use of Best Management Practices (BMPs). BMPs include dikes, berms, terraces, ditches or other similar structures used to isolate animal waste from outside surface drainage. ODAFF is the NPDES-permitting authority for CAFOs and SFOs in Oklahoma under what ODAFF calls the Agriculture Pollutant Discharge Elimination System (AgPDES). PFOs are smaller animal feeding operations so they are not required to get NPDES permits. They are only required to

[4] For environmental complaints, go to: www.deq.state.ok.us/ECLSnew/Complaints/onlncmpl.htm

register with ODAFF and follow PFO rules. In the Lower Red River Study Area, there weren't any PFOs.

A CAFO is an animal feeding operation that confines and feeds 1,000 or more animal units for 45 days or more in a 12-month period. The CAFO Rules are designed to protect water quality through the use of BMPs. Except for a 25-year, 24–hour rainfall event, CAFOs are considered "no discharge" facilities and are not considered a source of bacteria loading. If not managed properly, CAFOs have the potential to cause serious impacts on water quality.[5] Potential problems for CAFOs include possible animal waste discharges to State waterbodies and failure to properly operate wastewater lagoons. There are no CAFOs in the Lower Red River Study Area. However, according to ODAFF, there are five SFOs with 4,940 animal units.

Photo courtesy of Michigan State University.

An SFO is a lot or facility where swine kept for at least ninety (90) consecutive days or more in any twelve-month period. SFOs are required to develop a Swine Waste Management Plan[6], to prevent swine waste from being discharged into surface or groundwaters. This Plan includes the BMPs being used to prevent runoff & erosion. The Swine Waste Management Plan may include, but is not limited to, a Comprehensive Nutrient Management Plan (CNMP) per NRCS guidance or Nutrient Management Plan (NMP) per EPA guidance. SFOs are required to store wastewater in Waste Retention Structures (WRS) and either to land apply wastewater or make the WRS large enough to be total retention lagoons. SFOs are not allowed to discharge to State waterbodies.

Nonpoint Sources of Discharges in the Lower Red River Study Area

Nonpoint sources include those sources that cannot be identified as entering the waterbody at a specific location. Nonpoint sources of pollutants are typically separated into urban and rural categories. Surface storm runoff[7] is an important source of loading in urban or residential settings with many roads and other paved, impervious areas. In rural settings[8], the sources of bacteria may include runoff of manure applied to agricultural land, the runoff of farm animal wastes associated with the erosion of sediments in grazing fields, contributions from wildlife, and failing septic tanks. Some examples include:

- **Wildlife** – Disease-causing bacteria can be produced by all warm-blooded animals, including birds. Wildlife is naturally attracted to riparian corridors of streams and rivers. With direct access to the stream channel, wildlife can be a concentrated source of bacterial loading to a waterbody. Bacteria from wildlife are also deposited onto land surfaces, where they may be washed into nearby streams by rainfall runoff. It must be noted that no data are available in Oklahoma to estimate wildlife populations other than deer. A number of bacteria source tracking studies around the nation demonstrate that wild birds and mammals can represent a major source of the fecal bacteria found in streams. Currently there are insufficient data available to estimate populations and spatial distribution of wildlife and avian species

[5] The United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) has a program where operators of Animal Feeding Operations/Confined Animal Feeding Operations (AFO/CAFO) can apply for financial assistance for the storage, treatment, and utilization of animal waste. This is a statewide process to address the water quality impacts of these facilities to the rivers and streams of the State. For more information, go to www.nrcs.usda.gov/wps/portal/nrcs/detail/ok/programs/financial/?cid=nrcs142p2_000482.

[6] Swine Animal Waste Management Plan Requirements [Title 35 (ODAFF), Chapter 17 (Water Quality), Subchapter 3 (Swine Feeding Operations)] can be found in 35:17-3-14.

[7] For information on how to reduce runoff after rainstorms, request the free DVD from EPA entitled "Reduce Runoff: Slow it Down, Spread it Out, Soak it in!" (EPA Publication #84211001) by calling them at 800-490-9198 or by ordering it from their webpage (www.epa.gov/nscep/). The DVD includes the video, "After the Storm", which was co-produced by EPA and The Weather Channel. The "After the Storm" brochure (PDF) can be downloaded at http://water.epa.gov/action/weatherchannel/index.cfm.

[8] The Environmental Quality Incentives Program (EQIP) is a voluntary conservation program from the USDA NRCS that promotes agricultural production and environmental quality. Through EQIP, farmers and ranchers may receive financial and technical assistance to install or implement structural and management conservation practices on eligible agricultural land. To find out what programs are available, go to: www.nrcs.usda.gov/wps/portal/nrcs/detail/ok/programs/financial/?cid=nrcs142p2_000353 or contact your local NRCS Field Service Center.

by watershed. Consequently, it is difficult to assess the magnitude of bacterial contributions from wildlife species as a general category.

Photo courtesy of USDA ARS

However, adequate data are available by county to estimate the number of deer by watershed. Using Oklahoma Department of Wildlife Conservation county data, the population of deer can be roughly estimated. By using this estimate and the percentage of the watershed area within each county, wild deer population can be calculated for each watershed. For the ten watersheds in the Lower Red River Study Area impaired for bacteria, this comes to about 5,292 deer. This is an average deer per acre rate ranging from 0.010 [Sulphur Creek (OK410600010030_00), Bokchito Creek (OK410600010090_00), Caddo Creek (OK410600010140_00), and Mineral Bayou (OK410600010300_00)] to 0.022 [Boggy Creek, North (OK410400050410_00)]. At this minimal concentration, wildlife is considered to be a minor contributor of bacteria in those impaired watersheds.

- **Farm Animals** - Agricultural livestock grazing in pastures deposit manure containing bacteria onto land surfaces. Detailed information is not currently available to describe or quantify the relationship between in-stream concentrations of bacteria and land application of manure from commercially raised farm animals. Despite the lack of specific data, land application of commercially raised farm animal manure is considered a potential source of bacterial loading into watersheds in the Lower Red River Study Area for the purpose of these TMDLs. Examples of livestock activities that could result in bacteria getting into creeks, streams, and rivers include:

This cattle crossing keeps the cattle out of the stream except at the time of crossing.

Photo courtesy of USDA NCRS

  - **Processed manure from livestock operations such as poultry facilities:** This manure is often applied to fields as fertilizer and can contribute to fecal bacterial loading into waterbodies if washed into streams by runoff. In Oklahoma, poultry waste applicators must be certified.
  - **Livestock grazing in pastures:** Livestock deposit manure containing fecal bacteria onto land surfaces. These bacteria may be washed into waterbodies by storm runoff.
  - **Direct access to waterbodies by livestock:** Livestock standing in or crossing streams can provide a direct concentrated source of fecal bacteria into the streams. In the ten bacterially-impaired watersheds in the Lower Red River Study Area, cattle (an estimated 34,377 head) generate the largest amount of fecal coliform and often have direct access to streams and tributaries. The estimated numbers of livestock by watershed are based on the USDA county agricultural census data. The estimated farm animal populations were derived by using the percentage of the watershed within each county. Refer to the full TMDL report for the estimated number of all agricultural animals (Table 3-9) as well as their daily fecal coliform production rates (Table 3-10).

- **Pets** - Bacteria from the feces of dogs and cats can be a potential source of in-stream bacteria when it is transported to streams by runoff from urban and suburban areas. On average nationally there are 1.7 dogs per household and 2.2 cats per household [American Veterinary Medical Association (2007)]. Based on these national averages, it is estimated that there are about 4,075 dogs and 4,593 cats in the ten bacterially-impaired watersheds in the Lower Red River Study Area.
- **Failing Septic Systems** – If a septic system is not working properly, then raw sewage - a concentrated source of bacteria - can go directly into streams. Bacterial loading from

failing septic systems can be transported to streams in a variety of ways, including runoff from surface ponding or through groundwater. Bacteria-contaminated groundwater can also enter creeks through springs and seeps. It is estimated that there are 297 failing septic systems in the ten bacterially-impaired watersheds in the Lower Red River Study Area. Refer to the full TMDL report (Section 3.3.4) on how these numbers were calculated.

Summary of Possible Sources of Impairment:

- **Bacteria** - The health effects of bacteria should be a concern for the public who use these waterbodies for activities such as swimming, wading, or boating because some waterborne bacteria can cause serious human illness or disease. In the Lower Red River Study Area, most of the bacteria appear to come from nonpoint sources. Of the ten watersheds in the Study Area that are impaired with bacteria, four [Delaware Creek (OK410400030240_00), North Boggy Creek (OK410400050410_00), Bokchito Creek (OK410600010090_00), and Caddo Creek (OK410600010140_00)] have a continuous point source discharger in them. However, available data suggests that the proportion of bacteria from those point sources is minor. There are five SFOs (4,940 units) which could possibly contribute bacterial loading into the Caney Boggy Creek, Delaware Creek, and Sandy Creek watershed. But SFOs are not allowed to discharge or allow the runoff of animal waste so they are not considered to be major sources of bacteria as long as they are in compliance with their Animal Waste Management Plans as outlined in the ODAFF SFO Rules. Therefore the various nonpoint sources are considered to be the major source of bacterial loading in each watershed that requires a TMDL.

  Though most of the pathogens come from nonpoint sources, the specific sources from which the bacteria come cannot be determined without additional study. Of the four major nonpoint sources (wildlife, farm animals, failing septic systems, and domesticated dogs & cats), most of the fecal coliform load estimates from nonpoint sources to land surfaces appears to come from farm animals. Cattle, in particular, are thought to contribute the most to bacterial nonpoint source pollution because:

  - There are an estimated 34,377 units in the Lower Red River Study Area.
  - Cattle waste contains a significant amount of fecal coliform.
  - Cattle graze in fields where rain can result in stormwater runoff into nearby waterbodies.
  - Cattle are often allowed to wade in creeks and streams that flow to waterbodies.

  Table 3-13 of the TMDL report is an estimated percentage of fecal coliform load estimates from the four major nonpoint source categories that can contribute to the elevated bacterial concentrations found in these watersheds. It is estimated that commercially raised farm animals contribute 99.32% - 99.65% of the fecal coliform load estimates to land surfaces in these ten watersheds.

TMDL Calculations:

The purpose of a TMDL is to identify sources of pollutants in a watershed and calculate the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards. The Lower Red River Study Area contains waterbodies that are in violation of Oklahoma Water Quality Standards with respect to bacteria. The TMDL calculates the reduction in bacteria that would be needed in order for these streams to be in compliance with Oklahoma's WQS. This was done using load duration curves. The calculations include present and future sources as well as a margin of safety. For more information on how the TMDLs were developed, read Sections 4 & 5 and Appendix C of the TMDL report.

Recommendations:

After re-evaluating bacterial data following Oklahoma's assessment protocol, 11 TMDLs were developed for the 10 streams in the Lower Red River Study Area. **Table 3** is summaries of these TMDLs.

Table 3 Summary of Bacterial TMDLs in the Red River Study Area

Stream Name	Waterbody ID	Pollutant	TMDL (cfu/day)	WLA $_{WWTF}$ (cfu/day)	WLA$_{_MS4}$ (cfu/day)	LA (cfu/day)	MOS (cfu/day)
Delaware Creek	OK410400030240_00	**ENT**	8.72E+09	5.62E+07	0.00E+00	7.79E+09	8.72E+08
Leader Creek	OK410400030370_00	**ENT**	8.24E+09	0.00E+00	0.00E+00	7.42E+09	8.24E+08
Goose Creek	OK410400030490_00	**ENT**	2.93E+09	0.00E+00	0.00E+00	2.63E+09	2.93E+08
Boggy Creek, North	OK410400050410_00	**ENT**	1.29E+10	6.00E+07	0.00E+00	1.16E+10	1.29E+09
Caney Boggy Creek	OK410400060120_00	**ENT**	5.65E+09	0.00E+00	0.00E+00	5.08E+09	5.65E+08
Sulphur Creek	OK410600010030_00	***E. coli***	1.75E+10	0.00E+00	0.00E+00	1.58E+10	1.75E+09
		ENT	4.59E+09	0.00E+00	0.00E+00	4.13E+09	4.59E+08
Bokchito Creek	OK410600010090_00	**ENT**	5.46E+09	8.12E+07	0.00E+00	4.83E+09	5.46E+08
Caddo Creek	OK410600010140_00	**ENT**	6.21E+09	1.65E+08	0.00E+00	5.42E+09	6.21E+08
Mineral Bayou	OK410600010300_00	**ENT**	5.57E+09	0.00E+00	0.00E+00	5.01E+09	5.57E+08
Sandy Creek	OK410600020020_00	**ENT**	5.98E+09	0.00E+00	0.00E+00	5.39E+09	5.98E+08

Table 4 indicates the amount that each pollutant will need to be reduced [Percent Reduction Goal (PRG)] in order for that waterbody to meet water quality standards and its designated beneficial uses:

Table 4 Percent Reduction Goal Needed for Waterbody to Meet Bacterial Water Quality Standards

Waterbody ID	Waterbody Name	Required Reduction Rate	
		E. coli	**ENT**
OK410400030240_00	Delaware Creek	-	71.1%
OK410400030370_00	Leader Creek	-	77.3%
OK410400030490_00	Goose Creek	-	75.6%
OK410400050410_00	Boggy Creek, North	-	47.5%
OK410400060120_00	Caney Boggy Creek	-	82.5%
OK410600010030_00	Sulphur Creek	24.4%	92.7%
OK410600010090_00	Bokchito Creek	-	59.1%
OK410600010140_00	Caddo Creek	-	39.7%
OK410600010300_00	Mineral Bayou	-	73.2%
OK410600020020_00	Sandy Creek	-	85.1%

TMDLs include bacterial WLAs for point source dischargers. The WLAs are in **Table 5**.

Table 5 Bacterial Wasteload Allocations for OPDES-Permitted Facilities

Stream Name & Waterbody ID	Name	OPDES Permit No.	Disinfection	Design Flow (mg/d)	Wasteload Allocation (x10^7 cfu/day)
					ENT
Delaware Creek OK410400030240_00	**Wapanucka WWT**	OK0034011	No	0.045	5.62
Boggy Creek, North OK410400050410_00	**Stringtown WWT**	OK0030449	No	0.048	6.00

Stream Name & Waterbody ID	Name	OPDES Permit No.	Disinfection	Design Flow (mg/d)	Wasteload Allocation ($x10^7$ cfu/day)
					ENT
Bokchito Creek OK410600010090_00	**Bokchito WWT**	OK0027014	No	0.065	8.12
Caddo Creek OK410600010140_00	**Caddo WWT**	OK0022730	No	0.132	16.5

Providing comments

- DEQ invites your comments. The comment period will be open for 45 days. The TMDL report is a draft document and is subject to change based on comments received during the public participation process.
- You may also request a public meeting in writing. If there is a significant degree of interest, DEQ will schedule a public meeting.
- All official comments for the record must be submitted either in writing or by e-mail before the end of the comment period. DEQ will prepare a responsiveness summary addressing all comments received. After evaluating comments received and making any necessary changes, the TMDL report will be submitted to EPA for final approval. The final results of the TMDL will be incorporated into Oklahoma's Water Quality Management Plan.

Please submit your comments in writing to: Soojung Lim, Water Quality Division, Oklahoma Department of Environmental Quality, P.O. Box 1677, Oklahoma City, OK 73101-1677; (405) 702-8192; E-mail: Water.Comments@deq.ok.gov

Comments must be received by 4:30 pm on Monday, March 7, 2016

Obtaining copies: You may view the full Lower Red River Bacterial TMDL study by going to the DEQ website at: www.deq.state.ok.us/WQDnew/tmdl/index.html or by picking up copies at the DEQ main office, Water Quality Division, 707 North Robinson, Oklahoma City from 8:30 am – 5:00 pm. A document copying fee may apply.

You are receiving this notice because you are either on DEQ's list to receive all public notices, or you requested notices about your watershed. In addition to proposed TMDL reports, DEQ's Watershed Planning & Stormwater Permitting Section sends out public notices about proposed wasteload allocations (208s), proposed changes to the CPP or Integrated Report, 404 projects, 401 Certification requests, and stormwater permits.

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

If you would like to receive any or all of these public notices via e-mail, please send your e-mail address to Water.Comments@deq.ok.gov. Also, please let us know if you want to receive notices for the entire State or just for your watershed.

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