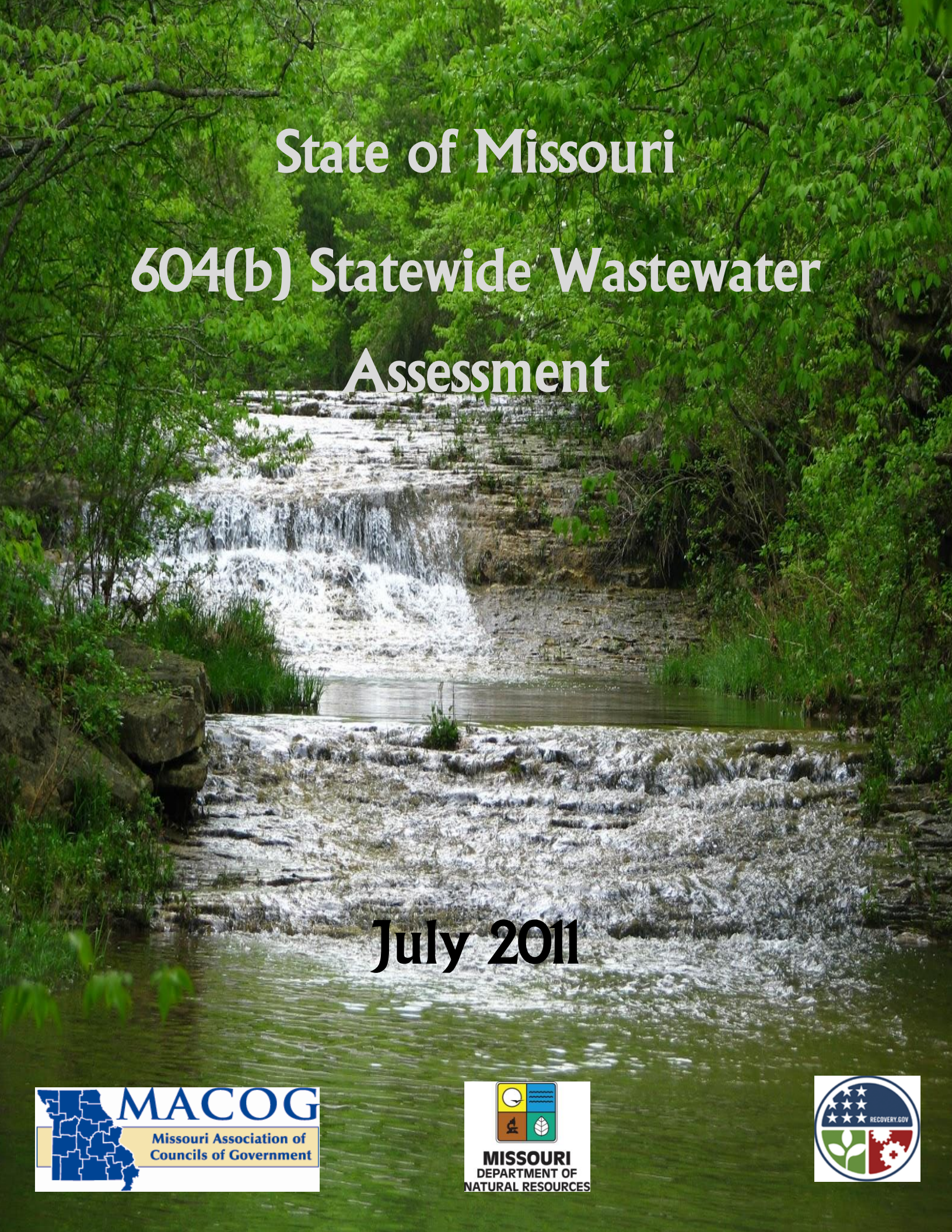

State of Missouri

604(b) Statewide Wastewater Assessment

July 2011

MACOG
Missouri Association of Councils of Government

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

RECOVERY.GOV

Prepared for

Missouri Department of Natural Resources

A project of Missouri Association of Council of Governments (MACOG)

Authored by

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Project No. G10-ARRAWQ-04

ABSTRACT

This report is the statewide wastewater assessment for communities less than 5,000 population for the State of Missouri. The report helps in assessing the existing condition of both the treatment and the collection system for the communities that have a population less than 5,000 per 2000 census and that are served by a public sewer system. The assessment is based on a statewide survey conducted by each region for each of their communities. Further, special attention was given to facilities which discharge into “sensitive” watersheds, such as those listed on the 303(d) list of impaired waters, Outstanding Resource Waters, or Conservation Areas.

The four objectives of this project are - to create an inventory of needed wastewater system improvements, to develop a needs summary for the participating entities, to develop a financing guide for the systems, and to work with the state and federal agencies to amass financing tools to address the needed improvements in the State of Missouri.

This report helps the communities to proactively plan for the needed wastewater improvements that are feasibly available to them as well as to implement the anticipated needs based on the necessity rather than reacting to citations or permit violations. Also, each of the participating entities will be provided guidance to track the needs and to obtain the needed financial assistance.

Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources has provided funding (or partial funding) for this project under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

Table of Contents

Executive Summary

The purpose of this project is to conduct an assessment of municipal wastewater systems and to provide an environmentally and economically sound plan for wastewater treatment and disposal in the State of Missouri for the next 20 years. This project will assess the needs of public wastewater treatment systems served by non-metropolitan organizations. This Statewide wastewater assessment project has been funded by Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

The assessment will determine the existing treatment type(s), quality of effluent required by the National Pollutant Discharge Elimination System (NPDES) permit, capacity, and compliance issues. All cities in the State of Missouri with a population of 5,000 or less per 2000 Census and that have a public wastewater system were surveyed by their respective Regional Planning Commission (RPC). Special attention has been given to facilities which discharge into "sensitive" watersheds, such as those listed on the 303(d) list of impaired waters, Outstanding Resource Waters, or Conservation Areas. The needed improvements and subsequent investments have been summarized by each RPC and 8-digit hydrologic unit code watersheds to identify the statewide priorities for future wastewater improvement investments.

A survey instrument was developed as a web-based application for collecting the information by Boonslick Regional Planning commission (lead RPC). Each RPC was responsible for conducting surveys for each community within their respective jurisdiction (individual RPC community reports are attached in the appendix section). The survey data was entered by the respective RPC in the web application for compilation by the lead RPC. The final community reports are designed to provide a "snapshot" of the existing system; a comparison of this system to others in the region and the State; and to forecast future system capacity needs, options, and costs. The final community reports were presented to the communities by the respective RPCs. A description of the methodology followed and data limitations are explained in the following sections.

The project utilizes Missouri's regional planning commissions that serve out-state Missouri to complete this project. A brief introduction of the activities performed by the Missouri Association

of Councils of Government (MACOG) and the Regional Planning Commission (RPC) are discussed later in this report.

Project Description

The aim of the project is to develop an inventory of wastewater needs throughout the State of Missouri served by non-metropolitan planning organizations. The assessment includes the analysis of the current public wastewater treatment systems and, planned and/or needed facility improvements for public wastewater treatment systems. The regional inventories have been aggregated to develop a statewide wastewater capital improvement needs summary to improve statewide water quality and promote water or energy improvements. Furthermore, the inventory of needs have been aligned by primary watersheds to prioritize those classified areas. The project also identifies the projects and funding programs that, when implemented, would lead to economic recovery through construction activities, and improved water quality.

The main objectives of the project are:

- To create an inventory of needed wastewater system improvements;
- To develop a wastewater improvement needs summary for participating entities;
- To develop a financing guide for wastewater treatment systems; and
- To work with state and federal agencies to amass fincancing tools to address the needed financing of wastewater system improvements.

The target audiences for the proposed project are two-fold. The primary target audience considered are the public bodies that operate a wastewater treatment facility. These audience have been assisted by their respective regional planning commission (RPC) in developing a wastewater treatment system improvement summary and financing guide that will help the community plan for the needed improvements in their wastewater treatment systems. These improvements are considered necessary to maintain and improve water quality in the State of Missouri.

The secondary audience considered are the funding agencies that provide financial assistance to communities for wastewater systems. This project report will articulate the magnitude of financial needs within the State and will highlight needed investments within the State's watershed so resources can be priortized to the most impaired water bodies. This project will also serve as the foundation for future watershed management planning.

The ideal behavior change that is sought is that communities will proactively plan to provide the highest quality wastewater treatment that is feasibly available to them, and that planning for these improvements will be done in anticipation of the need, instead of reacting to citations or permit violations. Each RPC will observe behavior changes that occur within their region and informally track the participating entity's efforts to obtain the needed financial assistance.

The wastewater inventory by each region and by each watershed has been utilized to assist local communities plan and finance needed improvements. Then the individual community data has been aggregated into a statewide summary. This statewide summary has been utilized to identify needed improvments in the most sensitive watershed so resources can be prioritized. The wastewater assessment summary described in this report includes the topics- type of the system; capacity of the system; schedule of complaince issues; notice of violation issues; expired permits; condition of the collection system; I & I issues; needs and costs by each region and watershed; financing options; future needs; and recommendations.

A brief introduction to the MACOG and RPC activities and the regulatory issues are detailed in the following pages.

Missouri Association of Councils of Governments (MACOG)

The Missouri Association of Councils of Governments (MACOG) is the statewide organization representing Missouri's 19 regional planning commissions and councils of governments. These professional organizations represent the entire State of Missouri and are committed to enhancing the state's regions. Regional councils are engaged in a myriad of activities, including: economic and community development, housing initiatives, safety and security, transportation planning, environmental issues, and quality-of-life issues

These activities create jobs for Missourians, stimulate private investment and attract millions of dollars which support public projects. MACOG's organizations serve the state's 114 counties and more than 6.8 million people.

Regional Planning Commission (RPC)

Regional planning commissions across the United States and in Missouri as well, are known by a variety of names, including councils of government, regional planning commissions, areawide planning organizations, economic development districts, and area development districts. Regardless of their name, there are several basic and fundamental similarities among the organizations. In Missouri, regional planning commissions are advisory in nature, and county and municipal governments hold membership on a voluntary basis.

Typically, RPCs address a broad cross-section of issues, including comprehensive planning; economic development, including marketing, industrial park development, operation of revolving loan funds, and coordination with industrial prospects and various agencies and organizations involved in economic development. Most regional planning commissions deal with infrastructural issues, such as public water supply; sanitary sewage collection and treatment; planning for various modes of transportation, including local streets and roads, highways, airports, port development, as appropriate, mass transit, and in some instances, rail.

Nonetheless, the primary role of the RPC is to provide a technical staff capable to providing sound advice to its membership and to work for coordination of various planning and infrastructural needs among the various counties and municipalities, as appropriate. Many regional planning commissions/councils of government conduct a considerable amount of research as a matter of course in their day-to-day operations and often have a considerable amount of data and information available for use by their members and citizens of the region.

Most of the rural RPCs in Missouri were formed under Chapter 251 of the Revised Statutes of the State of Missouri. Some are incorporated separately as not-for-profit corporations, and yet others, particularly in the metropolitan areas, were formed by interstate compact or other incorporating methods. Several of the regional planning commissions, notably East-West Gateway Coordination Council, Mid-America Regional Council and Mo-Kan Regional Council, serve as bi-state regional planning groups for their respective areas. All regional councils in Missouri operate on a not-for-profit basis. Attached is a map showing the regional planning commissions in Missouri.

Map 1 shows the Regional Planning Commissions

Regional Planning Commission Contact Information	
Boonslick Regional Planning Commission 111 Steinhagen P.O. Box 429 Warrenton MO 63383 Phone: (636) 456-3473 Website: www.boonslick.org	Mo-Kan Regional Council 1302 Faraon St. Joseph MO 64501 Phone: (816) 233-3144 Website: www.mo-kan.org
Bootheel Regional Planning and Economic Development Commission 105 E. North Main Dexter MO 63841 Phone: (573) 614-5178 Website: www.bootrpc.com	Northeast Missouri Regional Planning Commission PO Box 246 Memphis MO 63555 Phone: (660) 465-7281 Website: Under Construction
East-West Gateway Coordinating Council One Memorial Drive, Suite 1600 St. Louis MO 63102 Phone: (314) 421-4220 Website: www.ewgateway.org	Northwest Missouri Regional Council of Governments 114 West Third St. Maryville MO 64468 Phone: (660) 582-5121 Website: www.nwmorcog.org
Green Hills Regional Planning Commission 1104 Main PO Box 28 Trenton MO 64683 Phone: (660) 359-5636 Website: www.ghrpc.org	Ozark Foothills Regional Planning Commission 3019 Fair Street Poplar Bluff MO 63901 Phone: (573) 785-6402 Website: www.ofrpc.org
Harry S. Truman Coordinating Council 800 E. Pennell Carl Junction MO 64834 Phone: (417) 649-6400 Website: www.hstcc.org	Pioneer Trails Regional Planning Commission 802 S. Gordon PO Box 123 Concordia MO 64020 Phone: (660) 463-7934 Website: www.trailsrpc.org
Kasinger Basin Regional Planning Commission 213 South Washington Clinton MO 65735 Phone: (660) 885-3393 Website: www.kaysinger.com	South Central Ozark Council of Governments PO Box 100 Pamona MO 65789 Phone: (417) 256-4226 Website: www.scocog.org
Lake of the Ozarks Council of Local Governments 34 Roofener Camdenton MO 65020 Phone: (573) 346-5692 Website: www.loclg.org	Southeast Missouri Regional Planning & Economic Development PO Box 366 Perryville MO 63775 Phone: (573) 547-8357 Website: http://semorpc.org/
Mark Twain Regional Council of Governments 42494 Deleware Lane Perry MO 63462 Phone: (573) 565-2203 Website: www.marktwaincog.com	Southwest Missouri Council of Governments 901 S. National Springfield MO 65804 Phone: (417) 836-6900 Website: http://smcog.missouristate.edu/
Meramec Regional Planning Commission #4 Industrial Drive St. James MO 65559 Phone: (573) 265-2993 Website: http://meramecregion.org/	
Mid-America Regional Council 600 Broadway Suite 200 Kansas City MO 64105	

Regional Planning Commission Contact Information	
Phone: (816) 474-4240 Website: www.marc.org	
Mid-Missouri Regional Planning Commission 206 East Broadway Ashland MO 65010 Phone: (573) 657-9779 Website: www.mmrpc.org	

Table 1 contact information of the regional planning commissions

Regulatory Issues

Clean Water Act

The Federal Water Pollution Control Act of 1948 was the first major U.S. law to address water pollution. Growing public awareness and concern for controlling water pollution led to sweeping amendments in 1972. The 1972 amendments to the Federal Water Pollution Control Act (known as the Clean Water Act or CWA) established the foundation for wastewater discharge control in the country. The primary objective of CWA is to 'restore and maintain the chemical, physical, and biological integrity of the nation's waters.'

Section 402 of the CWA specifically requires Environmental Protection Agency (EPA) to develop and implement the National Pollutant Discharge Elimination System (NPDES) program. Permits that limit the amount of pollutants discharged are required of all municipal and industrial wastewater dischargers under the NPDES permit program. In addition, a construction grants program was set up to assist publicly owned wastewater treatment works build the improvements required to meet these new limits.

The 1977 amendments to CWA- established the basic structure for regulating pollutants discharging into the waters of the United States; gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry; maintained existing requirements to set water quality standards for all contaminants in surface waters; made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained; provided funding for the construction of sewage treatment plants under the construction grants program; and, recognized the need for planning to address the critical problems posed by nonpoint source pollution.

Subsequent amendments modified some of the earlier CWA provisions. Revisions in 1981 streamlined the municipal construction grants process, improving the capabilities of treatment plants built under the program. Changes in 1987 phased out the construction grants program, replacing it with the State Water Pollution Control Revolving Fund, more commonly known as the Clean Water State Revolving Fund. This new funding strategy addressed water quality needs by building on EPA-state partnerships.

Section 319 of the 1987 amendment of the Clean Water Act requires states to establish a nonpoint source, or NPS, program. States are to identify their NPS impaired or threatened

water resources (e.g., 303(d) and 305(b) reports), and develop and implement controls to improve or prevent water quality impacts resulting from non point sources.

Missouri Department of Natural Resources

The key activities of Missouri Department of Natural Resources- Water Pollution Control Branch (DNR WPCB) include the issuance of permits to build, erect, alter, replace, operate, use or maintain existing point sources of water pollution. The majority of the permits are issued for the discharge of wastewater from domestic and industrial facilities. Most of the permits are written to be site-specific to reflect the unique nature of the wastewater or the receiving stream. The permits usually have a five year cycle. As a permit expires, it is re-drafted, modified if needed, then placed on public notice for 30 days. When on public notice, a draft permit is open for comments. When the 30-day notice period expires, comments are reviewed and the permit is issued with needed changes, modified and re-noticed to resolve any concerns. Applications for the renewal of operating permits must be received at least one hundred eighty days before the expiration date of the present operating permit in accordance with 10 CSR 20-6.010(5)(C).

The CWA requires that state-issued individual NPDES permits include effluent limits as stringent as necessary to meet water quality standards. Sometimes a permittee cannot immediately comply with new or newly applied water quality-based effluent limits upon the effective date of the permit because the permittee needs time to perform substantial modifications to their facility or processes in order to meet the new limits. Depending upon the circumstances, NPDES permits may include a series of required steps and deadlines (i.e., a compliance schedule), which upon completion, enables the permittee to meet the permit's water quality-based effluent limits. Interim effluent permit limits may also be included in certain circumstances.

The DNR WPCB’s primary role is to achieve regulatory compliance with environmental laws. This is to ensure that not only the human health and the environment are protected but also to support economic development opportunities and the quality of life in Missouri. The DNR’s Regional Office follows an Operation Manual to conduct inspections and begin investigations. DNR requires a permit for all facilities that discharge or have the potential to discharge to waters of the state. If the DNR finds a facility that is operating without a permit, the DNR will take necessary enforcement actions against the facility to obtain the necessary permit and bring the

facility back into compliance. The table below shows the types of violations along with the descriptions.

Types of violations & descriptions	
No Violations	Inspector will send a letter to the facility within 15 days. No further action from the regional office or facility is required.
Only Class II Violations	The inspector will not require documentation proving compliance for inspections with only Class II violations. A letter; the list of observations; and the list of actions to correct the violations will be sent within 15 days of the inspection.
Class I Violations	Automated Letter of Warning. Require a response within 30 days from the inspection.
Acute or High Priority Violations	Both types of violations are major deviations from the regulations. Notice of Violation and the inspection report are issued within 15 days of inspection. Penalty steps are followed based on the type of violation and time taken to resolve it.

Table 2 Types of wastewater violations in the State of Missouri

The DNR's Regional Offices provide field inspections, complaint investigation and front-line troubleshooting, problem solving and technical assistance on environmental issues and emergencies. There are 5 regional offices in the State of Missouri. They are the Kansas City Regional Office located in Kansas City, Missouri; the Northeast Regional Office located in Macon; the Southeast Regional Office located in Poplar Bluff; the Southwest Regional Office located in Springfield; and the St. Louis Regional Office located in St. Louis.

A brief introduction to the regulatory issues pertaining to the CWA and Missouri Clean Water Law are discussed below. The web based information provided by the U.S. EPA and the DNR on the regulatory issues has been considered as a basis for presenting the information.

State regulatory issues

Missouri Clean Water Law

Missouri Clean Water Law states that "it is a violation to allow the discharge of a pollutant or contaminant to waters of the state" without a permit. The law authorizes the Missouri Clean Water Commission and the DNR to issue regulations, policies and guidelines to protect the quality of Missouri waters. The agencies issue permits and treatment standards to enforce the requirements. The law authorizes the state to adopt and enforce any requirements of the federal CWA.

Missouri's 303(d) Streams and Lakes

Section 303(d) of the Federal Clean Water Act requires that each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. Water quality standards protect such beneficial uses of water as whole body contact (such as swimming), maintaining fish and other aquatic life, and providing drinking water for people, livestock and wildlife. The 303(d) list helps state and federal agencies keep track of waters that are impaired but not addressed by normal water pollution control programs.

Streams are classified to help identify similarities and differences among streams, to assess ecosystem health, and to help establish policies and regulations. In the State of Missouri, the streams, lakes & rivers that have identified beneficial uses and maintain water year round are classified and listed in the DNR website.

Section 303(d) (1) of the CWA directs states to identify those waters within its jurisdiction for which effluent limitations required by Section 301 (b) (1) (A) and (B) are not stringent enough to implement any applicable water quality standards, and to establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters. The federal regulations direct the states to:

a) Identify the waters that require TMDLs (total maximum daily loads);
b) Rank, or prioritize, those waters taking into consideration the water uses and severity of the pollution problem;
c) Identify the pollutant(s) causing or expected to cause violations of the applicable water quality standards; and
d) Identify the waters targeted for TMDL development in the next two years.

Stream and Watershed Conservation

Stream and watershed conservation are part of the MDC programs. A watershed approach is a coordinating framework for environmental management involving diverse stakeholders and using sound science to focus resources on high priority issues within areas defined by their water system. A successful watershed approach promotes collaboration and communication between stakeholders with a variety of perspectives, from habitat preservation to hydropower generation. The watershed approach addresses the effects of typical development on water resources and outlines the steps a community can take to reduce the impacts of development.

Few communities are alone in a watershed. Instead, they are affected by the activities of adjacent political jurisdictions- upstream or downstream, uphill or downhill- in a common watershed. The Missouri Stream Team Program is a voluntary program which involves citizens throughout the state to work to protect and improve the stream resources.

Outstanding Resource Waters

The antidegradation provision of the CWA requires a high level of protection for high quality and high priority rivers. Under the CWA's antidegradation laws, a state may designate high quality rivers as "outstanding resource water" (ORW). An ORW designation protects rivers by prohibiting the release of harmful pollution that impairs the high quality nature of these rivers.

These are water bodies that are important, unique, or sensitive ecologically, but whose water quality, as measured by the traditional parameters such as dissolved oxygen or pH, may not be particularly high or whose characteristics cannot be adequately described by these parameters (such as wetlands). A map of the outstanding national and state resource waters is attached in the maps section.

Methodology

Boonslick Regional Planning Commission served as the lead agency for this project. The remaining 16 RPCs that serve the non-metropolitan planning organizations have subcontracted with the lead agency to work on this project. The 2 metropolitan planning organizations not included in this project are the East-West Gateway Coordinating Council and Mid-America Regional Council. The survey instrument was developed as a web-based application by the lead agency and upon receiving consensus by the DNR, the survey instrument was launched. The survey responses were then utilized to analyze the wastewater improvements and needs.

First, the lead agency with the help of the individual RPCs identified the potential communities that have a population less than 5,000 per 2000 Census and communities that are served by a public sewer system. The final list of communities to be surveyed were then finalized by the lead agency with the consensus from the respective RPCs.

Second, each individual RPC collected the information for every identified community. This step involved interacting with the cities in different ways such as phone calls, directly meeting with the specific person who is directly/ indirectly responsible in sharing the information etc. After compiling all the survey information, the individual RPCs entered the online surveys with the responses. Apart from the survey completion, the RPCs also provided the copies of the completed preliminary engineering reports to the lead agency.

Third, the lead agency compiled the online survey information for each RPC and performed a detailed analysis for each community by each RPC. The completed community reports were then send to the RPCs for presenting to the communities.

Finally, with the help of the complied information, the lead agency developed the final report which discusses the statewide assessment summaries, region wide summaries, and summaries by watershed.

Survey template

A copy of the survey template is included in the appendix section. The survey template developed for this project includes the following information:

- Type of the treatment system;
- Existing capacity of wastewater treatment plant;

- Number of users on the system and the rate for 5,000 gal/month;
- Current wastewater debt obligations;
- Planned improvements and the associated costs;
- Information on schedule of compliance issues and notices of violation;
- Information on the collection system: linear footage of the gravity line and force main, lift stations, type of the collection system, and current condition of the collection system; and,
- Information on I & I (inflow & infiltration) issues if any.

Some communities which were identified as part of this project were not aware of certain information pertaining to residential rates, I & I issues, and condition of the collection system. Also, some of the communities were in the preliminary stages of investigating alternatives for their wastewater infrastructure needs and hence, they were not aware of the cost estimates for the proposed improvements during the time of the completion of these survey responses. Therefore, it should be noted that these unknowns may have an impact on the analysis performed as part of this project.

Community report

The final community report consists of a two-sided single page document. These reports were presented to the communities as part of this project outcome. The details of the community report are shown below.

A template of the final community report is attached below followed by the detailed explanation.

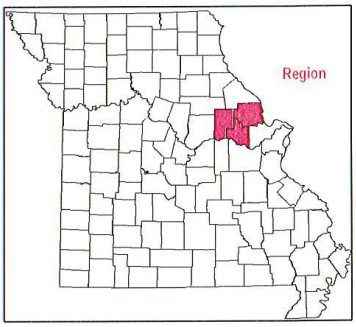
Community Wastewater Assessment
City of Bellflower

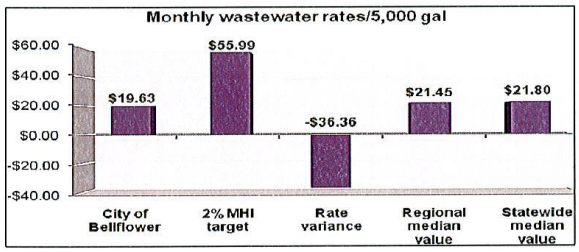
The City of Bellflower, together with Boonslick Regional Planning Commission, MoDNR and the Missouri Association of Councils of Government, surveyed small community wastewater treatment systems in the state. The goal of this project is to assess and inventory public wastewater systems; develop a wastewater improvement needs summary for interested communities and watersheds; identify potential funding opportunities for improvements; and work with communities as appropriate to anticipate needed improvements to maintain and improve water quality. This summary report is designed to provide a "snapshot" of the existing system; a comparison of this system to others in the region and the State; and to forecast future system capacity needs, options, and costs.

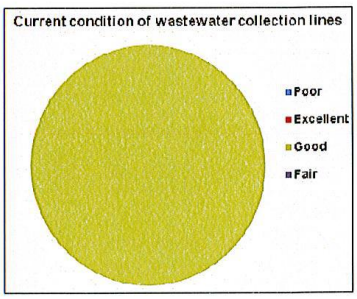
EXISTING CONDITIONS

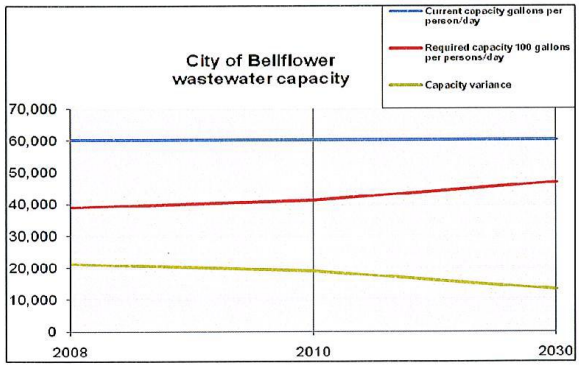
City of Bellflower Wastewater System

- Current Population = 389
- % of community served = 90%
- System type = Lagoon-3 cell non-aerated
- Current capacity = 60,000 gal/day
- Required capacity = 38,900 gal/day
- Anticipated capacity needs (20yr) = 46,900 gal/day
- 100% of the pipes are in "good" condition.
- Do not Have inflow & infiltration (I & I) issues – have an I & I program.
- Amount of outstanding wastewater debt obligations- unknown.
- Amounts of bonds authorized but not issued for wastewater improvements- none.
- There are no planned wastewater improvements at this time.







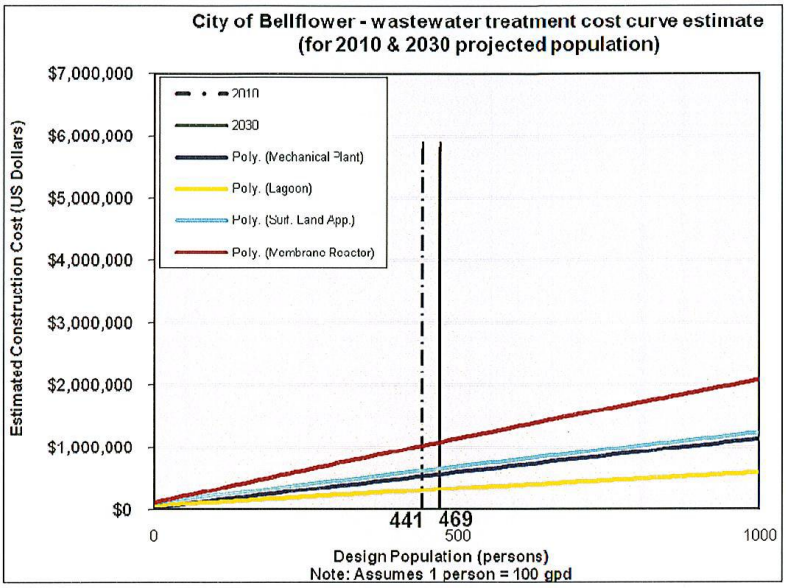


NPDES Permit

- Permit# MO-0103764
- Expiration: 08/06/2014
- This permit does not contain a Schedule of Compliance.
- Notices of violation: none listed

Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources has provided funding (or partial funding) for this project under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

Community Wastewater Assessment
City of Bellflower



The graph above estimates the cost of construction for wastewater systems to meet the capacity needs of the forecasted population. The vertical lines indicate the estimated population for 2010 and 2030. The intersection of these lines will provide an estimate of future construction costs based on treatment type and population.

Amount of debt proposed- $1,000,000							
	Interest rate (%)	Amortization period (years)	Total payment	Annual debt payment ($)	Current number of users	Annual payment required per user ($)	Estimated monthly payment increase ($)
Current market rate	5.5	20	$1,650,960	82,548	169	$488.45	$40.70
USDA rural development loan rate	3.75	35	$1,798,440	51,384		$304.05	$25.34
SRF loan	1.81	20	$1,191,600	59,580		$352.54	$29.38

Note: *This information is for planning purposes only; jurisdictions should work with their engineering consultants, financial advisers, and local regional planning commission before undertaking any course of action.*
Data presented in this summary report is provided by the Census Bureau and the MACOG Community Sewer Assessment Survey conducted as part of this project.
Linear interpolation is used to project population estimates for 2010 and 2030 assuming a linear model of population change between 1990 and 2000 numbers.
The survey results are dated as of fall 2010.

Projected population = Pop (2000) + B (projected year - last year)
B = (2000 population - 1990 population) / 2000-1990
Projected population (2010)= Pop (2000) + B (10)
Projected population (2030)= Pop (2010) + B (20)

Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources has provided funding (or partial funding) for this project under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

Page 1

The first text box discusses the following information:

- 2008 population
- % of community served by the treatment system
- Type of the system
- Current capacity, required capacity, anticipated capacity needs for 2030
- Current condition of the collection pipes
- Information on I & I issues
- Planned wastewater improvements and the corresponding costs
- Dollar amount of outstanding wastewater debt obligations
- Dollar amount of bonds authorized but not issued for wastewater improvements.
- Specifics on the recommended alternatives and the cost estimates from the preliminary engineering report.

The map on the right represents the map of the region i.e. the map of the RPC boundaries within the State of Missouri.

The bar chart indicates the – current residential wastewater rate for the community, the 2% MHI target rate (2% median household income is used as a target rate for applying to any grant program within the state). Median values (tend to be less biased than the mean or average values) for the respective RPC and the state are used to compare the rates in different areas.

The pie chart depicts the current condition of the wastewater collection lines. These are shown as percentage of collection system that is excellent, good, fair, and poor.

The line chart depicts 3 major components- blue line shows the current capacity in gallons per person per day (this number is mentioned in the wastewater permit); red line shows the required capacity (calculated as 100 gallons per person per day); green line shows the capacity variance. The capacities are calculated for the year 2008 using the current population numbers as mentioned by the specific community. The 2010 and 2030 capacities are projected based on the projected population numbers. The detailed information on projecting the population numbers is explained in page 2 of this report.

The second text box details the specific information on the permit such as the permit number, permit expiration date, if there is a schedule of compliance mentioned in the permit, and the notices of violations as mentioned in the online survey response.

Page 2

The graph provides an estimate of the cost of construction for wastewater systems to meet the capacity needs of the forecasted population. The population numbers are projected for 2010 and 2030 using the linear interpolation. The 1990 and 2000 population numbers were used to project the forecasted numbers. The vertical lines on the graph represent the estimated population for 2010 and 2030. The intersection of these lines provides an estimate of future construction costs for different treatment systems.

The cost curve estimate has been provided by the engineering consultants. The information used in this graph was compiled during the months of August and September, 2010. The engineering consultants prepared the graph showing the estimated costs for building the treatment systems: mechanical plant, lagoons, land application, and membrane reactor.

This graph was created solely for the use of communities in the State of Missouri with a population of under 5000 interested in gaining an understanding of the scale of costs associated with constructing a new treatment facility. The engineering consultants stated that the information used for this graph was compiled from data obtained from Missouri engineering firms, sanitary sewer and water districts, Missouri communities as well as the Missouri Department of Natural Resources. It should be understood that as variables such as material prices, inflation, and economic conditions fluctuate, the costs associated with constructing a treatment facility will also change.

Trendlines are used to graphically display trends in data and to help analyze problems of prediction. For the purpose of this project, the engineer utilized the polynomial trendlines. A polynomial (poly.) trendline is a curved line that is used when data fluctuates.

The table on this page provides an overview of the proposed estimated monthly payment increase for a proposed debt of $1 million. In order to calculate the proposed numbers, the current market rate, USDA rural development loan rate, and SRF loan rates were taken into consideration. Current number of users was used to calculate the estimated payment.

A note was provided at the end which clearly mentions that the information provided in these reports are for planning purposes only and that the communities if interested have to work with their engineering consultants, financial advisers, and local regional planning commission before undertaking any course of action. Further, a brief description of how linear interpolation was used to project the forecasted population numbers was explained.

The survey responses collected from the community reports formed a basis for performing the analysis. Apart from the survey responses, the following information has been analyzed for completing this report:

- preliminary engineering reports,
- 8-digit and 10-digit hydrologic unit code watershed maps along with the 303(d) listed impaired streams generated for each region,
- future growth maps generated using the 2010 Census numbers,
- existing federal & state regulatory issues, and
- a literature review of various other related reports.

Assessment Data Sets

For the purpose of the analysis, the wastewater assessment has been broken down by different levels. The statewide assessment has been discussed first followed by the region wide and watershed assessments. The survey responses are analyzed closely to make a reasonable analysis. It is to be noted that the survey respondents are the communities with population less than 5,000 per 2000 Census and that are served by a public sewer system. The following data sets are used in performing the analysis:

System type: The total percentage of communities served by different types of treatment systems are shown in this data set. For the purpose of this study, the treatment systems considered are the lagoon, oxidation ditch, activated sludge, sand filtration, land application, extended aeration, trickling filter, package treatment, membrane reactor, and sequencing batch reactor. The details on the classified streams and watersheds are also described.

A watershed is a geographic area of land, water and biota within the confines of a drainage divide. The watershed boundaries define the aerial extent of surface water drainage to a point. Watershed boundaries follow the highest ridgeline around the stream channels and meet at the bottom or lowest point of the land where water flows out of the watershed. In the United States, the watersheds are delineated by the U.S. Geological Survey using a national standard hierarchical system based on surface hydrologic features. Each hydrologic unit is identified by a unique hydrologic code (HUC) consisting of two to twelve digits based on the six levels of classification. The six types of hydrologic units along with the hydrologic units include:

- first level (region)- 2-digit HUC
- second-level (sub region)- 4-digit HUC
- third-level (accounting unit)- 6-digit HUC
- fourth-level (cataloguing unit)- 8-digit HUC
- fifth-level (watershed)- 10-digit HUC
- sixth-level (sub-watershed)- 12-digit HUC

For the purpose of this study, the 8-digit and 10-digit hydrologic-unit-codes were used to perform the assessments.

System capacity: This dataset looks at the current capacity numbers of the existing treatment system. These numbers are compared with the required capacity i.e. 100 gallons/person/day.

The rate variance numbers are analyzed to see how many communities are not served by the existing capacity. Furthermore, the 2030 projected population numbers are used to see how many communities have exceeding needs in the future.

Condition of the collection system: This dataset analyzes the current condition at the collection system i.e. the condition of the pipes. The survey results were looked closely to see the percentage of communities that have a collection system with excellent, good, fair, and poor condition.

Inflow & Infiltration (I & I) issues: Water entering sanitary sewers from inappropriate connections is called inflow. On the other hand, groundwater entering sanitary sewers through defective pipe joints and broken pipes is called infiltration. Inflow and infiltration (I & I issues) in a facility's collection system is costly for a wastewater treatment facility. Increased flow in the system results in higher operational and capital costs. The system runs the risk of overflows as it becomes overloaded. Inflow and infiltration problems can result in millions of gallons per day of increased flow into the wastewater facility, necessitating increased discharges of treated effluent to the receiving stream. The important solutions identified by EPA include: smoke testing, camera inspections, manhole inspections, flow monitoring, and finally repair and replacement. The DNR WPCB issues the notices on the I & I issues.
This dataset looks at the percentage of communities that “have I & I issues and have an I & I program” and communities that “have I & I issues but do not have an I & program”.

Schedule of compliance issues: A schedule of compliance includes a series of required steps and deadlines to meet the permit's water quality-based effluent limits. These are issued by the DNR WPCB in the State of Missouri. This section of the operating permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or other remedial actions, the schedule for expected changes of improvements and other requirements or recommendations.
This dataset determines the percentage of communities that have schedule of compliance issues. After performing the analysis, it has been observed that most of the compliance issues are pertaining to pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues: The notices of violations are issued for acute or high priority violations. A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected. It alerts the violator that serious, potentially serious or repeated violations exist and that the violator is or will be requested to take certain steps to address the violation.

The total percentage of communities with notices of violation issues in the State of Missouri with less than 5000 population are shown in this data set. Further, a detailed breakup of the types of violation issues is shown.

Expired permits: The DNR WPCB is responsible for issuing permits to build, erect, alter, replace, operate, use or maintain existing point sources of water pollution in the State of Missouri. The application for renewing the permit must be received within 180 days of the expiration of the current operating permit.

This dataset shows the total number of communities in the state less than 5,000 population & those with public sewer system that have expired permits. The survey results were analyzed to see how many communities will have expired permits by the end of Fall 2011.

Development trends: The 2010 Census numbers by block group were analyzed to see which part of the state, region, and watershed show growth.

Needs and costs: The different categories of needs in this dataset are defined based on the information provided in the summary reports developed by EPA for Clean Watersheds Needs Survey 2008. Based on the survey results, some changes were made to the definitions to fit to the needs.

Category of the need	Definition
Secondary Wastewater Treatment	This category includes needs and costs necessary to meet the minimum level of treatment that must be maintained by all treatment facilities.
Advanced Wastewater Treatment	This category includes needs and costs necessary to attain a level of treatment that is more stringent than secondary treatment or produce a significant reduction in nonconventional or toxic pollutants present in the wastewater treated by a facility.
Infiltration / Inflow (I&I) Correction	This category includes needs and costs for correction of sewer system infiltration/inflow problems.
Sewer Replacement / Rehabilitation	This category includes needs and costs for the maintenance, reinforcement, or reconstruction of structurally deteriorating

Category of the need	Definition
	sanitary or combined sewers. Also, includes the costs of installing new pipes.
System upgrades	This category includes the upgrades that need to be done for the existing system.

Table 3 Definitions for the different categories of needs

The categories of needs are analyzed based on the priorities. The estimated cost for each of the above needs is also shown. The total amount of outstanding wastewater debt obligations the total amount of bonds authorized but not issued for wastewater improvements are also shown.

Statewide Assessment

System type

Out of 452 communities surveyed statewide, 65% are served by lagoon, 13% are served by oxidation ditch, and 10% are served by activated sludge. There are three communities (<5000 population) in the state that are served by a package treatment plant.

More than 60 percent of the surveyed communities in the central, eastern, northern, western, northeastern, northwestern, southern, and southeastern regions of the state are served by lagoons than other treatment systems. Whereas, southwest part of the state is served by a mix of lagoons, activated sludge, and oxidation ditch.

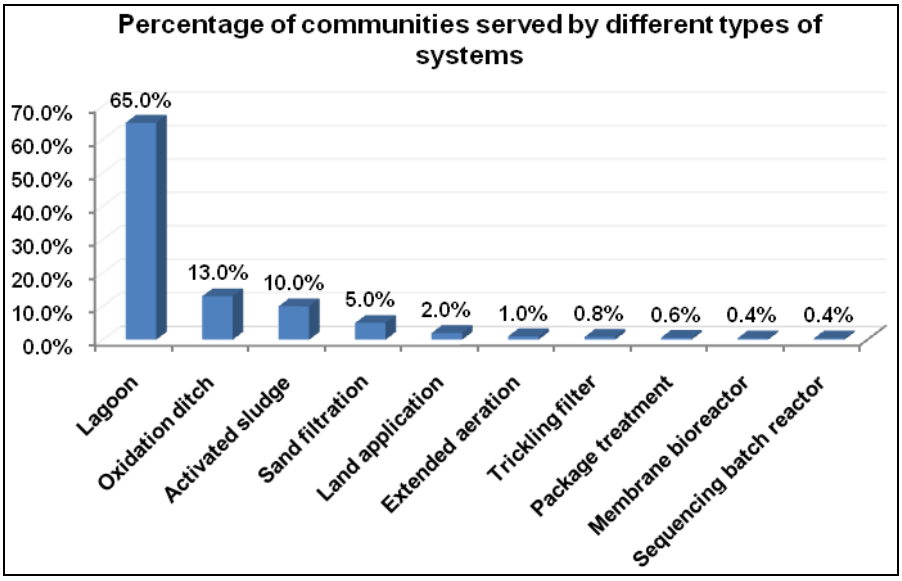


Chart 1

Section 303(d) of the federal Clean Water Act requires each state identify waters that are not meeting water quality standards and for which adequate water pollution controls have not been required. As per the 2008 Missouri 303(d) list, there are 284 classified streams in the State of Missouri. Most of these streams are concentrated towards the eastern, northern, southeastern, and southwestern regions of the state. Waters of the State are defined as all rivers, streams, lakes and other bodies of surface and subsurface water lying within or forming a part of the boundaries of the state. These include the Missouri and Mississippi rivers and losing streams, or

streams that distribute 30 percent or more of its flow through natural processes. Waters of the state also include metropolitan no-discharge streams, special streams, subsurface waters in aquifers and all other waters.

As per the watersheds delineated by the U.S. Geological Survey, there are 66 8-digit hydrologic unit code cataloguing units. Out of these there are forty- two 8-digit hydrologic unit code cataloguing units that contain 303(d) listed impaired streams. There are 387 10-digit hydrologic unit code watersheds (if clipped to county) in the state. Out of these there are one hundred and sixty nine 10-digit hydrologic unit code watersheds that contain 303(d) listed impaired streams in the State of Missouri. These are concentrated more towards the eastern, northern, southeastern, and southwestern regions of the state.

System Capacity

The reported capacity of treatment facilities in the state with communities less than 5000 population (2000 Census) is 118 million gallons/day. Out of 452 communities surveyed statewide, 6% of the communities i.e. 30 communities, all served by lagoons did not have the required capacity (100 gallons/persons/day). The north, southwest, and west parts of the state has more communities that are not served by the existing treatment capacity.

In 20 years, it is estimated that 88 communities in the state would have system capacities less than the required capacity (100 gallons/persons/day). Most of these communities are located in the northern, northwestern, and southwestern regions of the state.

Condition of the collection system

A wastewater collection system is defined as the network of pipes and pumping systems used to convey sanitary flow to a wastewater treatment facility for treatment prior to discharge to the environment. For the purpose of this study, the survey responses were closely analyzed to see what percentage of the communities have a collection system which is more than 70 percent in excellent condition. The condition of the collection system which is more than 40 percent in poor condition is also identified.

Out of 452 communities surveyed statewide, 14.4% of the communities have a collection system greater than 70 percent in excellent condition. Whereas, 11.1% of the communities have collection system that is greater than 40 percent in poor condition. The central and western regions of the state has more communities with collection system greater than 70 percent in

excellent condition; southeastern and eastern regions of the state has communities with a mix of both excellent and poor condition; whereas, northeastern, southwestern, northwestern, northern, and southern regions of the state has more communities with collection system greater than 40 percent in poor condition.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. Inflow and infiltration (I & I issues) in a facility's collection system is costly for a wastewater treatment facility. Increased flow in the system results in higher operational and capital costs.

Out of 452 communities surveyed statewide, 43% i.e. 198 communities have I & I issues and have an I & I program. Whereas, more than 31% i.e. 141 communities have I & I issues but do not have an I & I program. Based on the survey responses, it has been identified that northwest, northern, and eastern regions of the state has more communities with I & I issues and without an I & I program, whereas, the remaining parts of the state has more communities with I & I program in place. 25% of the surveyed communities i.e.114 communities in the state do not have any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet the permit's water quality-based effluent limits. This section of the operating permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or other remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Out of 452 communities surveyed statewide, 51% i.e. 231 communities have schedule of compliance issues. Southeastern, northern, western, northeastern, and the northwestern regions of the state have more communities with schedule of compliance issues. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Out of 452 communities surveyed statewide, 33% of the communities have notices of violation issues. Out of these, 52% of the violations are related to effluent limitations; 23% are related to late reporting and inspection issues; 10% of the violations are related to I & I issues; 6% are related to sanitary sewer overflows (SSOs), consent order from DNR & EPA, and sensitive area issues, and the remaining 4% are related to system issues.

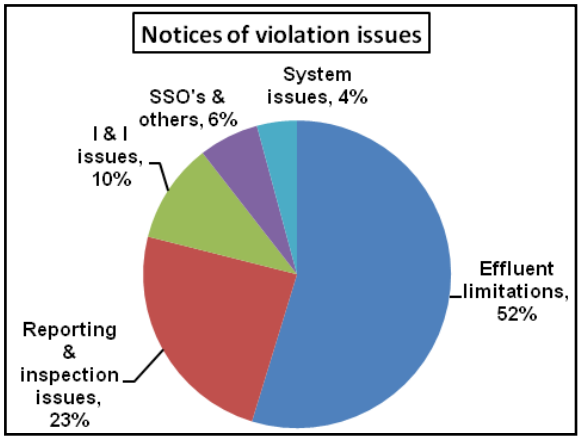


Chart 2

The central, northwestern and western regions of the state have more communities with notices of violation issues.

Expired permits

The DNR WPCB is responsible for renewing the permits in the state. The application for renewing the permit must be received within 180 days of the expiration of the current operating permit.

Out of 452 communities surveyed statewide, 9% of the communities i.e. 44 communities have expired permits. The survey responses show that by fall 2011, 17% of the communities i.e. 78 communities will have expired permits. The central, northeastern, southeastern, southwestern and western regions of the state have more communities with either expiring or about to expire wastewater permits. Some of the communities with expired permits are working with DNR on the permit renewal. The current status of the expired permits is that some permits are under the public comment period and some are under DNR WPCB review.

Development trends

As of 2008, 452 communities (< 5,000 population) provide wastewater services to approximately 9% of the total state population.

After looking at the 2010 Census numbers, it was observed that the northeastern, northwestern and southeastern regions of the state show a decline in the population; on the other hand, the eastern, northern, southern, western, southwestern, and central regions of the state showed a steady growth. There is just a small amount of the state that had no growth. A state map showing the population change by block group is attached under the map section.

Needs and Costs

The statewide median rate for wastewater is $21.80 per month. Out of 452 communities surveyed, 48% i.e. 217 communities has rate less than the statewide median value; whereas 51% i.e. 232 communities has rate greater than the statewide median value. Two communities in the state have the same rate as the statewide median value.

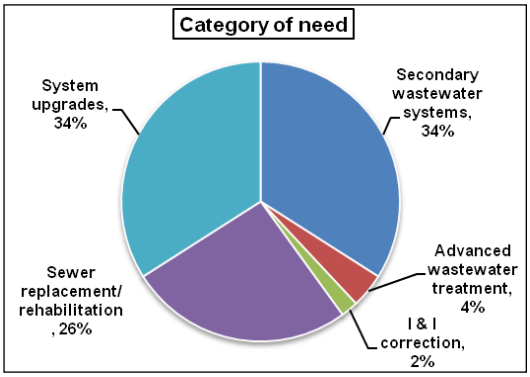


Chart 3

After analyzing the survey responses, it has been identified that the high priority needs in the state include “system upgrades” and “secondary wastewater systems”.

Even though the need for correction of I & I issues accounts for 2%, considering that these issues can result in millions of gallons/day of increased flow into the wastewater facility; necessitating increased discharges of treated effluent to the receiving stream, it is suggested that the communities consider working on the solutions such as smoke testing, camera inspections, manhole inspections, flow monitoring, repairs, and replacement.

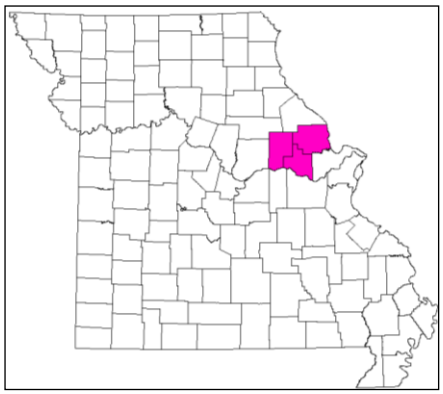
The total cost (communities that reported) to address the wastewater needs in the state for communities less than 5,000 population is estimated to be more than $170 million. There were some communities that had the identified needs but the costs were not mentioned at this time. Hence, only the reported needs are considered for this analysis.
Out of the total $170 million, the estimated cost to take care of “system upgrades and secondary wastewater systems” totals $117 million; estimated cost for replacing and rehabbing sewer totals $44 million; estimated cost for installing advanced treatment system totals $6 million; and for correcting I & I issues, the estimated cost is $3 million.

The outstanding wastewater debt obligations in the state is more than $250 million and the total amount of bonds authorized but not issued for wastewater improvements is $160 million.

Assessment by Regional Planning Commission

Boonslick Regional Planning Commission

Boonslick Regional Planning Commission is located in the east central part of the state and serves a three county area - Lincoln, Montgomery, and Warren- with an area of 1,645 square miles. There are 18 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 18 communities surveyed, 15 are served by lagoons; two are served by activated sludge; and one of the community's sewer is land applied. There are four 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

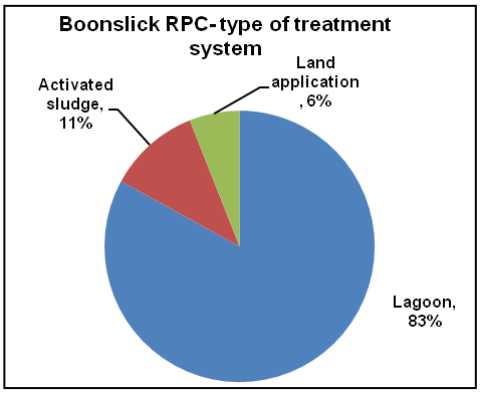


Chart 4

System Capacity

The reported capacity of treatment facilities in the region for 18 communities (<5,000 population & have a public sewer system) is 2.6 million gallons/day. In the region, 2 communities which are served by lagoons did not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that three communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Boonslick region has three communities with collection system in excellent condition, and three communities with collection system in poor condition. Also, there are seven communities in the region with good collection system and four communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.
There are three communities in the region that have I & I issues and that have a program in place. Eight communities in the region have I & I issues and have no program in place. There are seven communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Ten communities in the region have a schedule of compliance included in their operating permits. Most of the compliance issues are related to meeting the effluent limitations.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Four communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state. The application for renewal must be received within 180 days of the expiration of the current operating permit.
One community in the region has an expired permit and currently, the community is working with DNR to renew it.

Development trends

As of 2008, there are 18 communities (< 5,000 population) that provide wastewater services to approximately 18,680 residents.

As per 2010 Census numbers, of the three counties served by Boonslick RPC, all the counties show population growth.

Needs and Costs

The region wide median rate for wastewater is $21.45 per month whereas; the statewide median rate is $21.80. Out of 18 communities surveyed, seven communities in the region have wastewater rates greater than the region wide and statewide values.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. For Boonslick region, all the 18 communities had the wastewater rate less than the 2% MHI target rate.

The total amount to address all the needs in the region is estimated to be more than $13 million. This accounts to 8% of the statewide needs. The estimated cost to take care of system upgrades and secondary wastewater systems is $5.7 million; estimated cost for replacing and rehabbing sewer totals $4.9 million; and estimated cost for installing advanced treatment system totals $2.7 million.

The outstanding wastewater debt obligations in the region amounts to $7 million and the total amount of bonds authorized but not issued for wastewater improvements is $4 million.

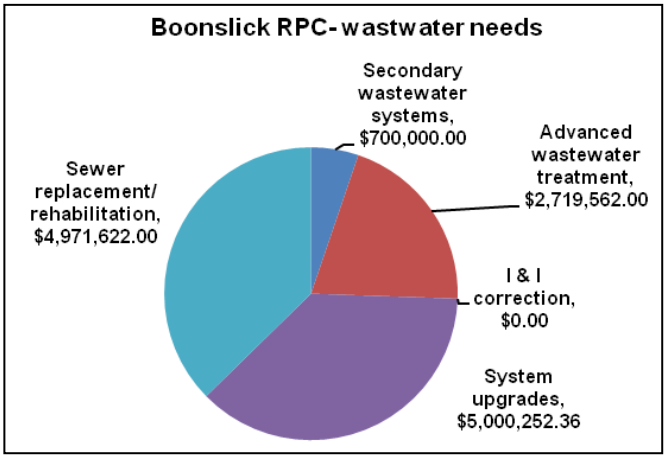
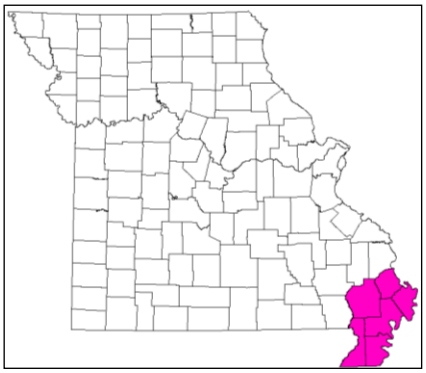


Chart 5

Bootheel Regional Planning & Economic Development Commission

Bootheel Regional Planning and Economic Development Commission is located in the southeastern part of the state and serves a six county area – Dunklin, Mississippi, New Madrid, Pemiscot, Scott, and Stoddard - with an area of 3,441 square miles. There are 42 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 42 communities surveyed, 39 are served by lagoons; and three are served by oxidation ditch. There are three 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

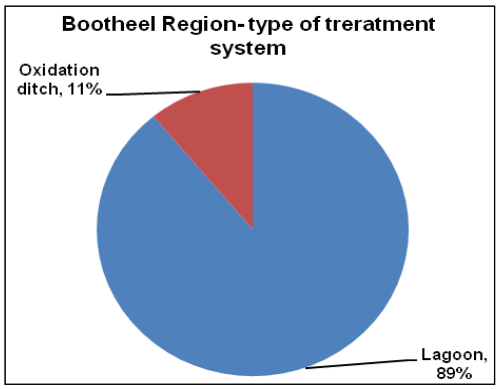


Chart 6

System Capacity

The reported capacity of treatment facilities in the region for 42 communities (<5000 population & have a public sewer system) is 11.1 million gallons/day. In the region, one community which is served by lagoon did not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that four communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Bootheel Regional Planning and Economic Development Commission has nine communities with collection system in excellent condition, and 9 communities with collection system in poor condition. There are 13 communities in the region with good collection system and 11 communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility. There are 17 communities in the region that have I & I issues and that have a program in place. 16 communities in the region have I & I issues and have no program in place. There are 8 communities in the region without any I & I issues. One community did not have any information on the I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Twenty- eight communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Eight communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.

The application for renewal must be received within 180 days of the expiration of the current operating permit.

Four communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 42 communities (< 5,000 population) that provide wastewater services to approximately 58,225 residents.
Of the six counties served by the region, as per 2010 Census numbers, Mississippi and Stoddard counties show population growth; whereas, Dunklin, New Madrid, Pemiscot, and Scott Counties shows a slight population decline.

Needs and Costs

The region wide median rate for wastewater is $15.08 per month whereas; the statewide median rate is $21.80. Out of 42 communities surveyed, eight communities in the region have wastewater rates greater than statewide values. There are 21 communities with rates greater than the region wide median value.

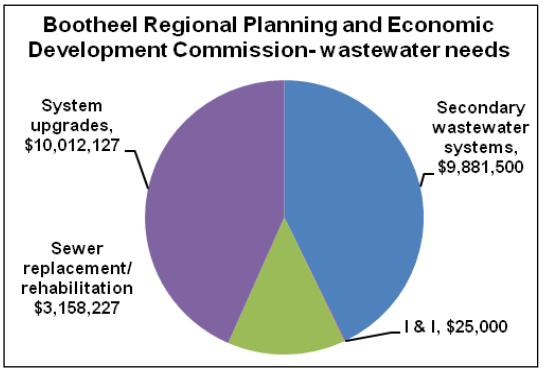


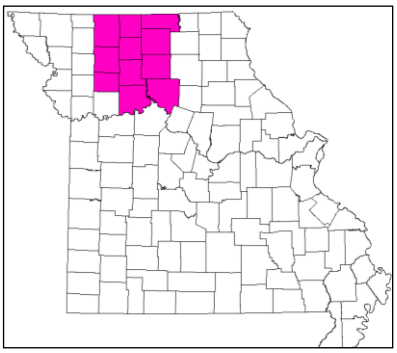
Chart 7

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. In the region, there are two communities with residential rate greater than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $23 million. This accounts to 13.5% of the statewide needs. The estimated cost to take care of system upgrades and secondary wastewater systems is $19.8 million; estimated cost for replacing and rehabbing sewer totals $3.1 million; and estimated cost for correcting I & I issues is $25,000.

The outstanding wastewater debt obligations in the region amounts to $5.3 million and the total amount of bonds authorized but not issued for wastewater improvements is $13.2 million.

Green Hills Regional Planning Commission



Locator Map

Green Hills Regional Planning Commission is located in the northern part of the state and serves an 11 county area – Caldwell, Carroll, Chariton, Daviess, Grundy, Harrison, Linn, Livingston, Mercer, Putnam and Sullivan- with an area of 6,420 square miles. There are 54 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.

System type

Out of 54 communities surveyed, 49 are served by lagoons; three are served by activated sludge; one is served by oxidation ditch and 1 with package treatment plant. There are five 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

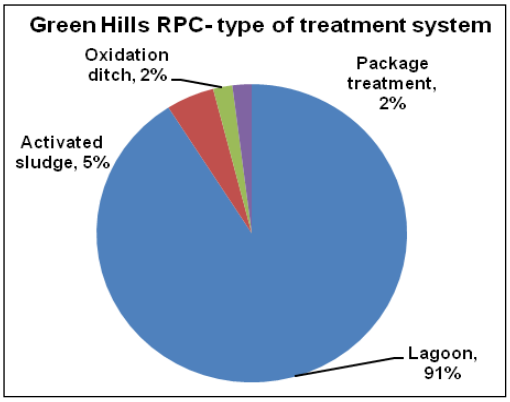


Chart 8

System Capacity

The reported capacity of treatment facilities in the region for 54 communities (<5,000 population & have a public sewer system) is 10.2 million gallons/day. In the region, five communities did not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that 14 communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Green Hills Regional Planning Commission has eight communities with collection system in excellent condition, and one community with collection system in poor condition. There are 32 communities in the region with good collection system and nine communities with fair collection system. There are two communities that didn't have any information on the condition of the collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are 20 communities in the region that have I & I issues and that have a program in place. 23 communities in the region have I & I issues and have no program in place. There are 10 communities in the region without any I & I issues. One community did not have any information on the I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Twenty eight communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

11 communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.
The application for renewal must be received within 180 days of the expiration of the current operating permit.

Two communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 54 communities (< 5,000 population) that provide wastewater services to approximately 40,012 residents.

Of the 11 counties served by the region, as per 2010 Census numbers, Caldwell, Daviess, Harrison, Livingston and Mercer counties show population growth; whereas, Carroll, Chariton, Grundy, Linn, Putnam and Sullivan County shows population decline.

Needs and Costs

The region wide median rate for wastewater is $23.87 per month whereas; the statewide median rate is $21.80. Out of 54 communities surveyed, 29 communities in the region have wastewater rates greater than statewide values. There are 22 communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. In the region, there are nine communities with residential rate greater than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $21.4 million. This accounts to 12.5% of the statewide needs.

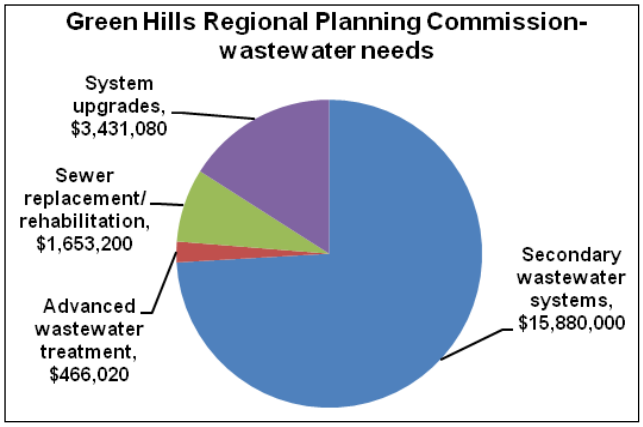


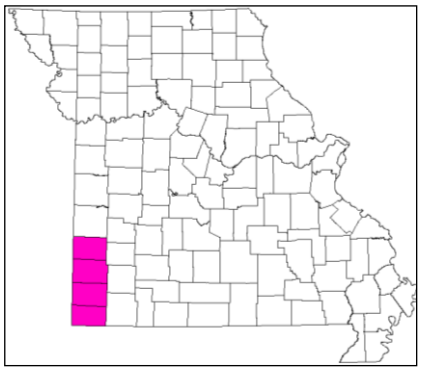
Chart 9

The estimated cost to take care of system upgrades and secondary wastewater systems is $19.3 million; estimated cost for replacing and rehabbing sewer totals $1.6 million; and estimated cost for advanced wastewater treatment is $466,020.

The outstanding wastewater debt obligations in the region amounts to $7.3 million and the total amount of bonds authorized but not issued for wastewater improvements is $11.1 million.

Harry S Truman Coordinating Council

Harry S. Truman Coordinating Council is located in the southwestern part of the state and serves a four county area - Barton, Jasper, McDonald, and Newton with an area of 2,404 square miles. There are 19 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 19 communities surveyed, eight are served by lagoons; five are served by activated sludge; two are served by oxidation ditch; two are served by sand filtration; one with land application; and one with trickling filter. There are three 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

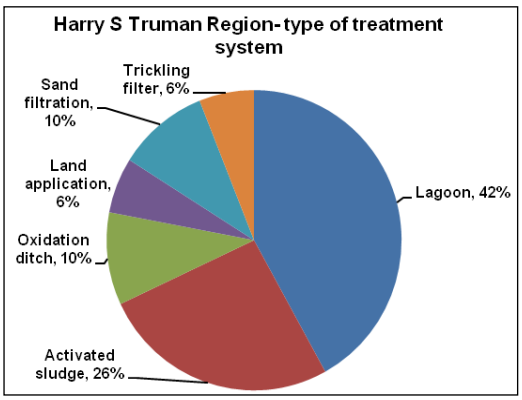


Chart 10

System Capacity

The reported capacity of treatment facilities in the region for 19 communities (<5,000 population & have a public sewer system) is 3.2 million gallons/day. In the region, three communities did not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that 8 communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Harry S. Truman Coordinating Council has five communities with collection system in excellent condition, and four communities with collection system in poor condition. There are six communities in the region with good collection system and three communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are seven communities in the region that have I & I issues and that have a program in place. Seven communities in the region have I & I issues and have no program in place. There are five communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Thirteen communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

3 communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.
The application for renewal must be received within 180 days of the expiration of the current operating permit.

Three communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 19 communities (< 5,000 population) that provide wastewater services to approximately 30,687 residents.

Of the four counties served by the region, as per 2010 Census numbers, Jasper, McDonald, and Newton counties show population growth; whereas, Barton County shows population decline.

Needs and Costs

The region wide median rate for wastewater is $24.25 per month whereas; the statewide median rate is $21.80. Out of 19 communities surveyed, nine communities in the region have wastewater rates greater than statewide values. There are six communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. In the region, there is one community with residential rate greater than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $11.1 million. This accounts to 6.5% of the statewide needs. The estimated cost to take care of system upgrades and secondary wastewater systems is $10.2 million; and estimated cost for replacing and rehabbing sewer totals $846,000.

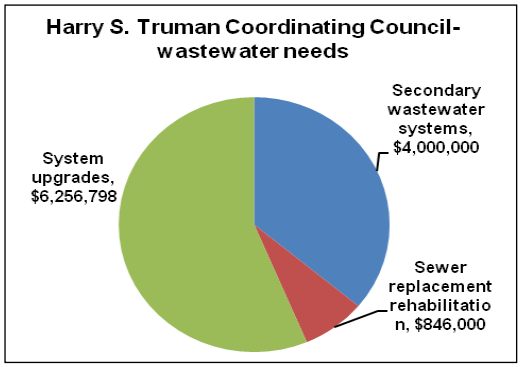
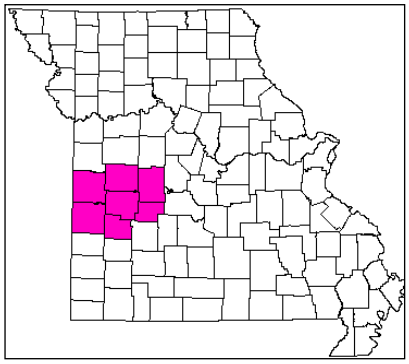


Chart 11

The outstanding wastewater debt obligations in the region amounts to $18.4 million and the total amount of bonds authorized but not issued for wastewater improvements is $6.3 million.

Kaysinger Basin Regional Planning Commission

Kaysinger Basin Regional Planning Commission is located in the western part of the state and serves a seven county area - Bates, Benton, Cedar, Henry, Hickory, St. Clair and Vernon - with an area of 4,786 square miles. There are 25 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 27 communities surveyed, 18 are served by lagoons; three are served by activated sludge; five are served by oxidation ditch; and one with package treatment plant. There are five 8-digit hydrologic unit code watersheds in this region that contain the 303d listed impaired streams.

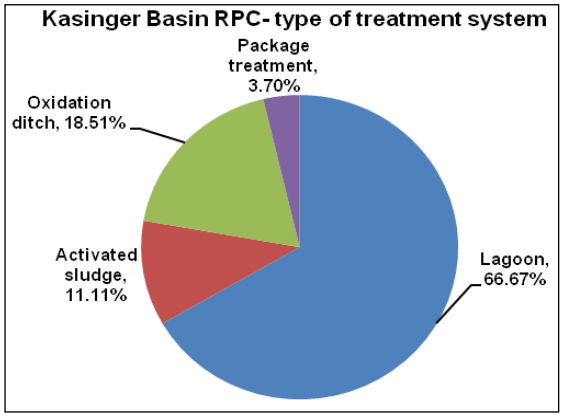


Chart 12

System Capacity

The reported capacity of treatment facilities in the region for 27 communities (<5,000 population & have a public sewer system) is 6.3 million gallons/day. In the region, four communities did not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that six communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Kaysinger Basin Regional Planning Commission has three communities with collection system in excellent condition, and five communities with collection system in poor condition. There are ten communities in the region with good collection system and nine communities with fair collection system. One community is currently, working to determine the condition of the collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are 16 communities in the region that have I & I issues and that have a program in place. Seven communities in the region have I & I issues and have no program in place. There are three communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Fourteen communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

14 communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state. The application for renewal must be received within 180 days of the expiration of the current operating permit.

Three communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 25 communities (< 5,000 population) that provide wastewater services to approximately 29,331 residents.
As per 2010 Census numbers, all the seven counties served by the region show population growth.

Needs and Costs

The region wide median rate for wastewater is $21.50 per month whereas; the statewide median rate is $21.80. Out of 25 communities surveyed, 14 communities in the region have wastewater rates greater than statewide values. There are 15 communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. All the 25 communities have a residential rate less than the 2% MHI rate.

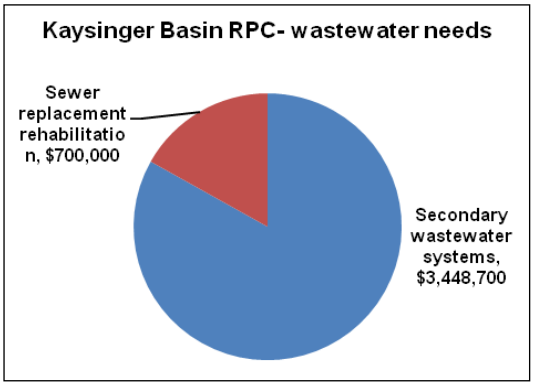
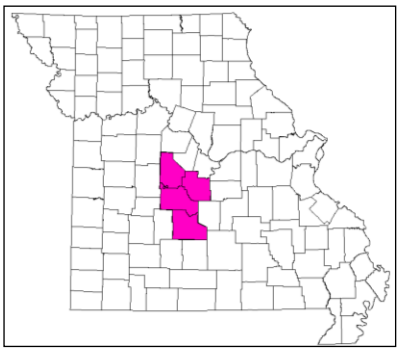


Chart 13

The total amount to address all the needs in the region is estimated to be more than $4.1 million. This accounts to 2.6% of the statewide needs. The estimated cost to take care of secondary wastewater systems is $3.4 million; and estimated cost for replacing and rehabbing sewer totals $700,000.

The outstanding wastewater debt obligations in the region amounts to $23.2 million and the total amount of bonds authorized but not issued for wastewater improvements is $7.7 million.

Lake of the Ozarks Council of Local Governments



Locator Map

Lake of the Ozarks Council of Local Governments is located in the central part of the state and serves a four county area – Camden, Laclede, Miller and Morgan - with an area of 2,695 square miles. There are 16 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.

System type

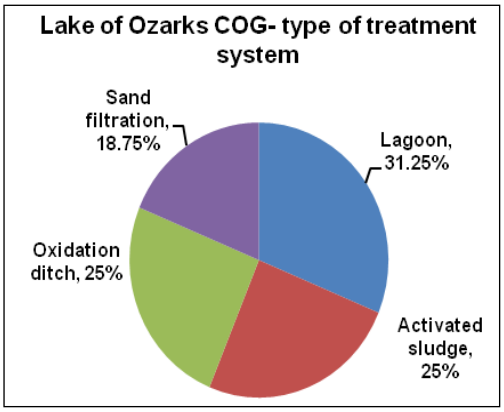


Chart 14

Out of 16 communities surveyed, 5 are served by lagoons; four are served by activated sludge; four are served by oxidation ditch; and three are served by sand filtration system. There are four 8-digit hydrologic unit code watersheds in this region that contains the 303(d) listed impaired streams.

System Capacity

The reported capacity of treatment facilities in the region for 16 communities (<5,000 population & have a public sewer system) is 9.5 million gallons/day. In the region, one community does not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that one community in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Lake of the Ozarks Council of Local Governments has five communities with collection system in excellent condition, and one community with collection system in poor condition. There are six communities in the region with good collection system and three communities with fair collection system. One community didn't have any information on the condition of the collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.
There are six communities in the region that have I & I issues and that have a program in place. Five communities in the region have I & I issues and have no program in place. There are five communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Ten communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Eight communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state. The application for renewal must be received within 180 days of the expiration of the current operating permit.

One community in the region has an expired permit and currently, the community is working with DNR to renew it.

Development trends

As of 2008, there are 16 communities (< 5,000 population) that provide wastewater services to approximately 24,437 residents.
As per 2010 Census numbers, all the four counties served by the region show population growth.

Needs and Costs

The region wide median rate for wastewater is $26.03 per month whereas; the statewide median rate is $21.80. Out of 16 communities surveyed, nine communities in the region have wastewater rates greater than statewide values. There are eight communities with rates greater than the region wide median value.

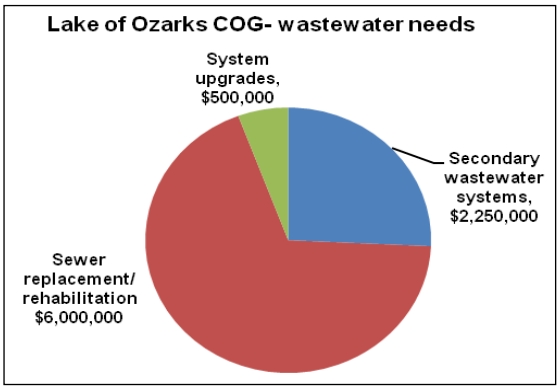


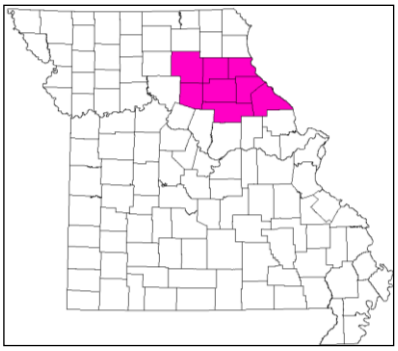
Chart 15

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. All the 16 communities have a residential rate less than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $8.7 million. This accounts to 5.1% of the statewide needs. The estimated cost to take care of secondary wastewater systems and system upgrades is $2.7 million; and estimated cost for replacing and rehabbing sewer totals $6 million.

The outstanding wastewater debt obligations in the region amounts to $16 million and the total amount of bonds authorized but not issued for wastewater improvements is $4.9 million.

Mark Twain Regional Council of Governments



Locator Map

Mark Twain Regional Council of Local Governments is located in the northeastern part of the state and serves an eight county area – Audrain, Macon, Marion, Monroe, Ralls, Randolph, Pike, and Shelby- with an area of 4,782 square miles. There are 37 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.

System type

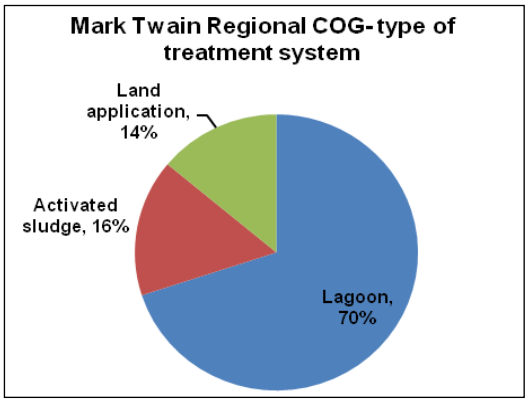


Chart 16

Out of 37 communities surveyed, 26 are served by lagoons; six are served by activated sludge; and five of the community's sewer is land applied. There are six 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

System Capacity

The reported capacity of treatment facilities in the region for 37 communities (<5,000 population & have a public sewer system) is 6.4 million gallons/day. In the region, two communities do not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that seven communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Mark Twain Regional Council of Local Governments has seven communities with collection system in excellent condition, and five communities with collection system in poor condition. There are 10 communities in the region with good collection system and 15 communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I

issues in a facility's collection system are costly for a wastewater treatment facility.
There are 16 communities in the region that have I & I issues and that have a program in place. 15 communities in the region have I & I issues and have no program in place. There are six communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Twenty-one communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

15 communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.
The application for renewal must be received within 180 days of the expiration of the current operating permit.

Three communities in the region have an expired permit and currently, the communities are working with DNR to renew it.

Development trends

As of 2008, there are 37 communities (< 5,000 population) that provide wastewater services to approximately 33,349 residents.

Of the eight counties served by the region, as per 2010 Census numbers, Marion, Ralls, Randolph, and Pike counties show population growth; whereas, Audrain, Macon, Monroe, and Shelby counties show population decline.

Needs and Costs

The region wide median rate for wastewater is $25.00 per month whereas; the statewide median rate is $21.80. Out of 37 communities surveyed, 20 communities in the region have wastewater rates greater than statewide values. There are 17 communities with rates greater than the region wide median value.

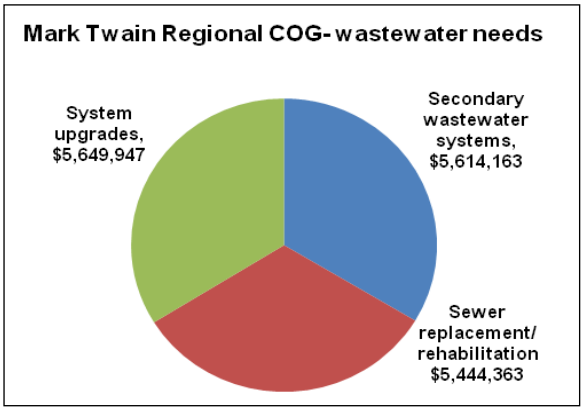


Chart 17

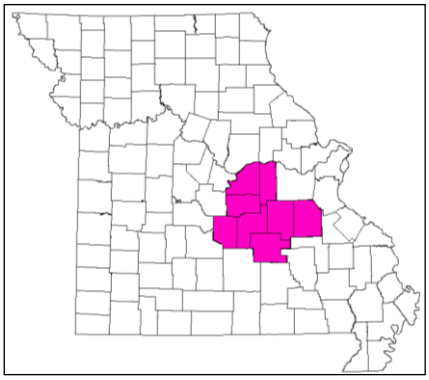
2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. In the region, there are two communities with residential rate greater than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $16.6 million. This accounts to 9.8% of the statewide needs. The estimated cost to take care of secondary wastewater systems and system upgrades is $11.2 million; and estimated cost for replacing and rehabbing sewer totals $5.4 million.

The outstanding wastewater debt obligations in the region amounts to $10.8 million and the total amount of bonds authorized but not issued for wastewater improvements is $12.9 million.

Meramec Regional Planning Commission

Meramec Regional Planning Commission is located in the central part of the state and serves an eight county area – Crawford, Dent, Gasconade, Maries, Osage, Phelps, Pulaski, and Washington- with an area of 5,152 square miles. There are 26 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 26 communities surveyed, 12 are served by lagoons; nine are served by activated sludge; and five are served by extended aeration. There are six 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

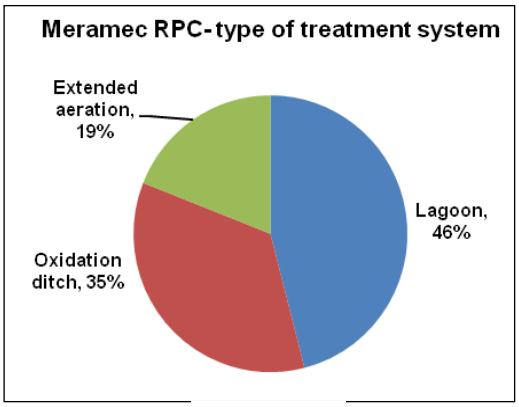


Chart 18

The reported capacity of treatment facilities in the region for 26 communities (<5,000 population & have a public sewer system) is 19.1 million gallons/day. Currently, in the region, all the communities have the required capacity (100 gallons/persons/day). Whereas, in 20 years, it is estimated that two communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Meramec Regional Planning Commission has one community with collection system in excellent condition, and five communities with collection system in poor condition. There are seven communities in the region with good collection system and 13 communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are 13 communities in the region that have I & I issues and that have a program in place. eight communities in the region have I & I issues and have no program in place. There are five communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Thirteen communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Ten communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state. The application for renewal must be received within 180 days of the expiration of the current operating permit.

One community in the region has an expired permit and currently, the community is working with DNR to renew it.

Development trends

As of 2008, there are 26 communities (< 5,000 population) that provide wastewater services to approximately 41,567 residents.

Of the eight counties served by the region, as per 2010 Census numbers, Crawford, Dent, Maries, Osage, Phelps, Pulaski, and Washington counties show population growth; whereas, Gasconade county shows population decline.

Needs and Costs

The region wide median rate for wastewater is $18.34 per month whereas; the statewide median rate is $21.80. Out of 26 communities surveyed, 10 communities in the region have wastewater rates greater than statewide values. There are 12 communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. In the region, there is one community with residential rate greater than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $12.1 million. This accounts to 7.1% of the statewide needs. The estimated cost to take care of system upgrades is $4.8 million; cost to take care of I & I corrections is $50,000; and estimated cost for replacing and rehabbing sewer totals $7.2 million.

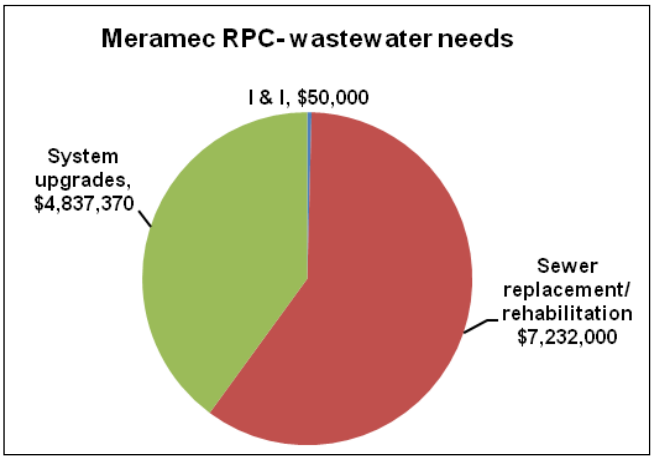
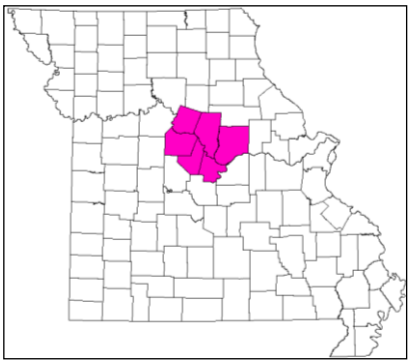


Chart 19

The outstanding wastewater debt obligations in the region amounts to $12.9 million and the total amount of bonds authorized but not issued for wastewater improvements is $13.3 million.

Mid-Missouri Regional Planning Commission

Mid-Missouri Regional Planning Commission is located in the central part of the state and serves a six county area – Boone, Callaway, Cole, Cooper, Howard, and Moniteau- with an area of 3,397 square miles. There are 25 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 25 communities surveyed, 18 are served by lagoons; one is served by activated sludge; three are served by oxidation ditch; one is served by package treatment plant; one is served by extended aeration and one community's sewer is land applied. There are four 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

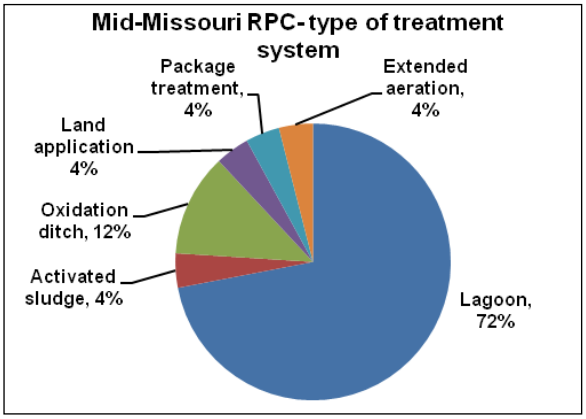


Chart 20

System Capacity

The reported capacity of treatment facilities in the region for 25 communities (<5,000 population & have a public sewer system) is 6.7 million gallons/day. In the region, two communities do not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that five communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Mid-Missouri Regional Planning Commission has five communities with collection system in excellent condition, and two communities with collection system in poor condition. There are 11 communities in the region with good collection system and seven communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are 11 communities in the region that have I & I issues and that have a program in place. Six communities in the region have I & I issues and have no program in place. There are eight communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Twelve communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

12 communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state. The application for renewal must be received within 180 days of the expiration of the current operating permit.

Five communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 25 communities (< 5,000 population) that provide wastewater services to approximately 30,783 residents.

Of the six counties served by the region, as per 2010 Census numbers, Boone, Callaway, Cole, Cooper, and Moniteau counties show population growth; whereas, Howard county shows population decline.

Needs and Costs

The region wide median rate for wastewater is $22.50 per month whereas; the statewide median rate is $21.80. Out of 25 communities surveyed, 14 communities in the region have wastewater rates greater than statewide values. There are 12 communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. All the 25 communities have a residential rate less than the 2% MHI rate.

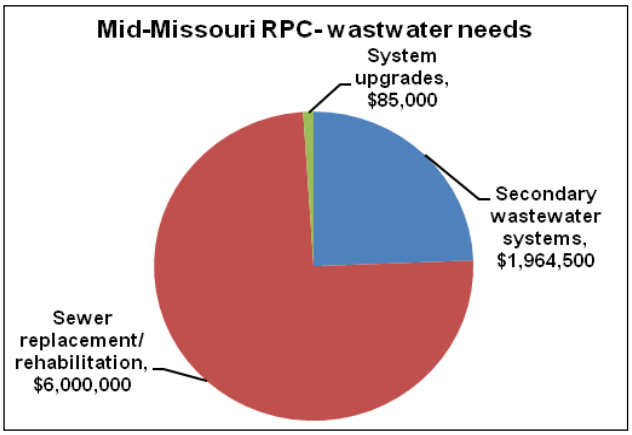


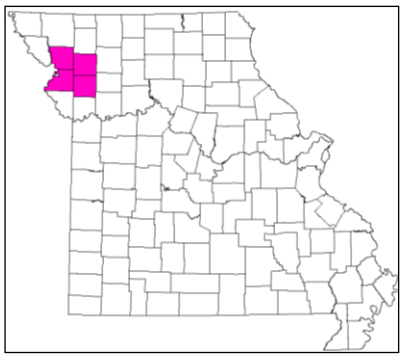
Chart 21

The total amount to address all the needs in the region is estimated to be more than $8.0 million. This accounts to 4.7% of the statewide needs. The estimated cost to take care of system upgrades and secondary wastewater systems is $2.0 million; and estimated cost for replacing and rehabbing sewer totals $6.0 million.

The outstanding wastewater debt obligations in the region amounts to $12.2 million and the total amount of bonds authorized but not issued for wastewater improvements is $13.5 million.

Mo-Kan Regional Council

Mo-Kan Regional Council is located in the western part of the state and serves a four county area – Andrew, Buchanan, Clinton, and DeKalb - with an area of 1,700 square miles. There are 12 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 12 communities surveyed, eight are served by lagoons; one is served by activated sludge; two are served by oxidation ditch; and one is served by sand filtration system. There is one watershed in this region that contains the 303(d) listed impaired streams.

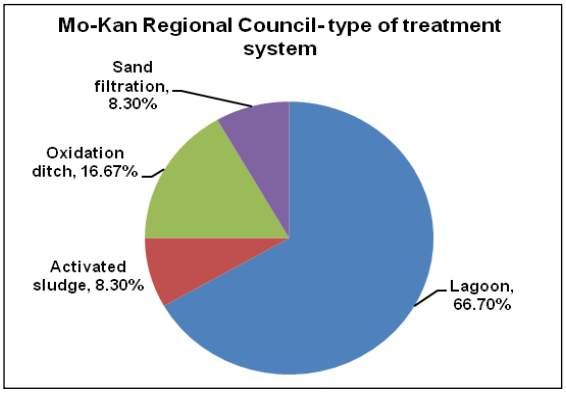


Chart 22

System Capacity

The reported capacity of treatment facilities in the region for 12 communities (<5,000 population & have a public sewer system) is 2.3 million gallons/day. In the region, two communities do not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that five communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Mo-Kan Regional Council has three communities with collection system in excellent condition, and two communities with collection system in poor condition. There are four communities in the region with good collection system and three communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are five communities in the region that have I & I issues and that have a program in place. Three communities in the region have I & I issues and have no program in place. There are four communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Two communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Six communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state. The application for renewal must be received within 180 days of the expiration of the current operating permit.

One community in the region has an expired permit and currently, the community is working with DNR to renew it.

Development trends

As of 2008, there are 12 communities (< 5,000 population) that provide wastewater services to approximately 15,197 residents.

As per 2010 Census numbers, all the four counties served by the region, show population growth.

Needs and Costs

The region wide median rate for wastewater is $24.47 per month whereas; the statewide median rate is $21.80. Out of 12 communities surveyed, eight communities in the region have wastewater rates greater than statewide values. There are six communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. All the 12 communities have a residential rate less than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $5.5 million. This accounts to 3.2% of the statewide needs. The estimated cost to take care of system upgrades is $1.4 million; estimated cost for advanced wastewater treatment is $3.0 million; and estimated cost for replacing and rehabbing sewer totals $221,350.

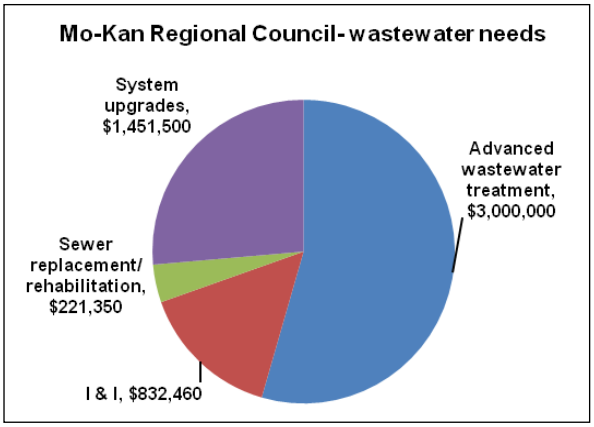
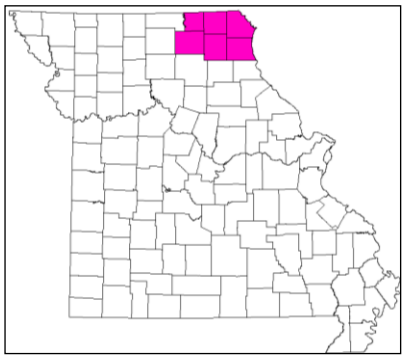


Chart 23

The outstanding wastewater debt obligations in the region amounts to $2.2 million and the total amount of bonds authorized but not issued for wastewater improvements is $7.3 million.

Northeast Missouri Regional Planning Commission

Northeast Missouri Regional Planning Commission is located in the northeast part of the state and serves a six county area – Adair, Clark, Knox, Lewis, Schuyler, and Scotland- with an area of 2,846 square miles. There are 25 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 25 communities surveyed, 22 are served by lagoons; one is served by activated sludge; one is served by oxidation ditch; and one community's sewer is land applied. There are three 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

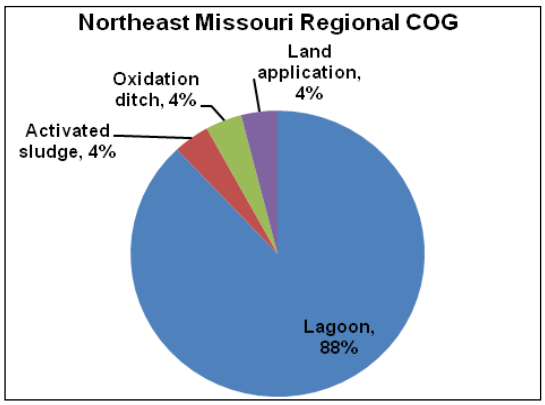


Chart 24

System Capacity

The reported capacity of treatment facilities in the region for 25 communities (<5,000 population & have a public sewer system) is 3.0 million gallons/day. Currently, in the region, all the communities have the required capacity (100 gallons/persons/day). Whereas, in 20 years, it is estimated that four communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Northeast Missouri Regional Planning Commission has four communities with collection system in excellent condition, and two communities with collection system in poor condition. There are ten communities in the region with good collection system and nine communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.
There are 11 communities in the region that have I & I issues and that have a program in place. 6 communities in the region have I & I issues and have no program in place. There are nine communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Ten communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Seven communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.
The application for renewal must be received within 180 days of the expiration of the current operating permit.

Five communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 25 communities (< 5,000 population) that provide wastewater services to approximately 15,321 residents.

Of the six counties served by the region, as per 2010 Census numbers, Adair and Schuyler counties show population growth; whereas, Clark, Knox, Lewis, and Scotland counties show population decline.

Needs and Costs

The region wide median rate for wastewater is $20.73 per month whereas; the statewide median rate is $21.80. Out of 25 communities surveyed, 12 communities in the region have wastewater rates greater than statewide values. There are 12 communities with rates greater than the region wide median value.

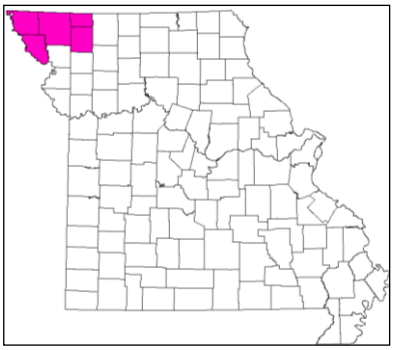
2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. In the region, there are three communities with residential rate greater than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $1.4 million. This accounts to 0.8% of the statewide needs. The only need that was identified by the region is sewer replacement and rehabilitation.

The outstanding wastewater debt obligations in the region amounts to $4.2 million and the total amount of bonds authorized but not issued for wastewater improvements is $2.0 million.

Northwest Missouri Regional Council of Governments

Northwest Missouri Regional Council of Governments is located in the northwest part of the state and serves a five county area – Atchison, Gentry, Holt, Nodaway, and Worth - with an area of 2,653 square miles. There are 25 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 25 communities surveyed, 19 are served by lagoons; one is served by oxidation ditch; two are served by sand filtration system; one is served by membrane reactor; and two communities are served by trickling filter. There is one 8-digit hydrologic unit code watershed in this region that contains the 303(d) listed impaired streams.

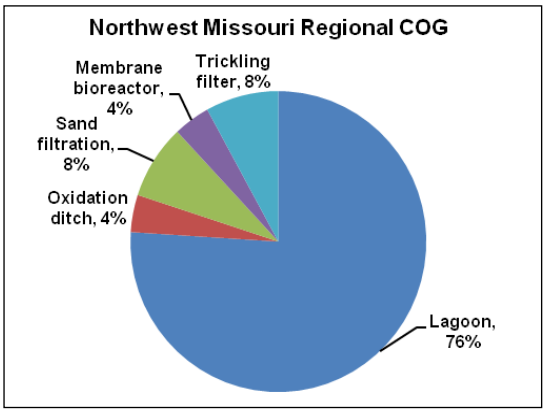


Chart 25

System Capacity

The reported capacity of treatment facilities in the region for 25 communities (<5,000 population & have a public sewer system) is 2.6 million gallons/day. In the region, one community does not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that six communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Northwest Missouri Regional Council of Governments has seven communities with collection system in excellent condition, and three communities with collection system in poor condition. There are 11 communities in the region with good collection system and four communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are three communities in the region that have I & I issues and that have a program in place. 12 communities in the region have I & I issues and have no program in place. There are 10 communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Seventeen communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

15 communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.
The application for renewal must be received within 180 days of the expiration of the current operating permit.

Two communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 25 communities (< 5,000 population) that provide wastewater services to approximately 15,321 residents.

Of the six counties served by the region, as per 2010 Census numbers, Nodaway County shows population growth; whereas, Atchison, Gentry, Holt, and Worth counties show population decline.

Needs and Costs

The region wide median rate for wastewater is $20.25 per month whereas; the statewide median rate is $21.80. Out of 25 communities surveyed, 13 communities in the region have wastewater rates greater than statewide values. There are 11 communities with rates greater than the region wide median value.

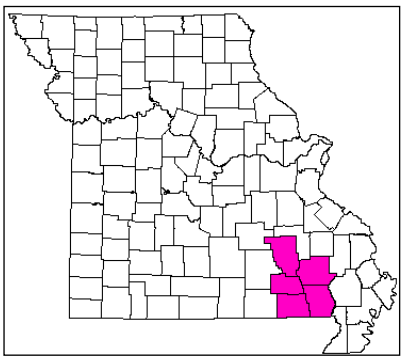
2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. In the region, there is one community with residential rate greater than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $122,500. This accounts to 0.07% of the statewide needs. The estimated cost for secondary wastewater systems is $60,000 and the cost for replacing and rehabbing sewer lines is $62,500.

The outstanding wastewater debt obligations in the region amounts to $4.2 million and the total amount of bonds authorized but not issued for wastewater improvements is $5.2 million.

Ozark Foothills Regional Planning Commission

Ozark Foothills Regional Planning Commission is located in the southeast part of the state and serves a five county area – Butler, Carter, Reynolds, Ripley, and Wayne - with an area of 3,428 square miles. There are 14 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 14 communities surveyed, nine are served by lagoons; one is served by activated sludge; and four are served by oxidation ditch. There are two 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

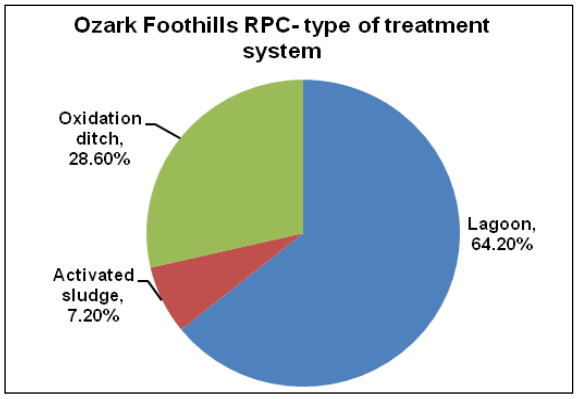


Chart 26

System Capacity

The reported capacity of treatment facilities in the region for 14 communities (<5,000 population & have a public sewer system) is 1.9 million gallons/day. Currently, all the communities are served by the required capacity (100 gallons/persons/day). In 20 years, it is estimated that two communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Ozark Foothills Regional Planning Commission has one community with collection system in excellent condition, and one community with collection system in poor condition. There are nine communities in the region with good collection system and three communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.
There are 8 communities in the region that have I & I issues and that have a program in place. 1 community in the region has I & I issues but there is no program in place. There are five communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Four communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Three communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.
The application for renewal must be received within 180 days of the expiration of the current operating permit.

Three communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 14 communities (< 5,000 population) that provide wastewater services to approximately 9,532 residents.
As per 2010 Census numbers, all five counties served by the region show population growth.

Needs and Costs

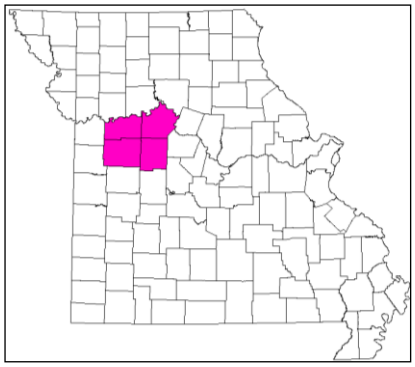
The region wide median rate for wastewater is $23.73 per month whereas; the statewide median rate is $21.80. Out of 14 communities surveyed, eight communities in the region have wastewater rates greater than statewide values. There are seven communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. In the region, all the communities have residential rate greater than the 2% MHI rate.

At this time, there were no needs identified by the region. The outstanding wastewater debt obligations in the region amounts to $2.9 million and the total amount of bonds authorized but not issued for wastewater improvements is $7.3 million.

Pioneer Trails Regional Planning Commission

Pioneer Trails Regional Planning Commission is located in the southeast part of the state and serves a four county area – Johnson, Lafayette, Pettis and Saline- with an area of 2,923 square miles. There are 25 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 25 communities surveyed, 21 are served by lagoons; one is served by activated sludge; two are served by oxidation ditch; and one is served by trickling filter. There are three 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

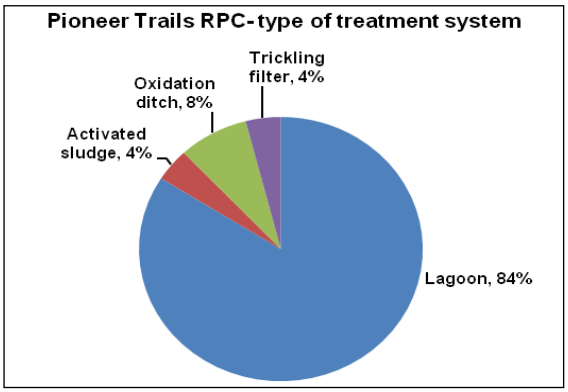


Chart 27

System Capacity

The reported capacity of treatment facilities in the region for 25 communities (<5,000 population & have a public sewer system) is 6.3 million gallons/day. Currently, all the communities are served by the required capacity (100 gallons/persons/day). In 20 years, it is estimated that one community in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Pioneer Trails Regional Planning Commission has three communities with collection system in excellent condition, and two communities with collection system in poor condition. There are 16 communities in the region with good collection system and four communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are eight communities in the region that have I & I issues and that have a program in place. Seven communities in the region have I & I issues but there is no program in place. There are 10 communities in the region without any I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Twelve communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Four communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.
The application for renewal must be received within 180 days of the expiration of the current operating permit.

One community in the region has an expired permit and currently, the community is working with DNR to renew it.

Development trends

As of 2008, there are 25 communities (< 5,000 population) that provide wastewater services to approximately 33,049 residents.

Of the four counties served by the region, as per 2010 Census numbers, Johnson, Lafayette, and Pettis counties show population growth; whereas, Saline county shows population decline.

Needs and Costs

The region wide median rate for wastewater is $28.00 per month whereas; the statewide median rate is $21.80. Out of 25 communities surveyed, 15 communities in the region have wastewater rates greater than statewide values. There are 12 communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. There are two communities in the region with a residential rate less than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $12.8 million. This accounts to 7.5% of the statewide needs. The estimated cost to take care of system upgrades and secondary wastewater systems is $12.2 million; and estimated cost for replacing and rehabbing sewer totals $600,000.

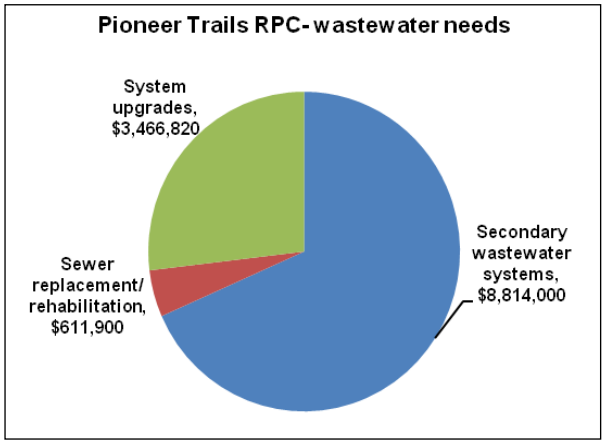
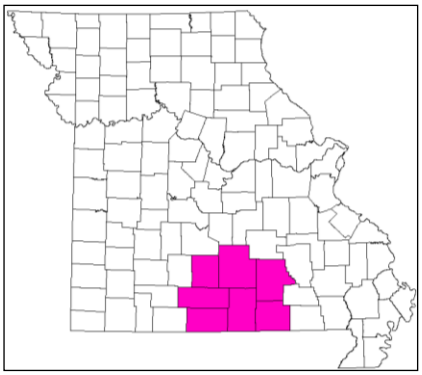


Chart 28

The outstanding wastewater debt obligations in the region amounts to $10.3 million and the total amount of bonds authorized but not issued for wastewater improvements is $3.9 million.

South Central Ozark Council of Governments

South Central Ozark Council of Governments is located in the southern part of the state and serves a seven county area – Douglas, Howell, Oregon, Ozark, Shannon, Texas, and Wright- with an area of 6,156 square miles. There are 21 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 21 communities surveyed, three are served by lagoons; ten are served by activated sludge; four are served by oxidation ditch; and four are served by sand filtration system. There are four 8-digit hydrologic unit code watersheds in this region that contains the 303(d) listed impaired streams.

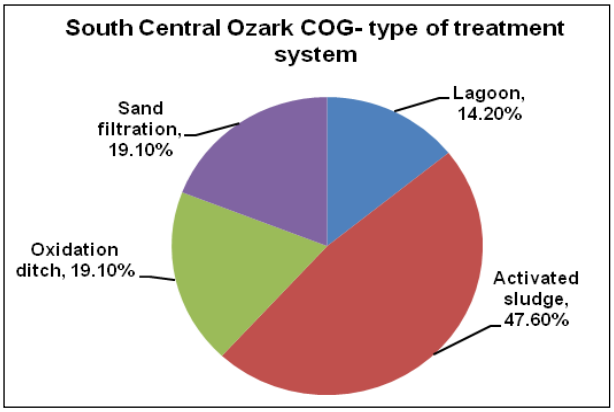


Chart 29

System Capacity

The reported capacity of treatment facilities in the region for 21 communities (<5,000 population & have a public sewer system) is 6.8 million gallons/day. In the region, one community does not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that two communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

South Central Ozark Council of Governments has two communities with collection system in excellent condition, and four communities with collection system in poor condition. There are ten communities in the region with good collection system and five communities with fair collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are 19 communities in the region that have I & I issues and that have a program in place. two communities in the region have I & I issues but there is no program in place.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Three communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Seven communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state. The application for renewal must be received within 180 days of the expiration of the current operating permit. None of the communities in this region has an expired permit as of fall 2010.

Development trends

As of 2008, there are 21 communities (< 5,000 population) that provide wastewater services to approximately 29,108 residents. As per 2010 Census numbers, all the seven counties show population growth.

Needs and Costs

The region wide median rate for wastewater is $22.00 per month whereas; the statewide median rate is $21.80. Out of 21 communities surveyed, 11 communities in the region have wastewater rates greater than statewide values. There are nine communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. There is one community in the region with a residential rate less than the 2% MHI rate.

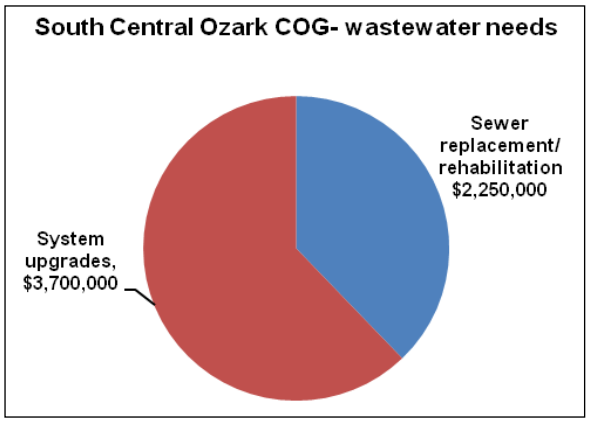


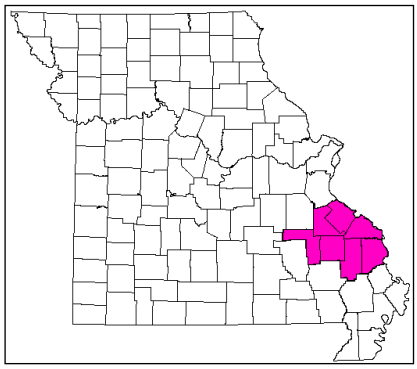
Chart 30

The total amount to address all the needs in the region is estimated to be more than $5.95 million. This accounts to 3.4% of the statewide needs. The estimated cost to take care of system upgrades is $3.7 million; and estimated cost for replacing and rehabbing sewer totals $2.25 million.

The outstanding wastewater debt obligations in the region amounts to $9.9 million and the total amount of bonds authorized but not issued for wastewater improvements is $0.65 million.

Southeast Missouri Regional Planning and Economic Development Commission

Southeast Missouri Regional Planning and Economic Development Commision is located in the southeast part of the state and serves a seven county area – Bollinger, Cape Girardeau, Iron, Madison, Perry, Ste. Genevieve, and St. Francois- with an area of 3,703 square miles. There are 19 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 19 communities surveyed, eight are served by lagoons; four are served by activated sludge; three are served by oxidation ditch; and four are served by sand filtration system. There are four 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

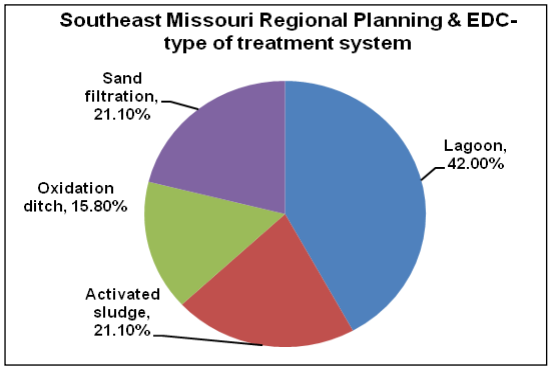


Chart 31

System Capacity

The reported capacity of treatment facilities in the region for 19 communities (<5,000 population & have a public sewer system) is 4.9 million gallons/day. Currently, all the communities are served by the required capacity (100 gallons/persons/day). In 20 years, it is estimated that two communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Southeast Missouri Regional Planning and Economic Development Commision has two communities with collection system in excellent condition, and two communities with collection system in poor condition. There are eight communities in the region with good collection system

and three communities with fair collection system. There are four communities in the region that do not have any information on their collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are four communities in the region that have I & I issues and that have a program in place. Two communities in the region have I & I issues but there is no program in place. One community did not have any I & I issues. 12 communities in the region did not have any information on the I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Eleven communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

Five communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state. The application for renewal must be received within 180 days of the expiration of the current operating permit.

One community in the region has an expired permit and currently, the community is working with DNR to renew it.

Development trends

As of 2008, there are 19 communities (< 5,000 population) that provide wastewater services to approximately 32,662 residents.

Of the seven counties served by the region, as per 2010 Census numbers, Bollinger, Cape Girardeau, Madison, Perry, Ste. Genevieve, and St. Francois counties show population growth; whereas, Iron county shows population decline.

Needs and Costs

The region wide median rate for wastewater is $21.50 per month whereas; the statewide median rate is $21.80. Out of 19 communities surveyed, nine communities in the region have wastewater rates greater than statewide values. There are 11 communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. There is one community in the region with a residential rate less than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $9.9 million. This accounts to 5.8% of the statewide needs. The estimated cost to take care of system upgrades and secondary wastewater system is $6.2 million; the estimated cost for

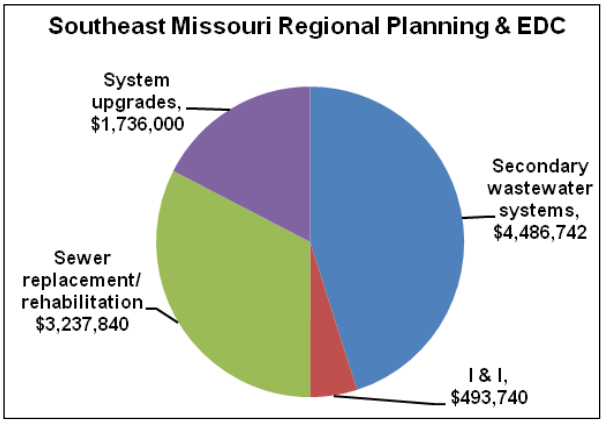


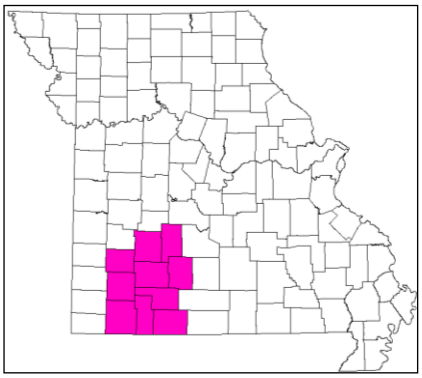
Chart 32

replacing and rehabbing sewer totals $3.2 million; and the cost to take care of I & I issues is $493,740.

The outstanding wastewater debt obligations in the region amounts to $3.1 million and the total amount of bonds authorized but not issued for wastewater improvements is $4.3 million.

Southwest Missouri Council of Governments

Southwest Missouri Council of Governments is located in the southwest part of the state and serves a 10 county area – Barry, Christian, Dade, Dallas, Greene, Lawrence, Polk, Stone, Taney, and Webster- with an area of 6,094 square miles. There are 49 communities in the region considered for this project which have a population less than 5,000 per 2000 Census and that are served by a public sewer system.



Locator Map

System type

Out of 49 communities surveyed, 14 are served by lagoons; seven are served by activated sludge; 16 are served by oxidation ditch; nine are served by sand filtration system; one is served by membrane reactor; and two are served by sequencing batch reactor. There are five 8-digit hydrologic unit code watersheds in this region that contain the 303(d) listed impaired streams.

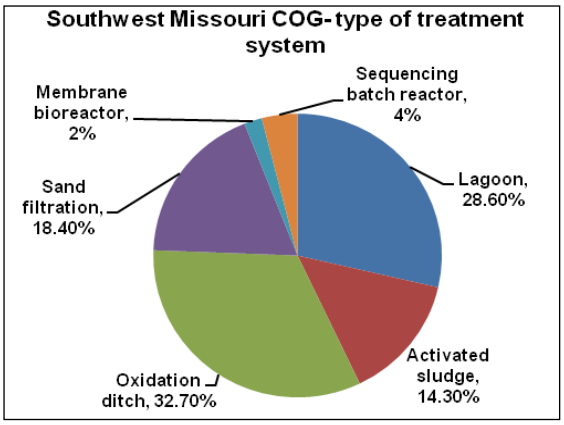


Chart 33

System Capacity

The reported capacity of treatment facilities in the region for 49 communities (<5,000 population & have a public sewer system) is 14.5 million gallons/day. In the region, five communities do not have the required capacity (100 gallons/persons/day). In 20 years, it is estimated that nineteen communities in the region will have system capacities less than the required capacity (100 gallons/persons/day).

Condition of the collection system

Southwest Missouri Council of Governments has 11 communities with collection system in excellent condition, and eight communities with collection system in poor condition. There are 20 communities in the region with good collection system and five communities with fair collection system. There are five communities in the region that do not have any information on their collection system.

Inflow & Infiltration (I & I) issues

Water entering sanitary sewers from inappropriate connections is inflow, whereas infiltration is the groundwater that enters sanitary sewers through defective pipe joints and broken pipes. I & I issues in a facility's collection system are costly for a wastewater treatment facility.

There are 26 communities in the region that have I & I issues and that have a program in place. 12 communities in the region have I & I issues but there is no program in place. Six communities did not have any I & I issues. Five communities in the region did not have any information on the I & I issues.

Schedule of compliance issues

A schedule of compliance includes a series of required steps and deadlines to meet an operating permit's water quality-based effluent limits. This section of the permit provides a summary of findings related to violations observed, regulatory compliance including any unsatisfactory features, the presentation of formal notices, the need for immediate or remedial actions, the schedule for expected changes of improvements and other requirements or recommendations. These are issued by the DNR WPCB.

Twenty-four communities in the region have a schedule of compliance included in their operating permits. These compliance issues include pending inflow/infiltration reports, engineering plans, operation & maintenance reports, and wet testing.

Notices of violation issues

A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. These are issued by the DNR WPCB. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected.

18 communities in the region have notices of violation. The notices are related to permit limitations, reporting violations, and sanitary sewer overflows.

Expired permits

The DNR WPCB is responsible for renewing operating permits in the state.
The application for renewal must be received within 180 days of the expiration of the current operating permit.

Nine communities in the region have an expired permit and currently, the communities are working with DNR to renew them.

Development trends

As of 2008, there are 49 communities (< 5,000 population) that provide wastewater services to approximately 66,867 residents.

Of the 10 counties served by the region, as per 2010 Census numbers, Barry, Christian, Dallas, Greene, Lawrence, Polk, Stone, Taney, and Webster counties show population growth; whereas, Dade county shows population decline.

Needs and Costs

The region wide median rate for wastewater is $24.60 per month whereas; the statewide median rate is $21.8. Out of 49 communities surveyed, 35 communities in the region have wastewater rates greater than statewide values. There are 27 communities with rates greater than the region wide median value.

2% median household income is considered as a target rate for the state agencies to provide grants. The 2% median household income (MHI) for the communities is considered as part of the analysis to determine how many communities had reached the target rate. There are three communities in the region with residential rate less than the 2% MHI rate.

The total amount to address all the needs in the region is estimated to be more than $15.8 million. This accounts to 9.2% of the statewide needs.

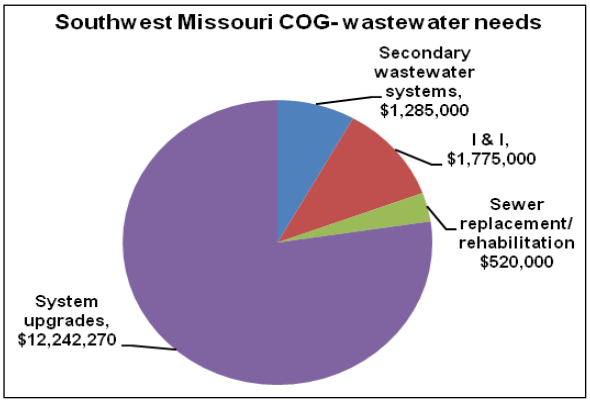


Chart 34

The estimated cost to take care of system upgrades and secondary wastewater system is $13.5 million; the estimated cost for replacing and rehabbing sewer totals $520,000; and the cost to take care of I & I issues is $1.7 million.

The outstanding wastewater debt obligations in the region amounts to $100 million and the total amount of bonds authorized but not issued for wastewater improvements is $42.5 million.

Summary

RPC name	# of communities	Capacity (million gallons/ day)	Median rate ($)	Schedule of compliance (#)	Notices of violation issues (#)	Expired permit (#)	Estimated cost for identified needs (million dollars)
Boonslick	18	2.6	21.45	10	4	1	16.00
Bootheel	42	11.1	15.08	28	8	4	23.00
Green Hills	54	10.2	23.87	28	11	2	21.40
Harry S. Truman	19	3.2	24.25	13	3	3	11.10
Kaysinger Basin	27	6.3	21.50	14	14	3	4.10
Lake of the Ozarks	16	9.5	26.03	10	8	1	8.70
Mark Twain	37	6.4	25.00	21	15	3	16.60
Meramec	26	19.1	18.34	13	10	1	12.10
Mid-Missouri	25	6.7	22.50	12	12	5	8.00
Mo-Kan	12	2.3	24.47	2	6	1	5.50
Northeast Missouri	25	3	20.73	10	7	5	1.40
Northwest Missouri	25	2.6	20.25	17	15	2	0.01
Ozark Foothills	14	1.9	23.73	4	3	3	2.90
Pioneer Trails	25	6.3	28.00	12	4	1	12.80
South Central Ozark	21	6.8	22.00	3	7	0	5.95
Southeast Missouri	19	4.9	21.50	11	5	1	9.90
Southwest Missouri	49	14.5	24.60	24	18	9	15.80

Table 4 shows the summary of the major datasets included in the analysis. A detailed summary is discussed below.

- The total number of communities considered for this project are 452.
- Green Hills Regional Planning Commission has the highest percentage of treatment systems served by lagoons followed by Bootheel Regional Planning & Economic Development Commission and Pioneer Trails Regional Planning Commission.

- South Central Ozark Council of Governments has the least percentage of treatment systems served by lagoons.

- Out of 17 RPCs surveyed, Meramec Regional Planning Commission which serves 26 communities has the maximum reported capacity of 19.1 million gallons/day.

- Pioneer Trails Regional Planning Commission has the highest median residential rate for wastewater- $28.00 whereas; Bootheel Regional Planning & Economic Development Commission has the least median residential rate for wastewater - $15.03 in the state.

- Bootheel Regional Planning & Economic Development Commission and Green Hills Regional Planning Commission has more communities with schedule of compliance issues mentioned on the wastewater permits whereas; Mo-Kan Regional council has the least number of communities with schedule of compliance issues.

- Southwest Missouri Council of Governments has more number of communities with notices of violation issues whereas; Ozark Foothills Regional Planning Commission has least number of communities with notices of violation issues.

- Southwest Missouri Council of Governments has more communities with expired permits whereas; South Central Ozark Council of Governments has no communities with expired permits.

- 90% of the communities in South Central Ozark Council of Governments has I & I issues and have an I & I program in place, whereas, 48% of the communities in Northwest Missouri Regional Council of Governments has I & I issues but do not have an I & I program in place.

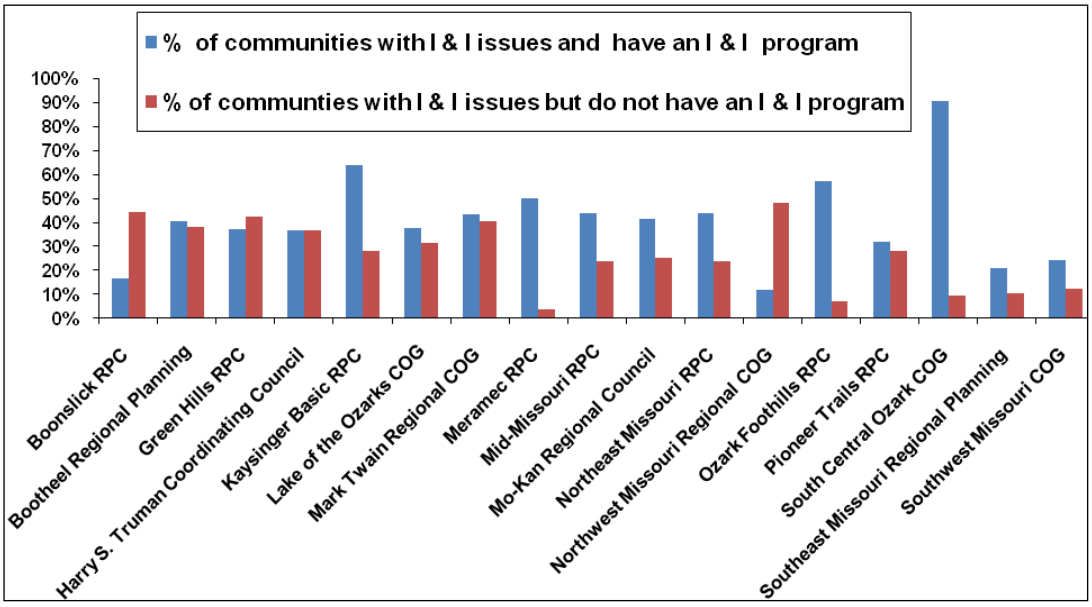


Chart 35

- There are 7 seven RPC's with regional median rate less than the statewide median rate - $21.8.

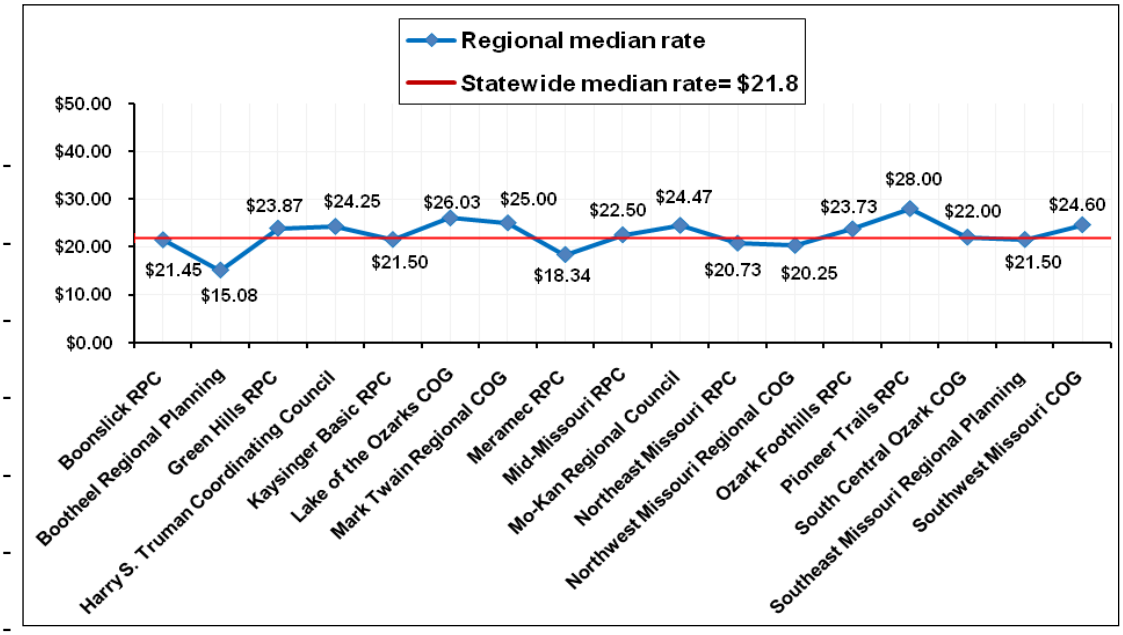


Chart 36

- Bootheel Regional Planning & Economic Development Commission has the highest estimated cost for addressing the needs in the state with a value of $23 million; whereas, Northwest Missouri Regional Council of Governments has the least estimated cost for

addressing the needs with $122,500. Ozark Foothills Regional Planning Commission has no needs to be addressed at this time.

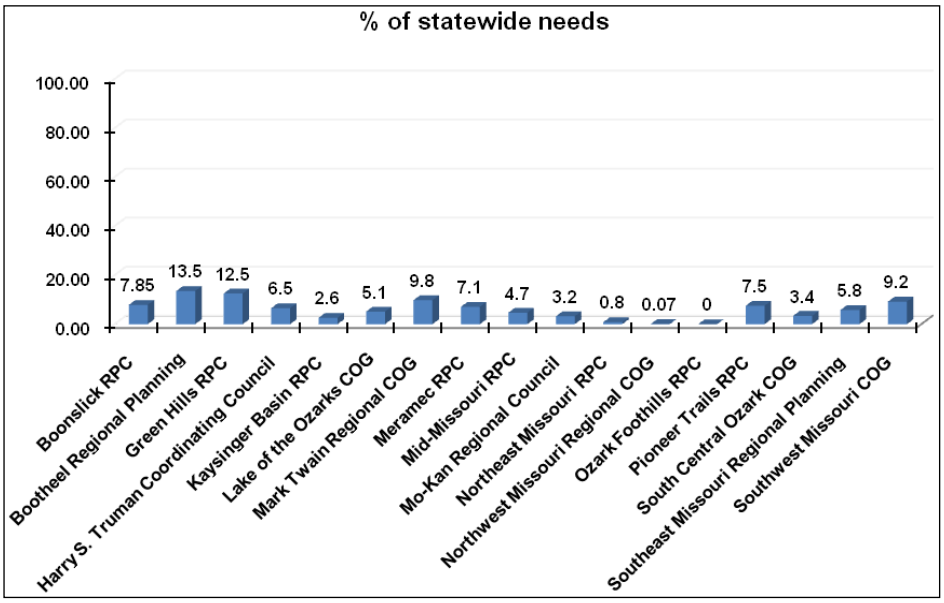


Chart 37

- Lake of the Ozarks Council of Local Governments has the highest percentage of communities with collection system in “excellent” condition whereas; Meramec Regional Planning Commission has the least percentage of communities with “excellent” collection system.

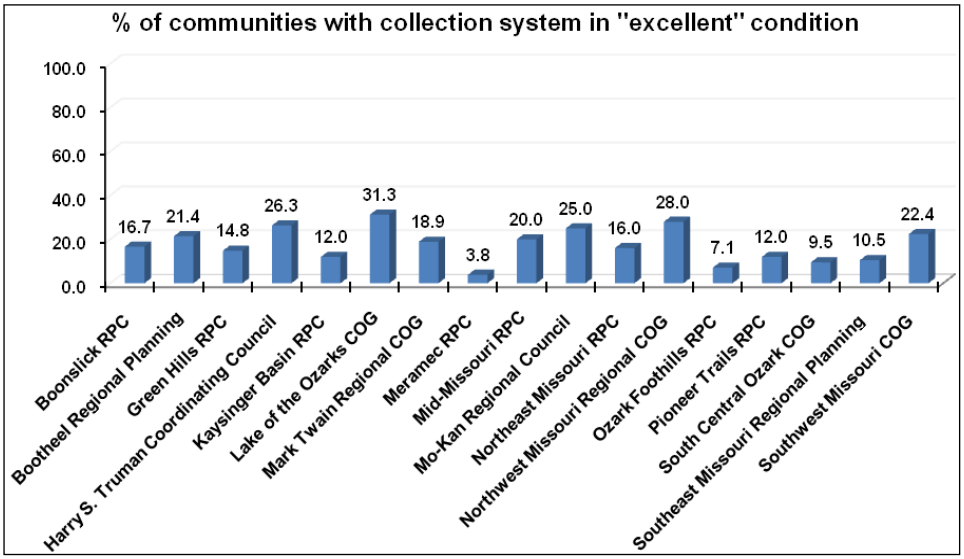


Chart 38

- Bootheel Regional Planning & Economic Development Commission has the highest percentage of communities with collection system in “poor” condition whereas; Green Hills Regional Planning Commission has least percentage of communities with “poor” collection system.

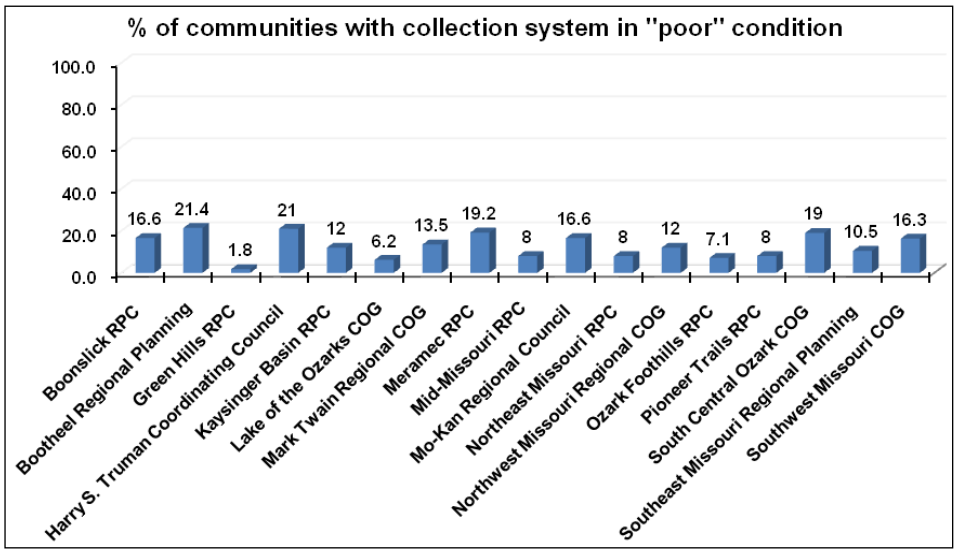


Chart 39

- Southwest Missouri Council of Governments has the highest amount of outstanding wastewater debt obligations in the state whereas; Mo-Kan Regional Council has the least amount of outstanding wastewater debt obligations.

- Southwest Missouri Council of Governments has the highest amount of bonds authorized but not issued for wastewater improvements whereas; South Central Ozark Council of Governments has the least amount of bonds authorized but not issued for wastewater improvements in the state.

Assessment by Watershed

A watershed is the geographic boundary of a creek, river or stream. It is the area of land from which water drains to a particular water body. A river basin consists of all the watersheds that flow to that river. All waters falling within a watershed boundary eventually flow to the point from which water discharges to the receiving stream or water body.

This part of the report analyzes the 8-digit hydrologic unit code cataloguing units (fourth-level of watershed delineation as per the U.S. Geological Survey) that have the 303(d) listed impaired streams. The main purpose of the assessment by watershed is to identify the needed improvements in the most sensitive watershed so, resources can be prioritized.

The analysis was based on the communities less than 5,000 population that discharge wastewater to the watersheds along with those that contain the 303(d) listed impaired streams.

The information for this assessment was gathered from various resources- U.S. EPA's website for watershed assessment, tracking & environmental results; Missouri DNR's Nonpoint Source management program annual report; Missouri Department of Conservation, and several other sources.

The information on the location and area of the watershed; type of treatment system that discharges wastewater into the watershed, the reported capacity of treatment facilities; the median wastewater rate of the watershed; estimated cost to address the wastewater needs; and number of watershed management plans developed are discussed for each of the 8-digit hydrologic unit code watersheds.

Big River Basin (HUC 8 digit- 07140104)

The Big River basin is located in east-central Missouri and drains 955 square miles of the Ozark plateau in portions of Ste. Genevieve, St. Francis, Franklin, Washington, Jefferson, and Iron counties.

- The types of treatment systems which discharge wastewater to this watershed are lagoons, oxidation ditches, and activated sludges.
- The reported capacity of treatment facilities in this watershed is 2.6 million gallons/day.
- The median wastewater rate for this watershed is $20.21 per month.

- The estimated cost to address wastewater needs in this watershed is $ 2.7 million. The needs are related to system upgrades & secondary wastewater systems.
- There are two watershed management plans in place for this watershed.

Black River Basin (HUC 8 digit- 11010007)

The Upper Black River basin, originates in Reynolds and Iron counties, Missouri, and flows south through Wayne and Butler counties and into Arkansas. Also included in this watershed, are portions of Dent, Ripley, Carter, and Shannon counties. The Black River drains 1,756 square miles in Missouri.

- The types of treatment systems which discharge wastewater to this watershed are lagoons, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 0.5 million gallons/day.
- The median wastewater rate for this watershed is $23.72 per month.
- Currently, there are no needs to be addressed for this watershed.
- There are no watershed management plans developed for this watershed.

Blackwater River Basin (HUC 8 digit- 10300104)

The Blackwater River Basin occupies portions of five counties: Johnson, Lafayette, Saline, Pettis and Cooper. The Blackwater River originates in Johnson County and flows in a northeasterly direction. The Blackwater River empties into the Lamine River in Cooper County.

- The type of treatment system which discharges wastewater to this watershed are lagoons.
- The reported capacity of treatment facilities in this watershed is 3.2 million gallons/day.
- The median wastewater rate for this watershed is $28.28 per month.
- There are needs to be addressed in this watershed related to system upgrades. The estimated cost is $1.3 million
- There are three watershed management plans developed for this watershed.

Bourbeuse River Basin (HUC 8 digit- 07140103)

The Bourbeuse River watershed is located within the northeastern quarter of the Ozark Highlands. The Bourbeuse River watershed drains 843 square miles and is composed of a number of smaller watersheds, including: Spring Creek, Boone Creek, Brush Creek, Red Oak Creek, Dry Fork, Little Bourbeuse River, and the Lower Bourbeuse River.

- The types of treatment systems which discharge wastewater to this watershed are lagoons, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 1.1 million gallons/day.
- The median wastewater rate for this watershed is $20.67 per month.
- The estimated cost to address wastewater needs in this watershed is $0.4 million. The needs are related to system upgrades and I & I issues.
- There are no watershed management plans developed for this watershed.

Upper Chariton River Basin (HUC 8 digit- 10280201)

The Chariton River originates in southern Iowa and flows almost due south through north central Missouri to its confluence with the Missouri River. The watershed includes portions of Putnam, Adair, Sullivan, and Schuyler counties. The river flows through two basins, the Upper and Lower Chariton.

- The type of treatment system which discharges wastewater to this watershed are lagoons.
- The reported capacity of treatment facilities in this watershed is 1 million gallons/day.
- The median wastewater rate for this watershed is $25.62 per month.
- The estimated costs to address the wastewater needs are unknown at this time. The needs mentioned were related to system upgrades and system replacement & rehabilitation.
- There is a watershed management plan developed for this watershed.

Lower Chariton River Basin (HUC 8 digit- 10280202)

The Chariton River originates in southern Iowa and flows almost due south through north central Missouri to its confluence with the Missouri River. The Lower Chariton Basin, includes portions of seven counties, Putnam, Sullivan, Adair, Linn, Macon, Chariton and Randolph.

- The types of treatment systems which discharge wastewater to this watershed are lagoons, and activated sludges.
- The reported capacity of treatment facilities in this watershed is 0.7 million gallons/day.
- The median wastewater rate for this watershed is $23.15 per month.
- The estimated cost to address wastewater needs in this watershed is $2.4 million. The needs are related to secondary wastewater systems, system upgrades and I & I issues.
- There are no watershed management plans developed for this watershed.

Little Chariton River Basin (HUC 8 digit- 10280203)

The Little Chariton River Basin occupies portions of five counties, Howard, Chariton, Randolph, Macon and Adair.

- The types of treatment systems which discharge wastewater to this watershed are lagoons, and land application systems.
- The reported capacity of treatment facilities in this watershed is 0.2 million gallons/day.
- The median wastewater rate for this watershed is $24.80 per month.
- There are needs related to system upgrades and the estimated cost is $0.1 million.
- There is a watershed management plan developed for this watershed.

Cuivre River (HUC 8 digit- 07110008)

The Cuivre River is located in northeast Missouri. It originates in Audrain & Pike counties and flows south-eastward through Pike, Montgomery, Lincoln, Warren, and St. Charles counties to its confluence with the Mississippi River near Winfield, Missouri. The entire watershed is 1,235 square miles.

- The types of treatment system which discharge wastewater to this watershed are lagoons land application systems, and activated sludges.
- The reported capacity of treatment facilities in this watershed is 1.8 million gallons/day.
- The median wastewater rate for this watershed is $22.25 per month.
- The estimated cost to address wastewater needs in this watershed is $ 3.5 million. The needs are related to system upgrades.
- There are no watershed management plans developed for this watershed.

Current River Basin (HUC 8 digit- 11010008)

The Current River Basin drains a land area of approximately 2,621 square miles in portions of 9 counties in Missouri, and two counties in Arkansas. These counties include Texas, Dent, Reynolds, Shannon, Howell, Oregon, Carter, Butler, and Ripley in Missouri; and Randolph and Clay in Arkansas. Most of the watershed (95.9%) lies within Missouri.

- The types of treatment systems which discharge wastewater to this watershed are lagoons, sand filtration systems, activated sludges, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 1.4 million gallons/day.
- The median wastewater rate for this watershed is $21.00 per month.
- Currently, there are no wastewater needs identified.

- There are no watershed management plans developed for this watershed.

Eleven Point River Basin (HUC 8 digit- 11010011)

The Eleven Point Basin originates near the town of Willow Springs, located in northeastern Howell County.

- The types of treatment systems which discharge wastewater to this watershed are activated sludges, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 0.1 million gallons/day.
- The median wastewater rate for this watershed is $17.70 per month.
- Currently, there are no wastewater needs identified.
- There are no watershed management plans developed for this watershed.

Elk River Basin (HUC 8 digit- 11070208)

The Elk River basin encompasses 1,032 square miles in the corners of four states, Arkansas, Kansas, Missouri, and Oklahoma. Counties that are partially or entirely within the basin are Benton County in Arkansas; Crawford County in Kansas; Barry, McDonald, and Newton counties in Missouri (866 square miles).

- The types of treatment systems which discharge wastewater to this watershed are lagoons, activated sludges, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 1.1 million gallons/day.
- The median wastewater rate for this watershed is $24.00 per month.
- The estimated cost to address wastewater needs in this watershed is $ 0.02 million. The needs are related to system upgrades.
- There are two watershed management plans developed for this watershed.

South Fabius River Basin (HUC 8 digit- 07110003)

The South Fabius River basin lies in northeastern Missouri in portions of Schuyler, Knox, Lewis, Shelby, Adair, Scotland, and Marion counties.

- The type of treatment system that discharges wastewater to this watershed are lagoons.
- The reported capacity of treatment facilities in this watershed is 0.3 million gallons/day.
- The median wastewater rate for this watershed is $22.75 per month.
- Currently, there are no wastewater needs identified.
- There are no watershed management plans developed for this watershed.

Upper Gasconade River Basin (HUC 8 digit- 10290201)

The Upper Gasconade River basin includes portions of Wright, Webster, Laclede, Camden, Texas, and Pulaski counties. The Gasconade River meanders north to northeast until it joins the Missouri River. The Upper and Lower Gasconade River watersheds drain 2,806 square miles.

- The types of treatment systems which discharge wastewater to this watershed are lagoons, activated sludges, extended aerations, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 5.2 million gallons/day.
- The median wastewater rate for this watershed is $23.05 per month.
- The estimated cost to address wastewater needs in this watershed is $2.4 million. The needs are related to system upgrades, I & I issues, and sewer rehabilitation.
- There are no watershed management plans developed for this watershed.

Lower Gasconade River Basin (HUC 8 digit- 10290203)

The Lower Gasconade River Basin is located in portions of Gasconade, Osage, Maries, Texas, Dent, Phelps, and Pulaski counties. There are a large number of springs in the watershed with a major concentration in the Little Piney Creek watershed. Little Piney Creek for 25 miles has been protected as an Outstanding State Resource Water in Missouri.

- The types of treatment systems which discharge wastewater to this watershed are lagoons, and extended aerations.
- The reported capacity of treatment facilities in this watershed is 1.8 million gallons/day.
- The median wastewater rate for this watershed is $18.17 per month.
- The estimated cost to address wastewater needs in this watershed is $0.8 million. The needs are related to system upgrades, and sewer rehabilitation.
- There are no watershed management plans developed for this watershed.

Upper Grand River Basin (HUC 8 digit- 10280101)

The Upper Grand River Basin has its most upstream portions in southern Iowa. The East, Middle and West Forks meet just south of Albany, Missouri, and form the Grand River.

- The type of treatment system which discharges wastewater to this watershed the most are the lagoons.
- The reported capacity of treatment facilities in this watershed is 2.4 million gallons/day.
- The median wastewater rate for this watershed is $25.66 per month.

- The estimated cost to address wastewater needs in this watershed is $7.3 million. The needs are related to system upgrades.
- There are no watershed management plans developed for this watershed.

Thompson River Basin (HUC 8 digit- 10280102)

The Thompson River Basin originates in southern Iowa and flows almost due south through north central Missouri to its confluence with the Grand River near Chillicothe, Missouri. The Missouri portion of the basin has an area of 1,105 square miles and includes portions of Grundy, Mercer, Harrison, Daviess, and Livingston counties.

- The type of treatment system which discharges wastewater to this watershed the most are the lagoons.
- The reported capacity of treatment facilities in this watershed is 0.5 million gallons/day.
- The median wastewater rate for this watershed is $20.23 per month.
- Currently, there are no wastewater needs identified.
- There are no watershed management plans developed for this watershed.

Middle Grand River Basin (HUC 8 digit- 10280103)

The Grand River originates in southern Iowa and flows almost due south through north central Missouri to its confluence with the Missouri River. Counties within this watershed include Putnam, Carroll, Chariton, Macon, Linn, Grundy, Livingston, Sullivan, and Mercer.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facilities in this watershed is 2.3 million gallons/day.
- The median wastewater rate for this watershed is $25.69 per month.
- The estimated cost to address wastewater needs in this watershed is $ 11.3 million. The needs are related to system upgrades, secondary wastewater systems, and sewer rehabilitation.
- There are no watershed management plans developed for this watershed.

James River Basin (HUC 8 digit- 11010002)

The James River Basin is a major tributary to the White River and its geology is characterized by karst which creates a terrain dominated by sinkholes, losing streams, caves and springs. The 1,512 square miles basin includes all of the land drained by the unimpounded portions of the James River and its tributaries. The basin is located in southwest Missouri in portions of Webster, Greene, Christian, Stone, Wright, Douglas, Lawrence, and Barry counties.

- The types of treatment systems which discharge wastewater to this watershed are oxidation ditches, activated sludges, and sand filtration systems.
- The reported capacity of treatment facilities in this watershed is 1.2 million gallons/day.
- The median wastewater rate for this watershed is $24.50 per month.
- The estimated cost to address wastewater needs in this watershed is $0.9 million. The needs are related to system upgrades, and sewer rehabilitation.
- There are 6 watershed management plans developed for this watershed.

Lamine River Basin (HUC 8 digit- 10300103)

The Lamine River Basin consists of all the land drained by the Lamine River and its tributaries, except that drained by the Blackwater River and its tributaries. It covers an area of approximately 1,110 square miles in west central Missouri including portions of Pettis, Benton, Morgan, Saline, Cooper, Johnson, and Moniteau counties.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facilities in this watershed is 0.4 million gallons/day.
- The median wastewater rate for this watershed is $15.30 per month.
- Currently, there are no wastewater needs identified.
- There are two watershed management plans developed for this watershed.

Meramec River Basin (HUC 8 digit- 07140102)

The Meramec River basin is located in east central Missouri in Crawford, Dent, Franklin, Iron, Jefferson, Phelps, Reynolds, St. Louis, Texas, and Washington counties. The Meramec River and its tributaries drain 2,149 square miles.

- The type of treatment system that discharges wastewater to this watershed are the oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 11.8 million gallons/day.
- The median wastewater rate for this watershed is $11.04 per month.
- The estimated cost to address wastewater needs in this watershed is $0.2 million. The needs are related to system upgrades.
- There are two watershed management plans developed for this watershed.

Mississippi River Tribs- Ste. Genevieve- Cape Girardeau (HUC 8 digit- 07140105)

The Upper Mississippi – Cape Girardeau portion, HUC 07140105, stretches along the eastern border of Ste. Genevieve, Perry, Cape Girardeau, Scott, St. Francis, Bollinger, and Mississippi counties.

- The types of treatment systems which discharge wastewater to this watershed are oxidation ditches, lagoons, and sand filtration systems.
- The reported capacity of treatment facilities in this watershed is 1 million gallons/day.
- The median wastewater rate for this watershed is $30.27 per month.
- Currently, there are no wastewater needs identified.
- There is a watershed management plan developed for this watershed.

Mississippi River- St. John's Bayou (HUC 8 digit- 08020201)

The New Madrid-St. John's Basin occupies portions of Scott, Mississippi, and New Madrid counties. The majority of the streams in this basin are channelized. St. John's Ditch and several other tributaries flow into St. John's Bayou.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facilities in this watershed is 3.2 million gallons/day.
- The median wastewater rate for this watershed is $15.15 per month.
- The estimated cost to address wastewater needs in this watershed is $4.3 million. The needs are related to system upgrades, and sewer rehabilitation.
- There are no watershed management plans developed for this watershed.

Peruque Creek- Mississippi River (HUC 8 digit- 07110009)

The Peruque-Piasa basin lies within Warren, Lincoln and St. Charles counties. Peruque and Dardenne creeks are the main streams in the basin. Peruque Creek originates in Warren County, and Dardenne Creek begins in western St. Charles County. Both streams flow easterly through a heavily urbanized area and gradually turn north to flow into the Mississippi River. Peruque Creek forms Lake St. Louis and Lake Ste. Louise.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facility in this watershed is 0.5 million gallons/day.
- The median wastewater rate for this watershed is $22.25 per month.
- There is a need to increase the system capacity for which the costs were unknown.
- There is a watershed management plan developed for this watershed.

Mississippi River Tribs- St. Louis- Ste. Genevieve (HUC 8 digit- 07140101)

The Middle Mississippi River (MMR) corridor ecosystem is a 200-mile long reach of the Mississippi River running from St. Louis, Missouri, to Cairo, Illinois. The Cahokia-Joachim portion stretches along the eastern border of St. Louis City, St. Louis County, Jefferson, St. Charles, St. Francis, and Ste. Genevieve counties.

- The type of treatment system that discharges wastewater to this watershed are the oxidation ditches.
- The reported capacity of treatment facility in this watershed is 0.7 million gallons/day.
- The median wastewater rate for this watershed is $13.14 per month.
- The estimated cost to address wastewater needs in this watershed is $1.2 million. The needs are related to system upgrades, and sewer rehabilitation.
- There is a watershed management plan developed for this watershed.

Missouri River Mainstream- Hermann to St. Louis (HUC 8 digit- 10300200)

The Missouri River Mainstem from Hermann to St. Louis lies in the eastern Missouri counties of Audrain, Callaway, Montgomery, Gasconade, Warren, Franklin, St. Charles, and St. Louis. The Missouri River runs through the middle of the basin from west to east.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facilities in this watershed is 0.6 million gallons/day.
- The median wastewater rate for this watershed is $17.75 per month.
- The estimated cost to address wastewater needs in this watershed is $ 4.1 million. The needs are related to system upgrades, and sewer rehabilitation.
- There are no watershed management plans developed for this watershed.

Missouri River Mainstream- Kansas City to Glasgow (HUC 8 digit- 10300101)

The Lower Missouri-Crooked consists of the land drained by the Missouri River and its tributaries from just downstream of its confluence with the Kansas River to Glasgow, Missouri. It covers an area of approximately 2,650 square miles, 95% of which lies in western Missouri, with the remainder in eastern Kansas.

- The type of treatment system that discharges wastewater to this watershed the most are the lagoons.
- The reported capacity of treatment facilities in this watershed is 1.5 million gallons/day.

- The median wastewater rate for this watershed is $40.72 per month.
- The estimated cost to address wastewater needs in this watershed is $2.1 million. The needs are related to system upgrades, and sewer rehabilitation.
- There are no watershed management plans developed for this watershed.

Missouri River Mainstream- Glasgow to Hermann (HUC 8 digit- 10300102)

The Missouri River Mainstem from Glasgow to Hermann lies in the central Missouri counties of Cole, Osage, Howard, Gasconade, Morgan, Randolph, Cooper, Chariton, Saline, Callaway, Boone, Audrain, Miller, Montgomery, and Moniteau. The watershed is approximately 584 square miles.

- The types of treatment systems that discharge wastewater to this watershed are the oxidation ditches, lagoons, activated sludges, package treatment plants, and land application systems.
- The reported capacity of treatment facilities in this watershed is 8.8 million gallons/day.
- The median wastewater rate for this watershed is $25.37 per month.
- The estimated cost to address wastewater needs in this watershed is $18 million. The needs are related to system upgrades, I & I correction, secondary wastewater systems, and sewer rehabilitation.
- There are three watershed management plans developed for this watershed.

North River- Bobs Creek (HUC 8 digit- 07110004)

The Sny River Basin lies in northeastern and eastern Missouri and encompasses the watersheds of the North River, South River and several small direct tributaries to the Mississippi River in Pike and Lincoln counties.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facilities in this watershed is 0.4 million gallons/day.
- The median wastewater rate for this watershed is $18.02 per month.
- The estimated cost to address wastewater needs in this watershed is $4.9 million. The needs are related to system upgrades, and sewer rehabilitation.
- There are no watershed management plans developed for this watershed.

Niangua River Basin (HUC 8 digit- 10290110)

The Niangua River is a sixth order tributary of the Osage River in west central Missouri. It originates in northern Webster County, at the confluence of its East and West Forks, about 7

miles north of Marshfield. The river meanders 120 miles to the north where it joins the Osage River (Osage Arm, Lake of the Ozarks).

- The types of treatment system that discharges wastewater to this watershed are the lagoons and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 0.7 million gallons/day.
- The median wastewater rate for this watershed is $16.67 per month.
- The estimated cost to address wastewater needs in this watershed is $0.5 million. The needs are related to system upgrades, and sewer rehabilitation.
- There are no watershed management plans developed for this watershed.

Marais des Cygnes basin (HUC 8 digit- 10290102)

The Lower Marais des Cygnes basin covers 3,704 square miles; 13% of the basin is in Missouri with the remainder in Kansas.

- The types of treatment system that discharges wastewater to this watershed are the lagoons activated sludges, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 0.3 million gallons/day.
- The median wastewater rate for this watershed is $34.50 per month.
- Currently, there are no wastewater needs identified.
- There are 3 watershed management plans developed for this watershed.

Marmaton River Basin (HUC 8 digit- 10209104)

The Marmaton River Basin lies within Vernon and Barton counties. The Marmaton River flows from Kansas into Vernon County, Missouri where it continues in an easterly direction, and then just before reaching the city of Nevada it turns northeasterly until the Little Osage River empties into it.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facilities in this watershed is 0.1 million gallons/day.
- The median wastewater rate for this watershed is $26.95 per month.
- There are identified needs related to system upgrades. Costs unknown at this time.
- There are no watershed management plans developed for this watershed.

Upper Osage River Basin (HUC 8 digit- 10290105)

The Harry S. Truman Reservoir covers portions of Barton, Vernon, St. Clair, Cedar, Hickory, Benton, Bates, Polk, and Henry counties. The Osage River originates at the confluence of the Bates County Drainage Ditch and Marmaton River northwest of Schell City, Missouri, in northeast Vernon County then flows in an easterly direction and inundates Harry S. Truman Lake.

- The types of treatment systems that discharge wastewater to this watershed are the lagoons and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 1.4 million gallons/day.
- The median wastewater rate for this watershed is $23.12 per month.
- There are identified needs related to system upgrades. Costs unknown at this time.
- There are no watershed management plans developed for this watershed.

Pomme de Terre River basin (HUC 8 digit- 10290107)

Pomme de Terre River is a sixth order river originating in southwest Missouri, near Marshfield. The river flows in a northeast direction from Marshfield and is impounded as Pomme de Terre Lake just upstream of Hermitage, Missouri, and further downstream becomes part of Harry S. Truman Reservoir. Pomme de Terre Lake is a 7,820-acre reservoir constructed and operated by the United States Army Corps of Engineers.

- The types of treatment system that discharges wastewater to this watershed are the lagoons and package treatment plants.
- The reported capacity of treatment facilities in this watershed is 0.2 million gallons/day.
- The median wastewater rate for this watershed is $19.00 per month.
- The estimated cost to address wastewater needs in this watershed is $1.4 million. The needs are related to system upgrades, and secondary wastewater system.
- There is a watershed management plan developed for this watershed.

Sac River Basin (HUC 8 digit- 10290106)

The Sac River headwaters originate near Springfield, Missouri. Major tributaries include Little Sac River, Turnback Creek, Sons Creek, Horse Creek, Cedar Creek, Coon Creek, Turkey Creek, Brush Creek, and Bear Creek.

- The types of treatment system that discharges wastewater to this watershed are the lagoons activated sludges, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 1.4 million gallons/day.

- The median wastewater rate for this watershed is $29.50 per month.
- The estimated cost to address wastewater needs in this watershed is $0.6 million. The needs are related to sewer rehabilitation and I & I corrections.
- There are 3 watershed management plans developed for this watershed.

Middle – South Forks of the Salt River (HUC 8 digit- 07110006)

The Middle, Elk, and South Forks of the Upper Salt River basin, HUC 07110006, lie in northeastern Missouri and encompasses much of Monroe, Audrain, eastern Randolph and Macon, and portions of Callaway, Shelby and Boone counties. The major streams in this basin are the Middle Fork, Elk Fork, and South Fork of Salt River. The downstream end of the basin occurs where these streams flow into Mark Twain Lake. The basin is 1,214 square miles in area.

- The types of treatment system that discharges wastewater to this watershed are the lagoons activated sludges, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 0.3 million gallons/day.
- The median wastewater rate for this watershed is $25.00 per month.
- The estimated cost to address wastewater needs in this watershed is $2.8 million. The needs are related to sewer rehabilitation, secondary wastewater systems, and I & I corrections.
- There are no watershed management plans developed for this watershed.

Lower Salt River Basin (HUC 8 digit- 07110007)

The Salt River basin lies in northeastern Missouri and flows east to its confluence with the Mississippi River about 20 miles southeast of Hannibal. The basin includes all of Mark Twain Lake and the watershed of the Salt River downstream of Mark Twain Lake. Counties within this basin are Marion, Pike, Ralls, Shelby, Audrain, and Monroe.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facilities in this watershed is 0.7 million gallons/day.
- The median wastewater rate for this watershed is $36.00 per month.
- There are identified needs related to system upgrades. Costs unknown at this time.
- There are 2 watershed management plans developed for this watershed.

South Grand River Basin (HUC 8 digit- 10290108)

The South Grand River Watershed occupies a land area of approximately 2,046 square miles in portions of eight counties in Missouri and two counties in Kansas.

- The type of treatment system that discharges wastewater to this watershed are the lagoons.
- The reported capacity of treatment facilities in this watershed is 0.2 million gallons/day.
- The median wastewater rate for this watershed is $28.37 per month.
- There are identified needs related to system upgrades. Costs unknown at this time.
- There are no watershed management plans developed for this watershed.

Cherokees Lake Basin (HUC 8 digit- 11070206)

The Lake O' the Cherokees basin has two portions in Missouri, one above the Elk River basin and one below in the southwest most corner of the state. The Missouri counties of Newton and McDonald contain portions of the watershed.

- The type of treatment system that discharges wastewater to this watershed are the oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 0.1 million gallons/day.
- The median wastewater rate for this watershed is $21.95 per month.
- Currently, there are no wastewater needs identified.
- There is a watershed management plan developed for this watershed.

Spring River Basin (HUC 8 digit- 11070207)

The Spring River Basin is located in southwest Missouri in Barry, Barton, Christian, Dade, Jasper, Lawrence, Newton, and Stone counties.

- The types of treatment system that discharges wastewater to this watershed are the lagoons activated sludges, sand filtration systems, land application systems, and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 3.4 million gallons/day.
- The median wastewater rate for this watershed is $24.50 per month.
- The estimated cost to address wastewater needs in this watershed is $10.7 million. The needs are related to sewer rehabilitation, and secondary wastewater systems.
- There are 5 watershed management plans developed for this watershed.

Spring River Basin (HUC 8 digit- 11010010)

The Spring River Basin is located southwest of the Eleven Point Watershed and is bounded to the west by the North Fork White River Watershed. The Spring River Basin in Missouri occupies 480.3 square miles.

- The types of treatment system that discharges wastewater to this watershed are sand filtrations and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 0.5 million gallons/day.
- The median wastewater rate for this watershed is $16.25 per month.
- The estimated cost to address wastewater needs in this watershed is $3.5 million. The needs are related to sewer rehabilitation, and system upgrades.
- There are no watershed management plans developed for this watershed.

Upper St. Francis Basin (HUC 8 digit- 08020202)

The Upper St. Francis Basin lies in portions of Iron, St. Francois, Madison, Ste. Genevieve, Butler, Reynolds, Washington, and Wayne counties. The St. Francis River originates in Iron County in southeast Missouri and flows 225 miles to the Missouri/Arkansas border. The basin drains 1,839 square miles in Missouri.

- The type of treatment system that discharges wastewater to this watershed the most are the lagoons.
- The reported capacity of treatment facilities in this watershed is 1.7 million gallons/day.
- The median wastewater rate for this watershed is $21.50 per month.
- The estimated cost to address wastewater needs in this watershed is $2 million. The needs are related to sewer rehabilitation, and system upgrades.
- There are no watershed management plans developed for this watershed.

Little River Ditches (HUC 8 digit- 08020204)

The Little River Ditches Basin flows through seven counties in Missouri, Bollinger, Cape Girardeau, Scott, Stoddard, New Madrid, Pemiscot, and Dunklin to the Missouri-Arkansas border.

- The types of treatment system that discharges wastewater to this watershed are the lagoons and oxidation ditches.
- The reported capacity of treatment facilities in this watershed is 16.5 million gallons/day.
- The median wastewater rate for this watershed is $16.47 per month.
- The estimated cost to address wastewater needs in this watershed is $16.5 million. The needs are related to system upgrades, I & I corrections, sewer rehabilitation, and secondary wastewater systems.
- There are no watershed management plans developed for this watershed.

Summary

Name of the watershed	Median rate ($)	Capacity (million gallons/day)	$ value of need (million dollars)
Big River	20.21	2.6	6.50
Black River	23.70	0.5	none
Blackwater	28.28	3.2	1.30
Bourbeuse River basin	20.67	1.1	0.40
Upper Chariton River basin	25.62	1.0	Costs unknown
Lower Chariton River basin	23.15	0.7	2.40
Little Chariton River basin	24.80	0.2	0.10
Cuivre River basin	22.25	1.8	3.50
Current River basin	21.00	1.4	none
Eleven Point River basin	17.70	0.1	none
Elk River basin	24.00	1.1	0.02
South Fabius River basin	22.75	0.3	none
Upper Gasconade River basin	23.05	5.2	2.40
Lower Gasconade River basin	18.17	1.8	0.80
Upper Grand River basin	25.66	2.4	7.30
Thompson River basin	20.23	0.5	none
Middle Grand River basin	25.69	2.3	11.30
James River basin	24.50	1.2	0.90
Lamine River basin	15.30	0.4	none
Meramec River basin	11.04	11.8	0.20
Mississippi River Tribs- Ste. Genevieve- Cape Girardeau	30.27	1.0	none
Mississippi River- St. John's Bayou	15.15	3.2	4.30
Peruque Creek- Mississippi River	22.25	0.5	none
Mississippi River Tribs- St. Louis- Ste. Genevieve	13.14	0.7	1.20
Missouri River Mainstream- Hermann to St. Louis	17.75	0.6	4.10
Missouri River Mainstream- Kansas City to Glasgow	40.72	1.5	2.10
Missouri River Mainstream- Glasgow to Hermann	25.37	8.8	18.00
North River- Bobs Creek	18.02	0.4	4.90
Niangua River Basin	16.67	0.7	0.50
Marias des Cygnes Basin	34.50	0.3	none
Marmaton River Basin	26.95	0.1	Costs unknown
Upper Osage River Basin	23.12	1.4	Costs unknown
Pomme de Terre River Basin	19.00	0.2	1.40
Sac River Basin	29.50	1.4	0.60

Name of the watershed	Median rate ($)	Capacity (million gallons/day)	$ value of need (million dollars)
Middle - South Forks of the Salt River	25.00	0.3	2.80
Lower Salt River Basin	36.00	0.7	Costs unknown
South Grand River Basin	28.37	0.2	Costs unknown
Cherokees Lake Basin	21.95	0.1	none
Spring River Basin (Southwest Missouri)	24.50	3.4	10.70
Spring River Basin (bounded by eleven point & north fork white river)	16.25	0.5	3.50
Upper St. Francis Basin	21.50	1.7	2.00
Little River ditches	16.47	6.0	16.50

Table 5 shows the summary of the major datasets included in the analysis. A detailed summary is discussed below.

- There are forty two 8-digit hydrologic unit code watersheds that contain the 303(d) listed impaired streams in the state.
- The capacity of treatment facilities in the watersheds ranges from 0.05 million gallons/day to 11.4 million gallons/day.
- 17 watersheds in the state have median wastewater rate less than the state median rate of $21.8.
- The median rate for wastewater ranges from $11.04 to $40.72.
- There are ten watersheds without any wastewater needs.
- There are five watersheds with identified needs but the costs were unknown at this time.
- The total amount to address all the reported needs for all the remaining 27 watersheds is estimated to be more than $109.62 million which is 65% of the statewide needs.
- The highest amount of reported needs are concentrated in Mid-Missouri Regional Planning Commission, Lake of the Ozarks Council of Governments, Meramec Regional Planning Commission, Bootheel Regional Planning & Economic Development Commission and Southeast Missouri Regional Planning & Economic Development Commission.

- Out of 42 watersheds considered for this project, 18 watersheds have completed watershed management plans.

Financing Options

A significant concern for many small communities in the State of Missouri is how to pay for the escalating cost of constructing wastewater system improvements. This part of the report discusses the various grant programs available for wastewater projects within the state. Further, the details related to the purpose of the grant, eligibility criteria and funding limits are included.

Community Development Block Grant (CDBG) Program

The CDBG program offers grants to Missouri communities to improve local facilities, address health and safety concerns, and develop a greater capacity for growth. These grants provide assistance to communities to establish or improve local water or sewer facilities. State CDBG funds are only available to cities and counties in non-entitlement areas. A non-entitlement area is a city with population less than 50,000 and/or a county with population less than 200,000. CDBG grants may be used for construction that is related to water treatment and distribution, and sewer treatment and collection for publicly owned systems. The maximum amount any community/applicant can apply for is $500,000 or $5,000/household.

CDBG grant applications are open cycle (year-round) and the grant process includes submission of a preliminary proposal and engineering report. The project beneficiaries should be at least 51% low-to-moderate income persons. New water or sewer systems or expansion/upgrades of existing systems that have substantiated health concerns are prioritized for the grant process.

United States Department of Agriculture (USDA) Rural Development

USDA Rural Development administers water and wastewater loan and grant program to improve the quality of life and promote economic development in rural communities. This assistance is available through Rural Development's Rural Utilities Programs.

Water & Waste Disposal Direct and Guaranteed Loans

Direct Loans: USDA offers direct loans to develop water and wastewater systems in rural areas and in cities and towns with a population of 10,000 or less. Funds are available to public entities such as municipalities, counties, special-purpose districts, and Indian tribes. Applicants

must be unable to obtain funds from other sources at reasonable rates and terms. The maximum term for all loans is 40 years.

Guaranteed Loans: USDA offers guaranteed loans for the same purpose as direct loans. These are made available and serviced by lenders such as banks and savings and loan associations.

Grants will not be made in a city or town with a median household income of more than 90% of the state non-metropolitan median household income. Currently, 90% of the state non-metropolitan household income equals $35,138. Priority will be given to communities with a median household income below 60% of the state non-metropolitan median household income. In no case will the grant amount exceed 75% of the project costs. There are four levels of percentage of grant assistance ranging from 75% down to 15%. Percentage of grant assistance is determined by population and income. Grant assistance to a particular project cannot exceed 50% of the state's allocation.

Missouri Department of Natural Resources (DNR) Rural Sewer Grant Program

DNR's Rural sewer grants are used for two types of wastewater construction projects. They are:

a) Rural Sewer Grants: These grants are restricted to unsewered projects and fund collection systems.
b) Special Needs Grants: These grants may be used to fund the additional costs of meeting more stringent U.S. EPA or the DNR requirements for wastewater treatment. Costs of upgrades to meet ammonia limits and disinfection requirements are examples of costs that could be funded up to 50 percent through this type of grant.

Public sewer districts, public water districts and communities of less than 10,000 population are eligible to apply.

The grants cover up to 50% of the eligible costs of a project. The balance of the eligible costs and all the ineligible costs must come from another funding source.
The maximum grant amount is the lesser of 50% of the eligible project cost or $1,400 times the number of service connections. When the grant is to fund a collection system, the maximum grant is based on the number of new service connections. Grants are capped at $500,000.

Missouri DNR-Clean Water State Revolving Loan Fund (SRF)

The Missouri SRF leveraged loan program is a revolving fund established pursuant to the federal Clean Water Act of 1987. It was developed by the Environmental Improvement and Energy Resources Authority (EIERA) and the DNR in cooperation with the Missouri Clean Water Commission, and provides subsidized low interest rate loans to qualifying applicants.

The Missouri SRF leveraged loan program is a subsidized low interest loan program. The political subdivisions must vote General Obligation and/or Revenue bonds to secure the applicant's debt. These bonds are purchased by and resold nationally by the EIERA. Funds generated by the sale are deposited with a trustee in the applicant's name and are used for construction. As construction costs are incurred, state and federal funds are deposited into a reserve account in an amount equal to 70% or more of the construction cost. Interest earned on the reserve is credited to the interest portion of the debt service charge on the bonds thereby providing the interest subsidy to the recipient.

The EIERA currently offers leveraged loans for construction of public wastewater systems and for construction of public drinking water systems. Funding is available to finance the costs of planning, design and construction publicly owned wastewater and drinking water projects.

Local bonds

General obligation bond

This is a common type of municipal bond that is secured by the state or local government’s pledge to use legally available resources, including tax revenues, to repay bond holders. Most general obligation pledges at the local government level include a pledge to levy a property tax to meet debt service requirements, in which case holders of general obligation bonds have a right to compel the borrowing government to levy that tax to satisfy the local government’s obligation.

Revenue bond

A revenue bond is a special type of municipal bond distinguished by its guarantee of repayment solely from revenues generated by a specified revenue-generating entity associated with the purpose of the bonds, rather than from a tax. Unlike general obligation bonds, only the revenues specified in the legal contract between the bond holder and bond issuer are required to be used

for repayment of the principal and interest of the bonds; other revenues and the general credit of the issuing agency are not so encumbered.

Because the pledge of security is not as great as that of general obligation bonds, revenue bonds may carry a slightly higher interest rate than general obligation bonds; however, they are usually considered the second-most secure type of municipal bonds. Revenue bonds are issued to construct or expand upon various revenue-generating entities, which include water and wastewater utilities.

Note: The annual principal and interest for a community to borrow $100,000 at 5% for 20 years is calculated to be $7925.

Future needs

The total cost (communities that reported) to address the wastewater needs in the state for communities less than 5,000 population is estimated to be more than $170 million.
Out of this, the estimated cost to take care of “system upgrades and secondary wastewater systems” totals $117 million; estimated cost for replacing and rehabbing sewer totals $44 million; estimated cost for installing advanced treatment system totals $6 million; and for correcting I & I issues, the estimated cost is $3 million.

This shows that the estimated cost to upgrade the existing system and the costs necessary to meet the minimum level of treatment is estimated as $117 million. The estimated cost for the maintenance, reinforcement, or reconstruction of structurally deteriorating sanitary or combined sewers, and installation of new pipes is $44 million. The estimated cost to attain a level of treatment that is more stringent than secondary treatment is $6 million.

Even though the estimated cost for correction of I & I issues accounts for $3 million, considering that these issues can result in millions of gallons/day of increased flow into the wastewater facility; necessitating increased discharges of treated effluent to the receiving stream, it is suggested that the communities consider working on I & I issues first, which will not only reduce treatment requirements, but will also reduce energy consumption.

With the continuous change in the population numbers along with the more stringent regulatory requirements and the types of contaminants that are targeted, changes; there is a need for the communities and the DNR to prioritize the identified needs and implement them. Funding priorities should address sensitive watersheds and high growth areas.

The various financing options provided for each community forms as a basis for the RPCs to look to see the various opportunities that they could approach in the future. However, the communities have to work with their engineering consultants and the RPCs before undertaking any course of action.

The financing options and assistance available at the Federal, State, and local levels need to be expanded to provide the public resources to aid small communities in their efforts to provide public wastewater systems. Financing should not just be limited to loan and loan guarantee

programs. Many small communities need grant assistance to fund the needed improvements and maintain rate affordability.

Recommendations

The health of our communities, the protection of our water bodies, and the prospects for future economic growth and development, are linked to our ability to maintain, and as necessary, upgrade these facilities.

Outdated treatment processes, obsolete collection system, and equipment nearing the end of its useful life can result in greater than necessary energy consumption. Aging infrastructure, both at treatment facilities and within collection and distribution systems, has the potential to significantly influence energy use within the sector. Trends in technology have the potential to influence energy use in the sector. More effective and user friendly advanced control systems, and newer, more efficient treatment processes also have the potential to decrease energy use in the sector. It is necessary to perform energy evaluations in order to identify energy efficiency opportunities and promote the prioritized opportunities, to implement the changes to save energy and to monitor the progress. Further, more cost-effective, green infrastructure technologies can be standardized promoting water conservation.

There also exists the need for the local governments to plan for effective, local infrastructure management plans. Further, infrastructure planning could include consideration of regional consolidation and shared services. Also, proactive communities could be rewarded for being good stewards.

Conclusion

As discussed in this report, there are aging systems that are failing and communities do not have the funds to adequately repair and replace the necessary infrastructure. With this said, clearly there is a need for sustainable wastewater infrastructure funding programs for the State of Missouri.

There is no dispute that the cost of ensuring proper wastewater treatment is larger than what local governments and the state can address on their own. Clearly, there is a compelling need for a sustainable wastewater infrastructure funding program, yet no mechanism presently exists for that funding.

It is clear; however, that this is not only a massive financial problem, but it is also a complex and difficult engineering, planning, and environmental undertaking. Until adequate funding can be developed to address the entire need, the funding agencies need to prioritize the most pressing needs. In reviewing the findings of this report, it would appear that the highest priorities should be placed geographically on most sensitive watershed areas and those communities experiencing rapid growth. Functionally, it would appear that the highest priority would be addressing inflow and infiltration needs as this will reduce treatment demands and conserve energy.

Properly treating wastewater and providing clean drinking water is a shared responsibility between the State of Missouri and the various local governments as a cooperative effort to provide for the health and welfare of all citizens and the environment. In the absence of federal assistance to comply with imposed mandates, the state and the local governments must work together to find additional funding for entities to meet mandates, particularly for those communities that do not have the ability to ask their residents to shoulder any more burden than has already been placed on them.

This report is meant for use by state and local officials to better understand regulatory factors and potential funding sources for wastewater projects. This understanding is important to comprehend the scope of the shortage of affordable funding that already exists. Here is the beginning of a dialogue with the constituents, the press, state legislators, and fellow local officials about the wastewater projects funding issues at the local and state levels which is a key factor in a cooperative state and local efforts toward cleaner, safer water.

Appendix I

Definitions

Activated sludge: Activated sludge is a continuous flow, biological treatment process characterized by a suspension of aerobic microorganisms, maintained in a relatively homogeneous state by the mixing and turbulence induced by aeration.

Biochemical oxygen demand (BOD): A measure of the amount of oxygen required by microorganisms to breakdown organic matter in water.

Collection system: A wastewater collection system or sanitary sewer system is defined as the network of pipes and pumping systems used to convey sanitary flow to a wastewater treatment facility for treatment prior to discharge to the environment. Collections systems are necessary to move wastewater from its source to a location for treatment.

Coliform bacteria: A group of bacteria predominantly inhabiting the intestines of humans or other warm-blooded animals, but occasionally found elsewhere. Used as an indicator of human fecal contamination.

Compliance Schedule: A schedule of remedial measures included in a permit or an enforcement order, including a sequence of interim requirements (for example, actions, operations, or milestone events) that lead to compliance with the Clean Water Act and regulations.

Classified streams: Are those that maintain water during low flow periods in dry weather and have official, identifiable beneficial uses.

Effluent: Sewage, water, or other liquid, partially or completely treated or in its natural state, flowing out of a septic tank, subsurface wastewater infiltration system, aerobic treatment unit, or other treatment system or system component.

Extended aeration: The extended aeration process is one modification of the activated sludge process which provides biological treatment for the removal of biodegradable organic wastes under aerobic conditions.

Expired permits: The Water Pollution Control Branch is responsible for issuing permits to build, erect, alter, replace, operate, use or maintain existing point sources of water pollution in the State of Missouri. The application for renewing the permit must be received within 180 days of the expiration of the current operating permit.

E. coli: The abbreviated name of a bacterium named Escherichia (Genus) coli (species) that normally live in the intestines of warm-blooded animals. Some strains of this bacterium can cause serious illness.

Flow Monitoring: this includes accurate measurement of the amount of water moving through its collection system in order to deductively pinpoint sources of I&I. The installation of sensors will help to identify, monitor and manage the I & I issues.

Inflow & Infiltration (I & I) issues: Water entering sanitary sewers from inappropriate connections is called inflow. On the other hand, groundwater entering sanitary sewers through defective pipe joints and broken pipes is called infiltration. Inflow and infiltration (I & I issues) in a facility's collection system is costly for a wastewater treatment facility. Increased flow in the system results in higher operational and capital costs. The system runs the risk of overflows as it becomes overloaded. Inflow and infiltration problems can result in millions of gallons per day of increased flow into the wastewater facility, necessitating increased discharges of treated effluent to the receiving stream. The important solutions identified by EPA include: smoke testing, camera inspections, manhole inspections, flow monitoring, and finally repair and replacement. The Missouri Department of Natural Resources branch for Water Pollution Control issues the notices on the I & I issues.

Lagoons: Lagoons are pond-like bodies of water or basins designed to receive, hold treat wastewater for a set period of time. The wastewater is treated through a combination of physical, biological, and chemical processes. Most of the treatment occurs naturally, but some systems use aeration devices to add oxygen to the wastewater.

Manhole inspections: these are relatively inexpensive and quick method of detecting inflow/infiltration sources in storm and sanitary sewer systems. Visual manhole inspections provide an additional source of information concerning the presence and degree of inflow/infiltration problems, the general structural condition of the manhole and the accuracy of previous system drawings.

Notices of violation issues: The notices of violations are issued for acute or high priority violations. A notice of violation is a formal, written notification of significant noncompliance and is sent with a cover letter. The notice of violation is issued for violations of law, regulations, permits, certifications, licenses or registrations that warrant legal action if not corrected. It alerts the violator that serious, potentially serious or repeated violations exist and that the violator is or will be requested to take certain steps to address the violation.
Receiving waters: Any body of water into which treated or untreated wastes are discharged. Sewage treatment, or domestic wastewater treatment, is the process of removing contaminants from wastewater and household sewage, both runoff (effluents) and domestic. It includes physical, chemical, and biological processes to remove physical, chemical and biological contaminants. Its objective is to produce an environmentally-safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer).

Operating permit: A renewable and revocable permit to operate and maintain an onsite or

clustered treatment system in compliance with specific operational or performance criteria stipulated by the regulatory authority.

Oxidation ditch: An oxidation ditch is an activated sludge biological treatment process; commonly operated in the extended aeration mode, although conventional activated sludge treatment is also possible.

Package Plants: Package plants are pre-manufactured treatment facilities used to treat wastewater in small communities or on individual properties.

Sand filter: A packed-bed filter of sand or other granular materials used to provide advanced secondary treatment of settled wastewater or septic tank effluent.

Sequencing batch reactors: A sequencing batch reactor is a variation of the activated sludge process. As a fill and draw or batch process, all biological treatment phases occur in a single tank.

Sanitary sewer overflows (SSOs): SSOs are events that occur when the capacity of a collection system (which is designed to collect and convey only sanitary wastewater, not storm water) is exceeded, flow is blocked, or mechanical failure prevents the system from proper operation.

Smoke testing: this involves pumping smoke through sanitary sewers from utility holes in streets or within public easements and observing & documenting where smoke exits. Depending on the specific circumstances, the exiting smoke can indicate the location of a broken pipe, manhole, catch basin, or where roof or foundation drains might be connected to the sewer system, indicating where infiltration or inflow might enter the sanitary sewer system.

Trickling filter: The process consists of a fixed bed of plastic media over which wastewater is applied for aerobic biological treatment.

Wastewater: Water carrying waste from homes, farms, businesses, and industries.

Wastewater Treatment: It is the process of removing contaminants from wastewater and household sewage, both runoff (effluents) and domestic. It includes physical, chemical, and biological processes to remove physical, chemical and biological contaminants. Its objective is to produce an environmentally-safe fluid waste stream (or treated effluent) and a solid waste (or treated sludge) suitable for disposal or reuse (usually as farm fertilizer).

Waste water treatment facility (WWTF): Facilities that store and process municipal sewage, before release. These facilities are under the regulation of the Missouri Department of Natural Resources

Watershed: A watershed is the total land area that contributes runoff to a particular water body. Land use within a watershed affects the water quality of the streams within the watershed because pollution on the land will wash into the stream when it rains or snows.

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Map description

Statewide 8-HUC watersheds & 303d listed impaired streams- map shows the 8-digit watersheds in the state that contain the 303d listed impaired streams. Each of the color indicates each watershed on the map. A list of the 8-digit watersheds and the 2008 list of 303d impaired streams are attached in the appendix section just before the maps section.

Statewide 10-HUC watersheds & 303d listed impaired streams- map shows the 10-digit watersheds in the state that contain the 303d listed impaired streams. Each of the color indicates each watershed on the map.

Statewide Outstanding Resource Waters- map shows the outstanding resources within the state of Missouri. A list of the outstanding resource waters is included in the appendix section just before the maps section.

2010 Population change by block group- map shows the population change from 2000 to 2010 by block group.

2010 population density by county- map shows the 2010 population density by county. The population density is shown by square mile.

RPC maps show the following:

- RPC boundary
- County boundary within the RPC
- Interstate
- U.S. Highway
- Type of the treatment system: this information is taken from the survey responses. If there is an RPC with “No system”- it means that the particular community does not have a treatment system but has a collection system.
- Cities < 5,000 population: It has to be noted that only those communities surveyed within the scope of this project are shown on this map. These include those selected communities with less than 5,000 population (2000 Census) and have a public sewer system.
- Cities > 5,000 population: The communities with population greater than 5,000 population are shown on the map.
- 303d listed impaired streams: This shows the impaired streams that are contained in either 8-digit or 10-digit watershed.

Missouri Watersheds based on their HUC 8, USGS basin name, and Missouri basin name

HUC 8	USGS Basin Name	Missouri Basin Name
07100009	Lower Des Moines	Des Moines Basin
07110001	Bear-Wyaconda	Wyaconda - Fox Rivers
07110002	North Fabius	North Fabius River Basin
07110003	South Fabius	South Fabius River Basin
07110004	The Sny	North River - Bobs Creek
07110005	North Fork Salt	North Salt River Basin
07110006	South Fork Salt	Middle-South Forks of the Salt River
07110007	Salt	Lower Salt River Basin
07110008	Cuivre	Cuivre River Basin
07110009	Peruque-Piasa	Peruque-Dardenne Creeks
07140101	Cahokia-Joachim	Mississippi River Tribs - St. L-Ste. Gen
07140102	Meramec	Meramec River Basin
07140103	Bourbeuse	Bourbeuse River Basin
07140104	Big	Big River Basin
07140105	Upper Mississippi-Cape Girardeau	Mississippi River Tribs - Ste. Gen-Cape Gir.
07140107	Whitewater	Castor-Whitewater Rivers Basin
08010100	Lower Mississippi-Memphis	Mississippi River Mainstem Below Ohio
08020201	New Madrid-St. Johns	St. Johns Bayou
08020202	Upper St. Francis	Upper St. Francis Basin
08020203	Lower St. Francis	Lower St. Francis Basin
08020204	Little River Ditches	Little River Ditches
08020302	Cache	Cache River Basin
10240001	Keg-Weeping Water	Missouri River Bottom
10240004	Nishnabotna	Nishnabotna River Basin
10240005	Tarkio-Wolf	Tarkio-Squaw Tributaries Basin
10240010	Nodaway	Nodaway River Basin
10240011	Independence-Sugar	Missouri River Mainstem
10240012	Platte	Platte River Basin
10240013	One Hundred and Two	102 River Basin
10270104	Lower Kansas	Kansas River Basin
10280101	Upper Grand	Upper Grand River Basin
10280102	Thompson	Thompson River Basin
10280103	Lower Grand	Middle Grand River Basin
10280201	Upper Chariton	Upper Chariton River Basin
10280202	Lower Chariton	Lower Chariton River Basin
10280203	Little Chariton	Little Chariton River Basin
10290102	Lower Marais Des Cygnes	Maries des Cygnes River Basin
10290103	Little Osage	Little Osage River Basin
10290104	Marmaton	Marmaton River Basin

HUC 8	USGS Basin Name	Missouri Basin Name
10290105	Harry S. Truman Reservoir	Upper Osage River Basin
10290106	Sac	Sac River Basin
10290107	Pomme De Terre	Pomme de Terre River Basin
10290108	South Grand	South Grand River Basin
10290109	Lake of the Ozarks	Lake of Ozarks Basin
10290110	Niangua	Niangua River Basin
10290111	Lower Osage	Lower Osage River Basin
10290201	Upper Gasconade	Upper Gasconade River Basin
10290202	Big Piney	Big Piney River Basin
10290203	Lower Gasconade	Lower Gasconade River Basin
10300101	Lower Missouri-Crooked	Missouri River Mainstem - KC to Glasgow
10300102	Lower Missouri-Moreau	Missouri River Mainstem - Glasgow to
10300103	Lamine	Lamine River Basin
10300104	Blackwater	Blackwater River Basin
10300200	Lower Missouri	Missouri River Mainstem - Hermann to St.
11010001	Beaver Reservoir	Table Rock Lake Basin
11010002	James	James River Basin
11010003	Bull Shoals Lake	Bull Shoals Lake Basin
11010006	North Fork White	North Fork White River Basin
11010007	Upper Black	Black River Basin
11010008	Current	Current River Basin
11010009	Lower Black	Fourche Creek Basin
11010010	Spring	Spring River Basin (Howell/Oregon
11010011	Eleven Point	Eleven Point River Basin
11070206	Lake O' the Cherokees	Cherokees Lake Basin
11070207	Spring	Spring River Basin
11070208	Elk	Elk River Basin

Missouri Department of Natural Resources

Table 3
Final Consolidated 2008 Missouri 303(d) List

This table is a summary of the waters approved for listing in the August 6, 2009, decision and today's action. The "Year WB/PP Listed" column identifies the first year a water body/pollutant pair was included on the 303(d) list. The "Source" provided here was identified by MDNR in their 2008 list submission as the source of the impairment. The "Segment Size" (miles/acres) is the segment identified by MDNR in their submission. The "Classified Segment Size" (miles/acres) listed in this table reflect the classified segment length according to Missouri's WQS 10 CSR 20-7.031 Tables G and H. The "Listing Appr." column identifies those water body/pollutant pairs that were approved by EPA without changes. The "Appr. Pollt. Change" column identifies those pollutant changes that were approved by EPA. "Restored by EPA" identifies those water body/pollutant pairs that were disapproved for delisting and EPA restored to the list. The "Impaired Uses" and "Unimpaired Uses" columns were provided by MDNR in their submission.

							MDNR Proposed Segment*					Impaired Classified Segment*								
No.	Water Body Name	WBID	Class	Pollutant	Source	Year WB/PP Listed	Segment Size	Upstream Latitude	Upstream Longitude	Down-stream Latitude	Down-stream Longitude	Classified Segment Size	From	To	County(ies)	Listing Approved	Approved Pollutant Change	Delisting Disapproved, Restored by EPA	Impaired Uses	Unimpaired Uses
1	Bear Creek	0115U-01	U	Unknown	Unknown	2002	2	40.1585	-92.5644	40.1436	-92.5374	n/a	near Kirksville		Adair	X			1G	
2	Bee Fork	2760	C	Lead	Fletcher Mine	2006	8.5	37.4426	-91.0915	37.4598	-90.9851	8.5	Mouth	30,32N,1W	Reynolds	X			1	2,4
3	Bee Fork	2760	C	Toxicity	Fletcher Mine	2008	0.9	37.4426	-91.0915	37.4438	-91.0758	8.5	Mouth	30,32N,1W	Reynolds	X			1G	2,4
4	Bee Fork	2760U-01	U	Toxicity	Fletcher Mine	2008	0.3	37.4415	-91.0942	37.4426	-91.0915	n/a	n/a		Reynolds	X			1G	
5	Belcher Branch Lake	7365	L3	Mercury (T)	Atmospheric deposition	2006	55.0	39.5895	-94.7344	39.5828	-94.7318	55.0	08/17,55N,34W		Buchanan	X			1G	2,4,5
6	Big Bottom Creek	1746	C	Ammonia	Lake Forest WWTP	2008	0.5	37.9561	-90.2084	37.9615	-90.2087	1.9	Mouth	Lake Anne	Ste. Genevieve	X			1	4
7	Big Bottom Creek	1746	C	Low D.O.	Lake Forest WWTP	1998	1.7	37.9561	-90.2084	37.9746	-90.1993	1.9	Mouth	Lake Anne	Ste. Genevieve	X			1	4
8	Big Bottom Creek	1746	C	Organic Sediment	Lake Forest WWTP	1998	0.5	37.9561	-90.2084	37.9615	-90.2087	1.9	Mouth	Lake Anne	Ste. Genevieve	X			1	4
9	Big Creek	0444	P	Ammonia	Bethany WWTP	2006	1.0	40.2554	-94.0618	40.2464	-94.0694	22	Mouth	9,63N,28W	Harrison	X			1	2,3,4
10	Big Creek	0444	P	Low D.O.	Bethany WWTP	2006	6.0	40.2554	-94.0618	40.2057	-94.0774	22	Mouth	9,63N,28W	Harrison	X			1	2,3,4
11	Big Otter Creek, Tributary to	1225	C	Low D.O.		2006	1.0	38.2054	-93.7188	38.2148	-93.7279	1.0	Mouth	32,40N,25W	Henry	X			1	2,4
12	Big River	2074	P	Lead	Mill tailings (Aban.)	1998	53.0	38.1599	-90.7052	38.4717	-90.6181	53.0	Mouth	Sur 3166,40N,3D	Jefferson	X			1	2,4,5,6,7
13	Big River	2080	P	Cadmium (S)	Mill tailings (Aban.)	2006	18.6	37.8722	-90.5885	37.9676	-90.5339	68	Sur 3166,40N,3D	12,35N,1E	St. Francois	X			1G	2,4,7
14	Big River	2080	P	Inorganic Sediment	Mill tailings (Aban.)	1994	55.0	37.8726	-90.5886	38.1601	-90.7046	68	Sur 3166,40N,3D	12,35N,1E	St. Fran./ Jefferson	X			1G	2,4,7
15-a	Big River	2080	P	Lead (S)	Mill tailings (Aban.)	1998	44.1	37.8722	-90.5885	38.1000	-90.6806	68	Sur 3166,40N,3D	12,35N,1E	St. Fran./ Jefferson	X			1G	2,4,7
15-b	Big River	2080	P	Lead (T)	Mill tailings (Aban.)	1998	48.7	37.8752	-90.5505	38.1599	-90.7053	68	Sur 3166,40N,3D	12,35N,1E	St. Fran./ Jefferson	X			1G	2,4,7
16	Big River	2080	P	Zinc (S)	Mill tailings (Aban.)	2006	18.6	37.8722	-90.5885	37.9676	-90.5339	68	Sur 3166,40N,3D	12,35N,1E	St. Francois	X			1G	2,4,7
17	Black River	2784	P	Mercury (T)	Atmospheric deposition	2008	35.0	37.1353	-90.7720	36.8256	-90.4224	35.0	16,25N,6E	Clearwater Dam	Wayne/ Butler	X			1G	2,3,4,5,6
18	Blackberry Creek	3184	C	Chloride	Asbury Power Plant	2008	3.5	37.3279	-94.5707	37.2877	-94.5618	6.5	Mouth	28,30N,33W	Jasper	X			1	2,4
19	Blackberry Creek	3184	C	Sulfate Chloride	Asbury Power Plant	2006	3.5	37.3279	-94.5707	37.2877	-94.5618	6.5	Mouth	28,30N,33W	Jasper	X			1	2,4
20	Blue River	0417	P	Bacteria	Urban NPS	2006	4.0	39.1007	-94.4896	39.1304	-94.4694	4.0	Mouth	Gunnotte Dam	Jackson	X			2	1,4,5,7
21	Blue River	0418	P	Bacteria	Urban NPS	2006	9.0	39.0158	-94.5200	39.1007	-94.4896	9.0	Gunnotte Dam	59th St.	Jackson	X			2	1,4,5,7
22	Blue River	0419	P	Bacteria	Urban NPS	2006	9.0	38.9571	-94.5592	39.0158	-94.5200	9.0	59th St.	Bannister Rd.	Jackson	X			2	1,4,5
23	Blue River	0421	C	Bacteria	Urban NPS	2006	11.0	38.8504	-94.6080	38.9571	-94.5592	11.0	Bannister Rd	State Line	Jackson	X			2	1,4,5
24	Bobs Creek	0035	C	Low D.O.	Lincoln Co. WWTF	2006	3.5	38.9861	-90.8701	38.9761	-90.8208	12.5	34,49N,2E	27,50,1E	Lincoln	X			1	2,4
25	Bonne Femme Creek	0750	P	Bacteria	Urban/Rural NPS	2006	7	38.8357	-92.3048	38.7915	-92.3799	7	Mouth	20,47N,12W	Boone	X			2	1,4
26	Bourbeuse River	2034	P	Mercury (T)	Atmospheric deposition	2002	132.0	38.1322	-91.5983	38.3991	-90.8990	132.0	Mouth	4,39N,6W	Phelps/ Franklin	X			1G	2,3,4,5,6

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27	Brush Creek	1371	P	Low D.O.	Humansville WWTP	2002	4.0	37.7874	-93.5831	37.8316	-93.6276	4.0	31,36N,24W	16,35N,24W	Polk/ St. Clair	X			1	2,4
28	Brush Creek	1371	P	Organic Sediment	Humansville WWTP	2002	4.0	37.7874	-93.5831	37.8316	-93.6276	4.0	31,36N,24W	16,35N,24W	Polk/ St. Clair	X			1	2,4
29	Buffalo Ditch	3118	P	Low D.O.	Kennett WWTP	1994	3.0	36.2001	-90.0614	36.1609	-90.0826	18.0	State Line	11,18N,9E	Dunklin	X			1	2,4
30	Burgher Branch	1865	C	Low D.O.		2006	2.0	37.9434	-91.7457	37.9320	-91.7262	2.0	Mouth	07,37N,07W	Phelps	X			1	4
31	Busch W.A. #35	7057	L3	Mercury (T)	Atmospheric deposition	2006	51.0	38.7132	-90.7318	38.7199	-90.7235	51.0	NE NE30,46N,03E		St. Charles	X			1G	4,5
32	Capps Creek	3234	P	Bacteria	Rural NPS	2006	4.0	36.8835	-94.0261	36.8884	-94.0935	4.0	Mouth	17, 25N,28W	Barry	X			2	1,3,4,5,6
33	Cave Spring Branch	3245U-01	U	Nutrients	Simmons Ind.	1998	0.2	36.5478	-94.6142	36.5477	-94.6178	n/a	n/a		McDonald	X			G	
34	Cedar Creek	0737	C	Unknown	Unknown	2008	7.0	39.0265	-92.1391	38.9524	-92.1517	33.0	21,46N,11W	3,49N,11W	Callaway	X			1G	2,4
35	Cedar Creek	1344	P	Unknown	Unknown	2008	10.0	37.6741	-93.9082	37.7572	-93.8754	27.0	Mouth	20,34N,27W	Cedar	X			1G	2,4,5,6
36	Cedar Creek	1357	C	Unknown	Unknown	2008	16.5	37.5312	-93.9866	37.6741	-93.9082	16.5	20,34N,27W	10,32N,28W	Cedar	X			1G	2,4
37	Cedar Creek, Tributary to	0743	C	Low D.O.		2006	1.5	39.0263	-92.1113	39.0218	-92.1310	1.5	Mouth	14,49N,11W	Callaway	X			1	2,4
38-a	Center Creek	3203	P	Cadmium (S)	Mill tailings (Aban.)	2006	12.8	37.1755	-94.4549	37.1508	-94.6172	26.0	14,28N,34W	34,28N,31	Jasper	X			1G	2,4,5,6,7
38-b	Center Creek	3203	P	Cadmium (W)	Mill Tailings (Aban.)	2006	12.8	37.1755	-94.4549	37.1508	-94.6172	26.0	14,28N,34W	34,28N,31	Jasper	X			1	2,4,5,6,7
39	Center Creek	3203	P	Lead (S)	Mill tailings (Aban.)	2006	12.8	37.1755	-94.4549	37.1508	-94.6172	26.0	14,28N,34W	34,28N,31	Jasper	X			1G	2,4,5,6,7
40	Center Creek	3203	P	Zinc (S)	Mill tailings (Aban.)	1994	12.8	37.1755	-94.4549	37.1508	-94.6172	26.0	14,28N,34W	34,28N,31W	Jasper	X			1G	2,4,5,6,7
41	Center Creek	3210	P	Bacteria	Rural NPS	2008	22.0	37.0370	-94.0753	37.1053	-94.3090	22.0	34,28N,31W	23,27N,29W	Newton/ Jasper	X			2	1,4,5,6,7
42	Charlton River	0640	P	Bacteria	Rural NPS	1998	40.0	39.8014	-92.6802	39.3130	-92.9580	110	Mouth	State Line	Macon/ Charlton	X			2	1,4,5,6
43	Clear Creek	1333	P	Low D.O.		2006	15.5	37.8228	-94.1102	37.9953	-93.6520	15.5	7,37N,27W	10,35N,29W	Vernon/ St.Clair	X			1	2,4
44	Clear Creek	1336	C	Low D.O.		2006	15.0	37.6960	-94.2263	37.8228	-94.1102	15.0	10,35N,29W	16,34N,30W	Vernon	X			1	2,4
45	Clear Creek	3238	P	Bacteria		2006	9.0	36.9422	-93.9997	36.9354	-94.1495	9.0	Mouth	28,26N,28W	Barry/ Newton	X			2	1,4
46	Clear Creek	3239	C	Low D.O.	Monett WWTP	2006	2.0	36.9204	-93.9490	36.9422	-93.9997	2.0	28,26N,28W	36,26N,28W	Barry/ Newton	X			1	2,4
47	Clear Creek	3239	C	Nutrients	Monett WWTP	2002	2.0	36.9204	-93.9490	36.9422	-93.9997	2.0	28,26N,28W	36,26N,28W	Barry/ Newton	X			G	2,4
48	Clear Fork	0935	P	Low D.O.	Knob Noster WWTP	2006	3.0	38.7702	-93.5928	38.7906	-93.5914	24.5	Mouth	35,45N,25W	Johnson	X			1	2,4
49	Clearwater Lake	7326	L2	Mercury (T)	Atmospheric deposition	2002	1650.0	37.1921	-90.7786	37.1353	-90.7721	1650.0	NW NE06,28N,03E		Reynolds/ Wayne	X			1G	2,4,5
50	Coldwater Creek	1706	C	Bacteria	Urban NPS	2008	5.5	38.8135	-90.2908	38.8321	-90.2192	5.5	Mouth	Hwy. 67	St. Louis	X			2	1,4
51	Coldwater Creek	1706	C	Chloride	Urban NPS	2006	5.5	38.8135	-90.2908	38.8321	-90.2192	5.5	Mouth	Hwy. 67	St. Louis	X			1	2,4
52	Coldwater Creek	1706	C	Low D.O.		1994	4.0	38.8135	-90.2908	38.8129	-90.2369	5.5	Mouth	Hwy. 67	St. Louis	X			1	2,4
53	Courtois Creek	1943	P	Lead (W)	Viburnum 29 Mine	2006	2.6	37.7647	-91.0711	37.7931	-91.0588	30	Mouth	17,35N,1W	Washington	X			1	2,4,5
54	Courtois Creek	1943	P	Metals*** (W)	Viburnum 29 Mine	2006	2.6	37.7647	-91.0711	37.7931	-91.0588	30	Mouth	17,35N,1W	Washington	X	X		1G	2,4,5
55	Creve Coeur Creek	1703	C	Bacteria	Urban NPS	2006	2.0	38.6702	-90.4921	38.7091	-90.4878	2.0	Creve Coeur Lk	1mi. S. of Hwy 340	St. Louis	X			2	1,4
56	Creve Coeur Creek	1703	C	Chloride	Urban NPS	2006	2.0	38.6702	-90.4921	38.7091	-90.4878	2.0	Creve Coeur Lk	1mi. S. of Hwy 341	St. Louis	X			1	2,4
57	Creve Coeur Creek	1703	C	Low DO		2006	--	--	--	--	--	2.0	Creve Coeur Lk	1mi. S. of Hwy 340	St. Louis			X		
58-a	Crooked Creek	1928	P	Cadmium (S)	Buick Smelter	2006	3.5	37.6987	-91.1599	37.7142	-91.2049	3.5	Mouth	33,35N,2W	Dent/ Crawford	X			1G	2,4
58-b	Crooked Creek	1928	P	Cadmium (W)	Buick Smelter	2006	3.5	37.6987	-91.1599	37.7142	-91.2049	3.5	Mouth	33,35N,2W	Dent/ Crawford	X			1	2,4
59	Crooked Creek	1928	P	Lead (S)	Buick Smelter	2006	3.5	37.6987	-91.1599	37.7142	-91.2049	3.5	Mouth	33,35N,2W	Dent/ Crawford	X			1G	2,4
60	Crooked Creek	1928U-01	U	Cadmium (W)	Buick Smelter	2008	5.2	37.6492	-91.1341	37.6987	-91.1599	n/a	n/a		Iron/ Dent	X			1G	
61	Current River	2636	P	Mercury (T)	Atmospheric deposition	2006	118.0	37.3766	-91.5471	36.4988	-90.8023	118.0	State Line	24,31N,6W	Shannon/ Ripley	X			1G	2,4,5,6
62	Dardenne Creek	0219	P1	Low D.O.		2006	7.0	38.8261	-90.6032	38.8612	-90.5367	7.0	Mouth	Sur 1704,47N,4E	St. Charles	X			1	2,4,5
63	Dardenne Creek	0221	P	Inorganic Sediment	Unknown	2006	1.5	38.7361	-90.7857	38.7387	-90.7665	15.0	Sur 1704,47N,4E	22,46N,2E	St. Charles	X			1G	2,4,5

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64	Dardenne Creek	0221	P	Unknown		2002	15.0	38.7361	-90.7857	38.8270	-90.6024	15.0	Sur 1704,47N,4E	22,46N,2E	St. Charles	X			1G	2,4,5
65	Dardenne Creek	0222	C	Inorganic Sediment	Unknown	2006	4.5	38.7448	-90.8342	38.7361	-90.7857	6.0	22,46N,2E	22,46N,1E	St. Charles	X			1G	2,4
66	Dardenne Creek	0222	C	Low D.O.		2006	6.0	38.7289	-90.8919	38.7362	-90.7857	6.0	22,46N,2E	22,46N,1E	St. Charles	X			1	2,4
67	Dark Creek	0690	C	Low D.O.		2006	8	39.5158	-92.5855	39.4399	-92.6302	8	Mouth	34,55N,15W	Randolph	X			1	2,4
68	Deer Ridge Community Lake	7015	L3	Mercury (T)	Atmospheric deposition	2002	48.0	40.1747	-91.8276	40.1807	-91.8276	48.0	18,62N,08W		Lewis	X			1G	2,4,5
69	Des Moines River	0036	P	Bacteria	Multiple Point & NPS	2008	29	40.6138	-91.7283	40.3809	-91.4226	29	Mouth	State Line	Clark	X			2	1,4,5
70	Ditch #36	3109	P	Low D.O.		2006	7	36.2730	-89.9928	36.1729	-90.0220	7	Mouth	21,19N,10E	Dunklin	X			1	2,4
71	Ditch to Buffalo Ditch	3120	P	Low D.O.		2006	12	36.2320	-90.0649	36.0987	-90.1595	12	Mouth	2,18N,9E	Dunklin	X			1	2,4
72	Douger Branch	3168	C	Cadmium (W)	Baldwin Park mine	2006	1.0	36.9755	-93.7145	36.9783	-93.7315	4.5	Mouth	7,26N,25W	Lawrence	X			1	2,4
73	Douger Branch	3168	C	Lead (S)	Mill Tailings (Aban.)	2006	1.0	36.9755	-93.7145	36.9783	-93.7315	4.5	Mouth	7,26N,25W	Lawrence	X			1G	2,4
74	Douger Branch	3168	C	Zinc (S)	Mill Tailings (Aban.)	1996	1.0	36.9755	-93.7145	36.9783	-93.7315	4.5	Mouth	7,26N,25W	Lawrence	X			1G	2,4
75	Dousinbury Creek	1180	P	Bacteria	Rural NPS	2006	3.5	37.5745	-92.9317	37.5958	-92.9801	3.5	Mouth	17,33N,18W	Dallas	X			2	1,4
76	Dry Branch	3189	C	Bacteria	Rural NPS	2008	9.0	37.2514	-94.2221	37.2929	-94.3591	9.0	Mouth	8,29N,30W	Jasper	X			2	1,4
77-a	Dutro Carter Creek	3569	P	Low D.O.	Rolla SE WWTP	2006	0.6	37.9321	-91.7260	37.9318	-91.7170	1.5	Mouth	Hwy 72	Phelps	X			1	2,4
77-b	Dutro Carter Creek	3569	P	Low D.O.	Unknown	2006	0.9	37.9306	-91.7403	37.9321	-91.7260	1.5	Mouth	Hwy 72	Phelps	X			1	2,4
78	East Fork Black River	2737	P	Hydromodification	Impoundment	2008	0.2	37.4950	-90.8371	37.4935	-90.8402	17.0	Mouth	29,34N,3E	Reynolds	X			1G	2,3,4
79	East Fork Charlton River	0682	P	Sulfate	Multiple AMLs	2006	48.5	39.7530	-92.5186	39.3406	-92.8451	48.5	Mouth	Long Br. Dam	Randolph	X			3	1,2,4,6
80	East Fork Grand River	0457	P	Bacteria	Rural NPS	2006	25.0	40.4943	-94.3120	40.1973	-94.3602	25.0	Mouth	29,66N,30W	Worth/ Gentry	X			2	1,3,4,5,6
81	East Fork Locust Creek	0608	P	Bacteria	Multiple Point & NPS	2008	13.0	40.1662	-93.1193	40.0440	-93.1735	13.0	Mouth	23,62N,20W	Sullivan	X			2	1,4
82-a	East Fork Locust Creek	0610	C	Bacteria	Rural NPS	2008	12.6	40.3632	-93.0867	40.2172	-93.1066	13.0	Hwy. 6	12,64N,20W	Sullivan	X			2	1,4
82-b	East Fork Locust Creek	0610	C	Bacteria	Point & NPS	2008	0.4	40.2172	-93.1066	40.2120	-93.1062	13.0	Hwy. 6	12,64N,20W	Sullivan	X			2	1,4
83	East Fork Locust Creek	0610	C	Low D.O.	Rural NPS	2008	12.6	40.3632	-93.0867	40.2172	-93.1065	13.0	Hwy. 6	12,64N,20W	Sullivan	X			2	1,4
84	East Fork Medicine Creek	0619	P	Bacteria	Rural NPS	2006	36.0	40.5804	-93.3340	40.1021	-93.3755	36.0	9,61N,22W	State Line	Putnam/ Grundy	X			2	1,4
85	East Fork Tebo Creek	1282	C	Low D.O.	Windsor SW WWTP	2006	1.0	38.5142	-93.5346	38.5005	-93.5297	12.0	31,43N,24W	45,44N,24W	Henry	X			1	2,4
86-a	Eaton Branch	2166	C	Cadmium (S)	Mill tailings (Aban.)	2006	0.9	37.8676	-90.6055	37.8711	-90.5919	3**	Mouth	9,36N,4E	St. Francois	X			1G	2,4
86-b	Eaton Branch	2166	C	Cadmium (W)	Mill tailings (Aban.)	2006	0.9	37.8676	-90.6055	37.8711	-90.5919	3**	Mouth	9,36N,4E	St. Francois	X			1	2,4
87	Eaton Branch	2166	C	Lead (S)	Mill tailings (Aban.)	2006	0.9	37.8676	-90.6055	37.8711	-90.5919	3**	Mouth	9,36N,4E	St. Francois	X			1G	2,4
88-a	Eaton Branch	2166	C	Zinc (S)	Mill tailings (Aban.)	2006	0.9	37.8676	-90.6055	37.8711	-90.5919	3**	Mouth	9,36N,4E	St. Francois	X			1G	2,4
88-b	Eaton Branch	2166	C	Zinc (W)	Mill tailings (Aban.)	2006	0.9	37.8676	-90.6055	37.8711	-90.5919	3**	Mouth	9,36N,4E	St. Francois	X			1	2,4
89	Eleven Point River	2597	P	Mercury (T)	Atmospheric deposition	2006	10	36.7983	-91.3384	36.7393	-91.2209	10	18,24N,2W	36,25N,4W	Oregon	X			1G	2,4,5
90	Eleven Point River	2601	P	Mercury (T)	Atmospheric deposition	2008	19.0	36.8274	-91.5855	36.7984	-91.3386	19.0	36,25N,4W	23,25N,6W	Oregon	X			1G	2,4,5
91	Elm Branch	1283	C	Low D.O.		2006	3.0	38.5165	-93.5126	38.5006	-93.5294	3.0	Mouth	12,43N,24W	Henry	X			1	2,4
92	Fishpot Creek	2186	P	Bacteria	Urban NPS	2008	2.0	38.5592	-90.5255	38.5470	-90.4976	2.0	Mouth	13,44N,05E	St. Louis	X			2	1,4
93	Fishpot Creek	2186	P	Low D.O.		2006	2.0	38.5592	-90.5255	38.5470	-90.4976	2.0	Mouth	13,44N,05E	St. Louis	X			1	2,4
94	Flat River Creek	2168	C	Cadmium	Old Lead Belt AML	2006	--	--	--	--	--	9.0	Mouth	21,36N,4E	St. Francois			X		
95	Flat River Creek	2168	C	Inorganic Sediment	Mill tailings (Aban.)	1994	4.0	37.8477	-90.5173	37.8920	-90.4999	9.0	Mouth	21,36N,4E	St. Francois	X			1G	2,4
96-a	Flat River Creek	2168	C	Lead (S)	Mill tailings (Aban.)	1998	6.0	37.8235	-90.5439	37.8920	-90.4999	9.0	Mouth	21,36N,4E	St. Francois	X			1G	2,4

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96-b	Flat River Creek	2168	C	Lead (T)	Mill tailings (Aban.)	1998	6.0	37.8235	-90.5439	37.8920	-90.4999	9.0	Mouth	21,36N,4E	St. Francois	X			1G	2,4
96-c	Flat River Creek	2168	C	Lead (W)	Mill tailings (Aban.)	1998	5.0	37.8395	-90.5267	37.8920	-90.4999	9.0	Mouth	21,36N,4E	St. Francois	X			1	2,4
97	Flat River Creek	2168	C	Zinc (W)	Mill tailings (Aban.)	1998	5.0	37.8395	-90.5267	37.8920	-90.4999	9.0	Mouth	21,36N,4E	St. Francois	X			1	2,4
98	Flat River Creek, Trib	2168U-01	U	Zinc (W)	Mill tailings (Aban.)	2008	0.3	37.8418	-90.5321	37.8395	-90.5267	n/a	n/a		St. Francois	X			1	
99	Foster Creek	0747U-01	U	Ammonia	Ashland WWTP	2008	0.5	38.7634	-92.2550	38.7574	-92.2501	n/a	n/a		Boone	X			1	
100	Fowler Creek	0747	C	Low D.O.		2006	6	38.7684	-92.2210	38.7133	-92.2171	6	Mouth	13,46N,12W	Boone	X			1	2,4
101	Fox River	0038	P	Bacteria	Rural NPS	2008	27.0	40.6070	-91.9161	40.3714	-91.5884	27.0	Spur 136	State Line	Clark	X			2	1,4,5
102	Gasconade River	1455	P	Mercury (T)	Atmospheric deposition	2002	249.0	38.6745	-91.5484	37.2120	-92.5182	249.0	Mouth	6,29N,14W	Gascon./ Wrght	X			1G	2,3,4,5
103	Grand Glaize Creek	2184	C	Bacteria	Urban NPS	2008	4.0	38.5713	-90.4696	38.5528	-90.4634	4.0	Mouth	9,44N,5E	St. Louis	X			2	1,4
104	Grand Glaize Creek	2184	C	Chloride	Urban NPS	2006	4.0	38.5713	-90.4696	38.5528	-90.4634	4.0	Mouth	9,44N,5E	St. Louis	X			1	2,4
105	Grand Glaize Creek	2184	C	Mercury (T)	Atmospheric deposition	2002	4.0	38.5713	-90.4696	38.5528	-90.4634	4.0	Mouth	9,44N,5E	St. Louis	X			1G	2,4
106	Grand River	0593	P	Bacteria	Rural NPS	2006	60.0	39.7406	-93.5322	39.3855	-93.1075	60.0	Mouth	Shoal Cr	Livin./ Charlton	X			2	1,3,4,5,6
107	Gravois Creek	1712	P	Bacteria	Urban NPS	2006	2.0	38.5408	-90.2990	38.5481	-90.2719	2.0	Mouth	24,44N,6E	St. Louis	X			2	1,4
108	Gravois Creek	1712	P	Chloride	Urban NPS	2008	2.0	38.5408	-90.2990	38.5481	-90.2719	2.0	Mouth	24,44N,6E	St. Louis	X			1	2,4
109	Gravois Creek	1713	C	Bacteria	Urban NPS	2006	4.0	38.5472	-90.3482	38.5408	-90.2990	4.0	24,44N,6E	Hwy. 30	St. Louis	X			2	1,4
110	Gravois Creek	1713	C	Chloride	Urban NPS	2006	4.0	38.5472	-90.3482	38.5408	-90.2990	4.0	24,44N,6E	Hwy. 30	St. Louis	X			1	2,4
111	Gravois Creek	1713	C	Low D.O.	Urban NPS	2006	4.0	38.5472	-90.3482	38.5408	-90.2990	4.0	24,44N,6E	Hwy. 30	St. Louis	X			1	2,4
112	Grindstone Creek	1009	C	Bacteria	Unknown	2006	1.5	38.9287	-92.2930	38.9277	-92.3220	1.5	Mouth	20,48N,12W	Boone	X			2	1,4
113	Hazel Creek Lake	7152	L1	Mercury (T)	Atmospheric deposition	2008	151.0	40.2747	-92.6325	40.2996	-92.6291	151.0	SW SW31,64N,15W		Adair	X			1G	2,3,4
114	Heaths Creek	0848	P	Low D.O.	Unknown	2008	13.0	38.9055	-93.2155	38.9218	-93.0189	13.0	Mouth	27,48N,22W	Pettis	X			1	2,4
115	Hickory Creek	0442	C	Unknown		2002	1.5	40.0291	-94.0130	40.0210	-94.0450	1.5	Mouth	11,60N,28W	Daviess	X			1G	2,4
116	Hickory Creek	3226	P	Bacteria	Unknown	2006	4.5	36.8524	-94.3260	36.8938	-94.3707	4.5	Mouth	28,25N,31W	Newton	X			2	1,4
117	Hickory Creek, Tributary to	0589	C	Unknown		2002	1.0	40.0226	-93.7125	40.0162	-93.7073	1.0	Mouth	9,60N,25W	Grundy	X			1G	2,4
118	Hinkson Creek	1007	P	Unknown	Urban Runoff	1998	6.0	38.9285	-92.3398	38.9220	-92.4140	6.0	Mouth	Hwy 163	Boone	X			1G	2,4,5
119	Hinkson Creek	1008	C	Bacteria		2006	18.0	39.0709	-92.2170	38.9285	-92.3398	18.0	Hwy 163	36,50N,12W	Boone	X			2	1,4
120	Hinkson Creek	1008	C	Unknown	Urban NPS	1998	6.3	38.9630	-92.2953	38.9285	-92.3398	18.0	Hwy 163	36,50N,12W	Boone	X			1G	2,4
121	Horse Creek	1348	P	Unknown	Unknown	2008	24.5	37.6442	-94.0779	37.7657	-93.8840	24.5	Mouth	35,34N,29W	Cedar	X			1G	2,4,6
122	Hough Park Lake	7388	L3	Mercury (T)	Atmospheric deposition	2002	7.0	38.5425	-92.1831	38.5403	-92.1831	7.0	19,44N,11W		Cole	X			1G	2,4
123	Indian Camp Creek	212	C	Inorganic sediment	JZ Landfill	1998	--	--	--	--	--	5.0	6,47N,1E	4,47N,1W	St. Charles/ Warren			X		
124	Indian Creek	0420	C	Bacteria	Multiple Point & NPS	2002	3.0	38.9385	-94.6082	38.9525	-94.5627	3.0	Mouth	State Line	Jackson	X			2	1,4,7
125	Indian Creek	0420	C	Chloride		2006	--	--	--	--	--	3.0	Mouth	State Line	Jackson			X		
126	Indian Creek	1946	C	Lead (W)	Viburnum 29 Mine	2006	1.5	37.7419	-91.0843	37.7649	-91.0711	1.5	Mouth	17,35N,1E	Washington	X			1	2,4
127	Indian Creek	1946	C	Metals*** (W)	Viburnum 29 Mine	2002	1.5	37.7419	-91.0843	37.7649	-91.0711	1.5	Mouth	17,35N,1E	Washington	X	X		1G	2,4
128	Indian Creek	3256	P	Bacteria	Rural NPS	2006	5.0	36.7947	-94.2318	36.7593	-94.2721	26.0	Mouth	24,24N,31W	Newton	X			2	1,4,5,6
129	Indian Creek Lake	7389	L3	Mercury (T)	Atmospheric deposition	2008	192.0	39.9173	-93.6996	39.8968	-93.6955	192.0	15/27,59N,25W		Livingston	X			1G	2,4,5
130	Indian Creek, Tributary to	3663	C	Lead (W)	Viburnum 29 Mine	2006	0.3	37.7590	-91.0798	37.7596	-91.0751	0.3	Mouth	7,35N,1W	Washington	X			1	2,4
131	Indian Creek, Tributary to	3663	C	Zinc (W)	Viburnum 29 Mine	2006	0.3	37.7590	-91.0798	37.7596	-91.0751	0.3	Mouth	7,35N,1W	Washington	X			1	2,4
132	Jordan Creek	3374	P	Low D.O.		2006	3.8	37.2193	-93.3098	37.1968	-93.3520	3.8	29,29N,22W	13,29N,22W	Greene	X			1	2,4
133	Jordan Creek	3374	P	Unknown	Urban NPS	2008	3.8	37.2193	-93.3098	37.1968	-93.3520	3.8	29,29N,22W	13,29N,22W	Greene	X			1G	2,4
134	Knob Noster State Park Lakes (Lake Buteo)	7196	L3	Mercury (T)	Atmospheric deposition	2002	10.0	38.7464	-93.5791	38.7491	-93.5822	24.0	29/30/46N,24W		Johnson	X			1G	2,4
135	Lake of the Woods	7436	L3	Mercury (T)	Atmospheric deposition	2002	3.0			38.9696	-92.2393	3.0	NE,02,48N,12W		Boone	X			1G	2,4
136	Lake of the Woods	0419U-01	U	Mercury (T)	Atmospheric deposition	2008	7.0	38.9942	-94.5172	38.9959	-94.5206	7.0	n/a		Jackson	X			1G	

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137	Lake Ste. Louise	7055	L3	Bacteria	Urban NPS	2002	87.0			38.8000	-90.7908	87.0	SW SW27,47N,02E		St. Charles	X			2	1,4
138	Lake Taneycomo	7314	L2	Low D.O.	Table Rock Dam	1994	1730	36.5954	-93.3092	36.6582	-93.1239	1730	SW NE8,23N,20W		Taney	X			1	2,3,4,5
139	Lamine River	0847	P	Bacteria	Unknown	2006	54.0	38.6684	-92.9535	38.9805	-92.8499	54.0	Mouth	13,45N,19W	Morgan/ Cooper	X			2	1,4,5,6
140	Lateral #2 Main Ditch	3105	P	Temperature	Channelization	2008	11.5	36.7878	-89.9260	36.6288	-89.9399	11.5	24,23N,10E	25,25N,10E	Stoddard	X			1	2,4
141	Lateral #2 Main Ditch	3105	P	Low D.O.		2006	11.5	36.7878	-89.9260	36.6288	-89.9399	11.5	24,23N,10E	25,25N,10E	Stoddard	X			1	2,4
142	Lewistown Lake	7020	L1	Atrazine	Crop production	1994	--	--	--	--	--	29	NW SW8,61N,8W		Lewis			X		
143	Little Beaver Creek	1529	C	Inorganic Sediment	Smith S&G	2008	3.3	37.9362	-91.8349	37.9046	-91.8593	4.0	36,26N,18W	17,26N,17W	Phelps	X			1G	2,4
144	Little Dry Fork	1863	P	Low D.O.	Rolla SE WWTP	2006	1.0	37.9387	-91.7112	37.9446	-91.6983	5.0	Mouth	8,37N,7W	Phelps	X			1	2,4
145-a	Little Dry Fork	1864	C	Low D.O.	Rolla SE WWTP	2006	0.6	37.9318	-91.7170	37.9387	-91.7112	4.5	8,37N,7W	5,36N,7W	Phelps	X			1	4
145-b	Little Dry Fork	1864	C	Low D.O.		2006	3.9	37.876	-91.7153	37.9318	-91.7170	4.5	8,37N,7W	5,36N,7W	Phelps	X			1	4
146	Little Drywood Creek	1325	P	Low D.O.		2006	17.0	37.6977	-94.3943	37.8628	-94.4016	17.0	Mouth	13,34N,32W	Vernon	X			1	2,4
147	Little Muddy Creek, Tributary to	3490	C	Chloride	Tyson Foods	2006	0.4	38.7669	-93.3037	38.7732	-93.2912	0.4	Mouth	14,46N,22W	Pettis	X			1	2,4
148	Little Muddy Creek, Tributary to	3490	C	Color	Tyson Foods	2006	0.4	38.7669	-93.3037	38.7732	-93.2912	0.4	Mouth	14,46N,22W	Pettis	X			G	1,2,4
149	Little Niangua River	1189	P	Low D.O.		2006	43.0	37.8406	-93.0014	38.0616	-92.9031	43.0	Mouth	26,36N,19W	Dallas/ Camden	X			1	2,4,5
150	Little Osage River	3652	C	Bacteria	Rural NPS	2008	16.0	37.9918	-94.6140	37.9844	-94.3884	16.0	18,37N,31W	18,37N,33W	Vernon	X			2	1,4
151	Little Osage River	3652	C	Low D.O.		1994	16.0	37.9918	-94.6140	37.9844	-94.3884	16.0	18,37N,31W	18,37N,33W	Vernon	X			2	1,4
152	Locust Creek	0606	P	Bacteria	Rural NPS	2006	36.4	40.5831	-93.1409	40.2074	-93.1653	84.0	Mouth	State Line	Putnam/ Sullivan	X			2	1,3,4,5
153	Long Branch	0857	C	Unknown		2002	4.5	38.7028	-93.5619	38.7152	-93.5005	4.5	06,45N,23W	09,45N,24W	Johnson/ Pettis	X			1G	2,4
154	Long Branch Creek	0696	C	Low D.O.	Atlanta WWTP	2006	2.0	39.8980	-92.4932	39.8764	-92.4900	13.0	5,58N,14W	19,60N,14W	Macon	X			1	2,4
155	Longview Lake	7097	L2	Mercury (T)	Atmospheric deposition	2002	930.0	38.8804	-94.4899	38.9229	-94.4684	930.0	04,47N,32W		Jackson	X			1G	2,4,5
156	Lost Creek	3278	P	Bacteria	Rural NPS	2006	8.5	36.8913	-94.5067	36.8397	-94.6180	8.5	State Line	14,25N,33W	Newton	X			2	1,4,5
157	Main Ditch	2814	C	Ammonia	Poplar Bluff WWTP	1994	1.0	36.7297	-90.3960	36.7160	-90.3960	14.0	18,22N,6E	10,24N,6E	Butler	X			1	2,4,6
158	Main Ditch	2814	C	pH	Poplar Bluff WWTP	2006	1.0	36.7297	-90.3960	36.7160	-90.3960	14.0	18,22N,6E	10,24N,6E	Butler	X			1	2,4,6
159	Main Ditch	2814	C	Temperature	Channelization	2006	10.0	36.7297	-90.3960	36.5900	-90.4207	14.0	18,22N,6E	10,24N,6E	Butler	X			1	2,4,6
160	Maline Creek	1709	C	Chloride	Urban NPS	2006	1.0	38.7366	-90.2265	38.7269	-90.2146	1.0	Mouth	Bellefontaine Rd	St. Louis	X			1	4
161	Mark Twain Lake	7033	L2	Mercury (T)	Atmospheric deposition	2002	18600	39.4801	-91.9393	39.5244	-91.6440	18600	26,55N,07W		Monroe/ Ralls	X			1G	2,3,4,5
162-a	Marmaton River	1308	P	Low D.O.	Ft. Scott WWTP	1994	2.0	37.8517	-94.6162	37.8597	-94.5896	49.5	19,38N,29W	State Line	Vernon	X			1	2,4,6
162-b	Marmaton River	1308	P	Low D.O.		1994	47.5	37.8597	-94.5896	37.9995	-94.3181	49.5	19,38N,29W	State Line	Vernon	X			1	2,4,6
163	McKay Park Lake (Sunset Lake)	7399	L3	Mercury (T)	Atmospheric deposition	2006	6.0	38.5588	-92.1955	38.5614	-92.1977	6.0	13,44N,12W		Cole	X			1G	2,4
164	McKenzie Creek	2786	P	Low D.O.	Piedmont WWTP	2002	2.5	37.1388	-90.7069	37.1094	-90.7173	6.0	Mouth	23,29N,3E	Wayne	X			1	2,4
165	Meramec River	1841	P	Mercury (T)	Atmospheric deposition	2006	37.0	38.2073	-91.0949	38.4726	-90.6188	37.0	Big R.	Meramec State Pk.	Franklin/ Jefferson	X			1G	2,3,4,5
166	Meramec River	2183	P	Lead (S)	Mill tailings (Aban.)	2008	22.0	38.5463	-90.4956	38.3888	-90.3429	22.0	Mouth	Hwy. 141	St. Louis	X			1G	2,3,4,5,7
167	Meramec River	2185	P	Lead (S)	Mill tailings (Aban.)	2008	15.7	38.4718	-90.6177	38.5463	-90.4956	26.0	Hwy. 141	Big R.	St. Louis	X			1G	2,3,4,5,7
168	Miami Creek	1299	P	Low D.O.		1994	18	38.2950	-94.4513	38.1452	-94.3354	18	Mouth	10,40N,32W	Bates	X			1	2,4
169	Middle Fork Grand River	0468	P	Bacteria	Rural NPS	2006	25.0	40.5402	-94.3511	40.2144	-94.3893	25.0	Mouth	12,66N,31W	Worth/ Gentry	X			2	1,4,5,6

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170	Middle Indian Creek	3263	P	Bacteria	Rural NPS	2008	2.5	36.8062	-94.1721	36.8182	-94.2036	2.5	Mouth	16,24N,30W	Newton	X			2	1,4
171	Mississippi River	1707	P	Lead	Herculaneum smelter	1998	--	--	--	--	--	195.5	Ohio R.	Dam #27	Mississippi/ St. Louis			X		
172	Mississippi River	1707	P	Zinc	Herculaneum smelter	1998	--	--	--	--	--	195.5	Ohio R.	Dam #27	Mississippi/ St. Louis			X		
173	Mississippi River	3152	P	Mercury (T)	Atmospheric deposition	2006	124.5	36.9822	-89.1337	35.9999	-89.7126	124.5	State Line	Ohio R.	Miss/ Pemiscot	X			1G	2,3,4,5,6,7
174	Missouri River	1604	P	Bacteria		2006	--	--	--	--	--	100.0	Mouth	Gasconade R.	St. Louis/ Gasconade			X		
175	Mound Branch	1300	C	Low D.O.	Unknown	1998	10.0	38.2645	-94.3037	38.1958	-94.3657	10.0	Mouth	13,40N,31W	Bates	X			1	2,4
176	Muddy Creek	557	P	Unknown		2002	--	--	--	--	--	36.5	Mouth	22,66N,23W	Grundy/ Mercer			X		
177	Muddy Creek	0853	P	Chloride	Mult Point Sources	2006	39.0	38.7521	-93.2772	38.8464	-93.0563	55.0	Mouth	17,45N,23W	Pettis	X			1	2,4
178	Muddy Creek	0853	P	Color	Tyson Foods	2006	1.0	38.7718	-93.2745	38.7677	-93.2573	55.0	Mouth	17,45N,23W	Pettis	X			G	1,2,4
179	Muddy Creek	0853	P	Unknown	Unknown	2008	55.0	38.6837	-93.4803	38.8464	-93.0563	55.0	Mouth	17,45N,23W	Pettis	X			1G	2,4
180	Mussel Fork Creek	0674	C	Bacteria	Rural NPS	2006	29.0	40.2071	-92.8880	39.8450	-92.8382	29.0	18,58N,17W	2,62N,18W	Sullivan/ Macon	X			2	1,3,4
181	Niangua River	1170	P	Bacteria	Rural NPS	2006	51	37.4462	-92.9196	37.7340	-92.8614	51	Bennett Spr Cr.	33,32N,18W	Dallas	X			2	1,4,5
182	No Creek	0550	P	Bacteria	Rural NPS	2006	22.5	40.1772	-93.4470	39.8875	-93.5700	22.5	Mouth	14,62N,23W	Grundy/ Livin.	X			2	1,4
183	Noblett Lake	7316	L3	Mercury (T)	Atmospheric deposition	2002	26.0	36.9119	-92.0929	36.9080	-92.1032	26.0	25,26N,11W		Douglas	X			1G	2,4
184	North Fork Cuivre River	170	C	Bacteria		2006	--	--	--	--	--	8	24,51N,3W	28,52N,3W	Pike			X		
185	North Fork Cuivre River	0170	C	Low D.O.		2006	8	39.2434	-91.2423	39.1689	-91.1854	8	24,51N,3W	28,52N,3W	Pike	X			1	2,4
186	North Fork Spring River	3186	P	Bacteria	Rural NPS	2008	14.5	37.2881	-94.3703	37.2684	-94.5352	14.5	Mouth	1,29N,32W	Barton	X			2	1,4,5
187	North Fork Spring River	3188	C	Ammonia	Lamar WWTP	2006	--	--	--	--	--	51.5	1,29N,32W	20,30N,28W	Barton			X		
188	North Fork Spring River	3188	C	Bacteria	Rural NPS	2008	51.5	37.3257	-94.0304	37.2879	-94.3703	51.5	1,29N,32W	20,30N,28W	Dade/ Jasper	X			2	1,4
189	North Fork Spring River	3188	C	Low D.O.	Lamar WWTP & NPS	2006	26.5	37.4937	-94.2928	37.2879	-94.3703	51.5	1,29N,32W	20,30N,28W	Barton/ Jasper	X			1	2,4
190	North Fork Spring River	3188	C	Unknown	Unknown	2006	51.5	37.3257	-94.0304	37.2879	-94.3703	51.5	1,29N,32W	20,30N,28W	Dade/ Jasper	X			1G	2,4
191	North Indian Creek	3260	P	Bacteria	Rural NPS	2008	5.0	36.8380	-94.1720	36.7949	-94.2320	5.0	24,24N,31W	36,25N,30W	Newton	X			2	1,4
192	Panther Creek	1373	C	Low D.O.		2006	7.8	37.7949	-93.5259	37.8342	-93.6332	7.8	Mouth	13,35N,24W	St.Clair/ Polk	X			1	2,4
193	Pearson Creek	2373	P	Bacteria	Multiple Point & NPS	2006	2.0	37.1871	-93.2009	37.1635	-93.1965	8.0	Mouth	5,29N,20W	Greene	X			2	1,4
194	Pearson Creek	2373	P	Unknown	Unknown	1996	2.0	37.1871	-93.2009	37.1635	-93.1965	8.0	Mouth	5,29N,20W	Greene	X	X		1G	2,4
195	Perruque Creek	0217	P	Inorganic Sediment	Urban/Rural NPS	2002	4	38.7979	-90.8601	38.7867	-90.8037	4	Hwy. 40/61	25,47N,1E	St. Charles	X			1G	2,4
196	Perruque Creek	0218	C	Inorganic Sediment	Urban/Rural NPS	2002	8.5	38.8133	-90.9925	38.7979	-90.8601	8.5	25,47N,1E	23,47N,1W	St. Charles	X			1G	2,4
197	Phillips Lake	1003U-01	U	Mercury (T)	Atmospheric deposition	2008	32.0	38.9006	-92.2899	38.8970	-92.2938	32.0	n/a		Boone	X			1G	
198	Pickle Creek	1755	P	pH	Atmospheric deposition	2006	7.0	37.8083	-90.2914	37.8371	-90.2036	7.0	Mouth	19,36N,7E	Ste. Genevieve	X			1	2,4
199	Pike Creek	2815	C	Temperature	Channelization	2008	1.3	36.7350	-90.4130	36.7296	-90.3961	6.0	15,24N,6E	30,25N,6E	Butler	X			1	2,4,6
200	Piper Creek (Town Branch)	1444	P	Organic Sediment	Bolivar WWTP, Unknown	1998	1.0	37.6166	-93.3901	37.6299	-93.3833	7.5	Mouth	Hwy 83	Polk	X			1G	2,4
201	Piper Creek (Town Branch)	1444	P	Unknown	Unknown	2006	7.5	37.6004	-93.4042	37.6794	-93.4054	7.5	Mouth	Hwy 83	Polk	X			1G	2,4
202	Pond Creek, Tributary to	2128	C	Inorganic Sediment	Barite Tailings Pond	1998	1.0	37.9516	-90.6820	37.9648	-90.6760	1.0	Mouth	3,37N,3E	Washington	X			1G	2,4
203	Red Oak Creek	2038	C	Low D.O.	Owensville WWTP	2006	2.0	38.3406	-91.4404	38.3373	-91.4086	9.0	28,42N,4W	16,41N,5W	Gasconade	X			1	2,4
204	Red Oak Creek, Tributary to	3360	P	Low D.O.	Owensville WWTP	2006	0.5	38.3442	-91.4485	38.3405	-91.4404	0.5	Mouth	35,42N,5W	Gasconade	X			1	2,4
205	Red Oak Creek, Tributary to	3361	C	Low D.O.	Owensville WWTP, NPS	2006	1.5	38.3503	-91.4780	38.3442	-91.4485	1.5	35,42N,5W	27,42N,5W	Gasconade	X			1	4

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206	River des Peres	1711	C	Chloride	Urban NPS	2006	1.0	38.5596	-90.2829	38.5483	-90.2716	1.0	Gravois Cr.	Morgan Ford Road	St. Louis	X			1	4
207	River des Peres	1711U -01	U	Chloride	Urban NPS	2006	2.5	38.6740	-90.3427	38.6616	-90.3100	n/a	at University City		St. Louis	X			1G	
208	Salt River	0091	P	Low D.O.	Reregulation Dam	2008	29.0	39.5652	-91.5708	39.5218	-91.2027	29.0	Hwy. 79	Re-Reg Dam	Ralls/ Pike	X			1	2,3,4,5,6
209	Salt River	0091	P	Mercury (T)	Atmospheric deposition	2002	29.0	39.5652	-91.5708	39.5218	-91.2027	29.0	Hwy. 79	Re-Reg Dam	Ralls/ Pike	X			1G	2,3,4,5,6
210	Sandy Creek	0652	C	Unknown	Unknown	2002	3.0	40.5037	-92.8466	40.4996	-92.8131	3.0	Mouth	19,66N,17W	Putnam	X			1G	2,4
211	Schuman Park Lake	7280	L3	Mercury (T)	Atmospheric deposition	2002	5.0	37.9553	-91.7664	37.9555	-91.7684	5.0	02,37N,08W		Phelps	X			1G	2,4
212	Scroggins Branch	2916U-01	U	Cadmium (W)	Glover Smelter site	2008	0.5	37.4829	-90.6968	37.4790	-90.6884	n/a	n/a		Iron	X			1G	
213	Scroggins Branch	2916U-01	U	Zinc (W)	Glover Smelter site	2008	0.5	37.4829	-90.6968	37.4790	-90.6884	n/a	n/a		Iron	X			1G	
214	Shaw Branch	2170	C	Cadmium (S)	Federal AML	2006	2.0	37.8335	-90.5170	37.8478	-90.5171	2.0	Mouth	20,36N,5E	St. Francois	X			1G	2,4
215	Shaw Branch	2170	C	Inorganic Sediment	Federal AML	1994	2.0	37.8335	-90.5171	37.8478	-90.5171	2.0	Mouth	20,36N,5E	St. Francois	X			1G	2,4
216	Shaw Branch	2170	C	Lead (S)	Federal AML	1998	2.0	37.8335	-90.5170	37.8478	-90.5171	2.0	Mouth	20,36N,5E	St. Francois	X			1G	2,4
217	Shibboleth Creek	2120	C	Inorganic Sediment	Mill tailings (Aban.)	1998	3.0	38.0075	-90.7079	38.0209	-90.6639	3.0	14,38N,3E	21,38N,3E	Washington	X			1G	2,4
218	Shoal Creek	3222	P	Bacteria	Rural NPS	2008	43.5	36.8917	-94.0977	37.0328	-94.6179	43.5	State Line	10,25N,29W	Newton	X			2	1,3,4,5,6
219	Shoal Creek	3231	C	Low D.O.		2006	4	36.6741	-93.9768	36.7289	-94.0129	4	12,23N,29W	Hwy. 86	Barry	X			1	2,4
220	Smi-a-Bar Creek	0399	P	Low D.O.		2006	32	38.9428	-94.1665	39.1406	-93.9688	32	Mouth	30,48N,29W	Jackson/ Lafayette	X			1	2,4,5
221	South Blackbird Creek	0655	C	Ammonia	Unknown	2006	5.0	40.4286	-92.9564	40.4165	-92.8886	13.0	2,64N,17W	18,65N,18W	Putnam	X			1	2,4
222	South Fabius River	71	P	Bacteria		2006	--	--	--	--	--	61.5	24,59N,6W	29,62N,11W	Marion/ Knox			X		
223	South Fork Salt River	0142	C	Low D.O.		1994	17.9	39.0498	-91.8401	39.1900	-91.8753	32.0	Audrain Co. Line	5,49N,4W	Callaway/ Audrain	X			1	2,3,4
224	South Grand River	1249	P	Bacteria	Rural NPS	2006	62.5	38.6675	-94.5318	38.3318	-93.8014	62.5	Mouth	02,44N,33W	Cass/ Henry	X			2	1,4,5
225	South Indian Creek	3259	P	Bacteria	Rural NPS	2008	9.0	36.7483	-94.1291	36.7949	-94.2320	9.0	24,24N,31W	1,23N,30W	McDonald/ Newton	X			2	1(CDF),4
226	Spring Branch (Creek)	3708	P	Low D.O.	Point/NPS	1994	7.4	37.6353	-91.5183	37.6977	-91.5685	7.4	02,34N,06W	Hwy. 32	Dent	X			1	4
227	Spring Branch (Creek)	3708	P	Organic Sediment	Salem WWTP	1998	7.4	37.6353	-91.5183	37.6977	-91.5685	7.4	02,34N,06W	Hwy. 32	Dent	X			1G	4
228	Spring River	3160	P	Bacteria	Rural NPS	2006	58.5	37.1210	-93.8959	37.1946	-94.6182	58.5	State Line	20,28N,27W	Lawrence/ Jasper	X			2	1,4,5,6,7
229	St. Johns Ditch	3138	P	Bacteria	Urban/Rural NPS	2006	35.0	37.0539	-89.5591	36.6108	-89.4467	35.0	29,23N,15E	25,28N,13E	Scott/ New Madrid	X			1G	2,4
230	St. Johns Ditch	3138	P	Mercury (T)	Atmospheric deposition	2006	35.0	37.0539	-89.5591	36.6108	-89.4467	35.0	29,23N,15E	25,28N,13E	Scott/ New Madrid	X			1G	2,4
231	Stevenson Bayou	3135	C	Low D.O.		2006	14	36.9372	-89.2579	36.7632	-89.3373	14	33,25N,16E	31,27N,17E	Mississippi	X			1	2,4
232	Stinson Creek	0710	C	Low D.O.	Unknown	1994	9.0	38.8419	-91.9413	38.7736	-91.8504	9.0	Mouth	16,47N,9W	Callaway	X			1	2,4
233	Stinson Creek	0710	C	Organic Sediment	Fulton WWTP	2002	9.0	38.8419	-91.9413	38.7736	-91.8504	9.0	Mouth	16,47N,9W	Callaway	X			1G	2,4
234	Stockton Branch	1361	C	Low D.O.	Stockton WWTP	2006	1.0	37.7082	-93.7889	37.7171	-93.7867	5.0	Mouth	4,34N,26W	Cedar	X			1	2,4
235	Straight Fork	0959	C	Chloride	Versailles WWTP	2006	2.5	38.4446	-92.8506	38.4758	-92.8494	6.0	6,43N,17W	36,43N,18W	Morgan	X			1	2,4
236	Straight Fork	0959	C	Low D.O.	Versailles WWTP	2006	2.5	38.4446	-92.8506	38.4758	-92.8494	6.0	6,43N,17W	36,43N,18W	Morgan	X			1	2,4
237	Strother Creek	2751	P	Lead (S)	Buick Mine	2008	2.1	37.5948	-91.0472	37.6051	-91.0167	7.0	Mouth	33,34N,1W	Iron	X			1G	2,4
238	Strother Creek	2751	P	Nickel (S)	Buick Mine	2008	2.1	37.5948	-91.0472	37.6051	-91.0167	7.0	Mouth	33,34N,1W	Iron	X			1G	2,4
239	Strother Creek	2751	P	Zinc (S)	Buick Mine	2008	2.1	37.5948	-91.0472	37.6051	-91.0167	7.0	Mouth	33,34N,1W	Iron	X			1G	2,4
240	Strother Creek	2751U-01	U	Arsenic (S)	Buick Mine	2008	1	37.5881	-91.0602	37.5948	-91.0472	n/a	n/a		Reynolds/ Iron	X			1G	
241	Strother Creek	2751U-01	U	Lead (S)	Buick Mine	2008	1	37.5881	-91.0602	37.5948	-91.0472	n/a	n/a		Reynolds/ Iron	X			1G	
242	Strother Creek	2751U-01	U	Nickel (S)	Buick Mine	2008	1	37.5881	-91.0602	37.5948	-91.0472	n/a	n/a		Reynolds/ Iron	X			1G	
243	Strother Creek	2751U-01	U	Zinc (S)	Buick Mine	2006	1	37.5881	-91.0602	37.5948	-91.0472	n/a	n/a		Reynolds/ Iron	X			1G	
244	Sugar Creek	0686	P	Low D.O.		2006	5	39.4747	-92.4804	39.4613	-92.5558	5	Mouth	Sugar Cr. Lake Dam	Randolph	X			1	2,4
245	Sugar Creek Trib	0686U-01	U	Nickel (W)	Coal Mine (Aban.)	2008	0.2	39.4448	-92.5252	39.4469	-92.5230	n/a	n/a		Randolph	X			1G	
246	Table Rock Lake	7313	L2	Nutrients		2002	43100.0	36.3753	-93.9073	36.5955	-93.3109	43100.0	NW NW22,22N22W		Barry/ Taney	X			G	1,2,4,5

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247	Thompson River	0549	P	Bacteria	Rural NPS	2008	5.0	40.5769	-93.8011	40.5433	-93.8159	65.0	Mouth	State Line	Harrison	X			2	1,3,4,6
248	Troublesome Creek	0074	C	Low D.O.		2006	34	40.1209	-92.0422	39.9046	-91.6701	34	15,59N,7W	5,61N,10W	Knox/ Marion	X			1	2,4
249	Turkey Creek	3216	P	Bacteria	Rural NPS	2006	7.0	37.1062	-94.5065	37.1249	-94.6180	7.0	State Line	35,28N,33W	Jasper	X			2	1,4
250-a	Turkey Creek	3216	P	Cadmium (S)	Mill tailings (Aban.)	2006	7.0	37.1061	-94.5066	37.1249	-94.6178	7.0	State Line	35,28N,33W	Jasper	X			1G	2,4
250-b	Turkey Creek	3216	P	Cadmium (W)	Mill tailings (Aban.)	2006	7.0	37.1061	-94.5066	37.1249	-94.6178	7.0	State Line	35,28N,33W	Jasper	X			1	2,4
251	Turkey Creek	3216	P	Lead (S)	Mill tailings (Aban.)	2008	7.0	37.1061	-94.5066	37.1249	-94.6178	7.0	State Line	35,28N,33W	Jasper	X			1G	2,4
252	Turkey Creek	3216	P	Zinc (S)	Mill tailings (Aban.)	2008	7.0	37.1061	-94.5066	37.1249	-94.6178	7.0	State Line	35,28N,33W	Jasper	X			1G	2,4
253	Turkey Creek	3217	P	Bacteria	Rural NPS	2008	5.0	37.0755	-94.4270	37.1061	-94.5066	5.0	35,28N,33W	9,27N,32W	Jasper	X			2	1,4
254	Turkey Creek	3217	P	Cadmium (S)	Mill tailings (Aban.)	2008	5.0	37.0755	-94.4270	37.1061	-94.5066	5.0	35,28N,33W	9,27N,32W	Jasper	X			1G	2,4
255	Turkey Creek	3217	P	Lead (S)	Mill tailings (Aban.)	2008	5.0	37.0755	-94.4270	37.1061	-94.5066	5.0	35,28N,33W	9,27N,32W	Jasper	X			1G	2,4
256	Turkey Creek	3217	P	Zinc (S)	Mill tailings (Aban.)	2008	5.0	37.0755	-94.4270	37.1061	-94.5066	5.0	35,28N,33W	9,27N,32W	Jasper	X			1G	2,4
257	Turkey Creek	3282	P	Cadmium (W)	Mill tailings (Aban.)	2006	2.4	37.9233	-90.5482	37.9549	-90.5569	2.4	Mouth	Hwy 47	St. Francois	X			1	2,4
258	Turkey Creek	3282	P	Lead (W)	Mill tailings (Aban.)	2006	2.4	37.9233	-90.5482	37.9549	-90.5569	2.4	Mouth	Hwy 47	St. Francois	X			1	2,4
259	Turkey Creek	3282	P	Zinc (W)	Mill tailings (Aban.)	2006	1.2	37.9233	-90.5482	37.9383	-90.5526	2.4	Mouth	Hwy 47	St. Francois	X			1	2,4
260	Village Creek	2863	P	Inorganic Sediment	Mill tailings (Aban.)	2006	1.5	37.5826	-90.2865	37.5657	-90.3094	1.5	Mouth	5,33N,7E	Madison	X			1G	2,4
261	Village Creek	2863	P	Lead		2006	1.5	37.5827	-90.2866	37.5657	-90.3093	1.5	Mouth	5,33N,7E	Madison	X			1	2,4
262	Village Creek	2864	C	Inorganic Sediment	Mine La Motte AML	1994	--	--	--	--	--	3.0	5,33N,7E	34,34N,7E	Madison			X		
263	Warm Fork Spring River	2579	P	Bacteria	Unknown	2006	1.2	36.5131	-91.5251	36.4990	-91.5275	12.0	State Line	25,23N,6W	Oregon	X			2	1,4,5,6
264	Watkins Creek	1708	C	Bacteria	Urban NPS	2006	3.5	38.7680	-90.1907	38.7736	-90.1757	3.5	Mouth	Hwy. 270	St. Louis	X			2	1,4
265	Watkins Creek	1708	C	Chloride	Urban NPS	2006	3.5	38.7680	-90.1907	38.7736	-90.1757	3.5	Mouth	Hwy. 270	St. Louis	X			1	2,4
266	Weldon River	0560	P	Bacteria		2006	42	40.5794	-93.6108	40.1031	-93.6485	42	Mouth	State Line	Mercer/ Grundy	X			2	1,4
267	West Fork Black River	2755	P	Lead (S)	West Fk. Mine	2008	1.3	37.4900	-91.1069	37.4972	-91.0872	31.7	Mouth	25,33N,03W	Reynolds	X			1G	2,4
268	West Fork Black River	2755	P	Nickel (S)	West Fk. Mine	2008	1.3	37.4900	-91.1069	37.4972	-91.0872	31.7	Mouth	25,33N,03W	Reynolds	X			1G	2,4
269	West Fork Black River	2755	P	Nutrients		1998	31.7	37.5233	-91.2254	37.4465	-90.8520	31.7	Mouth	25,33N,03W	Reynolds	X			G	1,2,4
270	West Fork Drywood Creek	1317	C	Low D.O.		2006	5.5	37.6858	-94.6174	37.7144	-94.5494	5.5	Mouth	State Line	Vernon	X			1	2,4
271	West Fork Locust Creek	0613	C	Unknown		2002	17.0	40.3056	-93.2675	40.1391	-93.2160	17.0	Hwy. 6	33,64N,21W	Sullivan	X			1G	2,4
272	West Fork Medicine Creek	0623	P	Bacteria	Rural NPS	2006	40.0	40.5804	-93.4257	40.1021	-93.3755	40.0	9,61N,22W	State Line	Mercer/ Grundy	X			2	1,4
273	West Fork Medicine Creek	0623	P	Unknown	Unknown	2006	40.0	40.5800	-93.4257	40.1024	-93.3755	40.0	9,61N,22W	State Line	Mercer/ Grundy	X			1G	2,4
274	West Fork Niangua River	1175	P	Low D.O.		1994	7	37.3659	-92.9150	37.4459	-92.9195	7	33,32N,18W	33,31N,18W	Webster	X			1	2,4
275	West Yellow Creek	0599	C	Low D.O.		2006	43	40.0936	-92.9926	39.6518	-93.0541	43	29,56N,19W	14,61N,19W	Sullivan/ Charlton	X			1****	4****
276	Whetstone Creek	1504	P	Low D.O.	Rural NPS	2006	13.0	37.1893	-92.3644	37.3120	-92.3909	13.0	Mouth	21,29N,13W	Wright	X			1	2,4
277	Willow Branch	0654U	U	Unknown		2002	--	--	--	--	--	0.6 (U)	Mouth	22,66N,18W	Putnam			X		
278	Willow Fork	0955	C	Low D.O.		2006	6.5	38.6371	-92.8210	38.6113	-92.7359	6.5	36,45N,17W	29,45N,17W	Monteau	X			1	2,4
279	Willow Fork, Tributary to	0956	C	Low D.O.	Tipton WWTP	2006	0.5	38.6308	-92.7681	38.6274	-92.7636	0.5	Mouth	27,45N,17W	Monteau	X			1	4
280	Wilson Creek	2375	P	Bacteria		2006	--	--	--	--	--	18.0	Mouth	16,29N,22W	Greene			X		
281	Wilson Creek	2375	P	Unknown	Multiple Pont/Urban NPS	1998	18.0	37.2245	-93.3455	37.0685	-93.4008	18.0	Mouth	16,29N,22W	Greene	X	X		1G	2,4
282	Wolf Creek	2879	C	Low D.O.		2006	8	37.7954	-90.3839	37.7284	-90.4062	8	Mouth	29,36N,6E	St. Francois	X			1	2,4
283	Wolf Creek, Tributary to	3589	C	Low D.O.		2006	1.5	37.7876	-90.4200	37.7775	-90.3985	1.5	Hwy. 32	Hwy. D	St. Francois	X			1	2,4
284	Wyaconda New Lake	7009	L1	Atrazine	Rural NPS	1998	9.0			40.3990	-91.9083	9.0	NW NW33,65N,09W		Clark	X			3	1,2,4,5

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(S) = pollutant in sediment
(T) = pollutant in fish tissue
(W) = pollutant in water
* EPA considers the entire classified segment as impaired on the 303(d) list. See section IV.D of the August 6, 2009, decision document and response to comments for additional information.
** Only 0.9 miles of this stream remains after the creation of the Leadwood tailings pond.
*** Metals are believed to be the pollutant based on analysis of invertebrate community
**** presumed uses. Due to an oversight, this waterbody is currently not listed in state WQ standards and no beneficial uses designated.
Aban. = abandonded
AML = abandoned mine land
D.O. = dissolved oxygen
Mult. =multiple
NPS = nonpoint source
Unk. = unknown
Use codes for Impaired and Unimpaired Uses columns:
G = General Criteria
1G = General criteria pertaining to protection of aquatic life
1 = Protection of aquatic life
2 = Whole Body Contact Recreation (swimming)
3 = Public Drinking Water Supply
4 = Livestock and Wildlife Watering
5 = Secondary Contact Recreation (Fishing and Boating)
6 = Irrigation
7 = Industrial Water

Outstanding State Resource Waters List

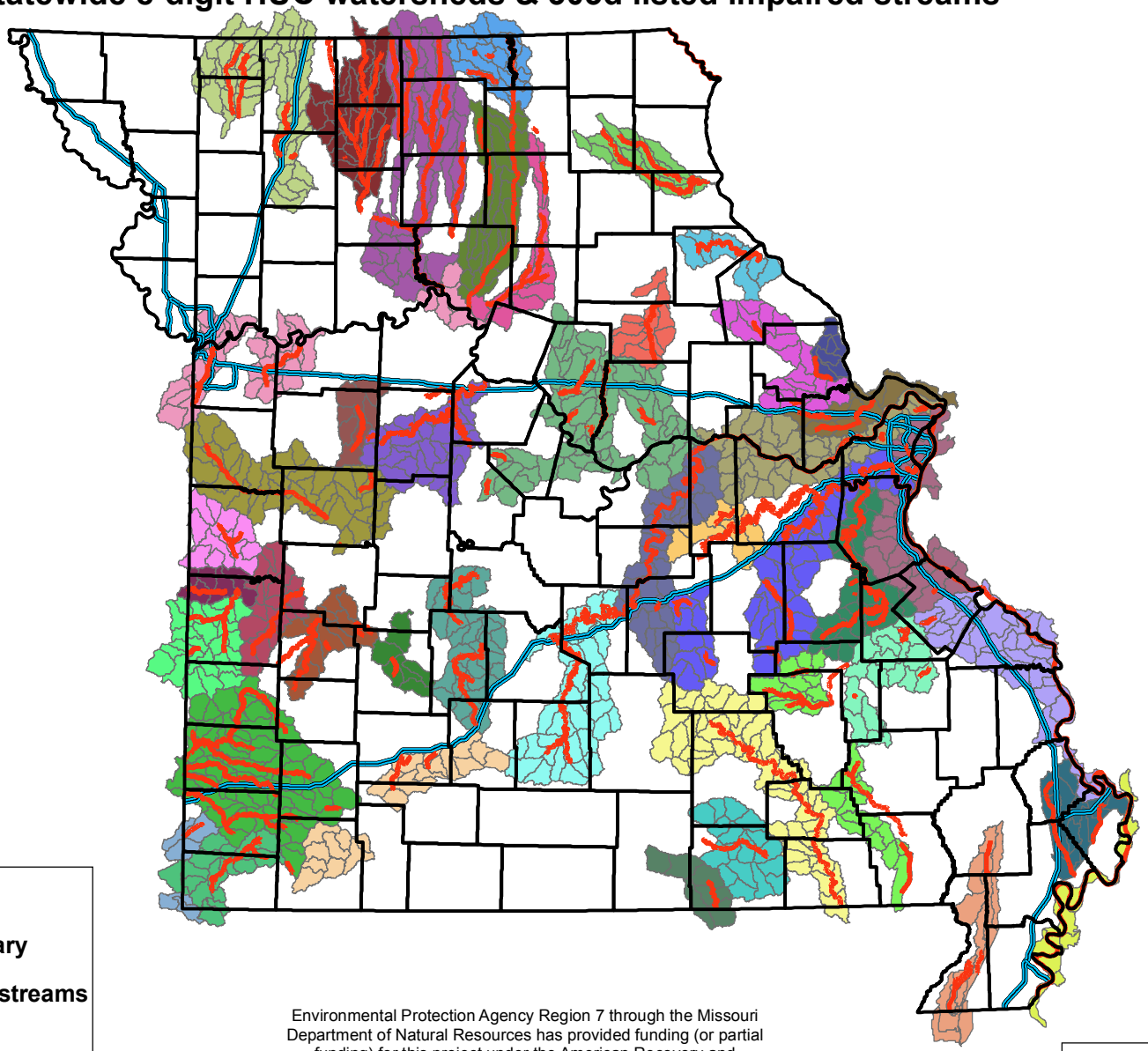
10 CSR 20-7.031, Table E

Outstanding State Resource Waters

Water Body	Miles/Ac		Location	County(ies)
Baker Branch	4	mi.	Taberville Prairie	St. Clair
Bass Creek	1	mi.	in Three Creek Conservation Area	Boone
Big Buffalo Creek	1.5	mi.	Big Buffalo Creek Conservation Area	Benton-Morgan
Big Creek	5.3	mi.	Sam A. Baker State Park	Wayne
Big Sugar Creek	7	mi.	Cuivre River State Park	Lincoln
Big Lake Marsh	150	ac.	Big Lake State Park	Holt
Blue Springs Creek	4	mi.	Blue Spring Creek Conservation Area	Crawford
Bonne Femme Creek	2	mi.	Three Creeks Conservation Area	Boone
Brush Creek	0.7	mi.	Bonanza Conservation Area	Caldwell
Bryant Creek	1.5	mi.	Bryant Creek Natural Area in Rippee Conservation Area	Ozark/Douglas
Bull Creek	8	mi.	Mark Twain National Forest S24	Christian
Cathedral Cave Branch	5	mi.	Onondaga Cave State Park	Crawford
Chariton River	9.8	mi.	Rebels Cove Conservation Area	Putnam-Schuyler
Chloe Lowry Marsh	40	ac.	Chloe Lowry Marsh Conservation Area	Mercer
Coakley Hollow	1.5	mi.	Lake of the Ozarks State Park	Camden
Coonville Creek	2	mi.	St. Francois State Park	St. Francois
Courtois Creek	12	mi.	Mouth to Hwy. 8	Crawford
Crabapple Creek	1	mi.	Bonanza Conservation Area	Caldwell
Devils Ice Box Cave Branch	1.5	mi.	Rock Bridge State Park	Boone
East Fork Black River	3	mi.	Johnson's Shut-Ins State Park	Reynolds
First Nicholson Creek	2	mi.	Prairie State Park	Barton
Gan's Creek	3	mi.	Rock Bridge State Park	Boone
Huzzah Creek	6	mi.	Mouth to Hwy. 8	Crawford
Indian Creek	18	mi.	Mark Twain National Forest	Douglas-Howell
Ketchum Hollow	1.5	mi.	Roaring River State Park	Barry
Little Piney Creek	25	mi.	Mouth to 21,35N,08W	Phelps
Little Black River	3	mi.	Mud Puppy Natural History Area S22	Ripley
Log Creek	0.4	mi.	Bonanza Conservation Area	Caldwell
Meramec River	8	mi.	Adjacent to Meramec State Park	Crawford/Franklin
Meramec River	3	mi.	Adjacent to Onondaga and Huzzah State Forest	Crawford
Mill Creek	5	mi.	Mark Twain National Forest	Phelps
N. Fork White River	5.5	mi	Mark Twain National Forest	Ozark
Noblett Creek	5	mi.	Above Noblett Lake, Mark Twain National Forest	Douglas-Howell
Onondaga Cave Branch	0.6	mi.	Onondaga Cave State Park	Crawford
Pickle Creek	3	mi.	Hawn State Park	Ste. Genevieve
S. Prong L. Black River	2	mi.	In Little Black Conservation Area	Ripley
Shoal Creek	0.5	mi.	Bonanza Conservation Area	Caldwell

Spring Creek	17	mi.	Mark Twain National Forest	Douglas
Spring Creek	6.5	mi.	Mark Twain National Forest	Phelps
Taum Sauk Creek	5.5	mi.	Johnson's Shut-Ins State Park Addition S23	Reynolds-Iron
Turkey Creek	4.6	mi.	In Three Creeks Conservation Area	Boone
Van Meter Marsh	80	ac.	Van Meter State Park	Saline
Whetstone Creek	5.1	mi.	Whetstone Creek Conservation Area	Callaway

Statewide 8-digit HUC watersheds & 303d listed impaired streams



N

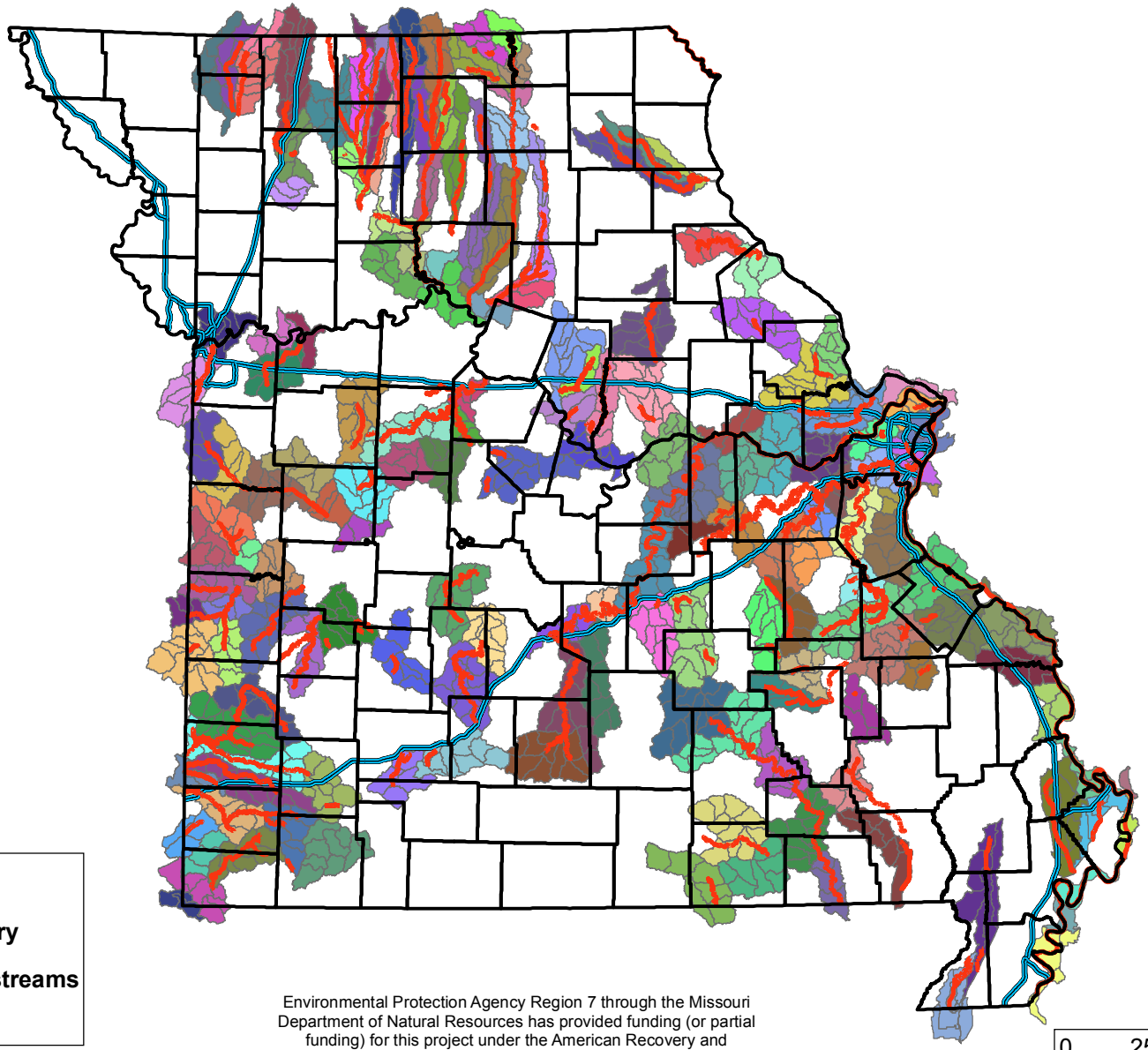
Legend

- County boundary
- 303d Impaired streams
- Interstate

Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources has provided funding (or partial funding) for this project under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

0 25 50 100 Miles

Statewide 10-digit HUC watersheds & 303d listed impaired streams



N

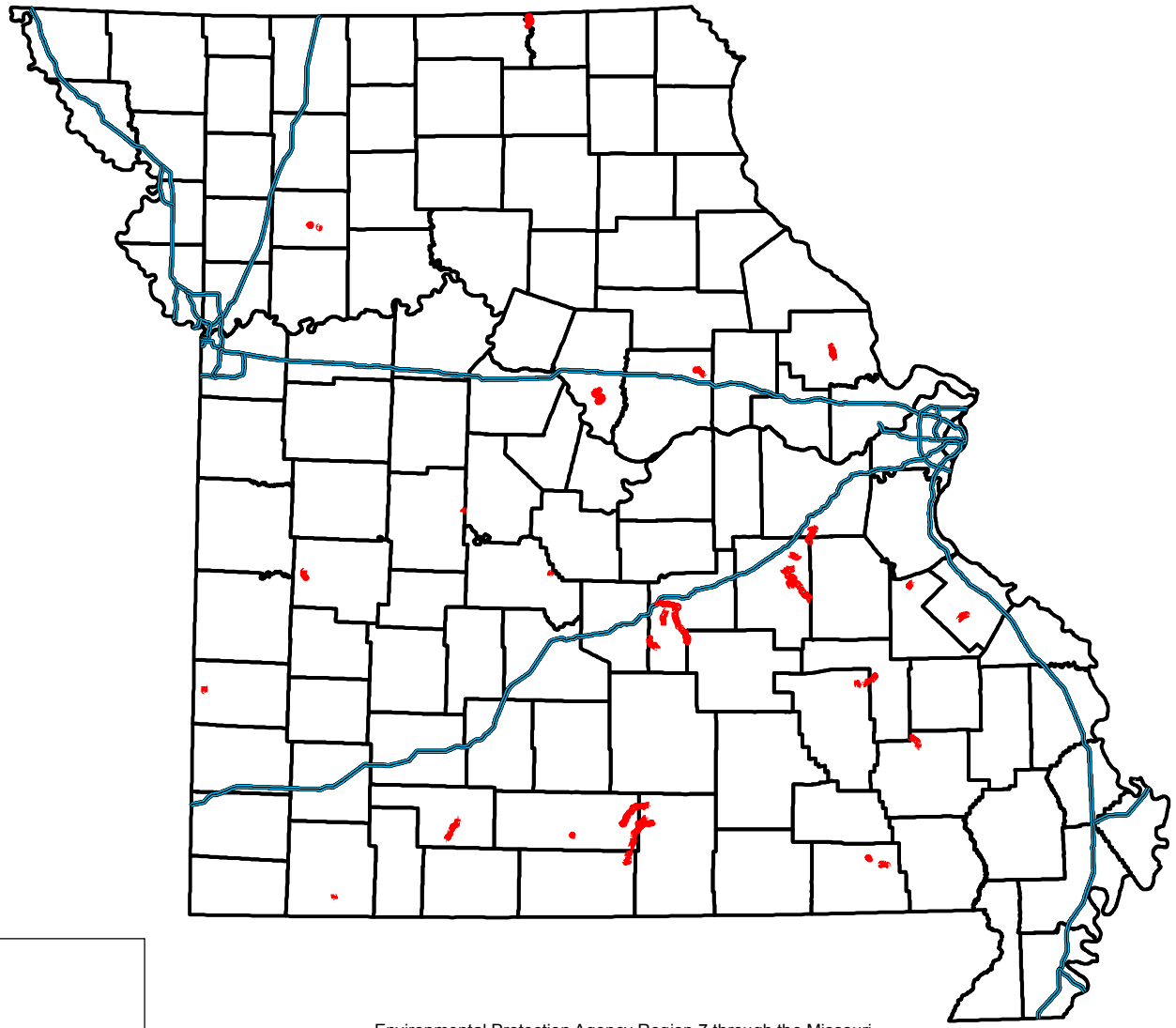
Legend

- County boundary
- 303d Impaired streams
- Interstate

Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources has provided funding (or partial funding) for this project under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

0 25 50 100 Miles

Statewide Outstanding Resource Waters



N

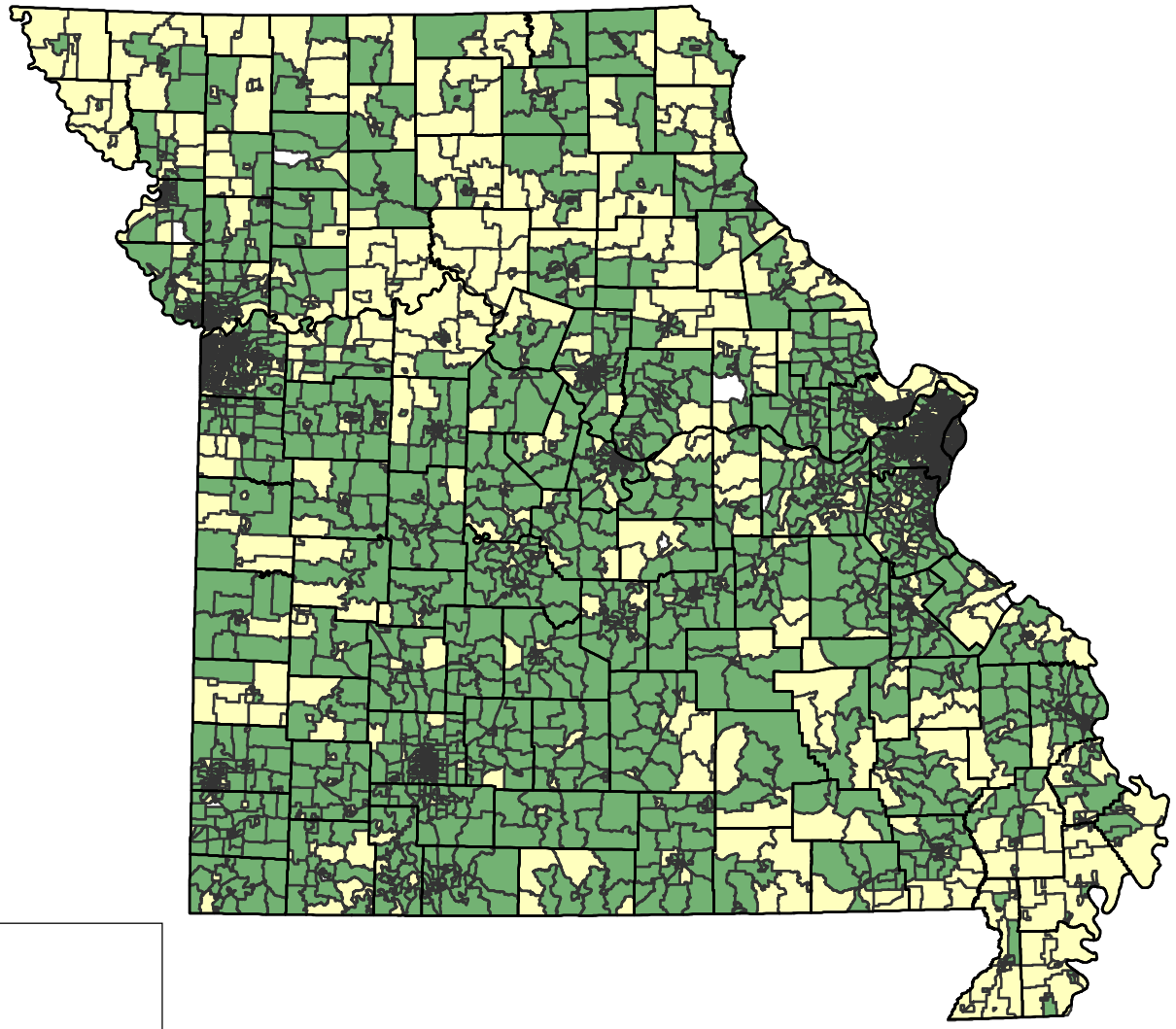
Legend

- County boundary
- Interstate Highway
- Outstanding Resource Waters

Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources has provided funding (or partial funding) for this project under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

0 25 50 100 Miles

2010 Population change by Block group



N

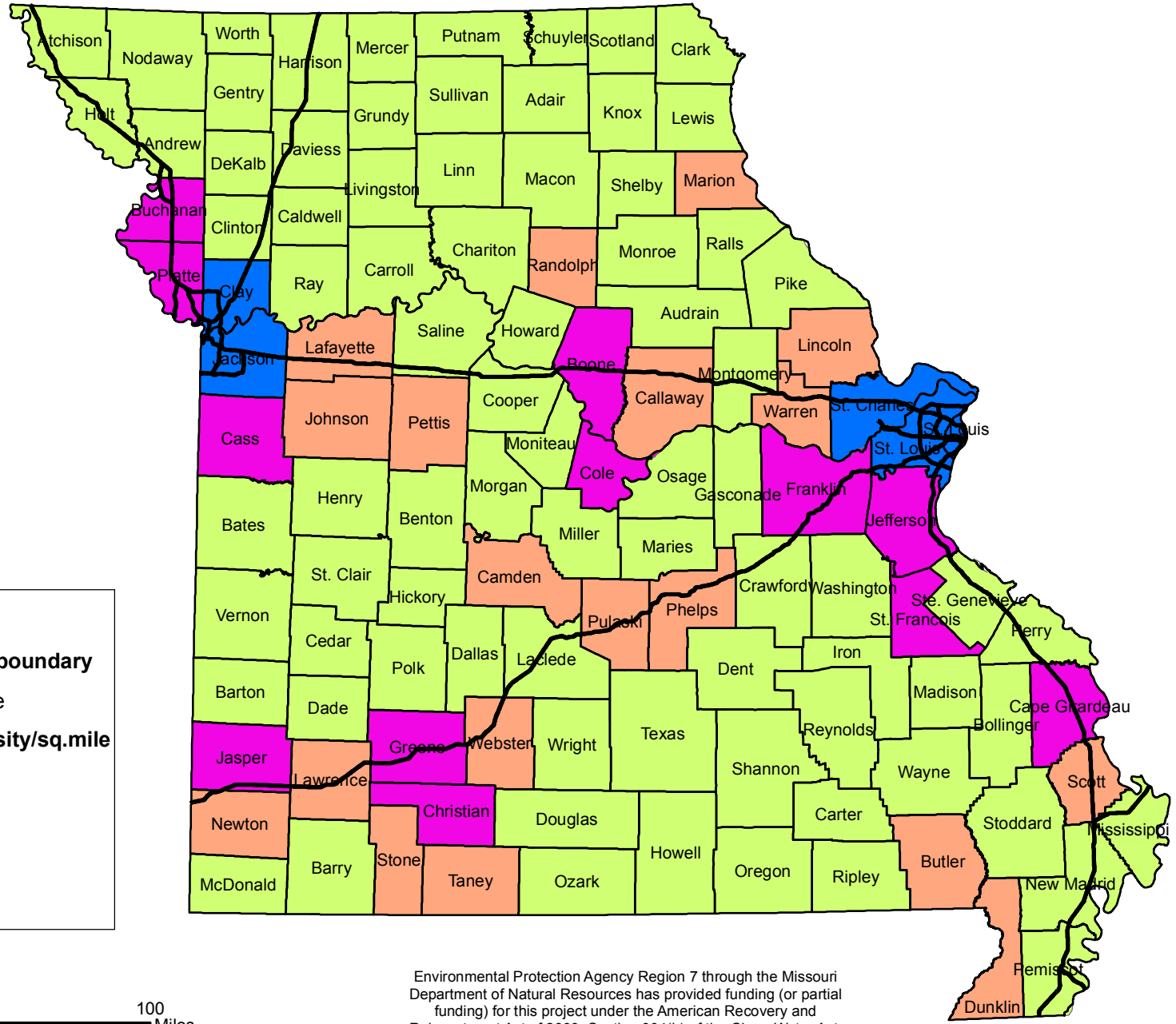
Legend

- County boundary
- 2000-2010 Population growth
- 2000-2010 Population decline
- 2000-2010 Population- no change

Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources has provided funding (or partial funding) for this project under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

0 25 50 100 Miles

2010 population density by county



Legend

- County boundary
- Interstate

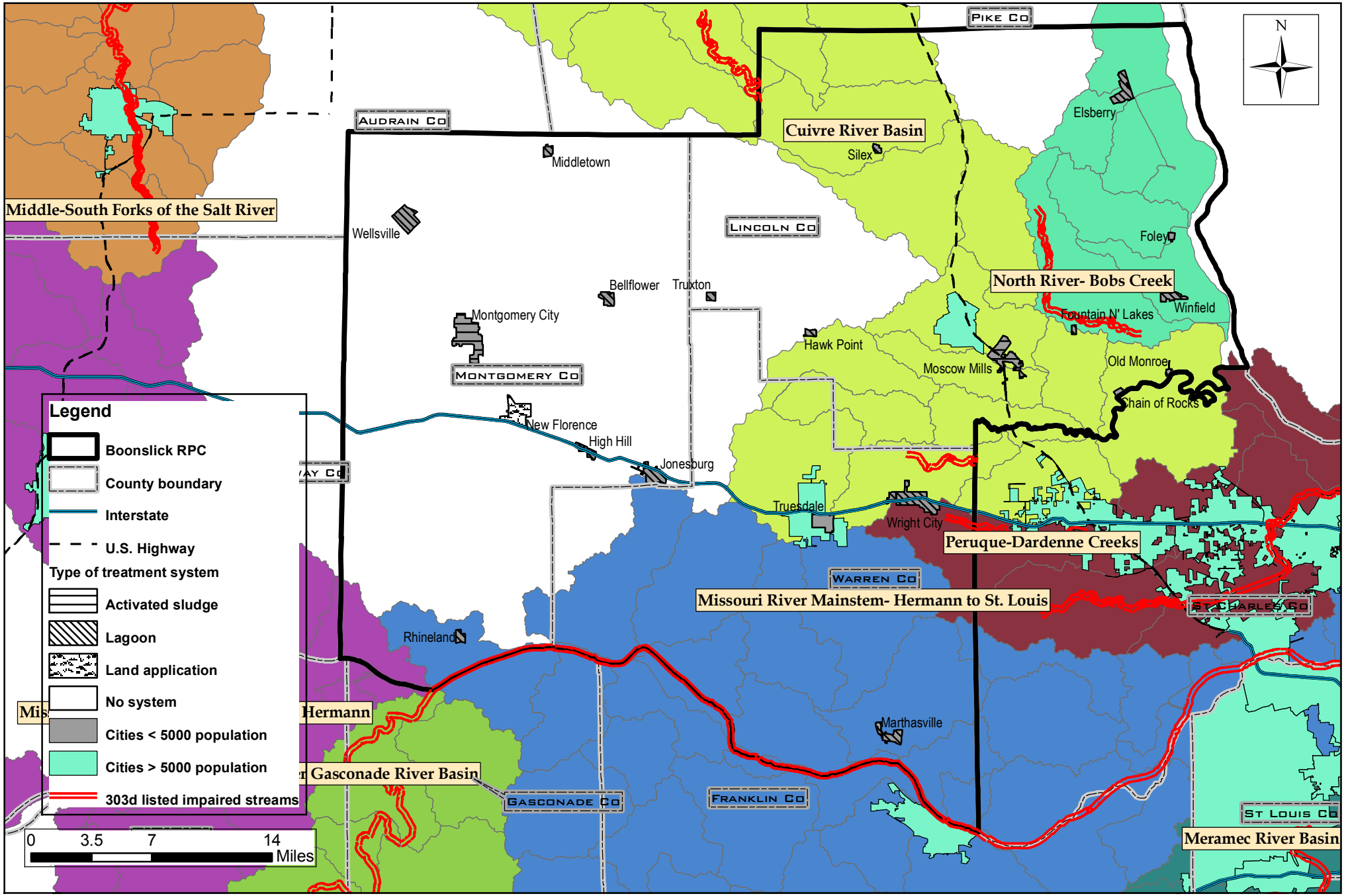
Population density/sq.mile

- < 50
- 50-100
- 100-500
- > 500

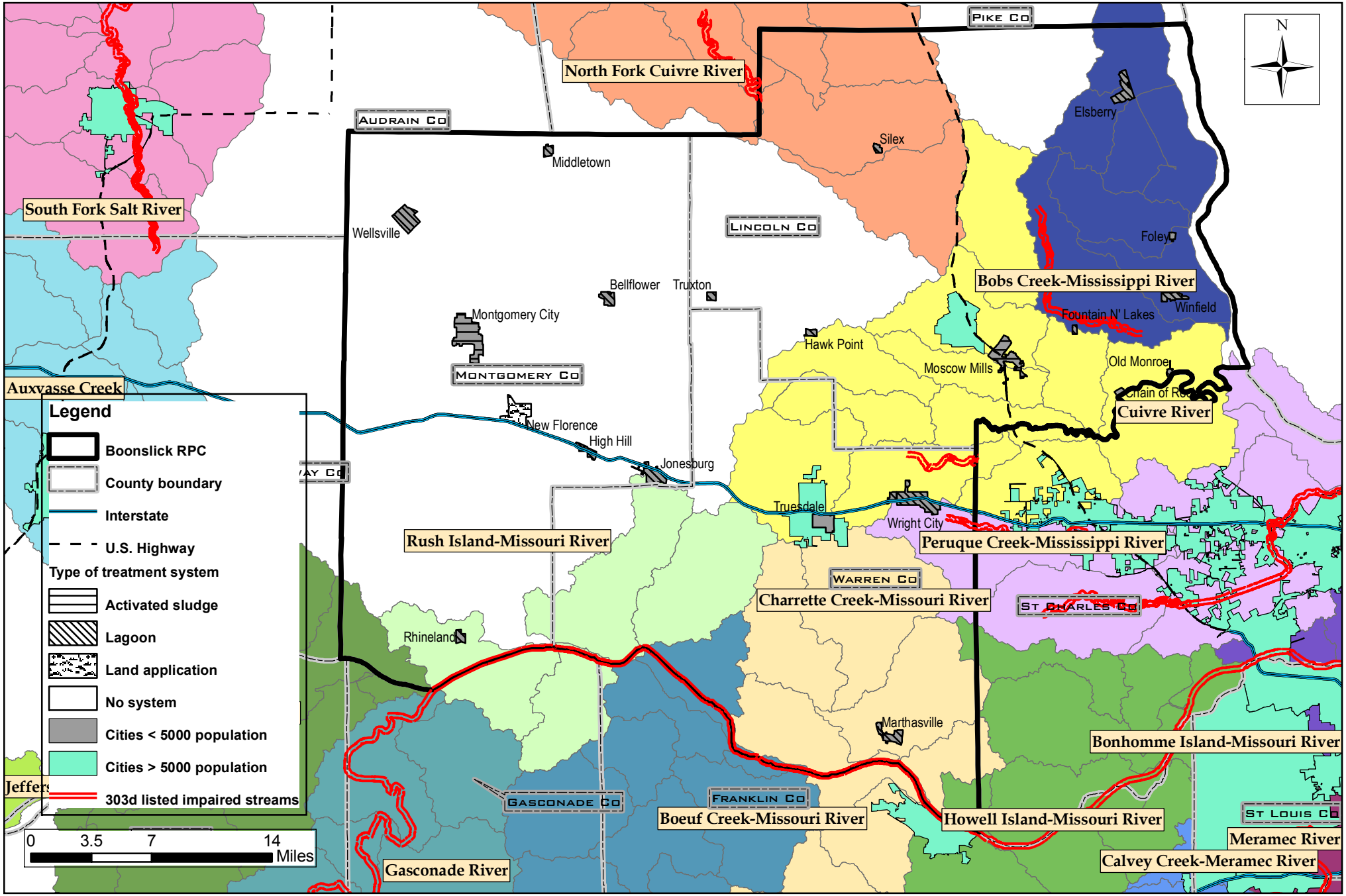
0 25 50 100 Miles

Environmental Protection Agency Region 7 through the Missouri Department of Natural Resources has provided funding (or partial funding) for this project under the American Recovery and Reinvestment Act of 2009, Section 604(b) of the Clean Water Act.

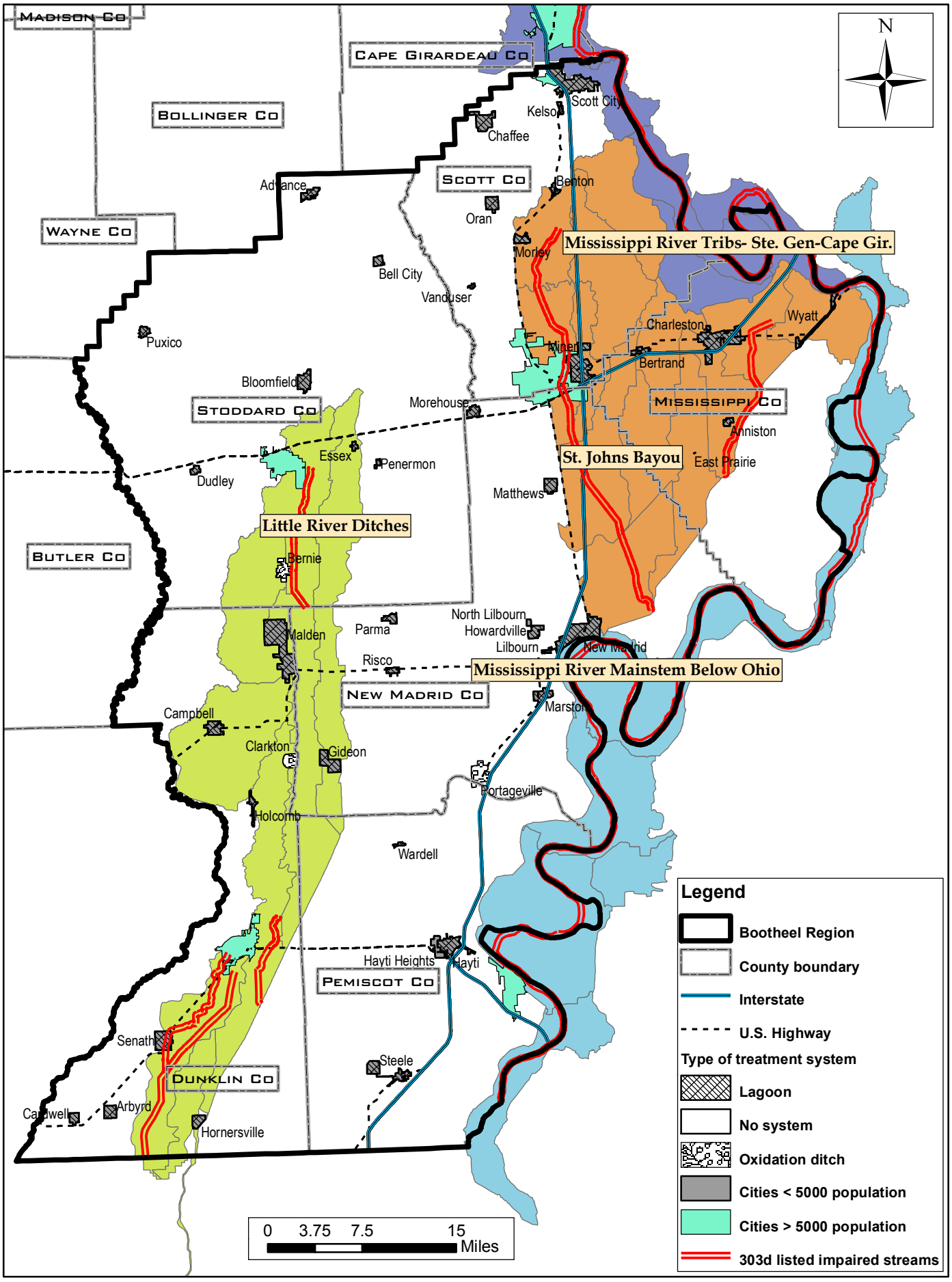
Boonslick Regional Planning Commission
8-digit watersheds and 303d listed impaired streams



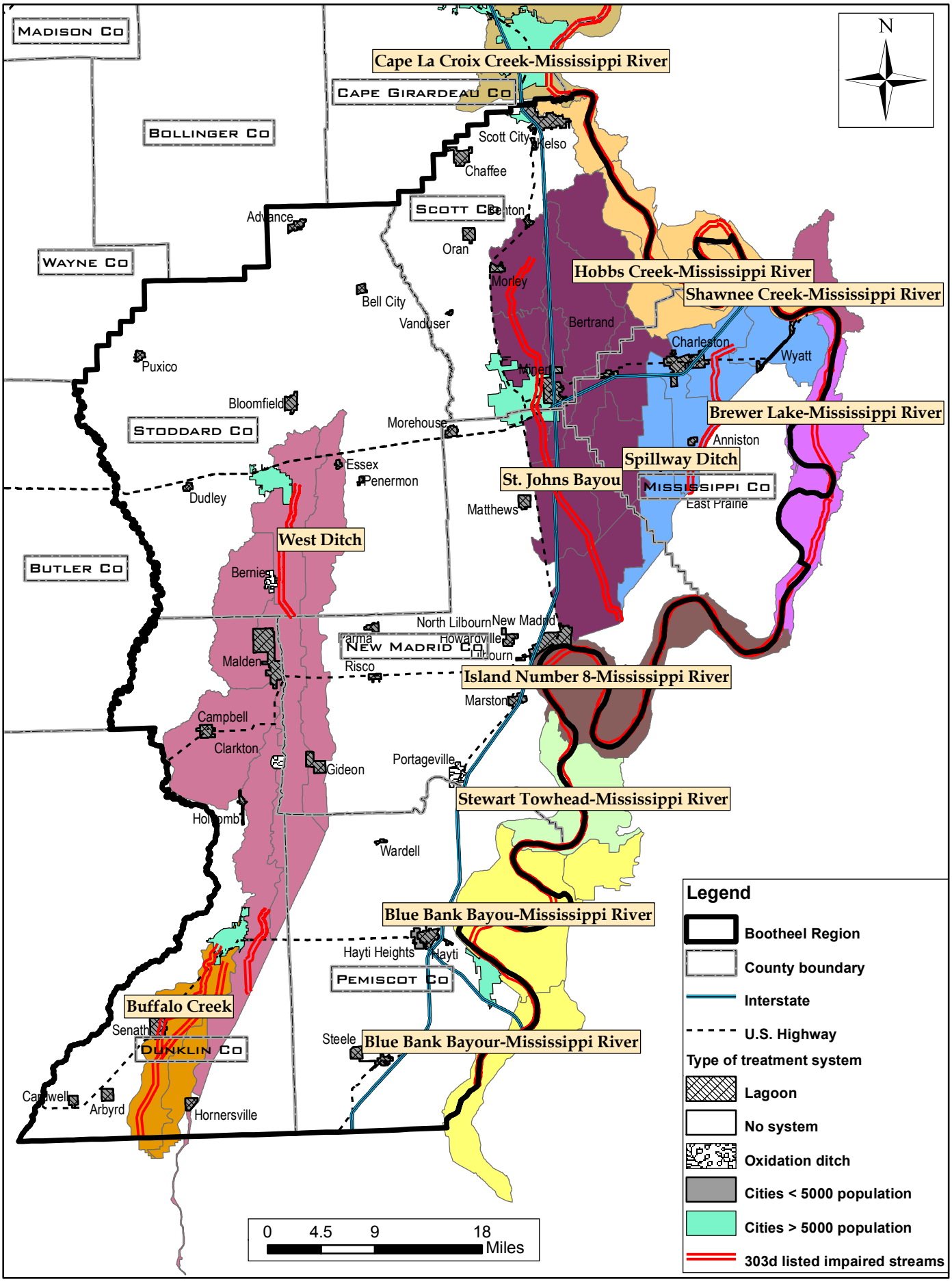
Boonslick Regional Planning Commission
10-digit watersheds and 303d listed impaired streams



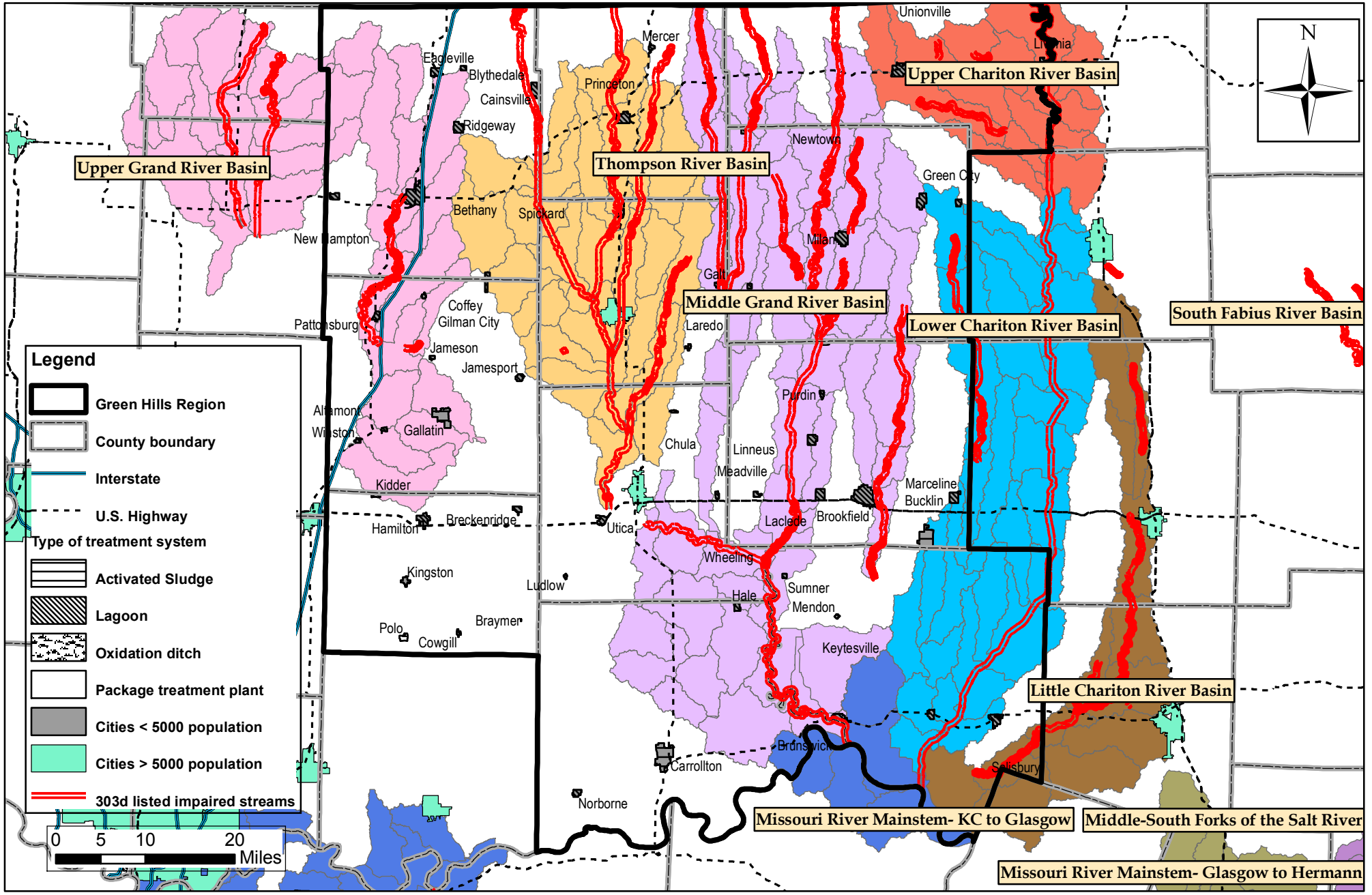
Bootheel Regional Planning & Economic Development Commission
8-digit watersheds and 303d listed impaired streams



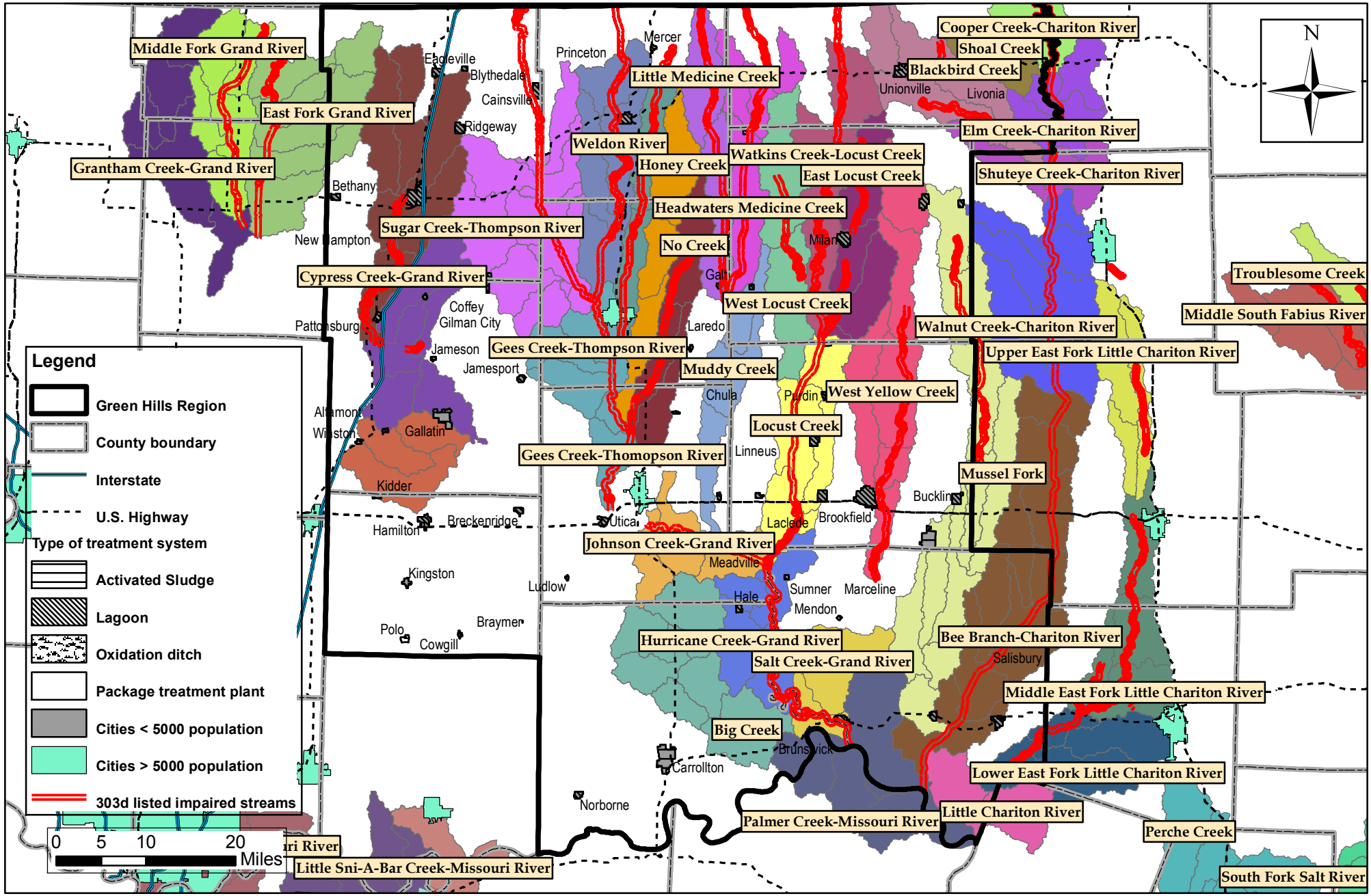
Bootheel Regional Planning & Economic Development Commission
10-digit watersheds and 303d listed impaired streams



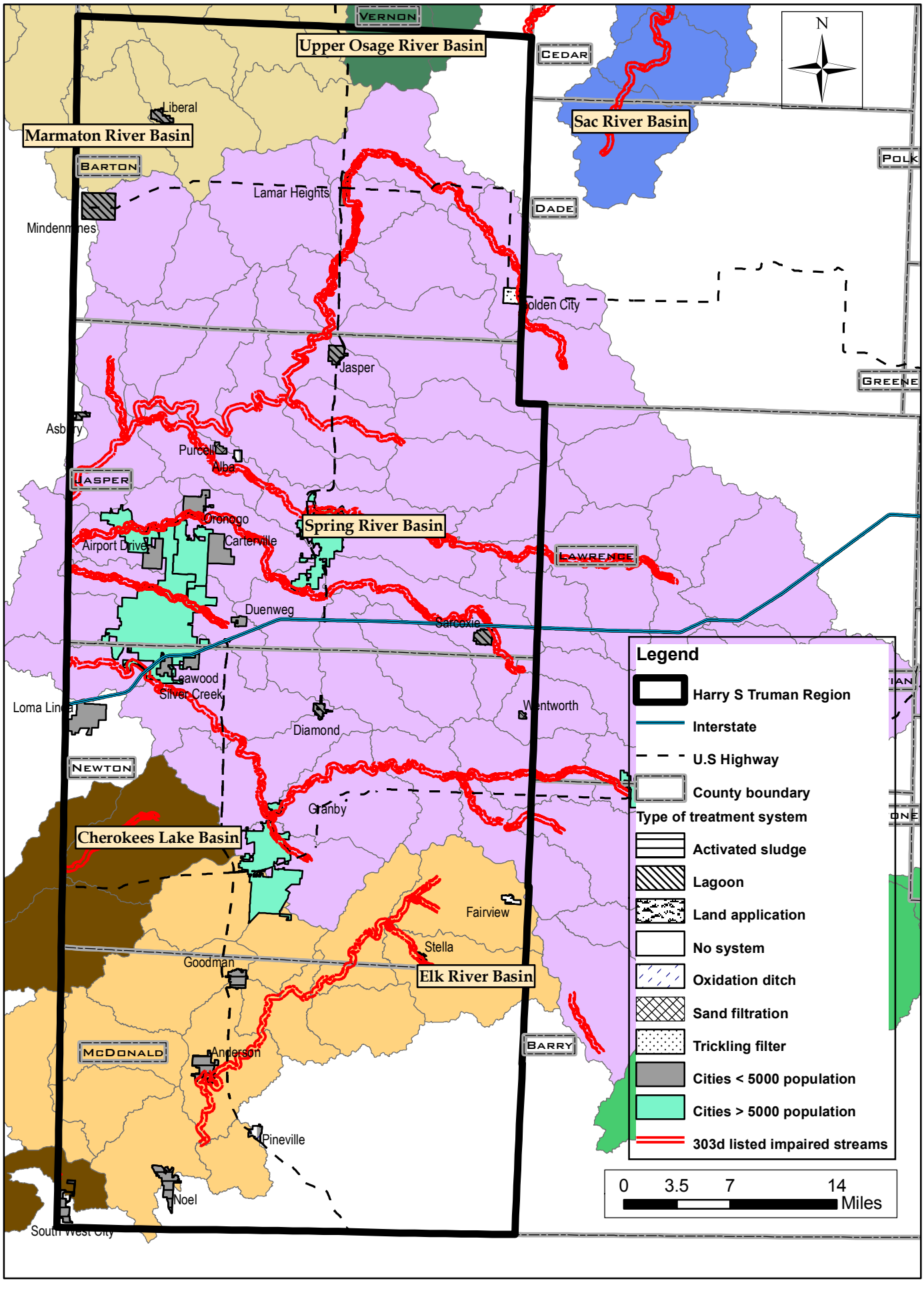
Green Hills Regional Planning Commission
8-digit watersheds and 303d listed impaired streams



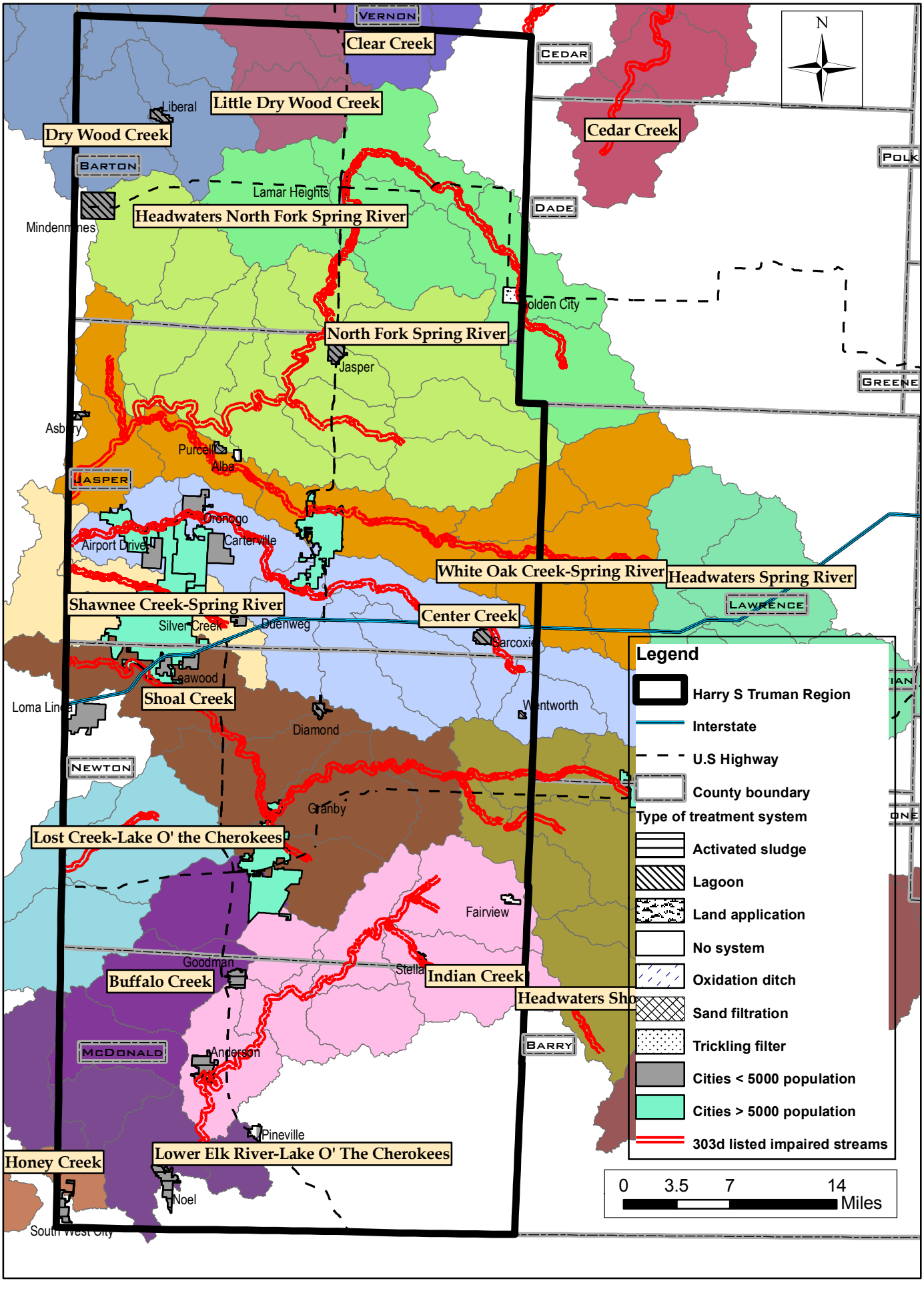
Green Hills Regional Planning Commission
10-digit watersheds and 303d listed impaired streams



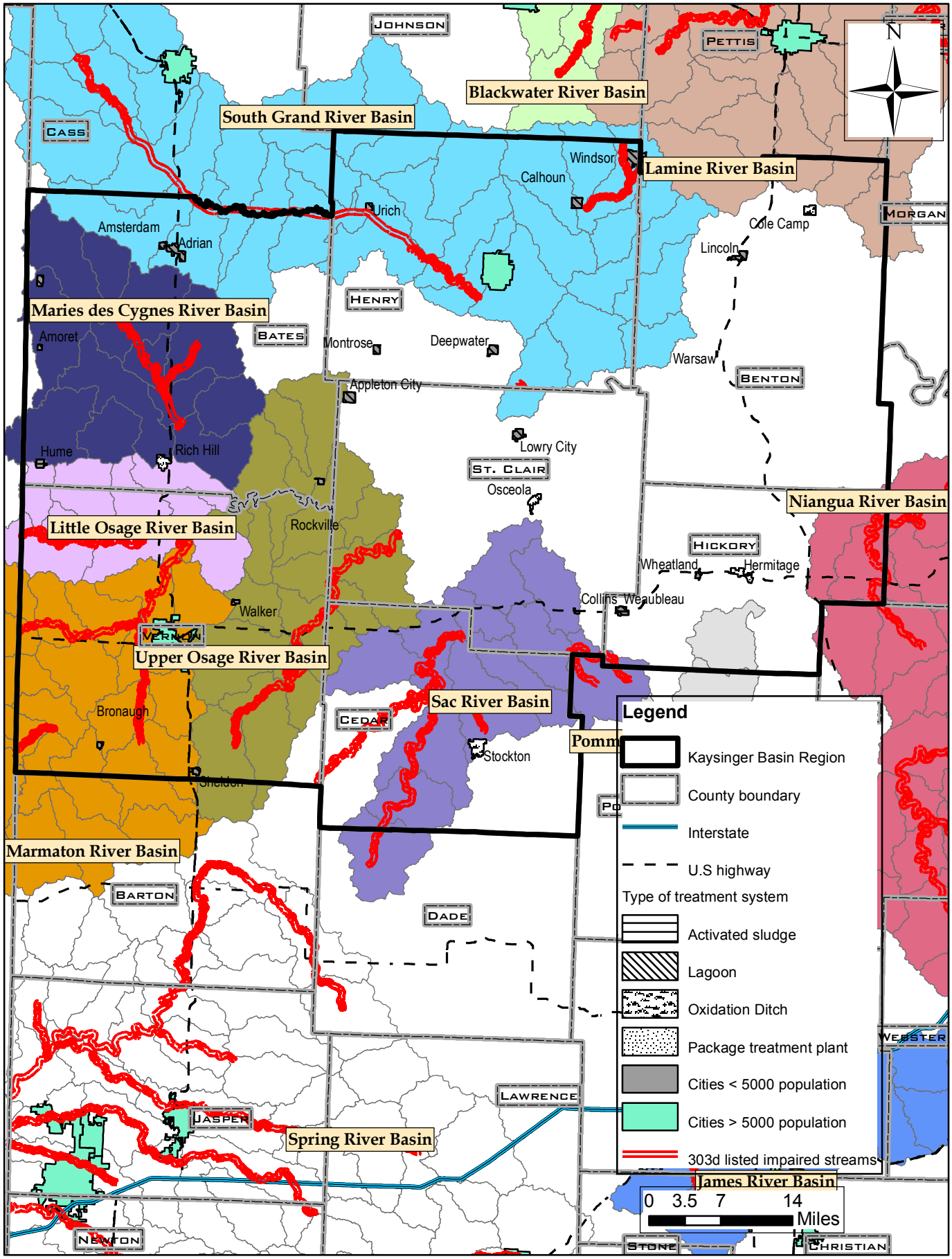
Harry S. Truman Coordinating Council
8-digit watersheds and 303d listed impaired streams



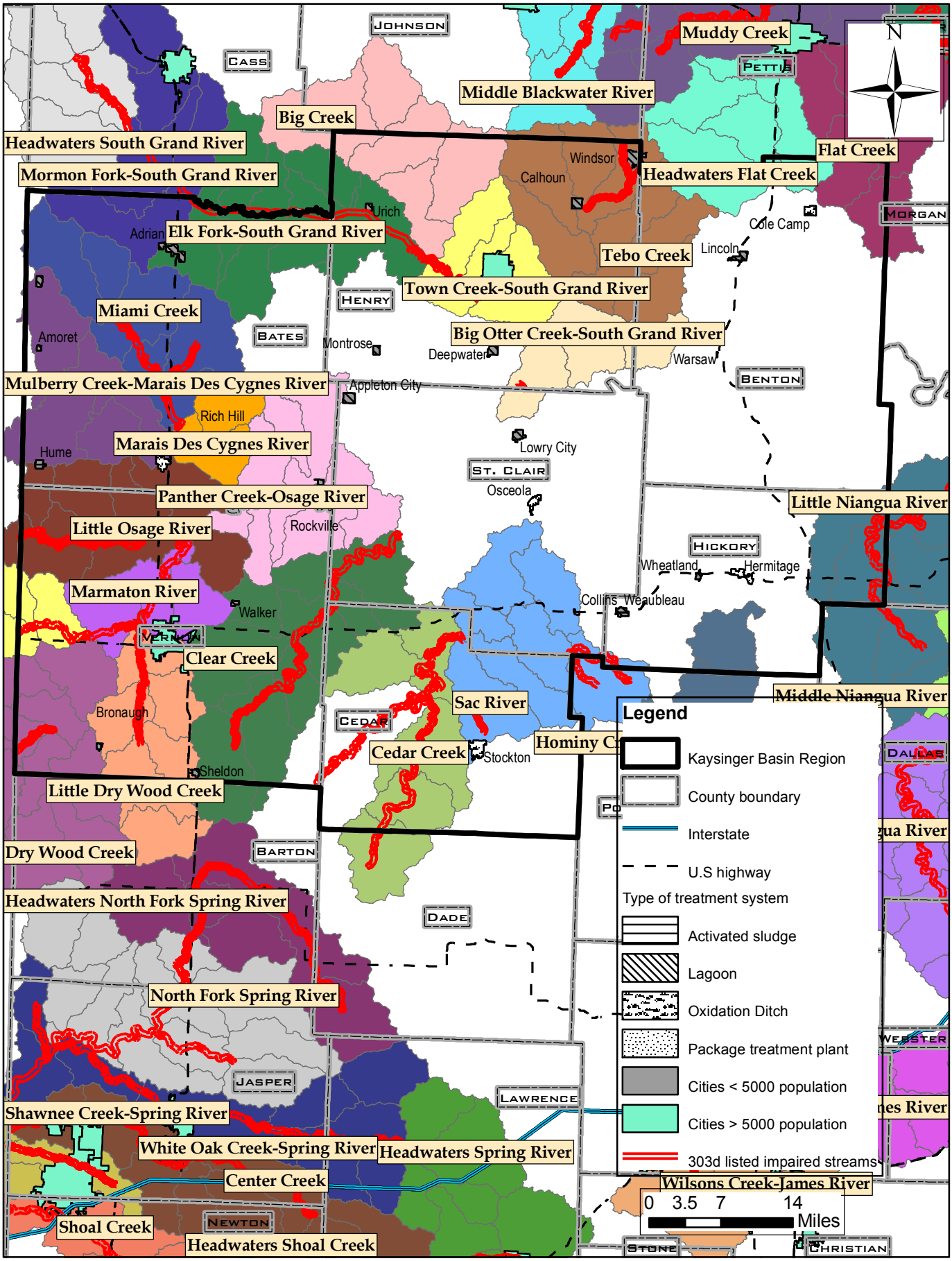
Harry S. Truman Coordinating Council
10-digit watersheds and 303d listed impaired streams



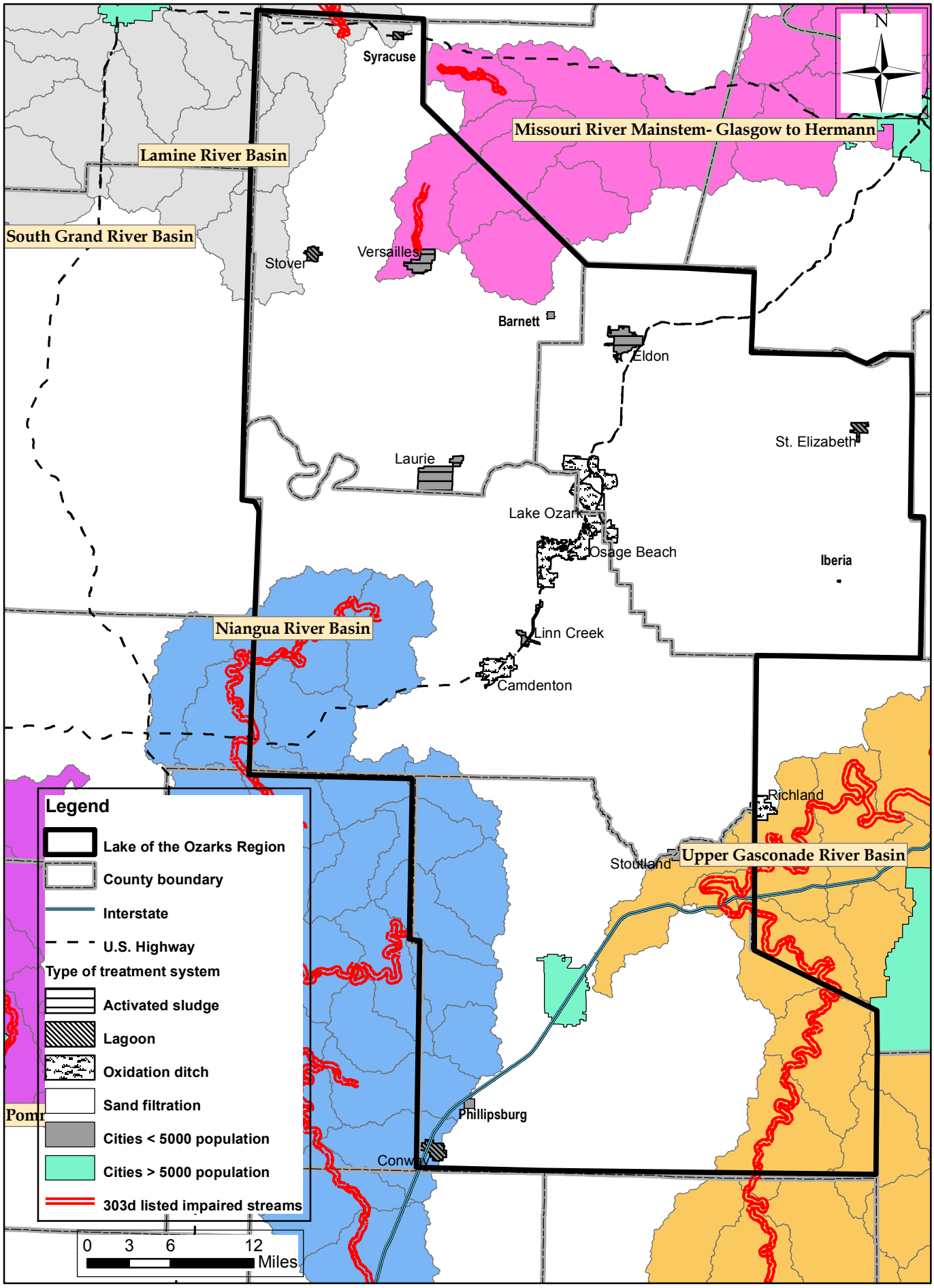
Kasinger Basin Regional Planning Commission
8-digit watersheds and 303d listed impaired streams



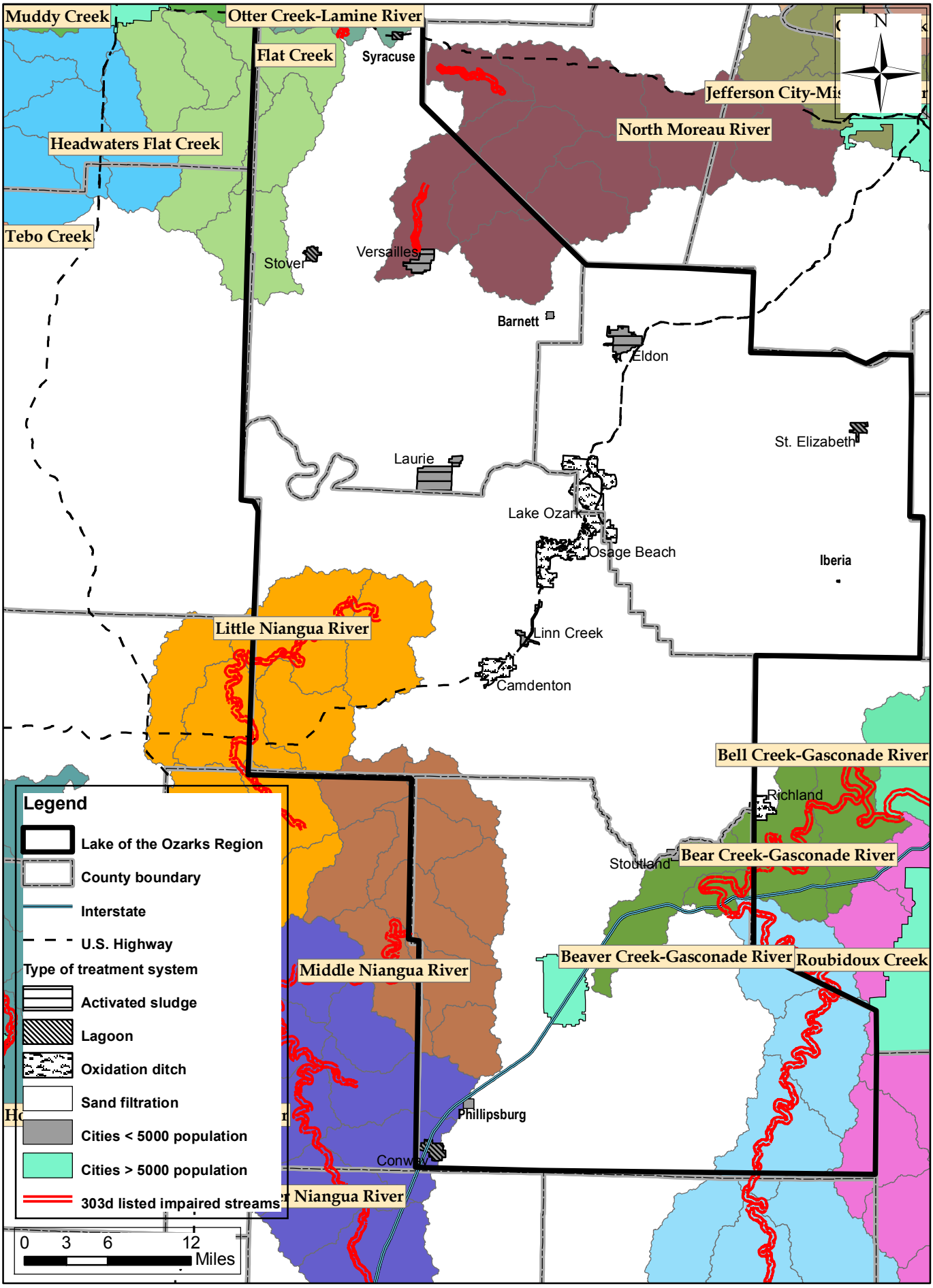
Kasinger Basin Regional Planning Commission
10-digit watersheds and 303d listed impaired streams



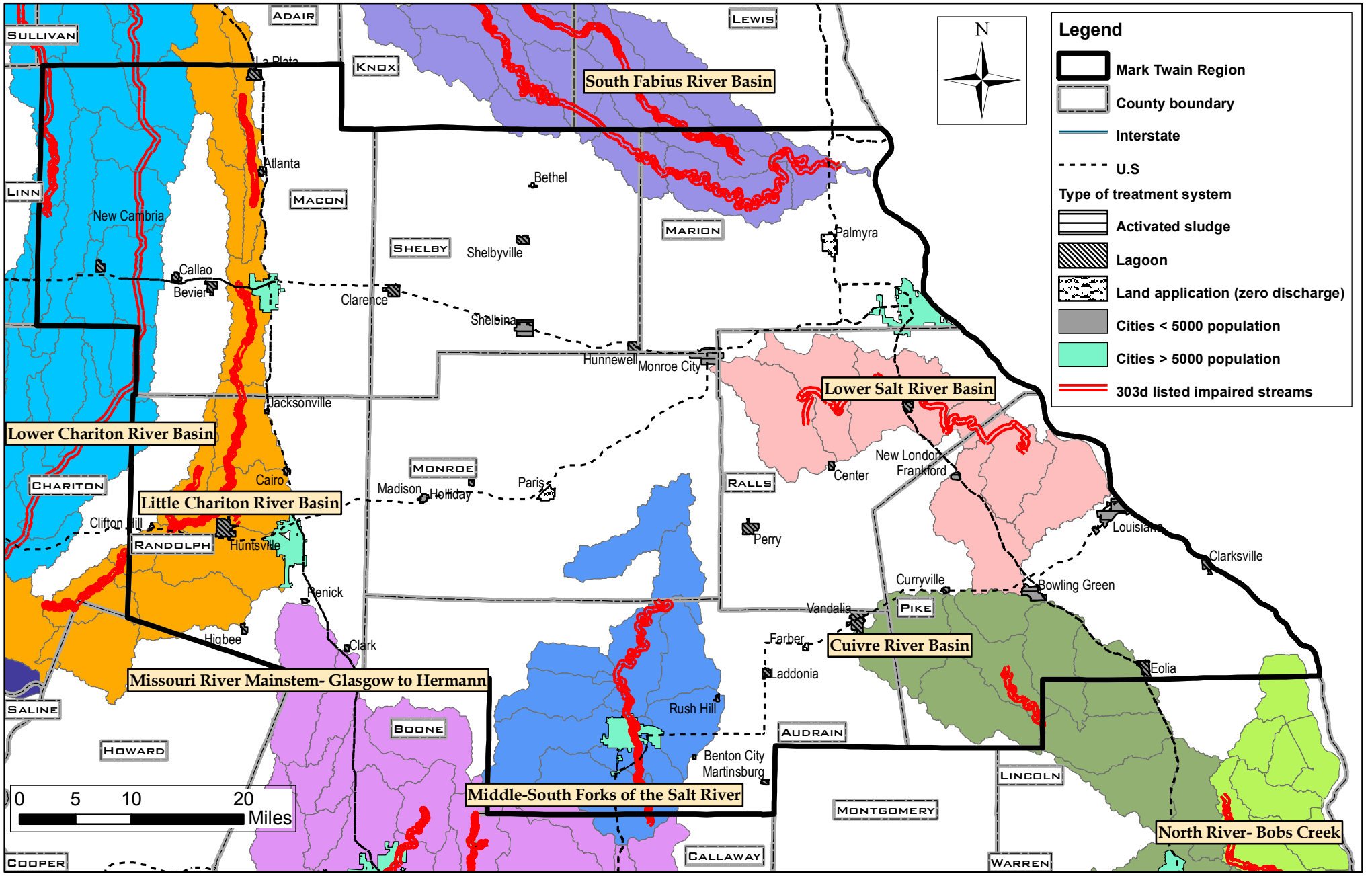
Lake of the Ozarks Council of Local Governments
8-digit watershed and 303d listed impaired streams



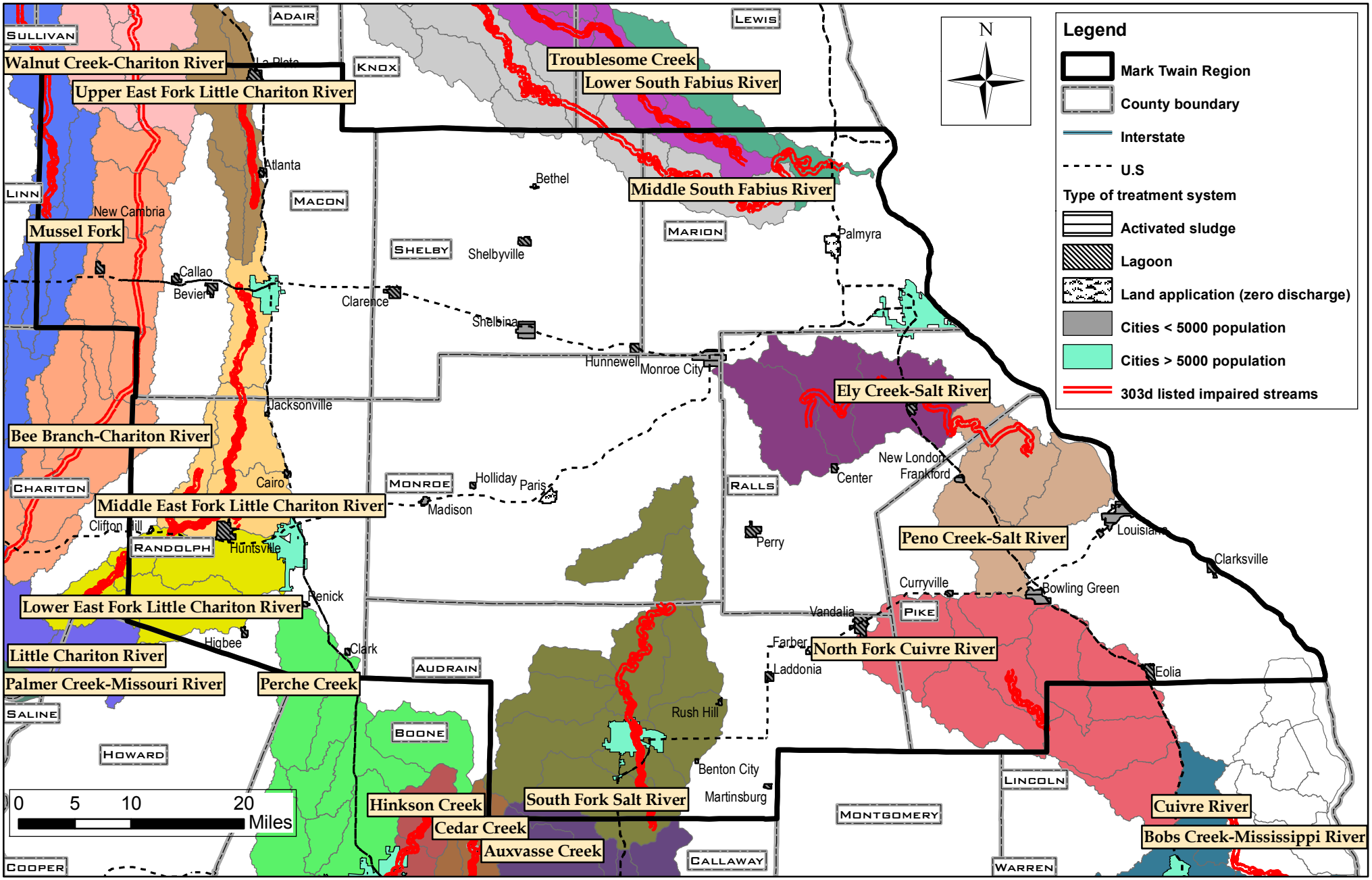
Lake of the Ozarks Council of Local Governments
10-digit watershed and 303d listed impaired streams



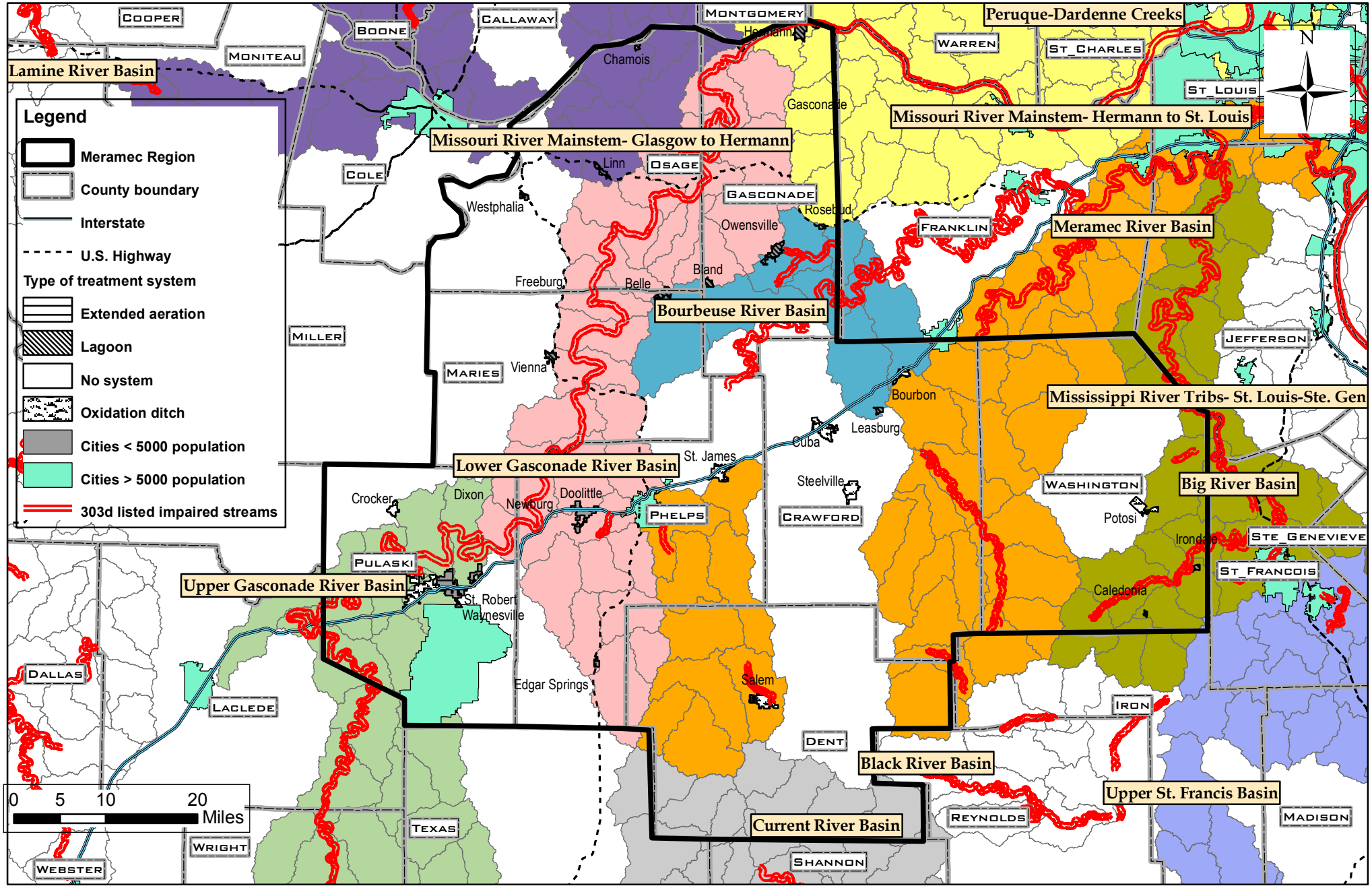
Mark Twain Regional Council of Governments
8-digit watersheds and 303d listed impaired streams



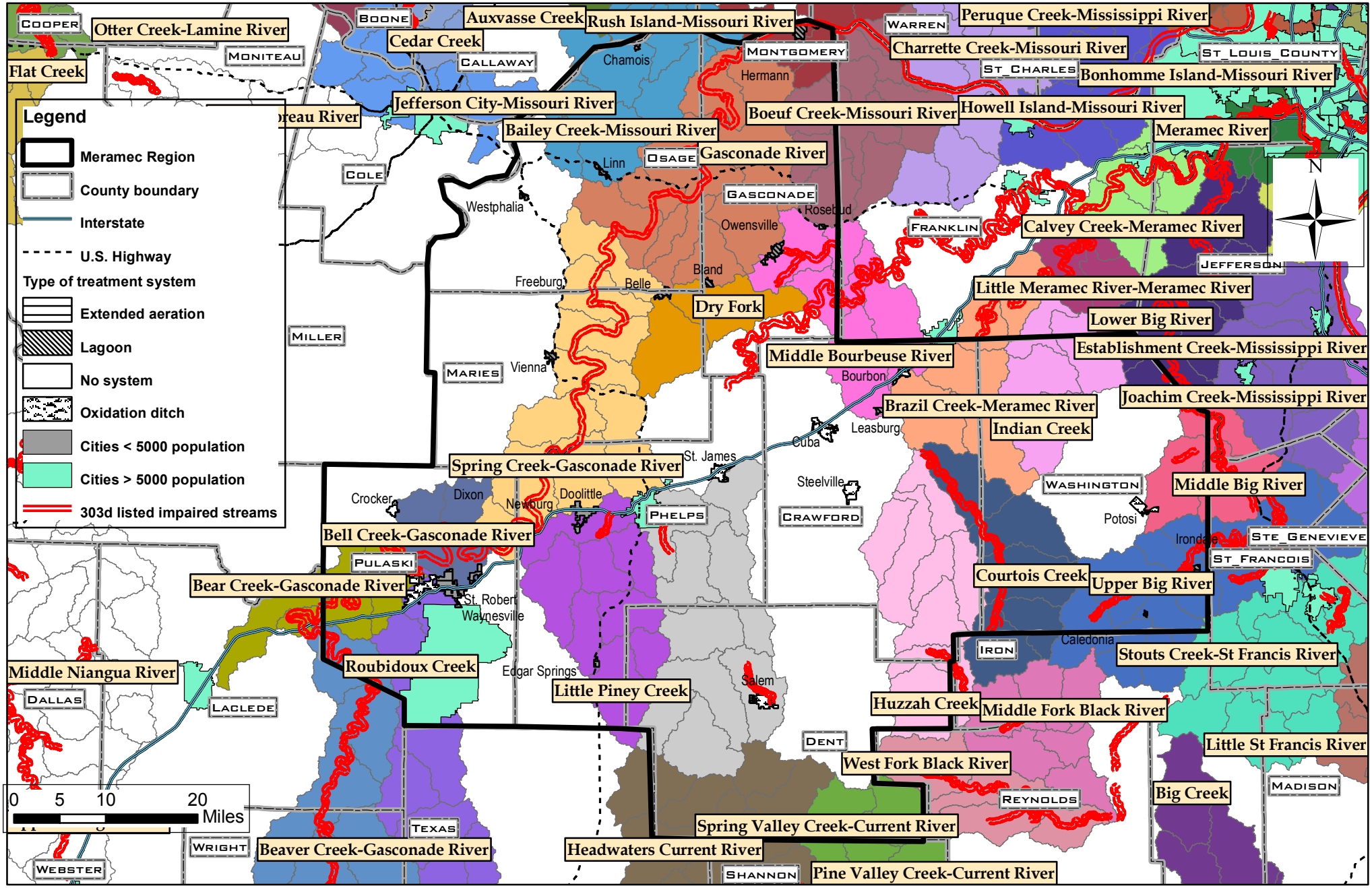
Mark Twain Regional Council of Governments
10-digit watersheds and 303d listed impaired streams



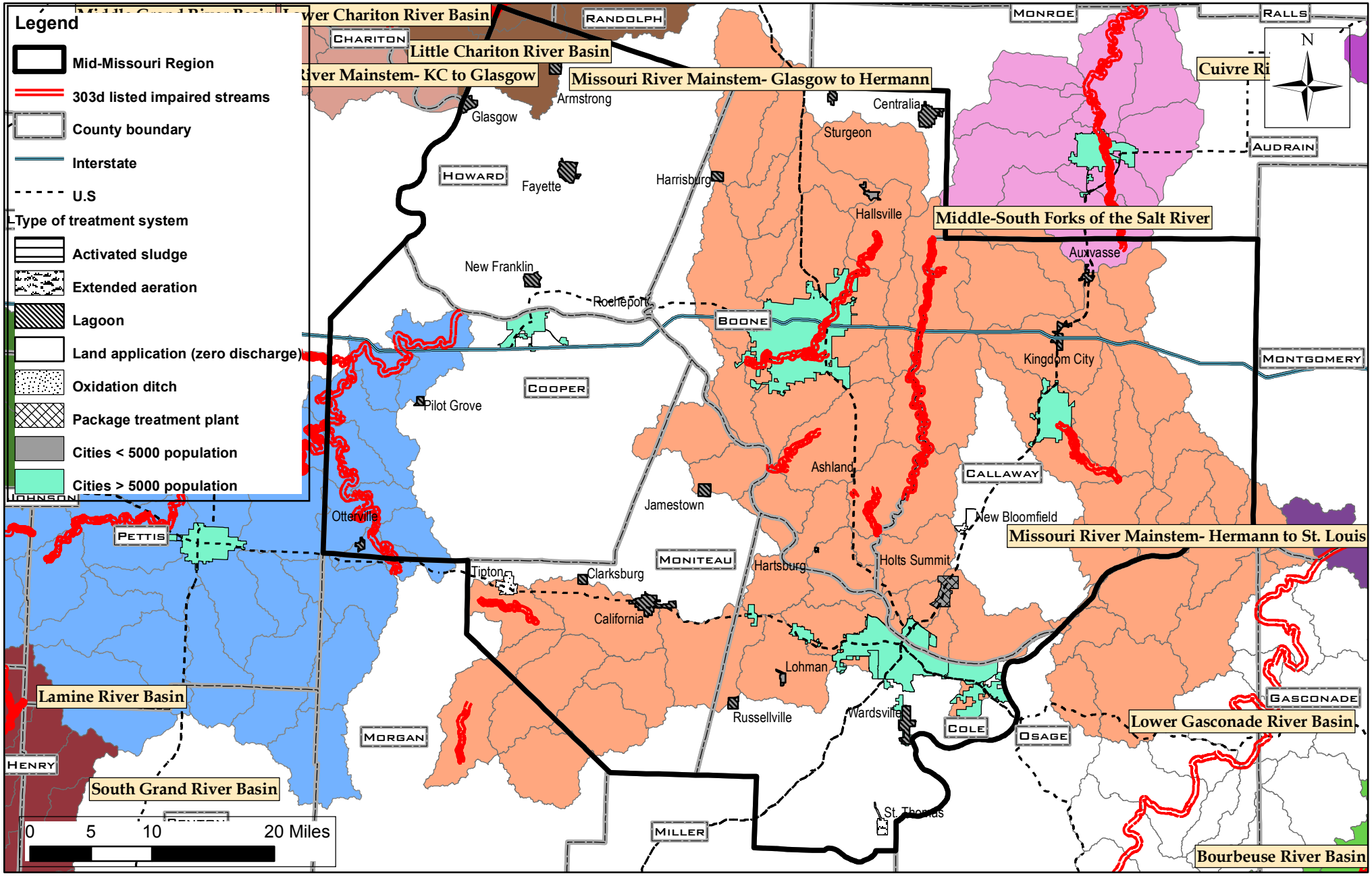
Meramec Regional Planning Commission
8-digit watersheds and 303d listed impaired streams



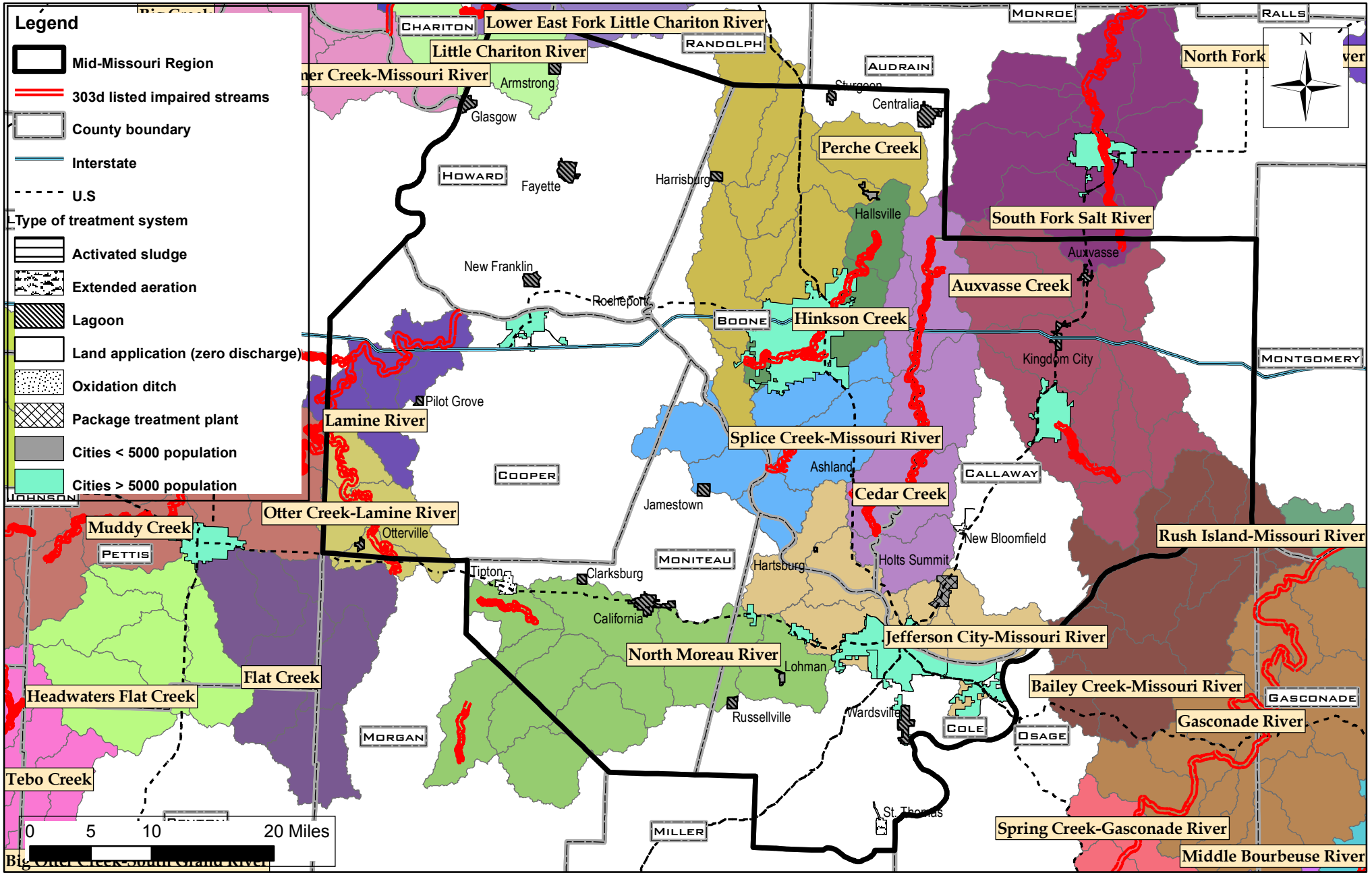
Meramec Regional Planning Commission
10-digit watersheds and 303d listed impaired streams



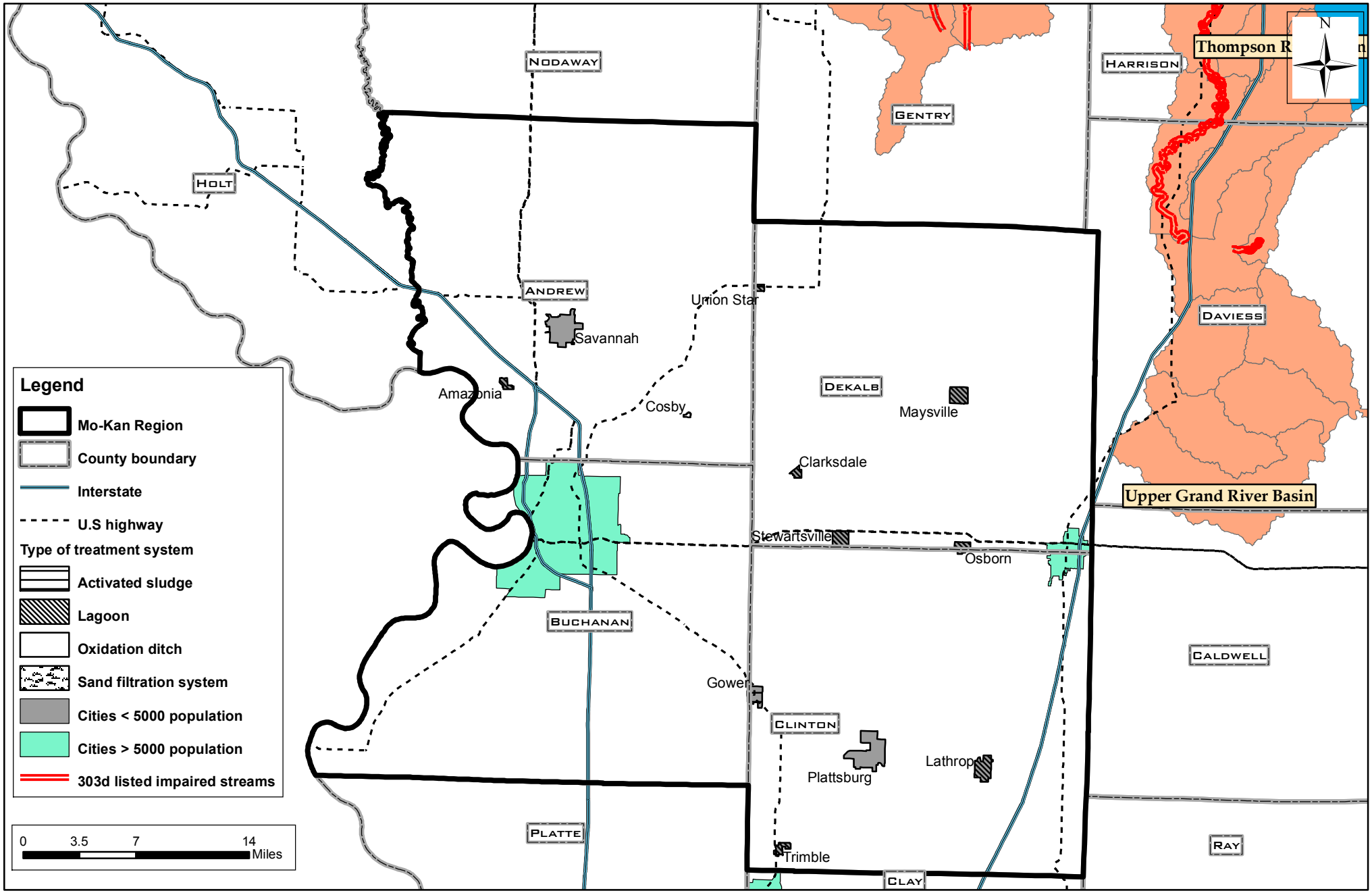
Mid-Missouri Regional Planning Commission
8-digit watersheds and 303d listed impaired streams



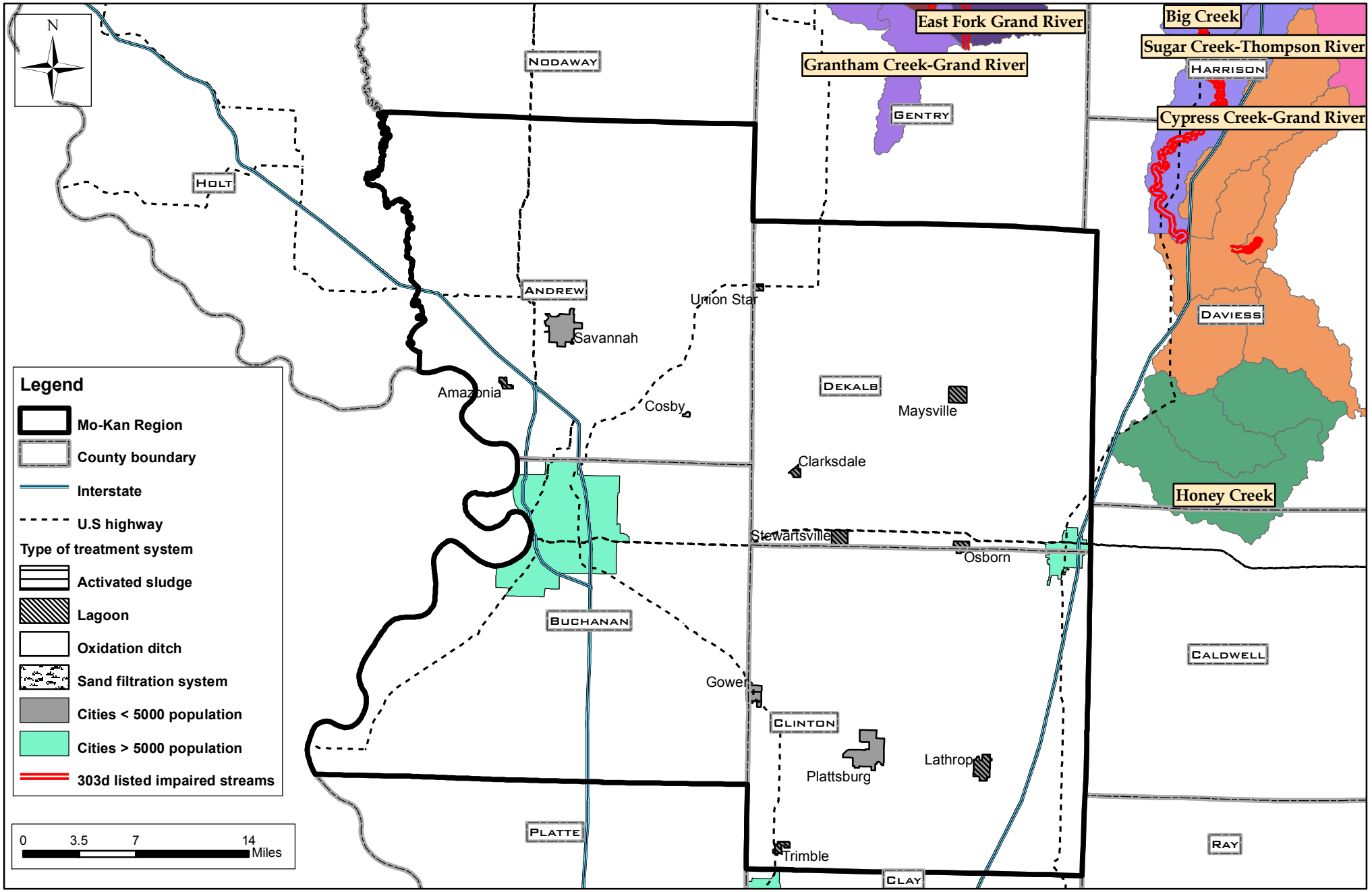
Mid-Missouri Regional Planning Commission
10-digit watersheds and 303d listed impaired streams



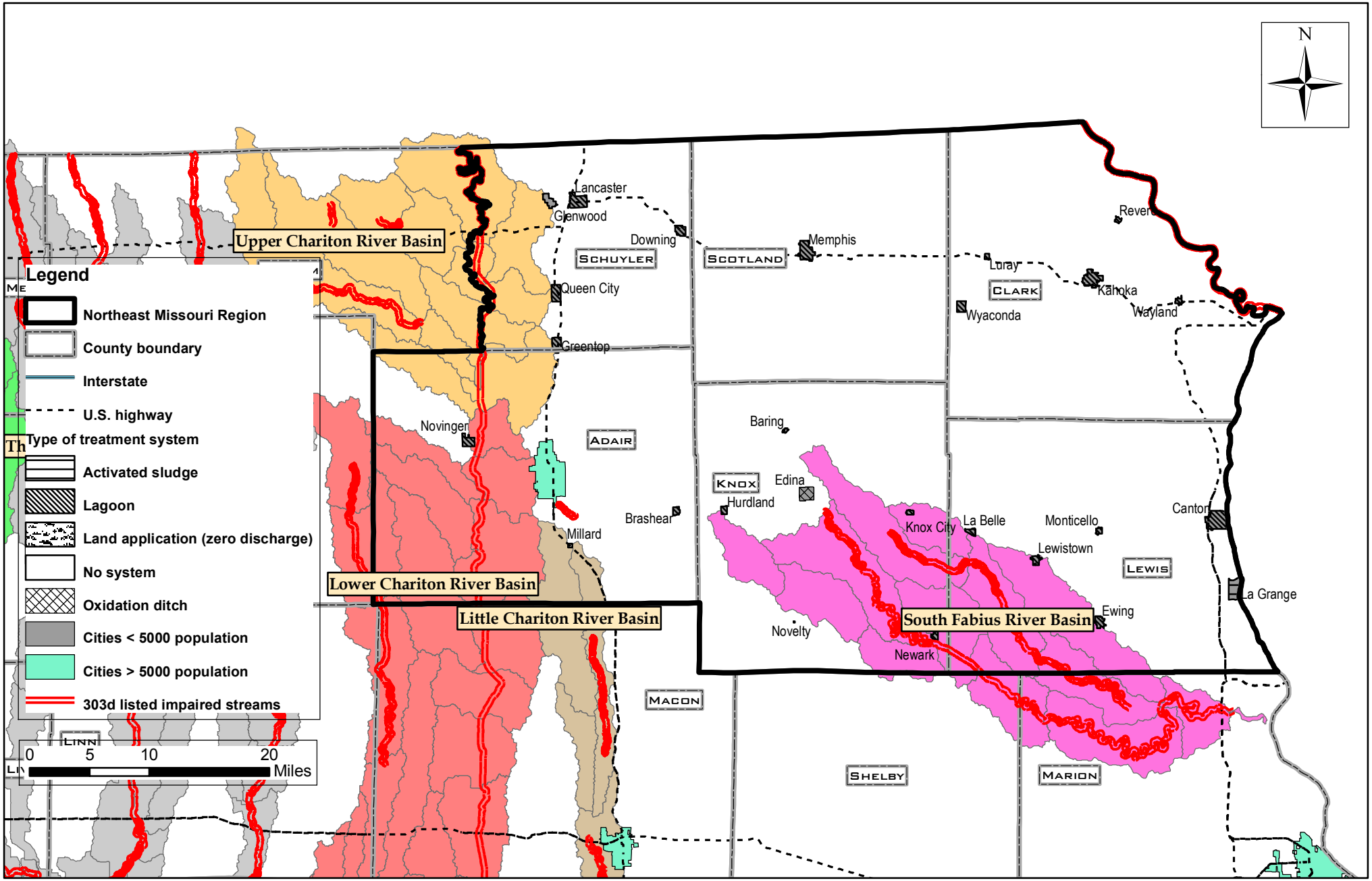
Mo-Kan Regional Council
8-digit watersheds and 303d listed impaired streams



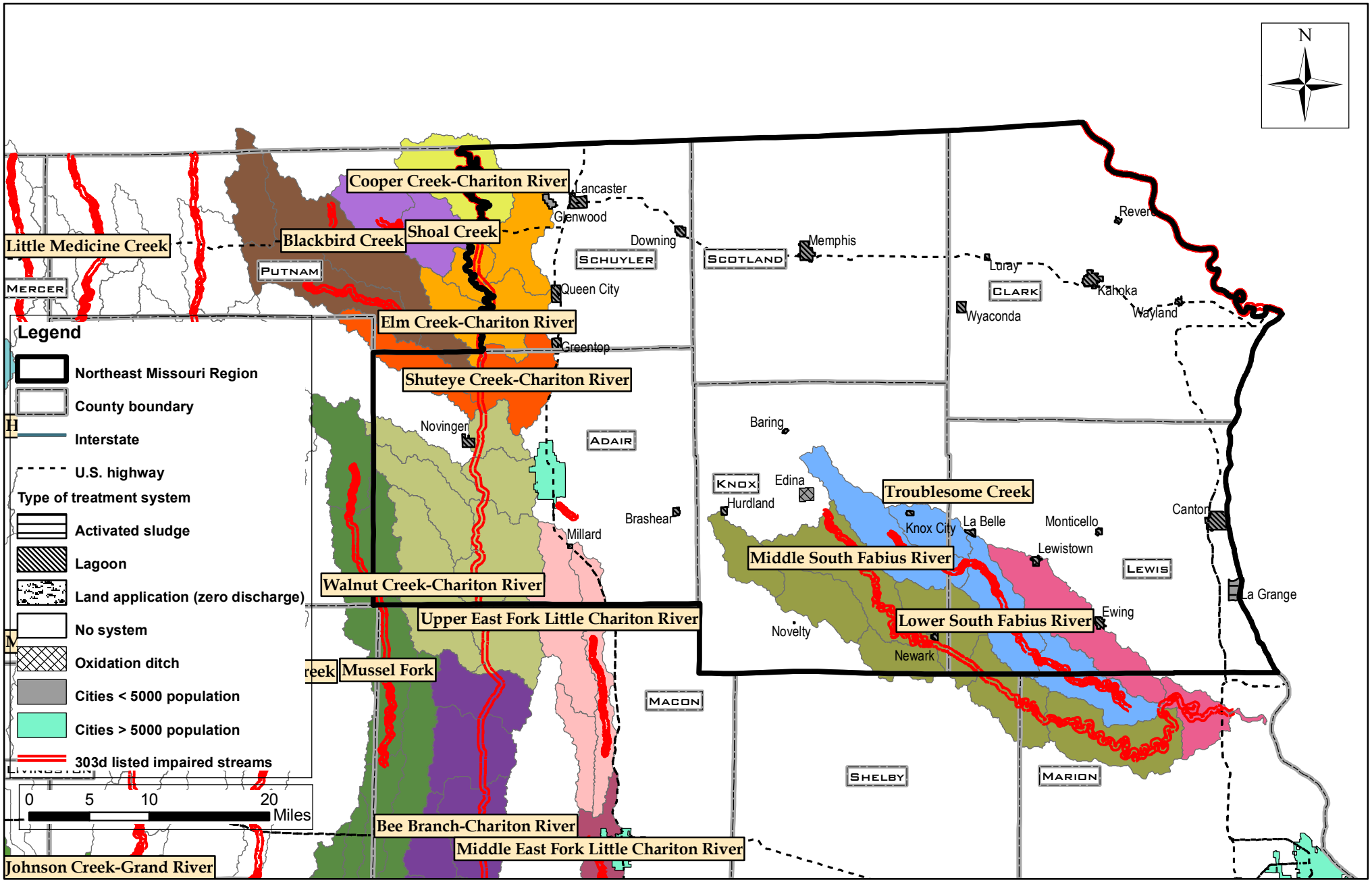
Mo-Kan Regional Council
10-digit watersheds and 303d listed impaired streams



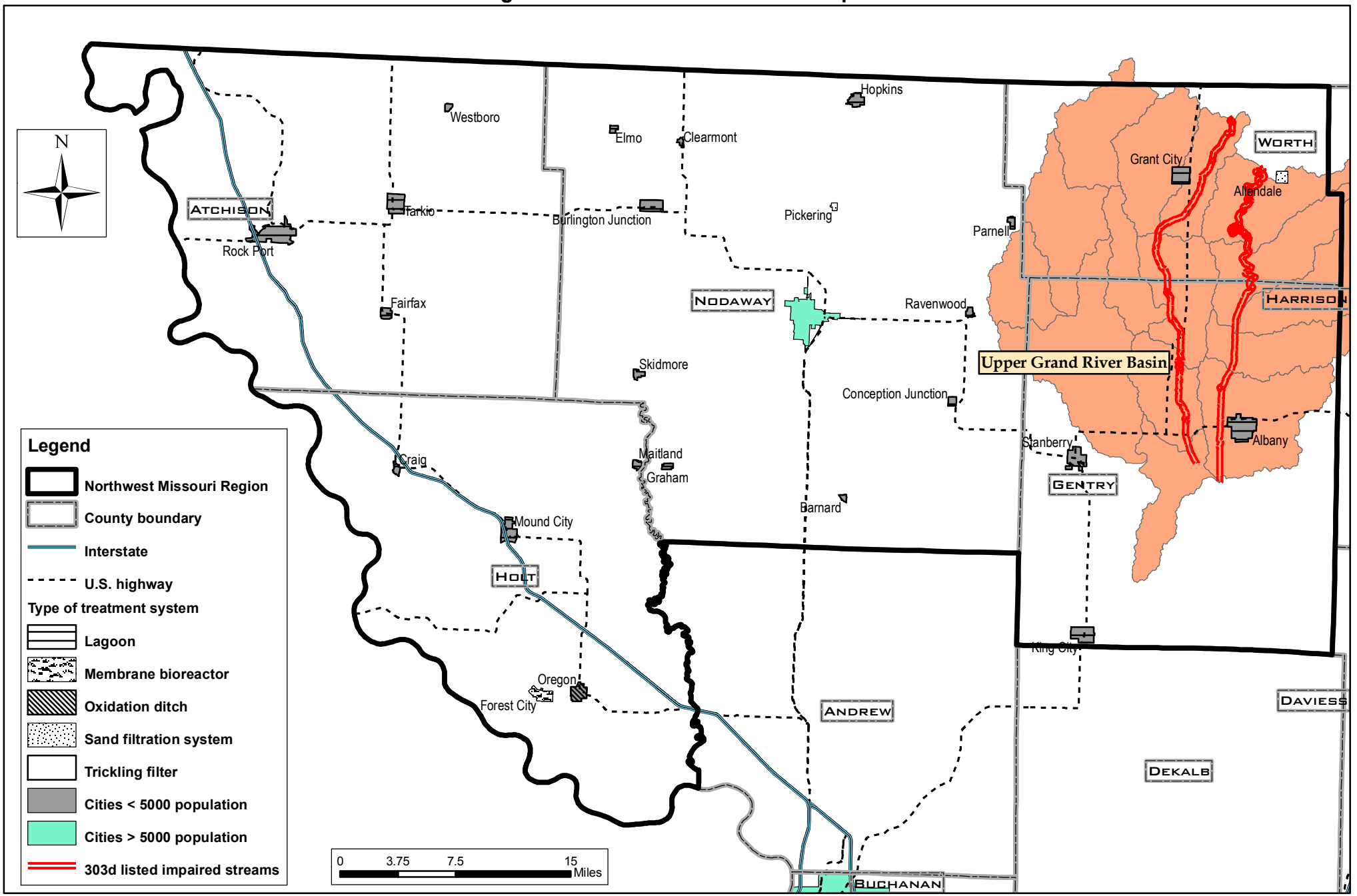
Northeast Missouri Regional Planning Commission
8-digit watersheds and 303d listed impaired streams



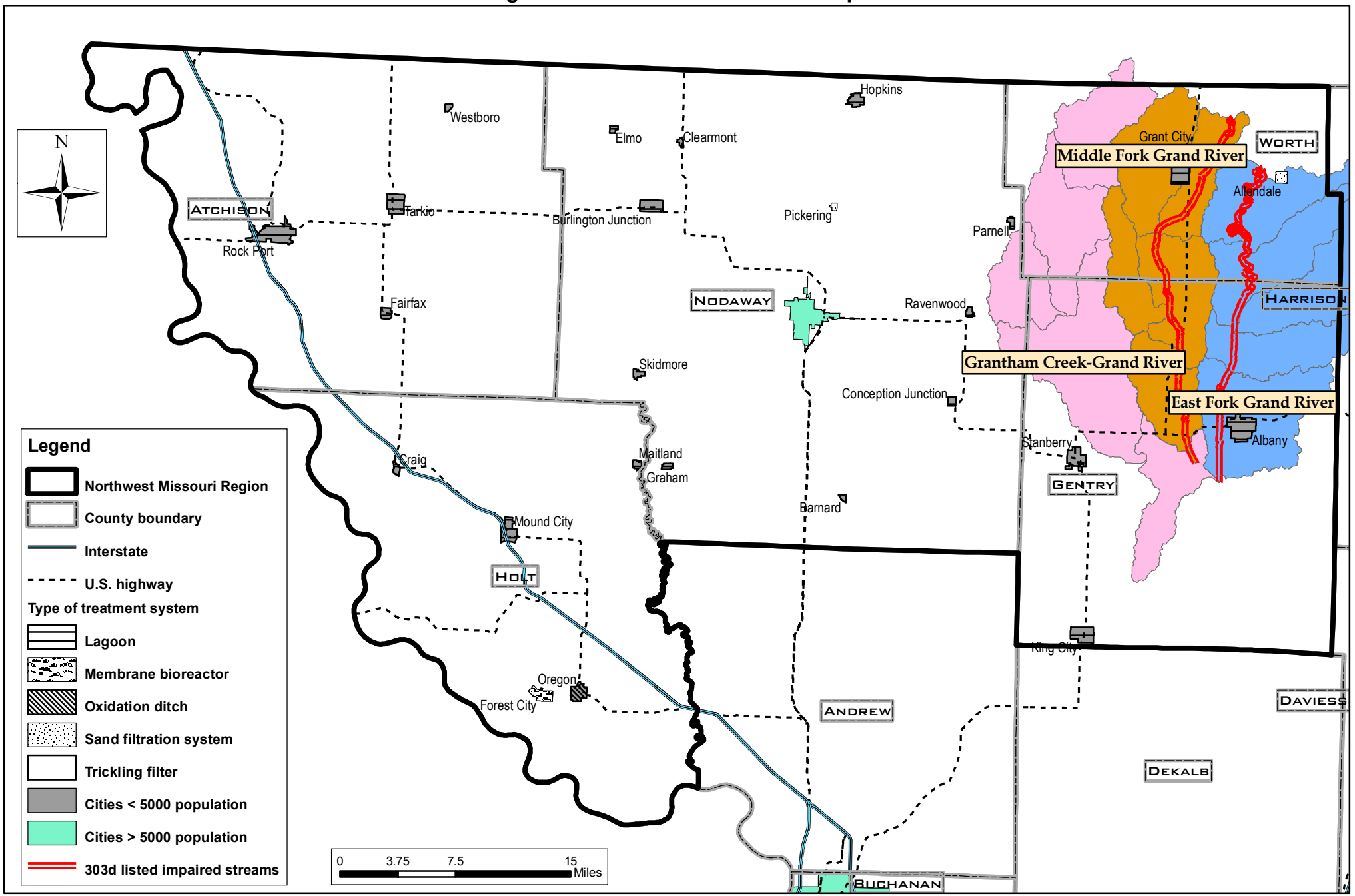
Northeast Missouri Regional Planning Commission
10-digit watersheds and 303d listed impaired streams



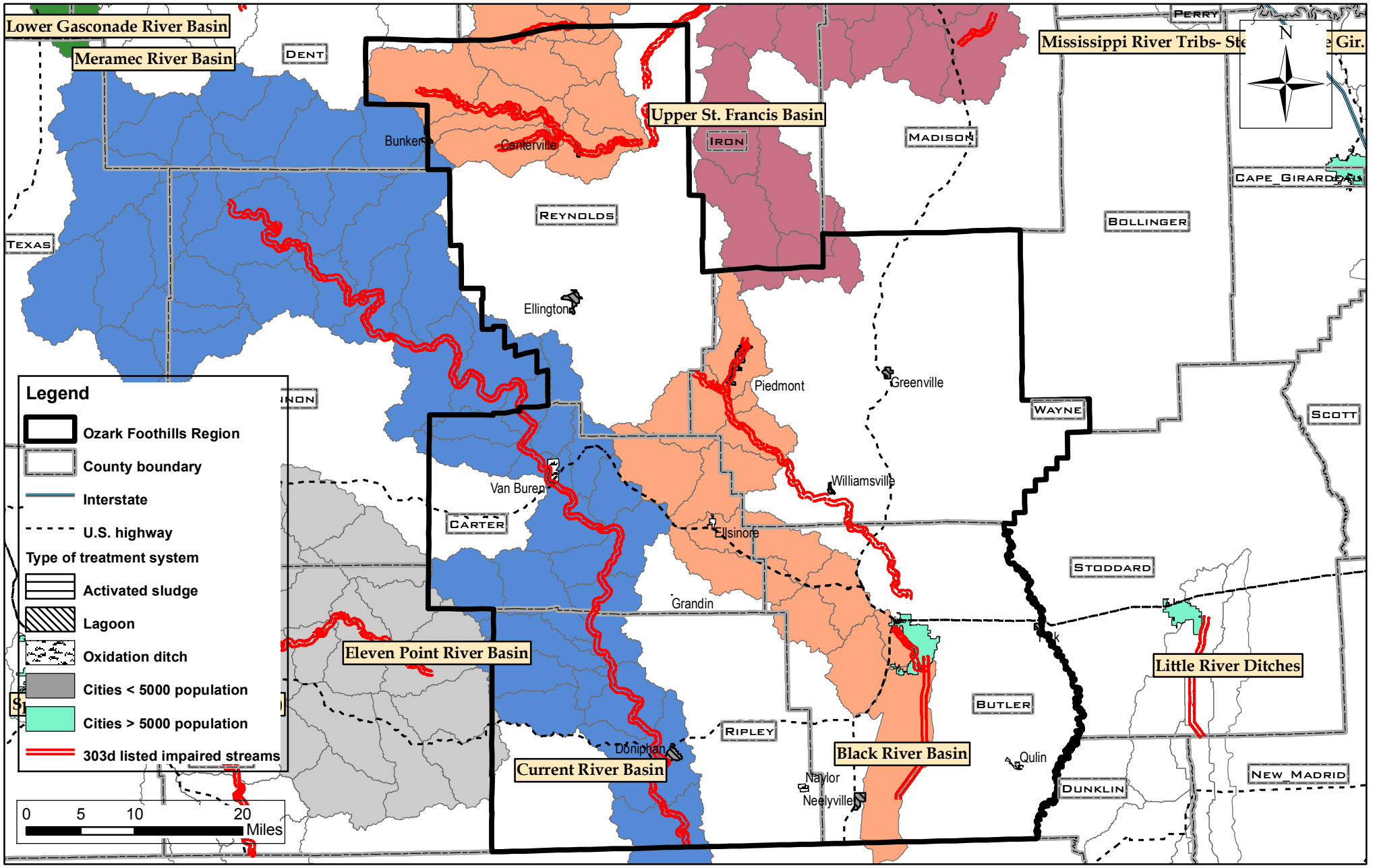
Northwest Missouri Regional Council of Governments
8-digit watersheds and 303d listed impaired streams



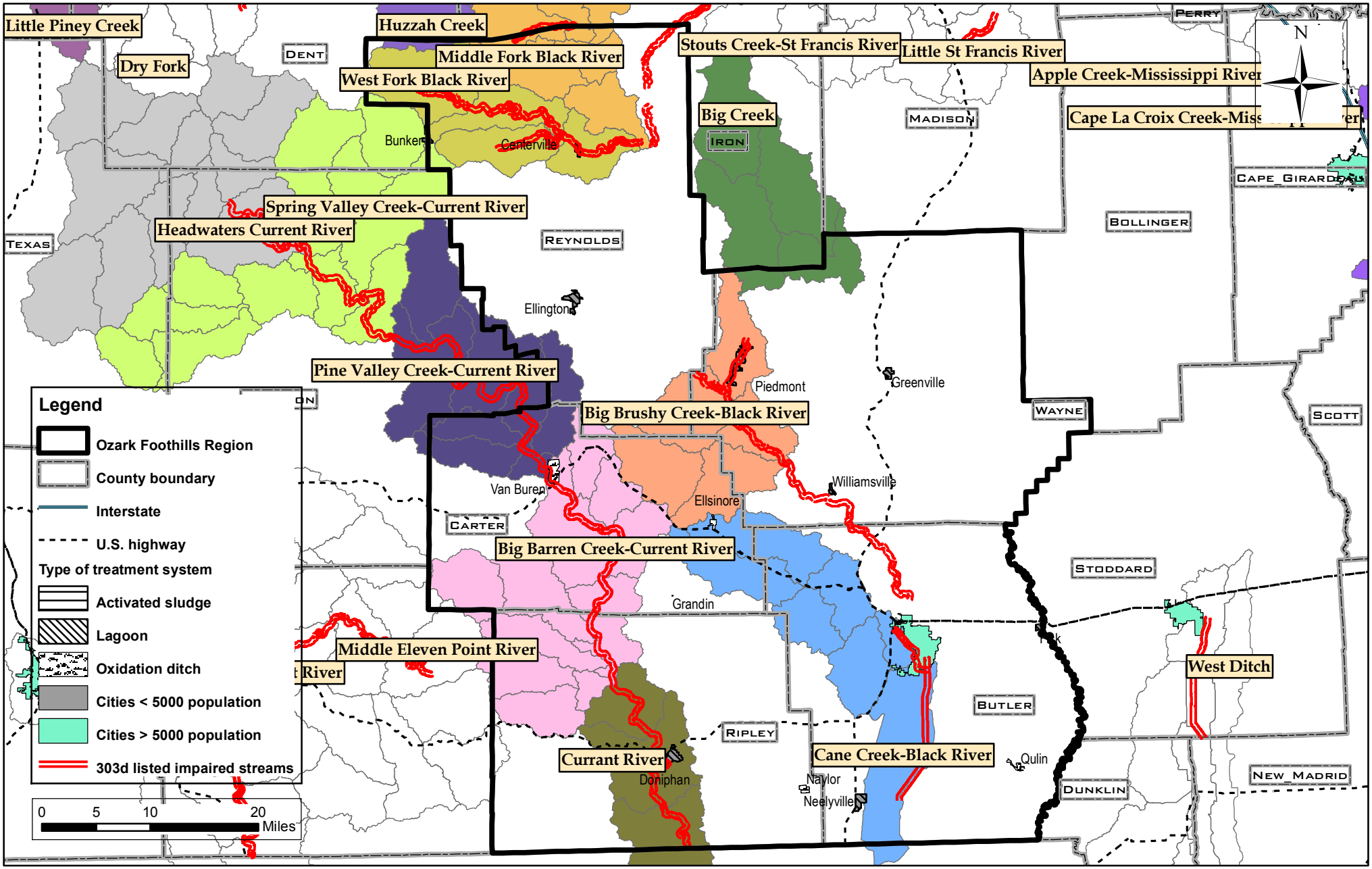
Northwest Missouri Regional Council of Governments
10-digit watersheds and 303d listed impaired streams



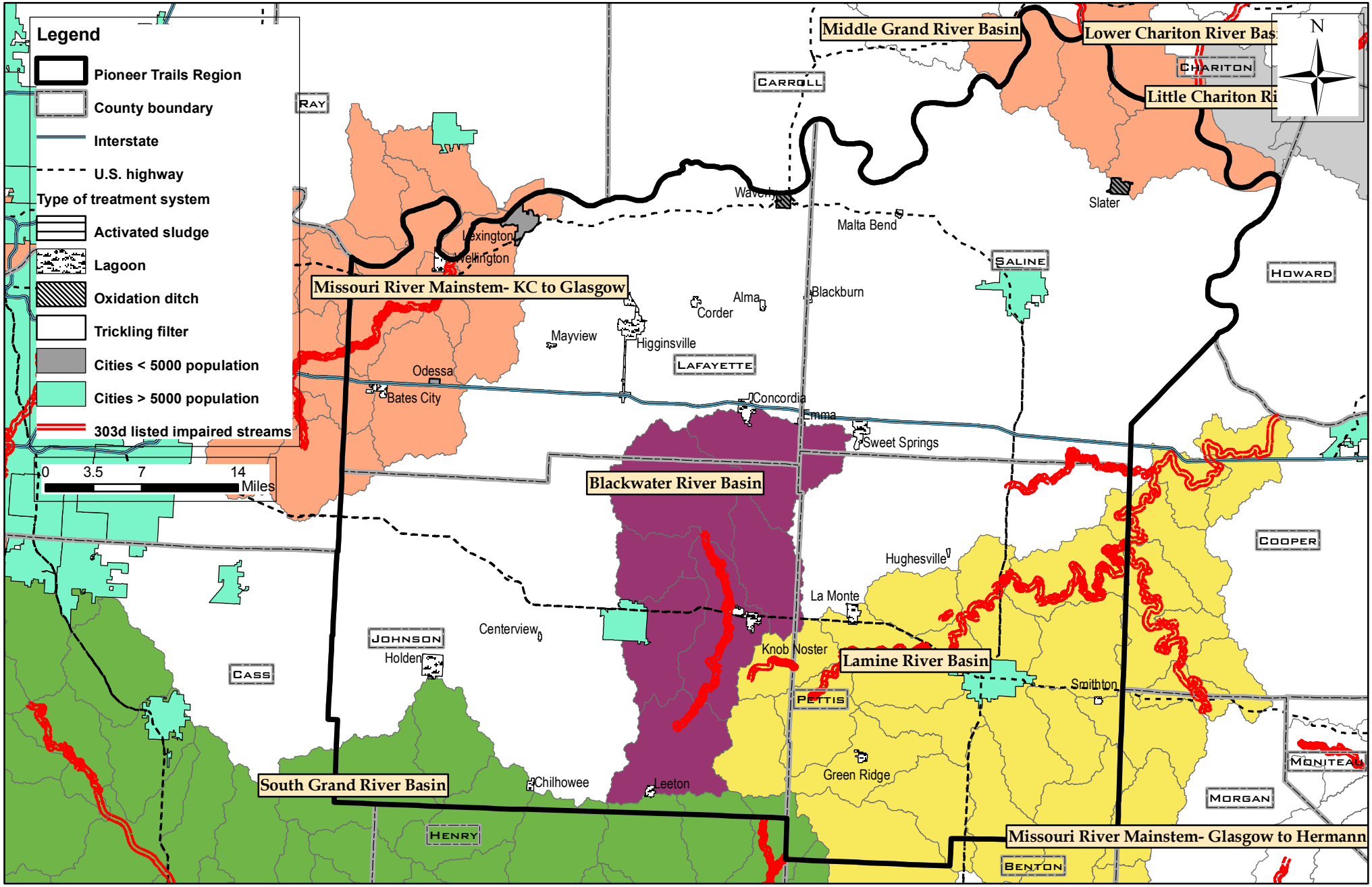
Ozark Foothills Regional Planning Commission
8-digit watersheds and 303d listed impaired streams



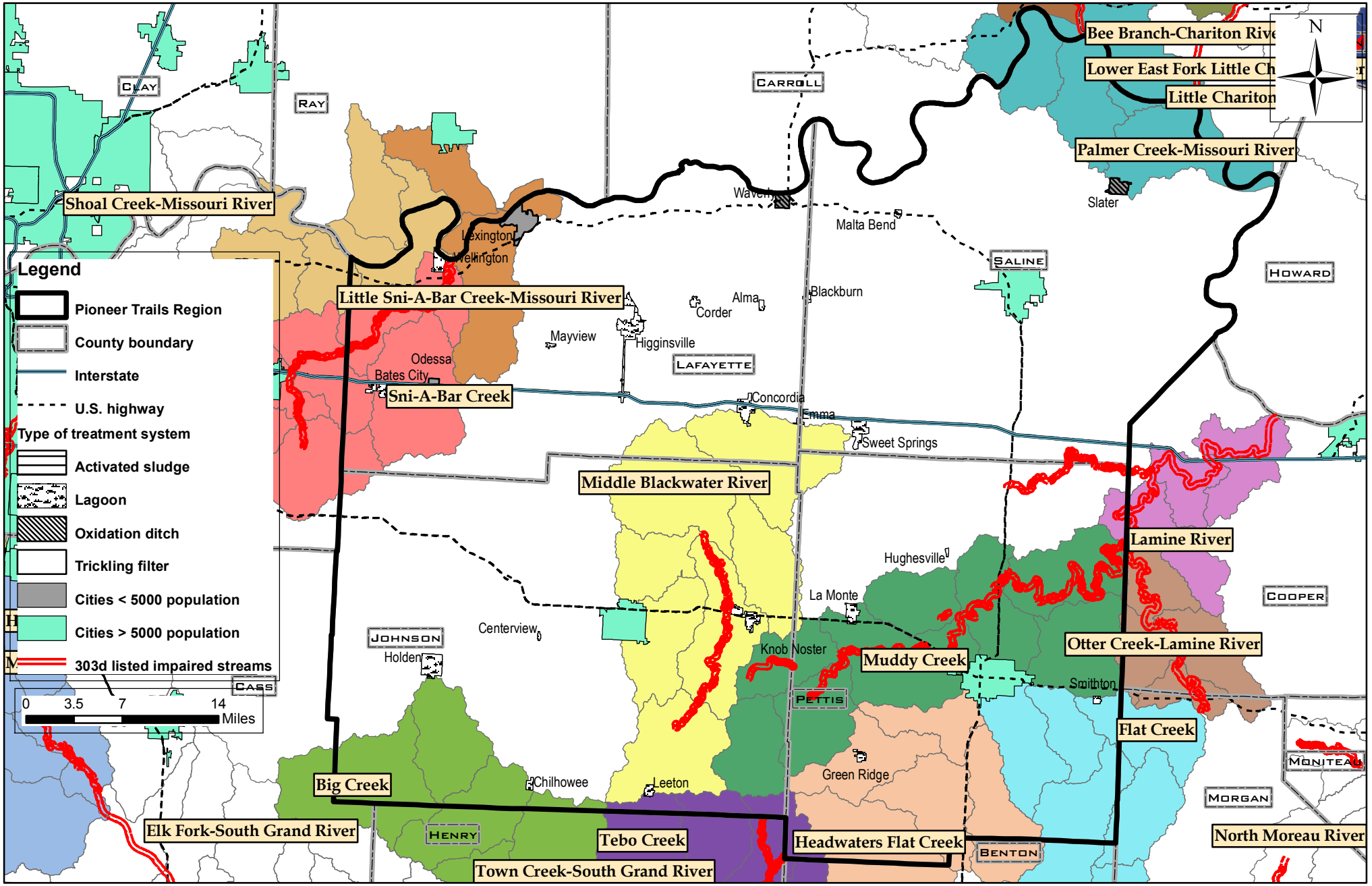
Ozark Foothills Regional Planning Commission
10-digit watersheds and 303d listed impaired streams



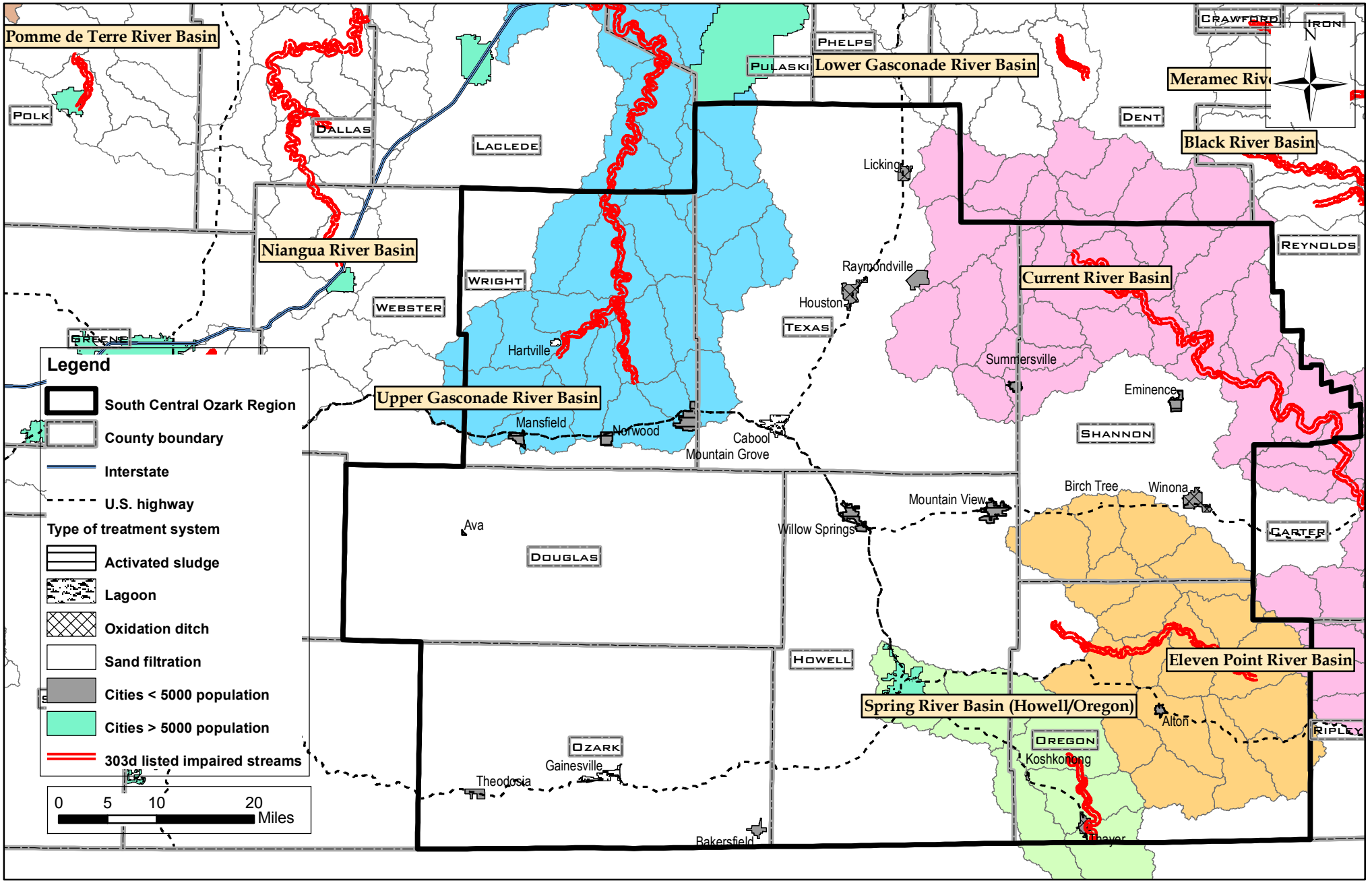
Pioneer Trails Regional Planning Commission
8-digit watersheds and 303d listed impaired streams



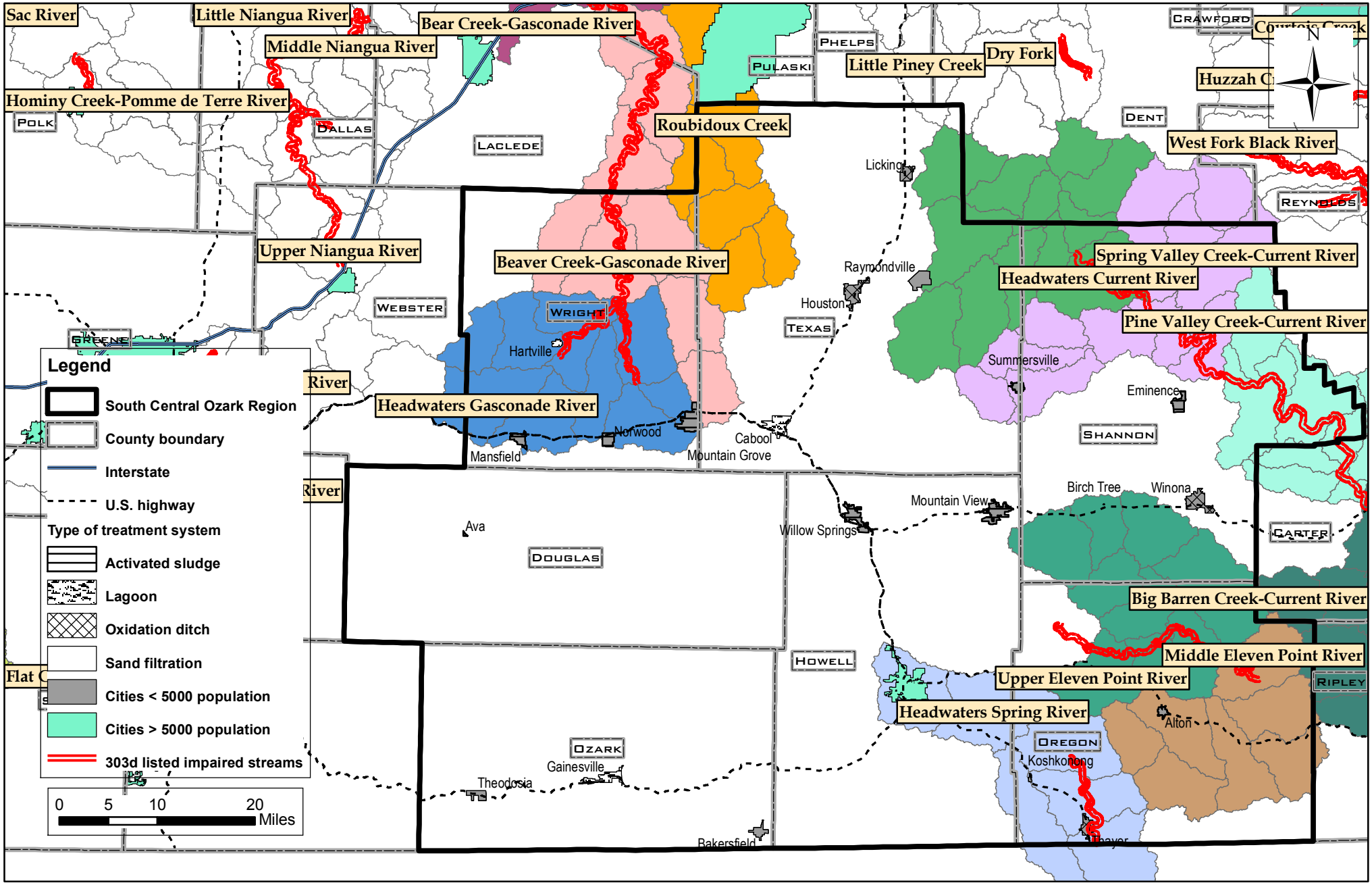
Pioneer Trails Regional Planning Commission
10-digit watersheds and 303d listed impaired streams

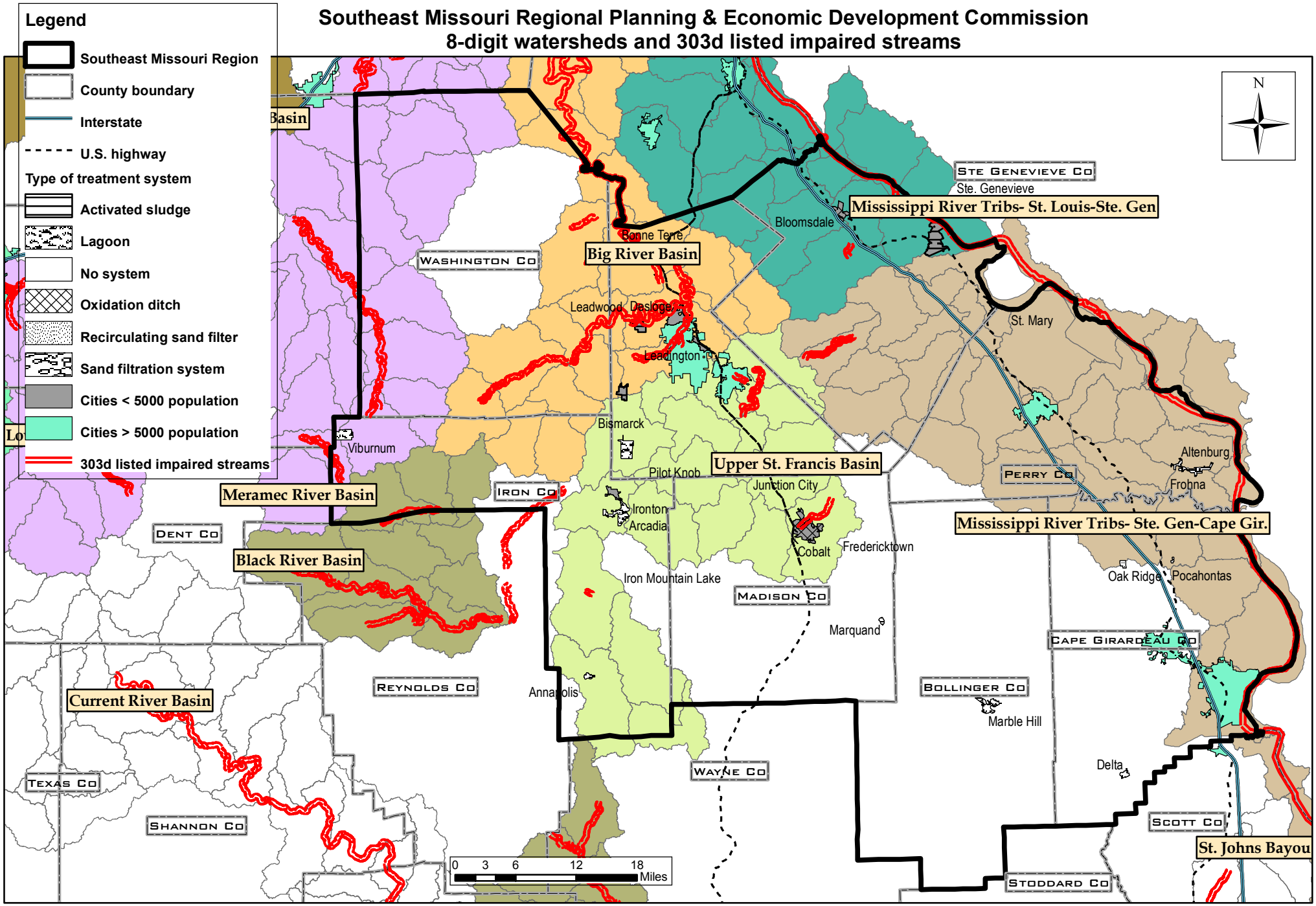


South Central Ozark Council of Governments
8-digit watersheds and 303d listed impaired streams

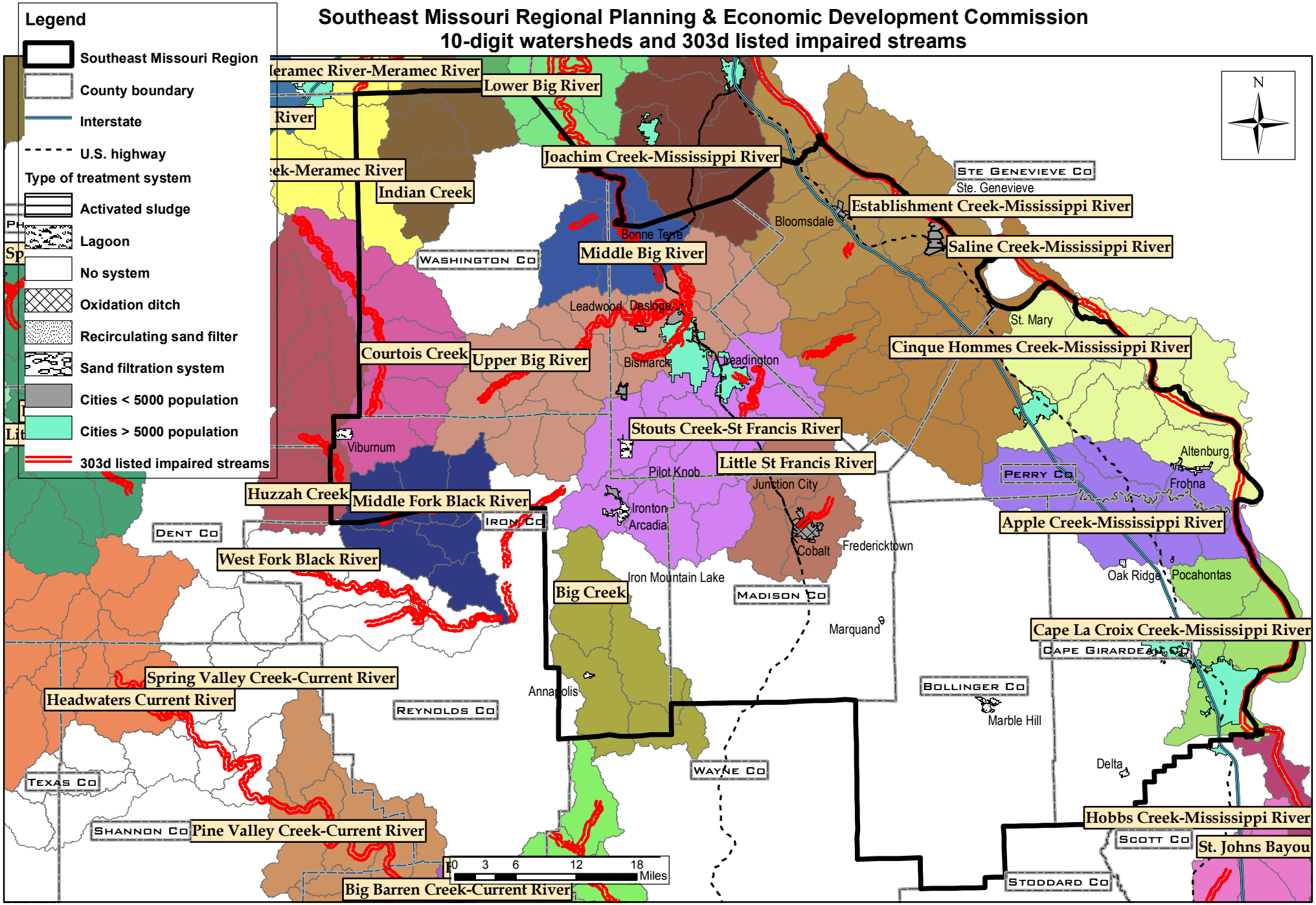


South Central Ozark Council of Governments
10-digit watersheds and 303d listed impaired streams

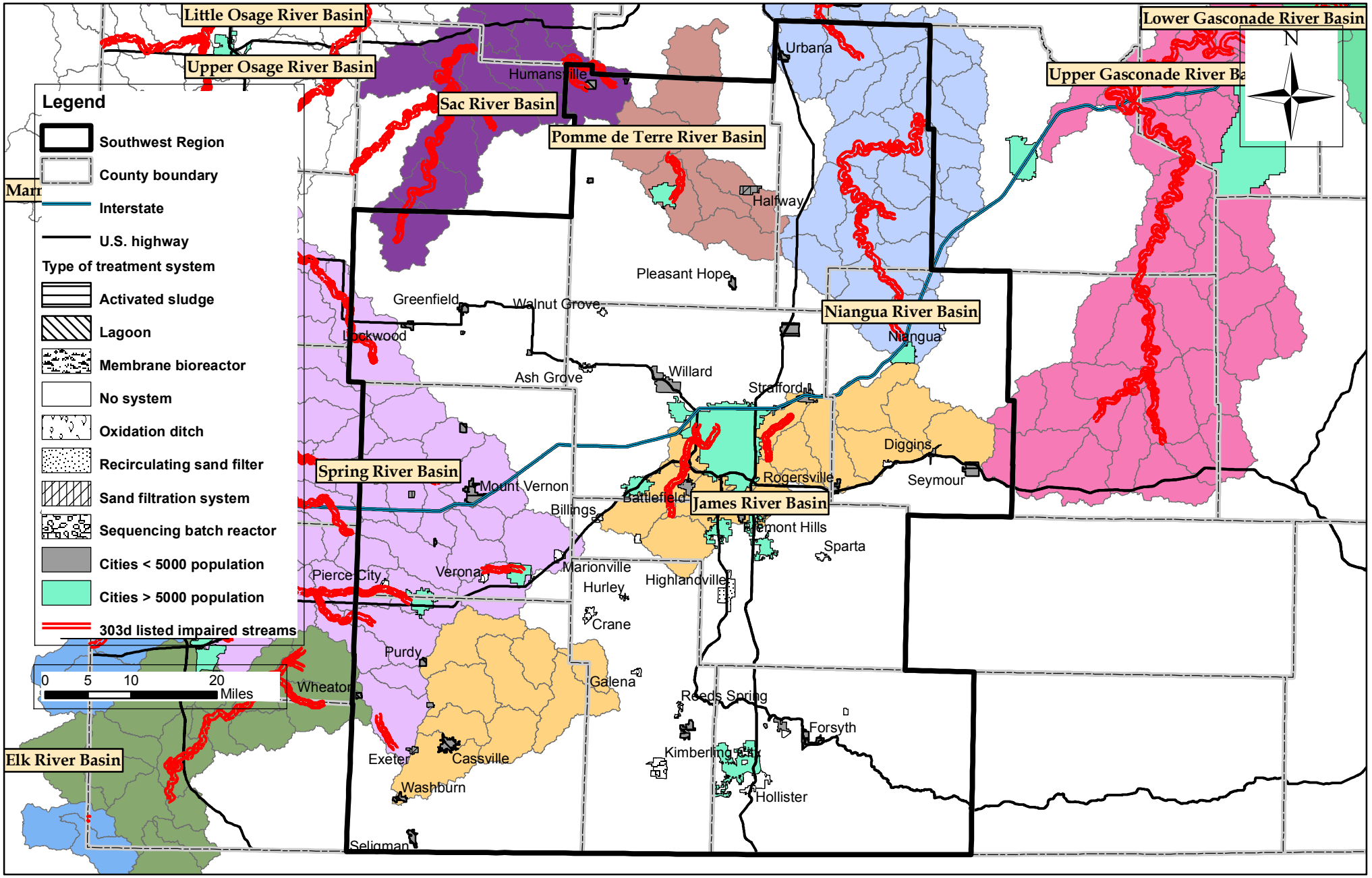



Legend
Southeast Missouri Region
County boundary
Interstate
U.S. highway
Type of treatment system
Activated sludge
Lagoon
No system
Oxidation ditch
Recirculating sand filter
Sand filtration system
Cities < 5000 population
Cities > 5000 population
303d listed impaired streams
Southeast Missouri Regional Planning & Economic Development Commission
8-digit watersheds and 303d listed impaired streams
N
Ste Genevieve Co
Ste. Genevieve
Mississippi River Tribs- St. Louis-Ste. Gen
Bloomsdale
Bonne Terre
Big River Basin
Washington Co
Leadwood
Desloge
St. Mary
Leadington
Bismarck
Viburnum
Upper St. Francis Basin
Pilot Knob
Junction City
Perry Co
Altenburg
Frohna
Meramec River Basin
Iron Co
Ironton
Arcadia
Mississippi River Tribs- Ste. Gen-Cape Gir.
Dent Co
Black River Basin
Cobalt
Fredericktown
Oak Ridge
Pocahontas
Iron Mountain Lake
Madison Co
Marquand
Cape Girardeau Co
Current River Basin
Reynolds Co
Annapolis
Bollinger Co
Marble Hill
Texas Co
Wayne Co
Delta
Shannon Co
Scott Co
St. Johns Bayou
Stoddard Co
0 3 6 12 18
Miles

Southeast Missouri Regional Planning & Economic Development Commission
10-digit watersheds and 303d listed impaired streams



Southwest Missouri Council of Governments
8-digit watersheds and 303d listed impaired streams



Southwest Missouri Council of Governments
10-digit watersheds and 303d listed impaired streams