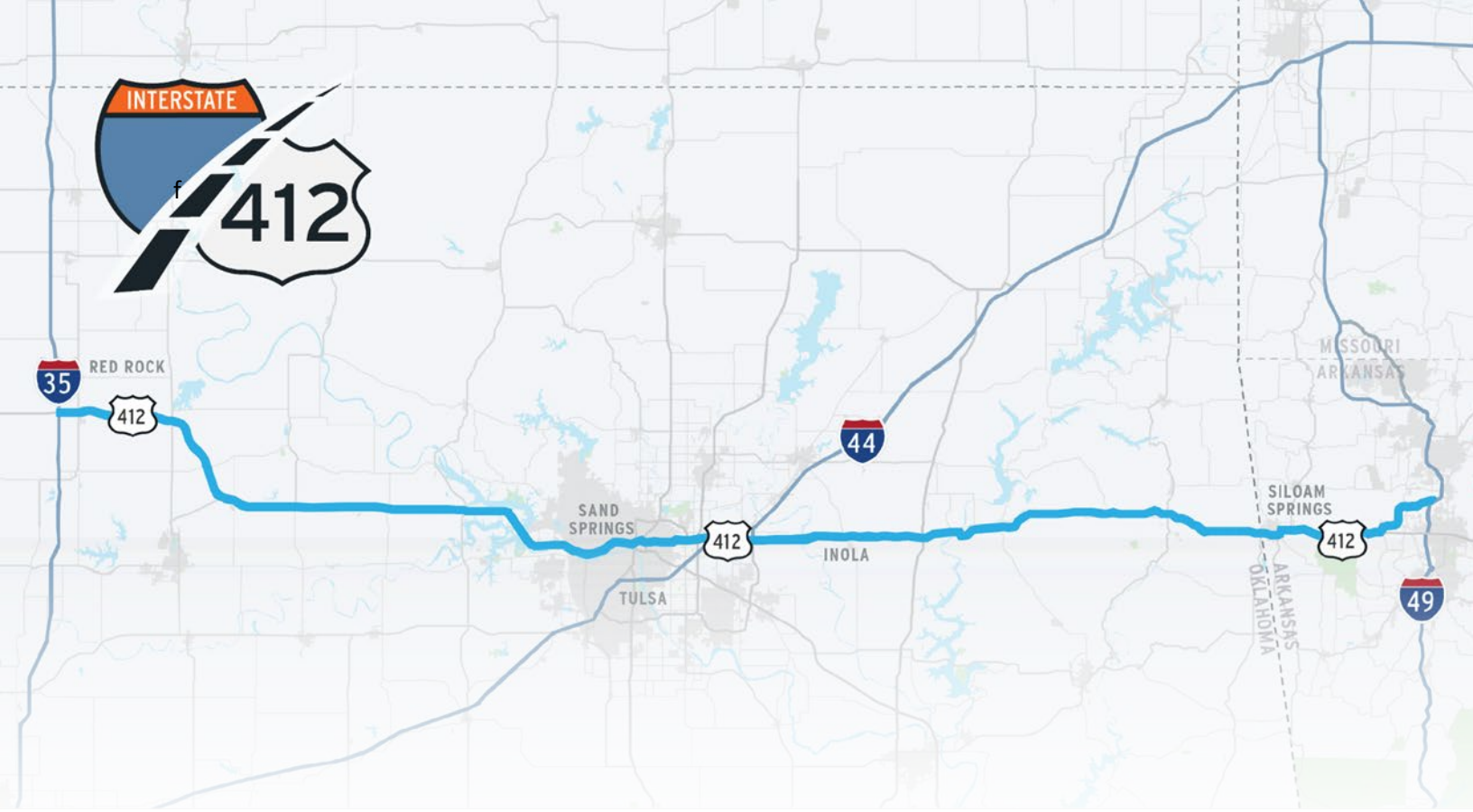

OKLAHOMA Transportation

ARDOT ARKANSAS DEPARTMENT OF TRANSPORTATION

OKLAHOMA Turnpike Authority

U.S. Department of Transportation Federal Highway Administration

U.S. 412: from I-35 in Noble County, Oklahoma
to I-49 in Benton County, Arkansas

Planning and Environmental Linkages Study

Environmental Constraints Report

June 2023

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1.0 Introduction

The Oklahoma Department of Transportation (ODOT) and Arkansas Department of Transportation (ARDOT) are initiating a Planning and Environmental Linkages (PEL) Study of U.S. 412. The PEL Study limits are from I-35 in Noble County, Oklahoma to I-49 in Benton County, Arkansas, a distance of 190 miles. The overarching goal is to develop a master plan to support the transition from a U.S. Highway to an interstate, in accordance with the Infrastructure Investment and Jobs Act (IIJA).

An environmental constraints review was performed to identify existing concerns that may constrain potential alternatives within the U.S. 412 PEL study area. This constraints report is to be used as a planning tool during the PEL process. Understanding the features and concerns of the study area will allow for the informed development and screening of potential alternatives. This report is not a comprehensive environmental analysis that would satisfy the requirements under NEPA nor is it intended for use in determining municipal, state, and federal permitting or other requirements.

ODOT and ARDOT anticipate incorporating recommendations made as part of the PEL study into future National Environmental Policy Act (NEPA) studies, per Title 23 of the U.S. Code, Part 168.

2.0 PEL Study Area

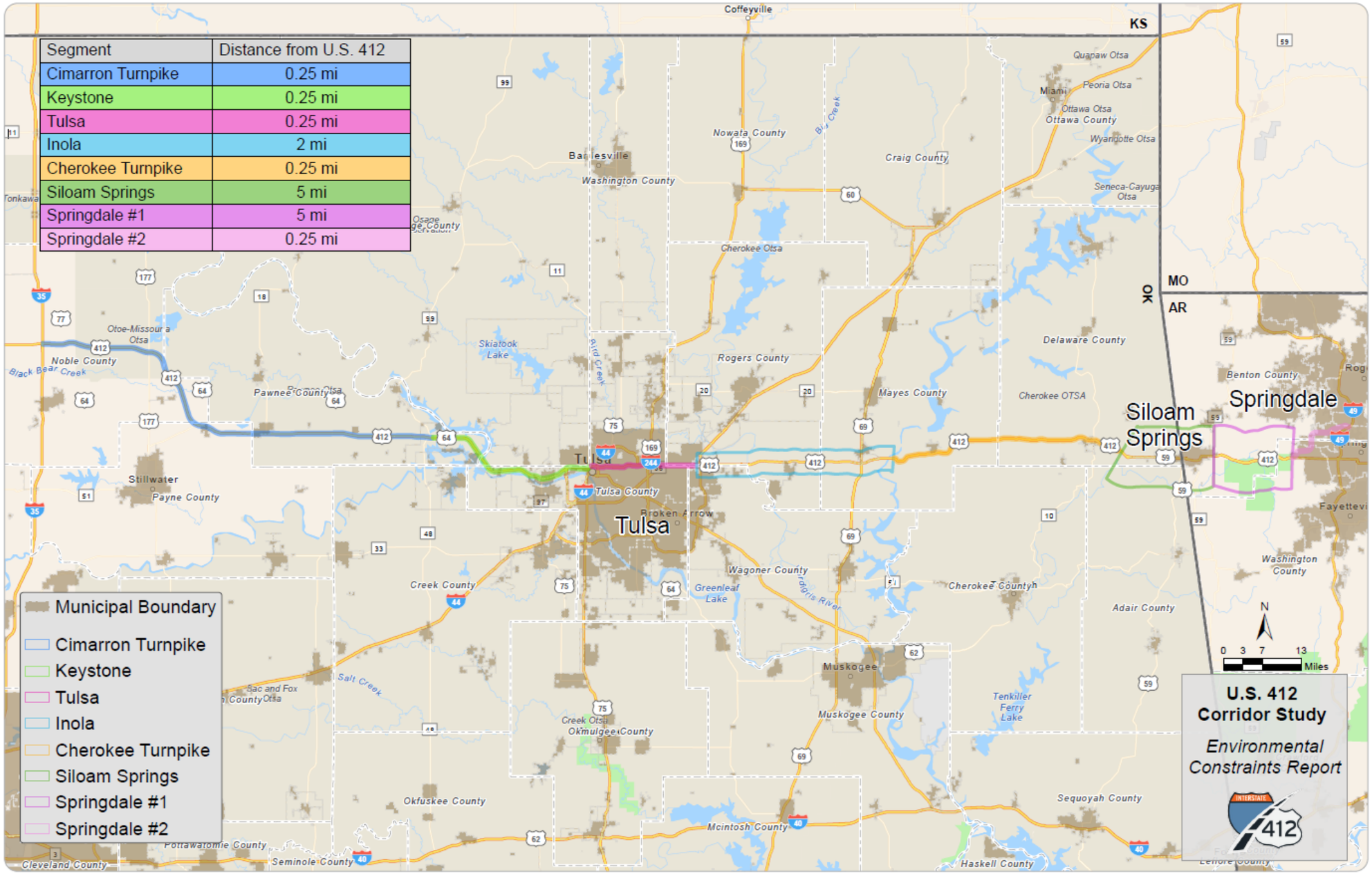
As shown in **Figure 1**, the study area has been divided into seven segments representative of their surrounding environment. The segment widths were determined by establishing an approximate distance from the U.S. 412 centerline for each of the segments below:

- **Cimmaron Turnpike** - 0.25-mile distance from the U.S. 412 centerline for a total study area width of 0.5 mile. Within this segment, U.S. 412 spans 59 miles through Oklahoma and is a fully access controlled facility.
- **Keystone** - 0.25-mile distance from the U.S. 412 centerline for a total study area width of 0.5 mile. Within this segment, U.S. 412 spans 24 miles through Oklahoma and is almost entirely access controlled. Diamond Head Drive (between Keystone Lake and the Keystone Dam) is an existing at-grade crossing.
- **Tulsa** - 0.25-mile distance from the U.S. 412 centerline for a total study area width of 0.5 mile. Within this segment, U.S. 412 spans 15 miles through the highly developed City of Tulsa, Oklahoma and is a fully access controlled facility.
- **Inola** - 2-mile distance from the U.S. 412 centerline for a total study area width of 4 miles. Within this segment, U.S. 412 spans 27 miles through Oklahoma. It is not an access-controlled facility and has numerous at-grade crossings.
- **Cherokee Turnpike** - 0.25-mile distance from the U.S. 412 centerline for a total study area width of 0.5 mile. Within this segment, U.S. 412 spans 33 miles through Oklahoma and is a fully access controlled facility.

- **Siloam Springs** - 5-mile distance from the U.S. 412 centerline for a total study area width of 10 miles. Within this segment, U.S. 412 spans 13 miles through the community of Siloam Springs. This segment is partially in Oklahoma and partially in Arkansas. It is not an access-controlled facility and has numerous at-grade crossings.
- **Springdale**
    - **Springdale #1**- 5-mile distance from the U.S. 412 centerline for a total study area width of 10 miles. Within this segment, U.S. 412 spans 11 miles through Arkansas.
    - **Springdale #2** - 0.25-mile distance from the proposed Springdale Northern Bypass for a total study area width of 0.5 mile. The Springdale #2 segment (signed AR Highway 612) spans 10 miles through Arkansas and is a fully access controlled facility.

The seven study area segments encompass a broad enough area to account for community resources, natural resources, and other potential environmental constraints. The Springdale segment was broken into two subsegments #1 and #2) to fully evaluate their environmental differences. If there were no differences between, the subsegments were evaluated together.

Figure 1: PEL Study Area Segments



Source: Study Team, 2023.

3.0 Methodology

To identify the environmental and infrastructure constraints associated with the U.S. 412 study area, information was collected through on-line database searches, imagery analyses, Google Maps, and desktop geographic information system (GIS) analyses. Where applicable, the constraints identified throughout this document are shown graphically in appendices. Available GIS data downloaded from federal, state, and local agencies was used for the assessments in the document. Sources for the data are identified throughout the document and each appendix. No claims are made to the accuracy or completeness of the information, nor to its suitability for a particular use. In general, each sheet in the appendices covers the limits of a study area segment, therefore the scale of each map varies.

4.0 Population and Employment

4.1 Population

Total populations for cities/towns along the U.S. 412 corridor are listed in **Table 1**. Tulsa is the largest urbanized area along the study limits.

Table 1: Total Population of Cities/Towns along U.S. 412

City/Town	Total Population
Sand Springs, OK	19.794
Tulsa, OK	402,324
Inola, OK	1,828
Siloam Springs, AR	16,715
Springdale, AR	79,598

Source: U.S. Census Bureau (USCB) American Community Survey (ACS), 2015-2019 5-Year Estimates, Table B01003

The population of each census tract intersecting the study area segments is presented in **Table 2**. Even with smaller study areas, the segments with urbanized areas have the greatest populations, such as Tulsa and Keystone. Total population by census tract intersecting each segment is shown in **Appendix A**.

Table 2: Total Population within the Study Area by Segment

Segment	Population	Percent
Cimarron Turnpike	17,011	7%
Keystone	42,726	18%
Tulsa	57,748	25%
Inola	28,202	12%
Cherokee Turnpike	18,184	8%
Siloam Springs	19,230	8%
Springdale #1	34,696	15%
Springdale #2	17,321	7%
Total	**235,118**	**100%**

Source: USCB ACS, 2015-2019 5-Year Estimates, Table B01003

4.2 Employment

StreetLight 2019 data was collected along each segment within the study limits. The StreetLight database uses connected devices and GPS to measure vehicle traffic data, including truck traffic. The data provided traffic counts, origin-destination (O-D) data, and other transportation metrics. Additional O-D traffic data can be found in the *U.S. 412 PEL Traffic, Safety and Engineering Constraints Report*. This data was used to identify travel patterns and determine where traffic was coming from and going within the O-D study area. As illustrated in **Appendix B** and summarized in **Table 3,** the data provides details on the home and work locations of driver's using each segment of the study area for a typical weekday (Tuesday through Thursday and minus holidays) from January 1st to December 31st in 2019.

Table 3: Home and Work Locations of U.S. 412 Drivers by Study Area Segment

Planning Segment	Home Location	Work Location
Cimarron Turnpike	Drivers passing through a U.S. 412 point in the center of the Cimarron Turnpike segment tend to live south of the Cimarron Turnpike segment and in the City of Tulsa.	Drivers passing through a U.S. 412 point in the center of the Cimarron Turnpike segment tend to work south of the Cimarron Turnpike segment and in the City of Tulsa.
Keystone	Drivers passing through a U.S. 412 point in the center of the Keystone segment tend to live along the eastern end of the Cimarron Turnpike segment, along the Keystone segment (Shady Grove and Sand Springs), and in the City of Tulsa.	Drivers passing through a U.S. 412 point in the center of the Keystone segment tend to work along the Keystone segment (Shady Grove and Sand Springs) and in the City of Tulsa.
Tulsa	Drivers passing through a U.S. 412 point in the center of the Tulsa segment tend to live in the City of Tulsa, particularly near U.S. 412.	Drivers passing through a U.S. 412 point in the center of the Tulsa segment tend to work in and around the City of Tulsa.
Inola	Drivers passing through a U.S. 412 point in the center of the Inola segment tend to live in and around the Town of Inola and the City of Tulsa.	Drivers passing through a U.S. 412 point in the center of the Inola segment tend to work in the Town of Inola and the City of Tulsa.
Cherokee Turnpike	Drivers passing through a U.S. 412 point in the center of the Cherokee Turnpike segment tend to live in the City of Siloam Springs, the City of Springdale, and to a lesser degree, the City of Tulsa.	Drivers passing through a U.S. 412 point in the center of the Cherokee Turnpike segment tend to work in the City of Siloam Springs, the City of Springdale, and to a lesser degree, the City of Tulsa.
Siloam Springs	Drivers passing through a U.S. 412 point in the center of the Siloam Springs segment tend to live in and around the City of Siloam Springs.	Drivers passing through a U.S. 412 point in the center of the Siloam Springs segment tend to work in and around the City of Siloam Springs, and to a lesser degree, in the City of Springdale.
Springdale #1 and Springdale #2	Drivers passing through a U.S. 412 point in the center of the Springdale #1 and #2 segments tend to live in the City of Siloam Springs and City of Springdale.	Drivers passing through a U.S. 412 point in the center of the Springdale #1 and 2 segments tend to work in the City of Siloam Springs and City of Springdale.

*Note: * Springdale #1 has not been completed. The point through which the O-D analysis was conducted for this segment was taken on existing U.S. 412.*
Source: Streetlight Data, 2019

5.0 Community Impacts

Community impacts evaluate the effects of a transportation action on a community and its quality of life. It includes documenting the existing social environment of a community, which are outlined in the sections below for the study area.

5.1 Environmental Justice

Executive Order (EO) 12898 entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs on minority and low-income populations. Due to the length of the study limits, census tracts were used to assess environmental justice populations.

5.1.1 Minority Populations

The Federal Highway Administration (FHWA) Order 6640.23A defines a minority as a person who is Black (having origins in any of the Black racial groups of Africa); Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race); Asian American (having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or American Indian and Alaska Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

Minority populations include populations where the percentage of minority persons approaches or exceeds 50% of a census tract population. As shown in **Table 4**, out of 61 total tracts within or intersecting the study area, 16 (26%) included minority populations of 50% or greater. Minority populations by census tract within each study area segment are shown in **Appendix C**.

Table 4: High Minority Populations within the Study Area by Census Tract

Segment	Census Tract Number	Minority Percentage
Keystone	9400.06	91%
Keystone	9	65%
Tulsa	72	51%
Tulsa	23.01	52%
Tulsa	15	54%
Tulsa	60	55%
Tulsa	83	60%
Tulsa	73.11	62%
Tulsa	16	64%
Tulsa	82	65%

Segment	Census Tract Number	Minority Percentage
Tulsa	13	68%
Tulsa	59	69%
Tulsa	14	73%
Tulsa	12	79%
Tulsa	10	88%
Cherokee Turnpike	3761	61%

Source: USCB ACS, 2015-2019 5-Year Estimates, Table B03002

In addition, an assessment of percent minority population was completed for each study area segment. As shown in **Table 5**, the Keystone segment has the highest percent minority population (65.8%) followed by the Tulsa segment (55.6%). The highest percentage of a specific race is American Indian or Alaska Native within the Cherokee Turnpike segment (30.8%).

Table 5: Percent Minority Population by Study Area Segment

Segment	African American	American Indian or Alaska Native	Asian	Native Hawaiian or Pacific Islander	Other	Two Or More Races	Hispanic or Latino	Percent Minority Population
Cimarron Turnpike	0.5%	7.8%	0.1%	0.0%	0.0%	7.8%	3.9%	**20.2%**
Keystone	13.3%	18.2%	2.3%	0.1%	0.2%	19.0%	12.7%	**65.8%**
Tulsa	12.3%	19.9%	4.7%	0.4%	2.5%	24.9%	27.9%	**55.6%**
Inola	0.8%	16.4%	1.8%	0.2%	0.1%	16.7%	7.2%	**43.1%**
Cherokee Turnpike	0.6%	30.8%	1.2%	0.1%	0.0%	12.3%	4.1%	**49.1%**
Siloam Springs	0.9%	10.9%	1.8%	0.1%	0.3%	7.3%	23.4%	**44.7%**
Springdale #1	0.6%	2.8%	6.6%	0.7%	0.6%	6.6%	19.0%	**36.8%**
Springdale #2	1.5%	0.9%	2.5%	0.0%	0.0%	3.0%	13.7%	**21.6%**

Source: USCB ACS, 2015-2019 5-Year Estimates, Table B03002

5.1.2 Low-Income Populations

Following the Office of Management and Budget's (OMB) Statistical Policy Directive 14, the Census Bureau uses a set of money income thresholds that vary by family size and composition to determine who is in poverty. If a family's total income is less than the family's threshold, then that family and every individual in it is considered in poverty (low-income). Per the U.S. Department of Health and Human Services (HHS), the 2023 poverty threshold for a family of four is $30,000. Percent of the population living in poverty was assessed for each study area segment at the census tract level. As shown in **Table 6**, the highest percent poverty is in the Tulsa segment (28%) followed by the Siloam Springs segment (22%) and Cherokee Turnpike segment (21%). The percent poverty for the entire study area is 18%. Low-income populations by census tract within each study area segment are shown in **Appendix D**.

Table 6: Low-Income Populations by Study Area Segment

Segment	Population in Poverty	Total Population	Percent Population in Poverty
Cimarron Turnpike	2,377	17,011	**14%**
Keystone	6,776	42,726	**16%**
Tulsa	16,372	57,748	**28%**
Inola	4,081	28,202	**14%**
Cherokee Turnpike	3,740	18,184	**21%**
Siloam Springs	4,201	19,230	**22%**
Springdale #1	3,693	34,696	**11%**
Springdale #2	777	17,321	**4%**
Total	**42,017**	**235,118**	**18%**

Source: USCB ACS, 2015-2019 5-Year Estimates, Table B17021

5.2 Limited English Proficiency Populations

Limited English Proficiency (LEP) persons are defined as individuals who speak English less than "very well." EO 13166, "Improving Access to Services for Persons with Limited English Proficiency" requires federal agencies to examine the services they provide and identify any need for services to those with LEP. The EO requires federal agencies to work to ensure that recipients of federal financial assistance provide meaningful access to their LEP applicants and beneficiaries. Failure to ensure that LEP persons can effectively participate in or benefit from federally assisted programs and activities may violate the prohibition under Title VI of the Civil Rights Restoration Act of 1987 and Title VI regulations against national origin discrimination.

An assessment of LEP populations was completed for each study area segment at the census tract level. As shown in **Table 7,** the Tulsa segment had the highest percent LEP with 10.9%, followed by Siloam Springs at 5.6%. The percent LEP for the entire study area is 4.8%. **Appendix E** presents the census tracts within or intersecting the study area segments with LEP populations greater than 5%, or the Safe Harbor LEP Threshold. This threshold identifies actions that will be considered strong evidence of compliance with Title VI of the Civil Rights Act obligations. Safe Harbor requires written translations of vital documents for each LEP group that meets the threshold.

Table 7: Percent LEP by Study Area Segment

Segment	Population that Speaks English Less Than Very Well	Total Population	% Of Population that Speak English Less Than Very Well
Cimarron Turnpike	101	17,011	0.6%
Keystone	504	42,726	1.2%
Tulsa	6,286	57,748	10.9%
Inola	661	28,202	2.3%
Cherokee Turnpike	198	18,184	1.1%
Siloam Springs	1,080	19,230	5.6%
Springdale #1	1,873	34,696	5.4%

Segment	Population that Speaks English Less Than Very Well	Total Population	% Of Population that Speak English Less Than Very Well
Springdale #2	522	17,321	3.0%
Total	**11,225**	**235,118**	**4.8%**

Source: USCB ACS, 2015-2019 5-Year Estimates, Table B16004

5.3 Areas of Persistent Poverty

The Justice40 Initiative was created to confront and address decades of underinvestment in disadvantaged communities. Justice40 is an opportunity to address gaps in transportation infrastructure and public services by working toward the goal that many of the Department of Transportation's (DOT) grants, programs, and initiatives allocate at least 40% of the benefits from federal investments to disadvantaged communities. In accordance with the Justice40 initiative, Areas of Persistent Poverty[1] were assessed for the study area. A project is located in an Area of Persistent Poverty if it meets one or more of the three below criteria:

1. The County in which the project is located consistently had greater than or equal to 20 percent of the population living in poverty in all three of the following datasets: (a) the 1990 decennial census; (b) the 2000 decennial census; and (c) the 2021 Small Area Income Poverty Estimates; or
2. The Census Tract in which the project is located has a poverty rate of at least 20 percent as measured by the 2014-2018 5-year data series available from the American Community Survey of the Bureau of the Census; or
3. The project is located in any territory or possession of the United States.

There are two counties intersecting the study area designated as Areas of Persistent Poverty: Payne County in the Cimarron Turnpike segment and Adair County in the Siloam Springs segment. As shown in **Table 8**, out of 61 total census tracts within or intersecting the study area, there are 31 census tracts designated as Areas of Persistent Poverty. The Areas of Persistent Poverty by census tract are located in the following segments of the study area: three in Keystone, four spanning Keystone and Tulsa, 16 in Tulsa, one spanning Tulsa and Inola, one in Inola, one spanning Inola and Cherokee Turnpike, one spanning Cherokee Turnpike and Siloam Springs, and four in Siloam Springs. Areas of Persistent Poverty by county and census tract are shown in **Appendix F**.

[1] Source: https://www.transportation.gov/RAISEgrants/raise-app-hdc

Table 8: Areas of Persistent Poverty by Census Tract

Segment	Census Tract Number
Keystone	29
Keystone	30
Keystone	88
Keystone, Tulsa	25
Keystone, Tulsa	27
Keystone, Tulsa	9
Keystone, Tulsa	9400.06
Tulsa	10
Tulsa	12
Tulsa	13
Tulsa	14
Tulsa	15
Tulsa	16
Tulsa	18
Tulsa	20
Tulsa	23.01
Tulsa	59
Tulsa	60
Tulsa	72
Tulsa	73.08
Tulsa	73.11
Tulsa	82
Tulsa	83
Tulsa, Inola	304.03
Inola	404
Inola, Cherokee Turnpike	405.02
Cherokee Turnpike, Siloam Springs	3761
Siloam Springs	211.01
Siloam Springs	212.01
Siloam Springs	212.02
Siloam Springs	377.66

Source: https://maps.dot.gov/BTS/GrantProjectLocationVerification/

5.4 Historically Disadvantaged Communities

Consistent with the Office of Management and Budget's (OMB) Interim Guidance for the Justice40 Initiative, DOT's interim definition of Historically Disadvantaged Communities (HDCs)[2] includes (a) certain qualifying census tracts, (b) any Tribal land, or (c) any territory or possession of the United

[2] Source: https://www.transportation.gov/RAISEgrants/raise-app-hdc

States. The DOT's interim definition for HDCs was developed by an internal and external collaborative research process. It includes data for 22 indicators collected at the census tract level and grouped into the following six (6) categories of transportation disadvantage.

- **Transportation access disadvantage** identifies communities and places that spend more, and take longer, to get where they need to go.
- **Health disadvantage** identifies communities based on variables associated with adverse health outcomes, disability, as well as environmental exposures.
- **Environmental disadvantage** identifies communities with disproportionately high levels of certain air pollutants and high potential presence of lead-based paint in housing units.
- **Economic disadvantage** identifies areas and populations with high poverty, low wealth, lack of local jobs, low homeownership, low educational attainment, and high inequality.
- **Resilience disadvantage** identifies communities vulnerable to hazards caused by climate change.
- **Equity disadvantage** identifies communities with a high percentile of persons (age 5+) who speak English "less than well."

As shown in **Table 9**, out of 61 total census tracts within or intersecting the study area, there are 29 census tracts designated as HDCs. The HDCs by census tract are located in the following segments of the study area: four in Keystone, three spanning Keystone and Tulsa, 14 in Tulsa, one spanning Tulsa and Inola, three in Inola, one spanning Inola and Cherokee Turnpike, two spanning Cherokee Turnpike and Siloam Springs, and one in Siloam Springs. HDCs are shown in **Appendix G**.

Table 9: Historically Disadvantaged Communities

Segment	Census Tract Number
Keystone	29
Keystone	30
Keystone	93
Keystone	9400.05
Keystone, Tulsa	9400.06
Keystone, Tulsa	25
Keystone, Tulsa	27
Tulsa	23.01
Tulsa	73.11
Tulsa	59
Tulsa	18
Tulsa	60
Tulsa	72
Tulsa	73.08
Tulsa	82
Tulsa	12
Tulsa	13

Segment	Census Tract Number
Tulsa	14
Tulsa	15
Tulsa	16
Tulsa	83
Tulsa, Inola	304.03
Inola	304.02
Inola	504.08
Inola	404
Inola, Cherokee Turnpike	405.02
Cherokee Turnpike, Siloam Springs	9762
Cherokee Turnpike, Siloam Springs	3761
Siloam Springs	3766

Source: https://maps.dot.gov/BTS/GrantProjectLocationVerification/

6.0 Land Use

As shown in **Appendix H**, existing land use throughout the study area varies by study area segment. The Cimarron Turnpike, Cherokee Turnpike, and Springdale #1 segments are primarily rural with grassland, forest, and crops. The eastern portion of the Keystone segment and all of the Tulsa segments are heavily urbanized. The Inola and Springdale #2 segments have small clusters of urbanized areas but are primarily grassland, forest, and crops. Likewise, the Siloam Springs segment is greatly developed around the city of Siloam Springs, but largely undeveloped forest and grassland outside of the city.

7.0 Section 4(f) Resources

A Section 4(f) resource is any significant publicly owned park, recreation area, wildlife and waterfowl refuge, or historic property (including archeological sites) protected by 23 Code of Federal Regulations (CFR) 774. Federally funded DOT actions cannot impact Section 4(f) eligible sites unless there is no "feasible and prudent" alternative. There are six local parks, one wildlife refuge, one wildlife management area, one state park, and one national forest potentially eligible for Section 4(f) protection in the study area. A list of Section 4(f) resources is provided in **Table 10** and shown in **Appendix I.** Section 4(f) historic properties and archeological sites are listed in **Table 27** and **Table 28**, respectively. There are several parks located immediately adjacent to U.S. 412 including Own Park in the Keystone segment; and John Hope Franklin Reconciliation Park, Admiral Park, and Norvell Park in the Tulsa segment. Likewise, portions of existing U.S. 412 pass through the Ozark-St. Francis National Forests and Wedington Wildlife Management Area in the Springdale #1 segment.

In addition to the potential Section 4(f) resources identified, land owned by the U.S. Army Corps of Engineers (USACE) is adjacent to existing U.S. 412, west of Sand Springs and near the Keystone Dam. As

identified in the Keystone Dam and Reservoir Master Plan[3] and shown in **Appendix J**, these land use classifications are project operations and low-density recreation.

Table 10: Section 4(f) Resources by Study Area Segment

Segment	Section 4(f) Resource	Number in Appendix I
Keystone	Gilcrease Park	1
Keystone	Owen Park*	2
Tulsa	John Hope Franklin Reconciliation Park*	3
Tulsa	Admiral Park*	4
Tulsa	Archer Park	5
Tulsa	Norvell Park*	6
Siloam Springs	Natural Falls State Park	7
Springdale #1	Ozark-St. Francis National Forest*	8
Springdale #1	Logan Cave National Wildlife Refuge	9
Springdale #1	Wedington Wildlife Management Area*	10

*Note: * Indicates that a Section 4(f) resource is located adjacent to existing U.S. 412.*
Source: ESRI ArcGIS Online

If projects identified as a result of the PEL Study result in a use of these types of properties, a Section 4(f) evaluation will be required during the National Environmental Policy Act (NEPA) phase. Logan Cave National Wildlife Refuge and the Ozark-St. Francis National Forest are further described in Section 13.1.7, which also discusses threatened and endangered species.

8.0 Section 6(f) Resources

A Section 6(f) resource is any public outdoor recreational land acquired or improved with funds authorized under the Land and Water Conservation Fund (LWCF) Act of 1965. Facilities that are LWCF funded must be maintained for outdoor recreation in perpetuity. Impacts to Section 6(f) properties require mitigation that includes replacement of at least equal value and recreation utility. Based on review of the National Park Service database and listed in **Table 11**, there are two Section 6(f) resources within the study area. These Section 6(f) resources are shown in **Appendix I**.

Table 11: Section 6(f) Resources by Study Area Segment

Segment	Section 6(f) Resource	Number in Appendix I
Springdale #1	Ozark-St. Francis National Forests	8
Springdale #1	Logan Cave National Wildlife Refuge	9

Source: https://lwcfcoalition.org/map

[3] Source: Keystone Dam and Reservoir Master Plan, Arkansas River, USACE Tulsa District, May 2016, https://usace.contentdm.oclc.org/digital/collection/p16021coll7/id/3966/

9.0 Places of Worship

There are a total of 129 places of worship within the PEL Study area. As shown in **Appendix K** and listed in **Table 12**, places of worship are scattered throughout the study area, with the greatest numbers occurring in the Tulsa, Inola, and Siloam Springs segments.

Table 12: Places of Worship by Study Area Segment

Segment	Name	Number in Appendix K
Keystone	R C T Christian Renewal Ministry	1
Keystone	True Baptist Church	2
Keystone	Amazing Grace Holiness Church	3
Keystone	General Baptist Church	4
Keystone	Centennial Baptist Church	5
Keystone	First Presbyterian Church of Sand Springs	6
Keystone	Rimrock Baptist Church	7
Keystone	Grace Community Fellowship	8
Keystone	Harvest Time Assembly	9
Keystone	Lake United Methodist Church	10
Keystone	Harrison Memorial United Methodist Church	11
Keystone	Faith Bible Church	12
Keystone	Calvary Temple Assembly of God	13
Keystone	Osage Hills Christian Church	14
Keystone	Lawnwood Free Will Baptist Church	15
Keystone	Easton Heights Baptist Church	16
Keystone	Christ Gospel Church	17
Keystone	Divine Inheritance Church	18
Tulsa	Fellowship Church Ministries	19
Tulsa	United Pentecostal Church First	20
Tulsa	Centenary United Methodist Church	21
Tulsa	John 3:16 Mission	22
Tulsa	Mount Zion Baptist Church	23
Tulsa	Vernon Ame Church	24
Tulsa	Immanuel Baptist Church	25
Tulsa	The Church at Downtown	26
Tulsa	Redeemed by Grace Church	27
Tulsa	Orth Contemporary	28
Tulsa	Iglesia Apostolica El Nombre De Jesucristo	29
Tulsa	St. Francis Xavier - Our Lady of Guadalupe Catholic Church	30
Tulsa	Crosstown Church of Christ	31
Tulsa	Flame International Outreach Church	32
Tulsa	Glad Tidings Assembly of God	33
Tulsa	Manna House Ministry	34

Segment	Name	Number in Appendix K
Tulsa	Church of The Gospel of Jesus Christ	35
Tulsa	Freedom Ministries	36
Tulsa	Kaleo Church Of the Nazarene	37
Tulsa	Calvary Baptist Church	38
Tulsa	New Beginnings Church	39
Tulsa	Iglesia Roca Viva	40
Tulsa	Rolling Hills Christian Church	41
Tulsa	Life.Church Catoosa	42
Inola	Landmark Missionary Baptist Church	43
Inola	Church of Christ	44
Inola	Timberridge Assembly of God	45
Inola	Oak Grove Baptist Church	46
Inola	Gregory Baptist Church	47
Inola	Inola Christian Church	48
Inola	Inola Church of Christ	49
Inola	River of Life Assembly of God	50
Inola	Inola United Methodist Church	51
Inola	Calvary Baptist Church	52
Inola	First Baptist Church	53
Inola	Cowboy Gatherin'	54
Inola	Eden Mennonite Church	55
Inola	Gadohi Usquanigodi	56
Inola	Chouteau United Methodist Church	57
Inola	Presbyterian Church	58
Inola	Christian Church	59
Inola	Word Fellowship Church Annex Building	60
Inola	Word Fellowship Church	61
Inola	First Baptist Church	62
Inola	Church of God	63
Inola	Arise Daughters of Zion	64
Inola	United Pentecostal Parsonage	65
Inola	Living Covenant Fellowship	66
Inola	Church of Christ	67
Inola	First Baptist Church	68
Siloam Springs	West Siloam SPG Spanish SDA	69
Siloam Springs	West Siloam Springs 7th Day	70
Siloam Springs	Calvary Baptist Church	71
Siloam Springs	Victory Worship Center	72
Siloam Springs	Assembly of God	73
Siloam Springs	Victory Worship Center	74
Siloam Springs	Faith Alive Church	75
Siloam Springs	Independent Baptist Church	76
Siloam Springs	Bethel United Methodist Church	77

Segment	Name	Number in Appendix K
Siloam Springs	Siloam Springs Bible Church	78
Siloam Springs	Eastgate Church of Christ	79
Siloam Springs	Second Baptist Church	80
Siloam Springs	Cathedral Of the Ozarks	81
Siloam Springs	New Heights Siloam	82
Siloam Springs	Church of the Nazarene	83
Siloam Springs	First Christian Church of Siloam Springs	84
Siloam Springs	Crossroads Revival Center	85
Siloam Springs	Heritage Missionary Baptist Church	86
Siloam Springs	Liberty Baptist Church	87
Siloam Springs	First Assembly of God	88
Siloam Springs	Siloam Springs Bible Church	89
Siloam Springs	The Church of Jesus Christ of Latter-Day Saints	90
Siloam Springs	Word of Life Ministries	91
Siloam Springs	Masonic Temple	92
Siloam Springs	First Baptist Church	93
Siloam Springs	Grace Episcopal	94
Siloam Springs	Redeemer Presbyterian Church	95
Siloam Springs	Sager Creek Community Church	96
Siloam Springs	First Presbyterian	97
Siloam Springs	Landmark Missionary Baptist Church	98
Siloam Springs	Antioch Church	99
Siloam Springs	Siloam Springs First United Methodist Church	100
Siloam Springs	Fellowship Bible Church	101
Siloam Springs	Faith Alive Church	102
Siloam Springs	Church of All Nations	103
Siloam Springs	Earth Mission	104
Siloam Springs	The Lighthouse	105
Siloam Springs	Trinity Pentecostal Church	106
Siloam Springs	Community Christian Fellowship	107
Siloam Springs	Arkansas Baptist	108
Siloam Springs	The Bunker	109
Siloam Springs	New Life Church	110
Siloam Springs	Sager Creek Community Church	111
Siloam Springs	Antioch Church	112
Siloam Springs	House of Prayer Church	113
Siloam Springs	Second Baptist Church	114
Siloam Springs	St. Mary's Catholic Church	115
Siloam Springs	Seventh-Day Aventist Church	116
Siloam Springs	Eastgate Church Of Christ	117
Siloam Springs	Jehovah's Witnesses	118
Siloam Springs	E Kenwood Missionary Baptist Church	119
Siloam Springs	Springs Church of Christ	120

Segment	Name	Number in Appendix K
Siloam Springs	Gentry Seventh-Day Adventist Church	121
Siloam Springs	Outreach Center	122
Siloam Springs	Faith Alive Church	123
Siloam Springs	Centro Cristiano Hispano	124
Siloam Springs	Eastgate Free Will Baptist Church	125
Siloam Springs	Gum Springs Baptist Church	126
Siloam Springs	Church of Jesus Christ of Latter-Day Saints	127
Springdale #1	Christian Life Church	128
Springdale #1	House of Prayer Church	129

Source: USGS Geographic Names Information System (GNIS)

10.0 Public Facilities

There are a total of 17 schools, 16 fire stations, 4 police stations, and 23 cemeteries within the PEL study area. **Table 13** presents these public facilities by study area segment. In addition, the Siloam Springs Regional Hospital in the Siloam Springs segment is the only hospital in the study area. **Appendix L** shows the locations of the schools, fire stations, police stations, and hospital. **Appendix Q** shows the locations of the cemeteries. Public facilities adjacent to U.S. 412 are noted in the **Table 13** with an asterisk.

Table 13: Public Facilities by Study Area Segment

Segment	Schools (Number in Appendix L)	Fire Stations	Police Stations	Cemeteries (Number in Appendix Q)
Keystone	Sand Springs Early Childhood Education Center (1) *	Tulsa Fire Department Station 2		Tullahassee Creek Indian Cemetery (1) *
	Wayman Tisdale Fine Arts Academy (2) *	Peninsula Fire Department Shaeffer Station*		
	Tulsa School of Arts and Sciences High School (3) *	Peninsula Fire Department Wilson Station*		
	Tulsa School of Arts Sciences Middle School (4)	Sand Springs Fire Department Station 1*		
	Project Accept Traice Elementary School (5)			
Tulsa		Tulsa Fire Department Station 2*		Rose Hill Cemetery (2) *
		Tulsa Fire Department Station 15*		
Inola	Inola Elementary School (6)	Inola Fire Department Station 2	Chouteau Police Department	Timber Ridge Cemetery (3)
	Inola High School (7)	Inola Fire Department Station 1 Headquarters	Inola Police Department	Sweeten Cemetery (4)
	Inola Middle School (8)	Oak Grove Fire Station		Highland Cemetery (5)
		Chouteau Fire Department		Amish Cemetery (6)
				Choteau West Cemetery (7)
Cherokee Turnpike	Kansas Middle School (9) *			Little Rock Cemetery (8) *
				Elm Cemetery (9) *
Siloam Springs	Moseley Public School (10)	Siloam Springs Fire Department Station 1	Siloam Springs Police Department*	Crittenden Cemetery (10)
	Siloam Springs Middle School (11) *	Siloam Springs Fire Department Station 2*	West Siloam Springs Police Department*	Allen Cemetery (11)
	Northside Elementary School (12)	Siloam Springs Fire Department Station 3		Johnson Cemetery (12)
	Delbert Pete & Pat Allen Elementary School (13)	Flint Ridge Volunteer Fire Department		Bell Cemetery (13)
	Southside Elementary School (14)	West Siloam Springs Volunteer Fire Department*		Oak Hill Cemetery (14)
	Siloam Springs Intermediate School (15)			Blagg Cemetery (15)
	Siloam Springs High School Conversion Charter (16)			Gunter Cemetery (16)
				Old Baptist Cemetery (17)
				Lone Elm Cemetery (18)
				Davis Cemetery (19)
Springdale #1	Willis Shaw Elementary School (17) *	Gallatin Fire Department		Martin Cemetery (20)
				Fairmount Cemetery (21)
				Logan Cemetery (22)
				Yell Cemetery (23)

*Source: National Center for Educations Statistics, ESRI U.S. Federal Data. Notes: * Indicates that a public facility is located adjacent to existing U.S. 412.*
*Grey boxes represent no public facilities present. Schools are labeled by number in **Appendix L**. Fires Stations and Police Stations are labeled by name in **Appendix L**. Cemeteries are labeled by number in **Appendix Q.** No public facilities exist in the Cimarron Turnpike and Springdale #2 segments.*

11.0 Natural Resources

11.1 Threatened and Endangered Species

Federally listed threatened and endangered species are subject to the protection afforded under Section 7 of the Endangered Species Act of 1973, as amended (ESA) (16USC 1531 et seq.). The ESA provides protection of animal and plant species that have been determined to be in population decline and are in jeopardy of becoming extinct.

Although the Bald Eagle is not a listed threatened or endangered species, it is still afforded protection by the federal government under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA).

The BGEPA provides for the protection of Bald and Golden Eagles by prohibiting the taking, possession, and commerce of such birds, except under certain specified conditions.

The MBTA makes it unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Provisions are in place for the protection of migratory birds, parts, nests, eggs, or products. Under the MBTA, "migratory birds" essentially includes all birds native to the U.S. and the regulations pertain to any time of the year, not just during migration. If tree removal occurs, conservation measures could be implemented to minimize the potential impacts to migratory birds, including tree clearing outside of the nesting season (generally March 1st to September 15th) or conducting nest surveys prior to clearing to avoid injuries to eggs or nestlings. Prior to construction, bridges should also be checked for potential nests.

Searches of the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) online planning tool and the Oklahoma Natural Heritage Inventory (ONHI) were utilized to collect information on species potentially occurring within the study area and are included in **Appendix S**. No source was readily available (other than IPaC) to obtain a list of threatened and endangered species by county for Arkansas. To obtain a state status for Arkansas species, the endangered species list in Arkansas Game and Fish Commission (AGFC) Code Book (Addendum Chapter P1.00) was utilized.

The sections below summarize the species with potential to occur within the study area segments (IPaC) or within the individual counties of each study area segment (ONHI). The threatened and endangered species lists and status changes periodically, therefore lists will be reviewed and updated during the NEPA phase.

11.1.1 Cimarron Turnpike

Table 14 lists the threatened and endangered (T&E) species identified as potentially occurring within the Cimarron Turnpike segment of the study area during searches of the USFWS IPaC and the ONHI on February 24, 2023.

Table 14: T&E Species Potentially Occurring Within the Cimarron Turnpike Segment of the Study Area

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Critical Habitat w/in Study Area
Invertebrates				
American Burying Beetle	*Nicrophorous americanus*	Threatened	-	None
Monarch Butterfly	*Danaus plexippus*	Candidate	-	None
Fishes				
Peppered Chub	*Macrhybopsis tetranema*	Endangered	-	None
Reptiles				
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened	-	None
Birds				
Piping Plover	*Charadrius melodus*	Threatened	-	None
Red Knot	*Calidris canutus rufa*	Threatened	-	Proposed
Whooping Crane	*Grus americana*	Endangered	-	None
Mammals				
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	-	None

1. Source: USFWS IPaC Database; 2. Source: ONHI Database

11.1.2 Keystone

Table 15 lists the T&E species identified as potentially occurring within the Keystone segment of the study area during searches of the USFWS IPaC and the ONHI on February 24, 2023.

Table 15: T&E Species Potentially Occurring Within the Keystone Segment of the Study Area

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Critical Habitat w/in Study Area
Invertebrates				
American Burying Beetle	*Nicrophorous americanus*	Threatened	-	None
Monarch Butterfly	*Danaus plexippus*	Candidate	-	None

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Critical Habitat w/in Study Area
Fishes				
Peppered Chub	*Macrhybopsis tetranema*	Endangered	-	None
Reptiles				
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened	-	None
Birds				
Piping Plover	*Charadrius melodus*	Threatened	-	None
Red Knot	*Calidris canutus rufa*	Threatened	-	Proposed
Mammals				
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	-	None

Source: 1. USFWS IPaC Database; 2. ONHI Database

11.1.3 Tulsa

Table 16 lists the T&E species identified as potentially occurring within the Tulsa segment of the study area during searches of the USFWS IPaC and the ONHI on February 24, 2023.

Table 16: T&E Species Potentially Occurring Within the Tulsa Segment of the Study Area

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Critical Habitat w/in Study Area
Invertebrates				
American Burying Beetle	*Nicrophorous americanus*	Threatened	-	None
Monarch Butterfly	*Danaus plexippus*	Candidate	-	None
Neosho Mucket	*Lampsilis rafinesqueana*	Endangered	-	None
Rabbitsfoot	*Quadrula cylindrica cylindrica*	Threatened	-	None
Reptiles				
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened	-	None
Birds				
Piping Plover	*Charadrius melodus*	Threatened	-	None
Red Knot	*Calidris canutus rufa*	Threatened	-	Proposed
Mammals				
Gray Bat	*Myotis grisescens*	Endangered	-	None

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Critical Habitat w/in Study Area
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	-	None

1. Source: USFWS IPaC Database; 2. Source: ONHI Database

11.1.4 Inola

Table 17 lists the T&E species identified as potentially occurring within the Inola segment of the study area during searches of the USFWS IPaC and the ONHI on February 24, 2023.

Table 17: T&E Species Potentially Occurring Within the Inola Segment of the Study Area

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Critical Habitat w/in Study Area
Invertebrates				
American Burying Beetle	*Nicrophorous americanus*	Threatened	-	None
Monarch Butterfly	*Danaus plexippus*	Candidate	-	None
Neosho Mucket	*Lampsilis rafinesqueana*	Endangered	-	None
Rabbitsfoot	*Quadrula cylindrica cylindrica*	Threatened	-	None
Reptiles				
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened	-	None
Birds				
Piping Plover	*Charadrius melodus*	Threatened	-	None
Red Knot	*Calidris canutus rufa*	Threatened	-	Proposed
Mammals				
Gray Bat	*Myotis grisescens*	Endangered	-	None
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	-	None
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	-	None

1. Source: USFWS IPaC Database; 2. Source: ONHI Database

11.1.5 Cherokee Turnpike

Table 18 lists the T&E species identified as potentially occurring within the Cherokee Turnpike segment of the study area during searches of the USFWS IPaC and the ONHI on February 24, 2023.

Table 18: T&E Species Potentially Occurring Within the Cherokee Turnpike Segment of the Study Area

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Critical Habitat w/in Study Area
Invertebrates				
American Burying Beetle	*Nicrophorous americanus*	Threatened	-	None
Monarch Butterfly	*Danaus plexippus*	Candidate	-	None
Neosho Mucket	*Lampsilis rafinesqueana*	Endangered	-	None
Oklahoma Cave Crayfish	*Cambarus tartarus*	-	Endangered	None
Rabbitsfoot	*Quadrula cylindrica cylindrica*	Threatened	-	None
Fishes				
Ozark Cavefish	*Amblyopsis rosae*	Threatened	-	None
Reptiles				
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened	-	None
Birds				
Piping Plover	*Charadrius melodus*	Threatened	-	None
Red Knot	*Calidris canutus rufa*	Threatened	-	Proposed
Mammals				
Gray Bat	*Myotis grisescens*	Endangered	-	None
Indiana Bat	*Myotis sodalis*	Endangered	-	None
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	-	None
Ozark Big-eared Bat	*Corynorhinus townsendii ingens*	Endangered	-	None
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	-	None

1. Source: USFWS IPaC Database; 2. Source: ONHI Database

11.1.6 Siloam Springs

Table 19 lists the T&E species identified as potentially occurring within the Siloam Springs segment of the study area during searches of the USFWS IPaC and the ONHI on February 24, 2023.

Table 19: T&E Species Potentially Occurring Within the Siloam Springs Segment of the Study Area

Common Name	Scientific Name	Federal Status[1]	State Status[2,3]	Critical Habitat w/in Study Area
Flowering Plants				
Missouri Bladderpod	*Physaria filiformis*	Threatened	-	None
Invertebrates				
American Burying Beetle	*Nicrophorous americanus*	Threatened	Endangered[3]	None
Benton County Cave Crayfish	*Cambarus aculabrum*	Endangered	Endangered[3]	None
Monarch Butterfly	*Danaus plexippus*	Candidate	-	None
Neosho Mucket	*Lampsilis rafinesqueana*	Endangered	Endangered[3]	Yes (Illinois River)
Oklahoma Cave Crayfish	*Cambarus tartarus*	-	Endangered[2]	None
Rabbitsfoot	*Quadrula cylindrica cylindrica*	Threatened	Endangered[3]	None
Fishes				
Blackside Darter	*Percina maculata*	-	Threatened[2]	None
Longnose Darter	*Percina nasuta*	-	Endangered[2]	None
Ozark Cavefish	*Amblyopsis rosae*	Threatened	Endangered[3]	None
Reptiles				
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened	-	None
Birds				
Eastern Black Rail	*Laterallus jamaicensis ssp. jamaicensis*	Threatened	Endangered[3]	None
Piping Plover	*Charadrius melodus*	Threatened	Endangered[3]	None
Red Knot	*Calidris canutus rufa*	Threatened	Endangered[3]	Proposed
Mammals				
Gray Bat	*Myotis grisescens*	Endangered	Endangered[3]	None
Indiana Bat	*Myotis sodalis*	Endangered	Endangered[3]	None
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Endangered[3]	None
Ozark Big-eared Bat	*Corynorhinus townsendii ingens*	Endangered	Endangered[3]	None
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	-	None

1. Source: USFWS IPaC Database; 2. Source: ONHI Database; 3. Source: AGFC Code Book (updated January 31, 2023)

11.1.7 Springdale #1 and #2

Table 20 lists the T&E species identified as potentially occurring within the Springdale #1 and #2 segments of the study area during a search of the USFWS IPaC on February 24, 2023.

Table 20: T&E Species Potentially Occurring Within the Springdale #1 and #2 Segments of the Study Area

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Critical Habitat w/in Study Area
Flowering Plants				
Missouri Bladderpod	*Physaria filiformis*	Threatened	-	None
Invertebrates				
Benton County Cave Crayfish	*Cambarus aculabrum*	Endangered	Endangered	None
Monarch Butterfly	*Danaus plexippus*	Candidate	-	None
Neosho Mucket	*Lampsilis rafinesqueana*	Endangered	Endangered	Yes (Illinois River)
Rabbitsfoot	*Quadrula cylindrica*	Threatened	Endangered	None
Fishes				
Ozark Cavefish	*Amblyopsis rosae*	Threatened	Endangered	None
Reptiles				
Alligator Snapping Turtle	*Macrochelys temminckii*	Proposed Threatened	-	None
Birds				
Eastern Black Rail	*Laterallus jamaicensis ssp. jamaicensis*	Threatened	Endangered	None
Piping Plover	*Charadrius melodus*	Threatened	Endangered	None
Red Knot	*Calidris canutus rufa*	Threatened	Endangered	Proposed
Whooping Crane	*Grus americana*	Experimental population, None-essential	Endangered	None
Mammals				
Gray Bat	*Myotis grisescens*	Endangered	Endangered	None
Indiana Bat	*Myotis sodalis*	Endangered	Endangered	None
Northern Long-eared Bat	*Myotis septentrionalis*	Threatened	Endangered	None
Ozark Big-eared Bat	*Corynorhinus townsendii ingens*	Endangered	Endangered	None

Note: Springdale #1 and #2 were evaluated together because the analysis results were consistent for both segments.

1. Source: USFWS IPaC Database; 2. Source: AGFC Code Book (updated January 31, 2023)

Logan Cave National Wildlife Refuge

The ESRI USA Parks GIS layer shows that Logan Cave National Wildlife Refuge is located within the Springdale #1 segment of the study area. According to the USFWS Logan Cave National Wildlife Refuge website[4], the only two known entrances to the cave include a sinkhole and a spring. A stream created from surfacing groundwater flows through the cave and at the outfall forms Logan Spring. Logan Cave is home to the largest population of the endangered Benton County cave crayfish, Ozark cavefish, and approximately 25,000 gray bats. Logan Cave National Wildlife Refuge is approximately 1.5 miles north of U.S. 412.

Ozark-St. Francis National Forest

U.S. 412 travels through the Ozark-St. Francis National Forest within the Springdale #1 segment and the far western edge of the Springdale #2 segment of the study area. The Ozark-St. Francis National Forest provides suitable habitat for the Indiana Bat and Northern long-eared bat species.

11.2 Waters of the U.S., including Wetlands

Waters of the U.S., including wetland resources are protected under Section 404 of the Clean Water Act (33 US Code [USC] 1344) and EO 11990 Protection of Wetlands (Environmental Protection Agency (EPA), 1977). This section describes the wetlands, streams, and ponds/lakes within the study area. This analysis was performed using GIS and the USFWS National Wetlands Inventory (NWI) and U.S Geological Survey (USGS) National Hydrology Database (NHD) mapping data. Each section below summarizes the surface waters and NWI wetlands within each study area segment. The stream information was collected by utilizing the NHD flowline information and the wetland data represents the NWI data within each study area segment. Once the study transitions to the NEPA phase, wetland delineations would be performed in accordance with the 1987 USACE Wetlands Delineation Manual and the Great Plains (Cimarron Turnpike, Keystone, & Tulsa segments), Midwest (Tulsa & Inola segments), and Eastern Mountains and Piedmont Regional Supplements (Inola, Cherokee Turnpike, Siloam Springs, & Springdale #1 and #2 segments). Coordination with the USACE may be required to obtain Section 404 and other permits and determine the amount of wetland and stream mitigation required.

11.2.1 Cimarron Turnpike

Surface Waters

Surface waters within the Cimarron Turnpike segment of the study area include Cottonwood Creek, Legend Creek, Long Branch, Greasy Creek, Otoe Creek, Black Bear Creek, Oak Creek, Camp Creek, Lagoon Creek, Ranch Creek, Carpenter Creek, Cowskin Creek, and unnamed tributaries. In total, according to the

[4] https://www.fws.gov/refuge/logan-cave/about-us

NHD flowline data, approximately 322,000 linear feet of streams occur within the Cimarron Turnpike segment of the study area.

Searches of aerial photography, NWI data, NHD data, and data from the Oklahoma Water Resources Board (OWRB) identified approximately 170 acres of ponds/lakes within the Cimarron Turnpike segment of the study area.

Wetlands

The NWI designated wetlands identified within the Cimarron Turnpike segment of the study area included 196 riverine wetlands (approximately 137 acres) located within the various stream/river channels, 29 freshwater emergent wetlands (approximately 20 acres), and 53 freshwater forested/shrub wetlands (approximately 60 acres). **Appendix M** shows NWI and NHD locations generally widespread throughout the Cimarron Turnpike segment of the study area.

11.2.2 Keystone

Surface Waters

Surface waters within the Keystone segment of the study area include the Arkansas River, Brush Creek, Little Sand Creek, Sand Creek, Shell Creek, Euchee Creek, Bigheart Creek, Harlow Creek, and unnamed tributaries. In total, according to the NHD flowline data, approximately 102,000 linear feet of streams occur within the Keystone segment of the study area.

Searches of aerial photography, NWI data, NHD data, and OWRB data identified approximately 260 acres of ponds/lakes within the Keystone segment of the study area.

Wetlands

The NWI designated wetlands identified within the Keystone segment of the study area included 30 riverine wetlands (approximately 118 acres) located within the various stream/river channels, four freshwater emergent wetlands (approximately 11 acres), and nine freshwater forested/shrub wetlands (approximately 12 acres). **Appendix M** shows NWI and NHD locations generally widespread throughout the Keystone segment of the study area.

11.2.3 Tulsa

Surface Waters

Surface waters within the Tulsa segment of the study area include Mingo Creek, Spunky Creek, and unnamed tributaries. In total, according to the NHD flowline data, approximately 46,000 linear feet of streams occur within the Tulsa segment of the study area.

Searches of aerial photography, NWI data, NHD data, and OWRB data identified approximately 30 acres of ponds/lakes within the Tulsa segment of the study area.

Wetlands

The NWI designated wetlands identified within the Tulsa segment of the study area included 22 riverine wetlands (approximately 26 acres) located within the various stream/river channels, two freshwater emergent wetlands (approximately 18 acres), and seven freshwater forested/shrub wetlands (approximately 8 acres). **Appendix M** shows NWI and NHD locations generally spread throughout the eastern two-thirds of the Tulsa segment of the study area.

11.2.4 Inola

Surface Waters

Surface waters within the Inola segment of the study area include Spunky Creek, Salt Creek, Verdigris River, Commodore Creek, Inola Creek, Pea Creek, Bull Creek, Brush Creek, Neosho River, Chouteau Creek, Pryor Creek, and unnamed tributaries. In total, according to the NHD flowline data, approximately 1,150,000 linear feet of streams occur within the Inola segment of the study area.

Searches of aerial photography, NWI data, NHD data, and OWRB data identified approximately 1,375 acres of ponds/lakes within the Inola segment of the study area.

Wetlands

The NWI designated wetlands identified within the Inola segment of the study area included 527 riverine wetlands (approximately 443 acres) located within the various stream/river channels, 38 freshwater emergent wetlands (approximately 63 acres), and 111 freshwater forested/shrub wetlands (approximately 1,424 acres). **Appendix M** shows NWI and NHD locations generally widespread throughout the Inola segment of the study area.

11.2.5 Cherokee Turnpike

Surface Waters

Surface waters within the Cherokee Turnpike segment of the study area include Crutchfield Branch, Little Spring Creek, Snake Creek, Little Saline Creek, Saline Creek, Spring Creek, and unnamed tributaries. In total, according to the NHD flowline data, approximately 154,000 linear feet of streams occur within the Cherokee Turnpike segment of the study area.

Searches of aerial photography, NWI data, NHD data, and OWRB data identified approximately 37 acres of ponds/lakes within the Cherokee Turnpike segment of the study area.

Wetlands

The NWI designated wetlands identified within the Cherokee Turnpike segment of the study area included 68 riverine wetlands (approximately 86 acres) located within the various stream/river channels, 13 freshwater emergent wetlands (approximately 7 acres), and 15 freshwater forested/shrub wetlands (approximately 51 acres). **Appendix M** shows NWI and NHD locations generally widespread throughout the Cherokee Turnpike segment of the study area.

11.2.6 Siloam Springs

Surface Waters

Surface waters within the Siloam Springs segment of the study area include the Illinois River, Flint Creek, Blue Spring Branch, Dripping Springs Branch, Rock Branch, Tate Parris Branch, Crazy Creek, Sager Creek, Beaver Creek, Fagan Creek, Little Flint Creek, and unnamed tributaries. In total, according to the NHD flowline data, approximately 1,665,000 linear feet of streams occur within the Siloam Springs segment of the study area.

Searches of aerial photography, NWI data, NHD data, and OWRB data identified approximately 466 acres of ponds/lakes within the Siloam Springs segment of the study area.

Wetlands

The NWI designated wetlands identified within the Siloam Springs segment of the study area included 732 riverine wetlands (approximately 1,083.31 acres) located within the various stream/river channels, 36 freshwater emergent wetlands (approximately 30 acres), and 166 freshwater forested/shrub wetlands (approximately 1,348 acres). **Appendix M** shows NWI and NHD locations generally widespread throughout the Siloam Springs segment of the study area.

11.2.7 Springdale #1

Surface Waters

Surface waters within the Springdale #1 segment of the study area include Sager Creek, the Illinois River, Chambers Spring Branch, Osage Creek, Wildcat Creek, Brush Creek, Lick Branch, and unnamed tributaries. In total, according to the NHD flowline data, approximately 1,917,000 linear feet of streams occur within the Springdale #1 segment of the study area.

Searches of aerial photography, NWI data, and NHD data identified approximately 244 acres of ponds/lakes within the Springdale #1 segment of the study area.

Wetlands

The NWI designated wetlands identified within the Springdale #1 segment of the study area included 803 riverine wetlands (approximately 1,115 acres) located within the various stream/river channels, 36 freshwater emergent wetlands (approximately 28 acres), and 141 freshwater forested/shrub wetlands (approximately 622 acres). **Appendix M** shows NWI and NHD locations generally widespread throughout the Springdale #1 segment of the study area.

11.2.8 Springdale #2

Surface Waters

Surface waters within the Springdale #2 segment of the study area include Brush Creek, Spring Creek, Puppy Creek, and unnamed tributaries. In total, according to the NHD flowline data, approximately 94,000 linear feet of streams occur within the Springdale #2 segment of the study area.

Searches of aerial photography, NWI data, and NHD data identified approximately 20 acres of ponds/lakes within the Springdale #2 segment of the study area.

Wetlands

The NWI designated wetlands identified within the Springdale #2 segment of the study area included 73 riverine wetlands (approximately 46 acres) located within the various stream/river channels, three freshwater emergent wetlands (approximately one acre), and one freshwater forested/shrub wetland (approximately 0.1 acres). **Appendix M** shows NWI and NHD locations generally widespread throughout Springdale #2 segment of the study area.

11.3 Water Quality

Water quality can be impacted through pollutants entering surface water or ground water. Surface waters can be directly impacted by roadway and bridge runoff as well as construction-related impacts. Construction-related impacts could include pollutants such as sedimentation, petroleum products, and nutrients leaching from seeded and mulched bare areas. Runoff from agricultural areas that contain fertilizers or pesticides also affect the water quality of an area.

Groundwater can be affected by pollutants from surface waters and overland flow infiltrating the aquifers that act as sources of groundwater. The easiest way for pollutants to reach the groundwater is in areas of karst topography which include features such as caves, sinkholes, sinking streams (streams that flow into shallow holes and sinkholes), and springs. These karst features can provide a direct connection between surface water and groundwater. Groundwater can also be affected through downward infiltration of surface water through shallow soil in upland, interstream areas. Karst features are discussed in **Section 14.4**.

Section 303(d) of the Clean Water Act (CWA) requires states to identify all water bodies where state water quality standards are not being met.

Oklahoma's water quality standards are defined in the Oklahoma Administrative Code Title 252 Chapter 611 (OAC 252:611). The water quality standards describe the desired condition of Oklahoma's waterbodies and the methods being utilized to reach or protect those conditions. The Oklahoma Department of Environmental Quality (ODEQ) maintains a list of Oklahoma Section 303(d) impaired waters. The current approved list (2022) was reviewed to determine if any surface waters within the study

area were listed as impaired. The listed impaired waters are discussed below within the individual study area segments.

Arkansas' water quality standards are defined in the Arkansas Pollution Control and Ecology Commission (APC&EC) Rule 2, *Rule Establishing Water Quality Standards for Surface Waters of the State of Arkansas*. The water quality standards describe the desired condition of Arkansas' waterbodies and the methods being utilized to reach or protect those conditions. The Arkansas Department of Energy and Environment, Division of Environmental Quality (ADEQ) maintains a list of Arkansas Section 303(d) impaired waters. The current approved list (2018) and the 2020 draft list were reviewed to determine if any surface waters within the study area were listed as impaired. The listed impaired waters are discussed below within the individual study area segments.

11.3.1 Cimarron Turnpike

According to the ODEQ GIS data for the 2022 Section 303(d) Impaired Waters List, three impaired waters are located within the Cimarron Turnpike segment of the study area. The impairments listed for the waters include macroinvertebrate biology, dissolved oxygen (DO), Enterococcus bacteria, Escherichia coli (E. coli), mercury, total dissolved solids, and turbidity. The impaired waters are listed as Category 5 waters. Category 5 waters have not attained water quality standards (WQS), are impaired or threatened for one or more uses, and require a total maximum daily load (TMDL). **Table 21** below summarizes the Section 303(d) waters in the Cimarron Turnpike segment of the study area.

Table 21: Section 303(d) Impaired Waters within the Cimarron Turnpike Segment

Name	Category	Macroinvertebrate Biology	Mercury	DO	Enterococcus	E. coli	Total Dissolved Solids	Turbidity
Black Bear Creek	5c	5c	-	-	4a	4a	-	4a
Camp Creek	5a	-	-	5a	-	-	-	-
Lone Chimney Lake	5c	-	5c	-	-	-	-	-

4a: TMDL has been completed; 5a: TMDL is underway or will be scheduled; 5c: Additional data or information will be collected before a TMDL or review of the WQS is scheduled.

11.3.2 Keystone

According to the ODEQ GIS data for the 2022 Section 303(d) Impaired Waters List, four impaired waters are located within the Keystone segment of the study area. The impairments listed for the waters include macroinvertebrate biology, Enterococcus bacteria, Escherichia coli, fish bioassessment, and turbidity. The impaired waters are listed as Category 5 waters. **Table 22** below summarizes the Section 303(d) waters in the Keystone segment of the study area.

Table 22: Section 303(d) Impaired Waters within the Keystone Segment

Name	Category	Macroinvertebrate Biology	Fish Bioassessment	Enterococcus	E. coli	Turbidity
Keystone Lake	5a	-	-	-	-	5a
Arkansas River	5a	-	-	4a	-	5a
Bigheart Creek	5a	-	5c	-	5a	-
Harlow Creek	5a	5c	5c	5a		

4a: TMDL has been completed; 5a: TMDL is underway or will be scheduled; 5c: Additional data or information will be collected before a TMDL or review of the WQS is scheduled.

11.3.3 Tulsa

According to the ODEQ GIS data for the 2022 Section 303(d) Impaired Waters List, there is one impaired water, Spunky Creek, located within the Tulsa segment of the study area. The impairments listed for Spunky Creek include macroinvertebrate biology (5c) and total dissolved solids (5b). Spunky Creek is listed as a Category 5 water (5b).

11.3.4 Inola

According to the ODEQ GIS data for the 2022 Section 303(d) Impaired Waters List, five impaired waters are located within the Inola segment of the study area. The impairments listed for the waters include macroinvertebrate biology, DO, Enterococcus bacteria, E. coli, pH, Ammonia, and turbidity. The impaired waters are listed as Category 4 and Category 5 waters. Category 4 waters are impaired or threatened for one or more uses but do not require the development of a TMDL. **Table 23** below summarizes the Section 303(d) waters in the Inola segment of the study area.

Table 23: Section 303(d) Impaired Waters within the Inola Segment

Name	Category	Macroinvertebrate Biology	pH	DO	Enterococcus	E. coli	Total Dissolved Solids	Ammonia, Un-ionized	Turbidity
Spunky Creek	5a	5c					5b		
Verdigris River	4a	-	-	-	4a	-		-	-
Pea Creek	4a	-	-	-	4a	4a		-	-
Bull Creek	5a		5a	5a					4a
Chouteau Creek	5a	-	5a	5a	4a	4a		5a	
Neosho River	5a	5c	-	5a	-	-		-	-

4a: TMDL has been completed; 5a: TMDL is underway or will be scheduled; 5c: Additional data or information will be collected before a TMDL or review of the WQS is scheduled.

11.3.5 Cherokee Turnpike

According to the ODEQ GIS data for the 2022 Section 303(d) Impaired Waters List, there is one impaired water, Spring Creek, located within the Cherokee Turnpike segment of the study area. The impairment listed for Spring Creek is macroinvertebrate biology (5c). Spring Creek is listed as a Category 5 water (5c).

11.3.6 Siloam Springs

According to the ODEQ GIS data for the 2022 Section 303(d) Impaired Waters List, three impaired waters are located within the Siloam Springs segment of the study area. The impairments listed for the waters include macroinvertebrate biology, DO, Enterococcus bacteria, E. coli, total phosphorous, sedimentation/siltation (S/S), and turbidity. The impaired waters are listed as Category 5 waters. **Table 24** below summarizes the Section 303(d) waters in the Keystone segment of the study area.

Table 24: Section 303(d) Impaired Waters within the Siloam Springs Segment

Name	Category	Macroinvertebrate Biology	S/S	DO	Enterococcus	E. coli	Total Phosphorous	Turbidity
Illinois River	5a	-	-	-	5a	5a	5a	5a
Flint Creek	5a	-	-	5a	-	-	5a	-
Sager Creek	5a	5c	5a	-	5a	-	-	-

5a: TMDL is underway or will be scheduled; 5c: Additional data or information will be collected before a TMDL or review of the WQS is scheduled.

According to the ADEQ GIS data for the 2020 Draft 303(d) Impaired Waters List, Sager Creek is the only listed water in the Arkansas portion of the Siloam Springs segment of the study area. Within Arkansas, Sager Creek is listed as a Category 5 water with the aquatic life use impaired by Ammonia-N.

11.3.7 Springdale #1 and #2

According to the ADEQ GIS data for the 2020 Draft 303(d) Impaired Waters List there are no impaired waters within the Springdale #1 and #2 segments of the study area.

11.4 Karst Features

Where water-soluble rocks (e.g., limestone, dolomite, gypsum, anhydrite, and salt) are at or near the surface, karst features are prone to develop by the dissolving action of circulating ground water. Features of karst landscapes include caves, springs, disappearing streams, dry valleys, and sinkholes. Both the Oklahoma and Arkansas portions of the study area include karst features, as described below by study area segment and shown in **Appendix M**.

11.4.1 Cimmaron Turnpike

According to the 2014 USGS US Karst Map GIS data, the Cimarron Turnpike segment of the study area is within karst topography composed of carbonate rocks at or near the land surface and gypsum and other evaporite deposits. The gypsum karst topography occurs within the entire study area segment and the carbonate karst topography occurs in approximately 14 percent of the study area segment.

11.4.2 Keystone

According to the 2014 USGS US Karst Map GIS data, the Keystone segment of the study area is within karst topography composed of carbonate rocks at or near the land surface and gypsum and other evaporite deposits. The carbonate karst topography occurs within approximately five percent of the study area segment and the gypsum karst topography occurs within the entire study area segment.

11.4.3 Tulsa

According to the 2014 USGS US Karst Map GIS data, the Tulsa segment of the study area is within karst topography composed of carbonate rocks at or near the land surface and gypsum and other evaporite deposits. The carbonate karst topography occurs within approximately 23 percent of the study area segment and the gypsum karst topography occurs within the entire study area segment.

11.4.4 Inola

According to the 2014 USGS US Karst Map GIS data, the Inola segment of the study area is within karst topography composed of carbonate rocks at or near the land surface and gypsum and other evaporite deposits. The carbonate karst topography occurs within approximately five percent of the study area segment and the gypsum karst topography occurs in approximately 11 percent of the study area segment. The carbonate karst topography is located at the eastern end of the study area segment and the gypsum karst topography is located at the western end of the study area segment.

11.4.5 Cherokee Turnpike

According to the 2014 USGS US Karst Map GIS data, the Cherokee Turnpike segment of the study area is within karst topography composed of carbonate rocks at or near the land surface. The carbonate karst topography occurs within approximately 97 percent of the study area segment.

11.4.6 Siloam Springs

According to the 2014 USGS US Karst Map GIS data, the Siloam Springs segment of the study area is within karst topography composed of carbonate rocks at or near the land surface. The carbonate karst topography occurs within approximately 80 percent of the study area segment.

11.4.7 Springdale #1 and #2

According to the 2014 USGS US Karst Map GIS data, the Springdale #1 and Springdale #2 segments of the study area are within karst topography composed of carbonate rocks at or near the land surface. The carbonate karst topography occurs within nearly the entirety of the Springdale #1 and Springdale #2 study area segments.

11.5 Water and Monitoring Wells

The sections below summarize the water and monitoring wells within the different segments of the study area. The groundwater wells have various listed uses, and the monitoring wells can be used to monitor for a variety of parameters including levels of toxins in the groundwater. Wells can also act as pathways of pollutants to groundwater. Well information for Oklahoma was obtained from searching GIS data from the OWRB. The well information for Arkansas was obtained by searching the Arkansas Department of Agriculture, Natural Resources Division's Water Well Construction Report Database. Water and monitoring wells within the study area are shown in **Appendix N**.

11.5.1 Cimarron Turnpike

There are 24 water and monitoring wells within the Cimarron Turnpike segment of the study area, of which one is a monitoring well. The remaining 23 wells have various listed uses such as domestic and agriculture (non-irrigation).

11.5.2 Keystone

There are 82 water and monitoring wells within the Keystone segment of the study area, of which 56 are monitoring wells. The remaining 26 wells have various listed uses such as domestic, public water supply, and industrial.

11.5.3 Tulsa

There are 322 water and monitoring wells within the Tulsa segment of the study area, of which 3218 are monitoring wells. The remaining 4 wells have various listed uses such as domestic and commercial.

11.5.4 Inola

There are 112 water and monitoring wells within the Inola segment of the study area, of which 82 are monitoring wells. The remaining 30 wells have various listed uses such as domestic, commercial, irrigation, piezometer, and agriculture (non-irrigation).

11.5.5 Cherokee Turnpike

There are 81 water wells and no monitoring wells within the Cherokee Turnpike segment of the study. The wells have various listed uses such as domestic, public water supply, and agriculture (non-irrigation).

11.5.6 Siloam Springs

There are 479 water and monitoring wells within the Siloam Springs segment of the study area, of which 15 are monitoring wells. The remaining 464 wells have various listed uses such as domestic, commercial, public water supply, industrial, irrigation, and agriculture (non-irrigation).

11.5.7 Springdale #1

There are 271 water and monitoring wells within the Springdale #1 segment of the study area, of which six are monitoring wells. The remaining 265 wells have various listed uses such as domestic, commercial, irrigation, and agriculture (non-irrigation).

11.5.8 Springdale #2

There are 22 water and monitoring wells within the Springdale #2 segment of the study area, of which one is a monitoring well. The remaining 21 wells have various listed uses such as domestic, public water supply, and agriculture (non-irrigation).

11.6 Floodways and Floodplains

Floodplains are low-lying land areas that are susceptible to being inundated by floodwaters from any source. EO 11988 on Floodplain Management directs federal agencies “to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.”

The Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL) was utilized to identify floodways and floodplains within the study area. FEMA defines the regulatory floodway as “the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.” The 100-year floodplain is defined by FEMA as “the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year.”

In Oklahoma, the OWRB issues floodplain development permits for proposed development on State owned or operated property. Additional floodplain permits from a county, city, or town may also be required and would be granted by the local floodplain administrator.

In Arkansas, floodplain permits are issued by the local floodplain administrators for the various counties, cities, or towns within the study area.

11.6.1 Cimarron Turnpike

There were no floodways and approximately 470 acres of 100-year floodplain within the Cimarron Turnpike segment of the study area. The floodplains within the Cimarron Turnpike segment of the study area, identified and shown in **Appendix O**, were associated with the following streams/rivers:

- unnamed tributaries to Red Rock Creek: 100-year floodplain
- unnamed tributaries to Black Bear Creek: 100-year floodplain
- Black Bear Creek: 100-year floodplain
- Oak Creek: 100-year floodplain
- Camp Creek: 100-year floodplain
- unnamed tributaries to Camp Creek: 100-year floodplain

11.6.2 Keystone

There was approximately 143 acres of floodway and 175 acres of 100-year floodplain within the Keystone segment of the study area. The floodways and floodplains within the Keystone segment of the study area, identified and shown in **Appendix O**, were associated with the following streams/rivers:

- Arkansas River: floodway and 100-year floodplain
- unnamed tributaries to the Arkansas River: floodway
- Little Sand Creek: floodway
- Sand Creek: floodway
- Shell Creek: floodway
- Euchee Creek: floodway
- Bigheart Creek: floodway
- Harlow Creek: floodway
- unnamed tributary to Harlow Creek: floodway and 100-year floodplain

11.6.3 Tulsa

There was approximately 110 acres of floodway and 21 acres of 100-year floodplain within the Tulsa segment of the study area. The floodways and floodplains within the Tulsa segment of the study area, identified and shown in **Appendix O**, were associated with the following streams/rivers:

- Mingo Creek: floodway
- unnamed tributaries to Mingo Creek: floodway and 100-year floodplain
- unnamed tributaries to Spunky Creek: floodway and 100-year floodplain
- Spunky Creek: floodway

11.6.4 Inola

There was approximately 424 acres of floodway and 6,890 acres of 100-year floodplain within the Inola segment of the study area. The floodways and floodplains within the Inola segment of the study area, identified and shown in **Appendix O**, were associated with the following streams/rivers:

- Spunky Creek: floodway
- Salt Creek: floodway
- unnamed tributaries to Salt Creek: floodway and 100-year floodplain
- Verdigris River: floodway
- unnamed tributaries to the Verdigris River: 100-year floodplain
- Commodore Creek: 100-year floodplain
- unnamed tributaries to Commodore Creek: 100-year floodplain
- unnamed tributaries to Inola Creek: 100-year floodplain
- Pea Creek: 100-year floodplain
- unnamed tributaries to Pea Creek: 100-year floodplain
- unnamed tributaries to Bull Creek: 100-year floodplain
- Bull Creek: 100-year floodplain
- Brush Creek: 100-year floodplain
- unnamed tributaries to Brush Creek: 100-year floodplain
- Choteau Creek: 100-year floodplain
- unnamed tributaries to Choteau Creek: 100-year floodplain
- unnamed tributaries to the Neosho River: 100-year floodplain
- Neosho River: 100-year floodplain
- Pryor Creek: 100-year floodplain
- Unnamed tributaries to Pryor Creek: 100-year floodplain

11.6.5 Cherokee Turnpike

There were no floodways and approximately 448 acres of 100-year floodplain within the Cherokee Turnpike segment of the study area. The floodplains within the Cherokee Turnpike segment of the study area, identified and shown in **Appendix O**, were associated with the following streams/rivers:

- Unnamed tributary to the Neoso RiverL 100-year floodplain
- Unnamed tributaries to Snake Creek: 100-year floodplain
- Little Spring Creek: 100-year floodplain
- Unnamed tributaries to Little Spring Creek: 100-year floodplain
- Saline Creek: 100-year floodplain
- Unnamed tributaries to Saline Creek: 100-year floodplain
- Unnamed tributaries to Spring Creek: 100-year floodplain
- Spring Creek: 100-year floodplain
- Unnamed tributary to Flint Creek: 100-year floodplain

11.6.6 Siloam Springs

There was approximately 471 acres of floodway and 7,890 acres of 100-year floodplain within the Siloam Springs segment of the study area. The floodways and floodplains within the Siloam Springs segment of the study area, identified and shown in **Appendix O**, were associated with the following streams/rivers:

- Illinois River: floodway and 100-year floodplain
- Flint Creek: floodway and 100-year floodplain
- Blue Spring Branch: 100-year floodplain
- Unnamed tributaries to Flint Creek: 100-year floodplain
- Dripping Springs Branch: 100-year floodplain
- Rock Branch: 100-year floodplain
- Tate Parris Branch: 100-year floodplain
- Crazy Creek: 100-year floodplain
- Sager Creek: floodway and 100-year floodplain
- Unnamed tributaries to Sager Creek: floodway and 100-year floodplain
- Unnamed tributaries to the Illinois River: 100-year floodplain
- Beaver Creek: 100-year floodplain
- Unnamed tributary to Beaver Creek: 100-year floodplain
- Fagan Creek: 100-year floodplain
- Little Flint Creek: 100-year floodplain

11.6.7 Springdale #1

There were no floodways and approximately 5,891 acres of 100-year floodplain within the Springdale #1 segment of the study area. The floodplains within the Springdale #1 segment of the study area, identified and shown in **Appendix O**, were associated with the following streams/rivers:

- Illinois River: 100-year floodplain
- Unnamed tributaries to the Illinois River: 100-year floodplain
- Chambers Spring Branch: 100-year floodplain
- Osage Creek: 100-year floodplain
- Unnamed tributaries to Osage Creek: 100-year floodplain
- Wildcat Creek: 100-year floodplain
- Brush Creek: 100-year floodplain
- Lick Branch: 100-year floodplain

11.6.8 Springdale #2

There was approximately 15 acres of floodway and 86 acres of 100-year floodplain within the Springdale #2 segment of the study area. The floodways and floodplains within the Springdale #2 segment of the study area, identified and shown in **Appendix O**, were associated with the following streams/rivers:

- Brush Creek: 100-year floodplain
- Spring Creek: 100-year floodplain
- Puppy Creek: floodway

12.0 Hazardous Materials

Data for hazardous materials sites were obtained through the Environmental Protection Agency (EPA), ODEQ, and ADEQ geodatabases. There is one Voluntary Cleanup Site, four Brownfield Sites, and 63 open underground storage tanks (UST) within the study area. **Table 25** lists the hazardous materials sites located within each study area by segment and **Appendix P** identifies their locations.

Table 25: Hazardous Materials Sites by Study Area Segment

Segment	Hazardous Materials Site	Number in Appendix P
Voluntary Cleanup Site		
Keystone	Sand Springs Home, Former PSO Cooling Ponds	1
Brownfield		
Keystone	ASARCO Trust Formerly Federated Metals	1
Keystone	City of Sand Springs Keystone Corridor Redevelopment Area A	2
Tulsa	CRC Evans Pipeline International Inc/Black and Decker	3
Tulsa	Park on Brady (now Guthrie Green) - George Kaiser Family Foundation	4
Open Underground Storage Tanks (UST)		
Cimarron Turnpike	Kum & go #880	1
Cimarron Turnpike	Pawnee Travel Plaza	2
Keystone	Tank 'N Tummy #1	3
Keystone	Joe's	4
Keystone	Lakeside Food Mart Inc	5
Keystone	Hiway Foodmart	6
Keystone	Quiktrip #23	7
Keystone	Keystone Food Mart Inc	8
Keystone	Swbt R66147 Sand Springs Co	9
Keystone	Sav-A-Trip #106	10
Keystone	W-W Oil Co	11
Keystone	Master Lube & Wash, Inc.	12
Keystone	Joe's Gas & Grocery	13
Keystone	Quiktrip #59R	14
Tulsa	Second Street Service Center	15
Tulsa	Corner Stop	16
Tulsa	Shell #24	17
Tulsa	Quiktrip #85	18
Tulsa	Quiktrip #75	19
Tulsa	Quiktrip #7R	20
Tulsa	Refrigerated Delivery Service	21
Tulsa	Quiktrip #44	22
Tulsa	Kicks 66	23
Tulsa	Quiktrip #8	24
Tulsa	Murphy Usa #6589	25

Segment	Hazardous Materials Site	Number in Appendix P
Tulsa	Fine Stop	26
Tulsa	Frontier International Trucks	27
Tulsa	Flying J Travel Plaza #706	28
Tulsa	Yellow Freight System, Inc.	29
Tulsa	Quiktrip #71TC	30
Tulsa	Quiktrip #24	31
Inola	Catoosa Port 33 Batch Plant	32
Inola	Inola Sinclair #1	33
Inola	Harp's #152	34
Inola	Kum & Go #886	35
Inola	Bailey Medical Center	36
Inola	Speedy's #7	37
Inola	Kum & Go #876	38
Inola	Brewer Construction Company of Eastern Ok Inc	39
Inola	Love's Country Store #295	40
Inola	E-Z Mart #4410	41
Inola	Fiesta Mart #16	42
Cherokee Turnpike	Kum & Go #846	43
Siloam Springs	Twisters	44
Siloam Springs	Love's #658	45
Siloam Springs	Station 2	46
Siloam Springs	Previously Crazy Ricks	47
Siloam Springs	Fieldhouse Station	48
Siloam Springs	Walmart Neighborhood Mkt #6960	49
Siloam Springs	EZ Mart #4313	50
Siloam Springs	Siloam Springs Public Schools	51
Siloam Springs	Station III	52
Siloam Springs	Flash Market #185	53
Siloam Springs	SS Food Mart	54
Siloam Springs	City Of Siloam Springs	55
Siloam Springs	Simmons Foods, Inc. (Truck Shop)	56
Siloam Springs	Flash Market #179	57
Siloam Springs	Asian-American Grocery & Deli	58
Siloam Springs	Speedy’s #9	59
Siloam Springs	Eastgate Mini Mart	60
Siloam Springs	Casey's General Store #3242	61
Siloam Springs	Murphy USA #6647	62
Siloam Springs	Siloam Springs Memorial Hospital	63

Source: ODEQ, ADEQ, EPA

13.0 Oil and Gas Wells

Oil and gas well data were obtained from the Oklahoma Corporation Commission and Arkansas Oil and Gas Commission. There are seven locations of oil and gas wells in the Cimarron Turnpike segment, which are listed in **Table 26** and shown in **Appendix P**.

Table 26: Oil and Gas Wells by Study Area Segment

Segment	Well Type	Number in Appendix P
Cimarron Turnpike	2DNC (Class 2 Non-Commercial Disposal Wells)	1
Cimarron Turnpike	2DNC (Class 2 Non-Commercial Disposal Wells)	2
Cimarron Turnpike	2DCm (Class 2 Commercial Disposal Well)	3
Cimarron Turnpike	2RIn (Class 2 Enhanced Recovery Well)	4
Cimarron Turnpike	2RIn (Class 2 Enhanced Recovery Well)	5
Cimarron Turnpike	2DNC (Class 2 Non-Commercial Disposal Wells)	6
Cimarron Turnpike	2RIn (Class 2 Enhanced Recovery Well)	7

Source: Oklahoma Corporation Commission Well Data, Arkansas Oil and Gas Commission

14.0 Historic Resources

Authorized by the National Historic Preservation Act of 1966, the National Park Service's National Register of Historic Places (NRHP) is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources. There are 49 NRHP listed historic resources within the study area. **Table 27** presents the historic resources by segment and **Appendix Q** shows their locations. There are several historic resources and historic districts located adjacent to U.S. 412 in the Tulsa segment. Likewise, there are numerous historic resources located in Siloam Springs. Once projects are identified and the NEPA phase is initiated, additional analysis will be conducted to determine other eligible or potentially eligible resources based on historic-age and the area of potential affect.

Table 27: Historic Resources by Study Area Segment

Segment	Historic Resource	Number in Appendix Q
Keystone	Page Memorial Library	1
Keystone	Owen Park Historic District	2
Tulsa	Brady Heights Historic District	3
Tulsa	Katy Railroad Historic District	4
Tulsa	Brady Historic District	5
Tulsa	Cain's Dancing Academy	6
Tulsa	Mount Zion Baptist Church	7
Tulsa	Greenwood Historic District	8
Tulsa	Blue Dome Historic District	9
Tulsa	Greenwood Historic District	10
Tulsa	100 Block North Greenwood Avenue	11
Tulsa	Vernon A.M.E. Church	12
Tulsa	Oklahoma Iron Works/Bethlehem Supply Company Building	13
Tulsa	Hooper Brothers Coffee Company Building	14
Tulsa	The Church Studio	15
Tulsa	Whittier Square Historic District	16
Tulsa	Phillips 66 Station #473	17
Tulsa	Circle Theater	18
Tulsa	White City Historic District	19

Segment	Historic Resource	Number in Appendix Q
Inola	Chouteau Territorial Commercial Historic District	20
Inola	Farmers and Merchants Bank	21
Siloam Springs	Hildebrand Mill	22
Siloam Springs	Oak Hill Mausoleum	23
Siloam Springs	Sager, Simon Cabin	24
Siloam Springs	Siloam Springs City Park	25
Siloam Springs	Carl's Addition Historic District	26
Siloam Springs	Maxwell--Sweet House	27
Siloam Springs	Duckworth--Williams House	28
Siloam Springs	Quell House	29
Siloam Springs	Lakeside Hotel	30
Siloam Springs	Henry Furniture Store Building	31
Siloam Springs	Reeves House	32
Siloam Springs	Pyeatte House	33
Siloam Springs	Siloam Springs Downtown Historic District	34
Siloam Springs	First National Bank	35
Siloam Springs	Bratt--Smiley House	36
Siloam Springs	Connelly--Harrington House	37
Siloam Springs	Grand Army of the Republic Memorial	38
Siloam Springs	Stockton Building	39
Siloam Springs	German Builder's House	40
Siloam Springs	Bartell, Fred House	41
Siloam Springs	House at 305 E. Ashley	42
Siloam Springs	Alfrey-Brown House	43
Siloam Springs	Thurmond House	44
Springdale #1	Illinois River Bridge (Siloam Springs)	45
Springdale #1	Illinois River Bridge (Pedro)	46
Springdale #1	Gailey Hollow Farmstead	47
Springdale #1	McIntyre House	48
Springdale #1	Illinois River Bridge at Phillips Ford	49

Source: National Park Service, NRHP, Oklahoma NRHP, Arkansas NRHP

15.0 Archeological Resources

Section 106 of the National Historic Preservation Act of 1966 requires that Federal agencies and their designees/authorized representatives consider the effects of their federal undertakings on cultural resources that are listed on or eligible for the NRHP. The process of complying with Section 106 provides state agencies with a role in commenting specifically on potential impacts to significant archaeological resources. The Oklahoma Archeological Survey (OAS), part of the University of Oklahoma system, oversees the management of archeological resources within Oklahoma, while the Archeological Survey (AAS), part of the University of Arkansas system, oversees the management of archeological resources in Arkansas.

There are 31 NRHP listed or eligible archeological resources within the study area. **Table 28** presents the archeological resources by study area segment. In order to protect the sites from looting and further destruction, all archeological site information and locations are not subject to the Freedom of Information

Act and are not to be distributed to the public. Accordingly, none of the archeological sites are shown on a map. As discussed in **Section 10.0**, these archeological sites are eligible for Section 4(f) protection by 23 CFR 774.

Table 28: Archeological Resources by Study Area Segment

Segment	Resource	NRHP Status	Description
Keystone	34TU13	Listed	Site 34TU13 represents the remains of the historic Fort Arbuckle Site, listed in the Oklahoma Landmarks inventory. The site is in a pasture.
Keystone	34TU220	Listed	Site 34TU220 represents the remains of the Berryhill Creek Site, a moderately disturbed prehistoric habitation area on an upland terrace along the Ozark Plateau.
Tulsa	34TU134	Listed	Site 34TU134 represents the remains of the McBirney Mansion Spring Site, a multicomponent site in a residential floodplain. The site is comprised of an unknown prehistoric period occupation and a historic trash dump dating from 1800 to present.
Inola	34MY254	Eligible	Site 34MY254 represents a multicomponent prehistoric open habitation site with little disturbance. This site is in the uplands of the Ozark Plateau.
Inola	34MY255	Eligible	Site 34MY255 represents a single component prehistoric open habitation site with moderate disturbance. This site is in a floodplain along the Ozark Plateau.
Siloam Springs	34AD7	Eligible	Site 34AD7 represents the remains of the Houston Site, a prehistoric occupation. This site is within a cultivated field in a floodplain and has been heavily disturbed.
Siloam Springs	34AD153	Eligible	Site 34AD153 represents the remains of the First Fort Wayne Site, a historic fort. This site is in a residential area on a terrace and has been heavily disturbed.
Siloam Springs	34DL127	Eligible	Site 34DL127 represents the McCoy Site, a prehistoric open habitation site in the floodplain on the Ozark Plateau.
Siloam Springs	34DL303	Listed	Site 34DL303 represents the remains of the Beck-Hildebrand Mill Site, a historic mill site. This site is on an Ozark Plateau terrace and is relatively undisturbed.
Siloam Springs	34DL304	Eligible	Site 34DL304 represents the remains of the Beck House Site. This multicomponent prehistoric/historic site contains the remains of a prehistoric occupation and historic farmstead. This site is on an Ozark Plateau terrace and is relatively undisturbed.
Siloam Springs	34DL306	Eligible	Site 34DL306 represents the remains of a multicomponent prehistoric open habitation and historic farmstead site. This site is on an Ozark Plateau terrace.
Springdale #1	3BE0275	Eligible	Site 3BE0275 represents the remains of the Chambers Hollow Shelter, a prehistoric Mississippian-period bluff shelter.
Springdale #1	3BE0276	Eligible	Site 3BE0276 represents the remains of the Chambers Hollow Shelter, a prehistoric Mississippian-period bluff shelter. This site contains **burial remains**.

Segment	Resource	NRHP Status	Description
Springdale #1	3BE0289	Eligible	Site 3BE0289 represents the remains of a multicomponent prehistoric and historic occupation site, characterized by a prehistoric lithic and historic ceramic scatter. This site is located on a ridge along the Springfield Plateau and is highly disturbed.
Springdale #1	3BE0316	Eligible	Site 3BE0316 represents the remains of the Lamb Roast Site, a prehistoric occupation dating from the Woodland to Mississippian Period. This site is in the floodplain along the Springfield Plateau.
Springdale #1	3BE0327	Eligible	Site 3BE0327 represents the remains of the Black Bank Site, a prehistoric occupation site dating from the Archaic to Mississippian Period. This site is in the floodplain along the Springfield Plateau.
Springdale #1	3BE0330	Eligible	Site 3BE0330 represents the remains of the Baby Flake Site, a prehistoric occupation dating to the Middle to Late Woodland Period. This is site is in the floodplain along the Springfield Plateau.
Springdale #1	3BE0331	Eligible	Site 3BE0331 represents the remains of the Chertfield Site, a multicomponent prehistoric and historic occupation site, which includes a former well or cistern. This site is in the floodplain along the Springfield Plateau and has been highly disturbed.
Springdale #1	3BE0332	Eligible	Site 3BE0332 represents the remains of the O.D. Site, a multicomponent prehistoric midden and historic occupation site. This site is in the floodplain along the Springfield Plateau.
Springdale #1	3BE0333	Eligible	Site 3BE0333 represents the remains of the Orange Peel Site, a Late Archaic occupation site. This site is in the floodplain along the Springfield Plateau.
Springdale #1	3BE0334	Eligible	Site 3BE0334 represents the remains of the Sandpiper Site, a prehistoric occupation site. This site is in the floodplain along the Springfield Plateau and has been heavily disturbed.
Springdale #1	3BE0449	Eligible	Site 3BE0449 represents the remains of the Sandpiper Site, a historic site with signs of former structures, which include a well or cistern, and burial remains. This site is located on a spur associated with the Ozark Mountains.
Springdale #1	3BE0535	Eligible	Site 3BE0535 represents the remains of a multicomponent prehistoric and historic period occupation site. This site is in the floodplain along the Springfield Plateau.
Springdale #1	3BE0536	Eligible	Site 3BE0536 represents the remains of a prehistoric occupation site. This site is in the floodplain along the Springfield Plateau.
Springdale #1	3BE0614	Eligible	Site 3BE0614 represents the remains of a historic cemetery. This site is in the floodplain along the Springfield Plateau.
Springdale #1	3BE0844	Eligible	Site 3BE0844 represents the remains of a former historic period occupation. This site is in the floodplain of the Springfield Plateau and has been highly disturbed.
Springdale #1	3WA0313	Eligible	Site 3WA0313 represents the remains of an Archaic and Woodland period occupation site. The site is on a ridge along the Springfield Plateau.

Segment	Resource	NRHP Status	Description
Springdale #1	3WA0451	Eligible	Site 3WA0451 represents the remains of the Sandstone Mansion Site, a multicomponent prehistoric and historic occupation site, which includes remains of a chimney. The site contains remnants of a former Civilian Conservation Corps (CCC) Camp.
Springdale #1	3WA0459	Eligible	Site 3WA0459 represents the remains of the Twin Cistern Site, a former historic occupation with remains of barn. The site is on a ridge along the Springfield Plateau.
Springdale #1	3WA1019	Eligible	Site 3WA1019 represents the remains of prehistoric occupation in a cave shelter. The site is on a ridge along the Springfield Plateau.
Springdale #2	3WA1444	Eligible	Site 3WA1444 represents the remains of a prehistoric lithic scatter on a terrace along the Springfield Plateau.

Sources: OAS 2023; AAS 2023.

16.0 Tribal Territory

As shown in **Table 29**, there are five different tribal territories spanning throughout the study area. The Muscogee (Creek) Nation spans through three segments and the Cherokee Nation spans through five segments. There are no federally recognized tribes in Arkansas. Tribal territories are shown in **Appendix R**.

Table 29: Tribal Territories

Segment	Tribal Territory
Cimarron Turnpike	Pawnee Nation Of Oklahoma
Cimarron Turnpike	Otoe - Missouri Tribe of Indians, Oklahoma
Keystone	Muscogee (Creek) Nation, Oklahoma
Keystone	Cherokee Nation, Oklahoma
Keystone	Osage Tribe, Oklahoma
Tulsa	Muscogee (Creek) Nation, Oklahoma
Tulsa	Cherokee Nation, Oklahoma
Inola	Muscogee (Creek) Nation, Oklahoma
Inola	Cherokee Nation, Oklahoma
Cherokee Turnpike	Cherokee Nation, Oklahoma
Siloam Springs	Cherokee Nation, Oklahoma

Source: ODOT GRIP database

17.0 Air Quality

Criteria Pollutants

Under the Clean Air Act (CAA), the federal government established the National Ambient Air Quality Standards (NAAQS) to protect public health, safety, and welfare from known or anticipated effects of six criteria pollutants: sulfur dioxide, particulate matter, carbon monoxide, nitrogen dioxide, ozone, and lead. Transportation substantially contributes to four of the six criteria pollutants: ozone, carbon monoxide,

particulate matter, and nitrogen dioxide. If an area is determined to not be in attainment with any transportation-related criteria pollutant, they are required to undergo evaluation of regionally significant projects to ensure the overall plan conforms with an approved emissions budget, also known as demonstrating transportation conformity.

The study area extends through the counties of Noble, Payne, Pawnee, Osage, Tulsa, Rogers, Wagoner, Mayes, Adair, and Delaware in Oklahoma; and Benton and Washington in Arkansas. All counties in Oklahoma and Arkansas are currently in attainment for all six criteria pollutants; therefore, transportation conformity rules would not apply.

Climate Change

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). Some GHGs such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHGs such as fluorinated gases are created and emitted solely through human activities. These gases are believed to contribute to climate change. The EPA defines "climate change" as any substantial change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer).

On July 8, 2019, EPA promulgated the Affordable Clean Energy Rule, or ACE Rule, and finalized repeal of the Obama-era Clean Power Plan. The Affordable Clean Energy Rule sets emission guidelines for state plans that are narrowly tailored toward in-the-fence-line measures that can be taken to reduce carbon dioxide emissions from coal-fired power plants. On January 19, 2021, the U.S. Court of Appeals for the D.C. Circuit court vacated EPA's ACE Rule. In developing a state plan, the Arkansas Division of Environmental Quality must follow both the procedures established by EPA emissions guidelines and those codified at Ark. Code Ann. 8-3-201 et seq.

In December 2021, EPA finalized revised GHG emissions standards for passenger cars and light trucks for Model Years 2023- 2026. The final standards would achieve significant GHG emissions reductions along with reductions in other criteria pollutants. The rule would result in substantial public health and welfare benefits, while providing consumers with savings from lower fuel costs.

According to EPA, the largest source of GHG emissions from human activities in the United States is from burning fossil fuels for electricity, heat, and transportation. The transportation sector generates the largest share of greenhouse gas emissions. Greenhouse gas emissions from transportation primarily come from burning fossil fuel for our cars, trucks, ships, trains, and planes. Over 90% of the fuel used for transportation is petroleum based, which includes primarily gasoline and diesel.[5]

[5] IPCC (2007). Climate Change 2007: Mitigation. (PDF) (863 pp, 24MB) Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [B. Metz, O.R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer (eds)], Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

The ultimate source of increased transportation emissions in the study area is population and employment growth, which is expected to increase with or without the implementation of future proposed project(s). Regardless, responsible agencies implementing future project(s) will be required to adhere to any applicable mandatory regulations regarding GHGs during the appropriate stage of the project development process.

In January 2023, the Council of Environmental Quality (CEQ) issued interim guidance to assist agencies in analyzing GHG, the climate change effects of their proposed actions, and the potential impacts of climate change on the proposed action under NEPA. CEQ issued the guidance as interim guidance, is seeking public comment on the guidance, and intends to either revise it in response to public comments or finalize it. CEQ's intent with the interim guidance is to provide greater clarity and more consistency in how agencies address climate change in NEPA reviews. As the U.S. 412 PEL Study progresses, consideration will be given to integrating GHG considerations into the study.

Mobile Source Air Toxics

EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA)[6]. These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics (MSAT), the list is subject to change and may be adjusted in consideration of future EPA rules.

While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field. Consistent with the FHWA interim guidance, a quantitative MSAT analysis should be conducted for projects located in proximity to populated areas that have an annual average daily traffic (AADT) volume greater than or equal to 140,000, or that create or significantly alter a major intermodal freight facility involving significant numbers of diesel vehicles.

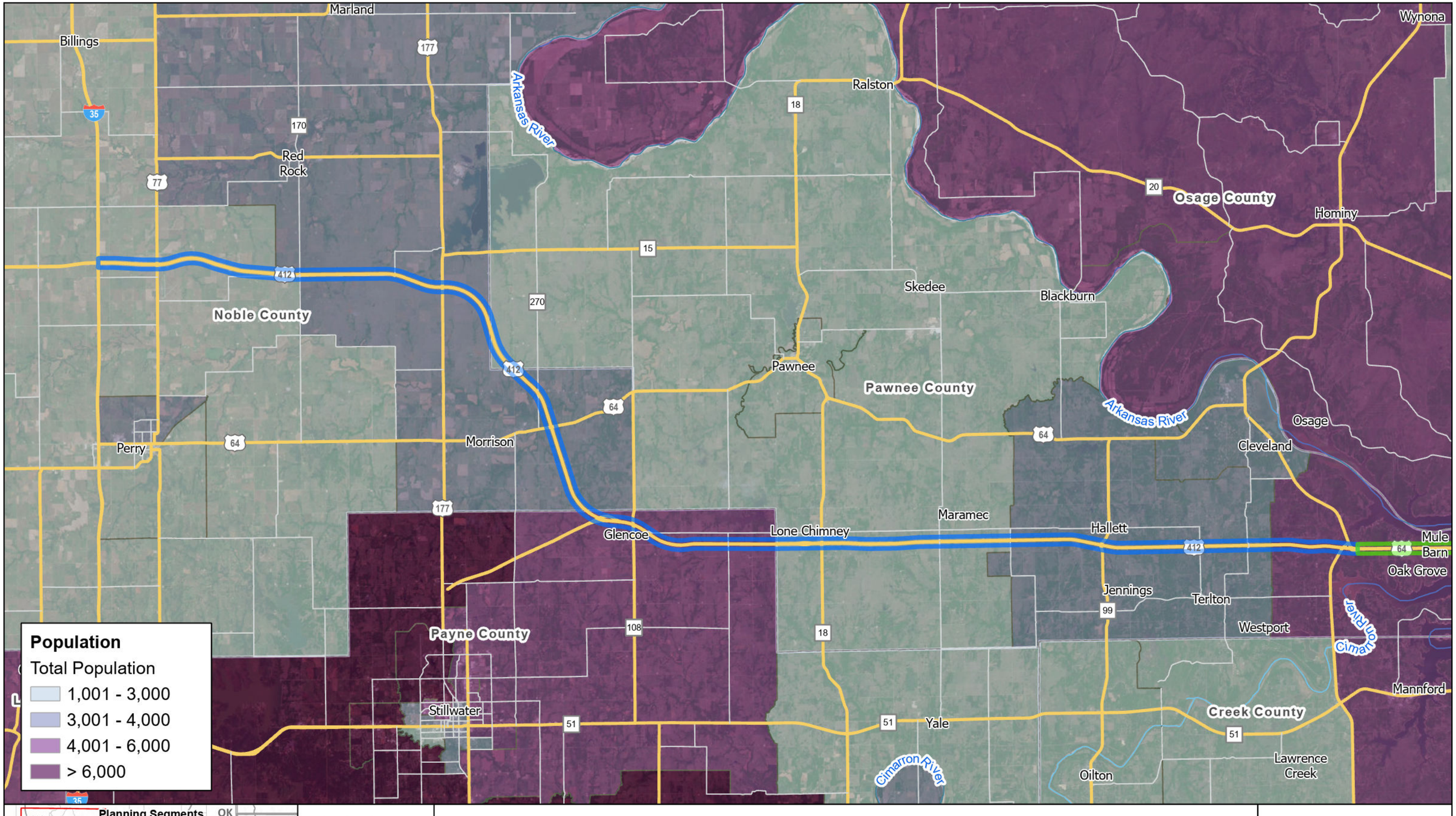
18.0 Traffic Noise

The 1972 Federal-Aid Highway Act required FHWA to develop a noise standard for new Federal-Aid highway projects. FHWA regulations require ODOT and ARDOT to 1) Identify traffic noise impacts and examine potential mitigation measures; 2) Incorporate reasonable and feasible noise mitigation measures

[6] https://www.epa.gov/national-air-toxics-assessment

into its highway projects; and 3) Coordinate with local officials to provide helpful information on compatible land use planning and control during the planning and design of a highway project. ODOT's Noise Policy Directive (2011) and ARDOT's Policy on Highway Traffic Noise Abatement (2018) describe their implementation of the requirements of FHWA's noise standard at 23 Code of Federal Regulations (CFR) Part 772.

Sensitive noise receptors within the study area include parks and recreation areas, wildlife management areas, schools, cemeteries, residences, motels, hotels, places of worship, libraries, and any other lands on which serenity and quite are of extraordinary significance and serve and important need, and where the preservation of those qualities is essential if the lands continue to serve their intended purpose.



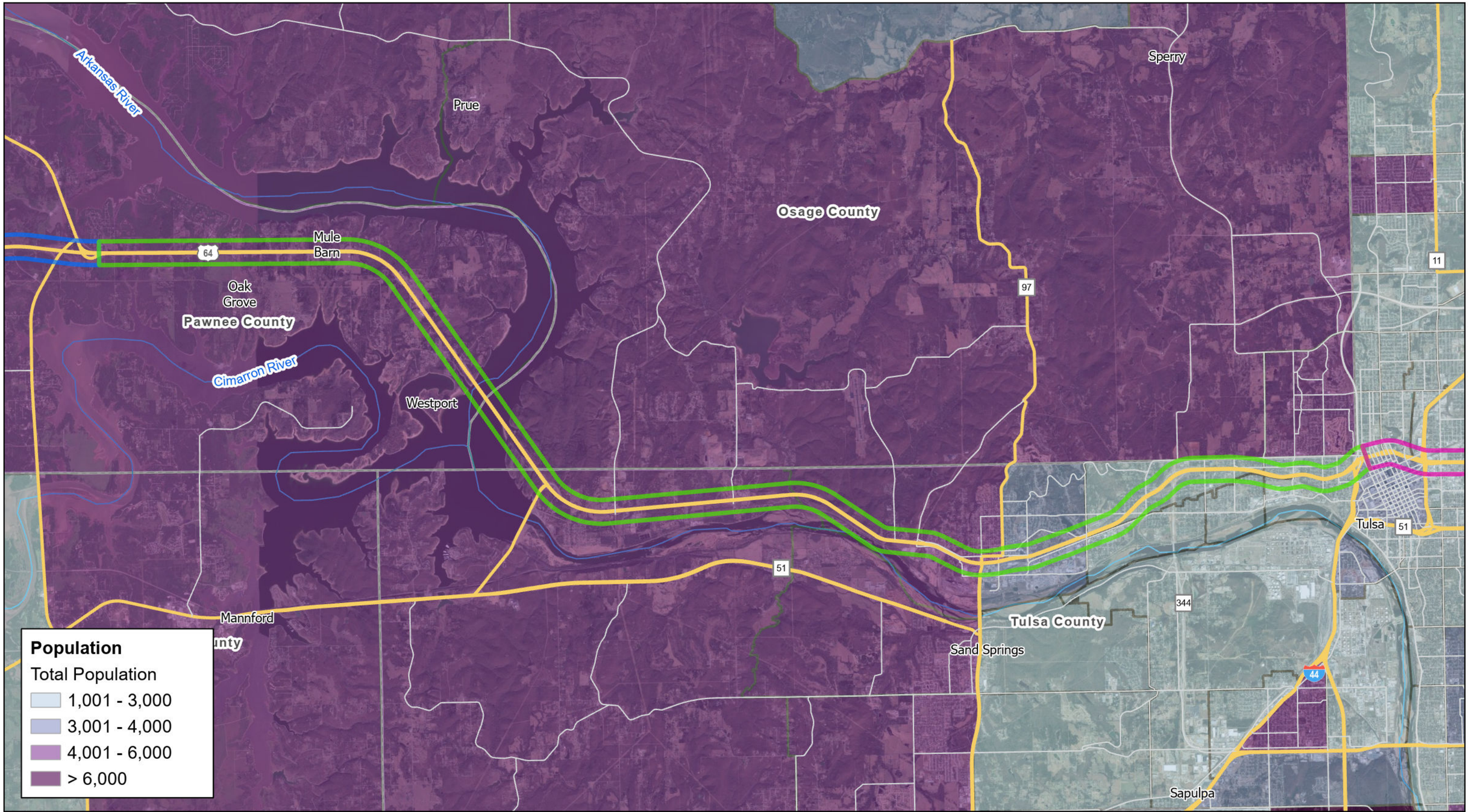
Appendix A - Population

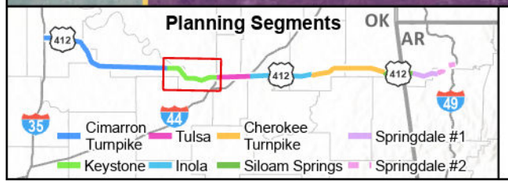
Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

June 2023





INTERSTATE 412

Appendix A - Population

Sheet 2 of 8

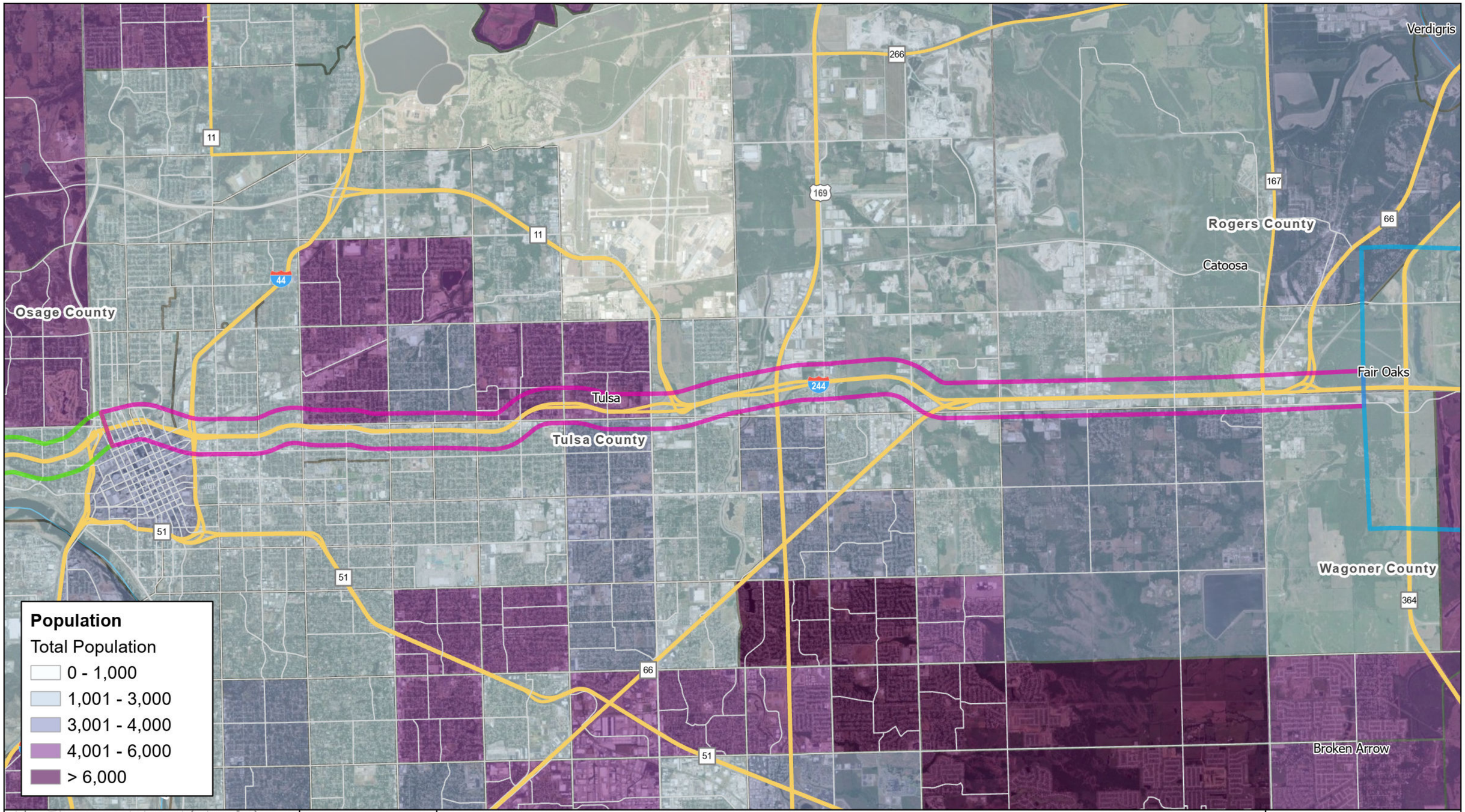
Keystone Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 1 2 Mi

June 2023



INTERSTATE 412

Appendix A - Population

Sheet 3 of 8

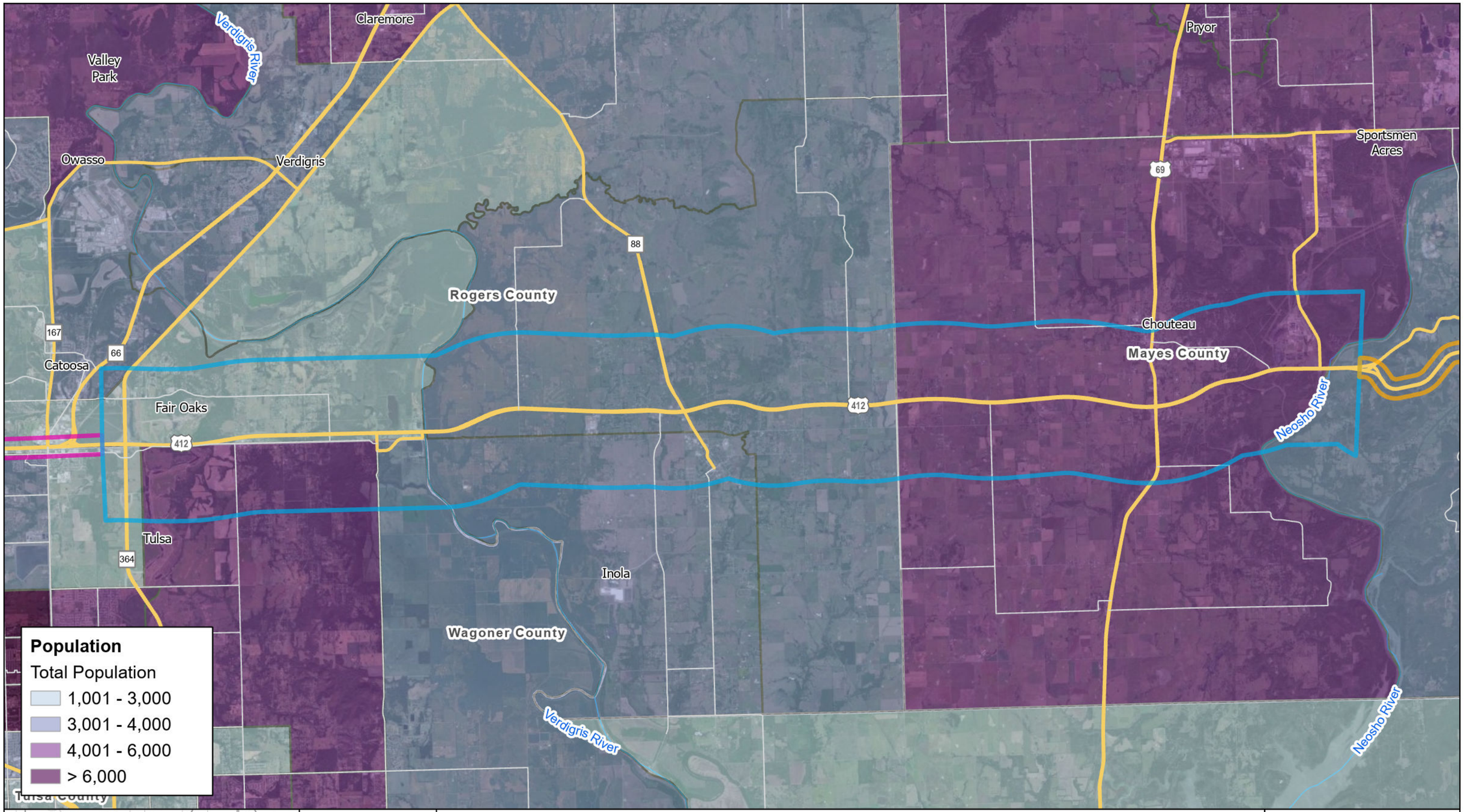
Tulsa Planning Segment

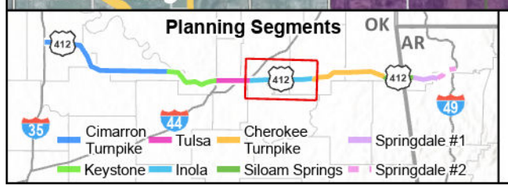
Source: US Census Bureau, ACS: 2015-2019.

N

0 0.5 1 Mi

June 2023





INTERSTATE 412

Appendix A - Population

Sheet 4 of 8

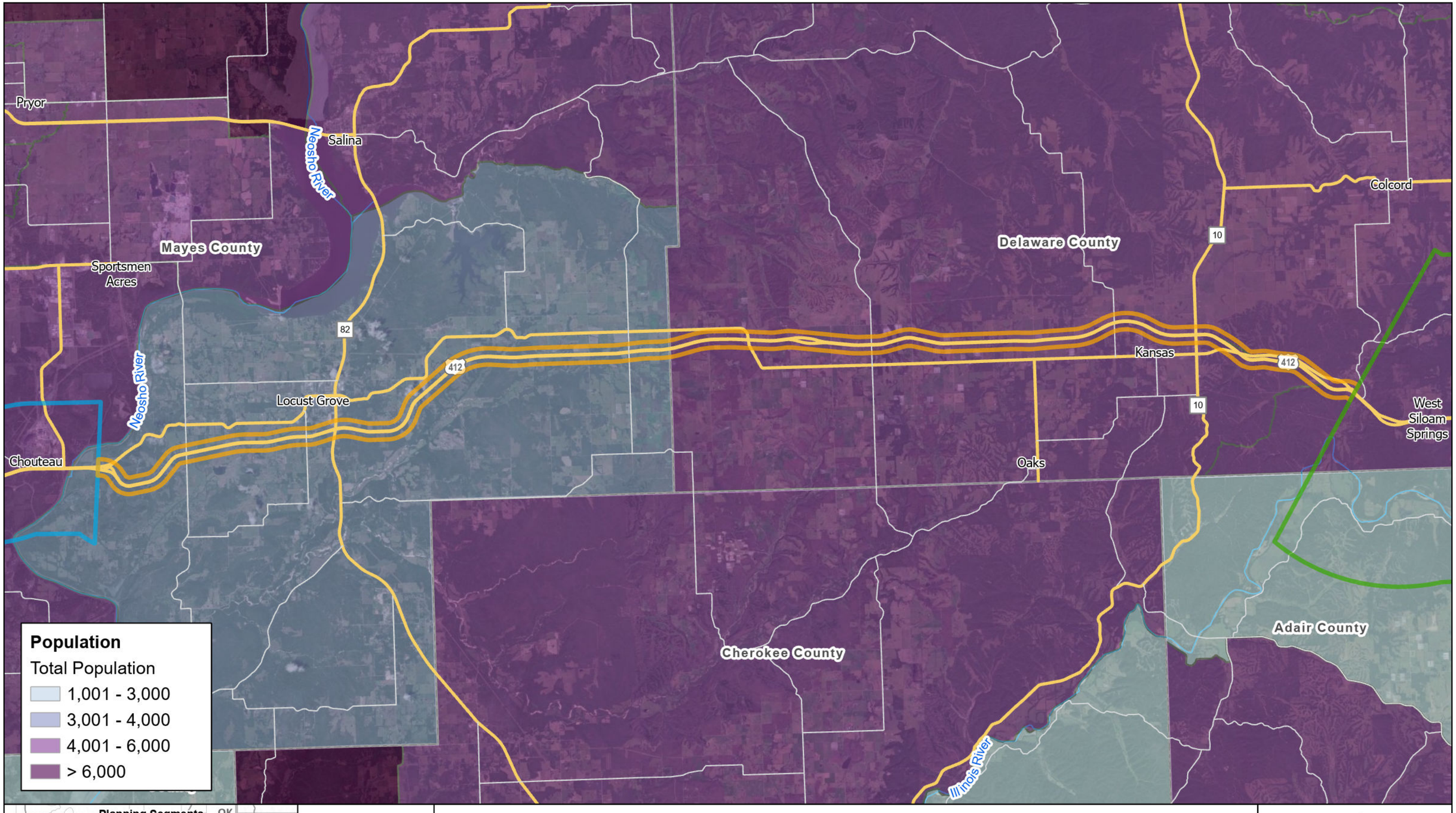
Inola Planning Segment

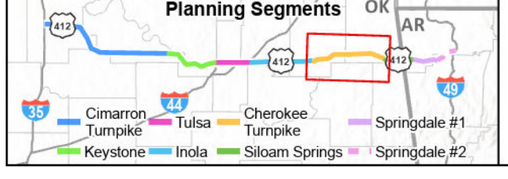
Source: US Census Bureau, ACS: 2015-2019.

N

0 1.25 2.5 Mi

June 2023





INTERSTATE 412

Appendix A - Population

Sheet 5 of 8

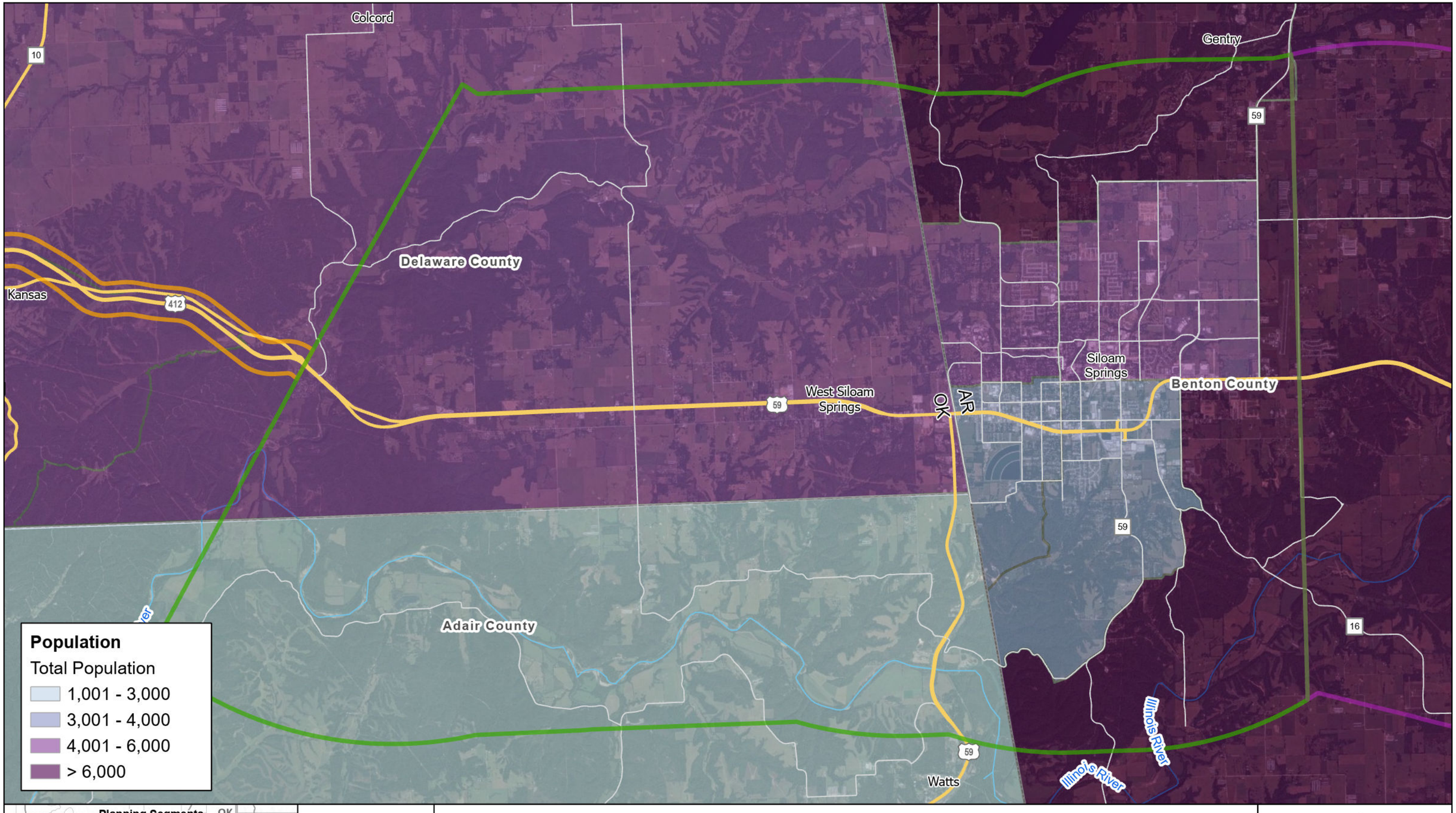
Cherokee Turnpike Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 1.5 3 Mi

June 2023



Appendix A - Population

Sheet 6 of 8

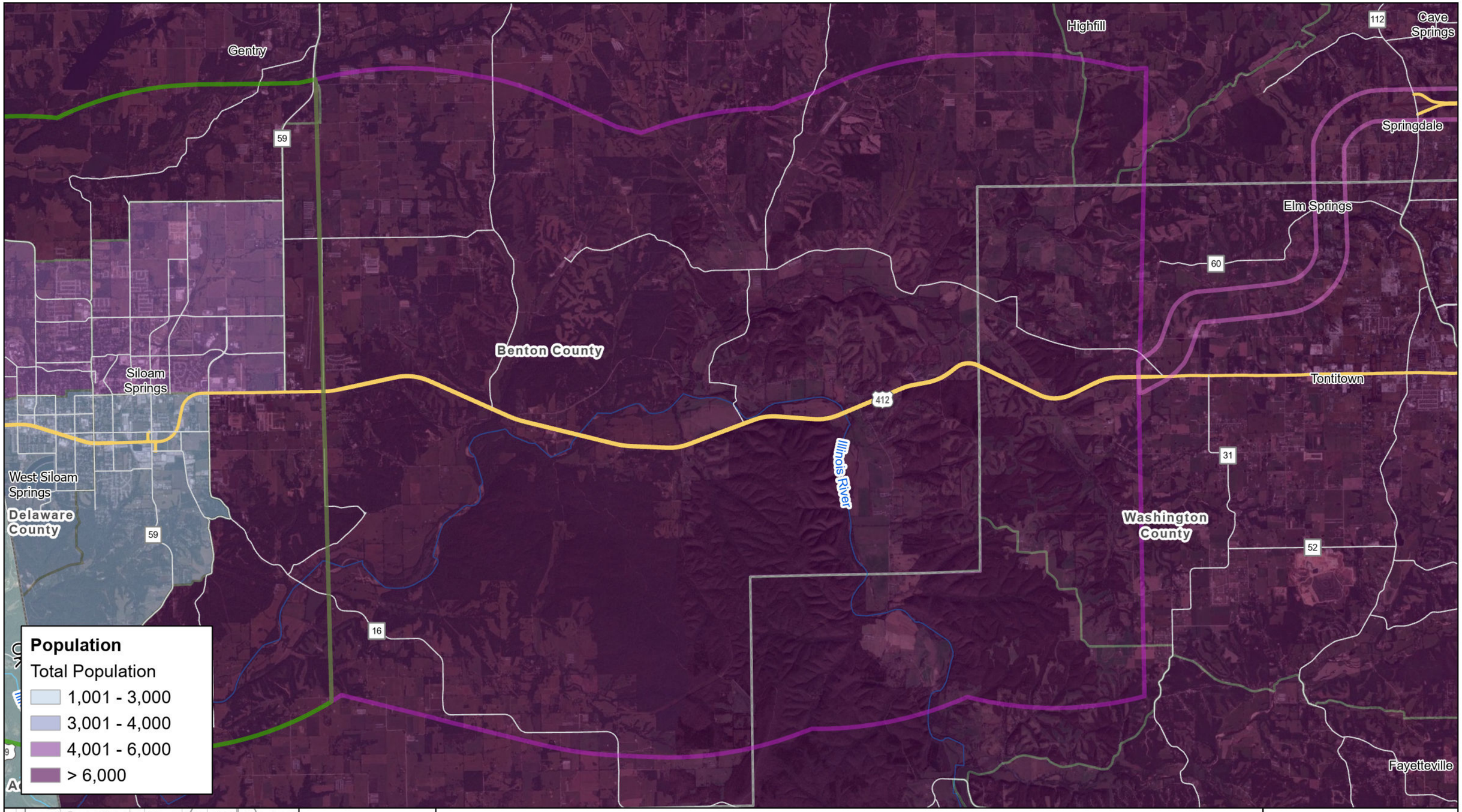
Siloam Springs Planning Segment

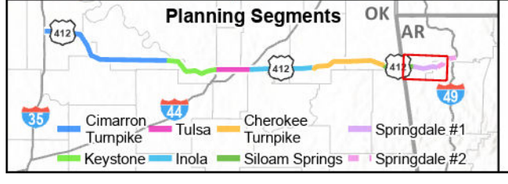
Source: US Census Bureau, ACS: 2015-2019.

N

0 0.75 1.5 Mi

June 2023





INTERSTATE 412

Appendix A - Population

Sheet 7 of 8

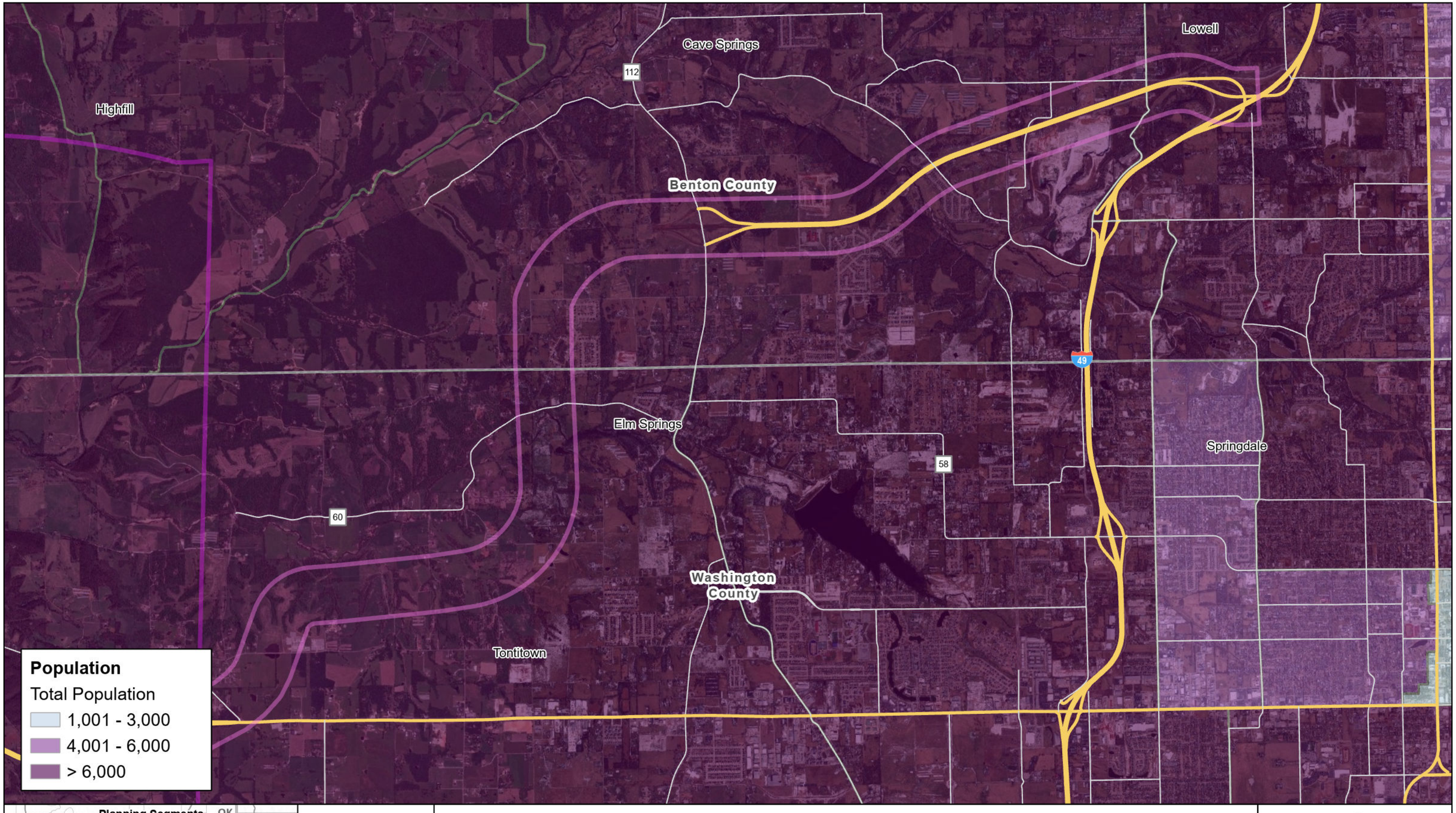
Springdale #1 Planning Segment

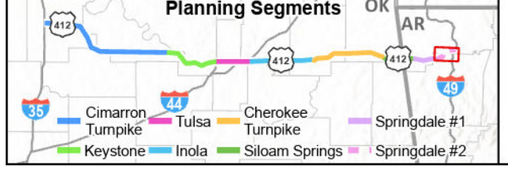
Source: US Census Bureau, ACS: 2015-2019.

N

0 0.75 1.5 Mi

June 2023





INTERSTATE 412

Appendix A - Population

Sheet 8 of 8

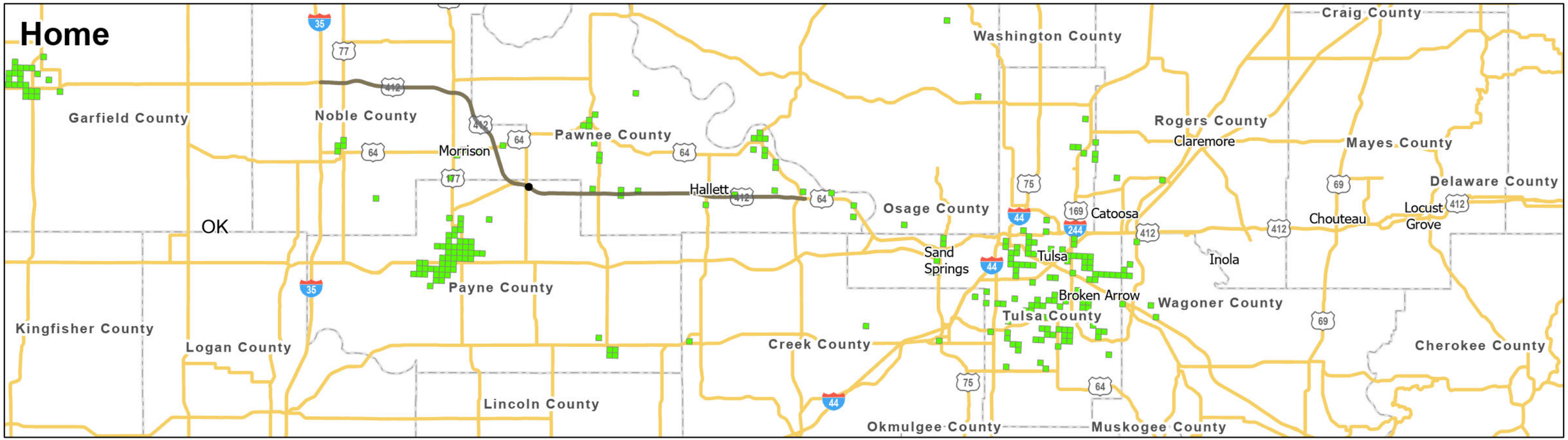
Springdale #2 Planning Segment

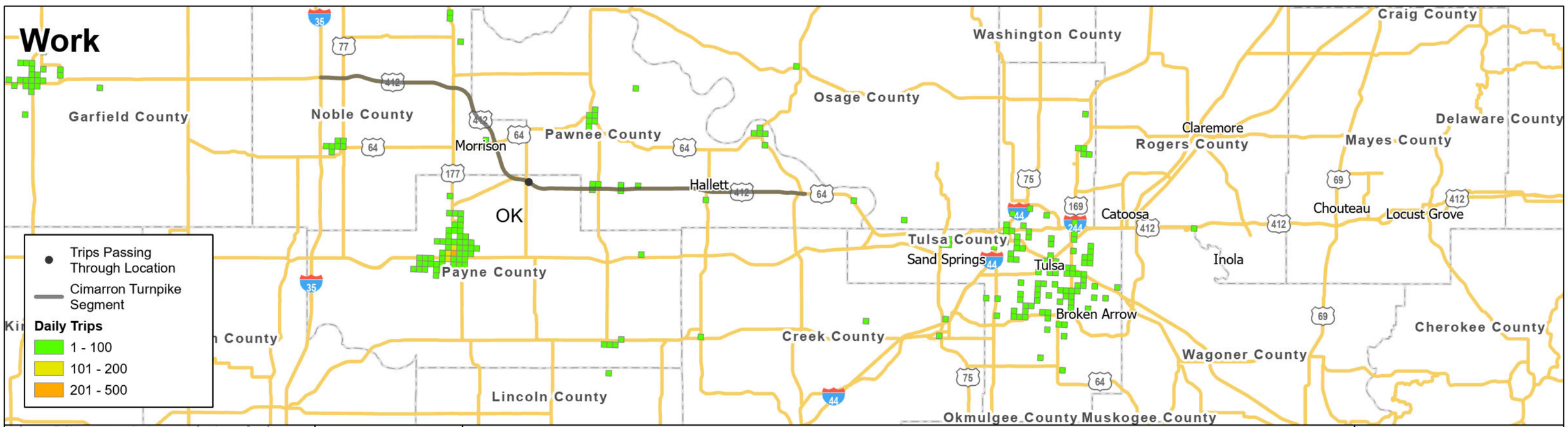
Source: US Census Bureau, ACS: 2015-2019.

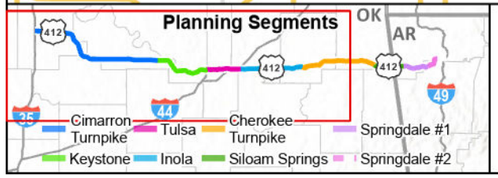
N

0 0.45 0.9 Mi

June 2023







INTERSTATE 412

Appendix B - Home and Work Locations of U.S. 412 Drivers

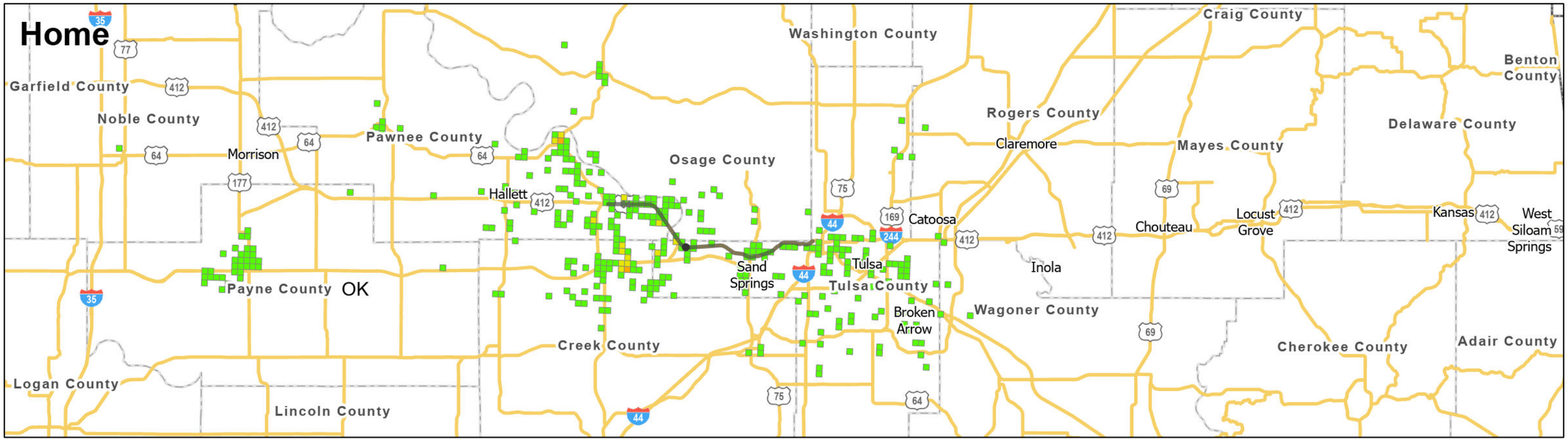
Cimarron Turnpike Planning Segment

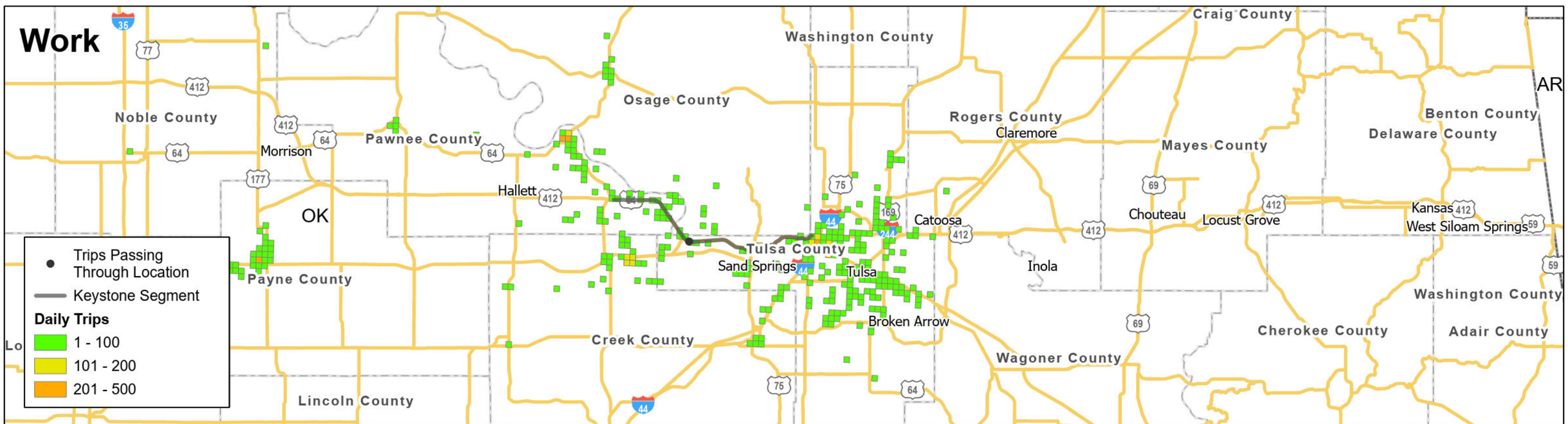
Source: Street Light, 2019.

N

0 1.5 3 Mi

June 2023





Appendix B - Home and Work Locations of U.S. 412 Drivers

Sheet 2 of 7

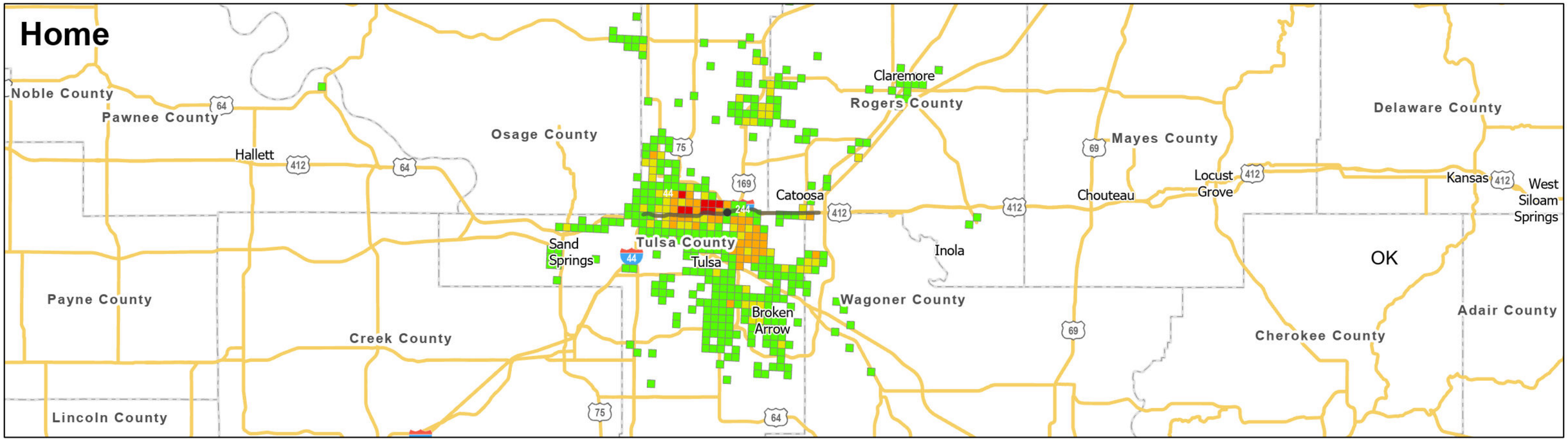
Keystone Planning Segment

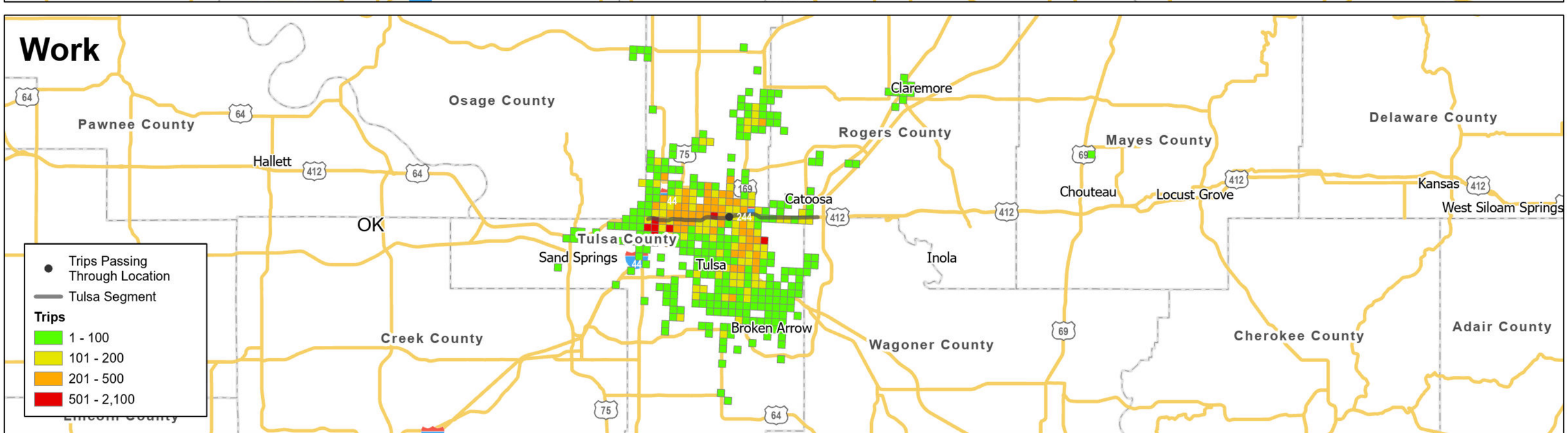
Source: Street Light, 2019.

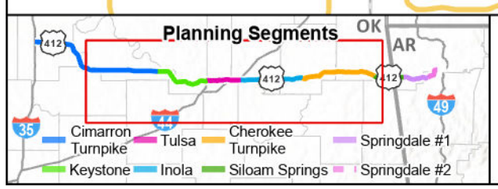
N

0 1.5 3 Mi

June 2023







Appendix B - Home and Work Locations of U.S. 412 Drivers

Sheet 3 of 7

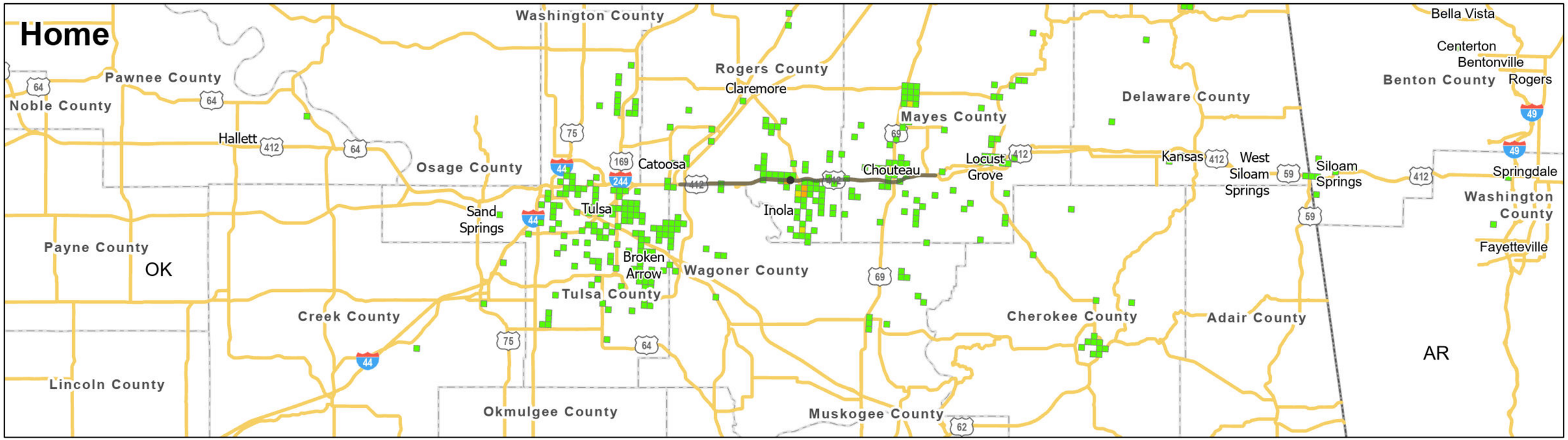
Tulsa Planning Segment

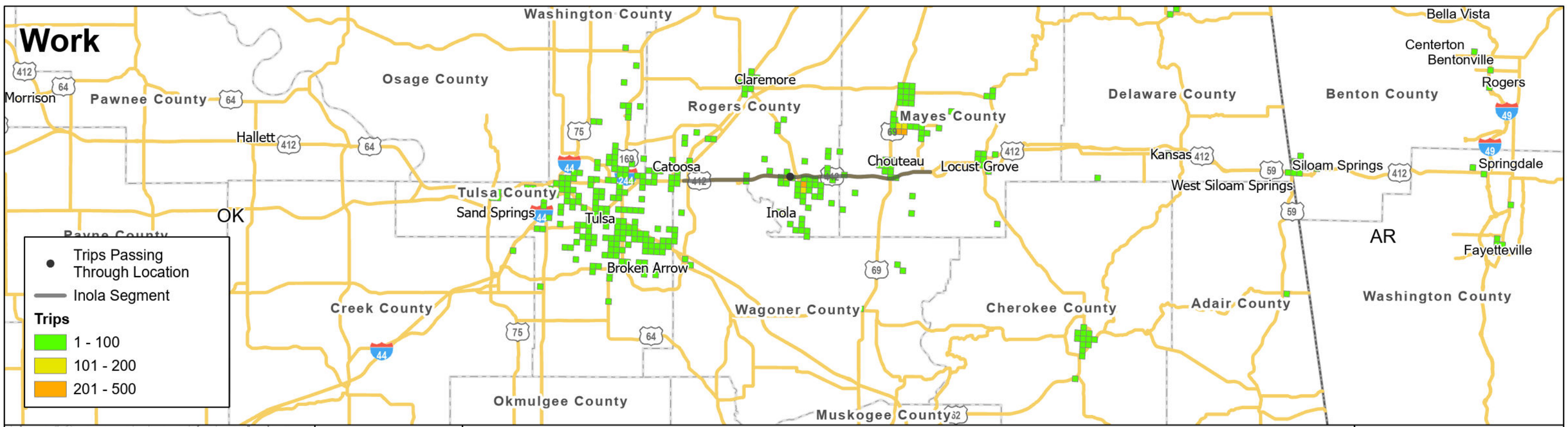
Source: Street Light, 2019.

N

0 1.5 3 Mi

June 2023





Appendix B - Home and Work Locations of U.S. 412 Drivers

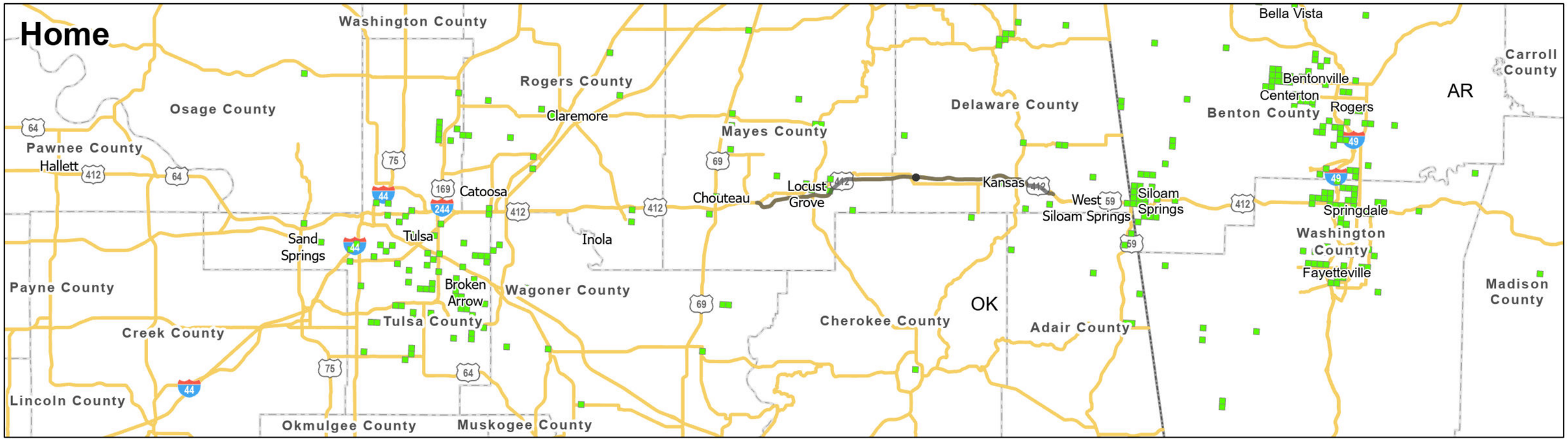
Inola Planning Segment

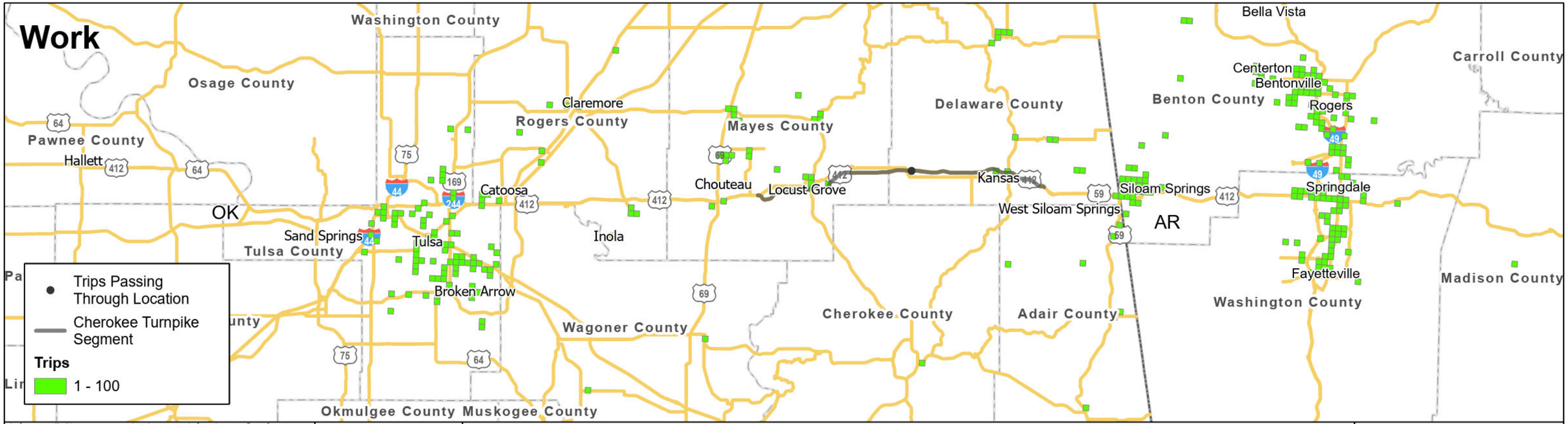
Source: Street Light, 2019.

N

0 1.5 3 Mi

June 2023





Appendix B - Home and Work Locations of U.S. 412 Drivers

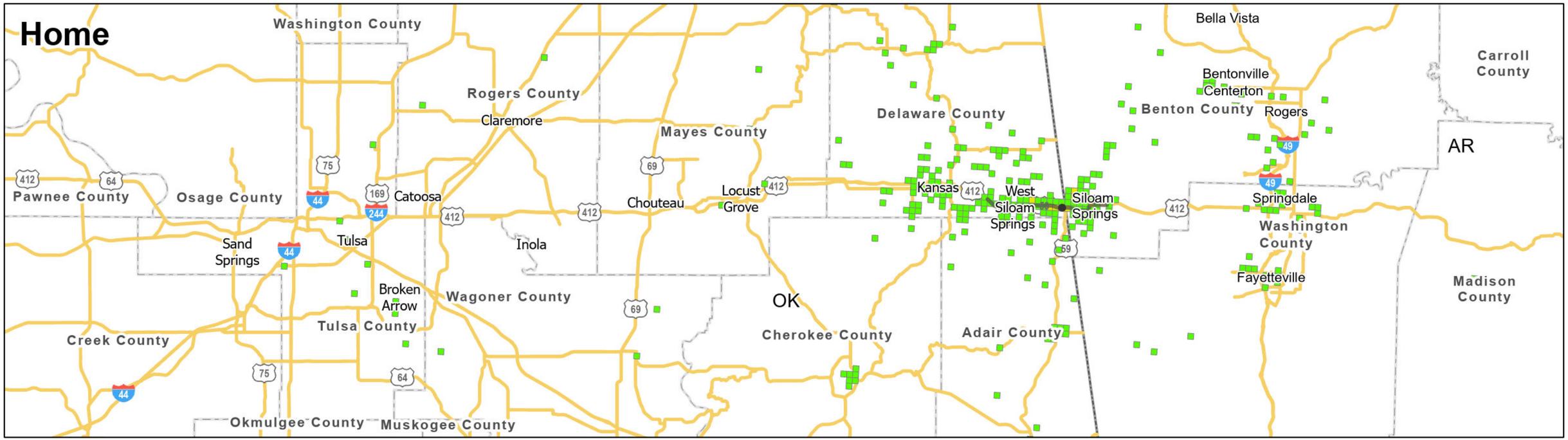
Cherokee Turnpike Planning Segment

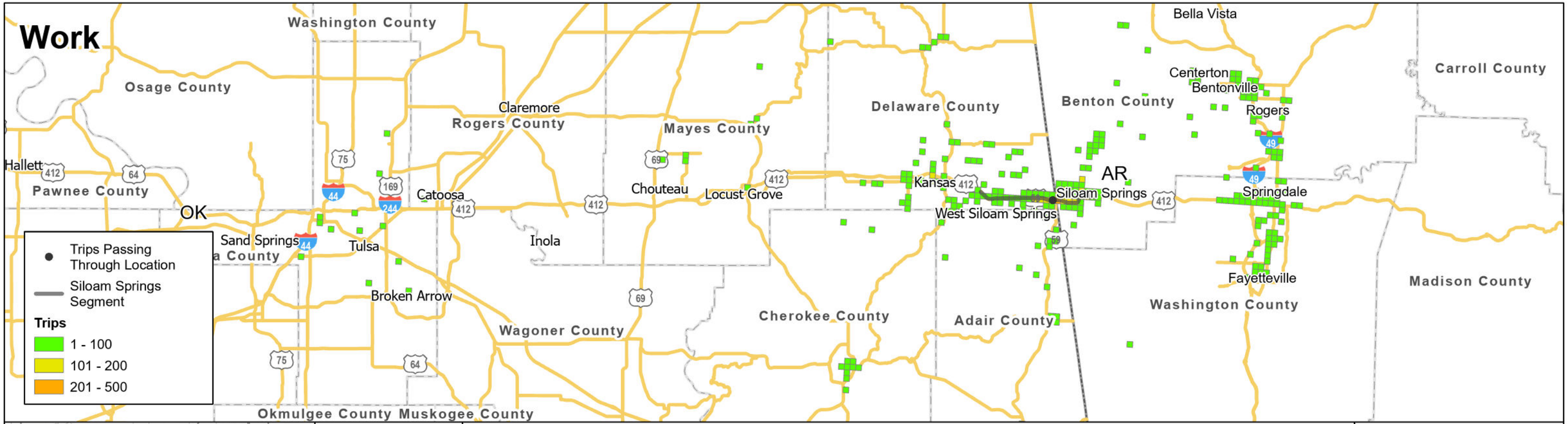
Source: Street Light, 2019.

N

0 1.5 3 Mi

June 2023





Appendix B - Home and Work Locations of U.S. 412 Drivers

Siloam Springs Planning Segment

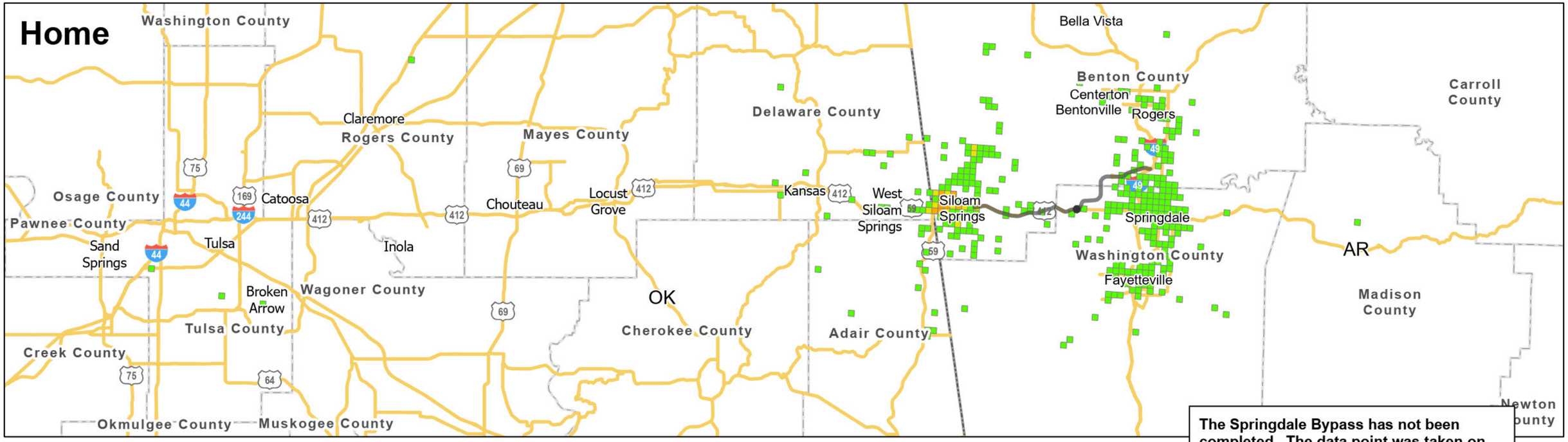
Source: Street Light, 2019.

N

0 1.5 3 Mi

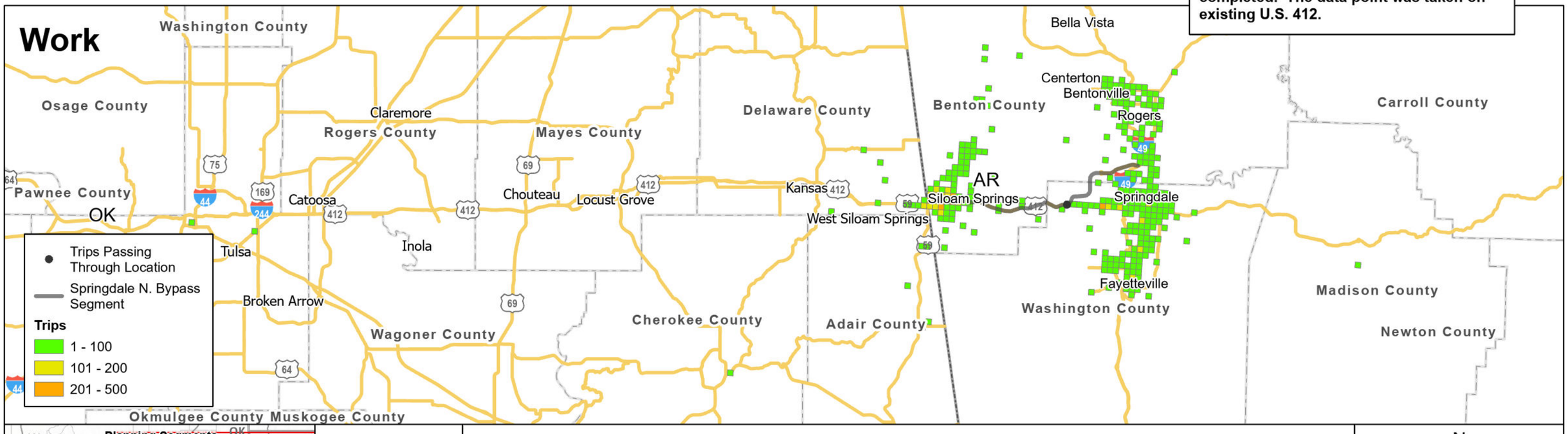
June 2023

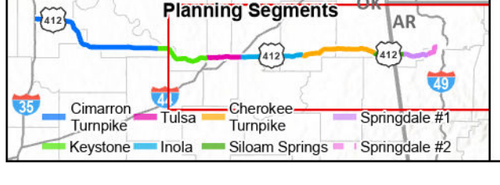
Home



The Springdale Bypass has not been completed. The data point was taken on existing U.S. 412.

Work





Appendix B - Home and Work Locations of U.S. 412 Drivers Sheet 7 of 7

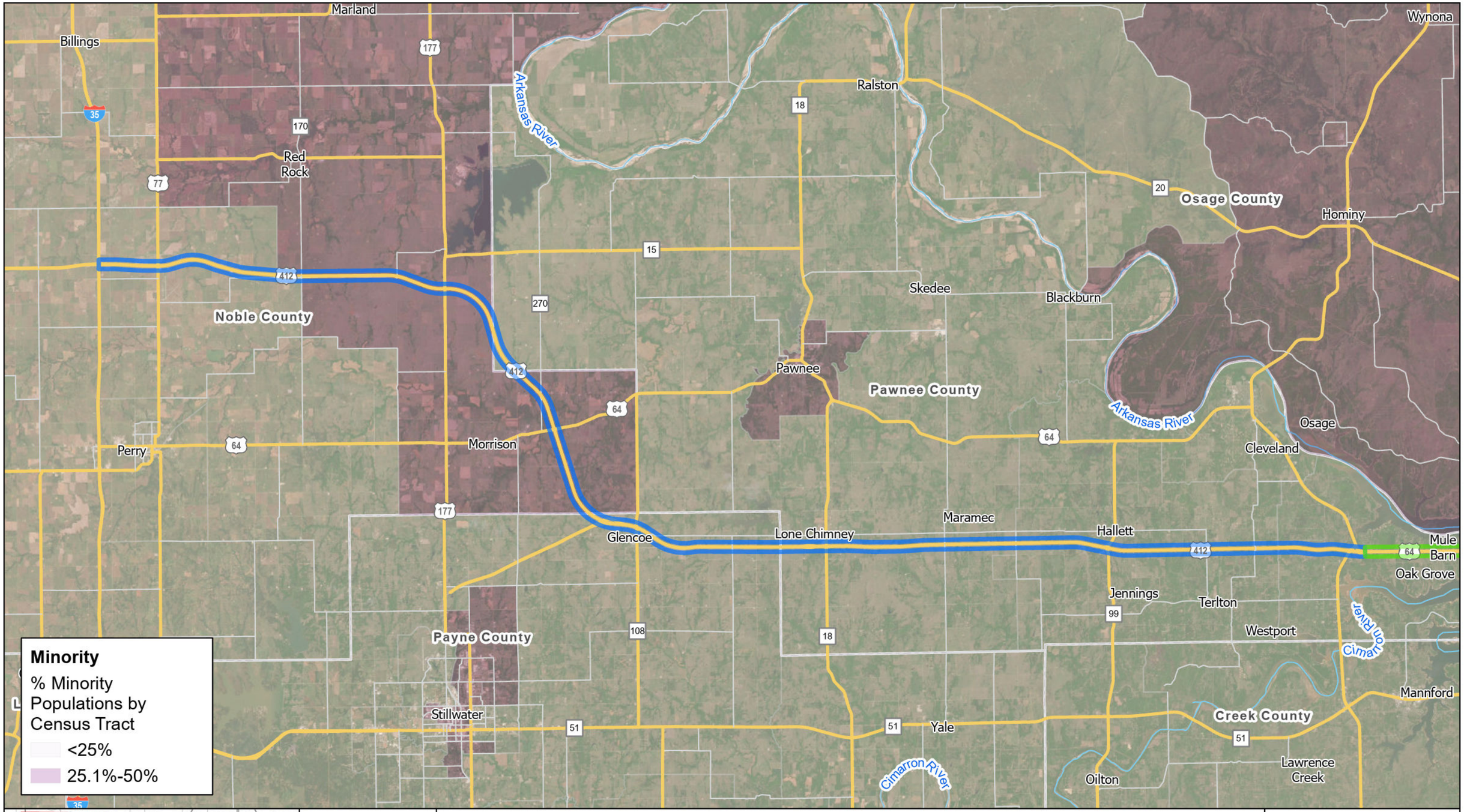
Springdale Planning Segment

Source: Street Light, 2019.

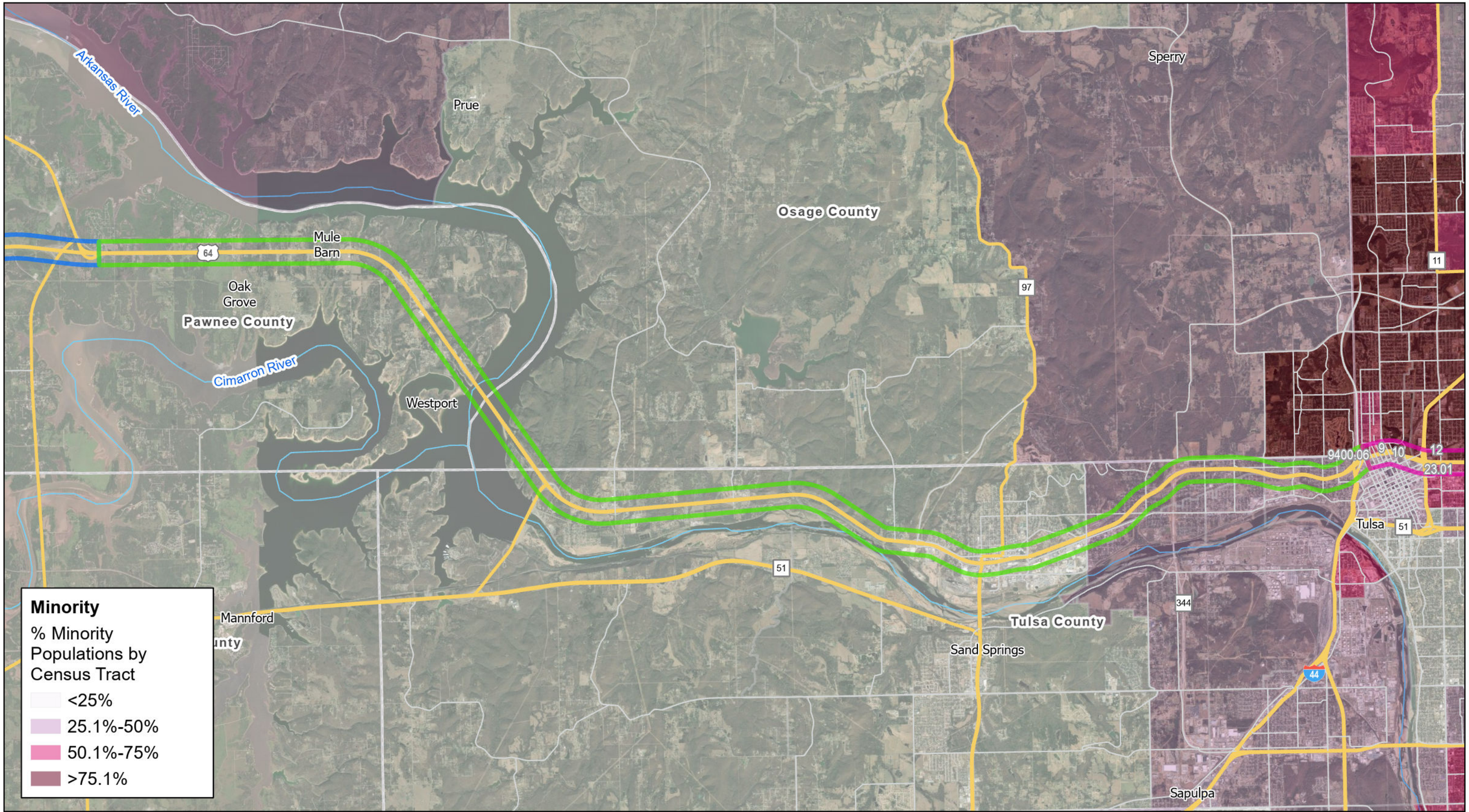
N

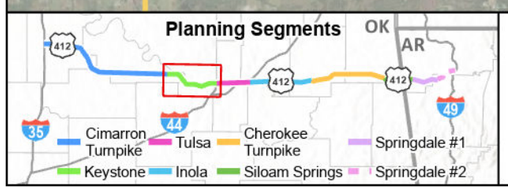
0 1.5 3 Mi

June 2023


Marland
Billings
177
Arkansas River
Ralston
18
Wynona
35
170
Red Rock
77
20
Osage County
Hominy
15
412
Noble County
270
Skedee
Blackburn
412
Pawnee
Pawnee County
64
Arkansas River
Osage
Perry
64
Morrison
64
Cleveland
177
Maramec
Glencoe
Lone Chimney
Hallett
412
Mule Barn
64
Oak Grove
Jennings
Terlton
99
Payne County
108
18
Westport
Cimarron River
Mannford
Stillwater
51
51
Yale
Creek County
51
Cimarron River
Oilton
Lawrence Creek
Minority
% Minority Populations by Census Tract
<25%
25.1%-50%
Planning Segments
OK
AR
Cimarron Turnpike
Tulsa
Cherokee Turnpike
Springdale #1
Keystone
Inola
Siloam Springs
Springdale #2
INTERSTATE
412
Appendix C - Minority Populations
Sheet 1 of 8
Cimarron Turnpike Planning Segment
Source: US Census Bureau, ACS: 2015-2019.
N
0
2.5
5
Mi

June 2023





INTERSTATE 412

Appendix C - Minority Populations

Sheet 2 of 8

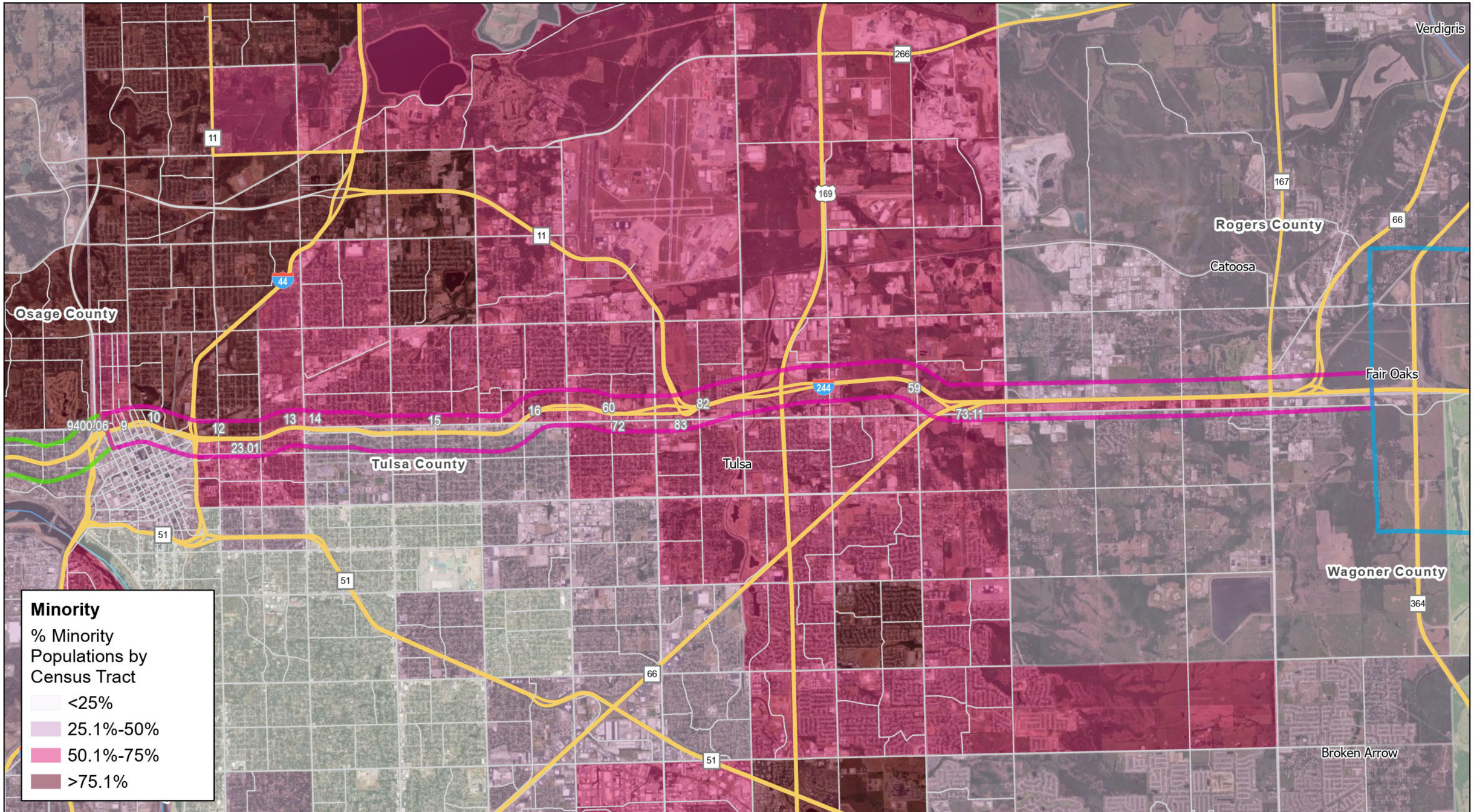
Keystone Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 1 2 Mi

June 2023



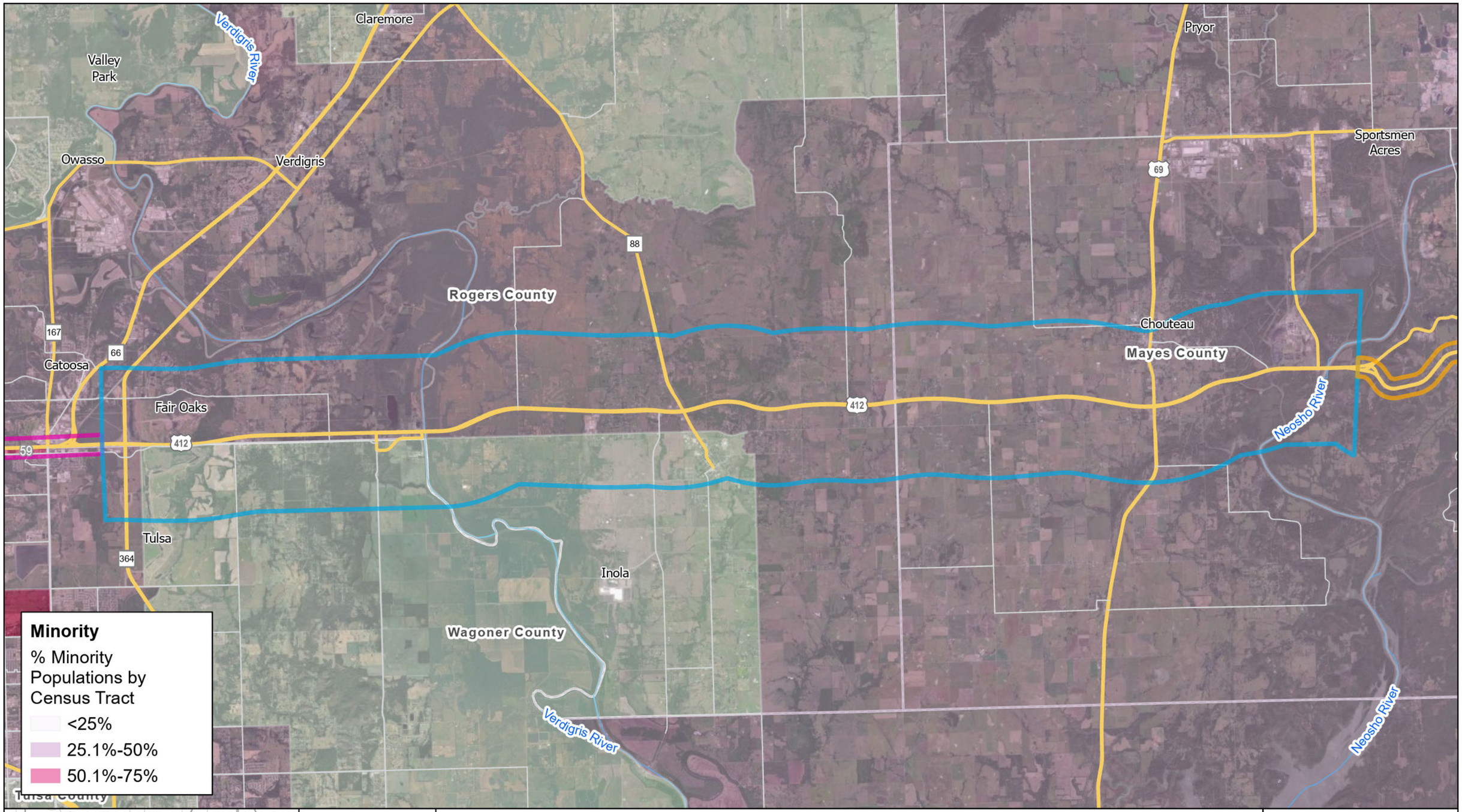
Appendix C - Minority Populations

Sheet 3 of 8

Tulsa Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

June 2023



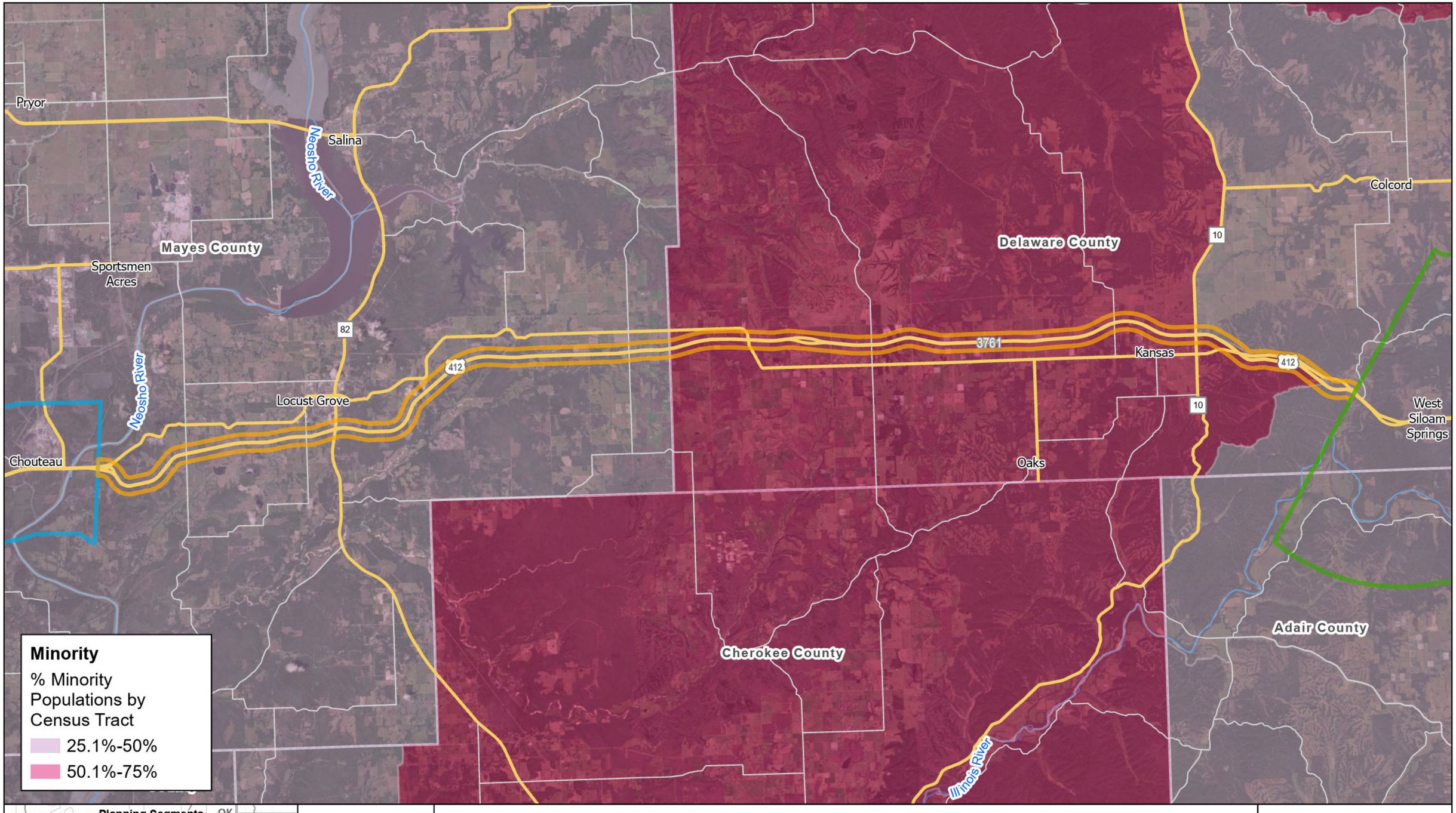
Appendix C - Minority Populations

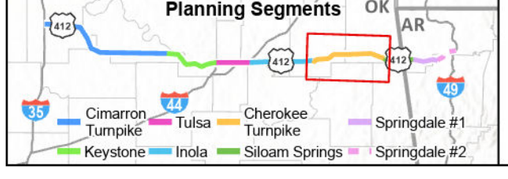
Sheet 4 of 8

Inola Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

June 2023





INTERSTATE 412

Appendix C - Minority Populations

Sheet 5 of 8

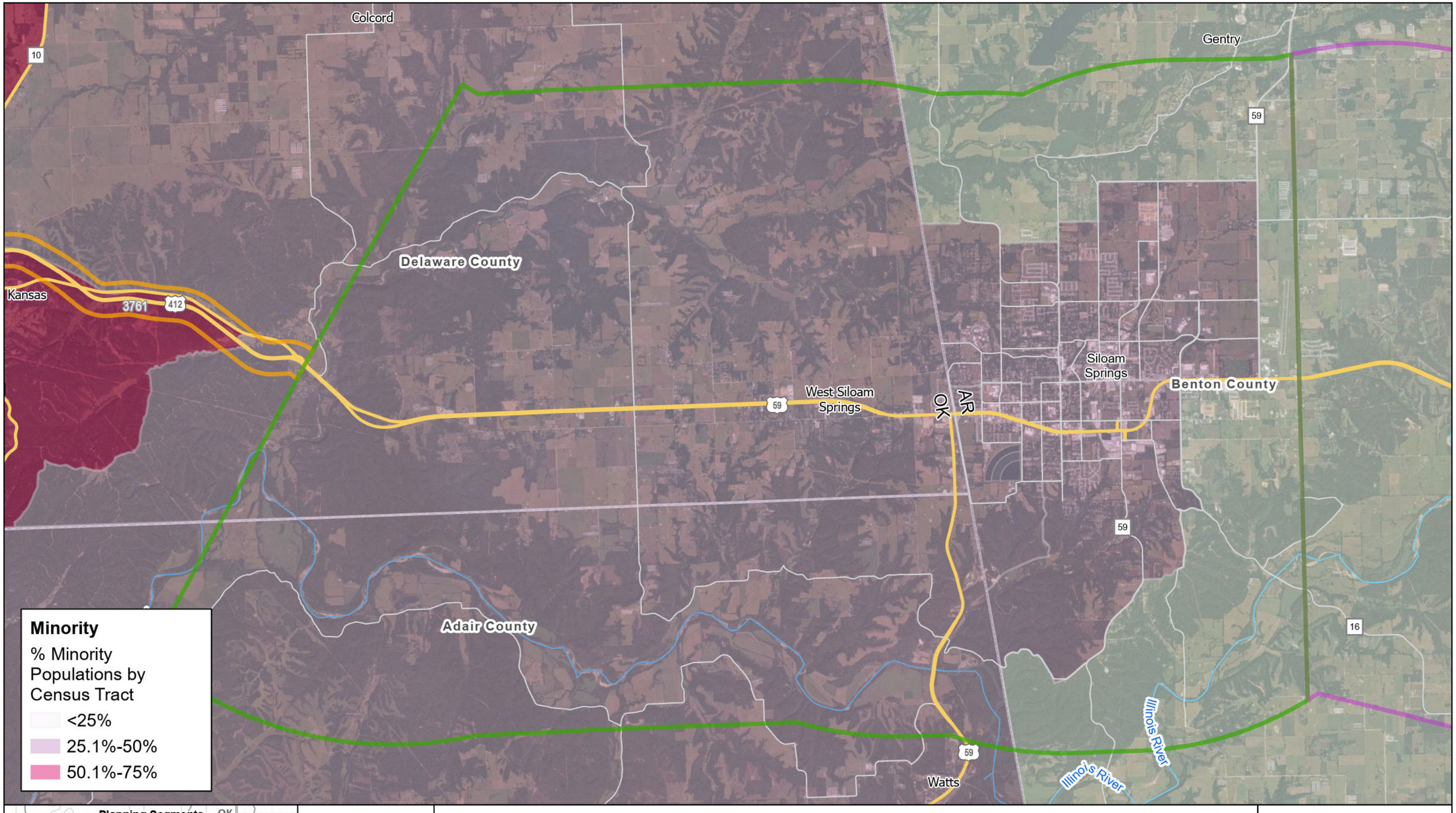
Cherokee Turnpike Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 1.5 3 Mi

June 2023



Appendix C - Minority Populations

Sheet 6 of 8

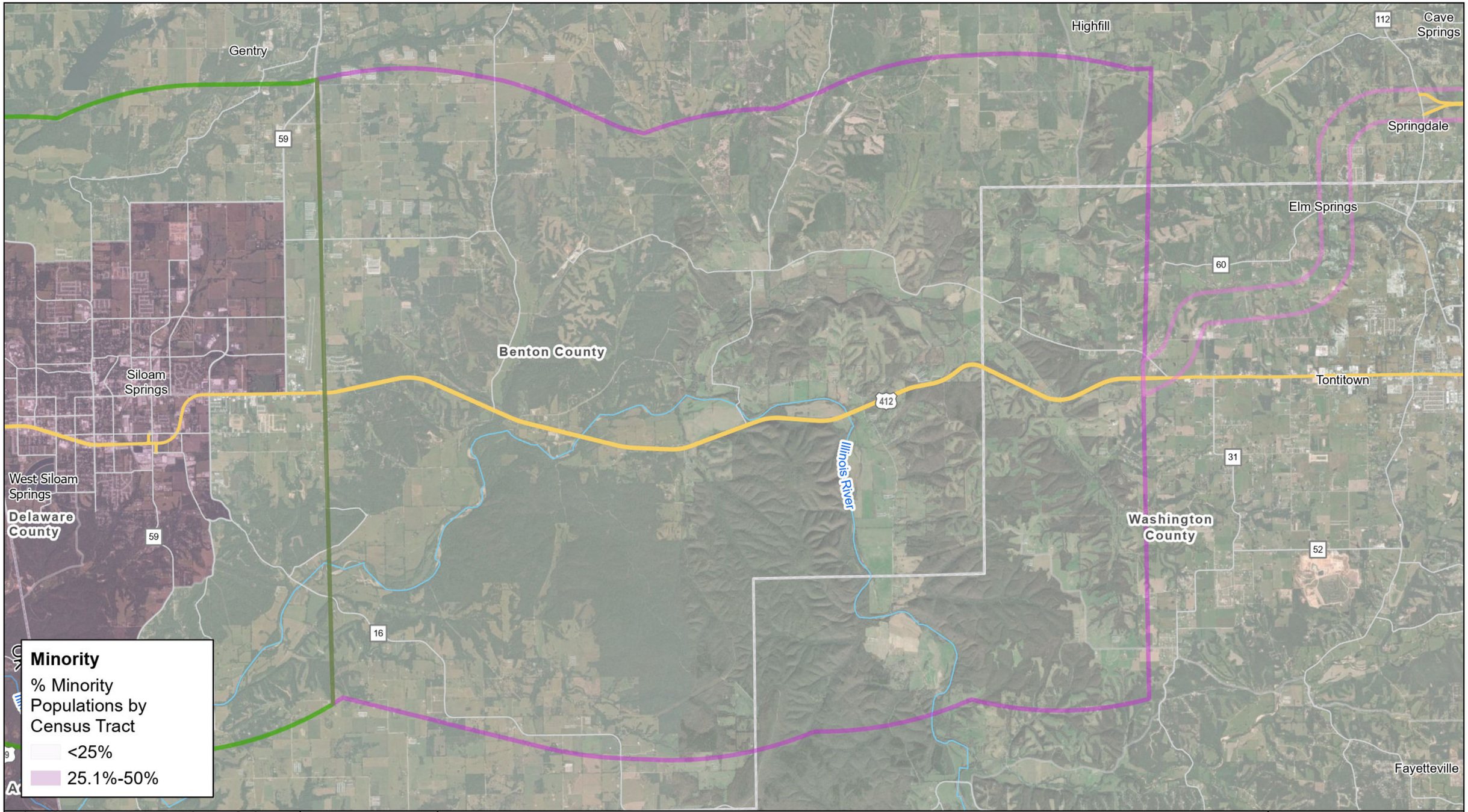
Siloam Springs Planning Segment

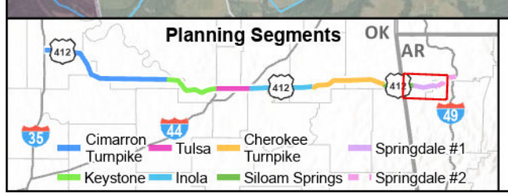
Source: US Census Bureau, ACS: 2015-2019.

N

0 0.75 1.5 Mi

June 2023





INTERSTATE 412

Appendix C - Minority Populations

Sheet 7 of 8

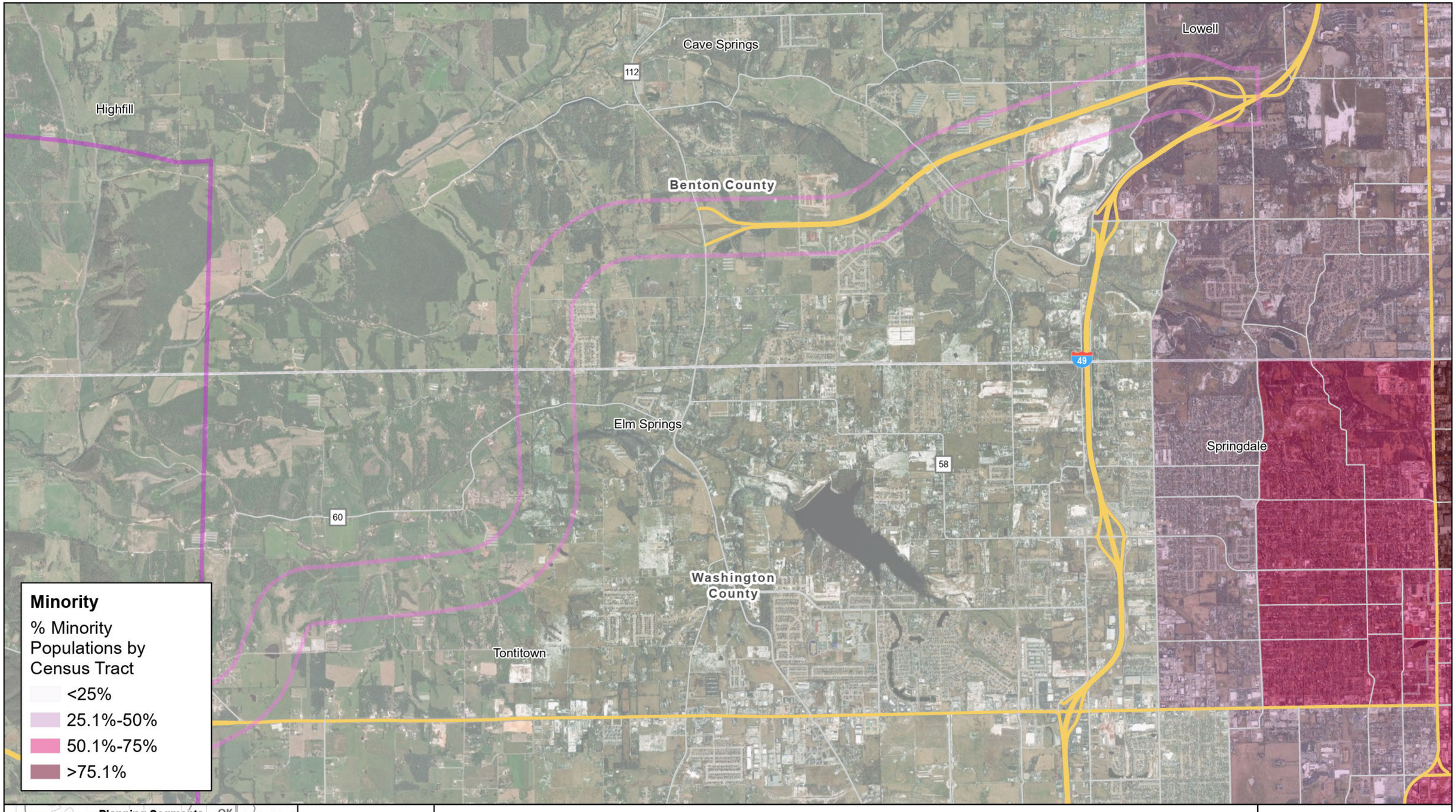
Springdale #1 Planning Segment

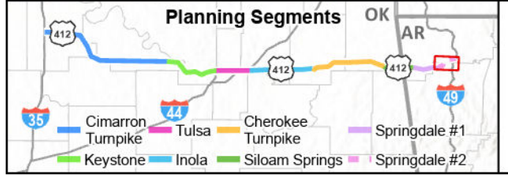
Source: US Census Bureau, ACS: 2015-2019.

N

0 0.75 1.5 Mi

June 2023





INTERSTATE 412

Appendix C - Minority Populations

Sheet 8 of 8

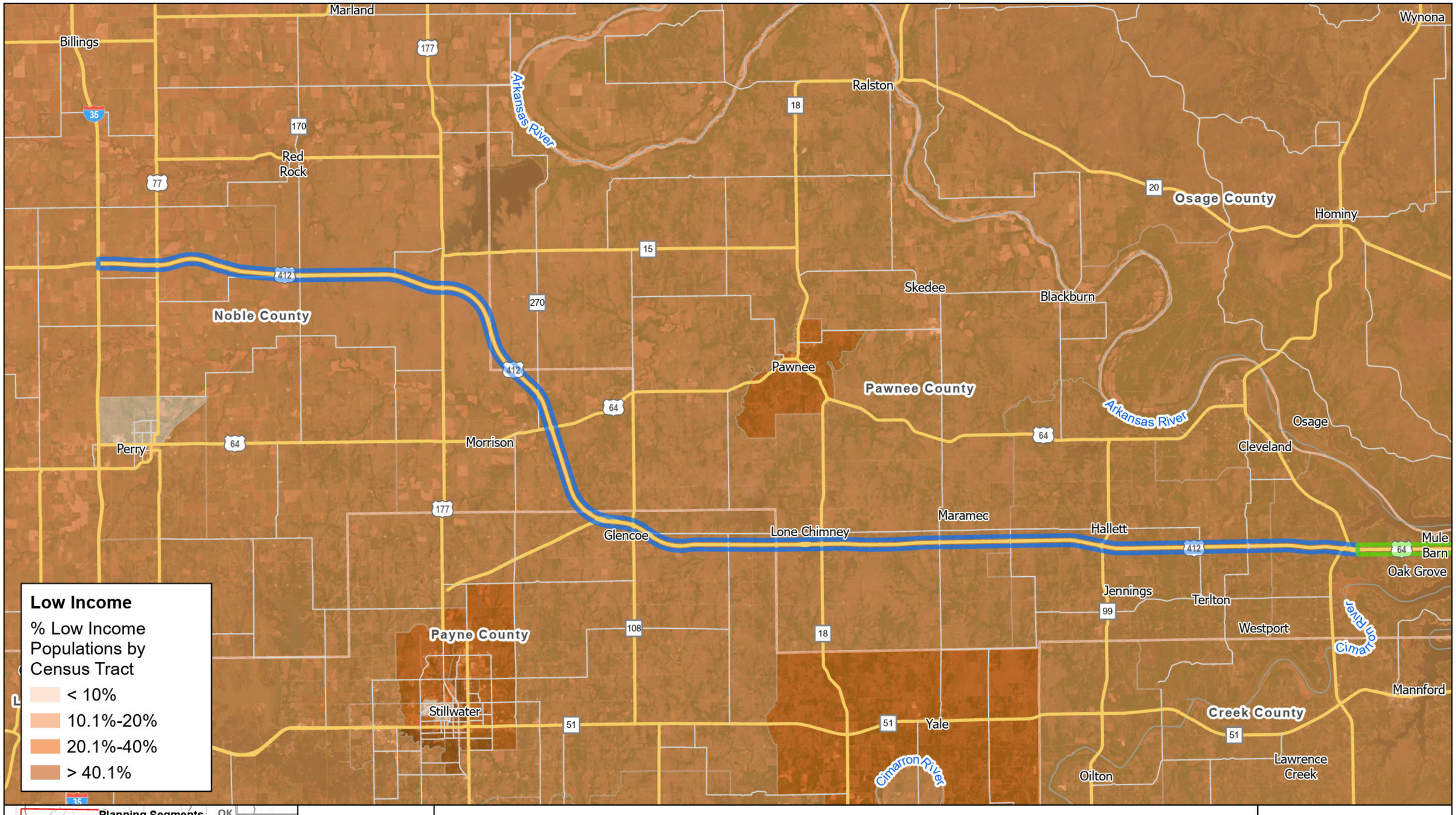
Springdale #2 Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 0.45 0.9 Mi

June 2023



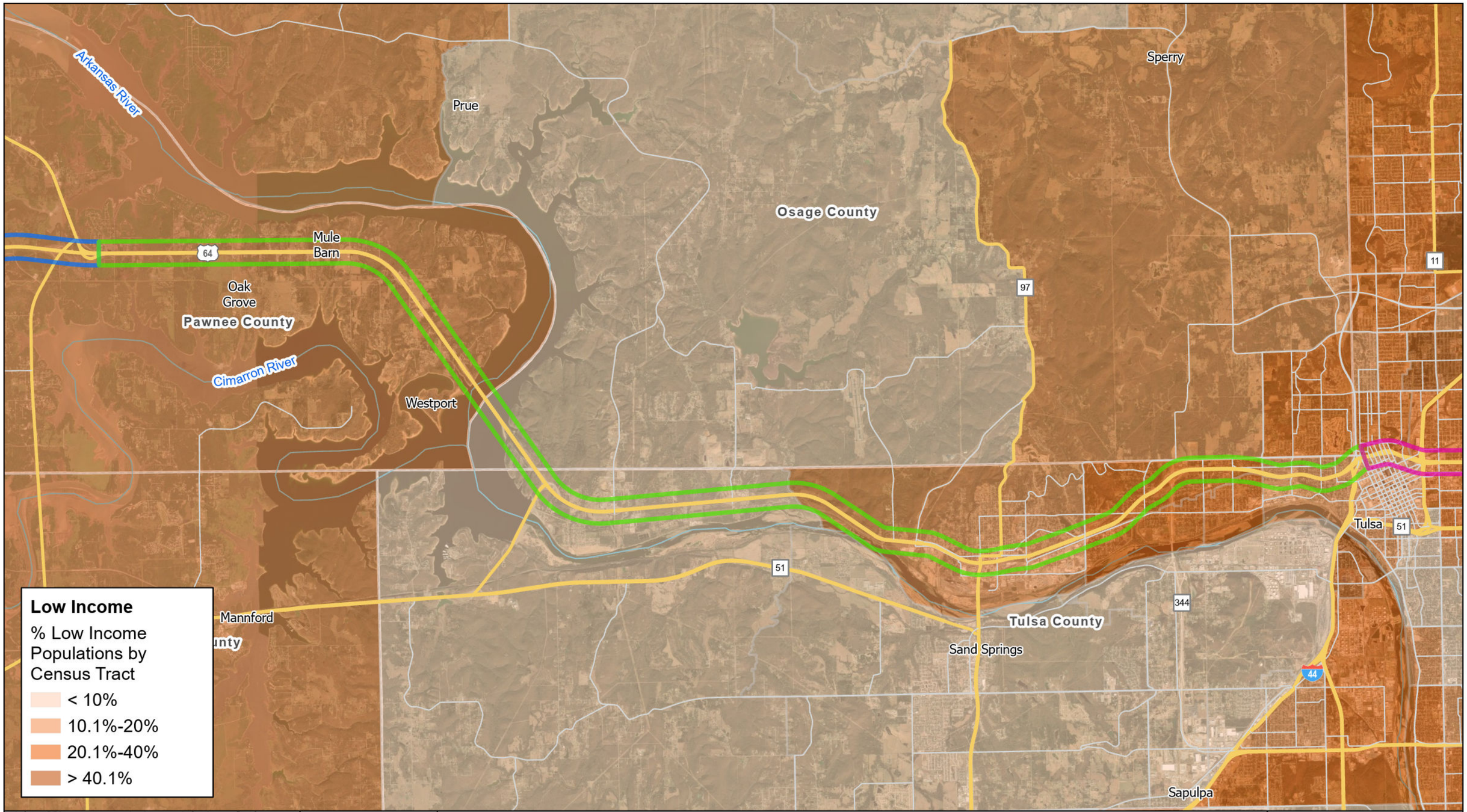
Appendix D - Low Income Populations

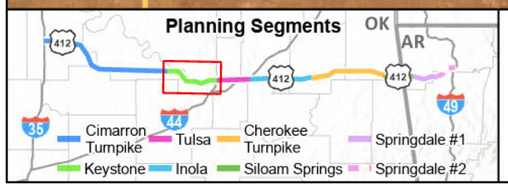
Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: US Census Bureau, ACS: 2015-20219.

June 2023





INTERSTATE 412

Appendix D - Low Income Populations

Sheet 2 of 8

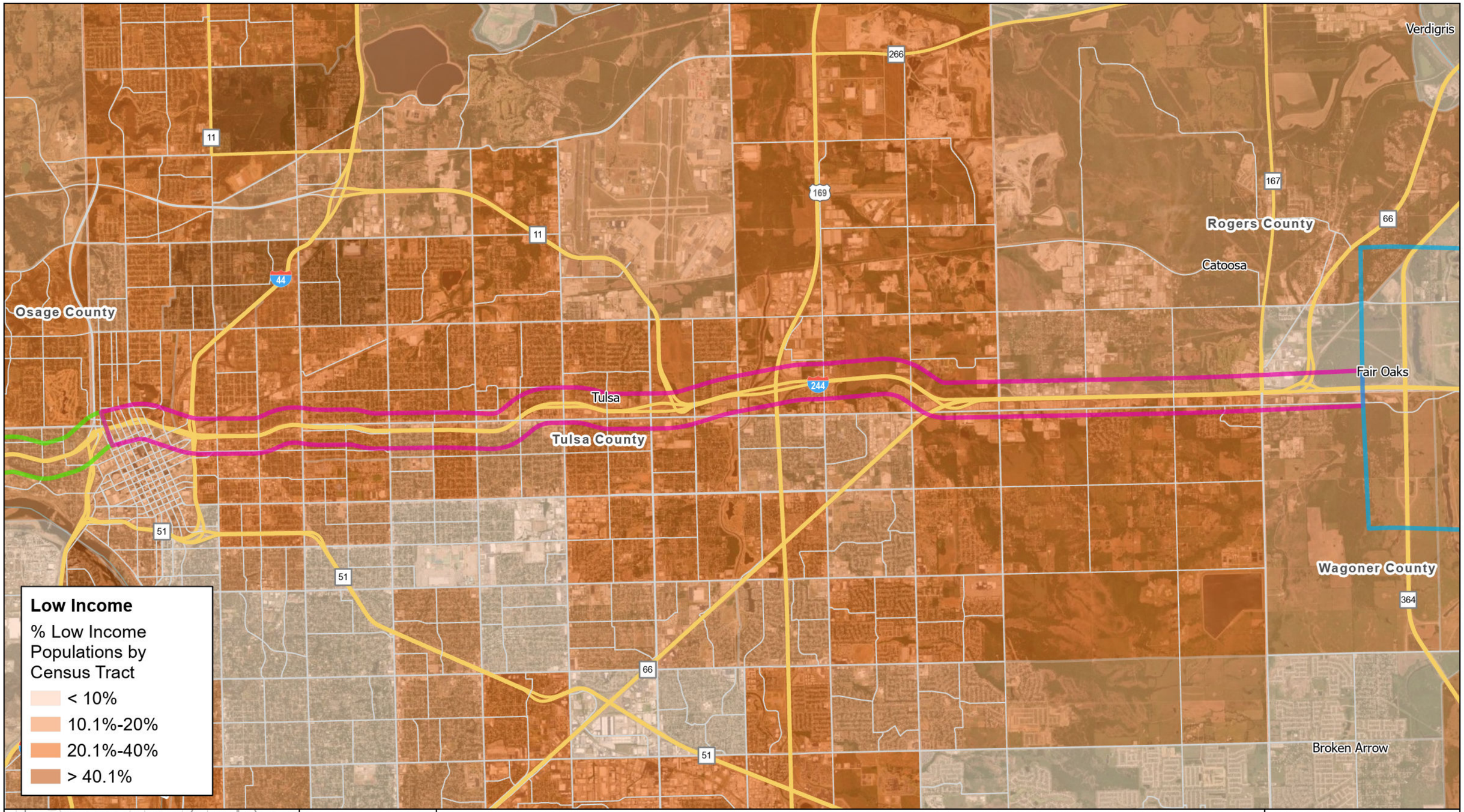
Keystone Planning Segment

Source: US Census Bureau, ACS: 2015-20219.

N

0 1 2 Mi

June 2023



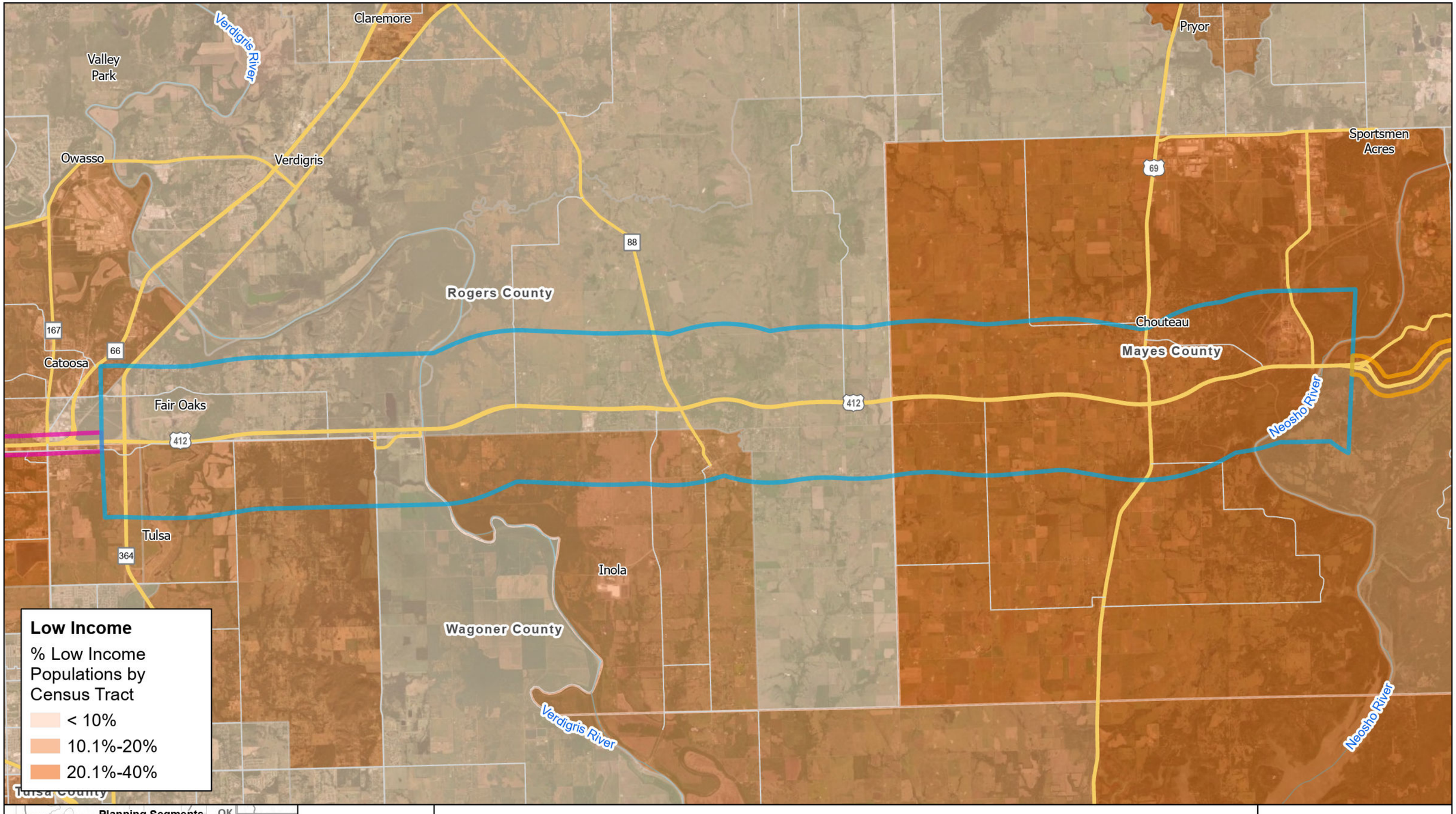
Appendix D - Low Income Populations

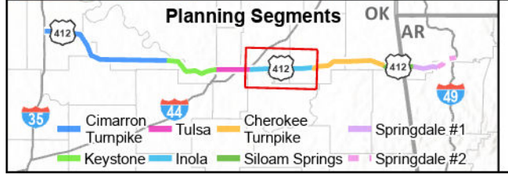
Sheet 3 of 8

Tulsa Planning Segment

Source: US Census Bureau, ACS: 2015-20219.

June 2023





Appendix D - Low Income Populations

Sheet 4 of 8

Inola Planning Segment

Source: US Census Bureau, ACS: 2015-20219.

N

0 1.25 2.5 Mi

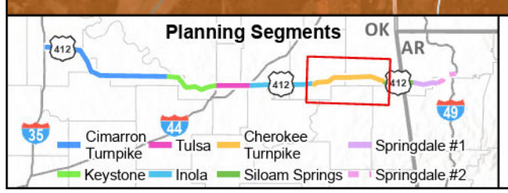
June 2023

Pryor
Salina
Neosho River
Mayes County
Sportsmen Acres
82
Neosho River
412
Locust Grove
Chouteau
Delaware County
10
Colcord
Kansas
412
10
West Siloam Springs
Oaks
Adair County
Cherokee County
Illinois River

Low Income

% Low Income Populations by Census Tract

- < 10%
- 10.1%-20%
- 20.1%-40%



INTERSTATE 412

Appendix D - Low Income Populations

Sheet 5 of 8

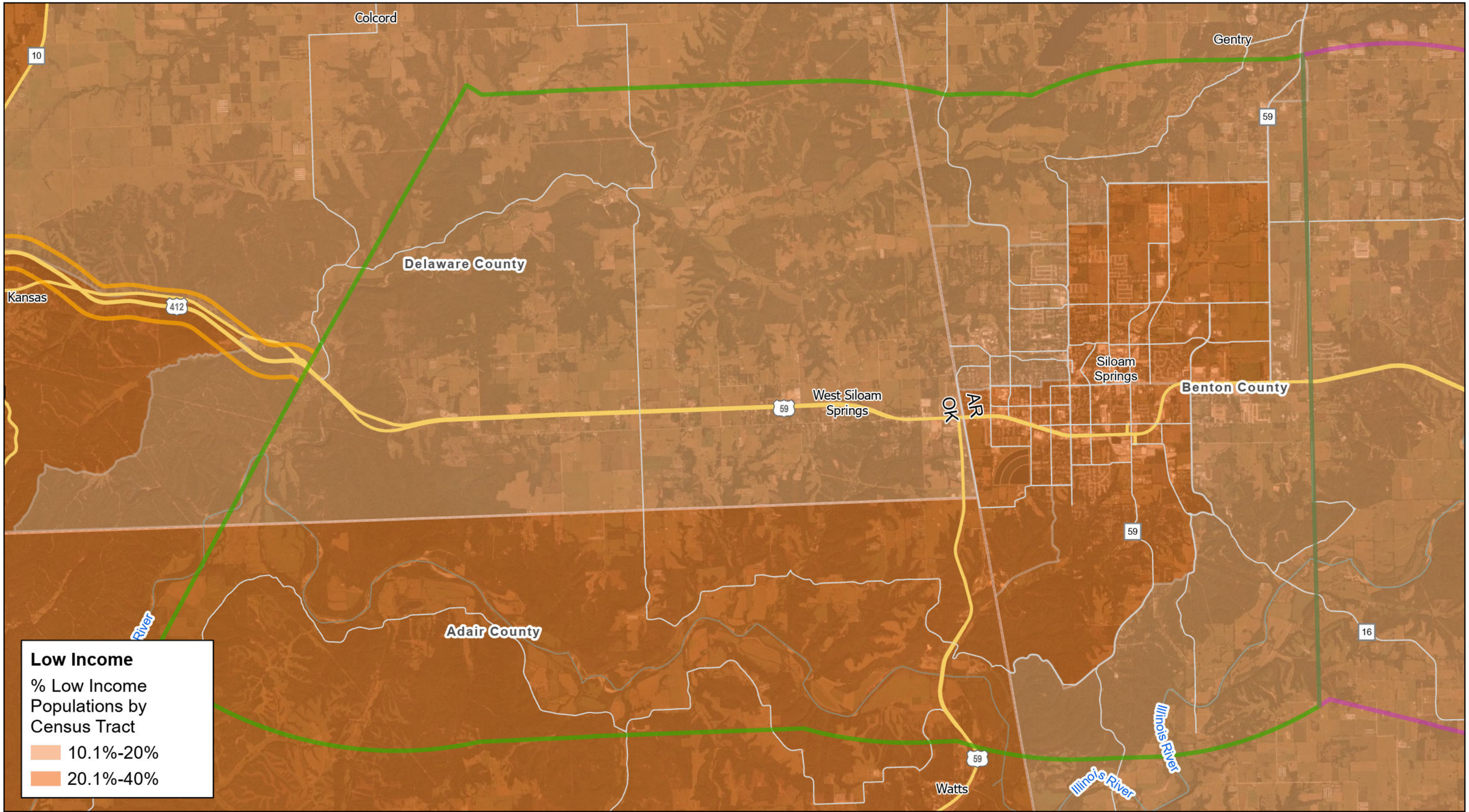
Cherokee Turnpike Planning Segment

Source: US Census Bureau, ACS: 2015-20219.

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix D - Low Income Populations

Sheet 6 of 8

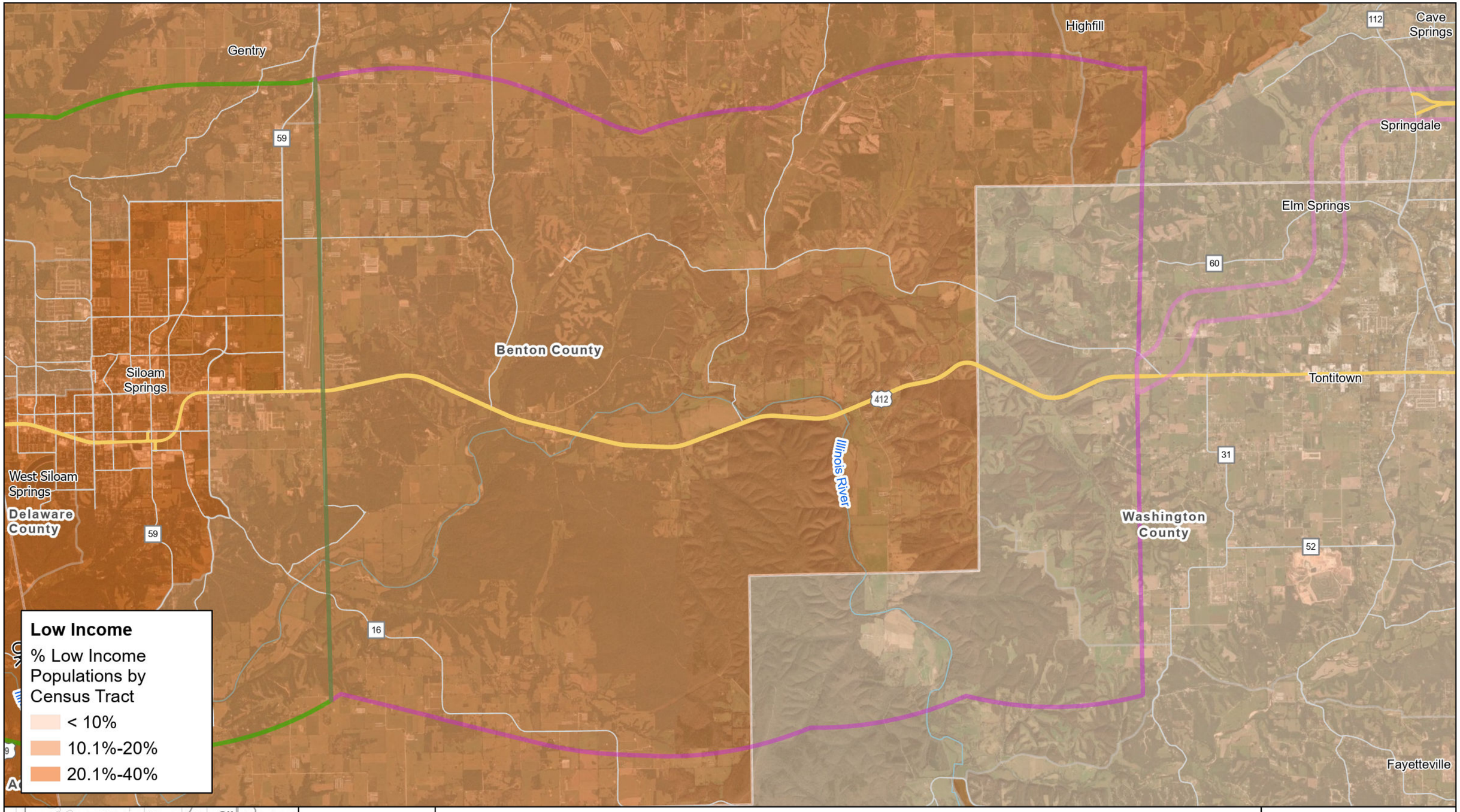
Siloam Springs Planning Segment

Source: US Census Bureau, ACS: 2015-20219.

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix D - Low Income Populations

Sheet 7 of 8

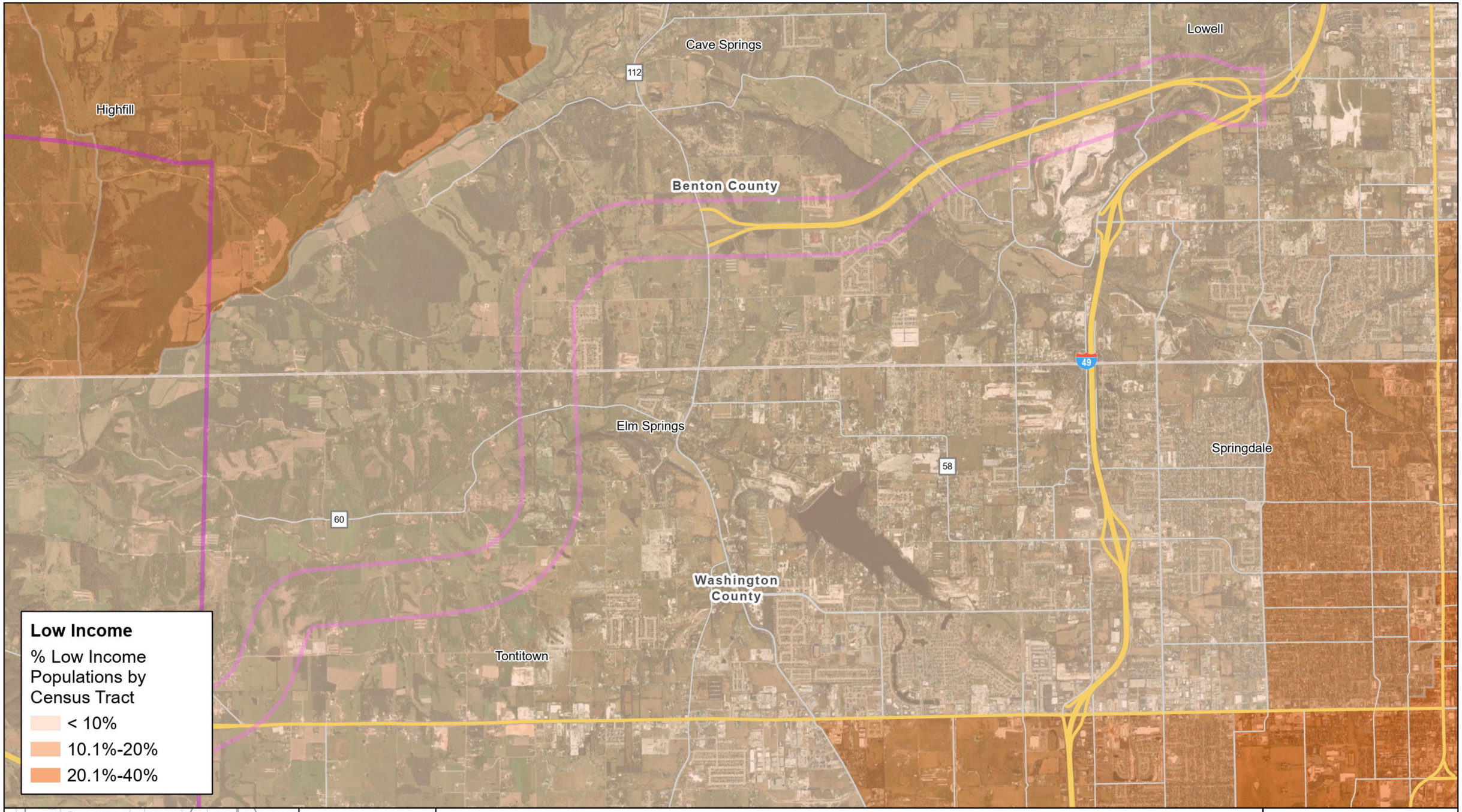
Springdale #1 Planning Segment

Source: US Census Bureau, ACS: 2015-20219.

N

0 0.75 1.5 Mi

June 2023



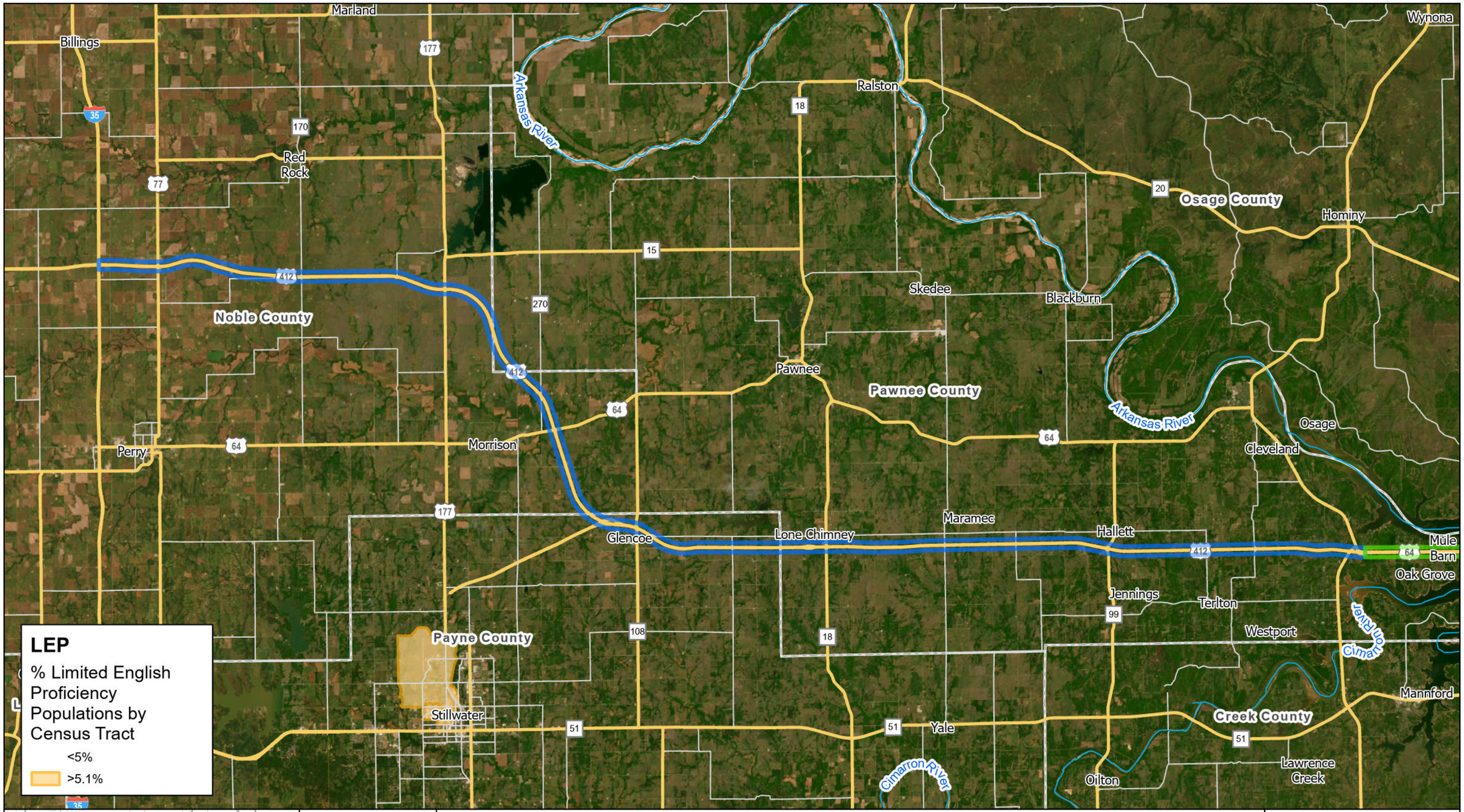
Appendix D - Low Income Populations

Sheet 8 of 8

Springdale #2 Planning Segment

Source: US Census Bureau, ACS: 2015-20219.

June 2023



Appendix E - Limited English Proficiency Populations

Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 2.5 5 Mi

June 2023

Arkansas River
Prue
Osage County
Sperry
Mule Barn
64
Oak Grove
Pawnee County
Cimarron River
Westport
97
11
12
23.01
Tulsa
51
Mannford
Tulsa County
Sand Springs
344
44
Sapulpa

LEP

% Limited English Proficiency Populations by Census Tract

<5%

>5.1%

INTERSTATE 412

Appendix E - Limited English Proficiency Populations

Sheet 2 of 8

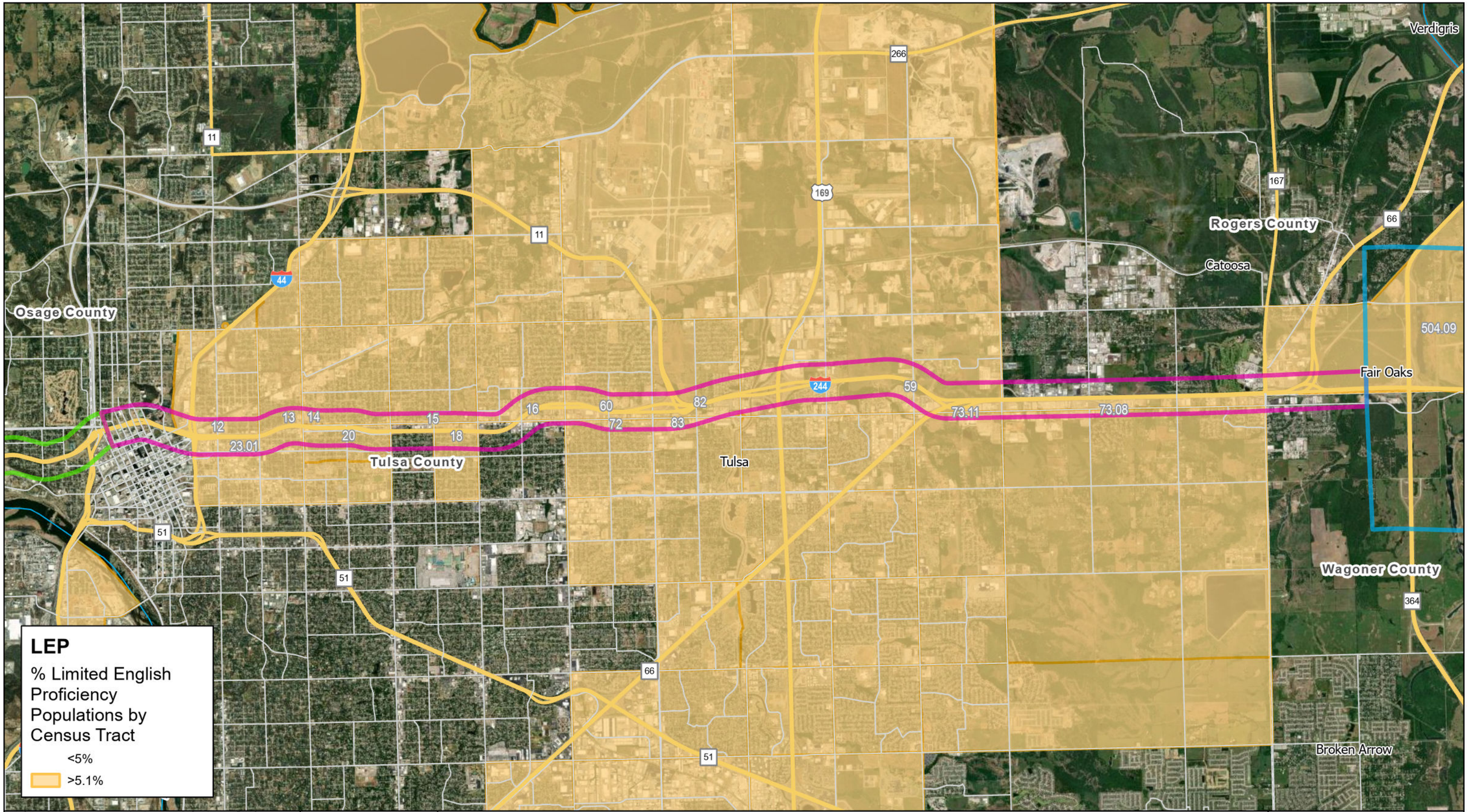
Keystone Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 1 2 Mi

June 2023



Appendix E - Limited English Proficiency Populations

Sheet 3 of 8

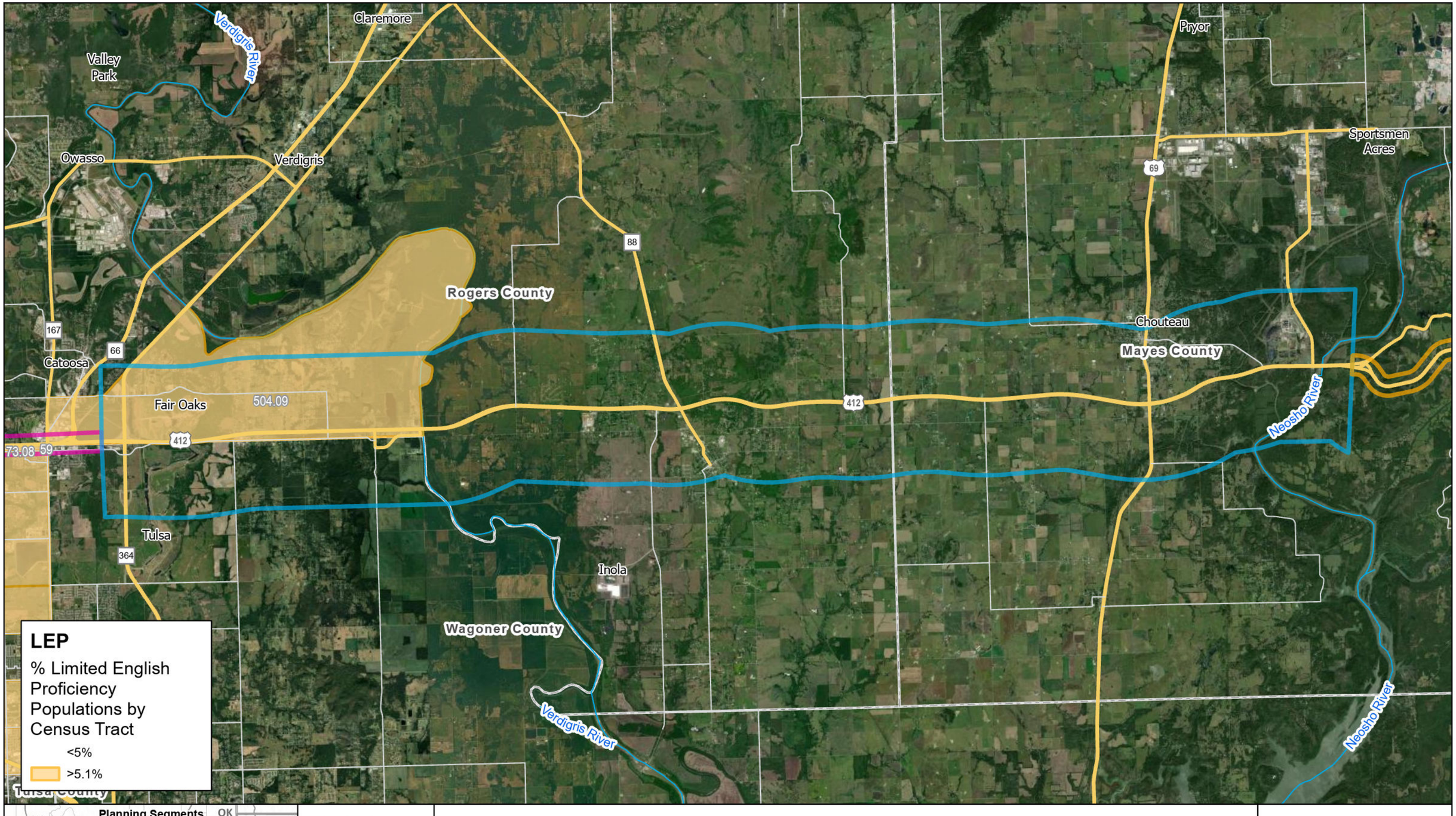
Tulsa Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 0.5 1 Mi

June 2023



Appendix E - Limited English Proficiency Populations

Sheet 4 of 8

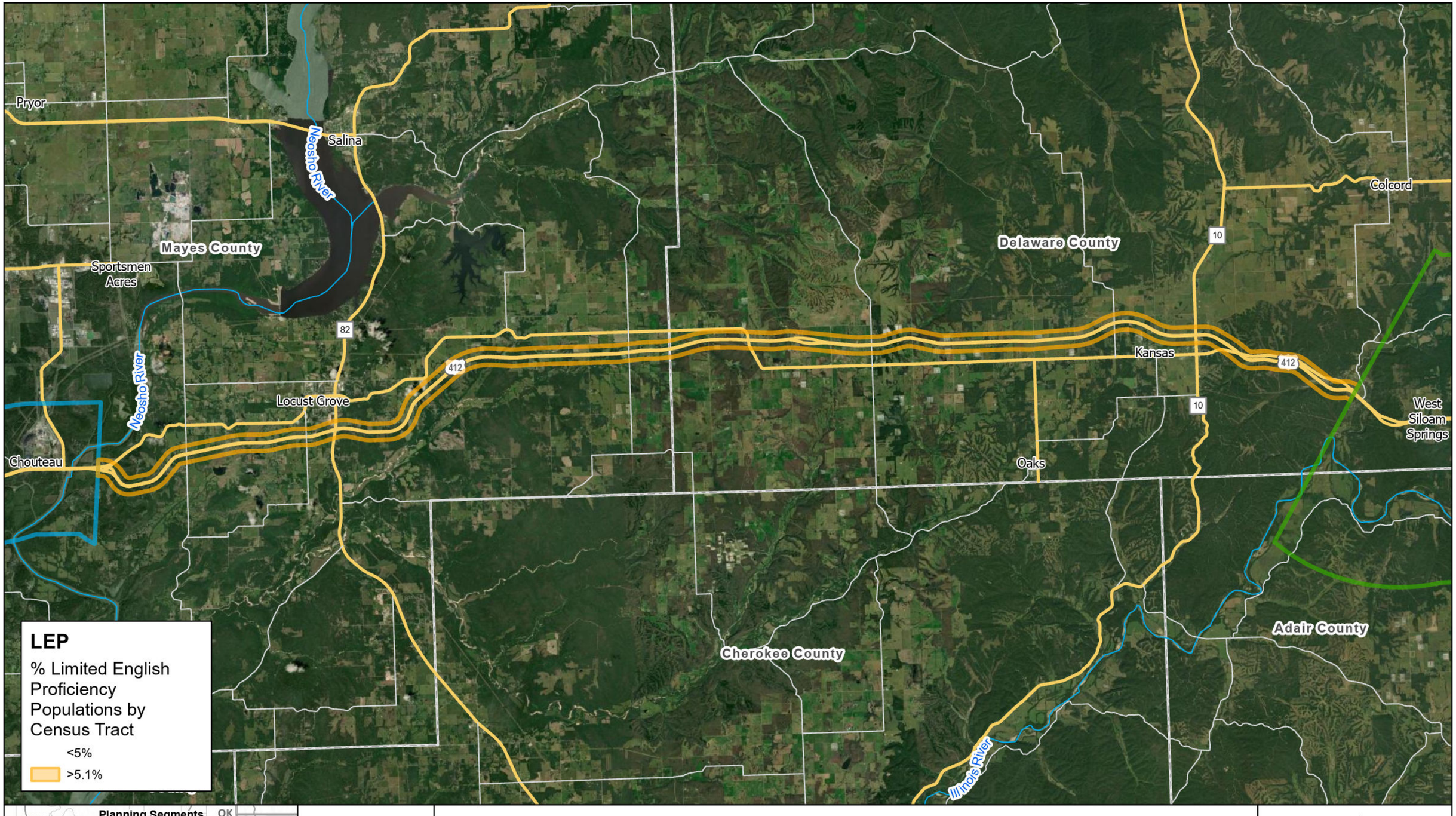
Inola Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 1.25 2.5 Mi

June 2023



Appendix E - Limited English Proficiency Populations

Sheet 5 of 8

Cherokee Turnpike Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 1.5 3 Mi

June 2023

Colcord
Gentry
Delaware County
Kansas
West Siloam Springs
Siloam Springs
Benton County
OK
AR
210.02
211.01
212.01
212.02
Adair County
Watts
Illinois River
10
412
59
16

LEP

% Limited English Proficiency Populations by Census Tract

<5%

>5.1%

Appendix E - Limited English Proficiency Populations

Sheet 6 of 8

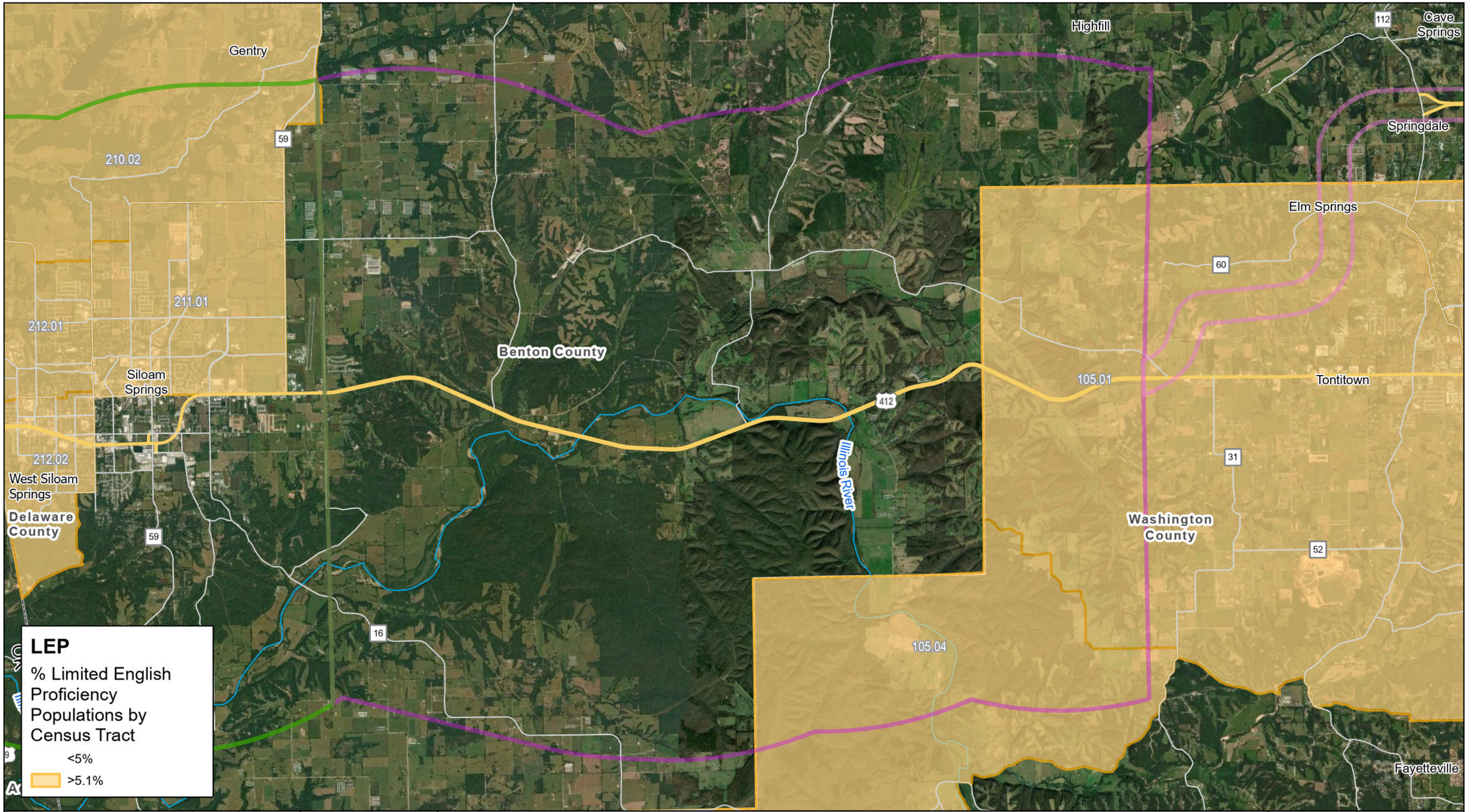
Siloam Springs Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 0.75 1.5 Mi

June 2023



Appendix E - Limited English Proficiency Populations

Sheet 7 of 8

Springdale #1 Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 0.75 1.5 Mi

June 2023

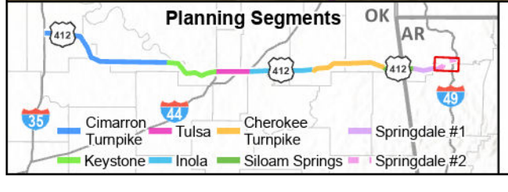
Highfill
Cave Springs
Lowell
112
Benton County
49
Elm Springs
Springdale
58
60
105.01
Washington County
Tontitown

LEP

% Limited English Proficiency Populations by Census Tract

<5%

>5.1%



INTERSTATE 412

Appendix E - Limited English Proficiency Populations

Sheet 8 of 8

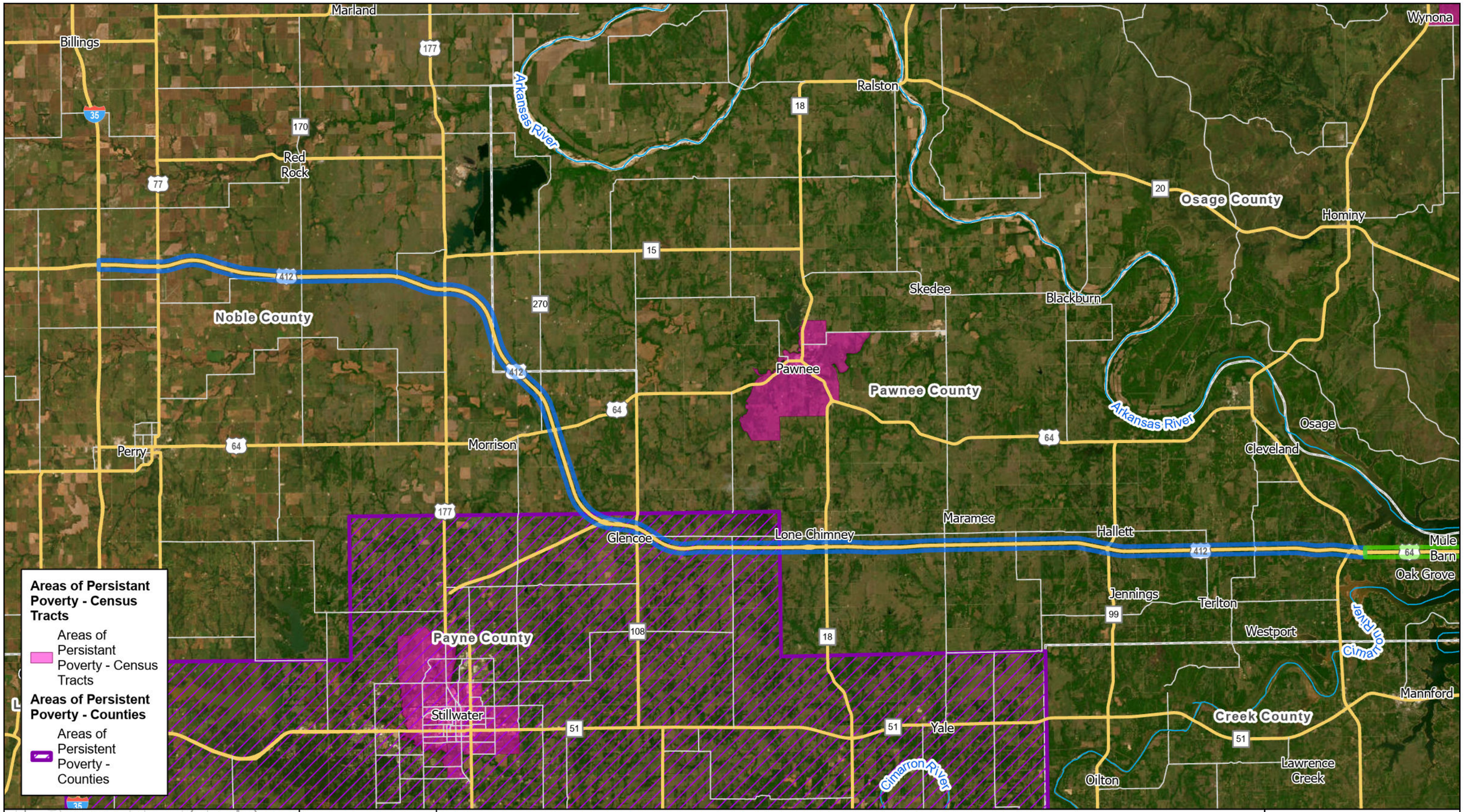
Springdale #2 Planning Segment

Source: US Census Bureau, ACS: 2015-2019.

N

0 0.45 0.9 Mi

June 2023



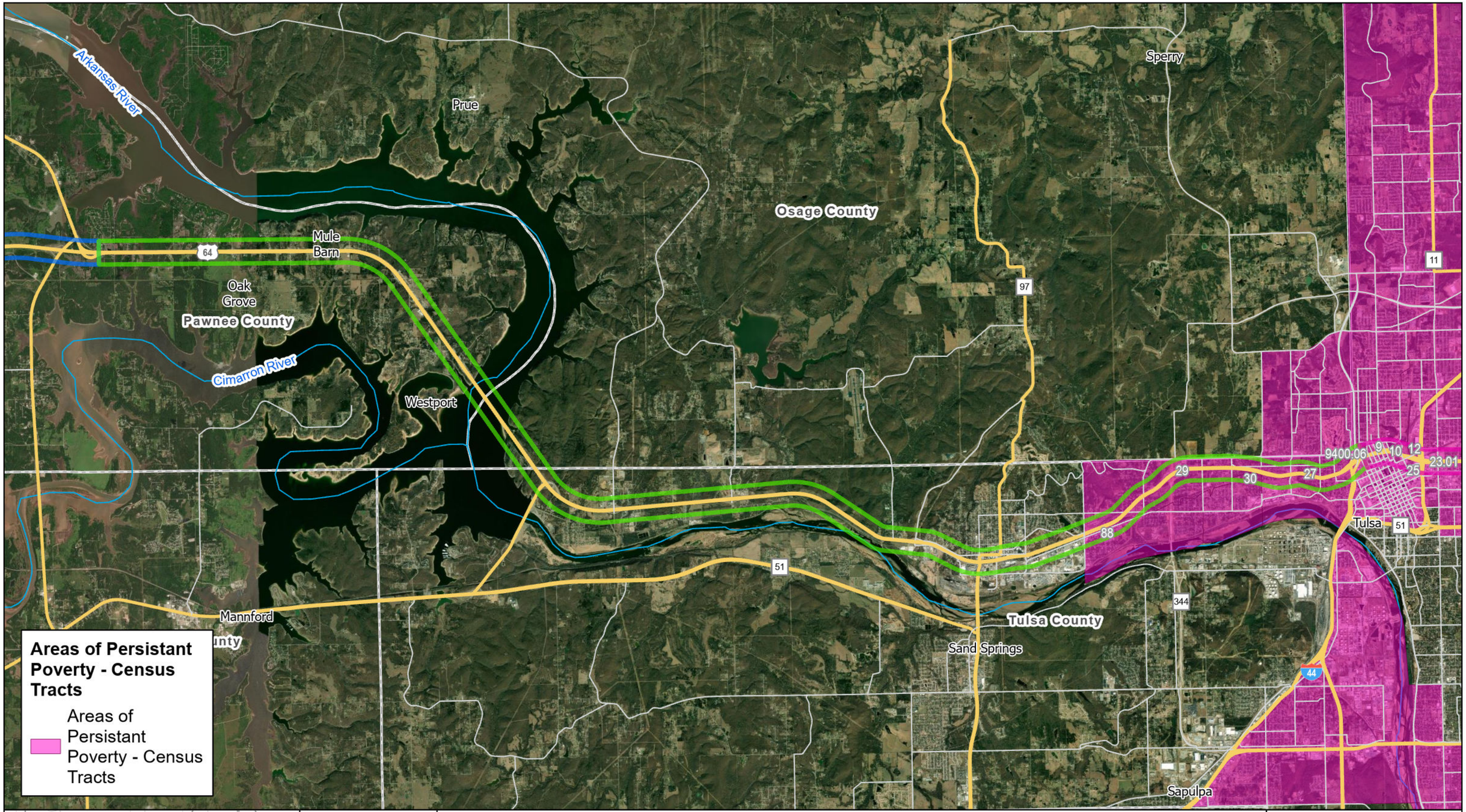
Appendix F - Areas of Persistent Poverty

Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: USDA (2018), U.S. Census Bureau ACS 2018.

June 2023



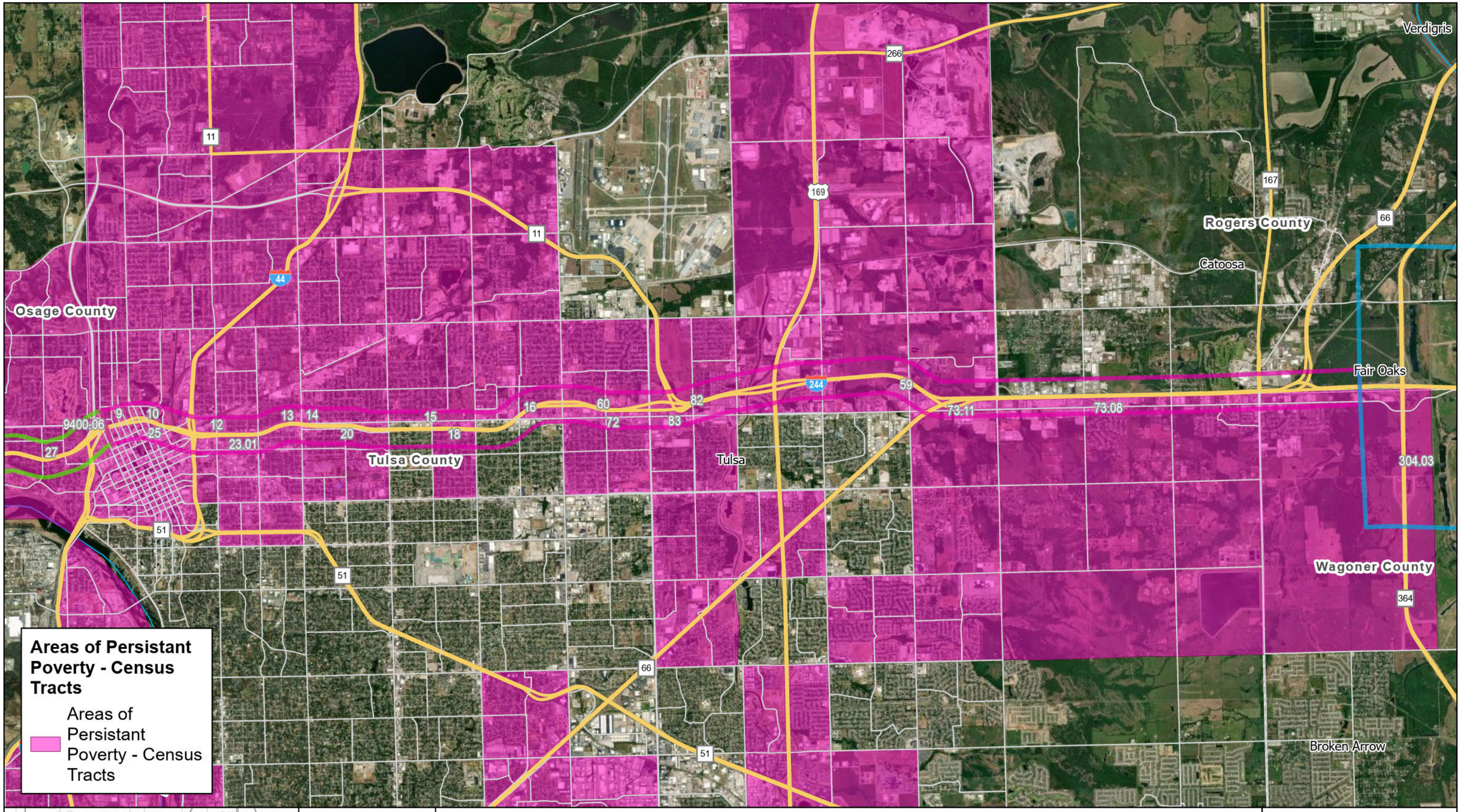
Appendix F - Areas of Persistent Poverty

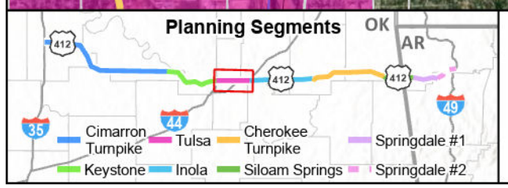
Sheet 2 of 8

Keystone Planning Segment

Source: USDA (2018), U.S. Census Bureau ACS 2018.

June 2023





INTERSTATE 412

Appendix F - Areas of Persistent Poverty

Sheet 3 of 8

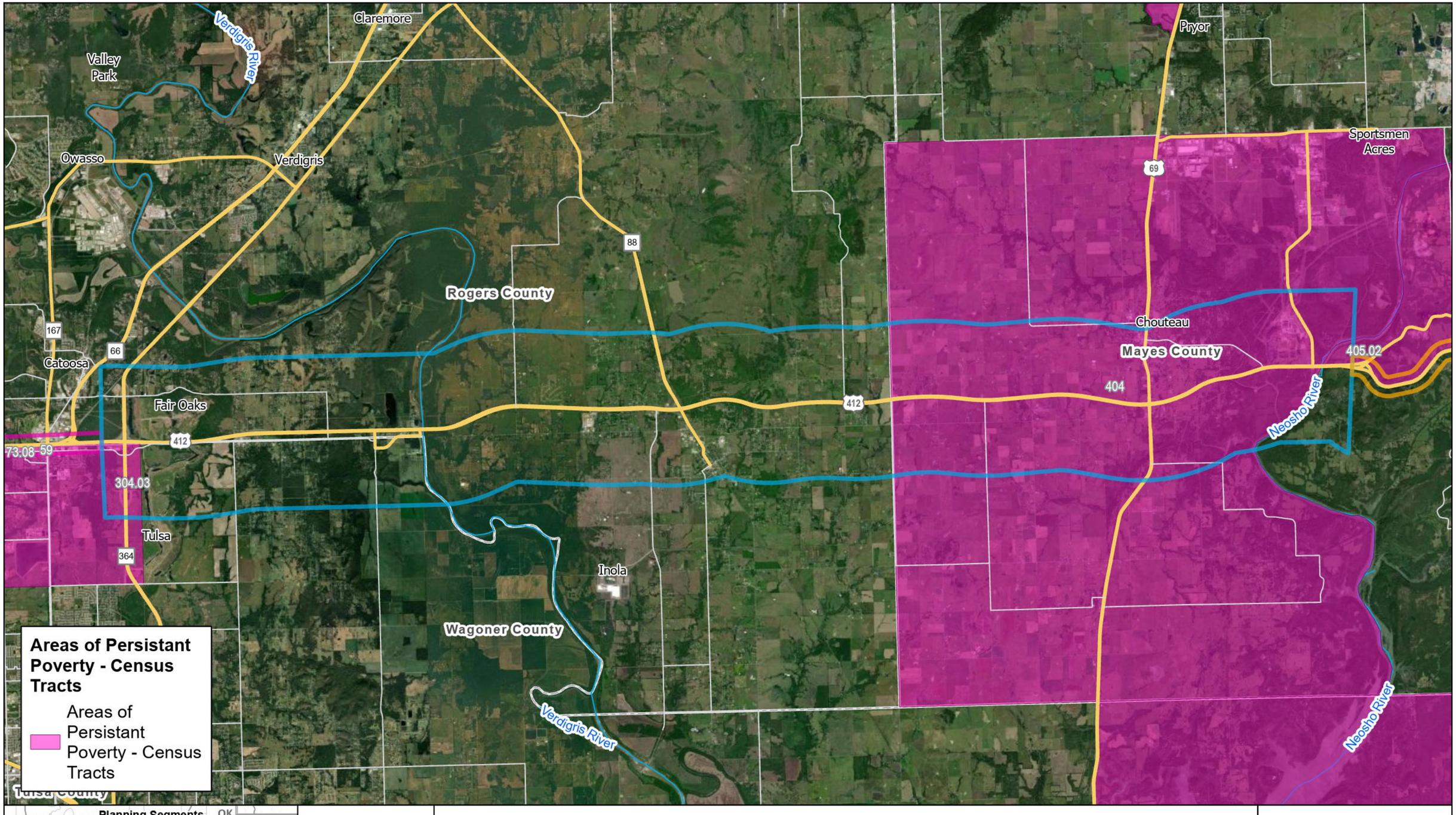
Tulsa Planning Segment

Source: USDA (2018), U.S. Census Bureau ACS 2018.

N

0 0.5 1 Mi

June 2023



INTERSTATE 412

Appendix F - Areas of Persistent Poverty

Sheet 4 of 8

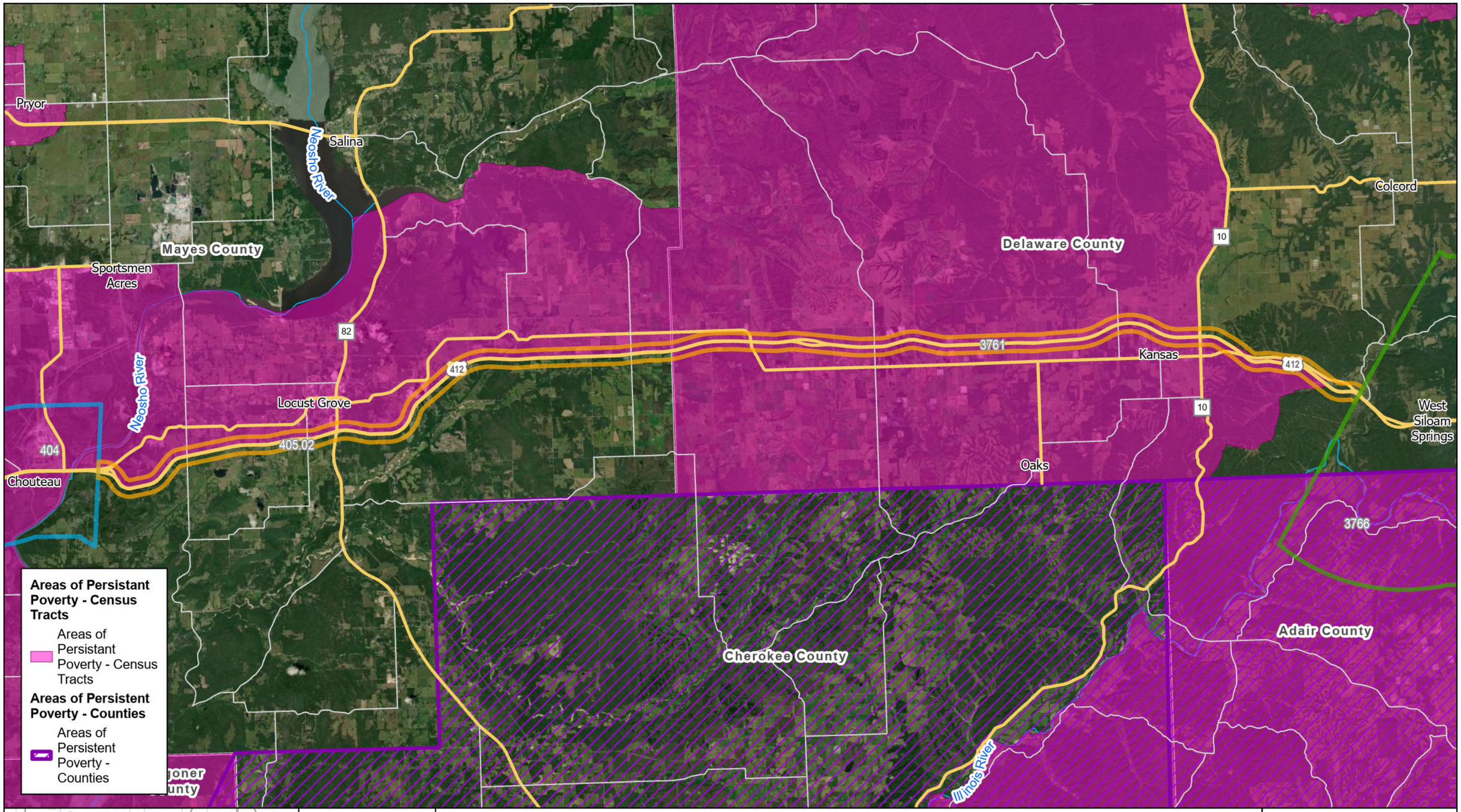
Inola Planning Segment

Source: USDA (2018), U.S. Census Bureau ACS 2018.

N

0 1.25 2.5 Mi

June 2023



Appendix F - Areas of Persistent Poverty

Sheet 5 of 8

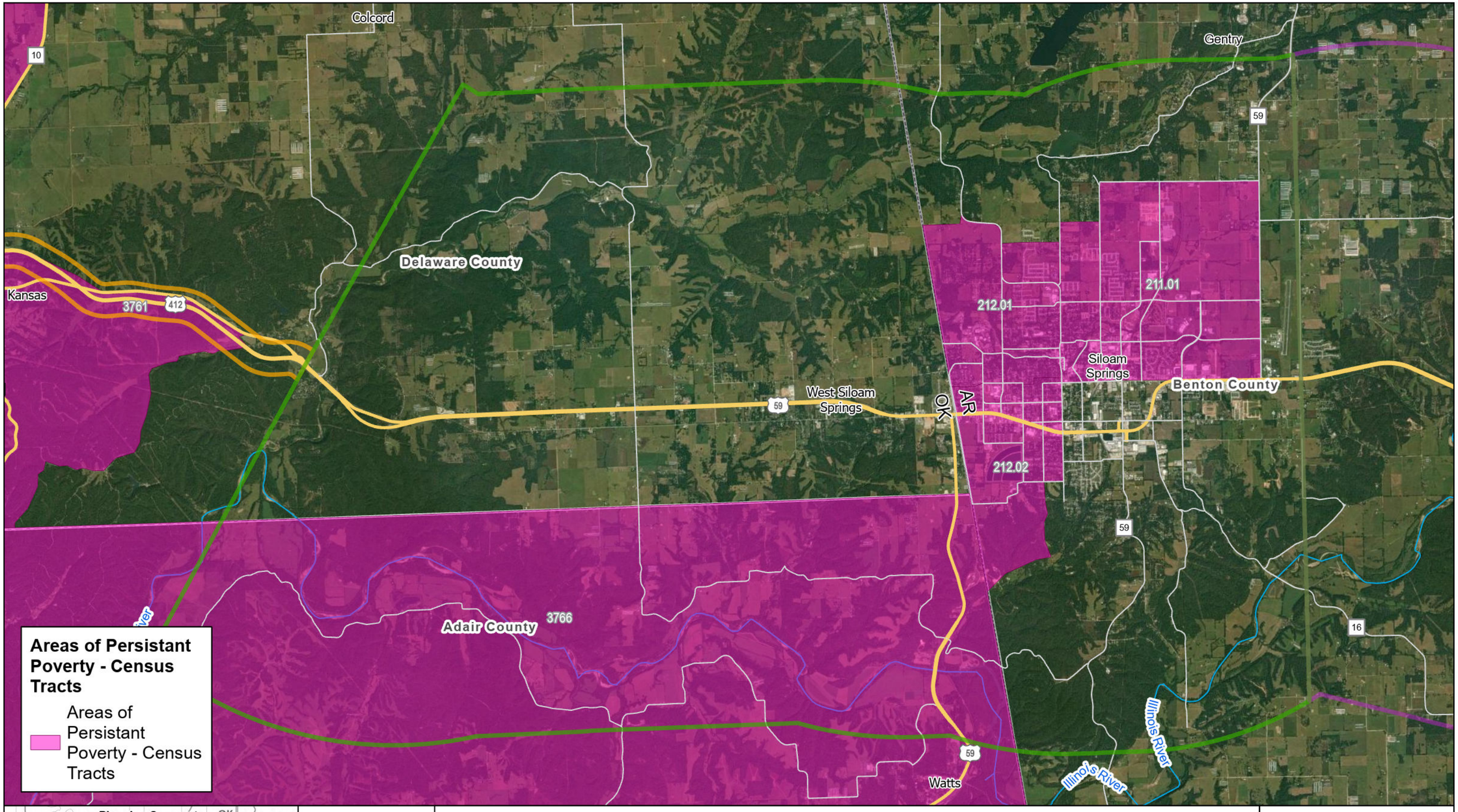
Cherokee Turnpike Planning Segment

Source: USDA (2018), U.S. Census Bureau ACS 2018.

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix F - Areas of Persistent Poverty

Sheet 6 of 8

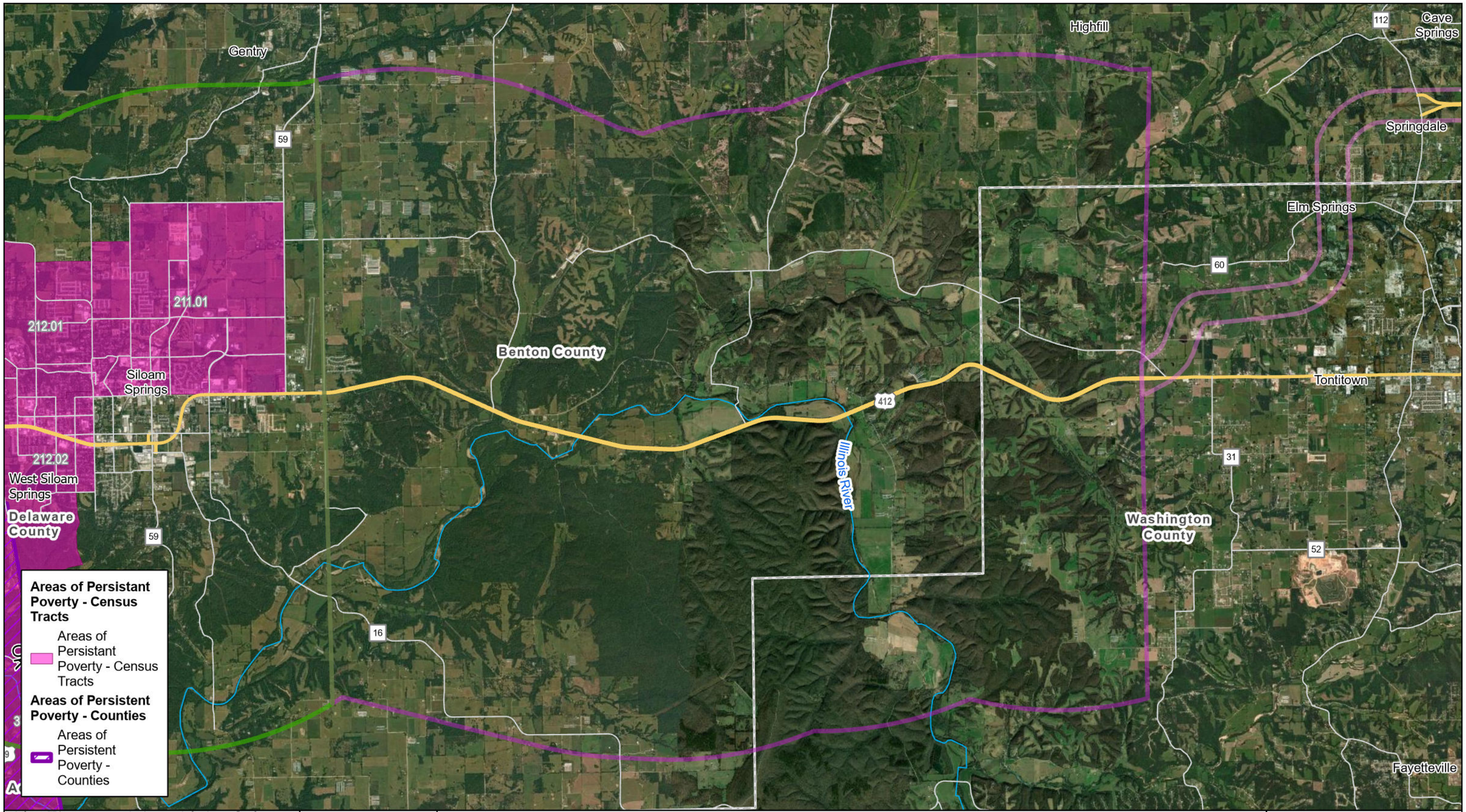
Siloam Springs Planning Segment

Source: USDA (2018), U.S. Census Bureau ACS 2018.

N

0 0.75 1.5 Mi

June 2023



Appendix F - Areas of Persistent Poverty

Sheet 7 of 8

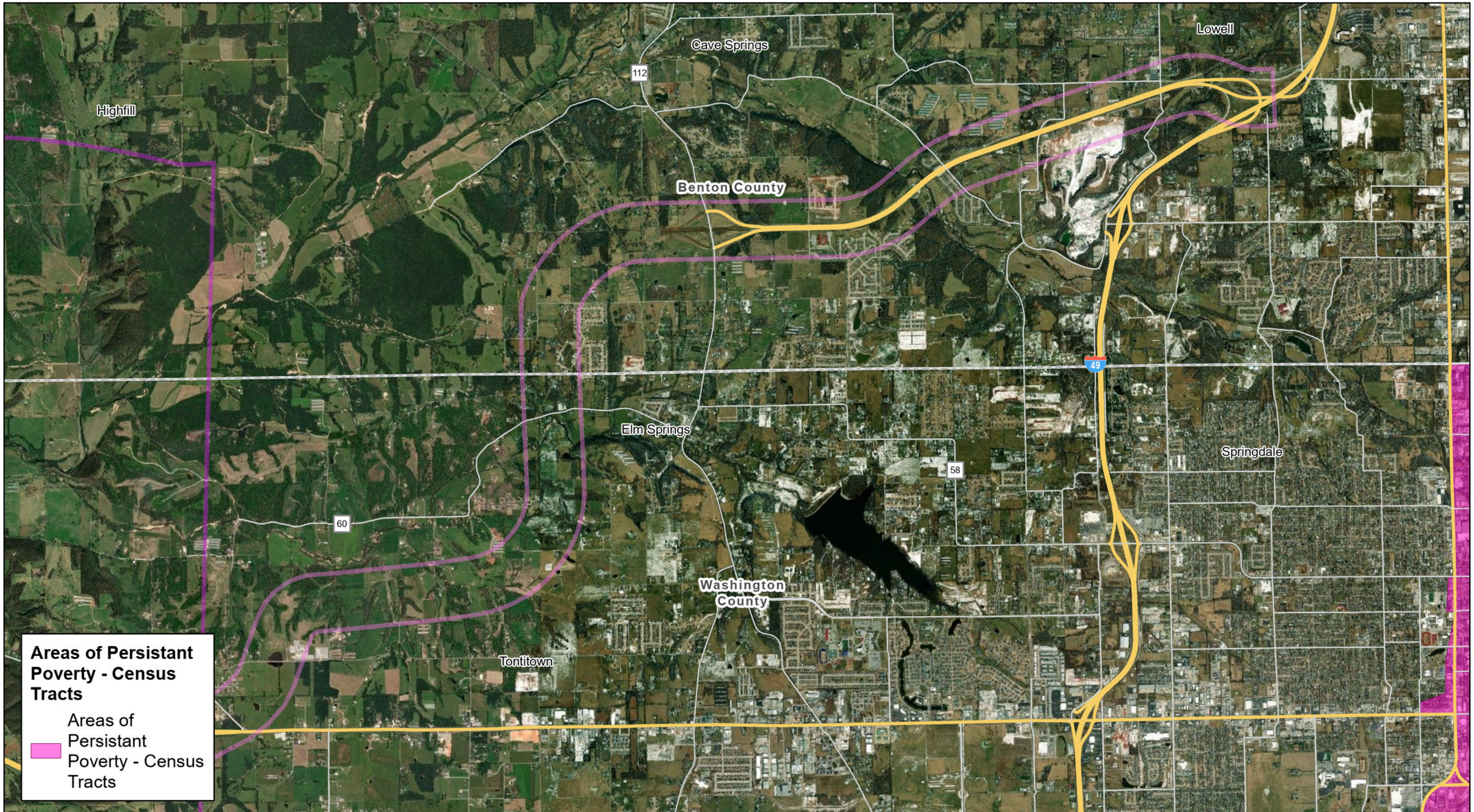
Springdale #1 Planning Segment

Source: USDA (2018), U.S. Census Bureau ACS 2018.

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix F - Areas of Persistent Poverty

Sheet 8 of 8

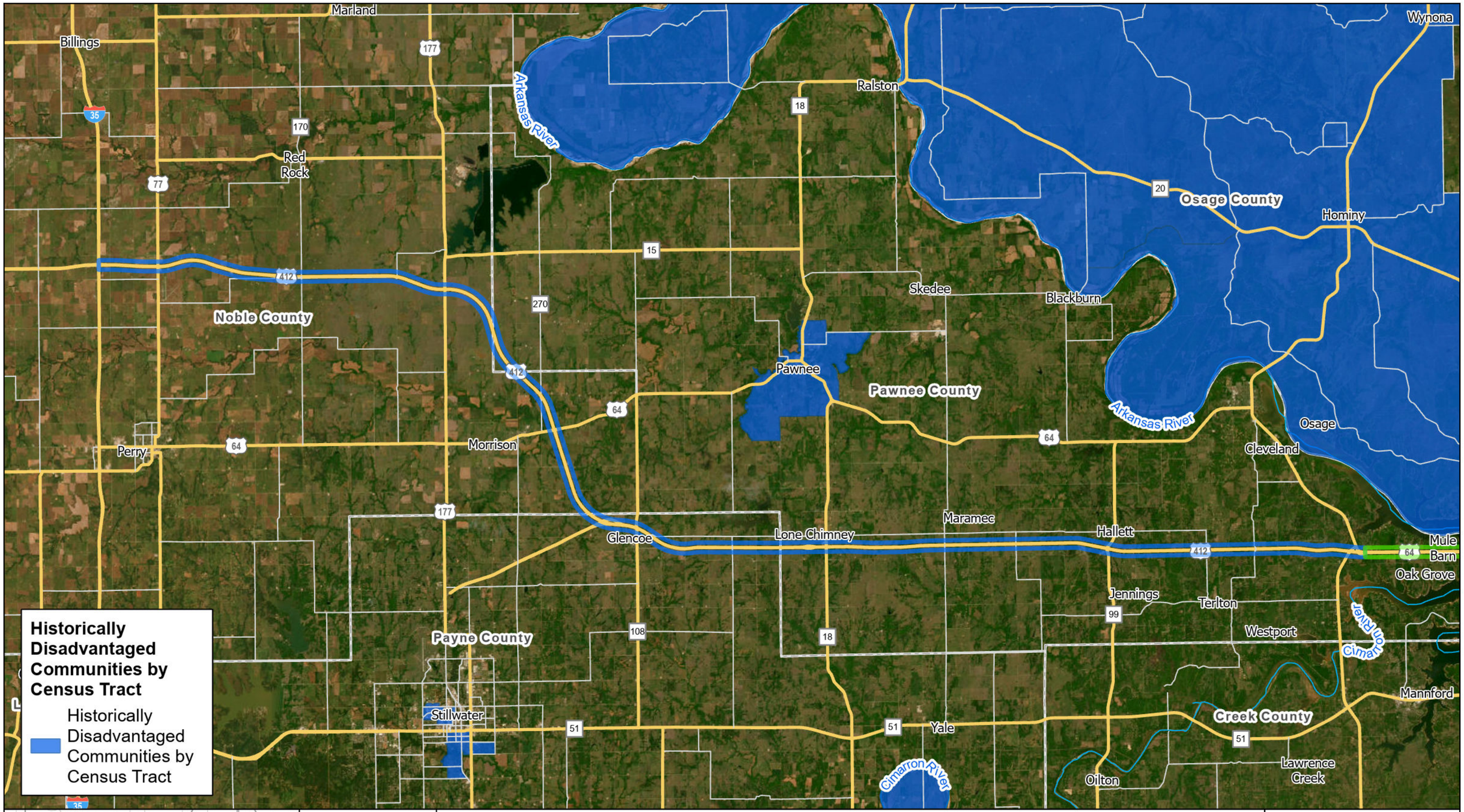
Springdale #2 Planning Segment

Source: USDA (2018), U.S. Census Bureau ACS 2018.

N

0 0.45 0.9 Mi

June 2023



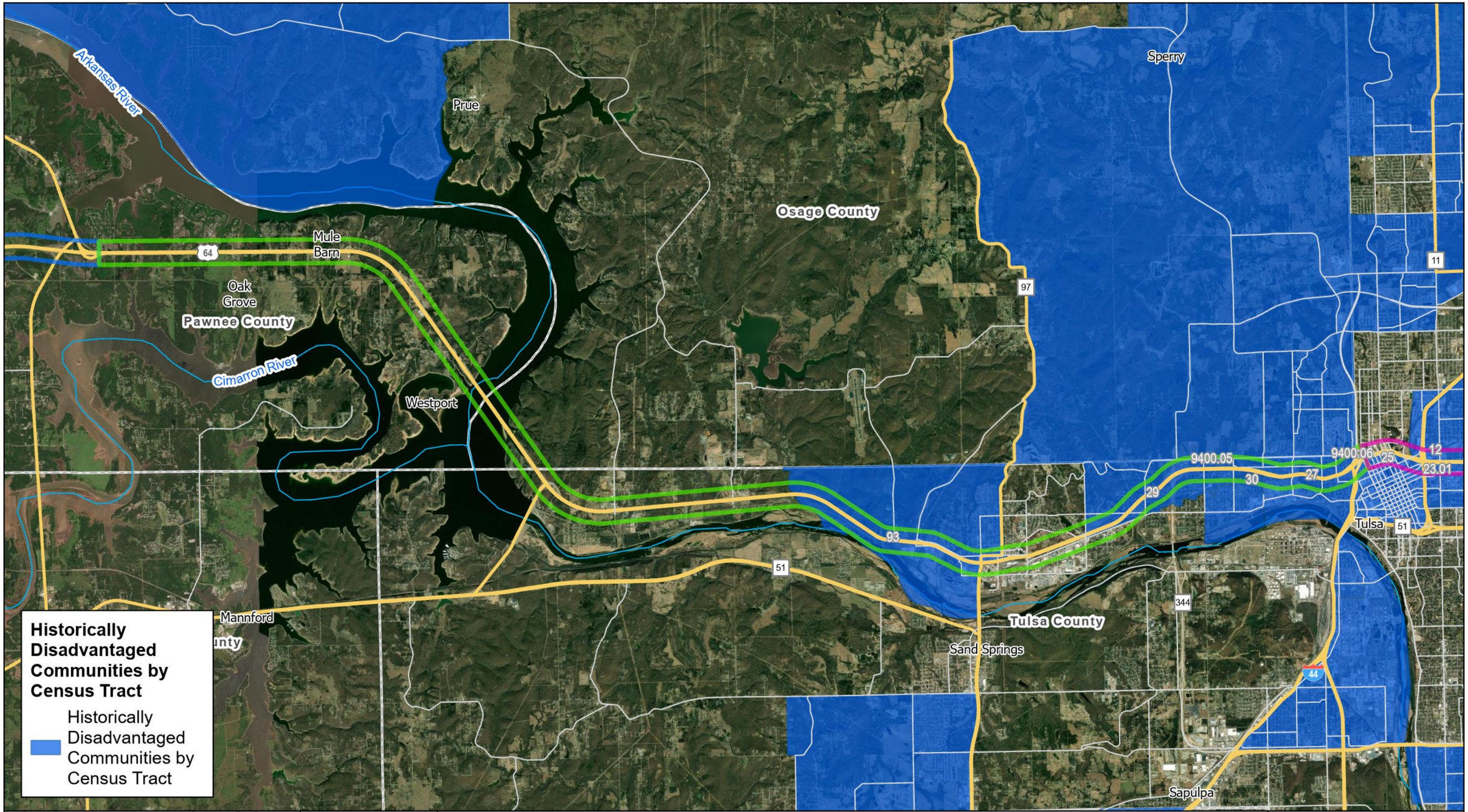
Appendix G - Historically Disadvantaged Communities

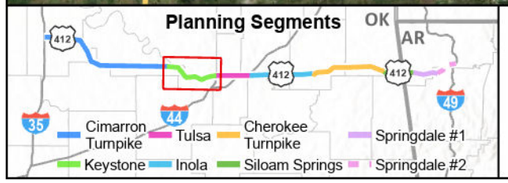
Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: U.S. Census Bureau ACS, 2018.

June 2023





INTERSTATE 412

Appendix G - Historically Disadvantaged Communities

Sheet 2 of 8

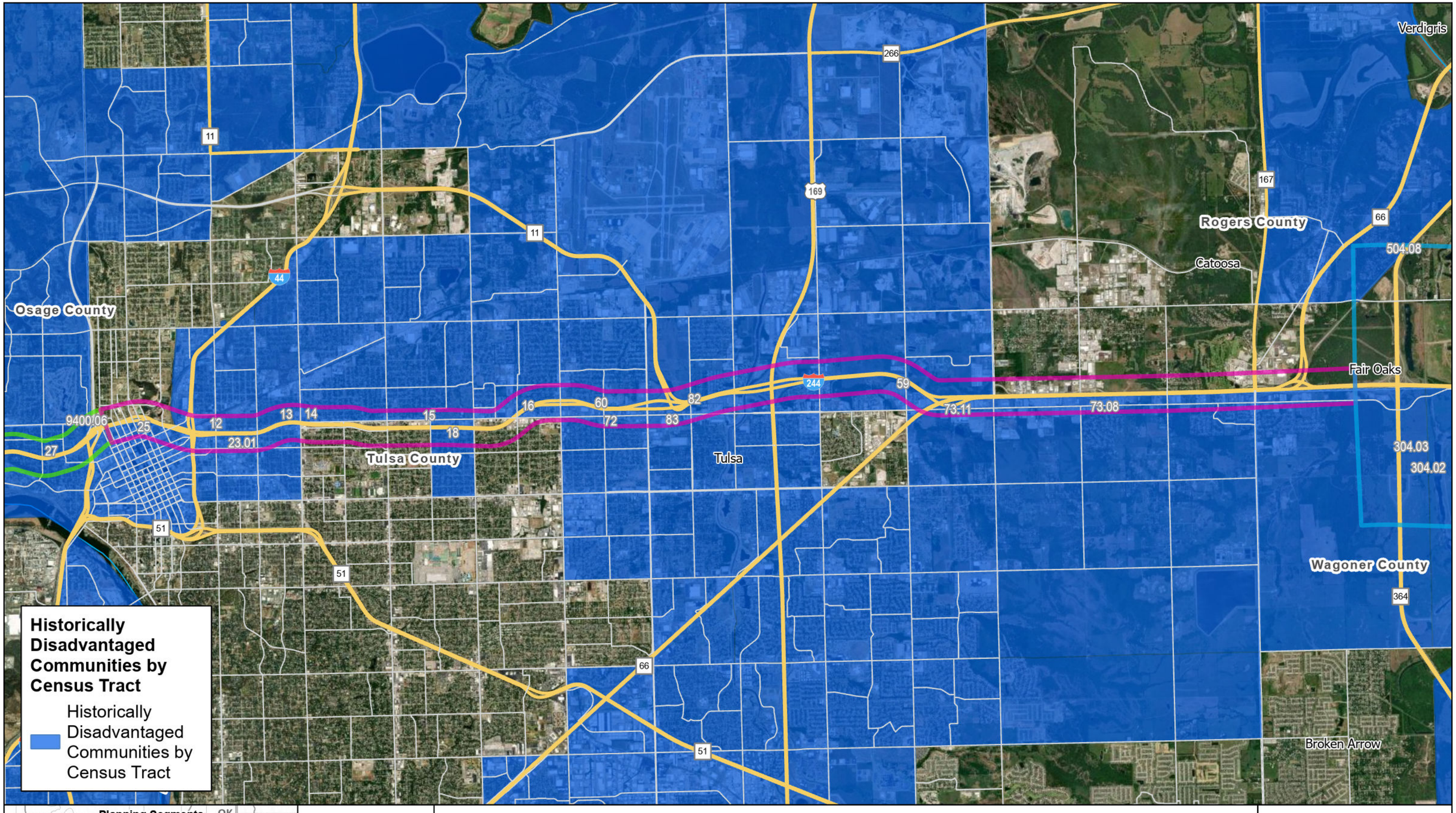
Keystone Planning Segment

Source: U.S. Census Bureau ACS, 2018.

N

0 1 2 Mi

June 2023



INTERSTATE 412

Appendix G - Historically Disadvantaged Communities

Sheet 3 of 8

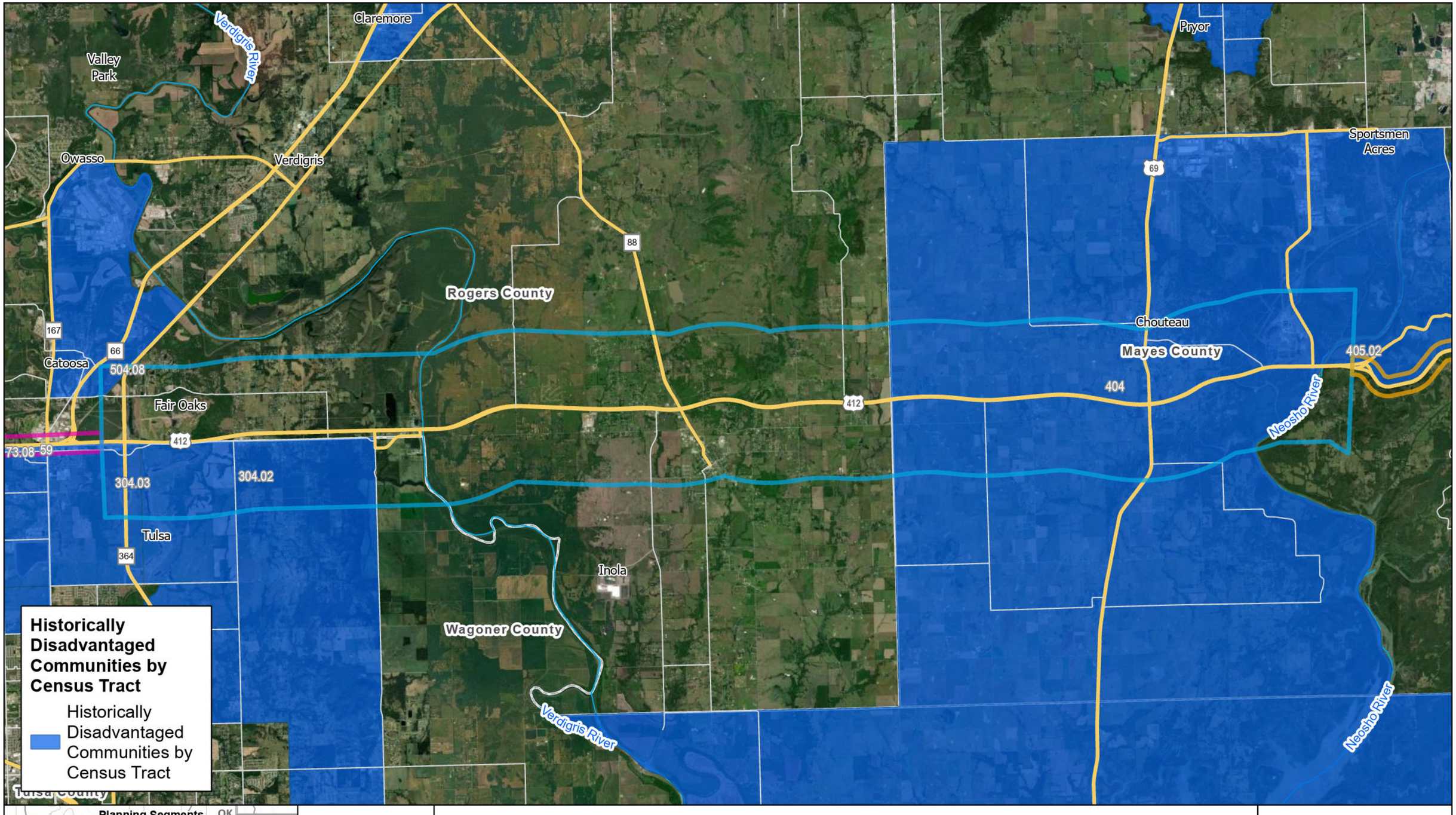
Tulsa Planning Segment

Source: U.S. Census Bureau ACS, 2018.

N

0 0.5 1 Mi

June 2023



Appendix G - Historically Disadvantaged Communities

Sheet 4 of 8

Inola Planning Segment

Source: U.S. Census Bureau ACS, 2018.

June 2023

INTERSTATE 412

Appendix G - Historically Disadvantaged Communities

Sheet 5 of 8

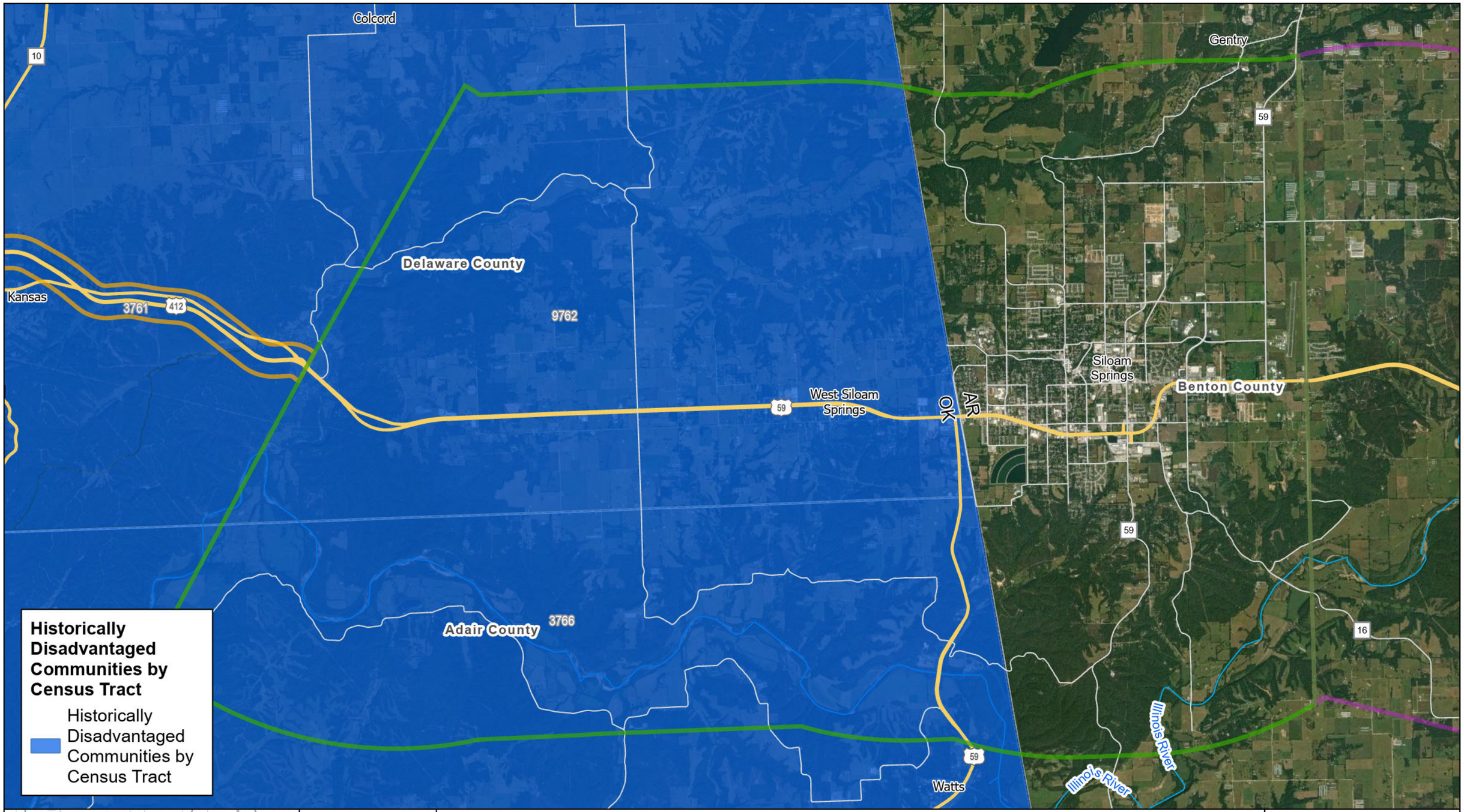
Cherokee Turnpike Planning Segment

Source: U.S. Census Bureau ACS, 2018.

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix G - Historically Disadvantaged Communities

Sheet 6 of 8

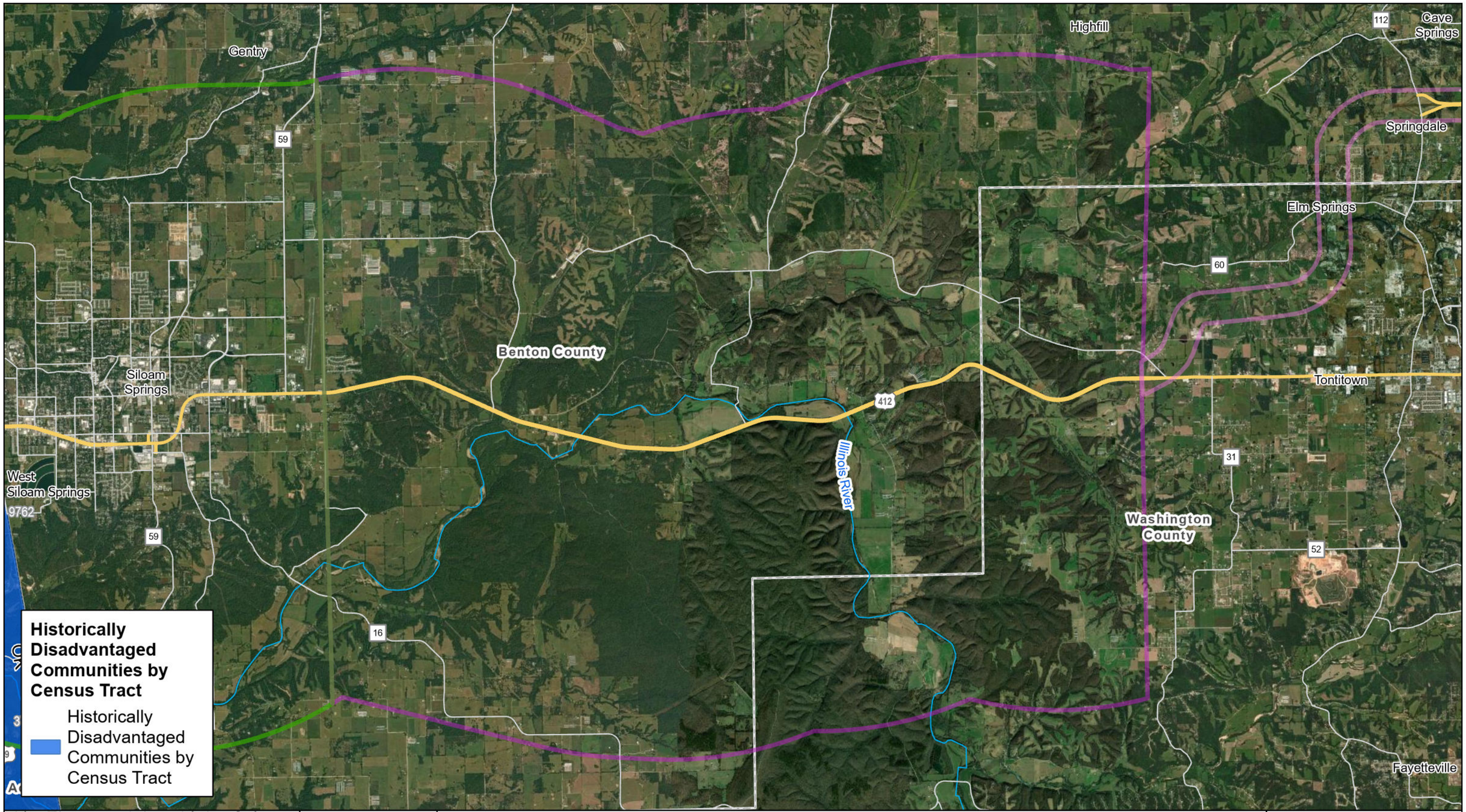
Siloam Springs Planning Segment

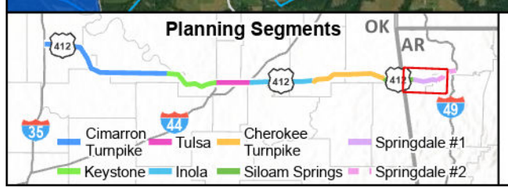
Source: U.S. Census Bureau ACS, 2018.

N

0 0.75 1.5 Mi

June 2023





INTERSTATE 412

Appendix G - Historically Disadvantaged Communities

Sheet 7 of 8

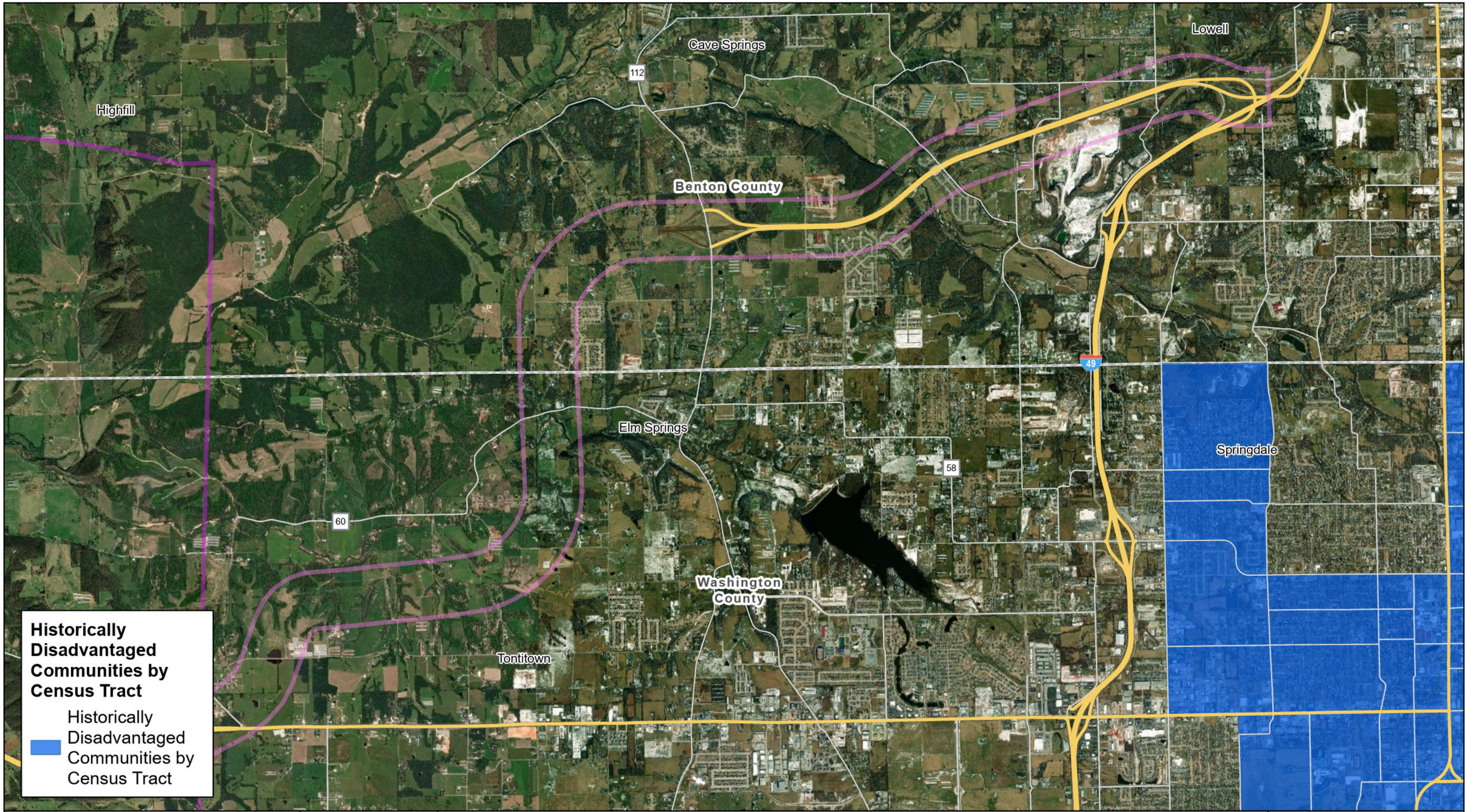
Springdale #1 Planning Segment

Source: U.S. Census Bureau ACS, 2018.

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix G - Historically Disadvantaged Communities

Sheet 8 of 8

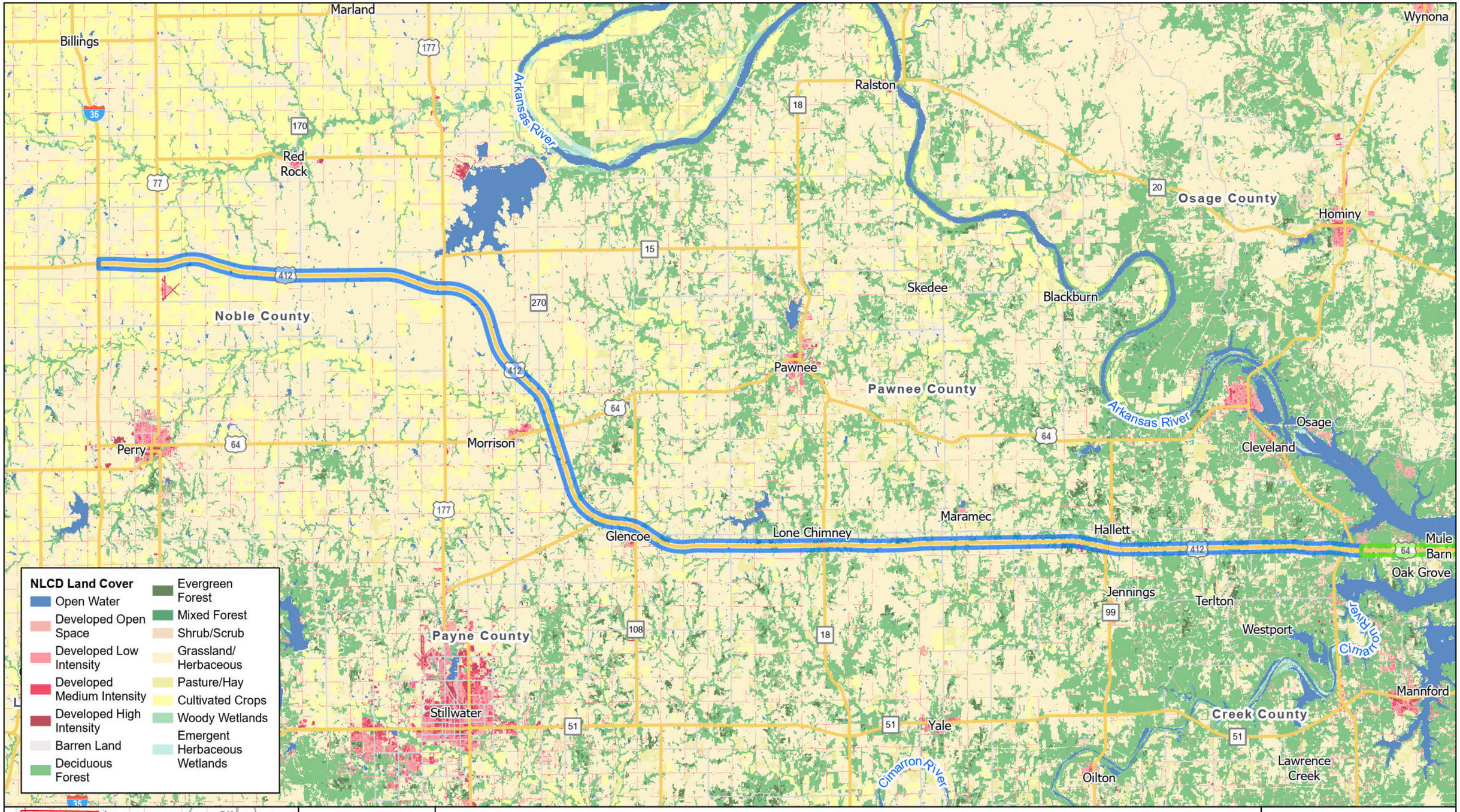
Springdale #2 Planning Segment

Source: U.S. Census Bureau ACS, 2018.

N

0 0.45 0.9 Mi

June 2023



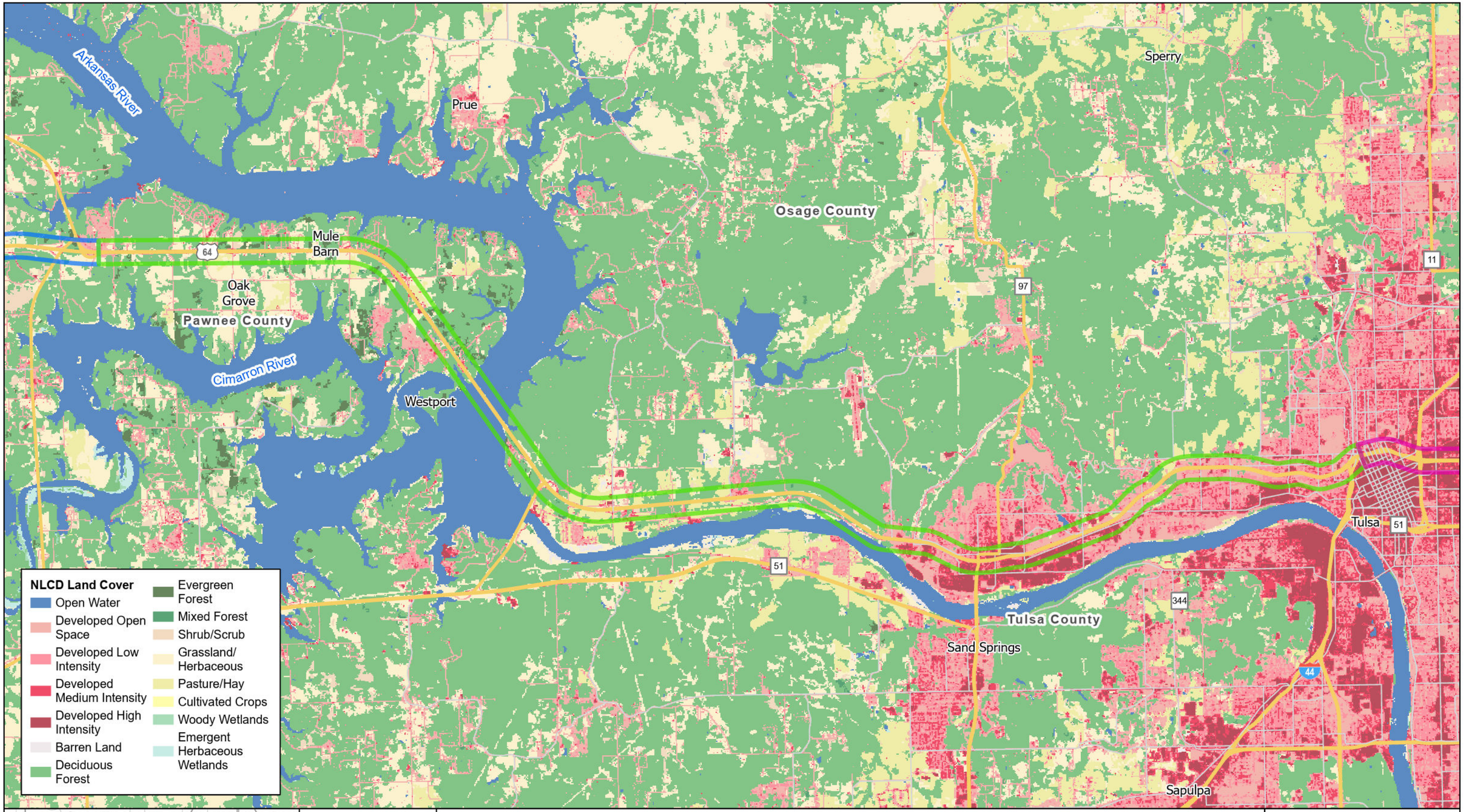
Appendix H - Land Use

Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: NLCD, 2019.

June 2023



INTERSTATE 412

Appendix H - Land Use

Sheet 2 of 8

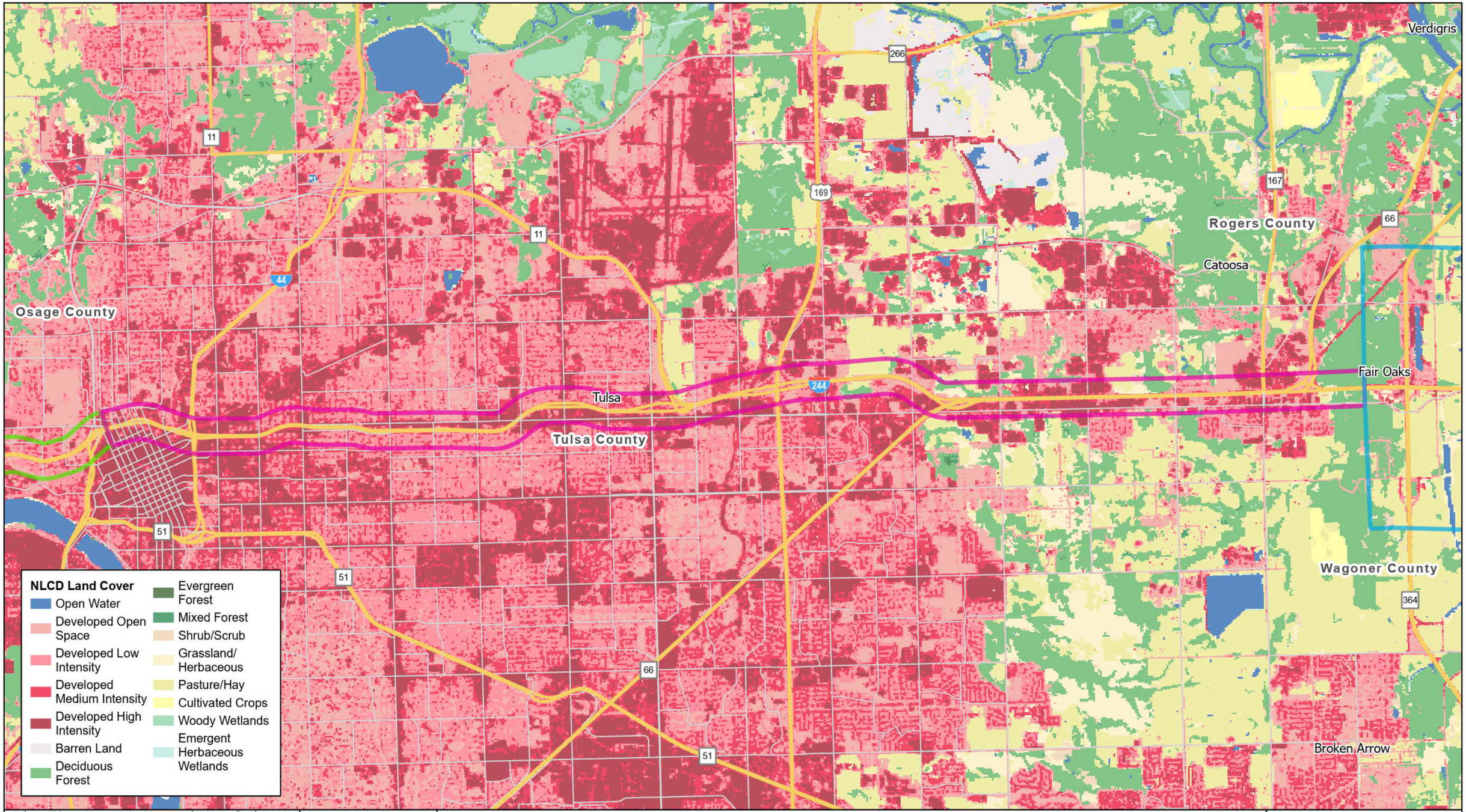
Keystone Planning Segment

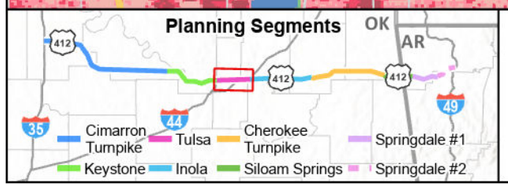
Source: NLCD, 2019.

N

0 1 2 Mi

June 2023





INTERSTATE 412

Appendix H - Land Use

Sheet 3 of 8

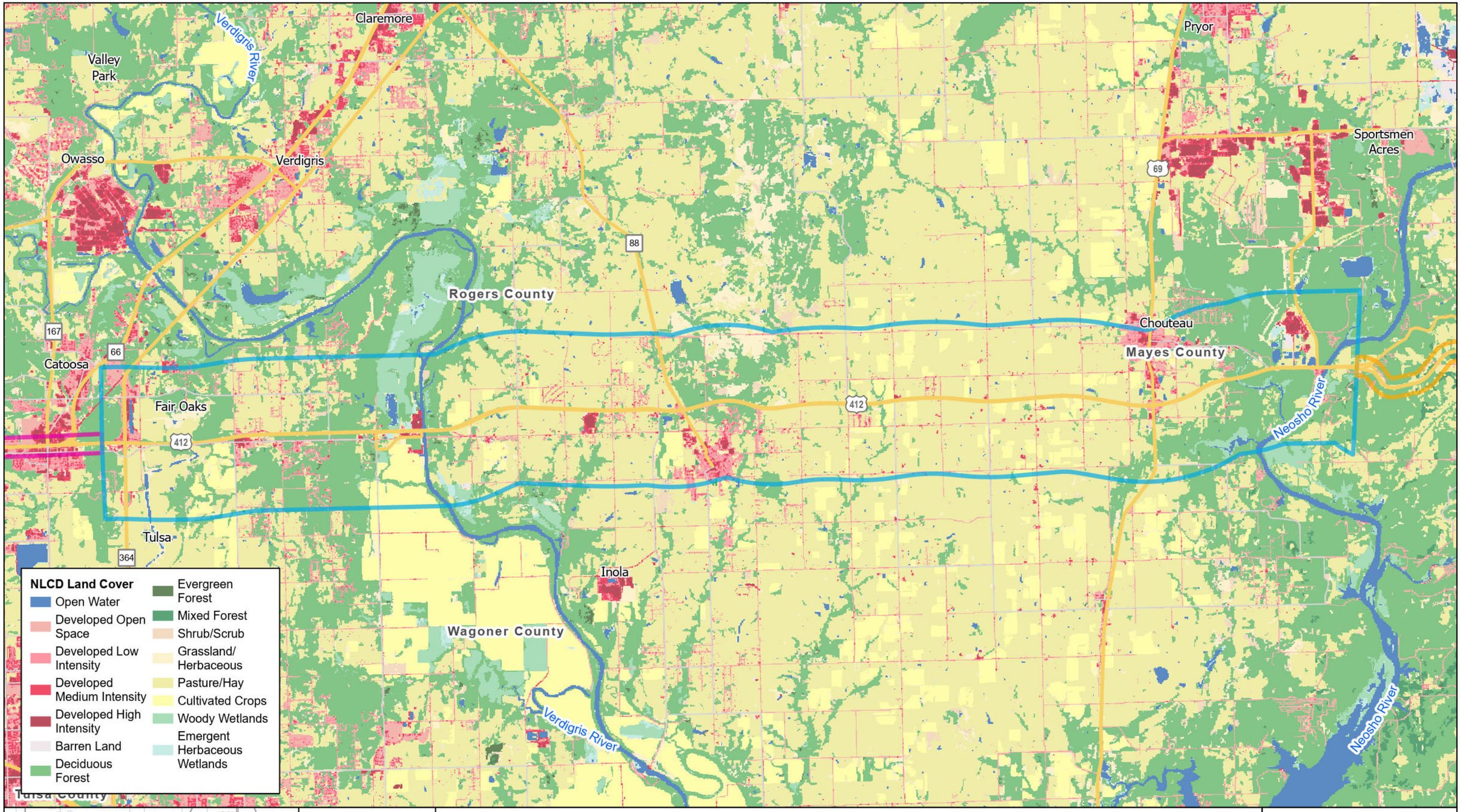
Tulsa Planning Segment

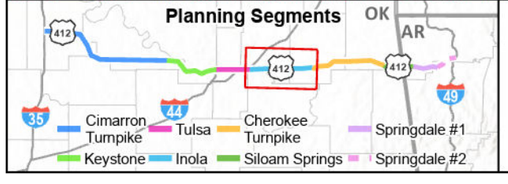
Source: NLCD, 2019.

N

0 0.5 1 Mi

June 2023





INTERSTATE 412

Appendix H - Land Use

Sheet 4 of 8

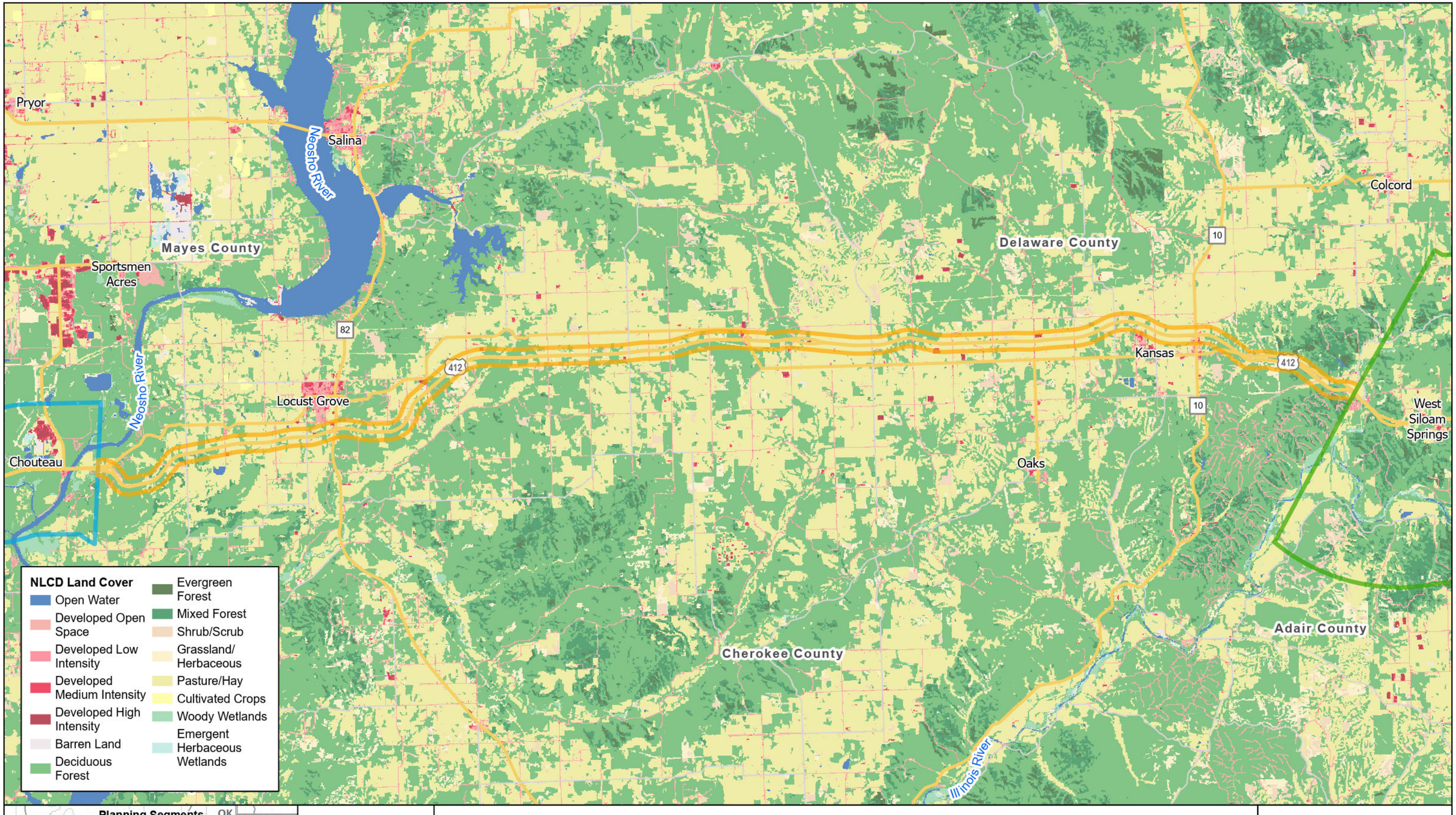
Inola Planning Segment

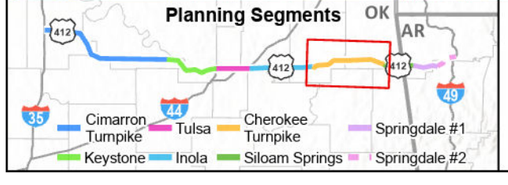
Source: NLCD, 2019.

N

0 1.25 2.5 Mi

June 2023





INTERSTATE 412

Appendix H - Land Use

Sheet 5 of 8

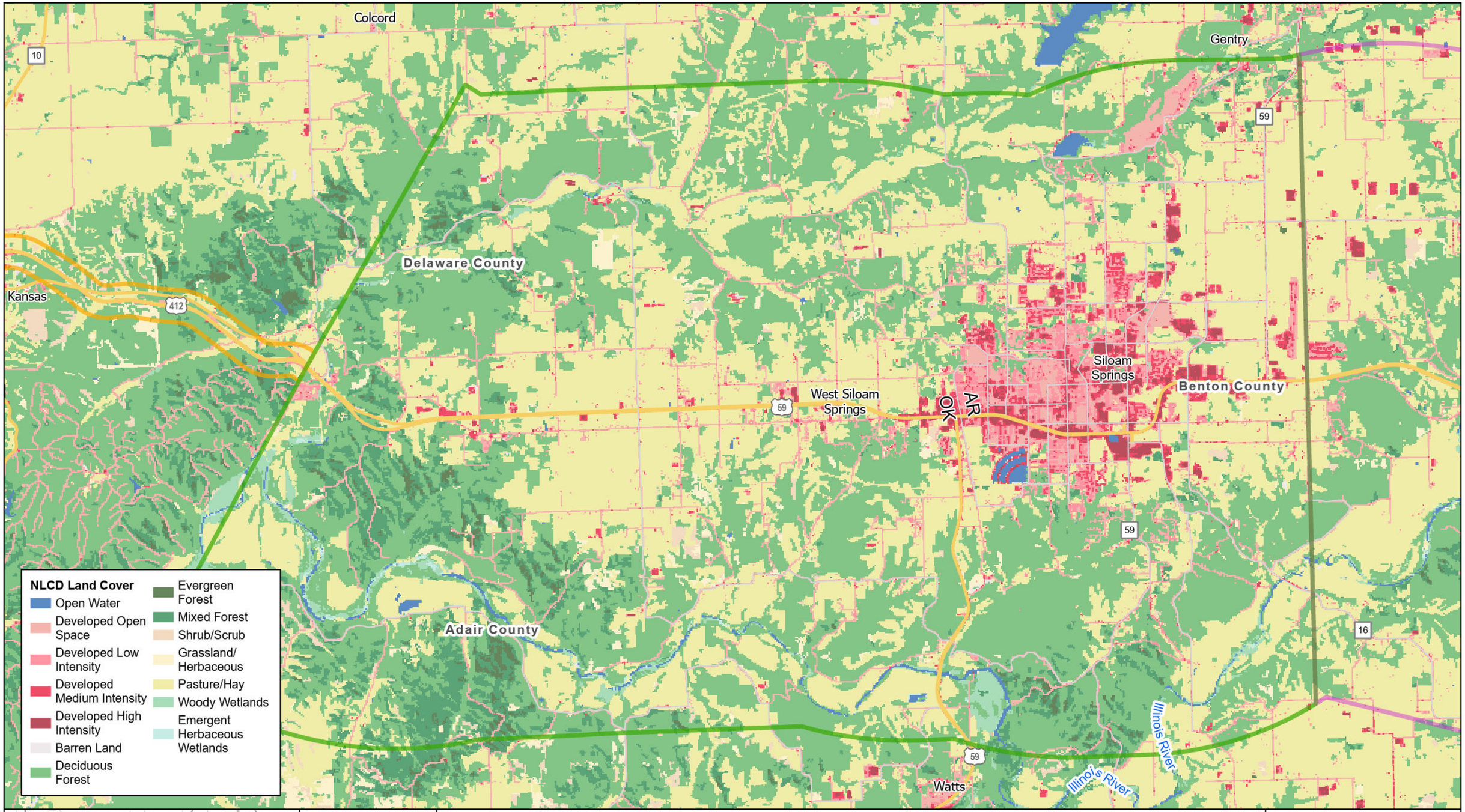
Cherokee Turnpike Planning Segment

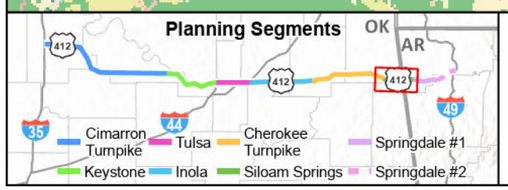
Source: NLCD, 2019.

N

0 1.5 3 Mi

June 2023





INTERSTATE 412

Appendix H - Land Use

Sheet 6 of 8

Siloam Springs Planning Segment

Source: NLCD, 2019.

N

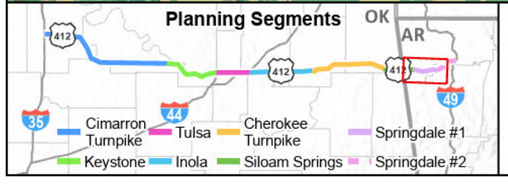
0 0.75 1.5 Mi

June 2023

Gentry
Highfill
Cave Springs
Springdale
Elm Springs
Benton County
Siloam Springs
Tontitown
West Siloam Springs
Delaware County
Illinois River
Washington County
Fayetteville
59
112
60
412
31
16
52

NLCD Land Cover

- Open Water
- Developed Open Space
- Developed Low Intensity
- Developed Medium Intensity
- Developed High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/ Herbaceous
- Pasture/Hay
- Woody Wetlands
- Emergent Herbaceous Wetlands



INTERSTATE 412

Appendix H - Land Use

Sheet 7 of 8

Springdale #1 Planning Segment

Source: NLCD, 2019.

N

0 0.75 1.5 Mi

June 2023

Highfill
Cave Springs
Lowell
Benton County
Elm Springs
Springdale
Washington County
Tontitown
112
49
58
60

NLCD Land Cover

- Open Water
- Perennial Snow/ Ice
- Developed Open Space
- Developed Low Intensity
- Developed Medium Intensity
- Developed High Intensity
- Barren Land
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Dwarf Scrub
- Shrub/Scrub
- Grassland/ Herbaceous
- Sedge/ Herbaceous
- Lichens
- Moss
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

INTERSTATE 412

Appendix H - Land Use

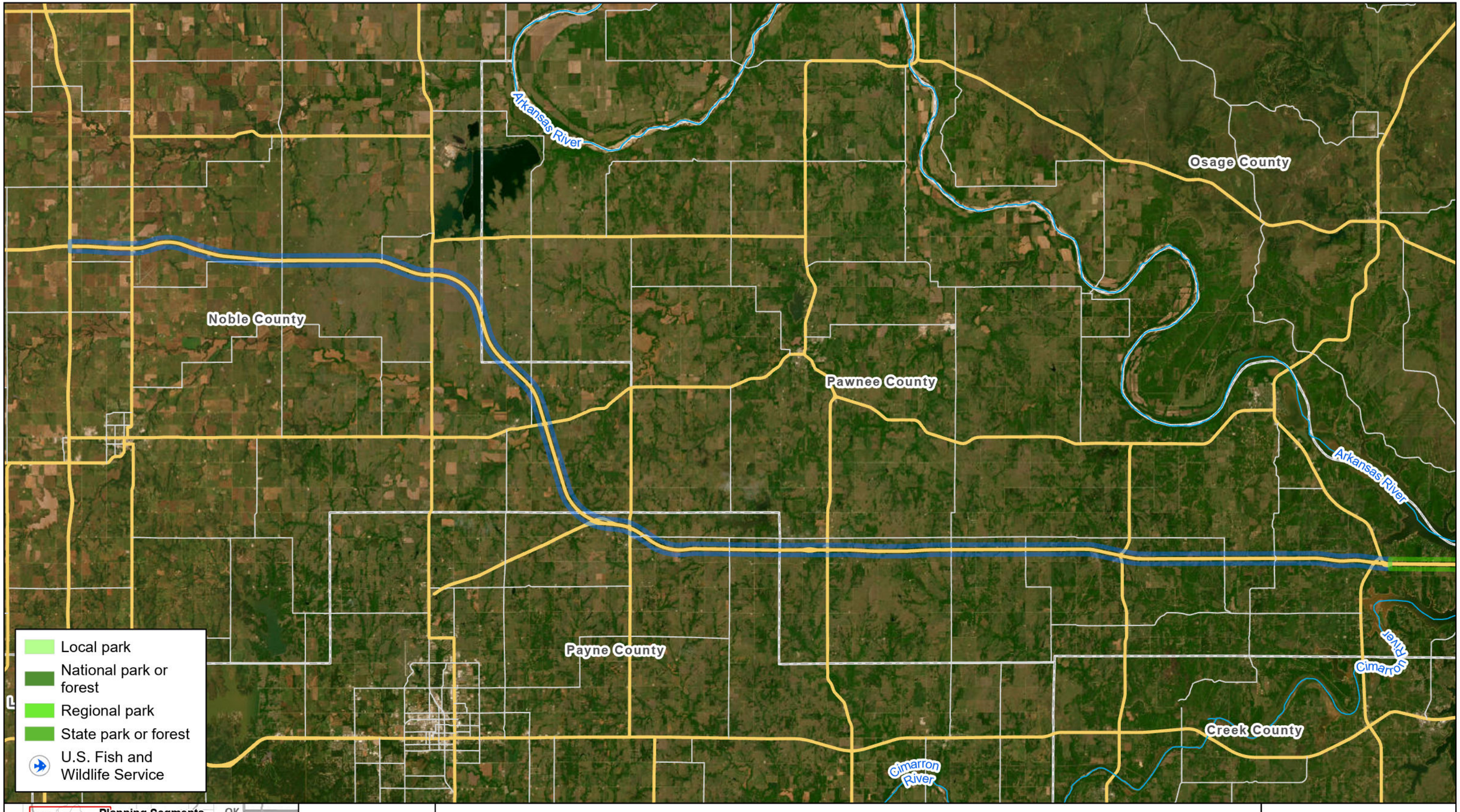
Springdale #2 Planning Segment

Source: NLCD, 2019.

N

0 0.45 0.9 Mi

June 2023



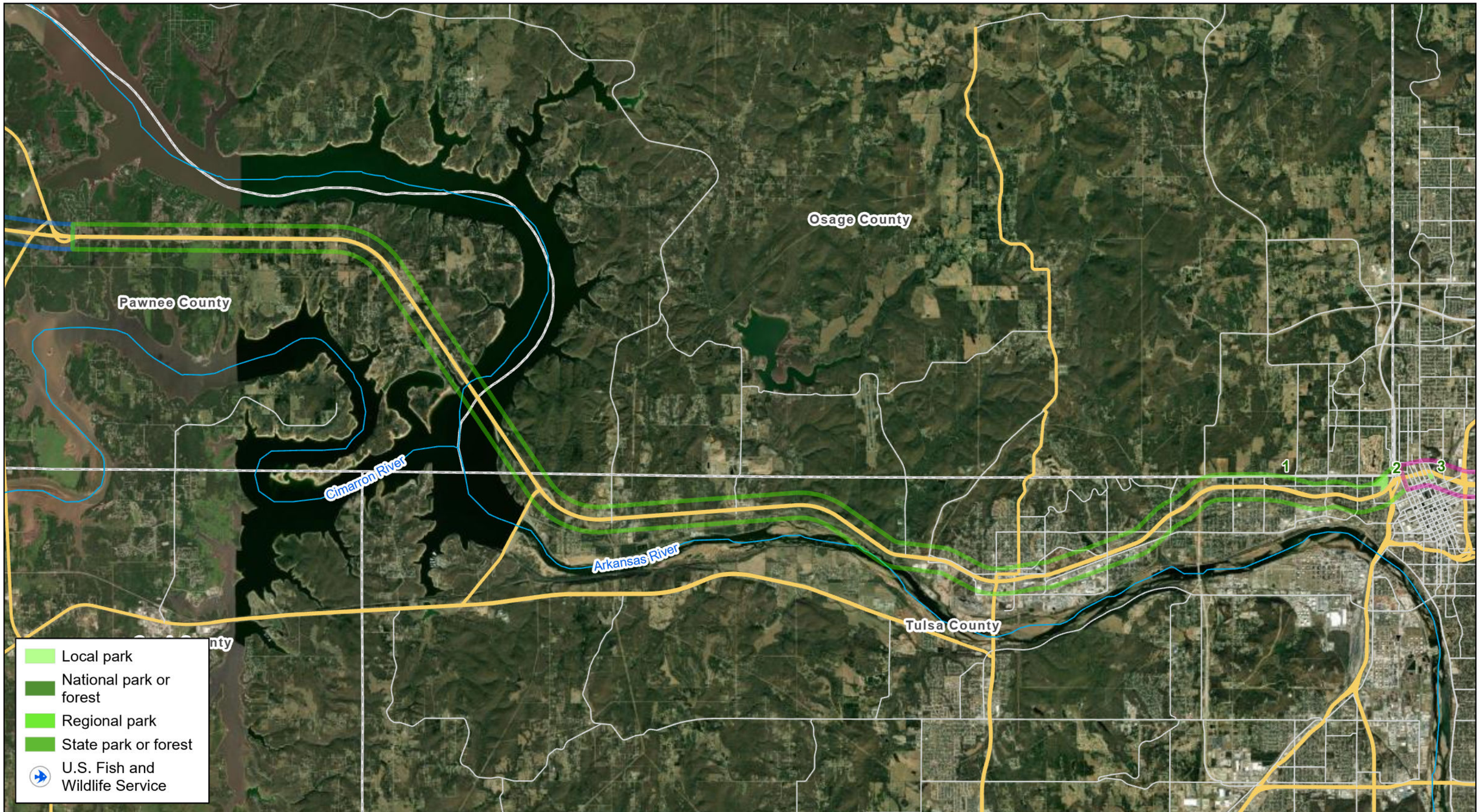
Appendix I - Section 4(f) & 6(f) Properties

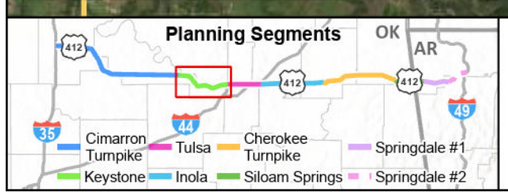
Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: LWCF (2022); ESRI, ArcGIS Online (2021).

June 2023





INTERSTATE 412

Appendix I - Section 4(f) & 6(f) Properties

Keystone Planning Segment

Source: LWCF (2022); ESRI, ArcGIS Online (2021).

N

0 1.25 2.5 Mi

June 2023

Osage County

Rogers County

Tulsa County

Wagoner County

Arkansas River

2 3 4 5 6

- Local park
- National park or forest
- Regional park
- State park or forest
- U.S. Fish and Wildlife Service

INTERSTATE 412

Appendix I - Section 4(f) & 6(f) Properties

Sheet 3 of 8

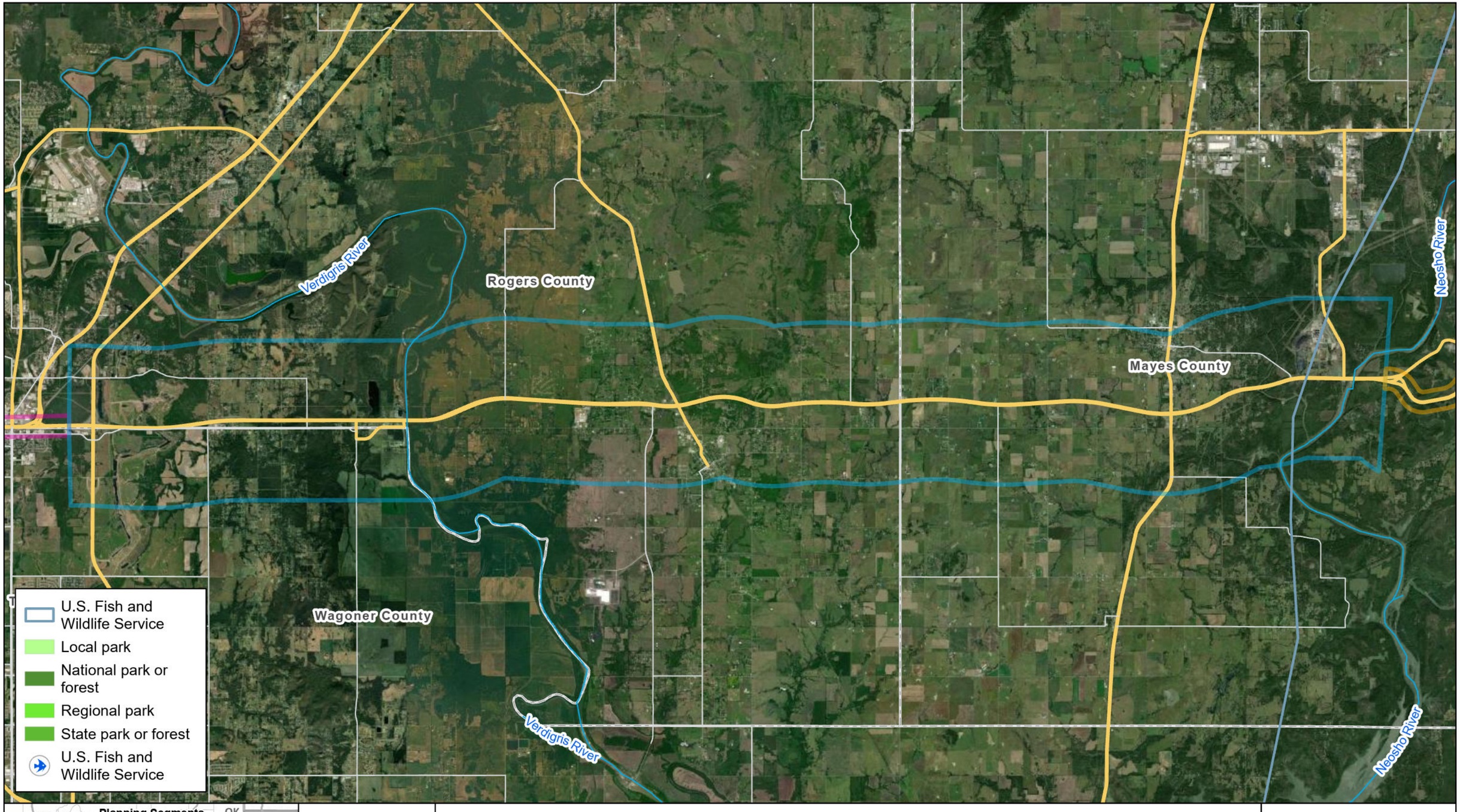
Tulsa Planning Segment

Source: LWCF (2022); ESRI, ArcGIS Online (2021).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix I - Section 4(f) & 6(f) Properties

Sheet 4 of 8

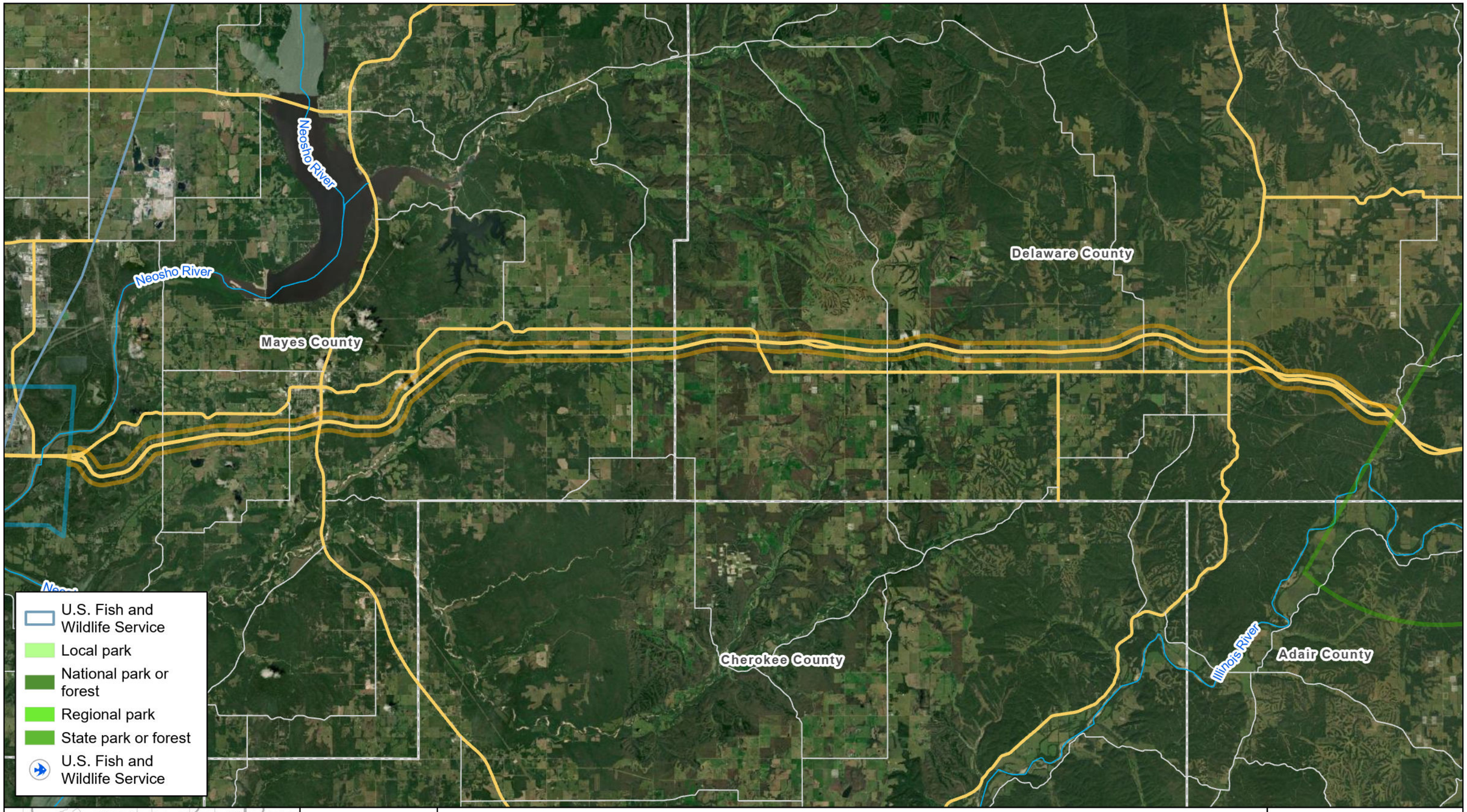
Inola Planning Segment

Source: LWCF (2022); ESRI, ArcGIS Online (2021).

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix I - Section 4(f) & 6(f) Properties

Sheet 5 of 8

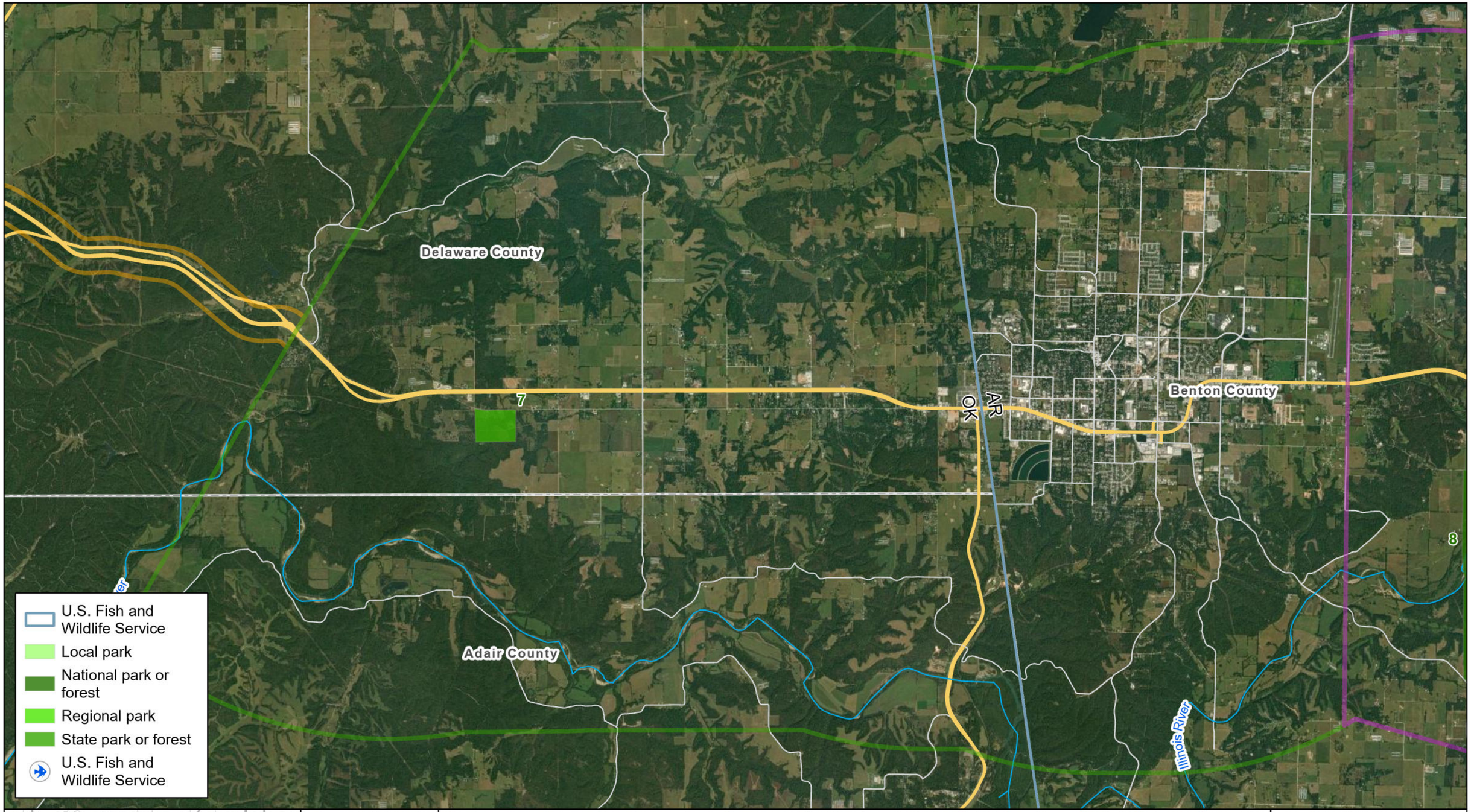
Cherokee Turnpike Planning Segment

Source: LWCF (2022); ESRI, ArcGIS Online (2021).

N

0 1.75 3.5 Mi

June 2023



INTERSTATE 412

Appendix I - Section 4(f) & 6(f) Properties

Sheet 6 of 8

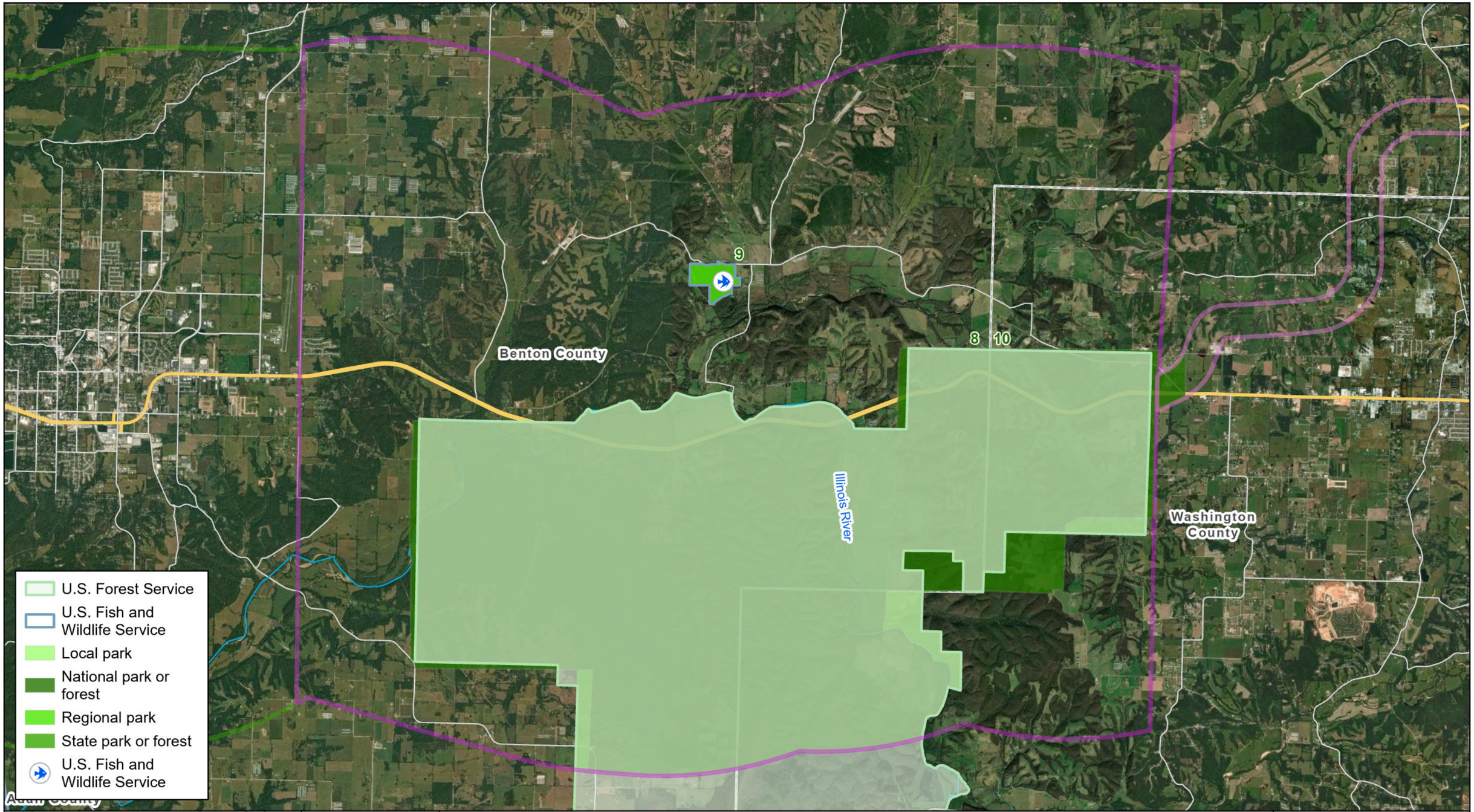
Siloam Springs Planning Segment

Source: LWCF (2022); ESRI, ArcGIS Online (2021).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix I - Section 4(f) & 6(f) Properties

Sheet 7 of 8

Springdale #1 Planning Segment

Source: LWCF (2022); ESRI, ArcGIS Online (2021).

N

0 0.75 1.5 Mi

June 2023

Benton County

Washington County

U.S. Forest Service
Local park
National park or forest
Regional park
State park or forest
U.S. Fish and Wildlife Service

INTERSTATE 412

Appendix I - Section 4(f) & 6(f) Properties

Sheet 8 of 8

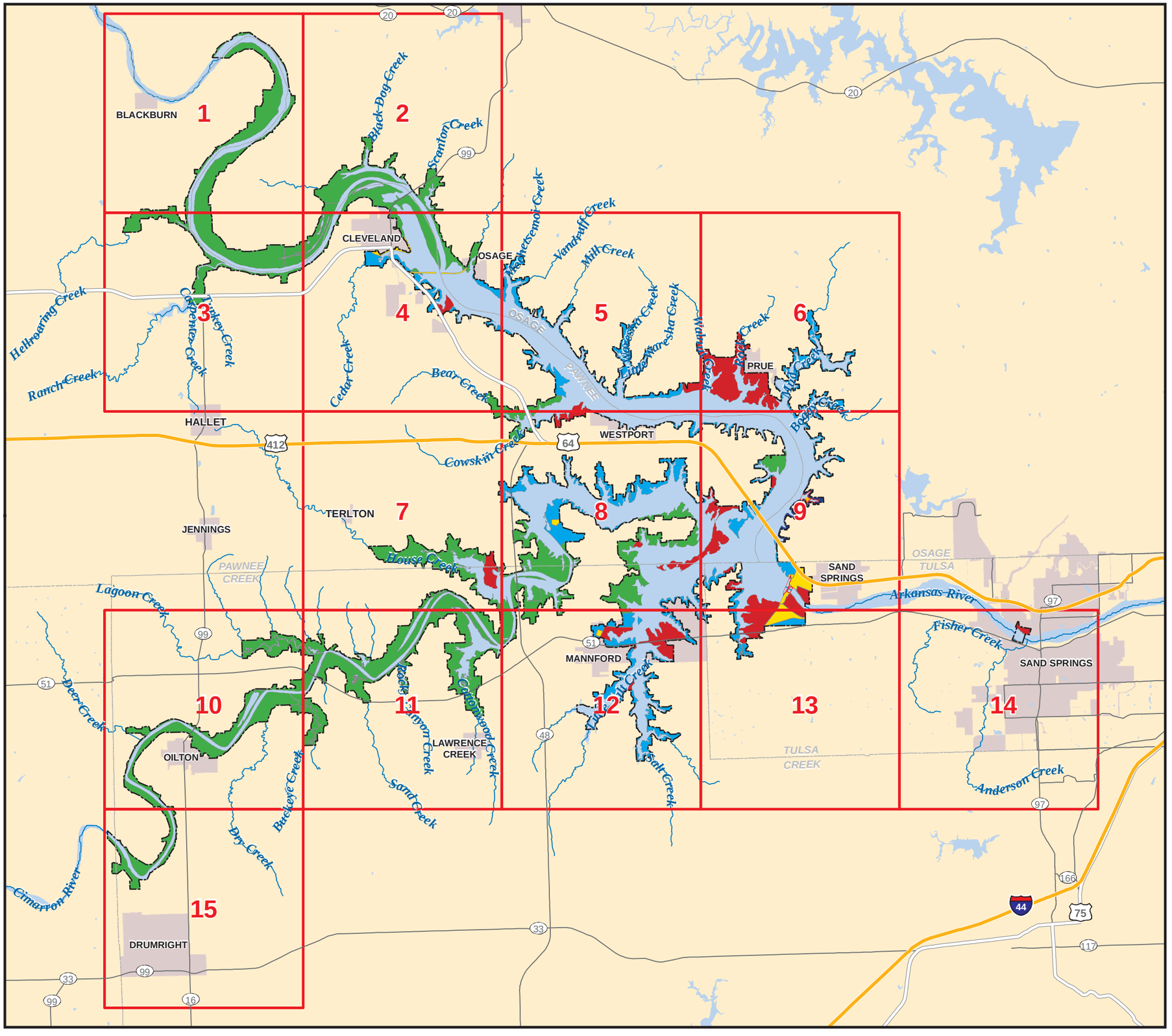
Springdale #2 Planning Segment

Source: LWCF (2022); ESRI, ArcGIS Online (2021).

N

0 0.5 1 Mi

June 2023



- INDEX GRID
- FEE BOUNDARY
- PROJECT OPERATIONS
- HIGH DENSITY RECREATION
- ENVIRONMENTALLY SENSITIVE AREAS
- LOW DENSITY RECREATION
- WILDLIFE MANAGEMENT
- WATER SURFACE: OPEN RECREATION
- WATER SURFACE: RESTRICTED
- WATER SURFACE: FISH & WILDLIFE SANCTUARY
- WATER SURFACE: DESIGNATED NO-WAKE AREAS

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT

KEYSTONE DAM AND RESERVOIR — ARKANSAS RIVER

KEYSTONE DAM AND RESERVOIR

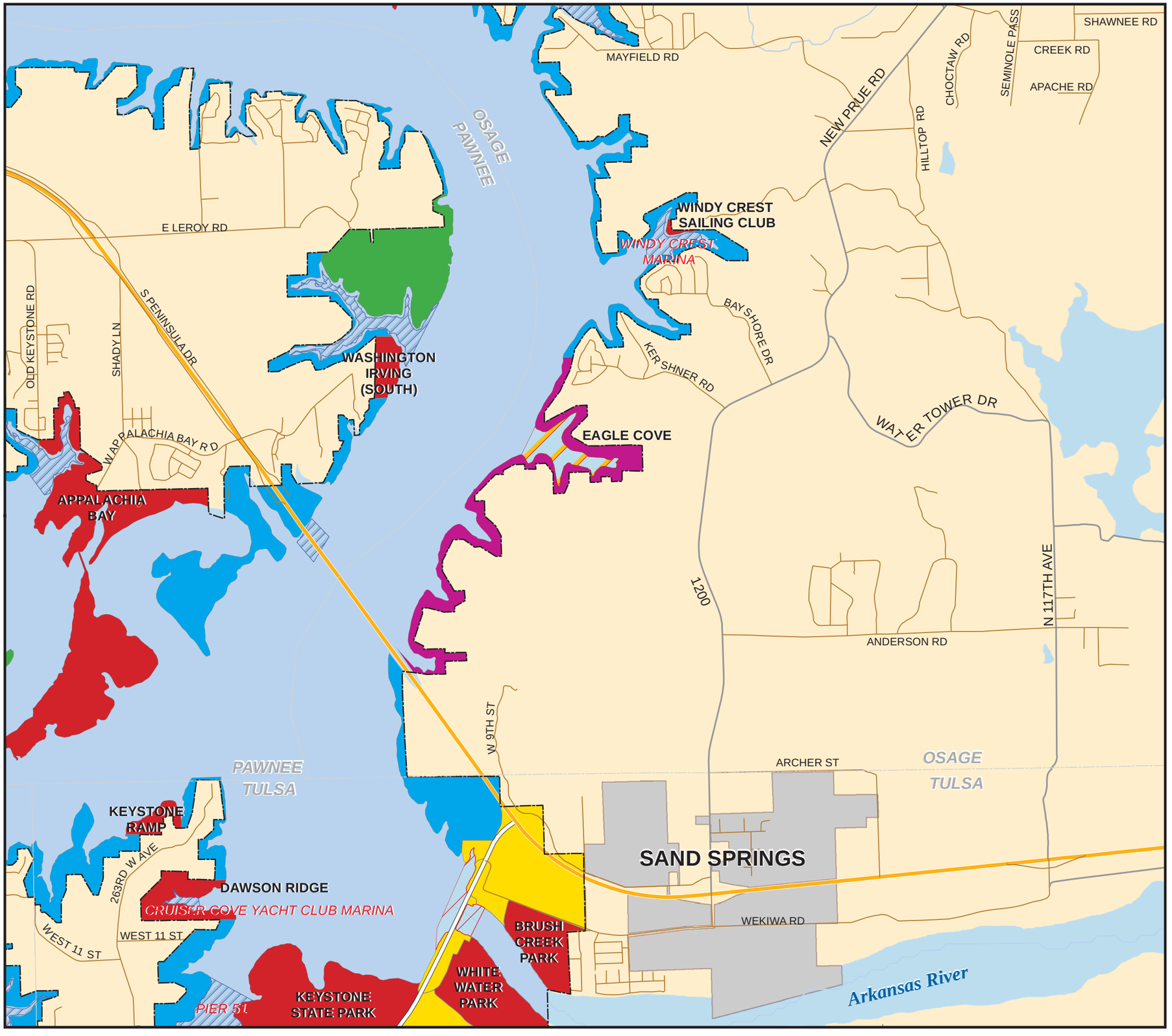
KEYSTONE LAKE MASTER PLAN

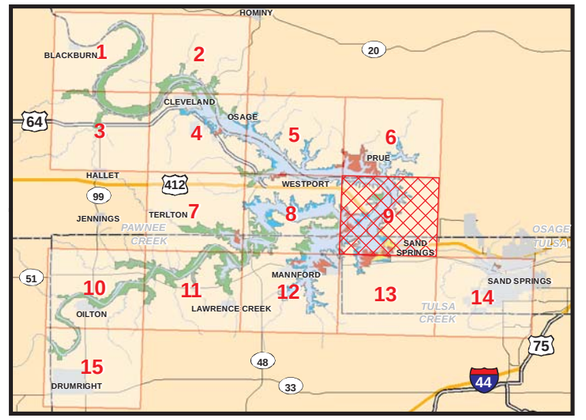
LAND CLASSIFICATION (INDEX SHEET 00)

N

0 1.25 2.5 5 MILES

DATE:	MAP NO.
MAY 2016	NK15MP-OC-00





- INDEX GRID
- FEE BOUNDARY
- PROJECT OPERATIONS
- HIGH DENSITY RECREATION
- ENVIRONMENTALLY SENSITIVE AREAS
- LOW DENSITY RECREATION
- WILDLIFE MANAGEMENT
- WATER SURFACE: OPEN RECREATION
- WATER SURFACE: RESTRICTED
- WATER SURFACE: FISH & WILDLIFE SANCTUARY
- WATER SURFACE: DESIGNATED NO-WAKE AREAS

U.S. ARMY CORPS OF ENGINEERS

TULSA DISTRICT

KEYSTONE DAM AND RESERVOIR — ARKANSAS RIVER

KEYSTONE DAM AND RESERVOIR

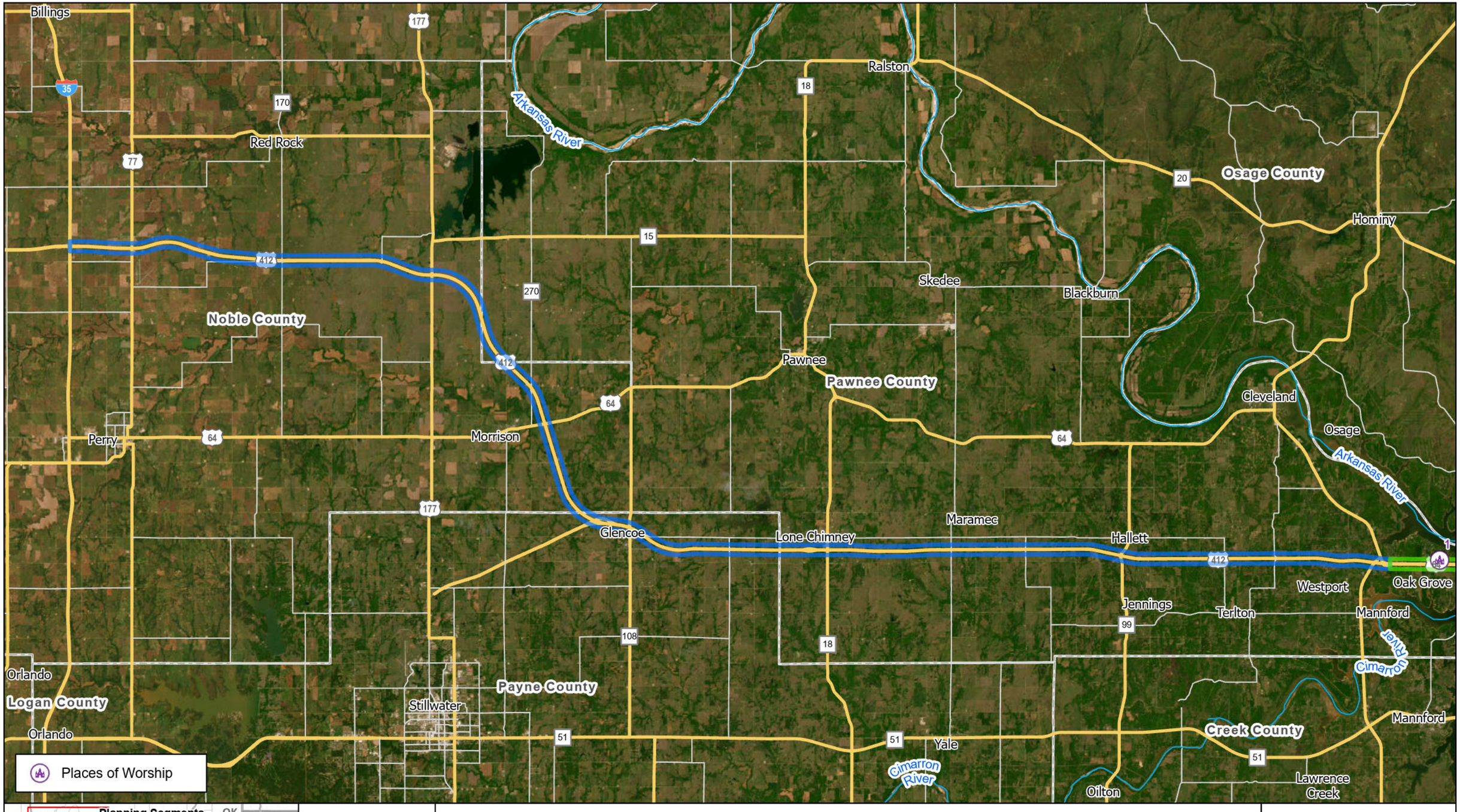
KEYSTONE LAKE MASTER PLAN

LAND CLASSIFICATION (SHEET 09)

N

0 0.25 0.5 1 MILES

DATE:	MAP NO.
MAY 2016	NK15MP-OC-09



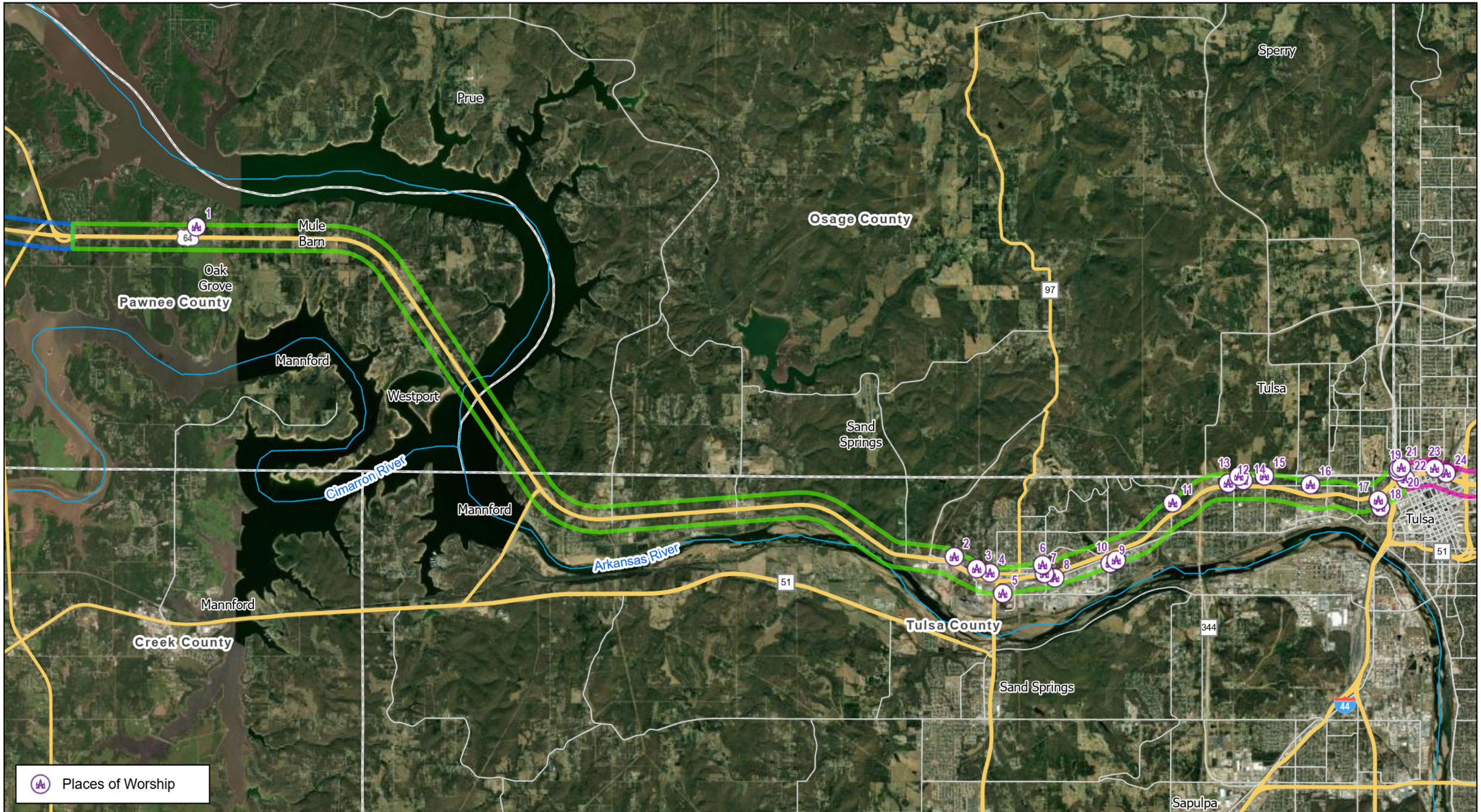
Appendix K - Places of Worship

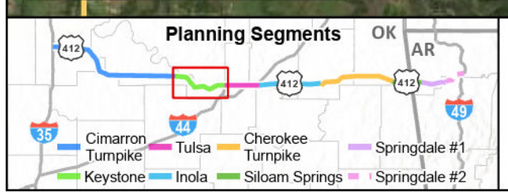
Sheet 1 of 8

Cimarron Turnpike Segment Planning

Source: USGS GNIS (2021).

June 2023





INTERSTATE 412

Appendix K - Places of Worship

Sheet 2 of 8

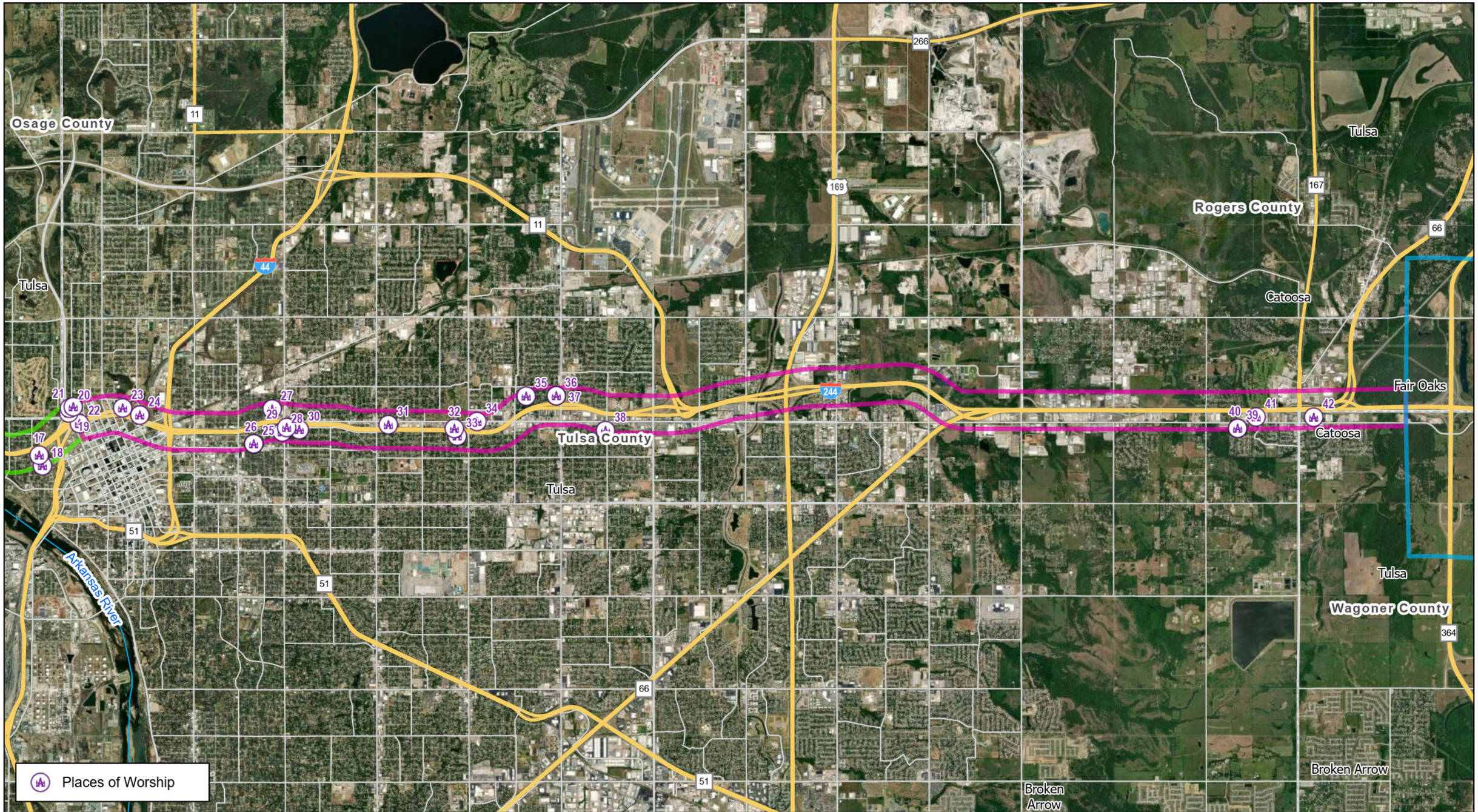
Keystone Segment Planning

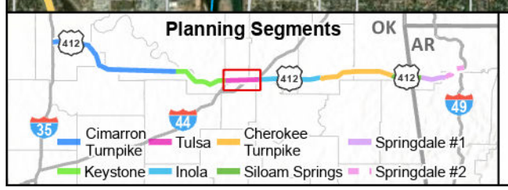
Source: USGS GNIS (2021).

N

0 1.25 2.5 Mi

June 2023





INTERSTATE 412

Appendix K - Places of Worship

Sheet 3 of 8

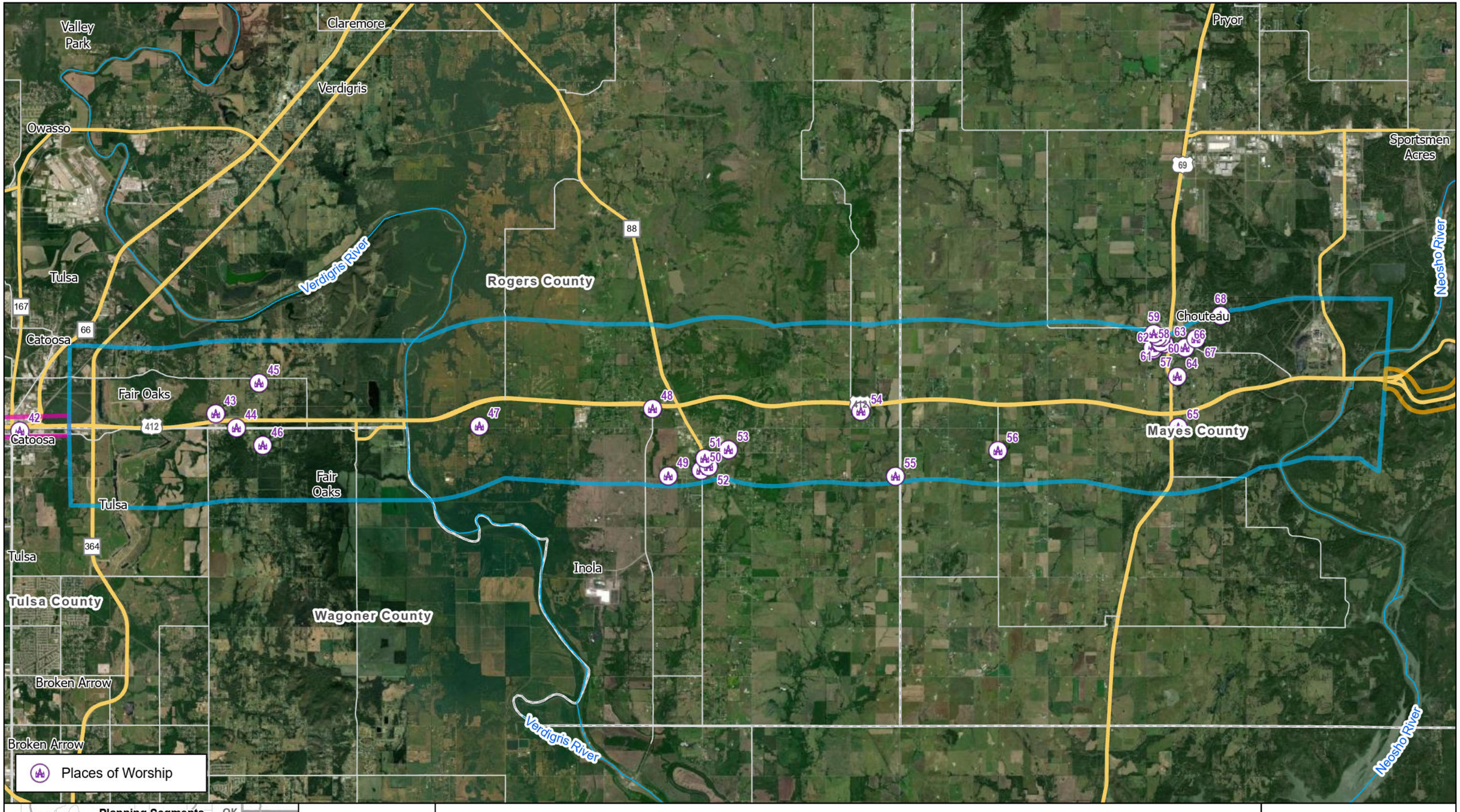
Tulsa Segment Planning

Source: USGS GNIS (2021).

N

0 0.75 1.5 Mi

June 2023



Appendix K - Places of Worship

Sheet 4 of 8

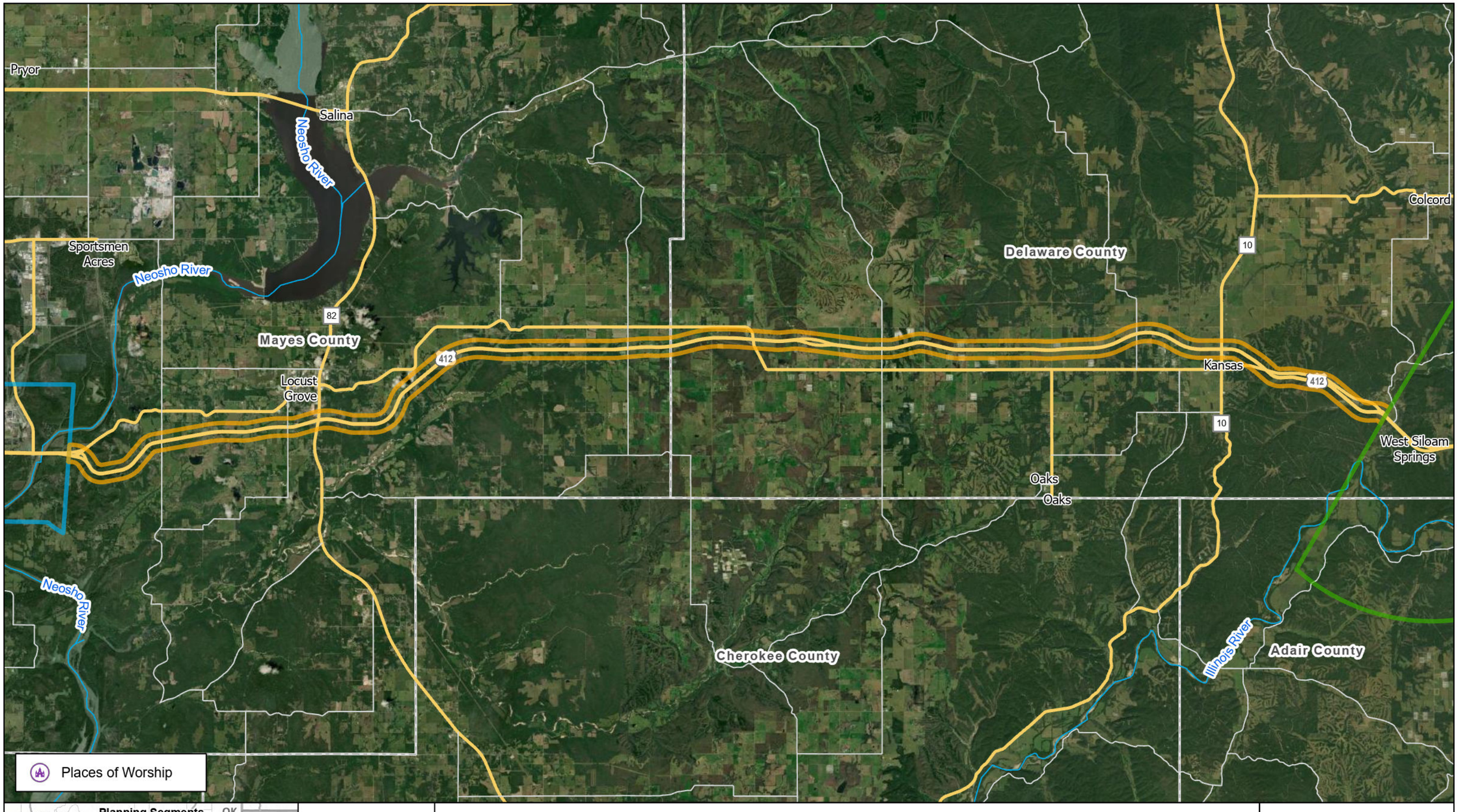
Inola Segment Planning

Source: USGS GNIS (2021).

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix K - Places of Worship

Sheet 5 of 8

Cherokee Turnpike Segment Planning

Source: USGS GNIS (2021).

N

0 1.75 3.5 Mi

June 2023

Kansas
412
Delaware County
Gentry
121
59
93
85
113
110
111
112
127
Benton County
94
81
91
92
97
95
123
84
82
Siloam Springs
101
103
100
104
107
120
124
125
72
70
69
OK
AR
78
79
80
105
115
109
117
119
71
59
73
74
77
89
88
96
99
114
116
West Siloam Springs
75
83
87
98
126
76
86
90
106
118
59
108
122
16
Illinois River
Adair County
102
Illinois River
59
Watts
Places of Worship

Planning Segments
OK
AR
412
35
44
49
Cimarron Turnpike
Tulsa
Cherokee Turnpike
Springdale #1
Keystone
Inola
Siloam Springs
Springdale #2

INTERSTATE 412

Appendix K - Places of Worship

Sheet 6 of 8

Siloam Springs Segment Planning

Source: USGS GNIS (2021).

N

0 0.75 1.5 Mi

June 2023

Gentry
Highfill
Cave Springs
Springdale
Elm Springs
Siloam Springs
Benton County
Tontitown
Washington County
Fayetteville
Illinois River
Adair County
59
112
60
412
31
52
16
102
108
122
Places of Worship

INTERSTATE 412

Appendix K - Places of Worship

Sheet 7 of 8

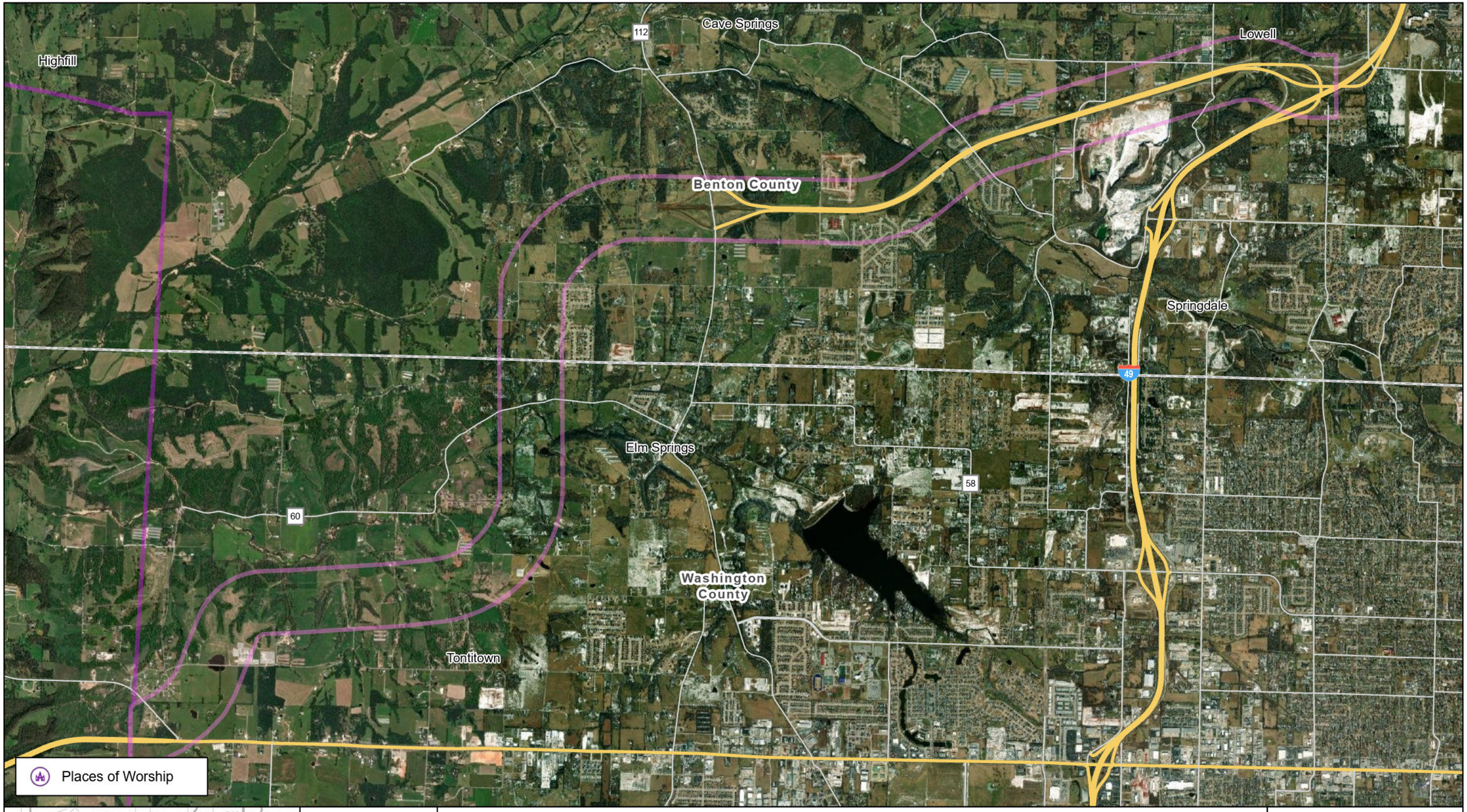
Springdale #1 Segment Planning

Source: USGS GNIS (2021).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix K - Places of Worship

Sheet 8 of 8

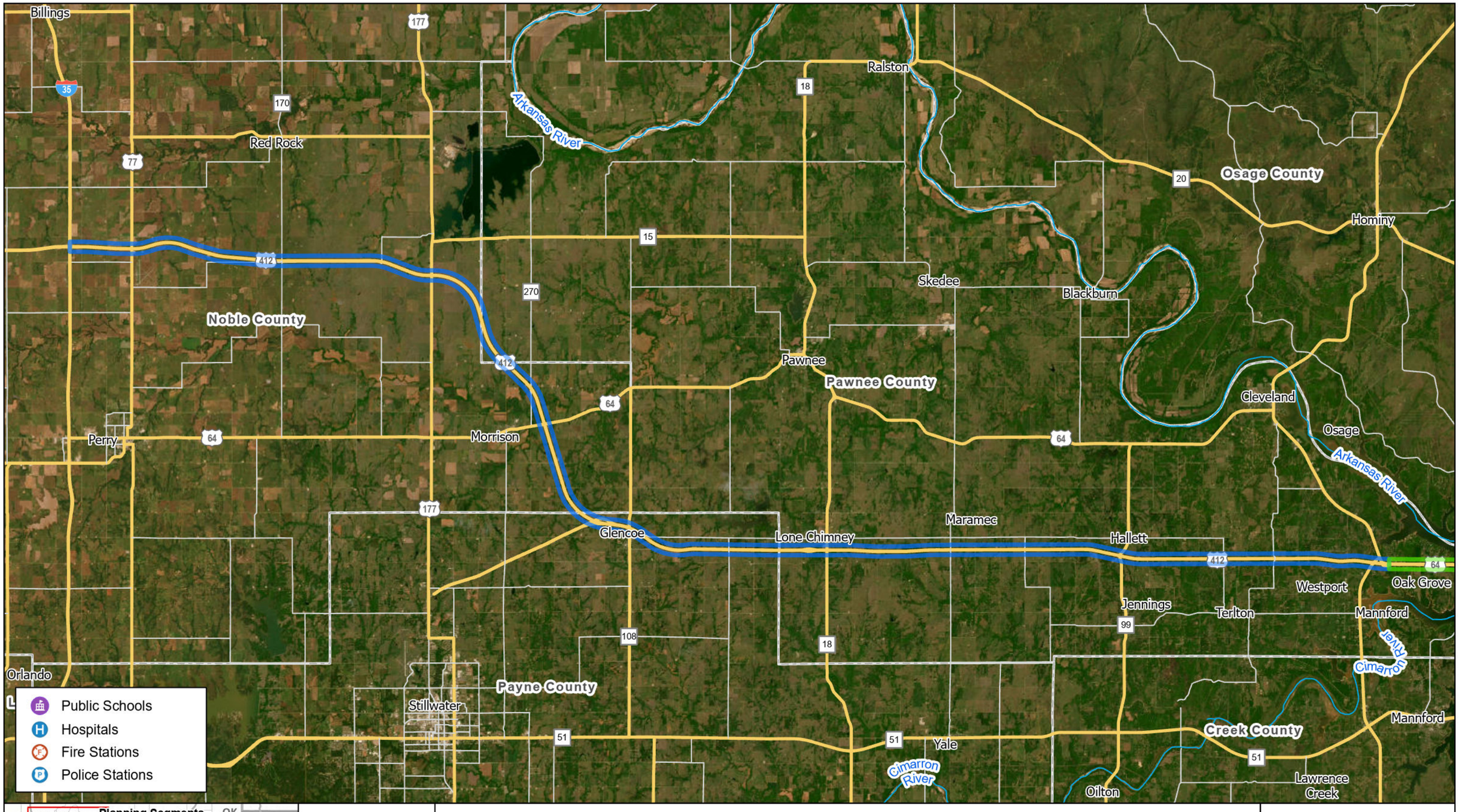
Springdale #2 Segment Planning

Source: USGS GNIS (2021).

N

0 0.5 1 Mi

June 2023



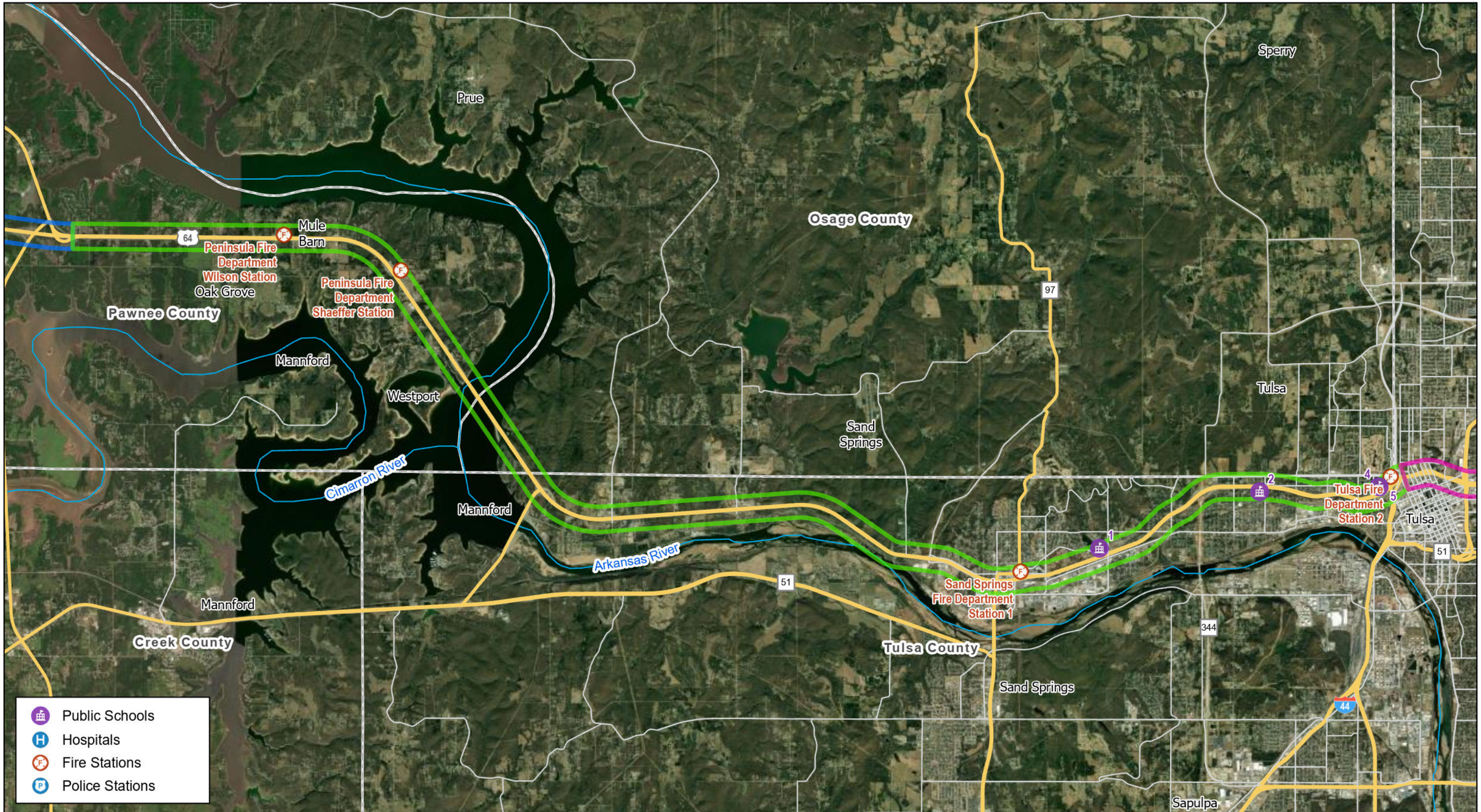
Appendix L - Public Facilities

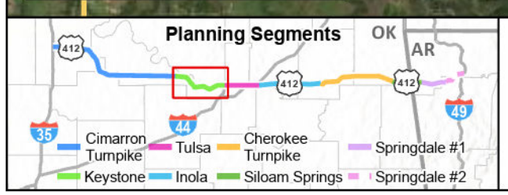
Sheet 1 of 8

Cimarron Turnpike Segment Planning

Source: National Center for Education Statistics (2022); ESRI, US Federal Data (2021).

June 2023





INTERSTATE 412

Appendix L - Public Facilities

Sheet 2 of 8

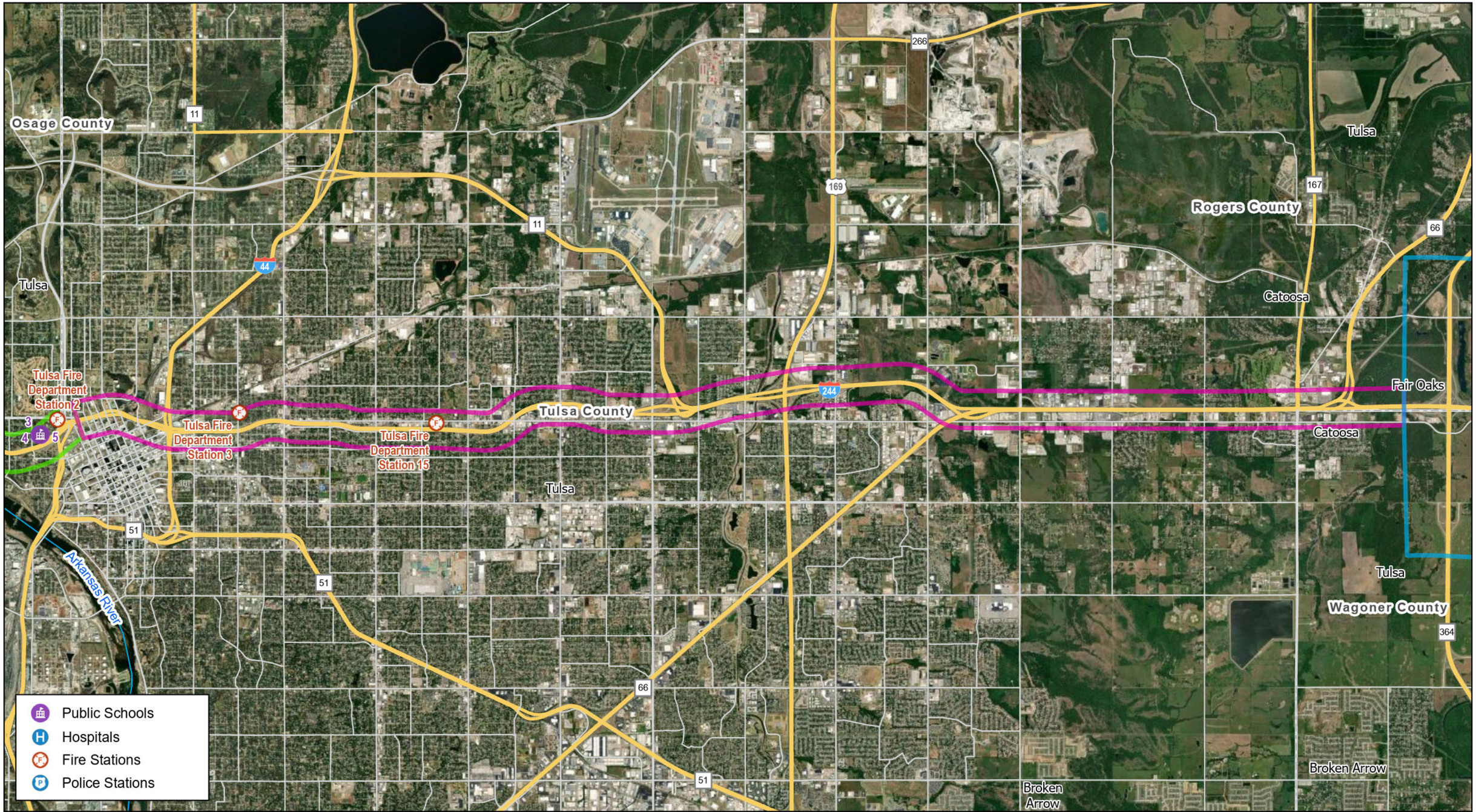
Keystone Segment Planning

Source: National Center for Education Statistics (2022); ESRI, US Federal Data (2021).

N

0 1.25 2.5 Mi

June 2023



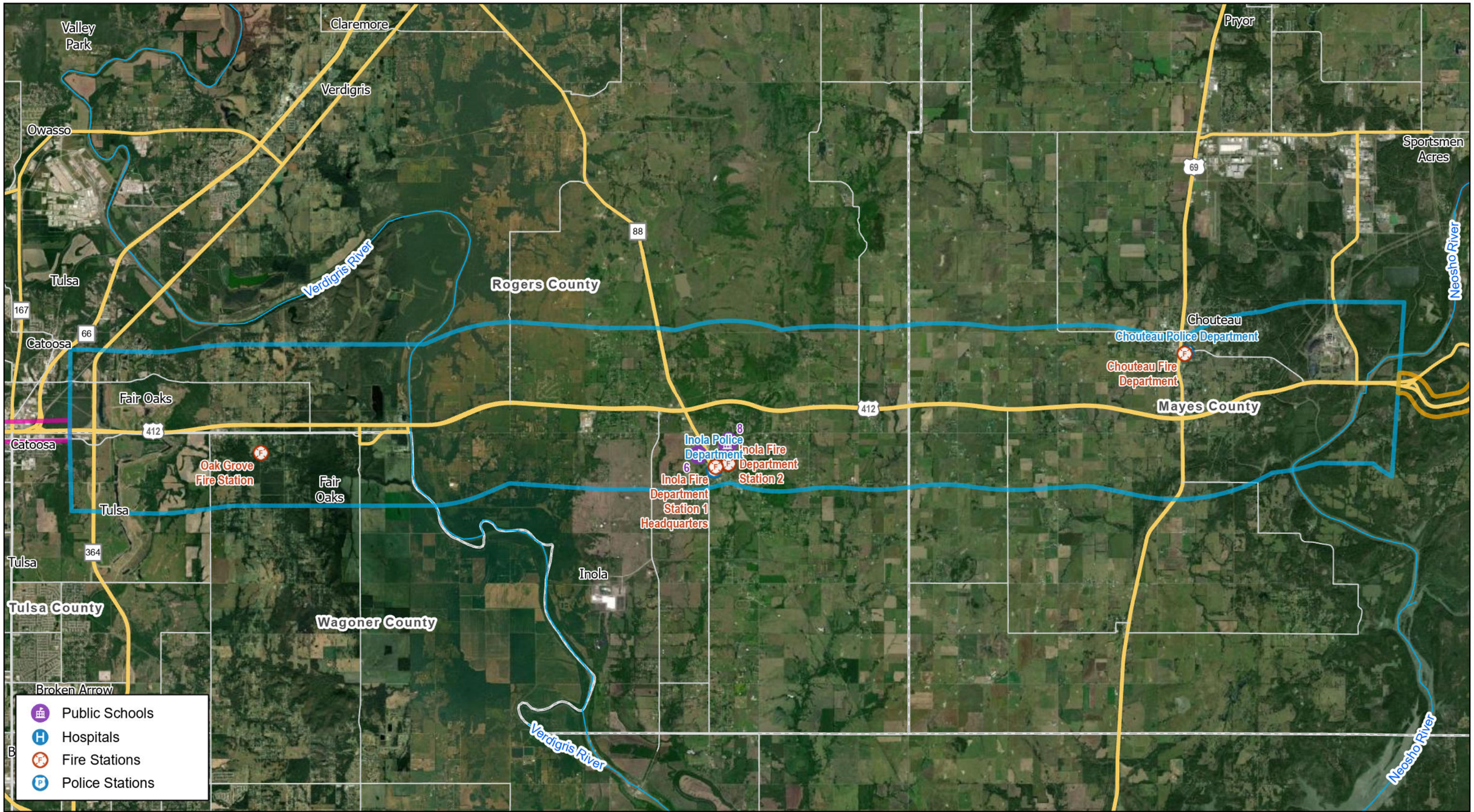
Appendix L - Public Facilities

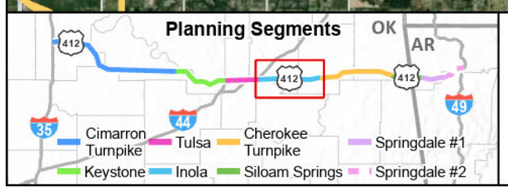
Sheet 3 of 8

Tulsa Segment Planning

Source: National Center for Education Statistics (2022); ESRI, US Federal Data (2021).

June 2023





Appendix L - Public Facilities

Sheet 4 of 8

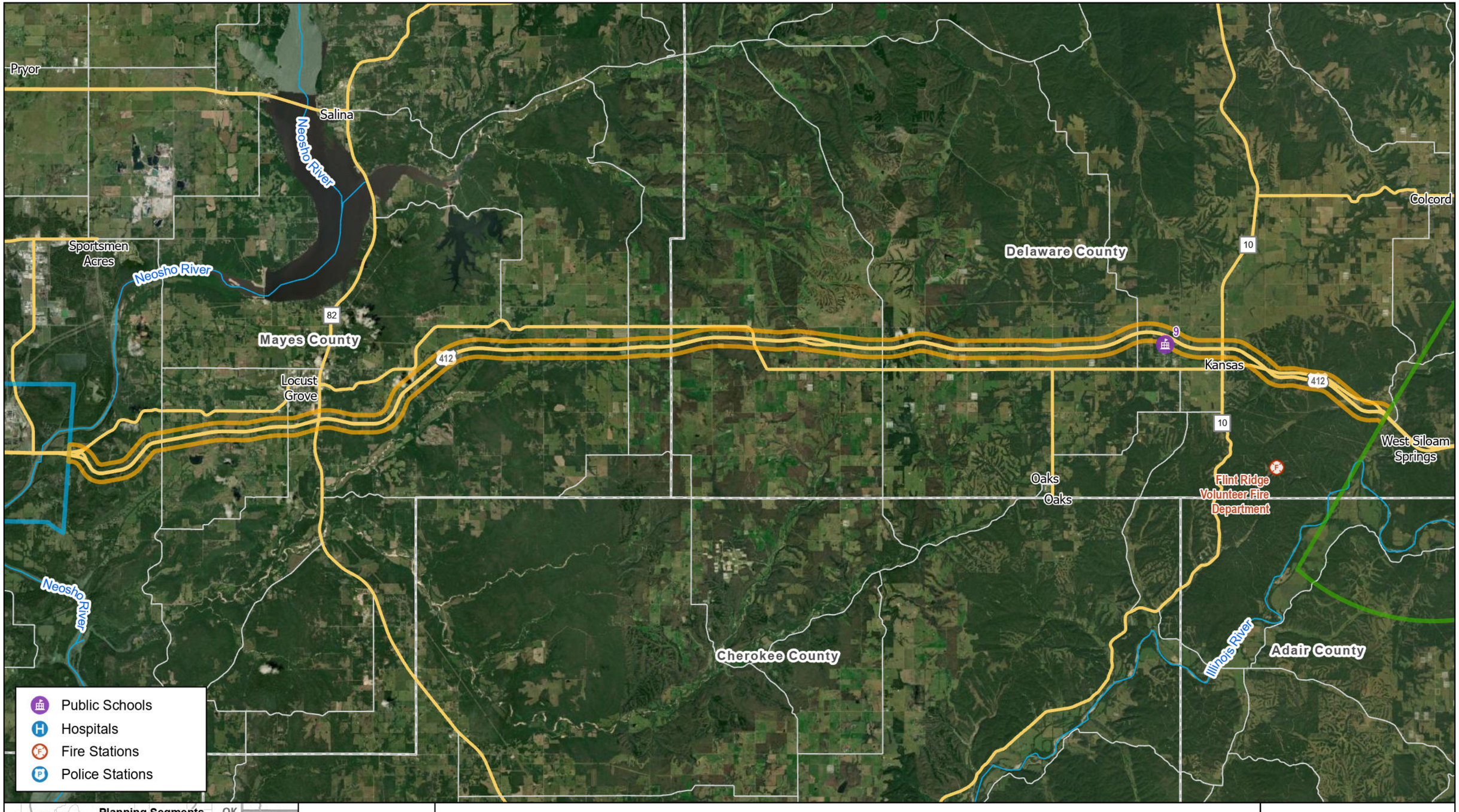
Inola Segment Planning

Source: National Center for Education Statistics (2022); ESRI, US Federal Data (2021).

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix L - Public Facilities

Sheet 5 of 8

Cherokee Turnpike Segment Planning

Source: National Center for Education Statistics (2022); ESRI, US Federal Data (2021).

N

0 1.75 3.5 Mi

June 2023

Kansas
Delaware County
Gentry
Adair County
Watts
Benton County
West Siloam Springs
Siloam Springs
OK
AR
412
59
16
Illinois River
Illinois River
West Siloam Springs Police Department
West Siloam Springs Volunteer Fire Department
Flint Ridge Volunteer Fire Department
Siloam Springs Fire Department Station 1
Siloam Springs Fire Department Station 2
Siloam Springs Fire Department Station 3
Siloam Springs Police Department
Siloam Springs Regional Hospital
10
11
12
13
14
15
16

- Public Schools
- Hospitals
- Fire Stations
- Police Stations

Planning Segments

Cimarron Turnpike · Tulsa · Cherokee Turnpike · Springdale #1
Keystone · Inola · Siloam Springs · Springdale #2

Appendix L - Public Facilities

Sheet 6 of 8

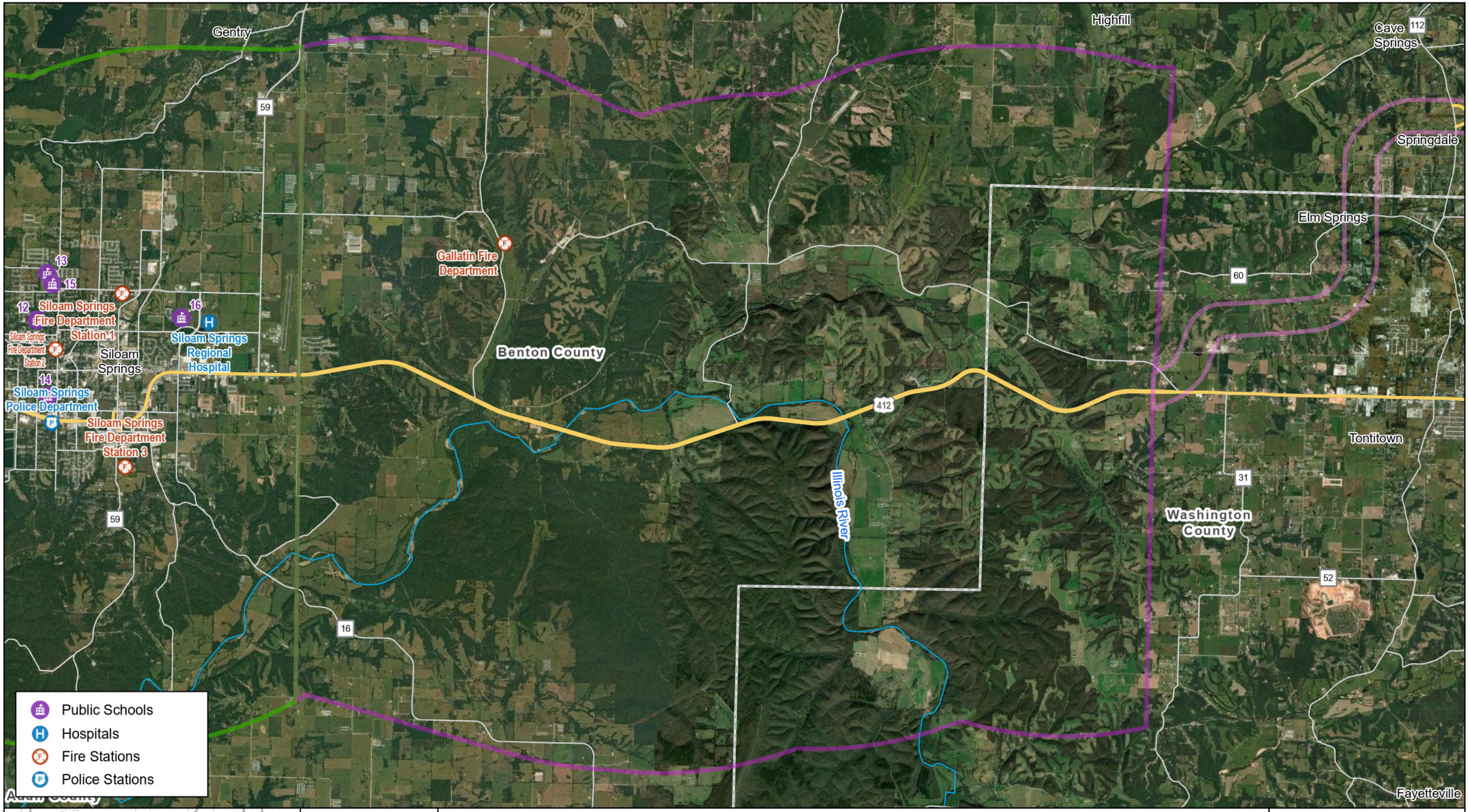
Siloam Springs Segment Planning

Source: National Center for Education Statistics (2022); ESRI, US Federal Data (2021).

N

0 0.75 1.5 Mi

June 2023



Appendix L - Public Facilities

Sheet 7 of 8

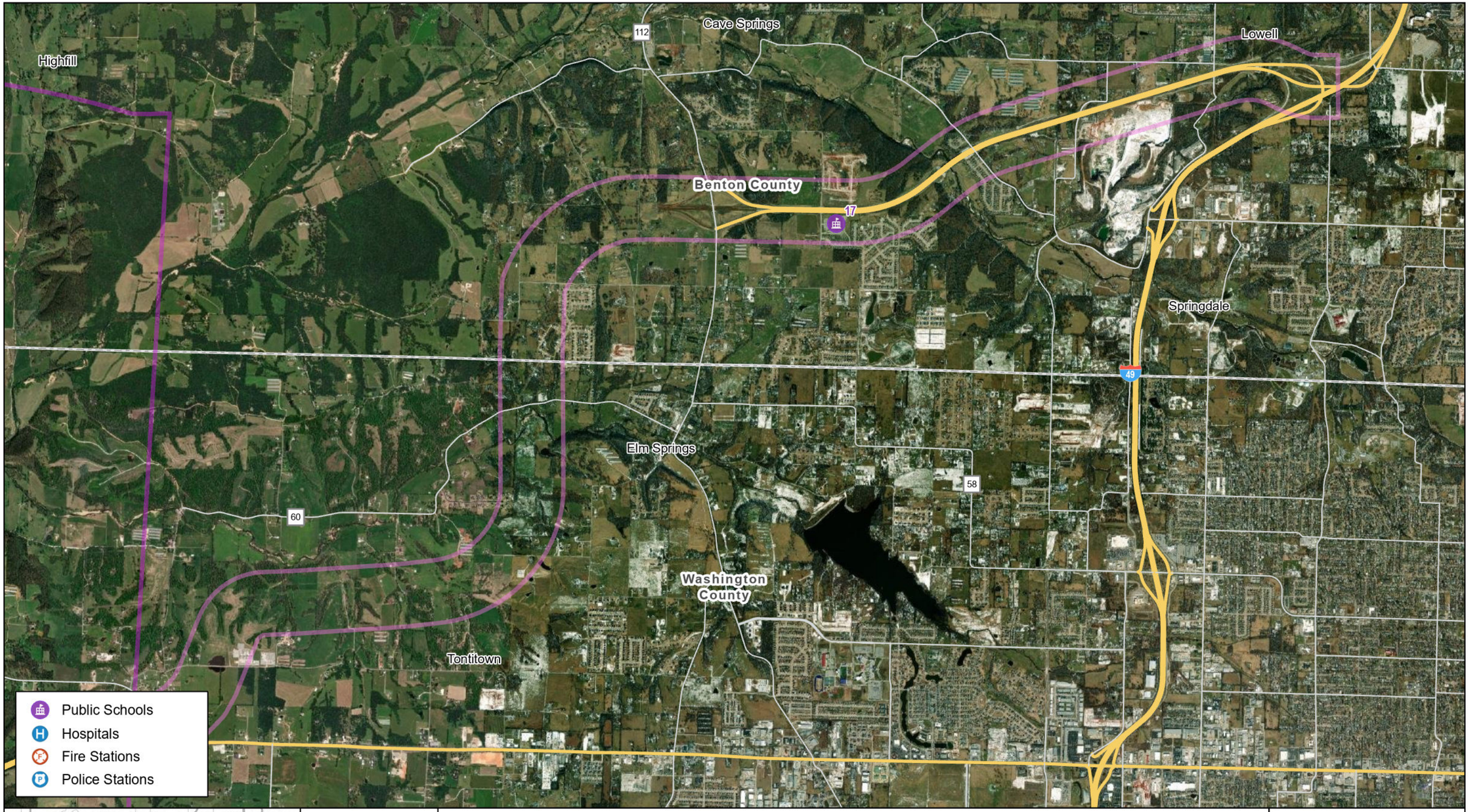
Springdale #1 Segment Planning

Source: National Center for Education Statistics (2022); ESRI, US Federal Data (2021).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix L - Public Facilities

Sheet 8 of 8

Springdale #2 Segment Planning

Source: National Center for Education Statistics (2022); ESRI, US Federal Data (2021).

N

0 0.5 1 Mi

June 2023

Arkansas River

Noble County

Pawnee County

Osage County

Payne County

Creek County

Arkansas River

Cimarron River

Cimarron River

Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Carbonates
- Gypsum
- H
- L
- M

INTERSTATE 412

Appendix M - Waters, Wetlands and Karst Features

Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: USGS (2019, 2023), USFWS (2023), ESRI (2020).

N

0 3 6 Mi

June 2023

Pawnee County

Osage County

Cimarron River

Arkansas River

Tulsa County

Creek County

Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Carbonates
- Gypsum
- H
- L
- M

INTERSTATE 412

Appendix M - Waters, Wetlands and Karst Features

Sheet 2 of 8

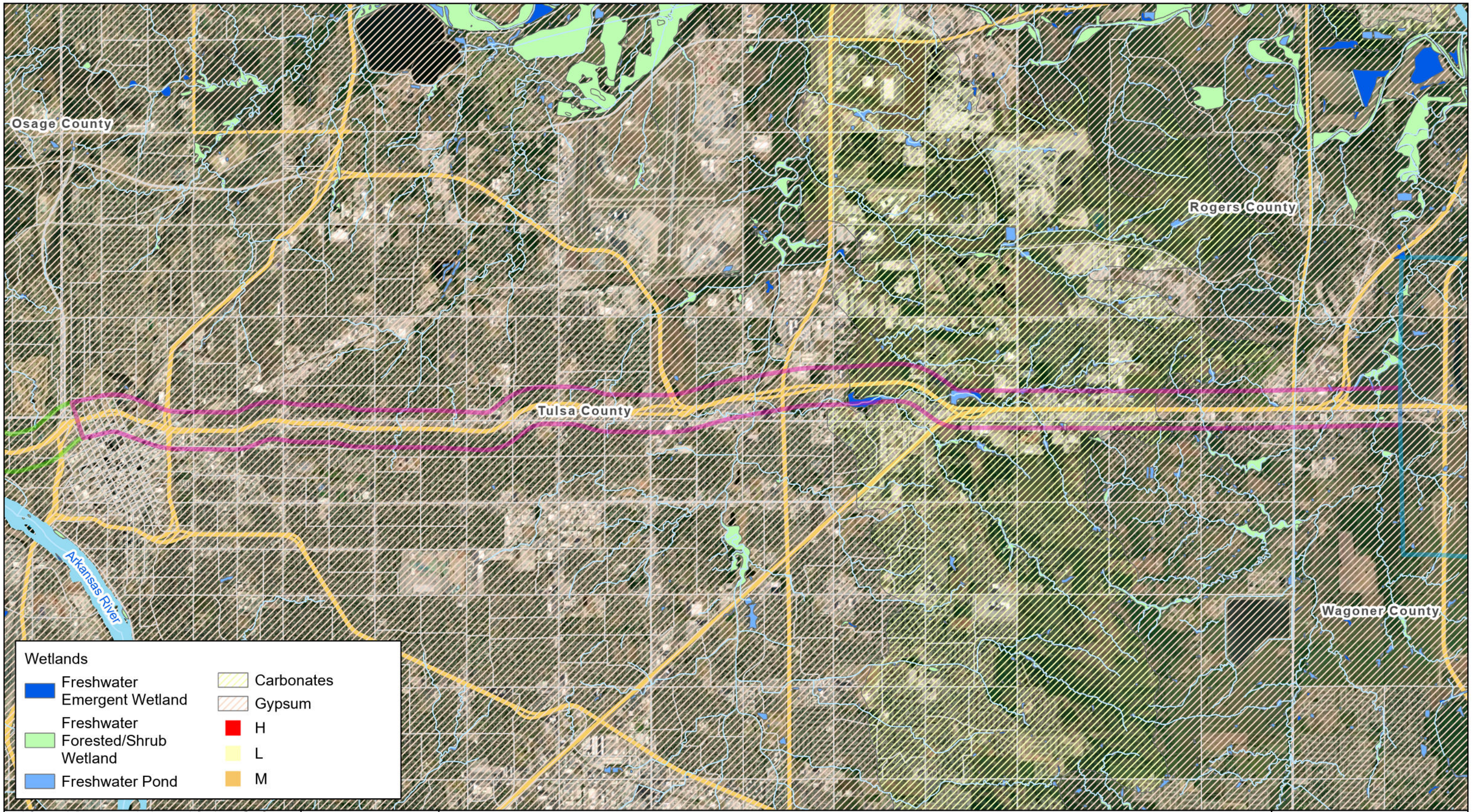
Keystone Planning Segment

Source: USGS (2019, 2023), USFWS (2023), ESRI (2020).

N

0 1.25 2.5 Mi

June 2023



INTERSTATE 412

Appendix M - Waters, Wetlands and Karst Features

Sheet 3 of 8

Tulsa Planning Segment

Source: USGS (2019, 2023), USFWS (2023), ESRI (2020).

N

0 0.75 1.5 Mi

June 2023

Verdigris River

Rogers County

Neosho River

Mayes County

Tulsa County

Wagoner County

Verdigris River

Neosho River

Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Carbonates
- Gypsum
- H
- L
- M

INTERSTATE 412

Appendix M - Waters, Wetlands and Karst Features

Sheet 4 of 8

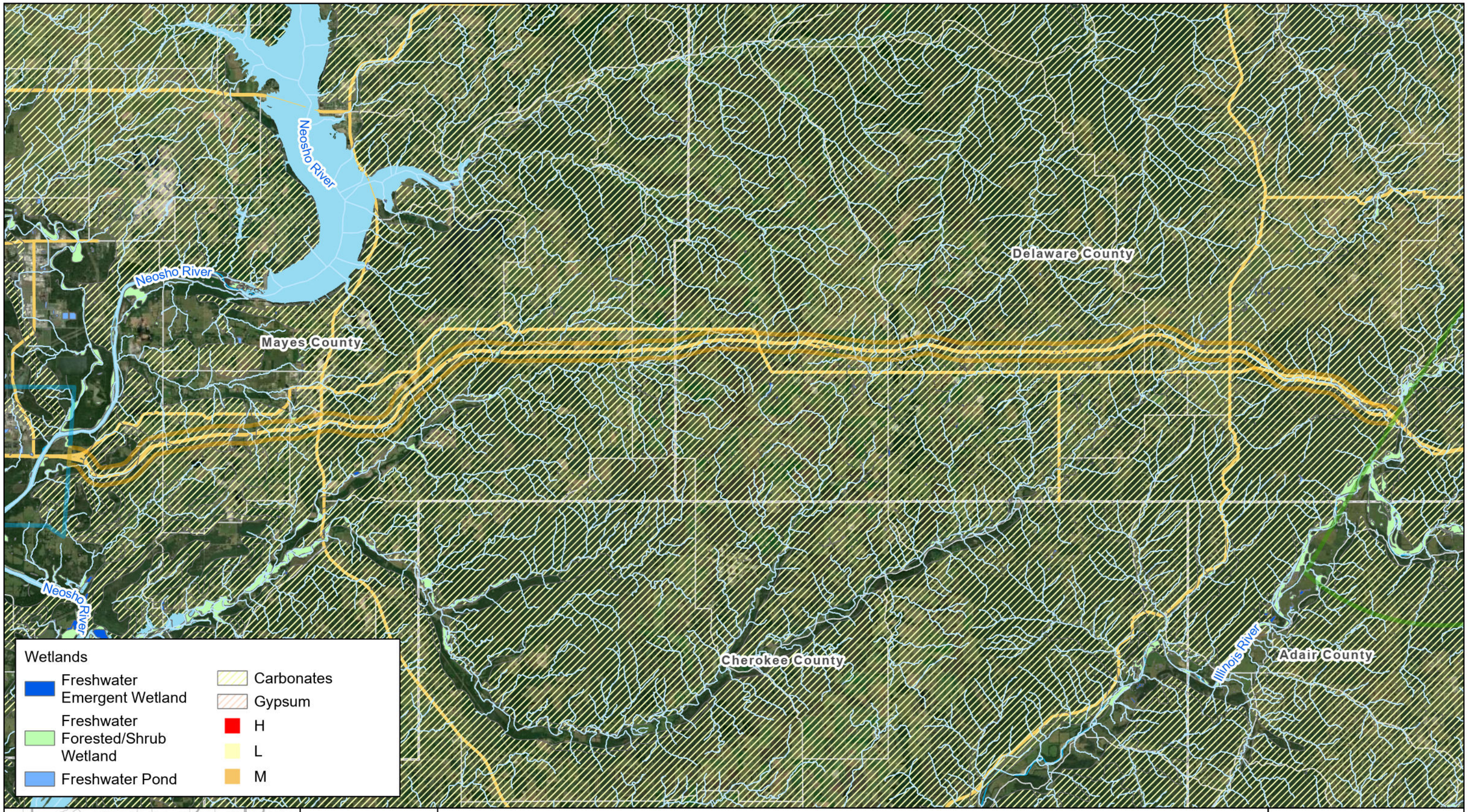
Inola Planning Segment

Source: USGS (2019, 2023), USFWS (2023), ESRI (2020).

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix M - Waters, Wetlands and Karst Features

Sheet 5 of 8

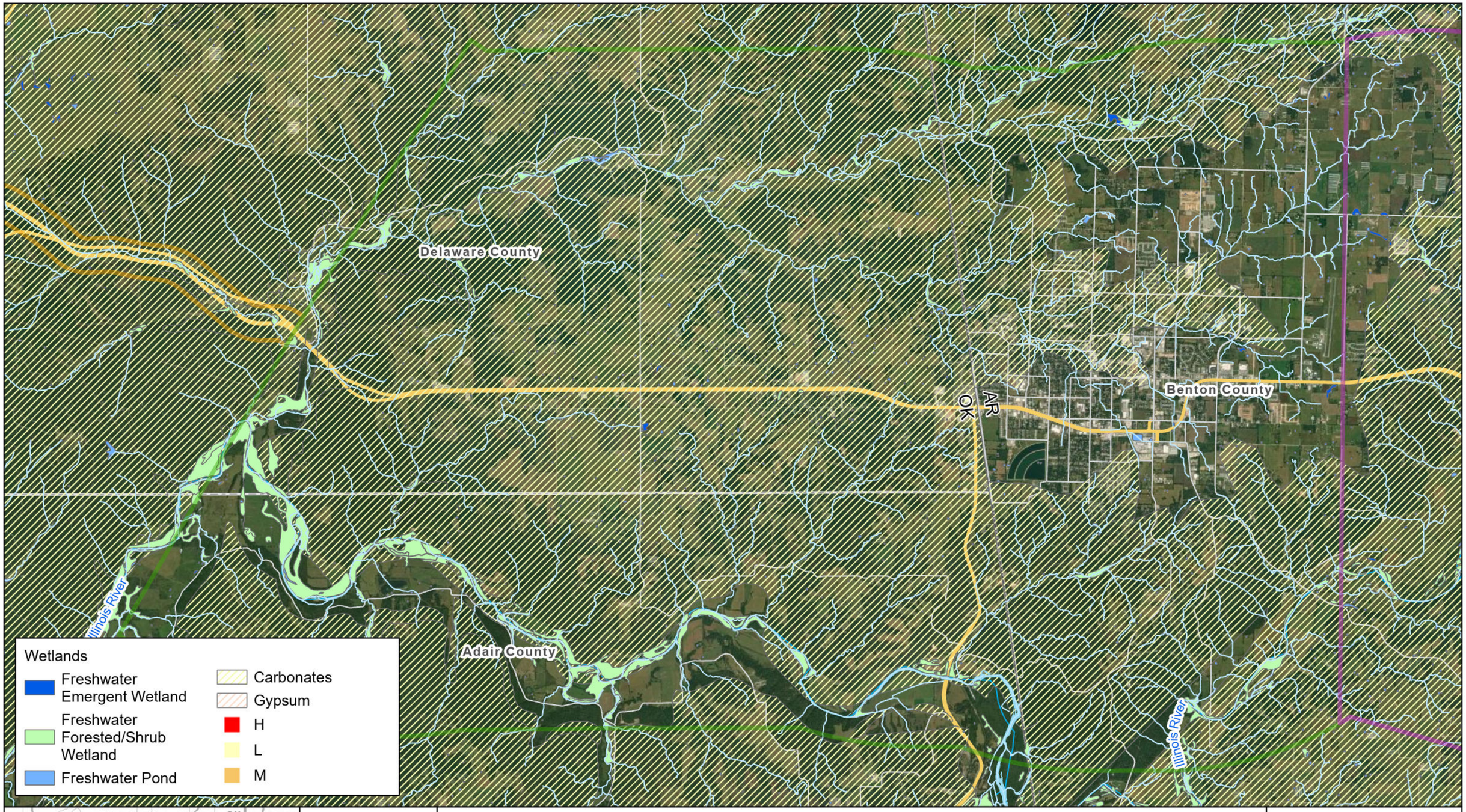
Cherokee Turnpike Planning Segment

Source: USGS (2019, 2023), USFWS (2023), ESRI (2020).

N

0 1.75 3.5 Mi

June 2023



INTERSTATE 412

Appendix M - Waters, Wetlands and Karst Features

Sheet 6 of 8

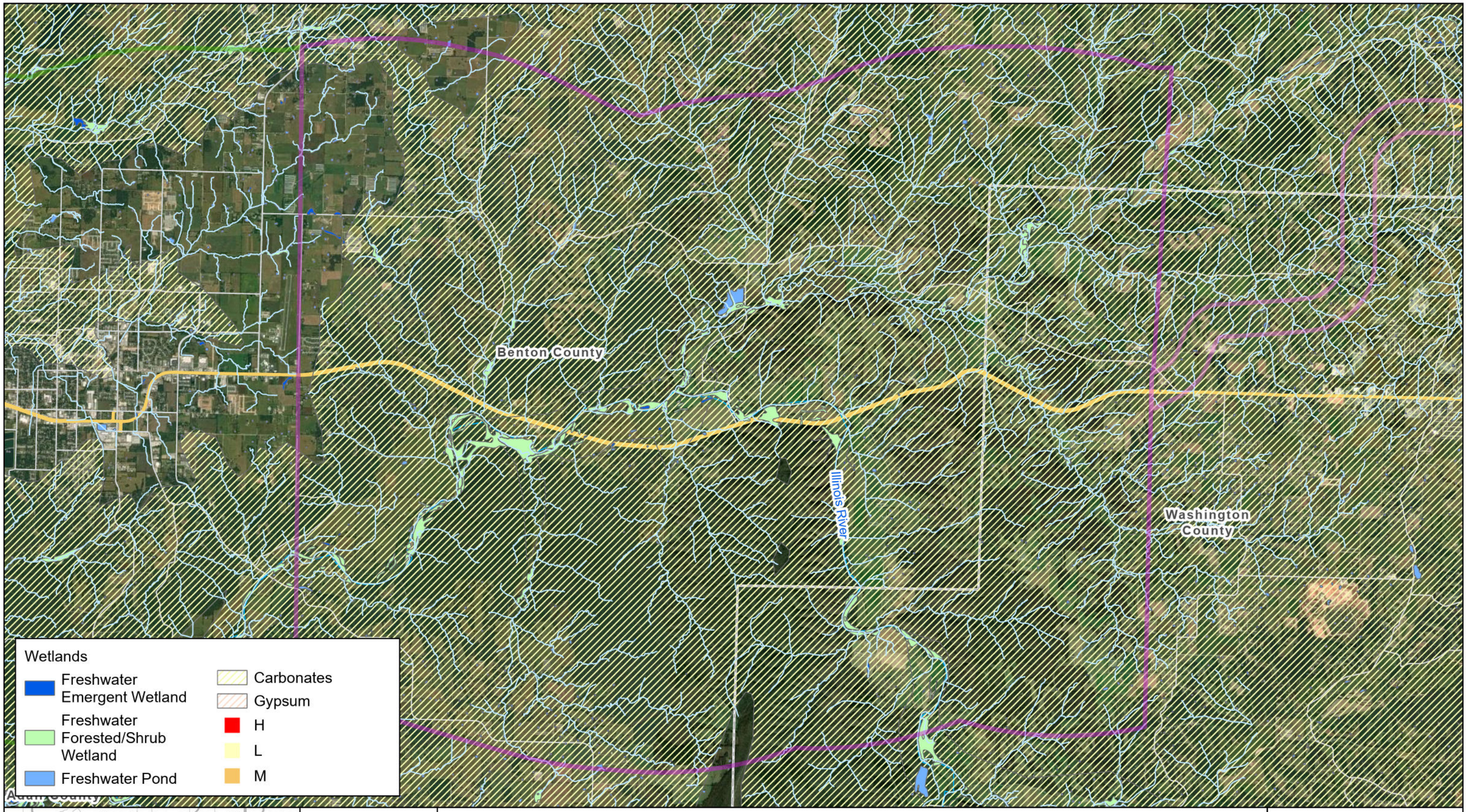
Siloam Springs Planning Segment

Source: USGS (2019, 2023), USFWS (2023), ESRI (2020).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix M - Waters, Wetlands and Karst Features

Sheet 7 of 8

Springdale #1 Planning Segment

Source: USGS (2019, 2023), USFWS (2023), ESRI (2020).

N

0 0.75 1.5 Mi

June 2023

Benton County

Washington County

Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Carbonates
- Gypsum
- H
- L
- M

INTERSTATE 412

Appendix M - Waters, Wetlands and Karst Features

Sheet 8 of 8

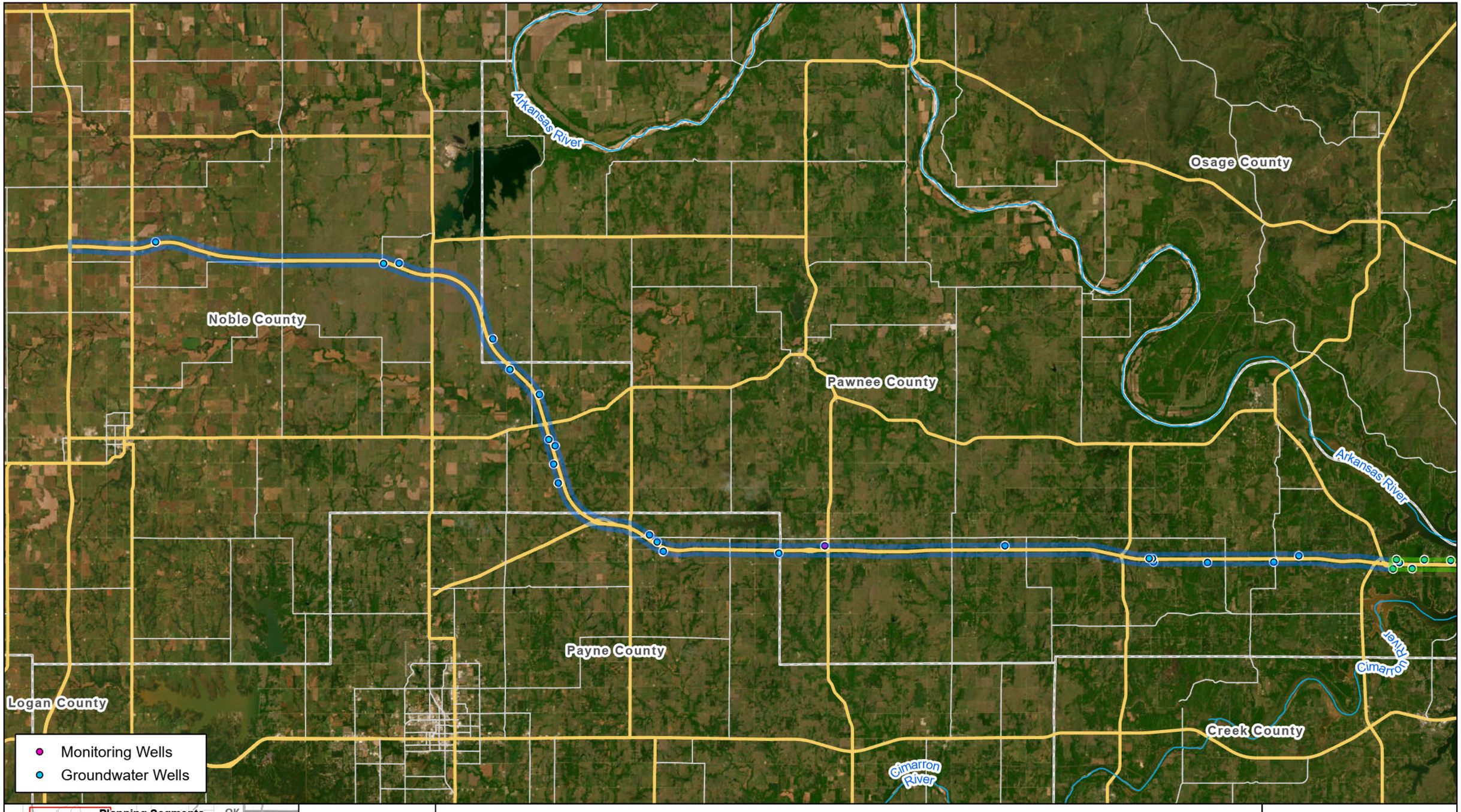
Springdale #2 Planning Segment

Source: USGS (2019, 2023), USFWS (2023), ESRI (2020).

N

0 0.5 1 Mi

June 2023



INTERSTATE 412

Appendix N - Water and Monitoring Wells

Sheet 1 of 8

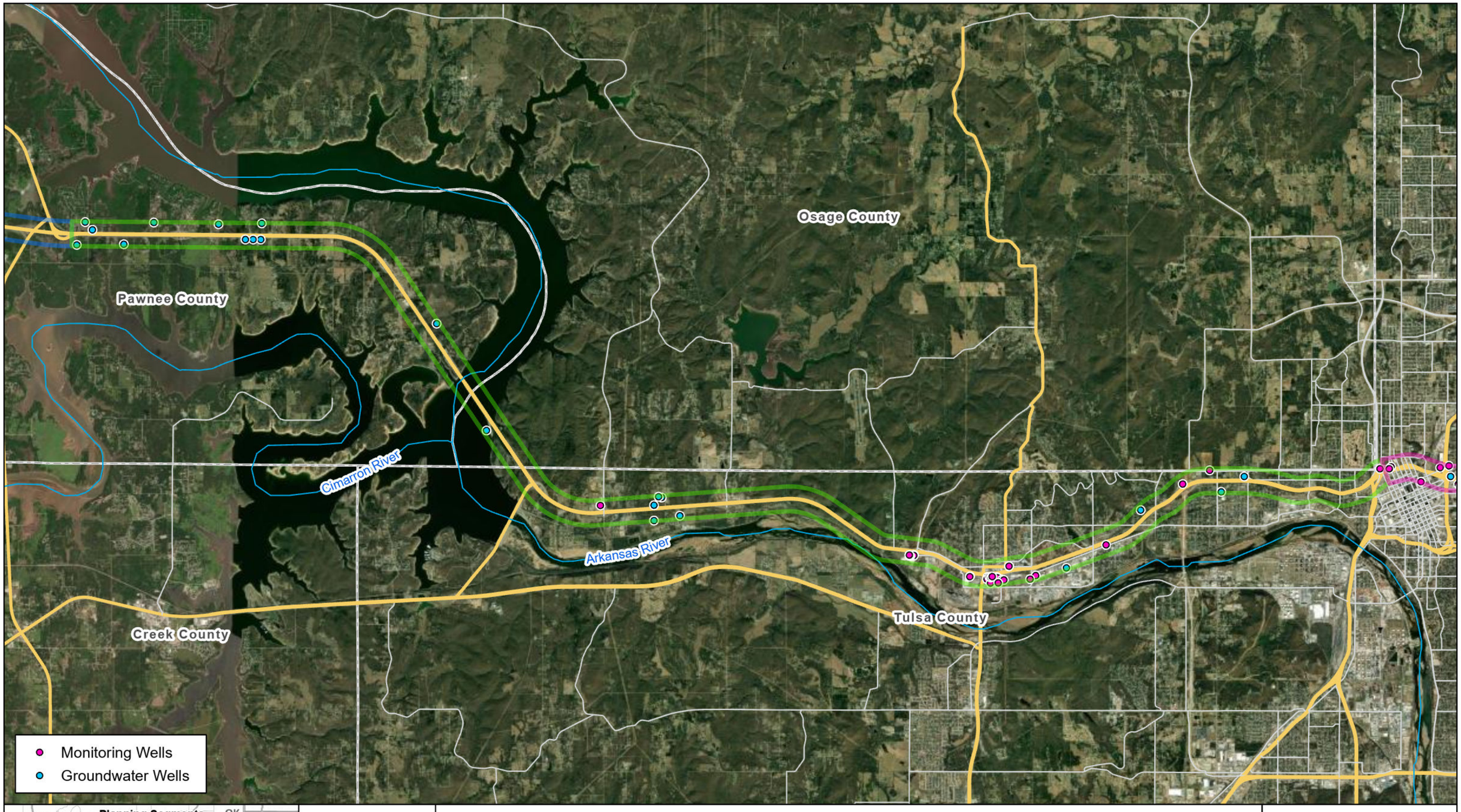
Cimarron Turnpike Planning Segment

Source: Arkansas Department of Agriculture and Natural Resources Division (2023)

N

0 3 6 Mi

June 2023



INTERSTATE 412

Appendix N - Water and Monitoring Wells

Sheet 2 of 8

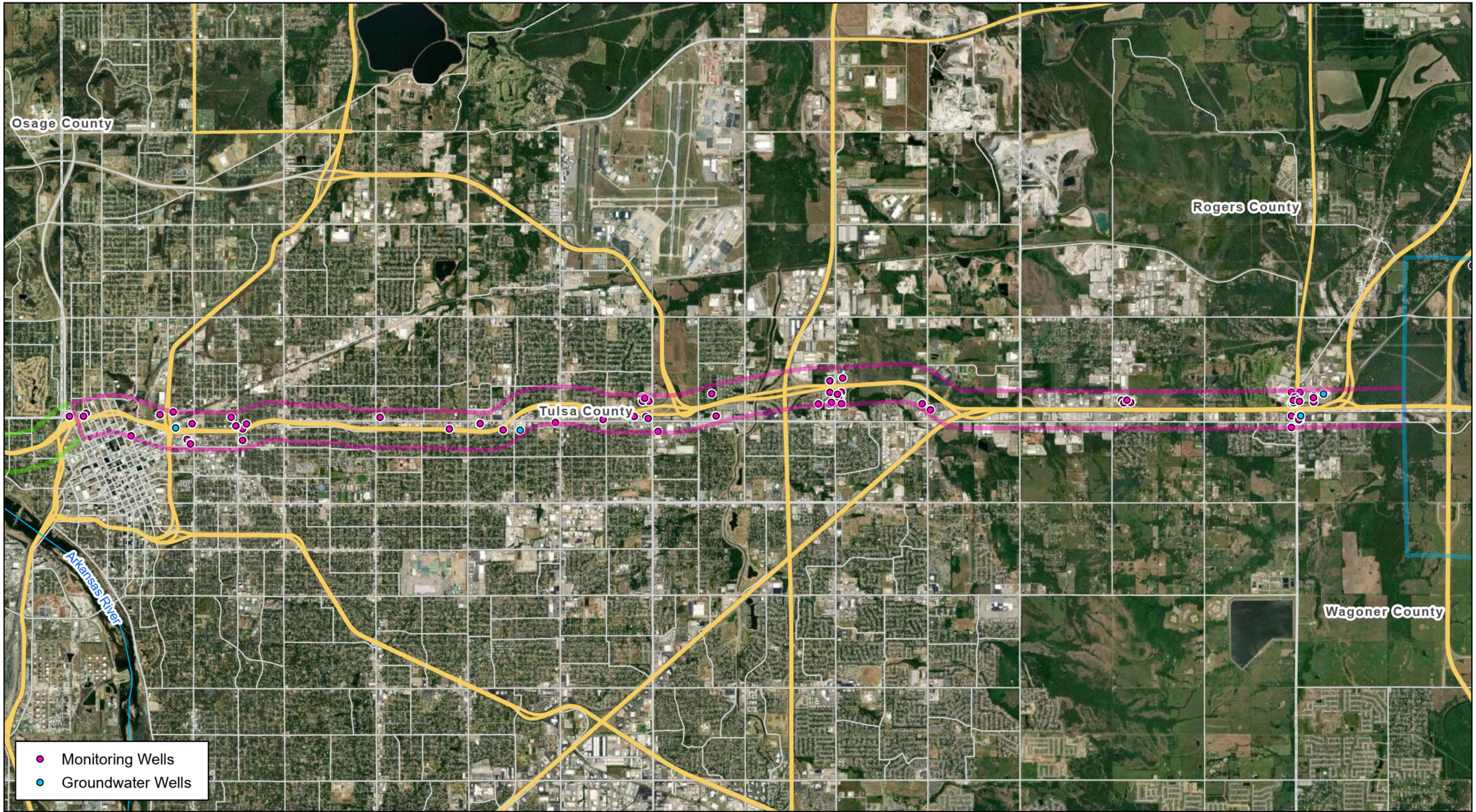
Keystone Planning Segment

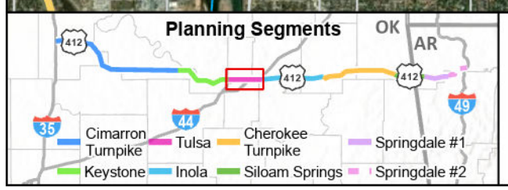
Source: Arkansas Department of Agriculture and Natural Resources Division (2023)

N

0 1.25 2.5 Mi

June 2023





INTERSTATE 412

Appendix N - Water and Monitoring Wells

Sheet 3 of 8

Tulsa Planning Segment

Source: Arkansas Department of Agriculture and Natural Resources Division (2023)

N

0 0.75 1.5 Mi

June 2023

Rogers County
Mayes County
Tulsa County
Wagoner County
Verdigris River
Neosho River
Verdigris River
Neosho River
Monitoring Wells
Groundwater Wells

Appendix N - Water and Monitoring Wells

Sheet 4 of 8

Inola Planning Segment

Source: Arkansas Department of Agriculture and Natural Resources Division (2023)

N

0 1.5 3 Mi

June 2023

Neosho River

Neosho River

Mayes County

Delaware County

Neosho River

Cherokee County

Illinois River

Adair County

Monitoring Wells

Groundwater Wells

INTERSTATE 412

Appendix N - Water and Monitoring Wells

Sheet 5 of 8

Cherokee Turnpike Planning Segment

Source: Arkansas Department of Agriculture and Natural Resources Division (2023)

N

0 1.75 3.5 Mi

June 2023

Delaware County

Benton County

Adair County

OK

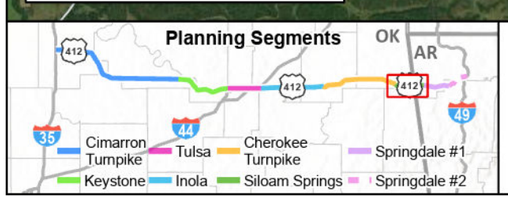
AR

Illinois River

Illinois River

Monitoring Wells

Groundwater Wells



INTERSTATE 412

Appendix N - Water and Monitoring Wells

Sheet 6 of 8

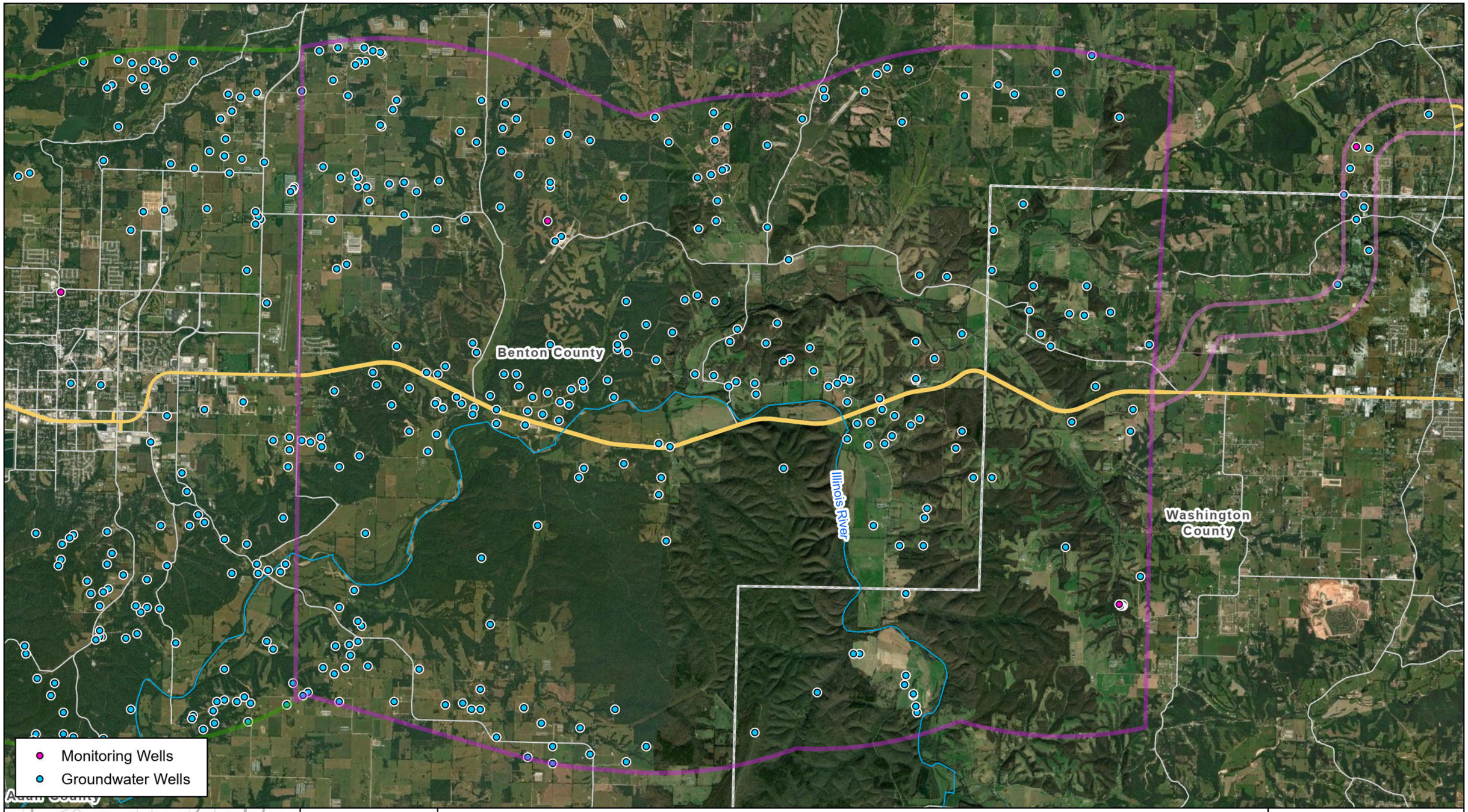
Siloam Springs Planning Segment

Source: Arkansas Department of Agriculture and Natural Resources Division (2023)

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix N - Water and Monitoring Wells

Sheet 7 of 8

Springdale #1 Planning Segment

Source: Arkansas Department of Agriculture and Natural Resources Division (2023)

N

0 0.75 1.5 Mi

June 2023

Benton County

Washington County

Monitoring Wells
Groundwater Wells

INTERSTATE 412

Appendix N - Water and Monitoring Wells

Sheet 8 of 8

Springdale #2 Planning Segment

Source: Arkansas Department of Agriculture and Natural Resources Division (2023)

N

0 0.5 1 Mi

June 2023

Arkansas River

Osage County

Noble County

Pawnee County

Arkansas River

Payne County

Cimarron River

Logan County

Creek County

100 Year Floodplain

Floodway

INTERSTATE 412

Appendix O - Floodplains & Floodways

Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: FEMA (2022).

N

0 3 6 Mi

June 2023

Pawnee County

Osage County

Cimarron River

Arkansas River

Creek County

Tulsa County

100 Year Floodplain
Floodway

INTERSTATE 412

Appendix O - Floodplains & Floodways

Sheet 2 of 8

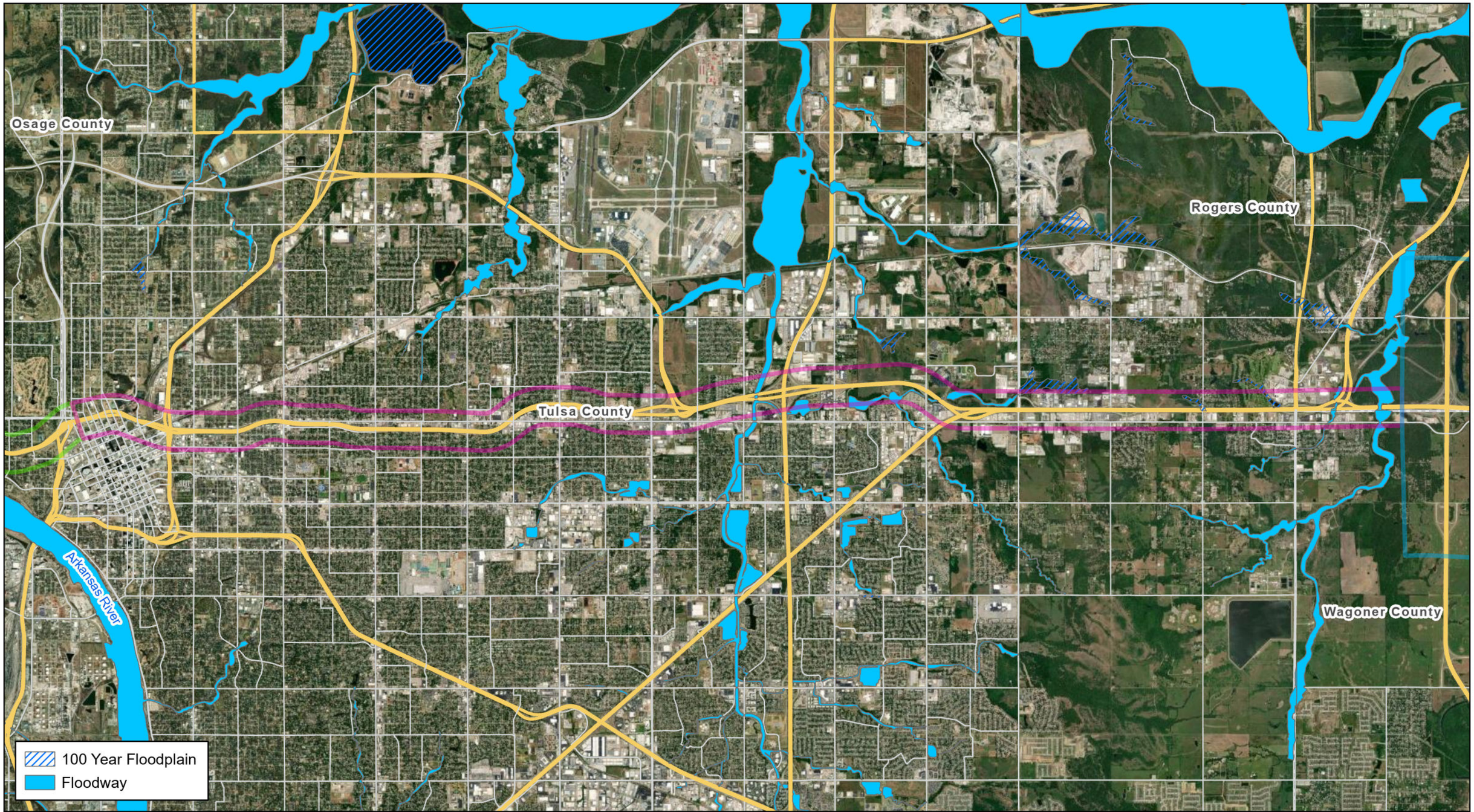
Keystone Planning Segment

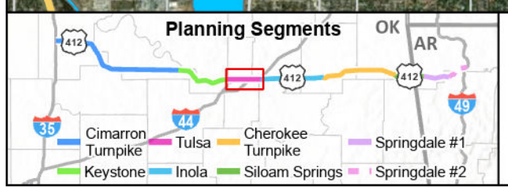
Source: FEMA (2022).

N

0 1.25 2.5 Mi

June 2023





INTERSTATE 412

Appendix O - Floodplains & Floodways

Sheet 3 of 8

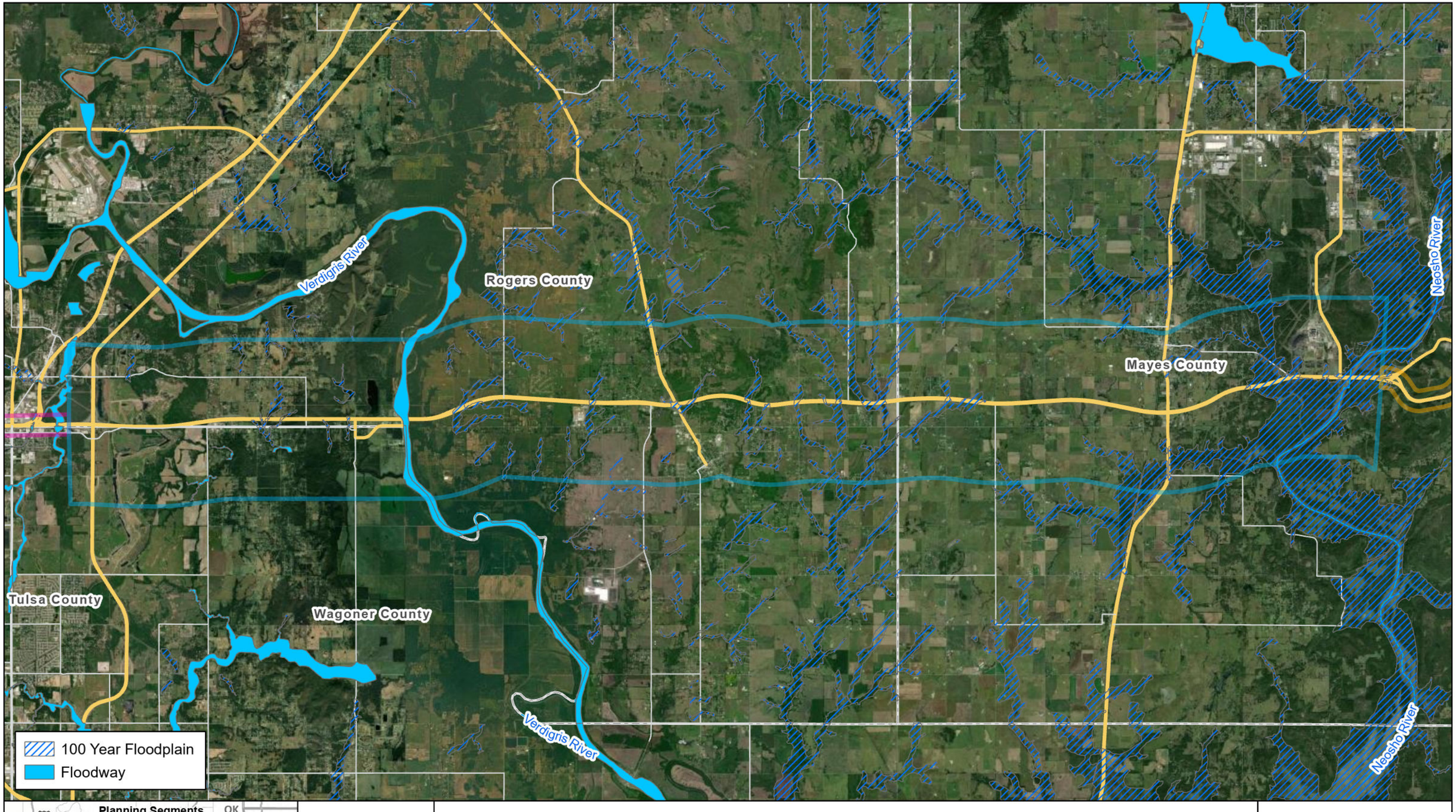
Tulsa Planning Segment

Source: FEMA (2022).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix O - Floodplains & Floodways

Sheet 4 of 8

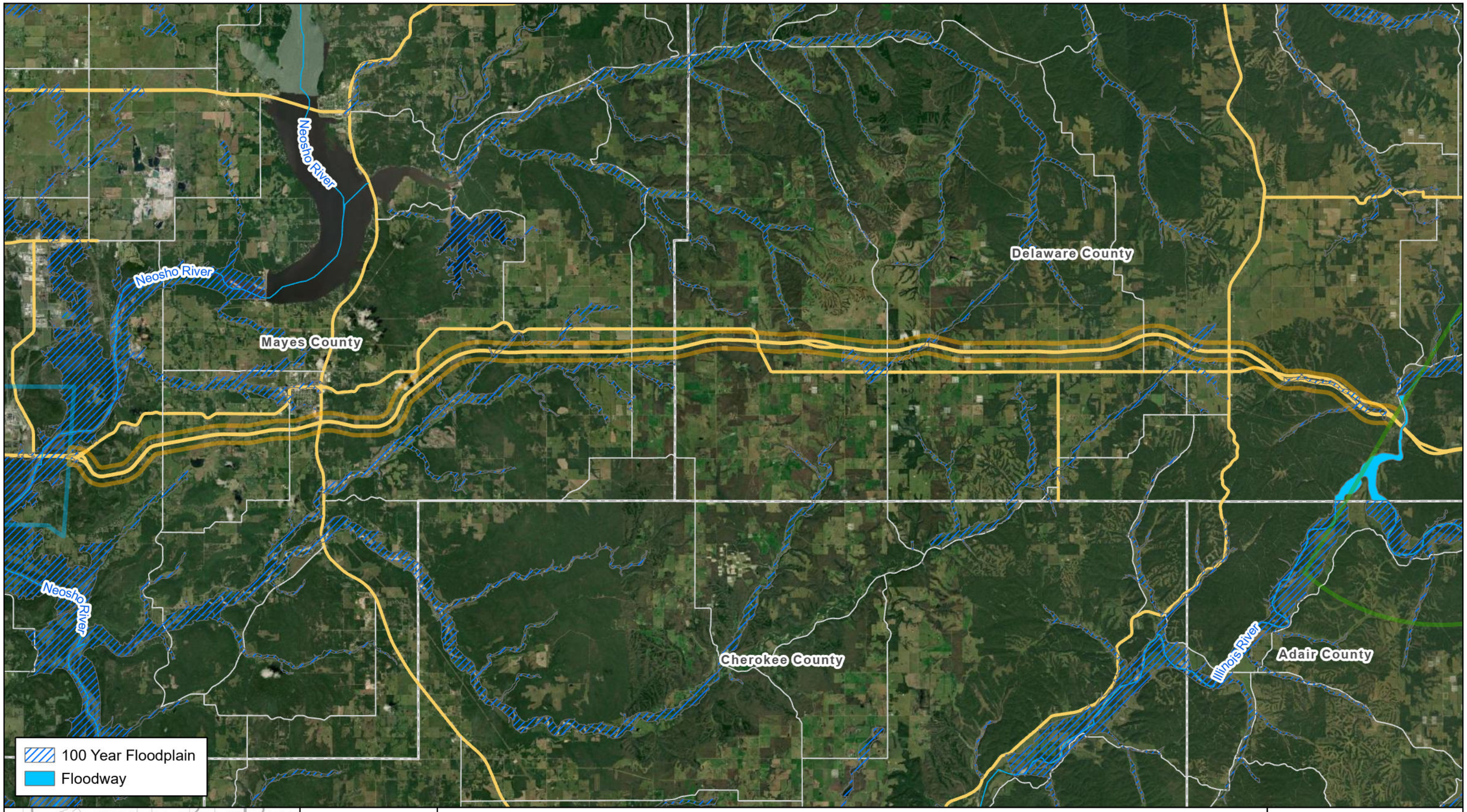
Inola Planning Segment

Source: FEMA (2022).

N

0 1.5 3 Mi

June 2023



Appendix O - Floodplains & Floodways

Sheet 5 of 8

Cherokee Turnpike Planning Segment

Source: FEMA (2022).

N

0 1.75 3.5 Mi

June 2023

Delaware County

Benton County

OK

AR

Illinois River

Adair County

Illinois River

100 Year Floodplain

Floodway

INTERSTATE 412

Appendix O - Floodplains & Floodways

Sheet 6 of 8

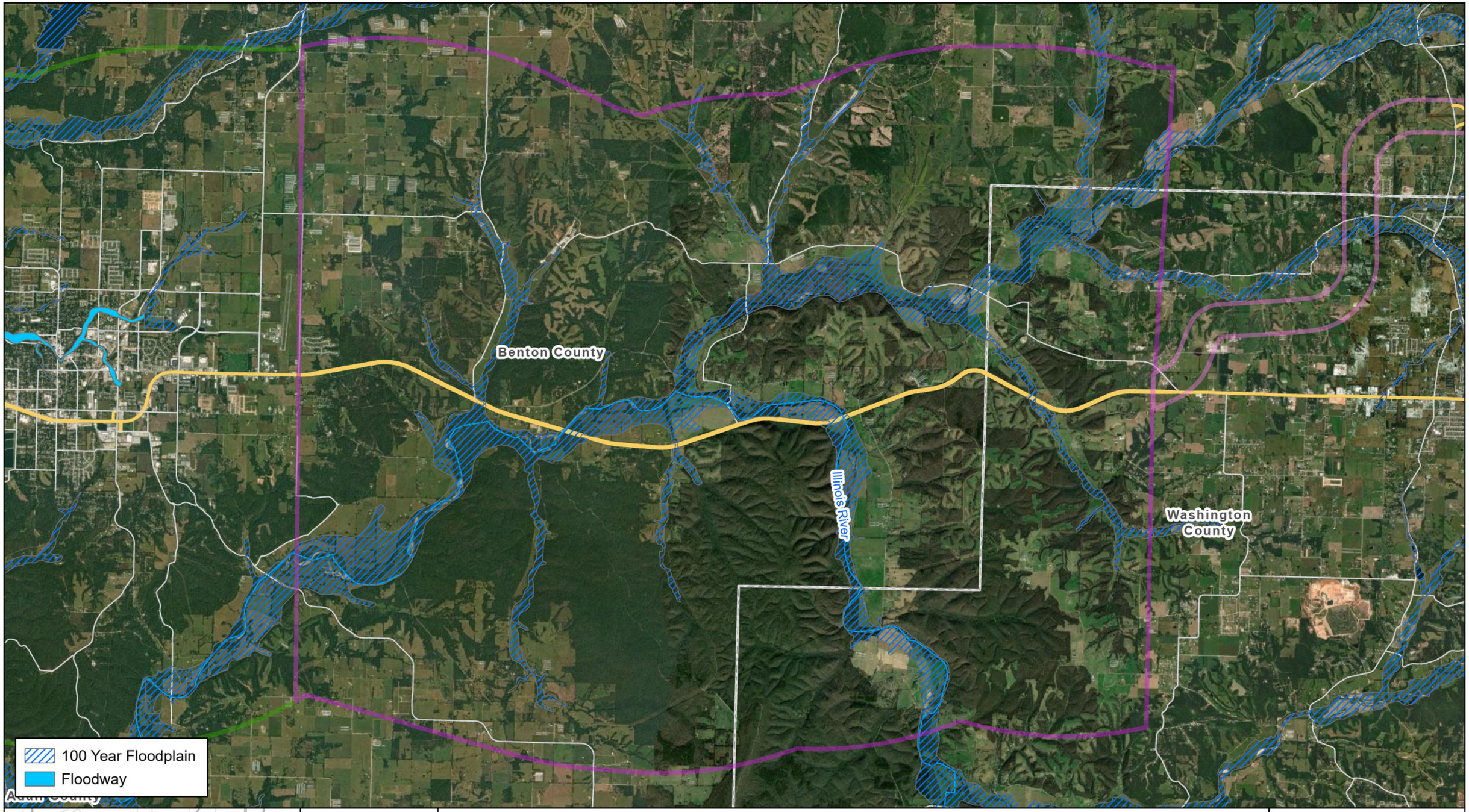
Siloam Springs Planning Segment

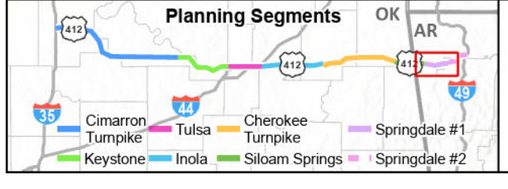
Source: FEMA (2022).

N

0 0.75 1.5 Mi

June 2023





INTERSTATE 412

Appendix O - Floodplains & Floodways

Sheet 7 of 8

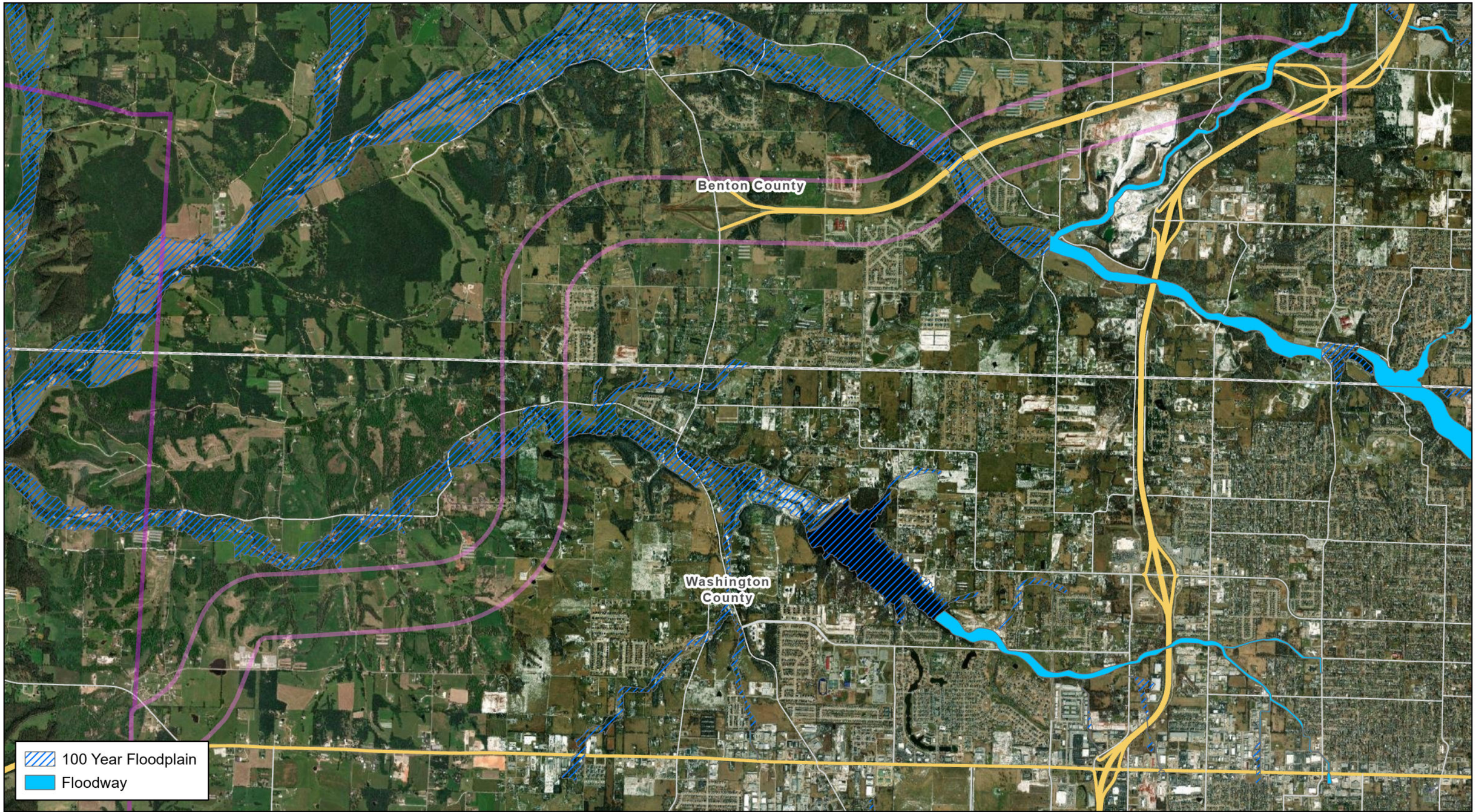
Springdale #1 Planning Segment

Source: FEMA (2022).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix O - Floodplains & Floodways

Sheet 8 of 8

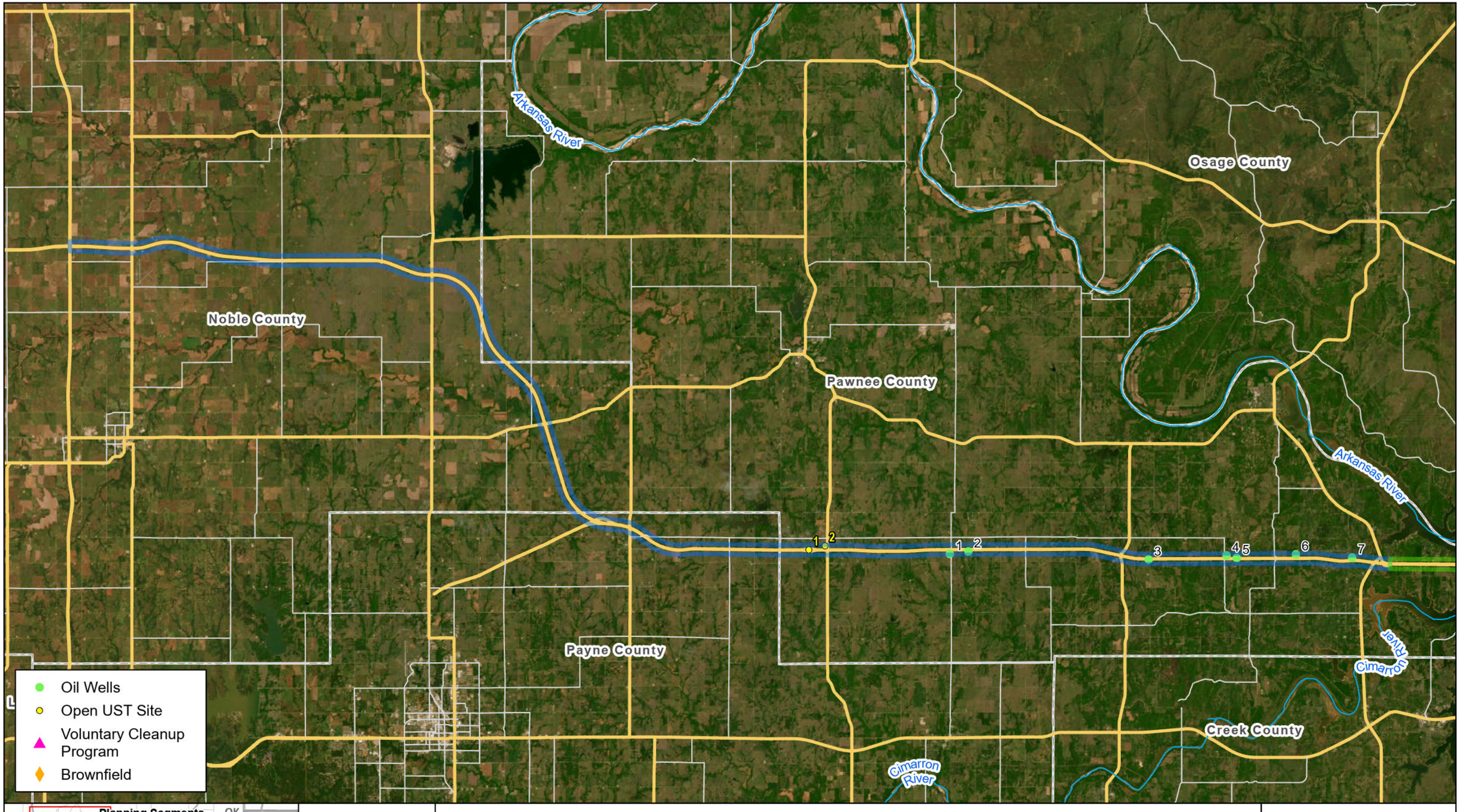
Springdale #2 Planning Segment

Source: FEMA (2022).

N

0 0.5 1 Mi

June 2023



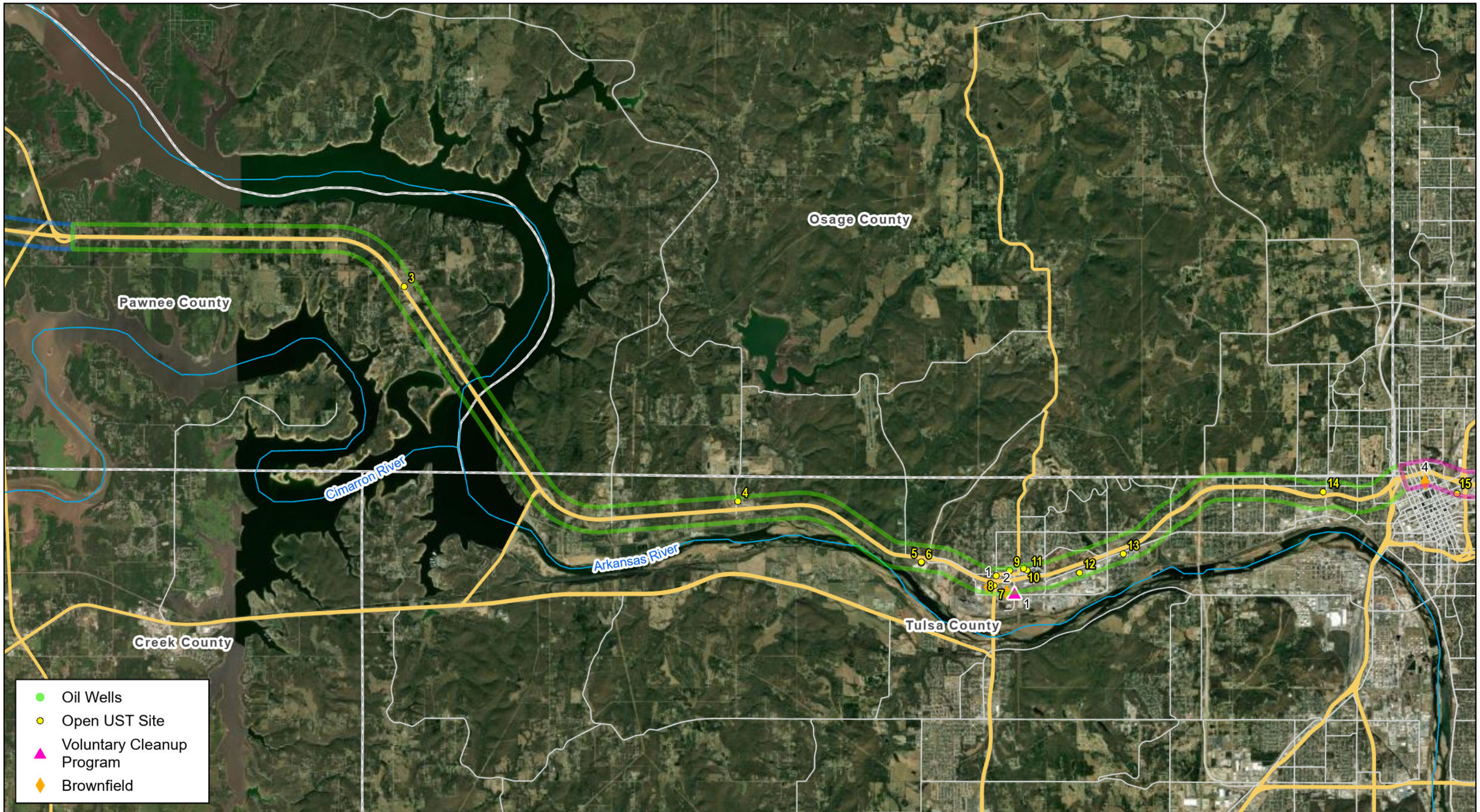
Appendix P - Hazardous Materials and Oil and Gas Wells

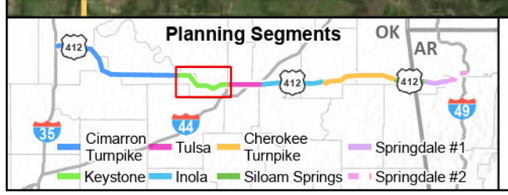
Sheet 1 of 8

Cimarron Turnpike Planning Segment

Source: OCC (2022), ODEQ (2018), EPA (2018), ODOT (2022), Arkansas GIS Office (2020).

June 2023





Appendix P - Hazardous Materials and Oil and Gas Wells

Sheet 2 of 8

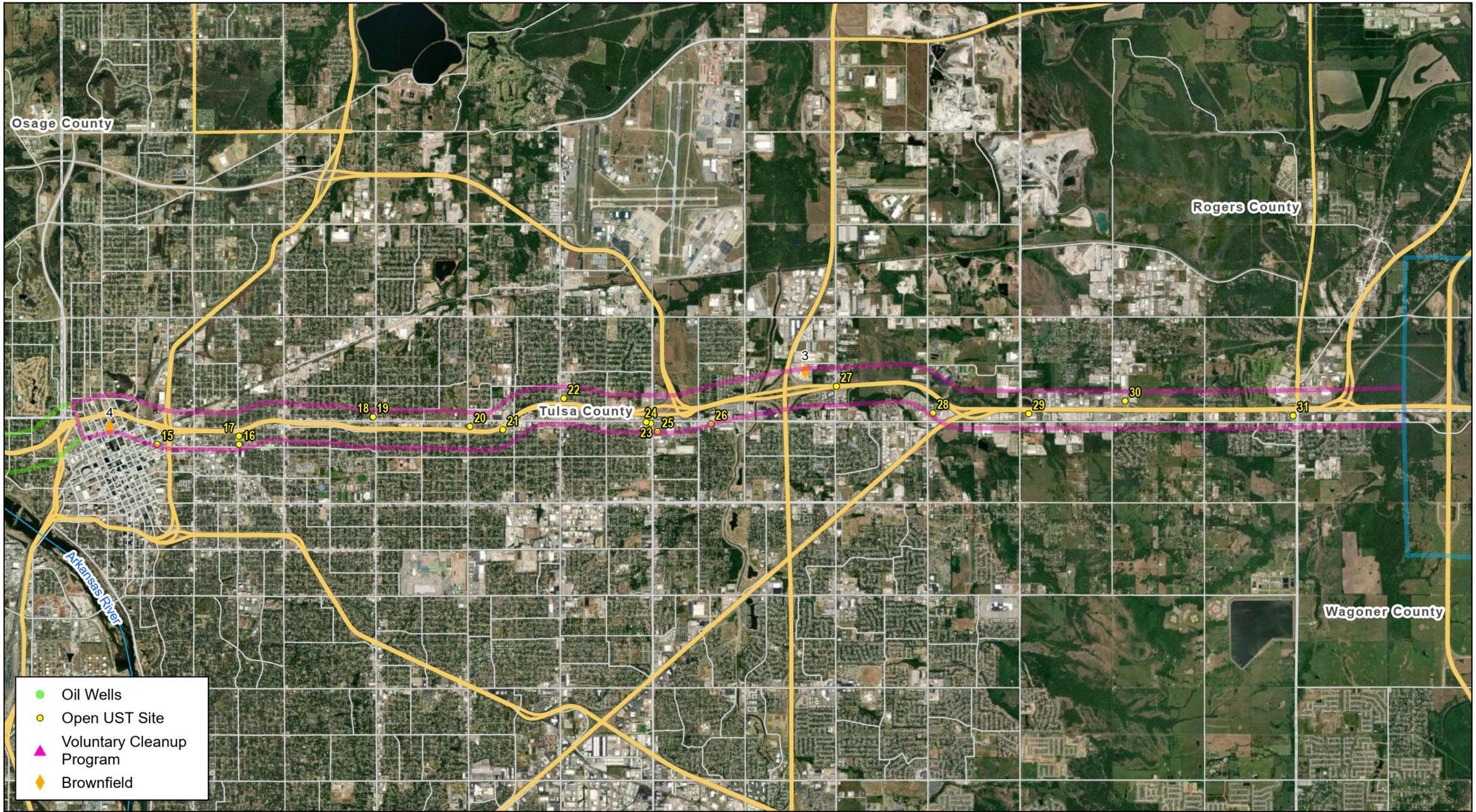
Keystone Planning Segment

Source: OCC (2022), ODEQ (2018), EPA (2018), ODOT (2022), Arkansas GIS Office (2020).

N

0 1.25 2.5 Mi

June 2023



INTERSTATE 412

Appendix P - Hazardous Materials and Oil and Gas Wells

Sheet 3 of 8

Tulsa Planning Segment

Source: OCC (2022), ODEQ (2018), EPA (2018), ODOT (2022), Arkansas GIS Office (2020).

N

0 0.75 1.5 Mi

June 2023

Verdigris River

Rogers County

Mayes County

Neosho River

Tulsa County

Wagoner County

Verdigris River

Neosho River

31 32 33 34 35 36 37 38 39 40 41 42

Oil Wells
Open UST Site
Voluntary Cleanup Program
Brownfield

INTERSTATE 412

Appendix P - Hazardous Materials and Oil and Gas Wells

Sheet 4 of 8

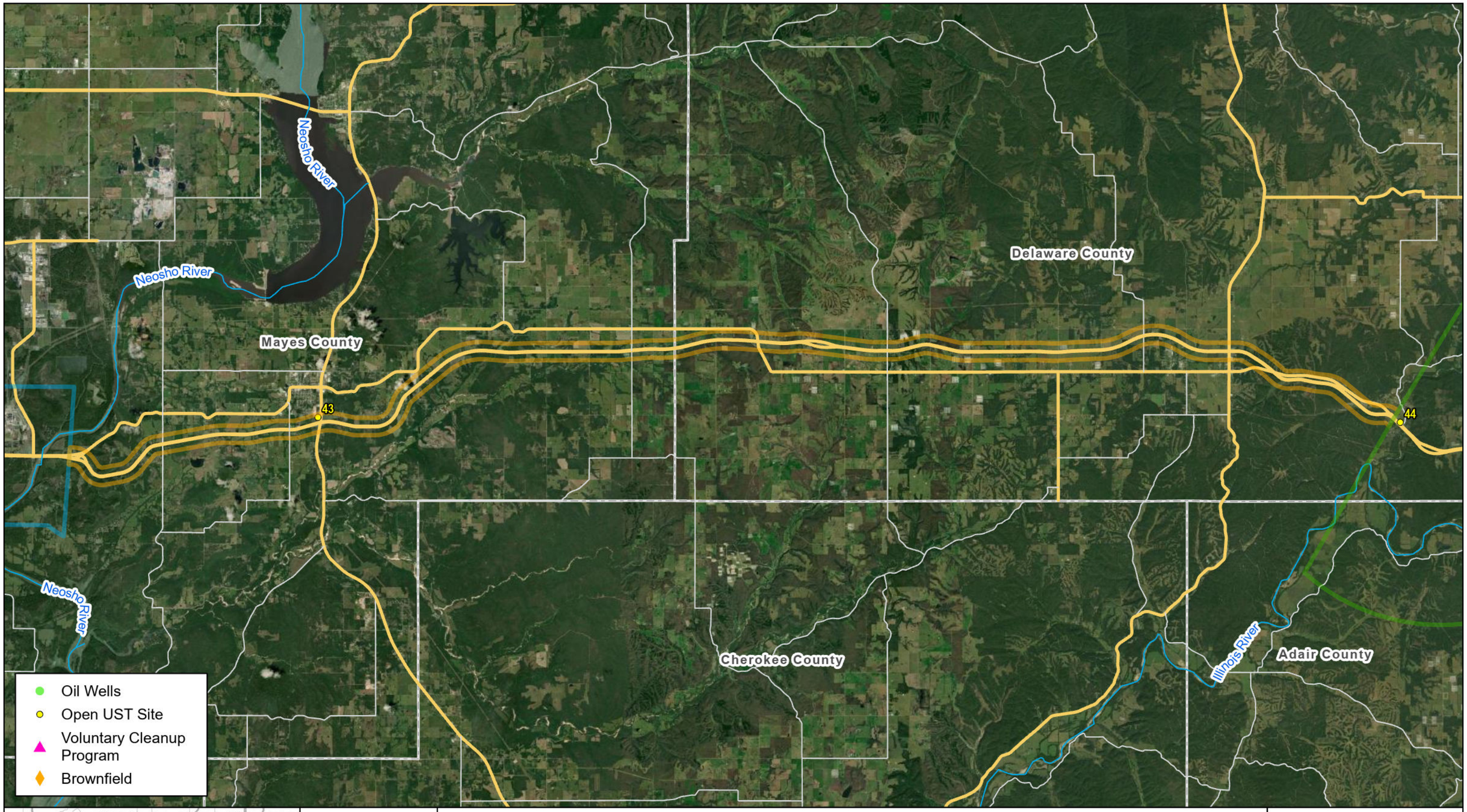
Inola Planning Segment

Source: OCC (2022), ODEQ (2018), EPA (2018), ODOT (2022), Arkansas GIS Office (2020).

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix P - Hazardous Materials and Oil and Gas Wells

Sheet 5 of 8

Cherokee Turnpike Planning Segment

Source: OCC (2022), ODEQ (2018), EPA (2018), ODOT (2022), Arkansas GIS Office (2020).

N

0 1.75 3.5 Mi

June 2023

Delaware County

Adair County

Benton County

OK

AR

Illinois River

Illinois River

44

45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

- Oil Wells
- Open UST Site
- Voluntary Cleanup Program
- Brownfield

INTERSTATE 412

Appendix P - Hazardous Materials and Oil and Gas Wells

Sheet 6 of 8

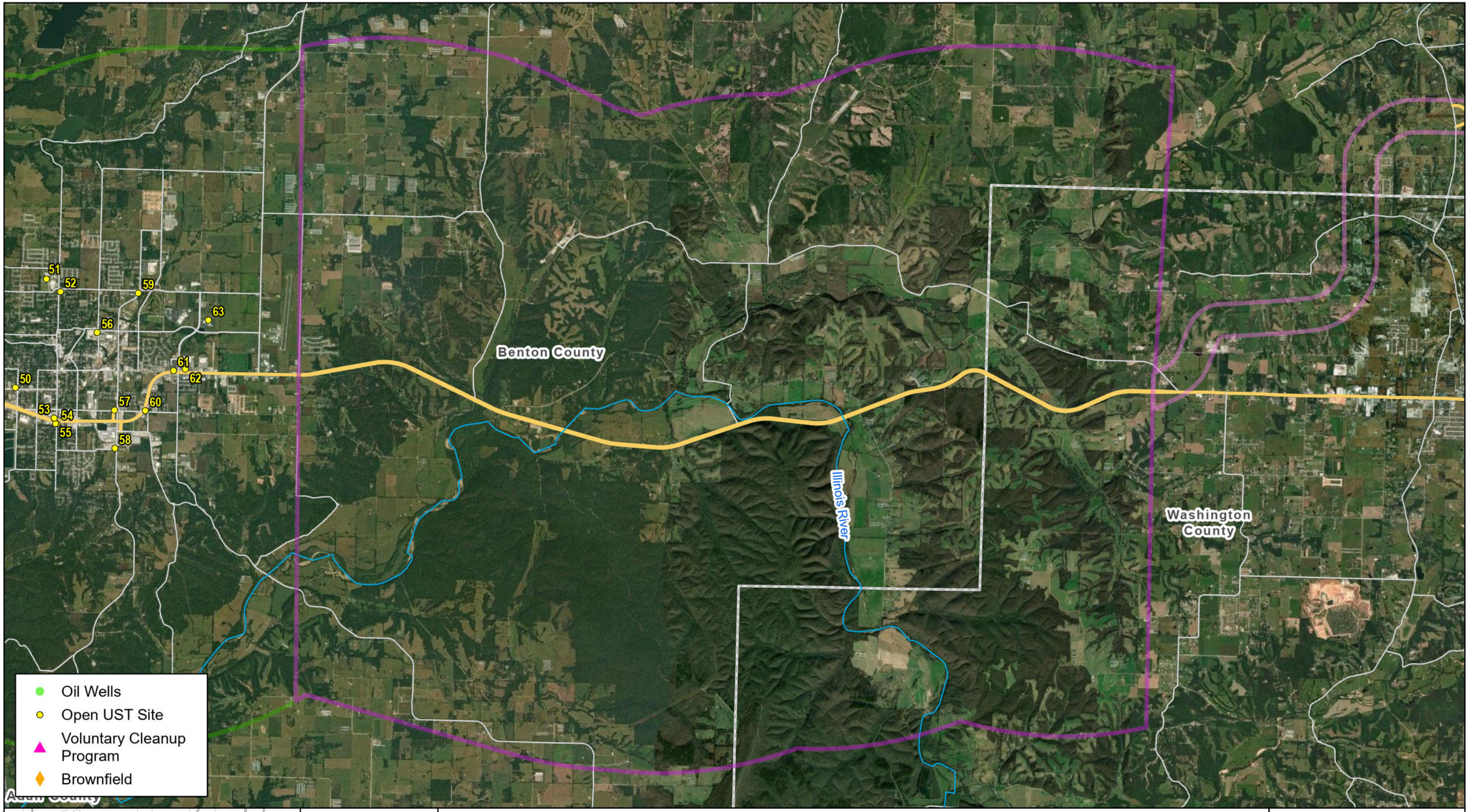
Siloam Springs Planning Segment

Source: OCC (2022), ODEQ (2018), EPA (2018), ODOT (2022), Arkansas GIS Office (2020).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix P - Hazardous Materials and Oil and Gas Wells

Sheet 7 of 8

Springdale #1 Planning Segment

Source: OCC (2022), ODEQ (2018), EPA (2018), ODOT (2022), Arkansas GIS Office (2020).

N

0 0.75 1.5 Mi

June 2023

Benton County

Washington County

- Oil Wells
- Open UST Site
- Voluntary Cleanup Program
- Brownfield

INTERSTATE 412

Appendix P - Hazardous Materials and Oil and Gas Wells

Sheet 8 of 8

Springdale #2 Planning Segment

Source: OCC (2022), ODEQ (2018), EPA (2018), ODOT (2022), Arkansas GIS Office (2020).

N

0 0.5 1 Mi

June 2023

Arkansas River

Osage County

Noble County

Pawnee County

Arkansas River

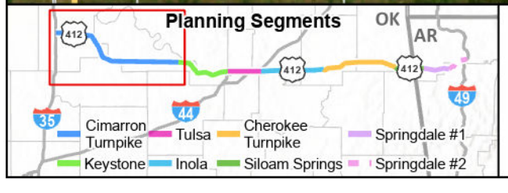
Payne County

Cimarron River

Creek County

Cimarron River

- Cemeteries
- National Register of Historic Places
- OK National Register of Historic Places Sites
- OK National Register of Historic Places Districts
- AR National Register of Historic Places Sites
- AHPP National Register of Historic Places Districts



Appendix Q - Historic Resources

Sheet 1 of 8

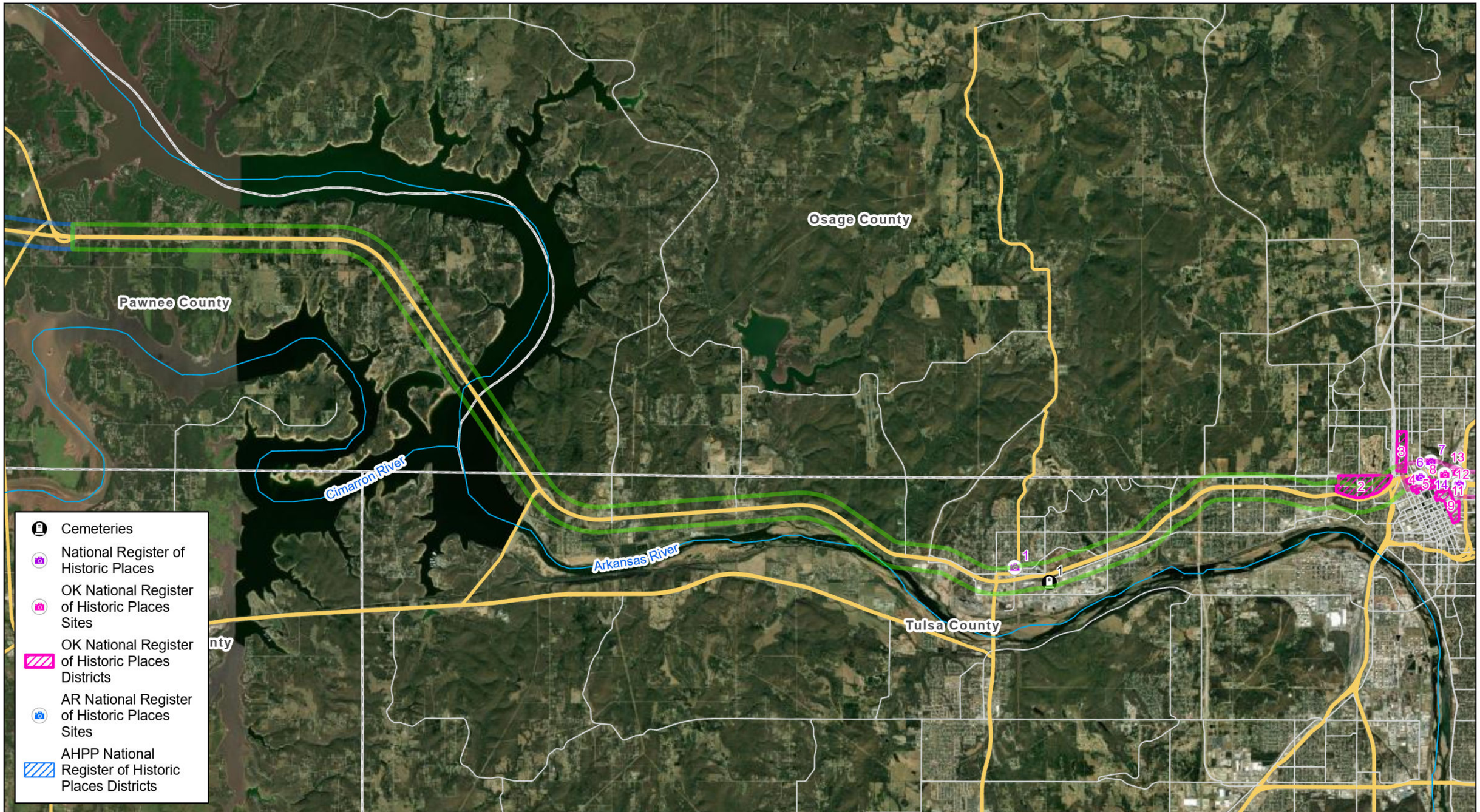
Cimarron Turnpike Planning Segment

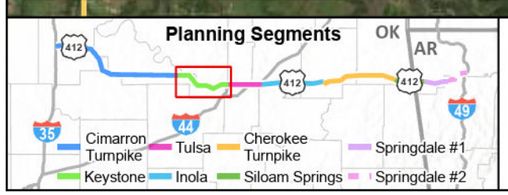
Source: NPS (2018); ESRI, US Federal Data (2023); OK Historical Society (2020), AHPP (2020).

N

0 3 6 Mi

June 2023





INTERSTATE 412

Appendix Q - Historic Resources

Sheet 2 of 8

Keystone Planning Segment

Source: NPS (2018); ESRI, US Federal Data (2023); OK Historical Society (2020), AHPP (2020).

N

0 1.25 2.5 Mi

June 2023

Osage County

Tulsa County

Rogers County

Wagoner County

Cemeteries

National Register of Historic Places

OK National Register of Historic Places Sites

OK National Register of Historic Places Districts

AR National Register of Historic Places Sites

AHPP National Register of Historic Places Districts

INTERSTATE 412

Appendix Q - Historic Resources

Sheet 3 of 8

Tulsa Planning Segment

Source: NPS (2018); ESRI, US Federal Data (2023); OK Historical Society (2020), AHPP (2020).

N

0 0.75 1.5 Mi

June 2023

Verdigris River

Rogers County

Neosho River

Mayes County

Wagoner County

Verdigris River

Neosho River

3

4

5

6

7

20

21

- Cemeteries
- National Register of Historic Places
- OK National Register of Historic Places Sites
- OK National Register of Historic Places Districts
- AR National Register of Historic Places Sites
- AHPP National Register of Historic Places Districts

Planning Segments

OK

AR

412

35

44

49

Cimarron Turnpike

Tulsa

Cherokee Turnpike

Springdale #1

Keystone

Inola

Siloam Springs

Springdale #2

INTERSTATE 412

Appendix Q - Historic Resources

Sheet 4 of 8

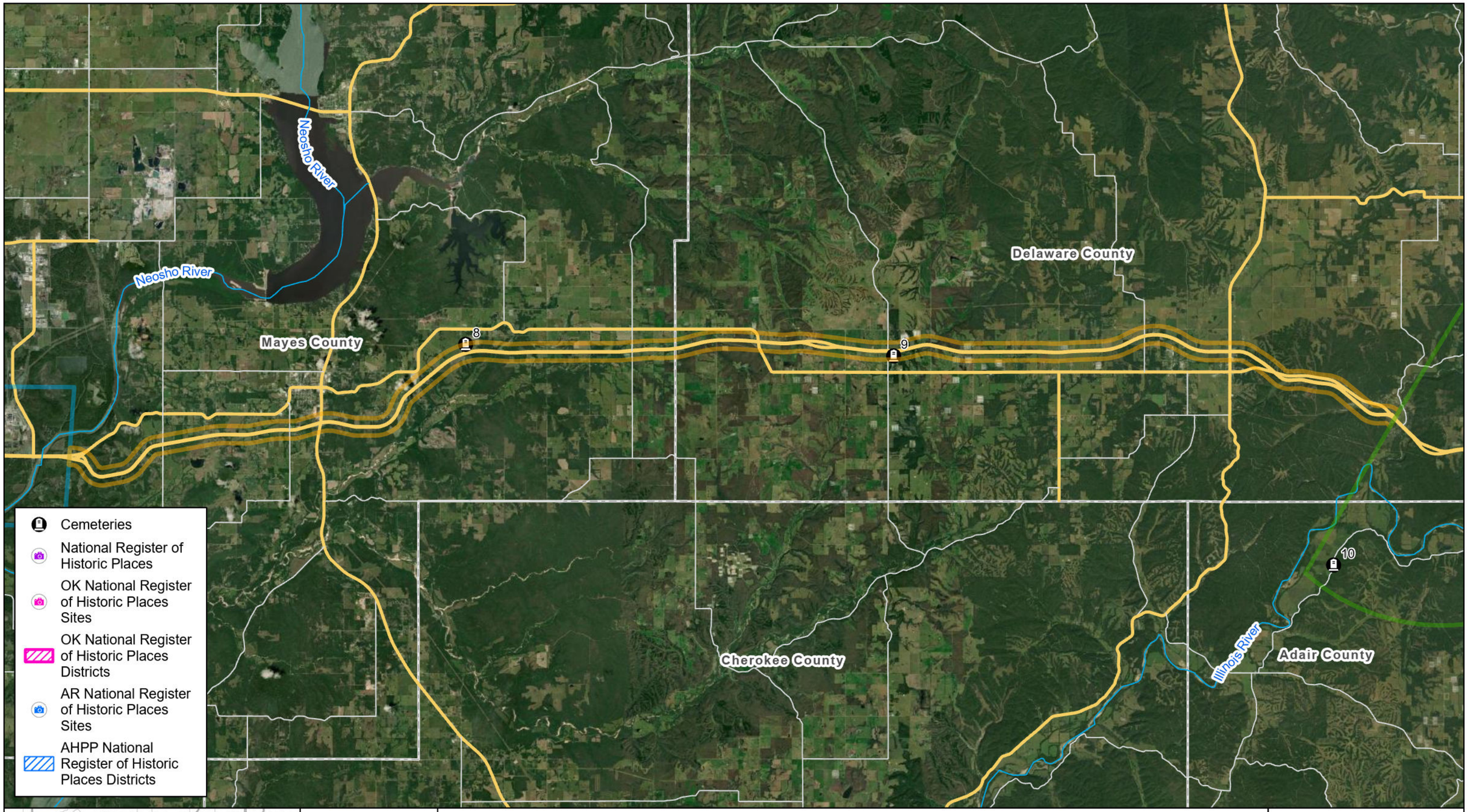
Inola Planning Segment

Source: NPS (2018); ESRI, US Federal Data (2023); OK Historical Society (2020), AHPP (2020).

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix Q - Historic Resources

Sheet 5 of 8

Cherokee Turnpike Planning Segment

Source: NPS (2018); ESRI, US Federal Data (2023); OK Historical Society (2020), AHPP (2020).

N

0 1.75 3.5 Mi

June 2023

Delaware County

Benton County

Adair County

OK

AR

Illinois River

- Cemeteries
- National Register of Historic Places
- OK National Register of Historic Places Sites
- OK National Register of Historic Places Districts
- AR National Register of Historic Places Sites
- AHPP National Register of Historic Places Districts

Appendix Q - Historic Resources

Sheet 6 of 8

Siloam Springs Planning Segment

Source: NPS (2018); ESRI, US Federal Data (2023); OK Historical Society (2020), AHPP (2020).

N

0 0.75 1.5 Mi

June 2023

Cemeteries
National Register of Historic Places
OK National Register of Historic Places Sites
OK National Register of Historic Places Districts
AR National Register of Historic Places Sites
AHPP National Register of Historic Places Districts

Benton County
Washington County
Illinois River
Adair County

Planning Segments
OK
AR
Cimarron Turnpike
Tulsa
Cherokee Turnpike
Springdale #1
Keystone
Inola
Siloam Springs
Springdale #2

INTERSTATE 412

Appendix Q - Historic Resources

Sheet 7 of 8

Springdale #1 Planning Segment

Source: NPS (2018); ESRI, US Federal Data (2023); OK Historical Society (2020), AHPP (2020).

N

0 0.75 1.5 Mi

June 2023

Benton County

Washington County

- Cemeteries
- National Register of Historic Places
- OK National Register of Historic Places Sites
- OK National Register of Historic Places Districts
- AR National Register of Historic Places Sites
- AHPP National Register of Historic Places Districts

Appendix Q - Historic Resources

Sheet 8 of 8

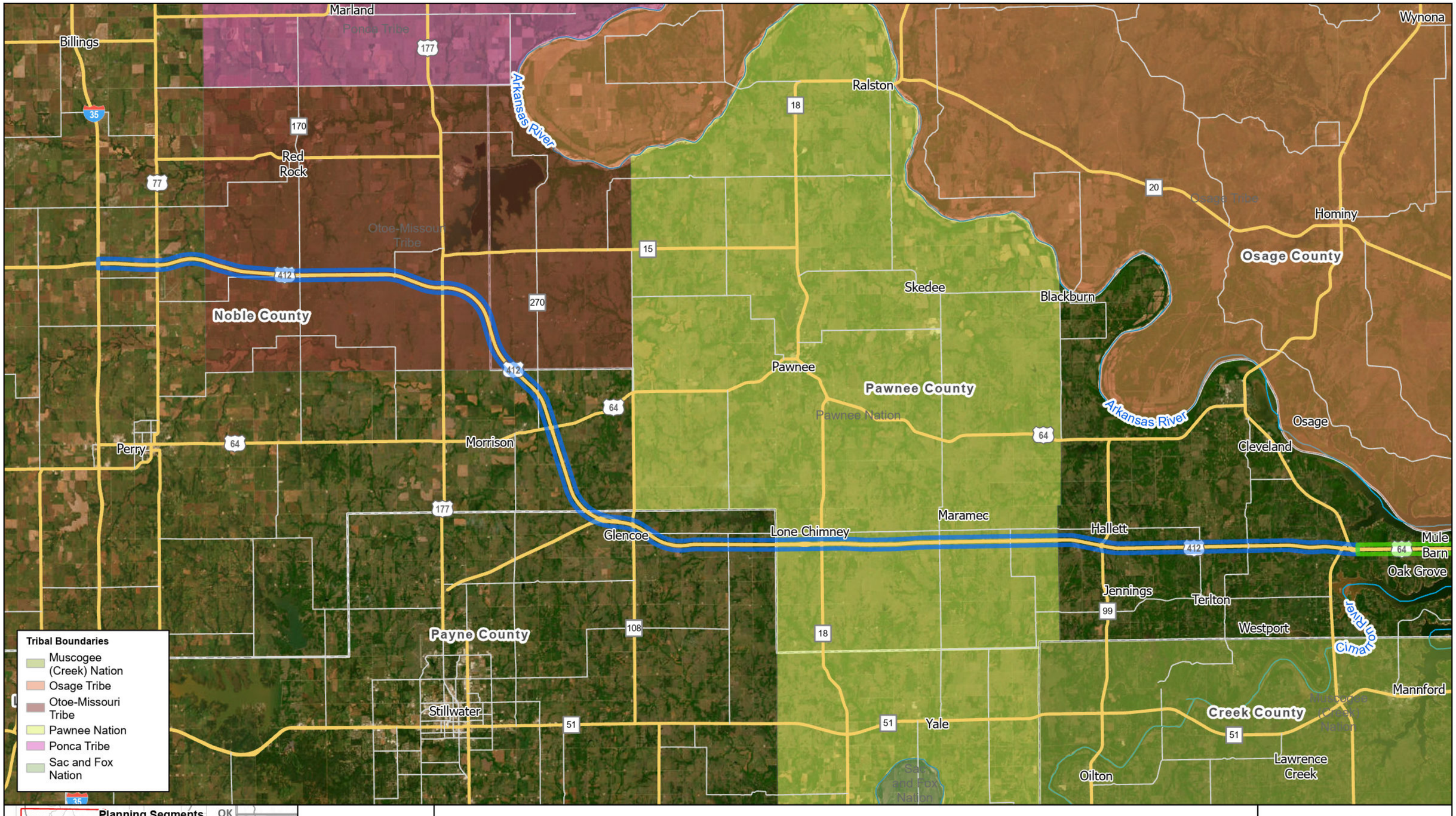
Springdale #2 Planning Segment

Source: NPS (2018); ESRI, US Federal Data (2023); OK Historical Society (2020), AHPP (2020).

N

0 0.5 1 Mi

June 2023



Appendix R - Tribal Territory

Sheet 1 of 8

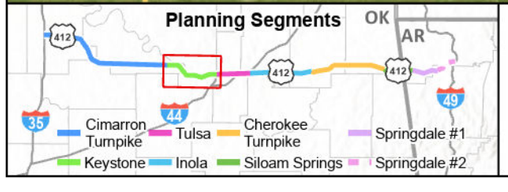
Cimarron Turnpike Planning Segment

Source: ODOT (2018).

June 2023

Arkansas River
Prue
Sperry
Osage Tribe
Osage County
Cherokee Nation
Mule Barn
64
Oak Grove
Pawnee County
Cimarron River
Westport
97
11
51
Tulsa
Mannford
Muscogee (Creek) Nation
Tulsa County
Sand Springs
344
44
Sapulpa

Tribal Boundaries
- Muscogee (Creek) Nation
- Osage Tribe
- Otoe-Missouri Tribe
- Pawnee Nation
- Ponca Tribe
- Sac and Fox Nation



Appendix R - Tribal Territory

Sheet 2 of 8

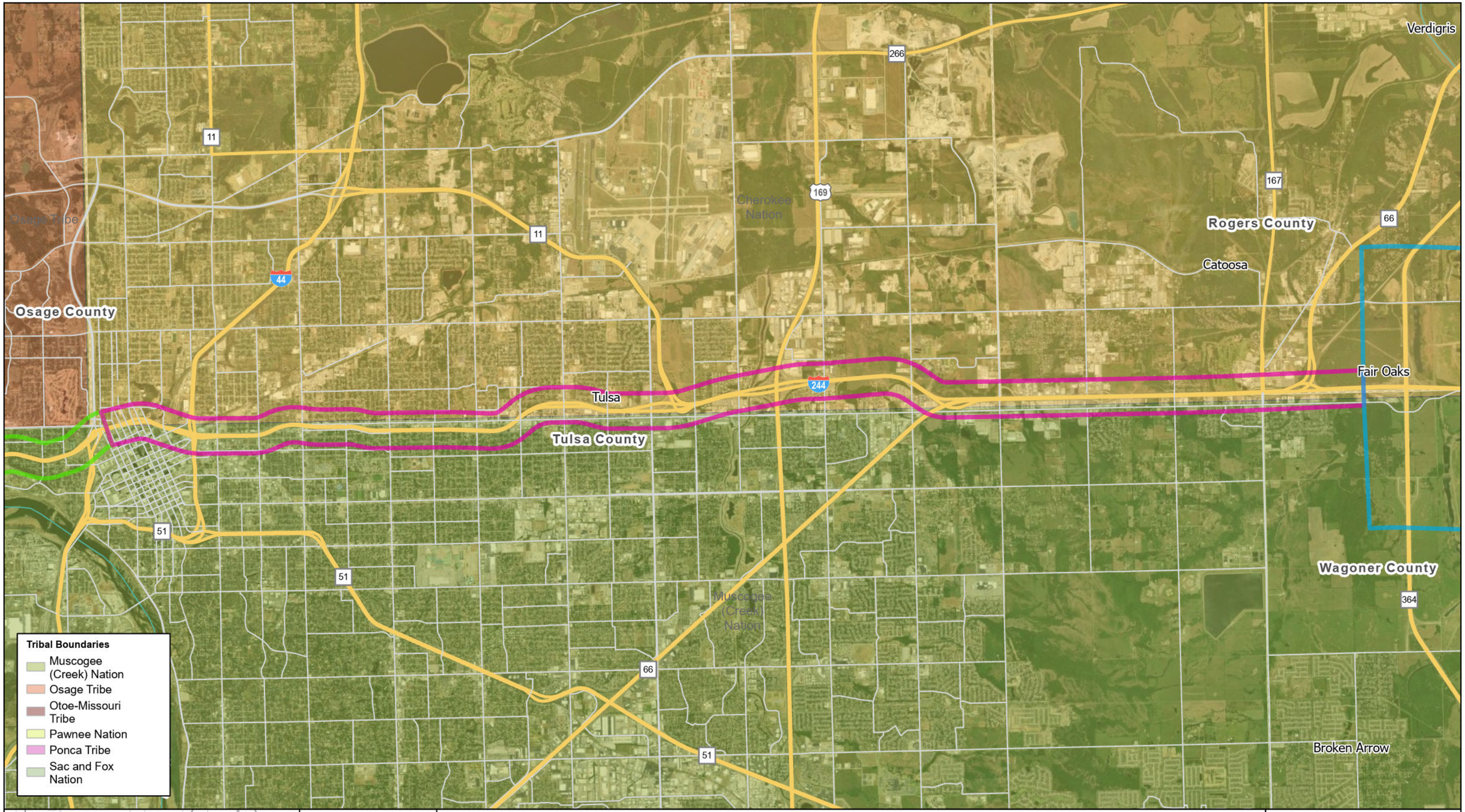
Keystone Planning Segment

Source: ODOT (2018).

N

0 1 2 Mi

June 2023



INTERSTATE 412

Appendix R - Tribal Territory

Sheet 3 of 8

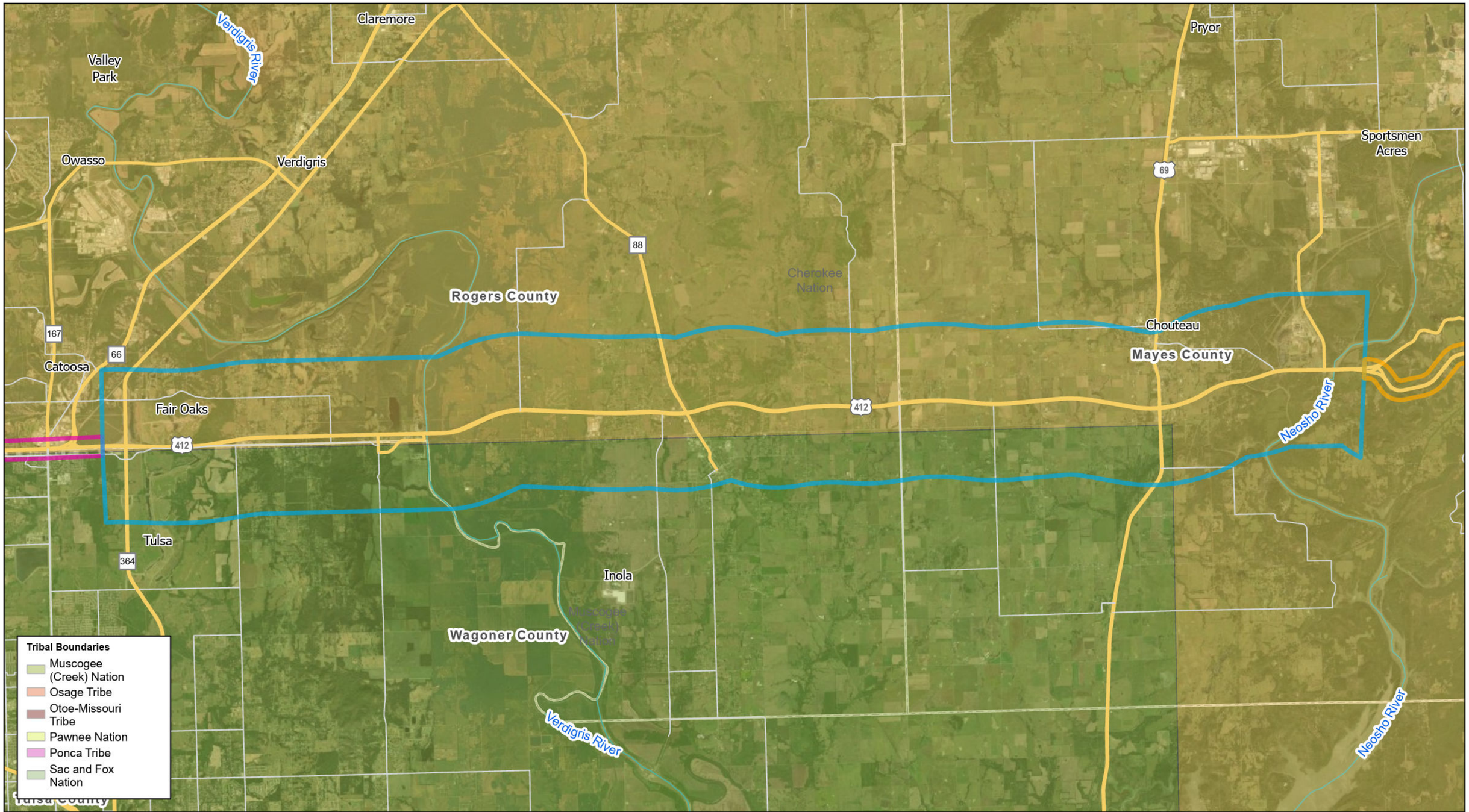
Tulsa Planning Segment

Source: ODOT (2018).

N

0 0.5 1 Mi

June 2023



Appendix R - Tribal Territory

Sheet 4 of 8

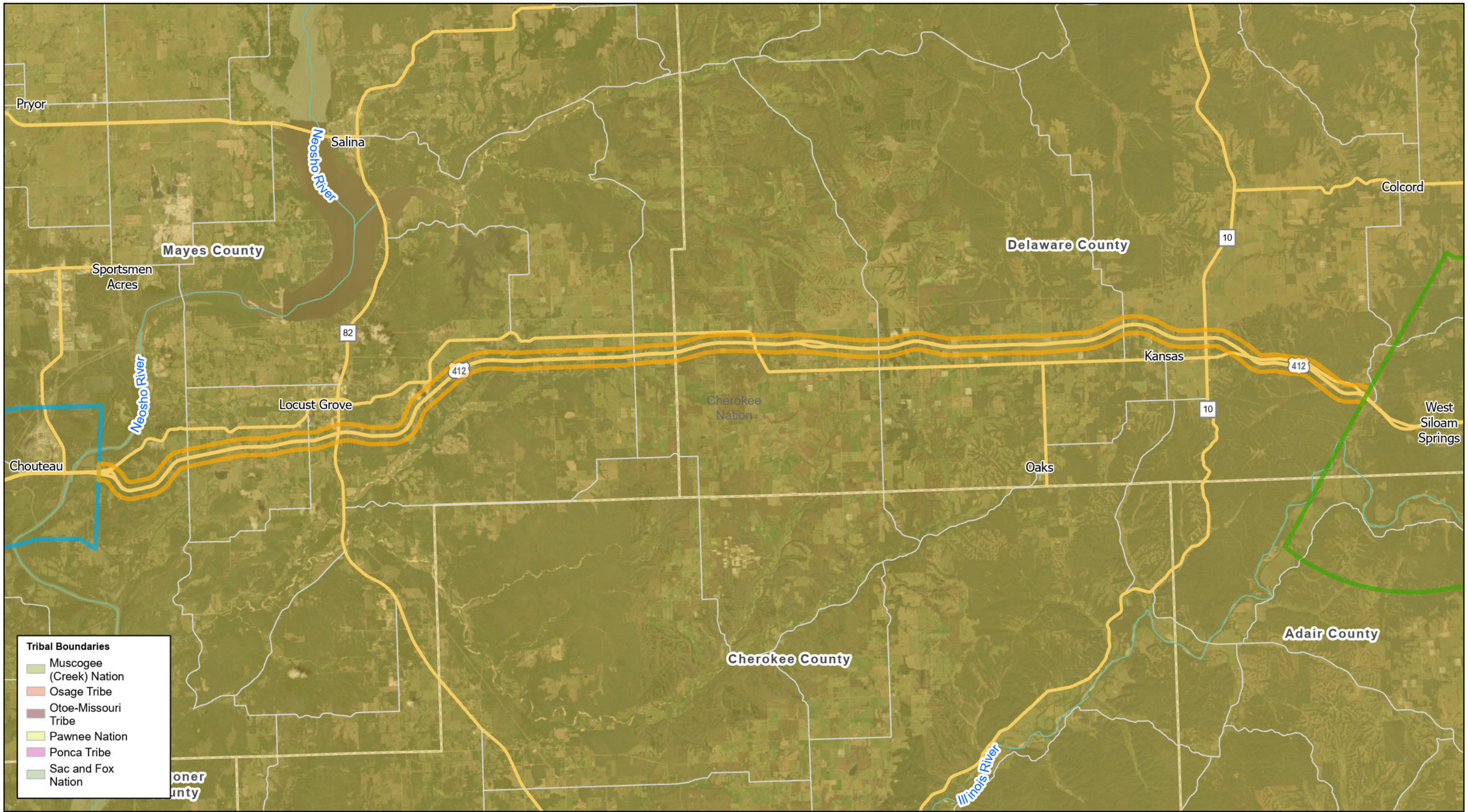
Inola Planning Segment

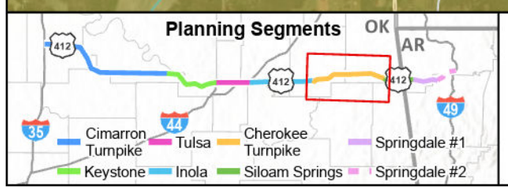
Source: ODOT (2018).

N

0 1.25 2.5 Mi

June 2023





INTERSTATE 412

Appendix R - Tribal Territory

Sheet 5 of 8

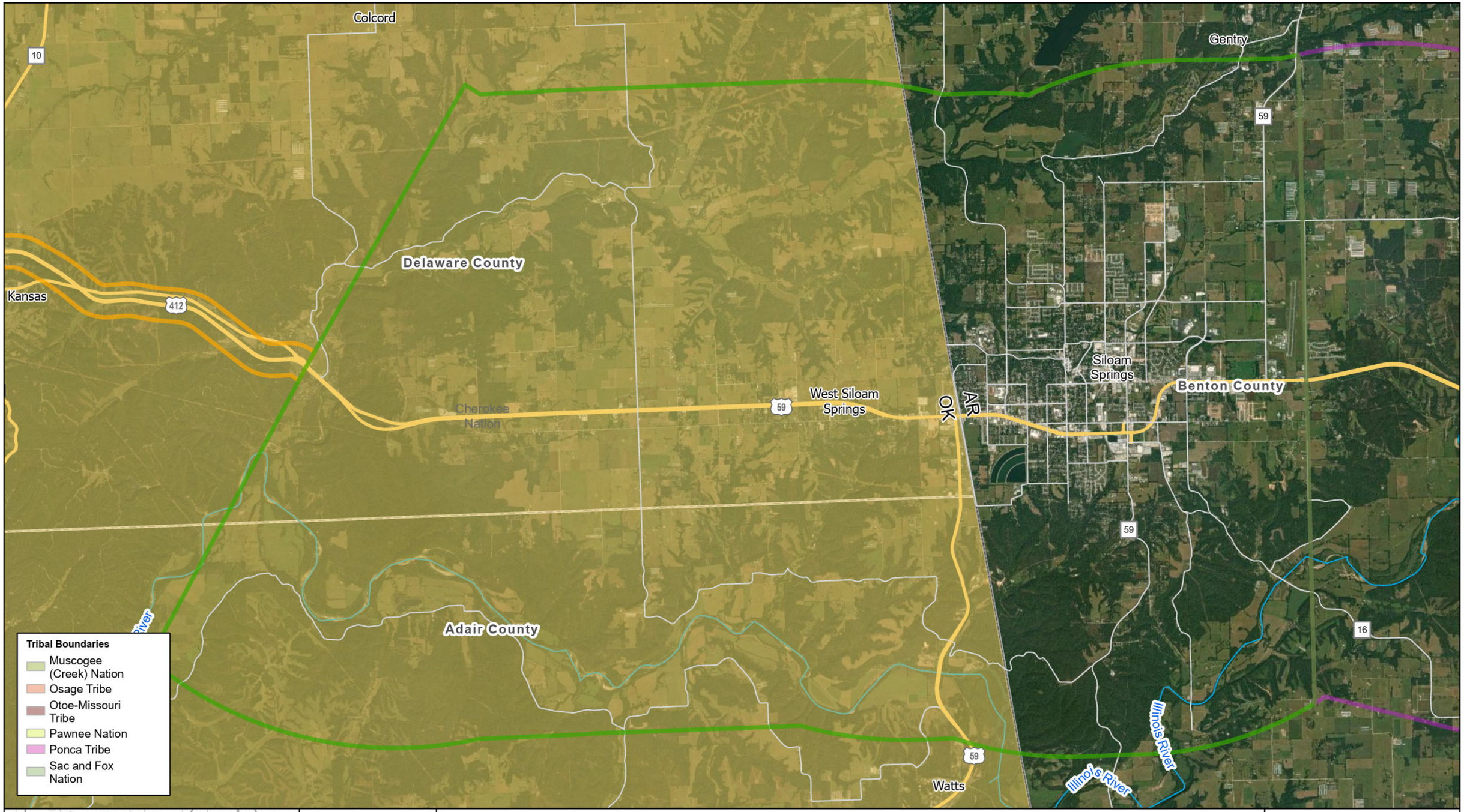
Cherokee Turnpike Planning Segment

Source: ODOT (2018).

N

0 1.5 3 Mi

June 2023



INTERSTATE 412

Appendix R - Tribal Territory

Sheet 6 of 8

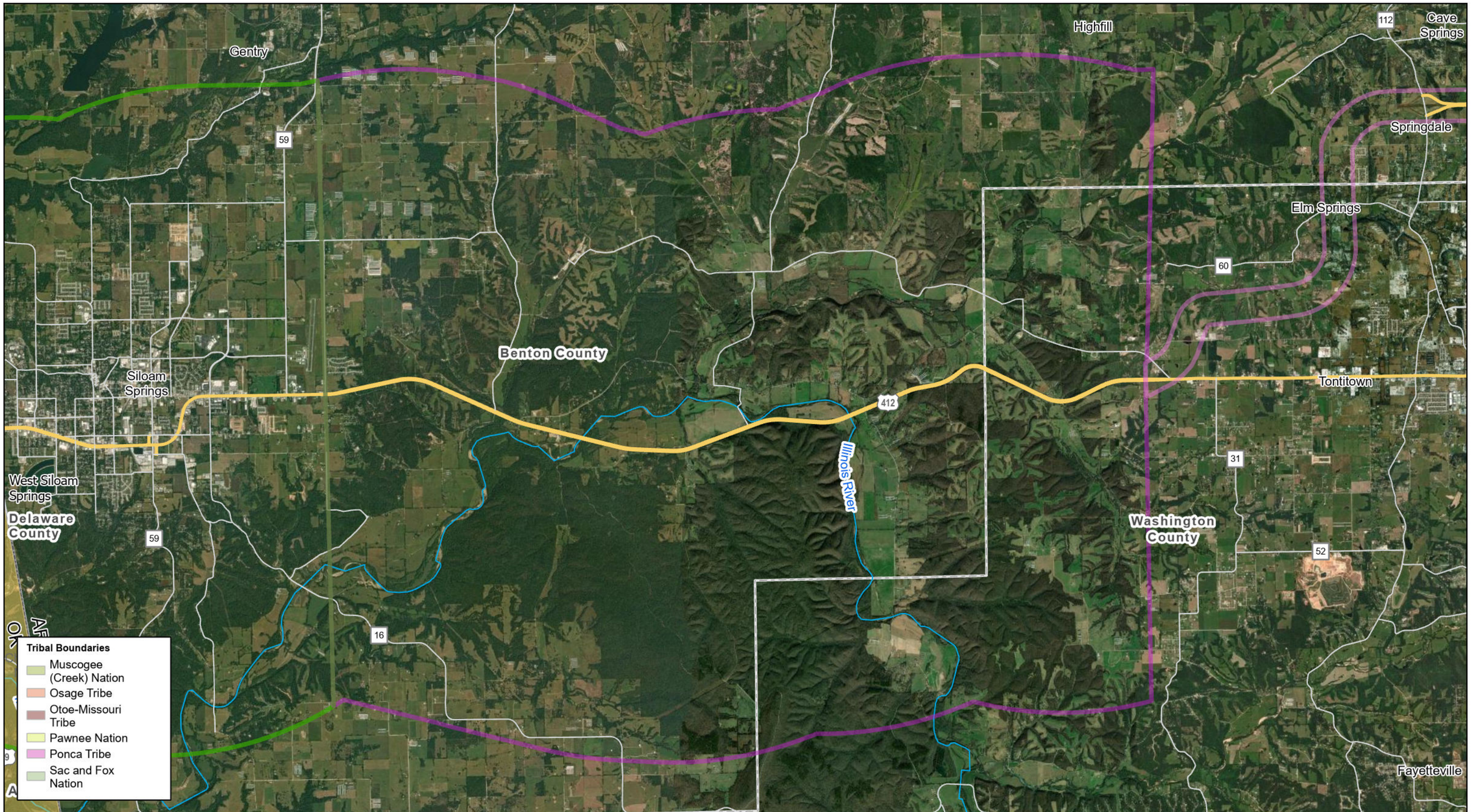
Siloam Springs Planning Segment

Source: ODOT (2018).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix R - Tribal Territory

Sheet 7 of 8

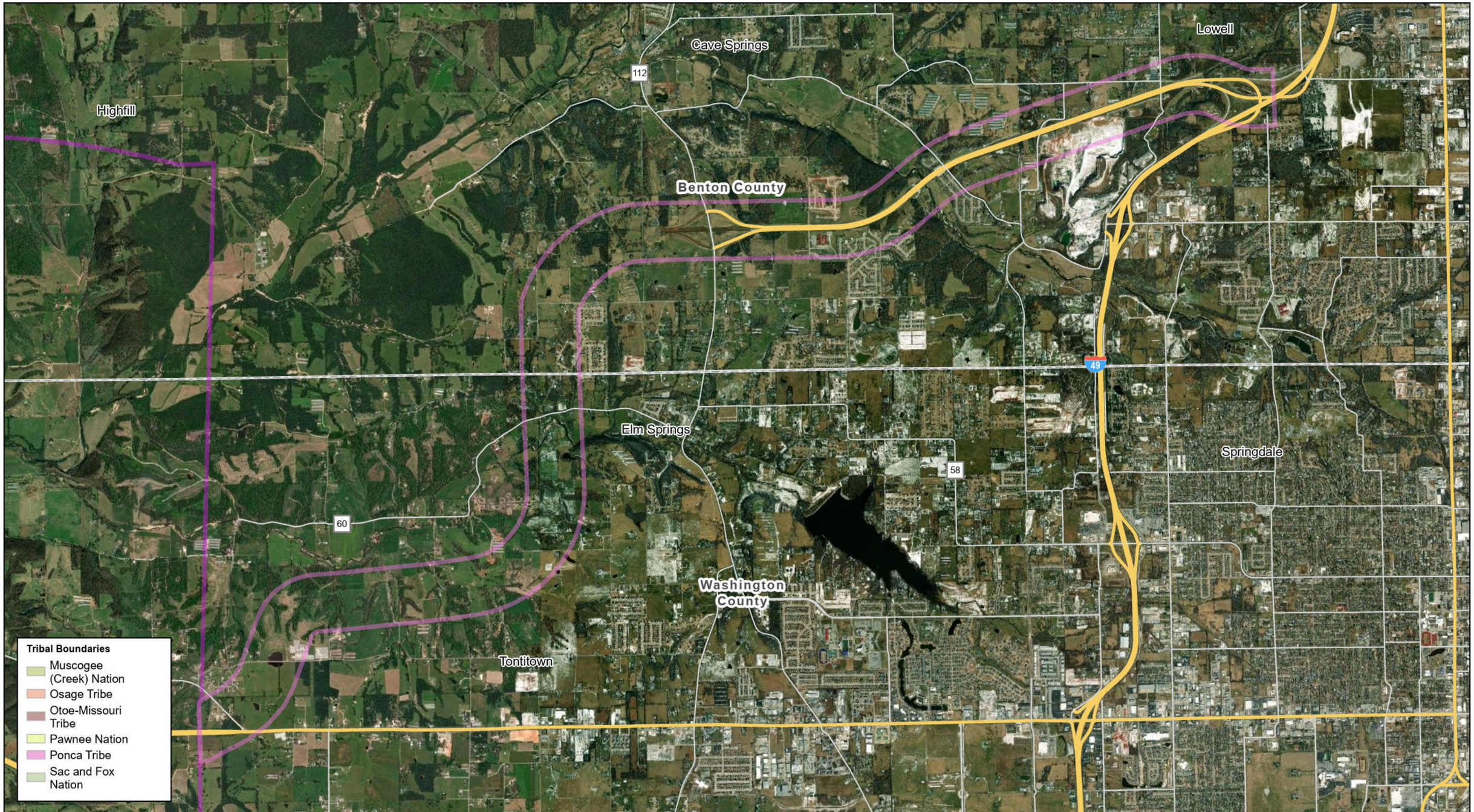
Springdale #1 Planning Segment

Source: ODOT (2018).

N

0 0.75 1.5 Mi

June 2023



INTERSTATE 412

Appendix R - Tribal Territory

Sheet 8 of 8

Springdale #2 Planning Segment

Source: ODOT (2018).

N

0 0.45 0.9 Mi

June 2023

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Noble , Pawnee , and Payne counties, Oklahoma

Local office

Oklahoma Ecological Services Field Office

(918) 581-7458
(918) 581-7467

9014 East 21st Street
Tulsa, OK 74129-1428

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Tricolored Bat Perimyotis subflavus — Proposed Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10515

Birds

NAME	STATUS
Piping Plover Charadrius melodus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot Calidris canutus rufa Wherever found There is **proposed** critical habitat for this species. https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane Grus americana There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/758	Endangered

Reptiles

NAME	STATUS
Alligator Snapping Turtle Macrochelys temminckii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

Fishes

NAME	STATUS
Peppered Chub Macrhybopsis tetranema Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/532	Endangered

Insects

NAME	STATUS
American Burying Beetle Nicrophorus americanus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/66	Threatened

Monarch Butterfly Danaus plexippus — Candidate

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME BREEDING SEASON

Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Black Tern Chlidonias niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Kentucky Warbler Oporornis formosus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Little Blue Heron Egretta caerulea This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 10 to Oct 15
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05,

and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

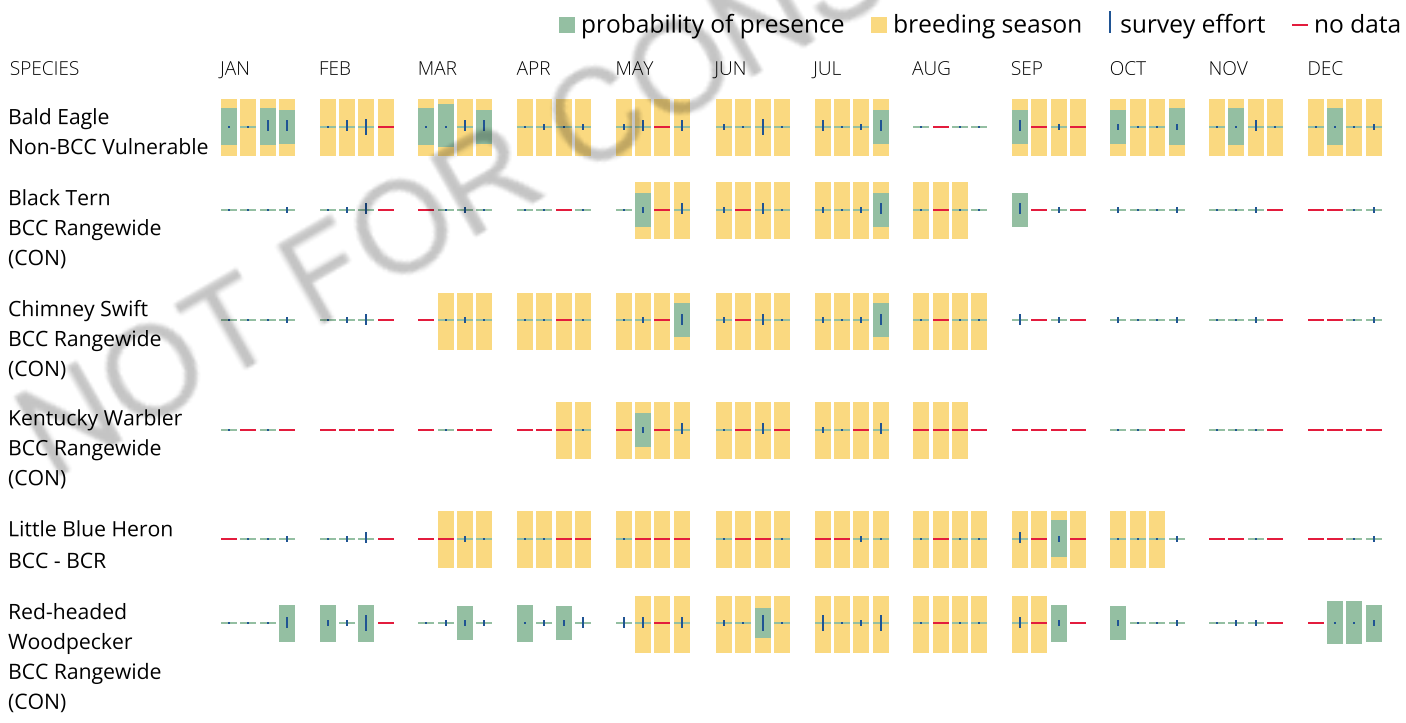
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Osage , Pawnee , and Tulsa counties, Oklahoma

Local office

Oklahoma Ecological Services Field Office

(918) 581-7458
(918) 581-7467

9014 East 21st Street
Tulsa, OK 74129-1428

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Tricolored Bat Perimyotis subflavus — Proposed Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10515

Birds

NAME	STATUS
Piping Plover Charadrius melodus There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot Calidris canutus rufa Wherever found There is **proposed** critical habitat for this species. https://ecos.fws.gov/ecp/species/1864	Threatened

Reptiles

NAME	STATUS
Alligator Snapping Turtle Macrochelys temminckii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

Fishes

NAME	STATUS
Peppered Chub Macrhybopsis tetranema Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/532	Endangered

Insects

NAME	STATUS
American Burying Beetle Nicrophorus americanus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/66	Threatened
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Aug 31

Black-billed Cuckoo Coccyzus erythropthalmus — Breeds May 15 to Oct 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9399

Chimney Swift Chaetura pelagica — Breeds Mar 15 to Aug 25
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Eastern Whip-poor-will Antrostomus vociferus — Breeds May 1 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Hudsonian Godwit Limosa haemastica — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Little Blue Heron Egretta caerulea — Breeds Mar 10 to Oct 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird Euphagus carolinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Upland Sandpiper Bartramia longicauda — Breeds May 1 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9294

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

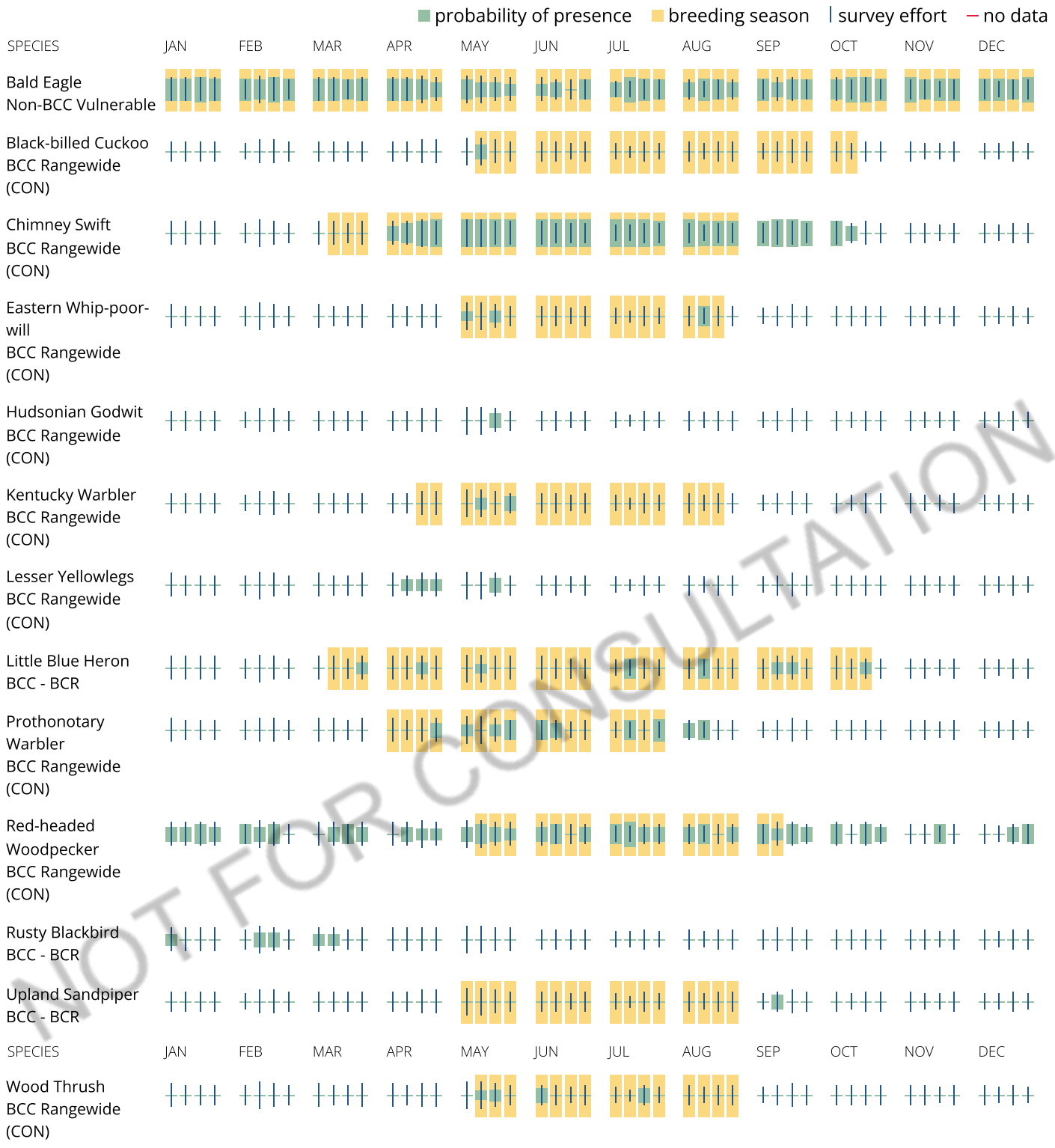
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

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What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

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Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

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Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Oklahoma

Local office

Oklahoma Ecological Services Field Office

(918) 581-7458
(918) 581-7467

9014 East 21st Street
Tulsa, OK 74129-1428

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

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For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
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4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Gray Bat Myotis grisescens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6329

Tricolored Bat Perimyotis subflavus — Proposed Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10515

Birds

NAME	STATUS

Piping Plover Charadrius melodus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened
Wherever found
There is **proposed** critical habitat for this species.
https://ecos.fws.gov/ecp/species/1864

Reptiles

NAME	STATUS

Alligator Snapping Turtle Macrochelys temminckii — Proposed Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4658

Clams

NAME	STATUS

Neosho Mucket Lampsilis rafinesqueana — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/3788

Rabbitsfoot Quadrula cylindrica cylindrica — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5165

Insects

NAME	STATUS
American Burying Beetle Nicrophorus americanus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/66	Threatened
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Hudsonian Godwit *Limosa haemastica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere

Upland Sandpiper Bartramia longicauda — Breeds May 1 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9294

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

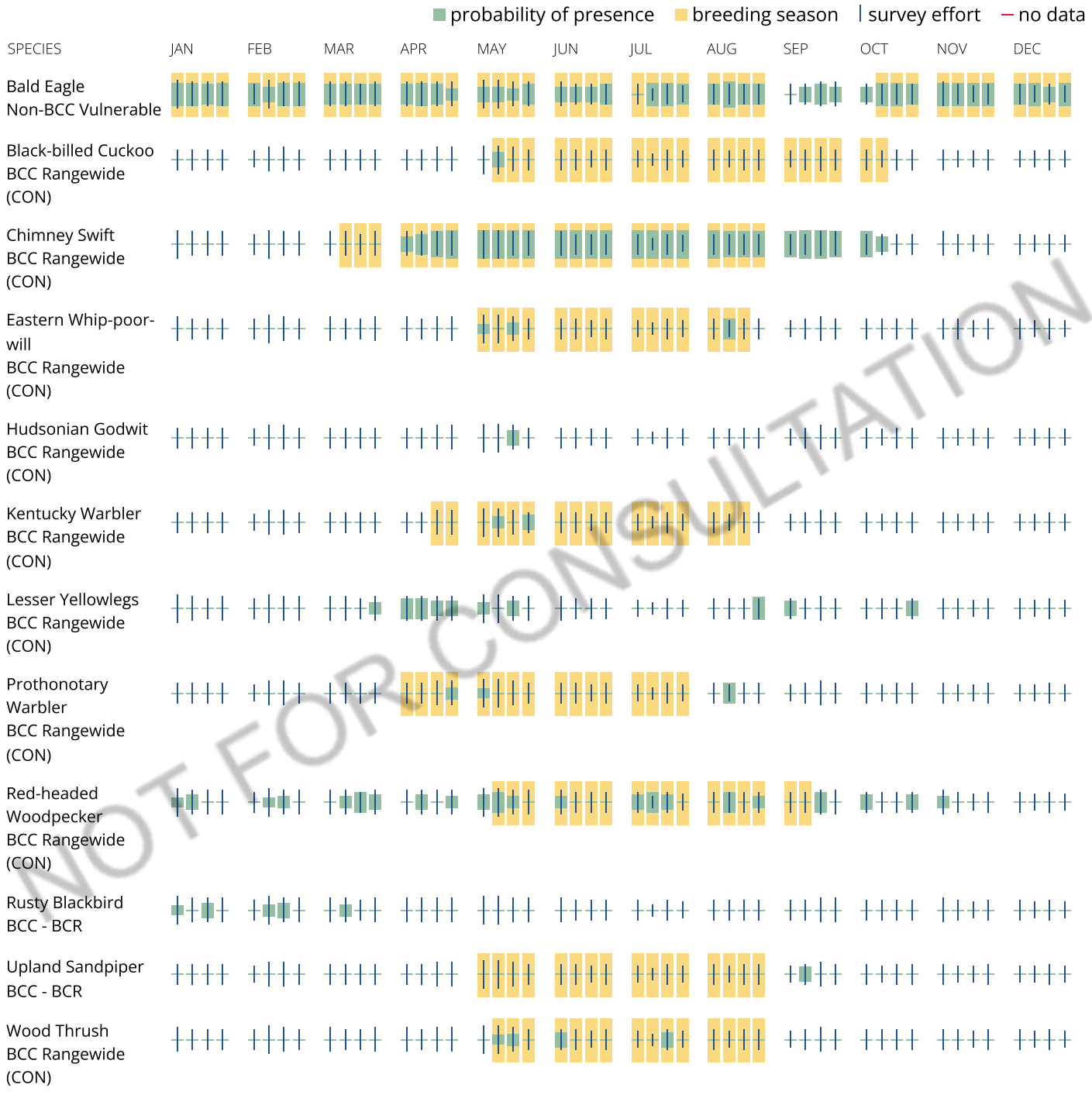
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mayes , Rogers , and Wagoner counties, Oklahoma

Local office

Oklahoma Ecological Services Field Office

(918) 581-7458
(918) 581-7467

9014 East 21st Street
Tulsa, OK 74129-1428

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Gray Bat Myotis grisescens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6329

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Tricolored Bat Perimyotis subflavus — Proposed Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10515

Birds

NAME	STATUS

Piping Plover Charadrius melodus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened
Wherever found
There is **proposed** critical habitat for this species.
https://ecos.fws.gov/ecp/species/1864

Reptiles

NAME	STATUS

Alligator Snapping Turtle Macrochelys temminckii — Proposed Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4658

Clams

NAME	STATUS

Neosho Mucket Lampsilis rafinesqueana — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/3788

NAME	STATUS
Rabbitsfoot Quadrula cylindrica cylindrica Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5165	Threatened

Insects

NAME	STATUS
American Burying Beetle Nicrophorus americanus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/66	Threatened
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Kentucky Warbler Oporornis formosus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

Rusty Blackbird Euphagus carolinus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

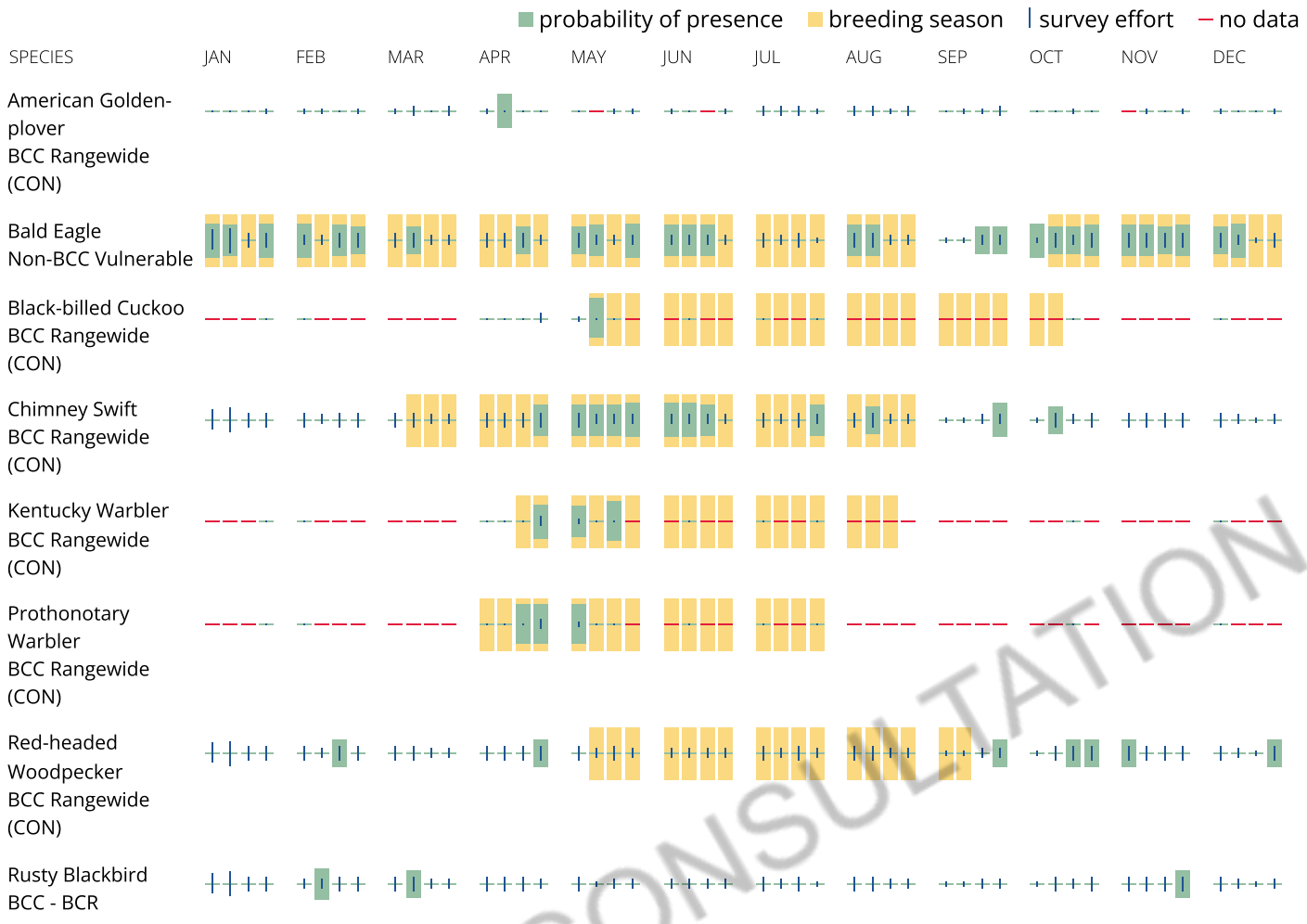
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the

key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Delaware and Mayes counties, Oklahoma

Local office

Oklahoma Ecological Services Field Office

(918) 581-7458
(918) 581-7467

9014 East 21st Street
Tulsa, OK 74129-1428

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Gray Bat Myotis grisescens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6329

Indiana Bat Myotis sodalis — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5949

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Ozark Big-eared Bat Corynorhinus (=Plecotus) townsendii ingens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7245

Tricolored Bat Perimyotis subflavus — Proposed Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10515

Birds

NAME	STATUS

Piping Plover Charadrius melodus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened
Wherever found
There is **proposed** critical habitat for this species.
https://ecos.fws.gov/ecp/species/1864

Reptiles

NAME	STATUS

Alligator Snapping Turtle Macrochelys temminckii — Proposed Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4658

Fishes

NAME	STATUS
Ozark Cavefish Amblyopsis rosae Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6490	Threatened

Clams

NAME	STATUS
Neosho Mucket Lampsilis rafinesqueana Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3788	Endangered
Rabbitsfoot Quadrula cylindrica cylindrica Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5165	Threatened

Insects

NAME	STATUS
American Burying Beetle Nicrophorus americanus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/66	Threatened
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Aug 31
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will Antrostomus vociferus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Field Sparrow Spizella pusilla This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Aug 15

Kentucky Warbler Oporornis formosus — Breeds Apr 20 to Aug 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prothonotary Warbler Protonotaria citrea — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

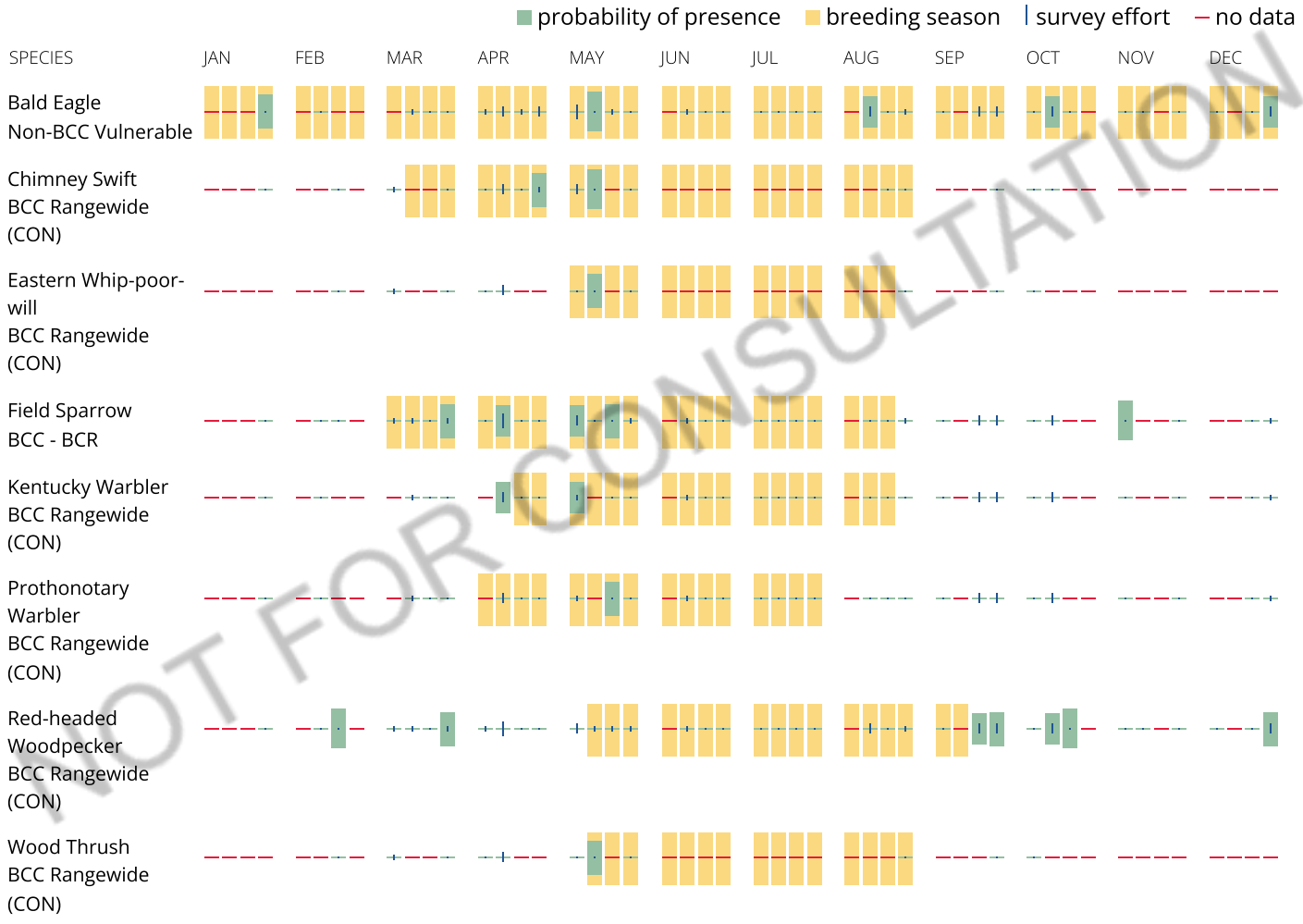
Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

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2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

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What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

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Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Arkansas and Oklahoma

Local offices

Oklahoma Ecological Services Field Office

(918) 581-7458
(918) 581-7467

9014 East 21st Street
Tulsa, OK 74129-1428

Arkansas Ecological Services Field Office

(501) 513-4470
(501) 513-4480

110 South Amity Suite 300

Conway, AR 72032-8975

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

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For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Gray Bat Myotis grisescens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6329

Indiana Bat Myotis sodalis — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5949

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Ozark Big-eared Bat Corynorhinus (=Plecotus) townsendii ingens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7245

Tricolored Bat Perimyotis subflavus — Proposed Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10515

Birds

NAME	STATUS

Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10477

Piping Plover Charadrius melodus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened
Wherever found
There is **proposed** critical habitat for this species.
https://ecos.fws.gov/ecp/species/1864

Reptiles

NAME	STATUS

Alligator Snapping Turtle Macrochelys temminckii — Proposed Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4658

Fishes

NAME	STATUS

Ozark Cavefish Amblyopsis rosae — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6490

Clams

NAME	STATUS

Neosho Mucket Lampsilis rafinesqueana — Endangered
Wherever found
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
https://ecos.fws.gov/ecp/species/3788

Rabbitsfoot Quadrula cylindrica cylindrica — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5165

Insects

NAME	STATUS

American Burying Beetle Nicrophorus americanus — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/66

Monarch Butterfly Danaus plexippus — Candidate
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Crustaceans

NAME	STATUS

Benton County Cave Crayfish Cambarus aculabrum — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5011

Flowering Plants

NAME	STATUS
Missouri Bladderpod Physaria filiformis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5361	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Neosho Mucket Lampsilis rafinesqueana https://ecos.fws.gov/ecp/species/3788#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and

models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Field Sparrow *Spizella pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Aug 15
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

Rusty Blackbird Euphagus carolinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Benton and Washington counties, Arkansas

Local office

Arkansas Ecological Services Field Office

(501) 513-4470
(501) 513-4480

110 South Amity Suite 300
Conway, AR 72032-8975

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Gray Bat Myotis grisescens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6329

Indiana Bat Myotis sodalis — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5949

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Ozark Big-eared Bat Corynorhinus (=Plecotus) townsendii ingens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7245

Birds

NAME — STATUS

Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10477

Piping Plover Charadrius melodus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened
Wherever found
There is **proposed** critical habitat for this species.
https://ecos.fws.gov/ecp/species/1864

Whooping Crane Grus americana — EXPN
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/758

Reptiles

NAME — STATUS

Alligator Snapping Turtle Macrochelys temminckii — Proposed Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4658

Fishes

NAME	STATUS
Ozark Cavefish Amblyopsis rosae	Threatened

Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6490

Clams

NAME	STATUS
Neosho Mucket Lampsilis rafinesqueana	Endangered

Wherever found
There is **final** critical habitat for this species. Your location overlaps the critical habitat.
https://ecos.fws.gov/ecp/species/3788

Rabbitsfoot Quadrula cylindrica cylindrica — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5165

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus	Candidate

Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Crustaceans

NAME	STATUS
Benton County Cave Crayfish Cambarus aculabrum	Endangered

Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5011

Flowering Plants

NAME	STATUS

Missouri Bladderpod Physaria filiformis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5361	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
Neosho Mucket Lampsilis rafinesqueana https://ecos.fws.gov/ecp/species/3788#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Field Sparrow *Spizella pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Aug 15
Henslow's Sparrow *Ammodramus henslowii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds May 1 to Aug 31
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5

Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Prairie Warbler Dendroica discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
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Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

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1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
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and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

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Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

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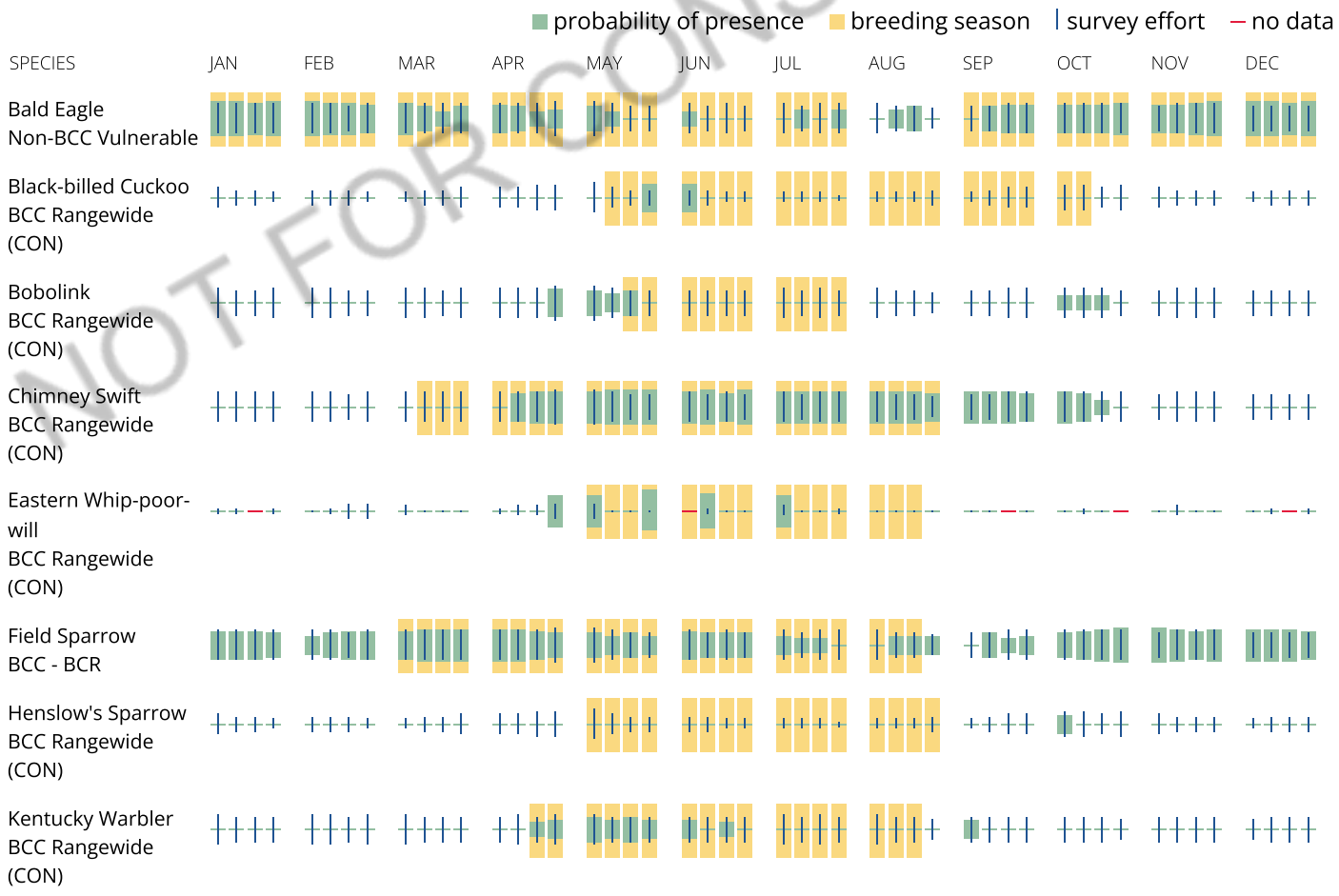

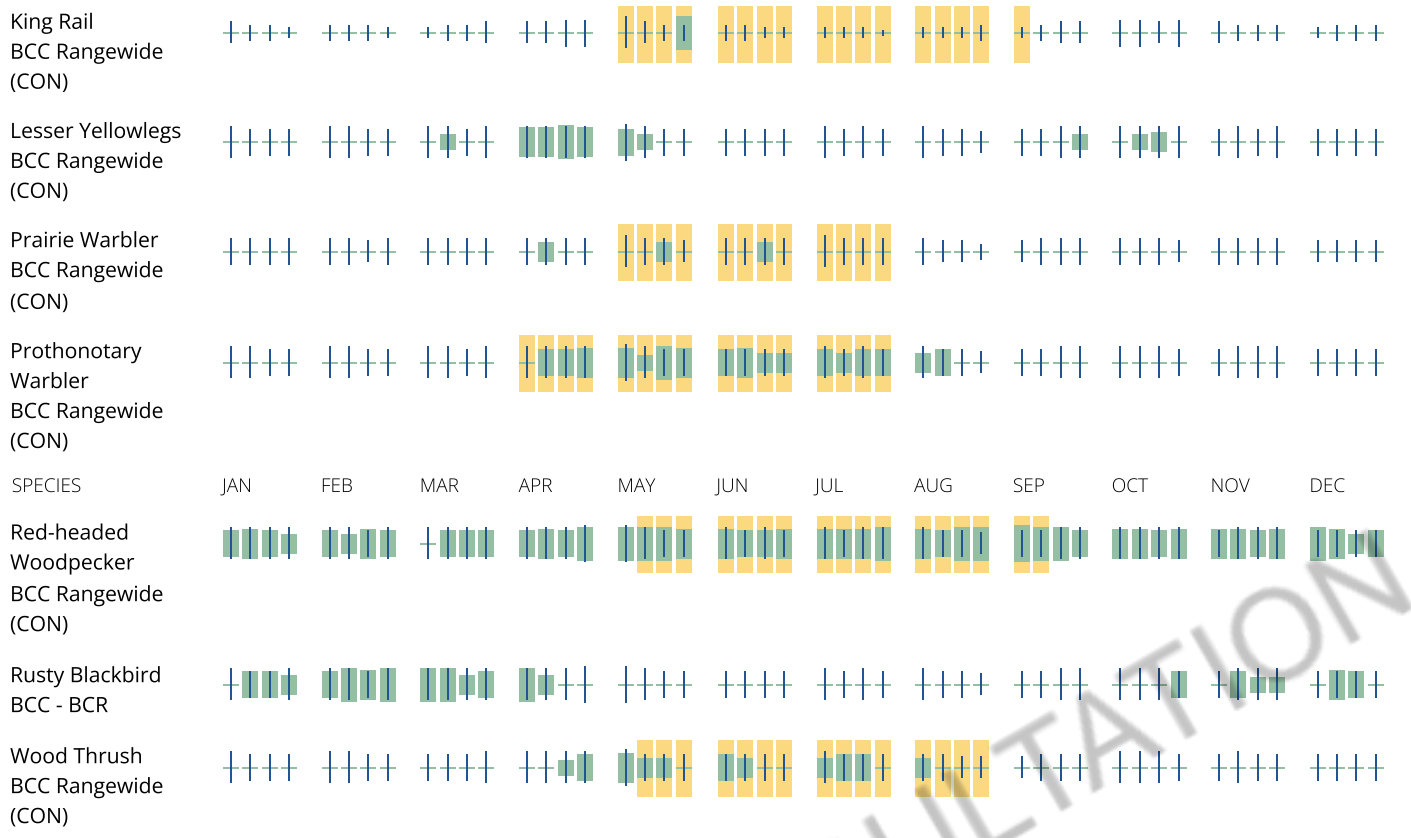

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Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

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To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
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3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be

in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

This location overlaps the following National Wildlife Refuge lands:

LAND	ACRES
LOGAN CAVE NATIONAL WILDLIFE REFUGE	126.45 acres

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery;

thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Benton and Washington counties, Arkansas

Local office

Arkansas Ecological Services Field Office

(501) 513-4470
(501) 513-4480

110 South Amity Suite 300
Conway, AR 72032-8975

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Gray Bat Myotis grisescens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6329

Indiana Bat Myotis sodalis — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5949

Northern Long-eared Bat Myotis septentrionalis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9045

Ozark Big-eared Bat Corynorhinus (=Plecotus) townsendii ingens — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7245

Birds

NAME	STATUS

Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/10477

Piping Plover Charadrius melodus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6039

Red Knot Calidris canutus rufa — Threatened
Wherever found
There is **proposed** critical habitat for this species.
https://ecos.fws.gov/ecp/species/1864

Reptiles

NAME	STATUS

Alligator Snapping Turtle Macrochelys temminckii — Proposed Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4658

Fishes

NAME	STATUS
Ozark Cavefish Amblyopsis rosae Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6490	Threatened

Clams

NAME	STATUS
Neosho Mucket Lampsilis rafinesqueana Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3788	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Benton County Cave Crayfish Cambarus aculabrum Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5011	Endangered

Flowering Plants

NAME	STATUS
Missouri Bladderpod Physaria filiformis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5361	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31

Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Field Sparrow Spizella pusilla This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 1 to Aug 15
Kentucky Warbler Oporornis formosus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
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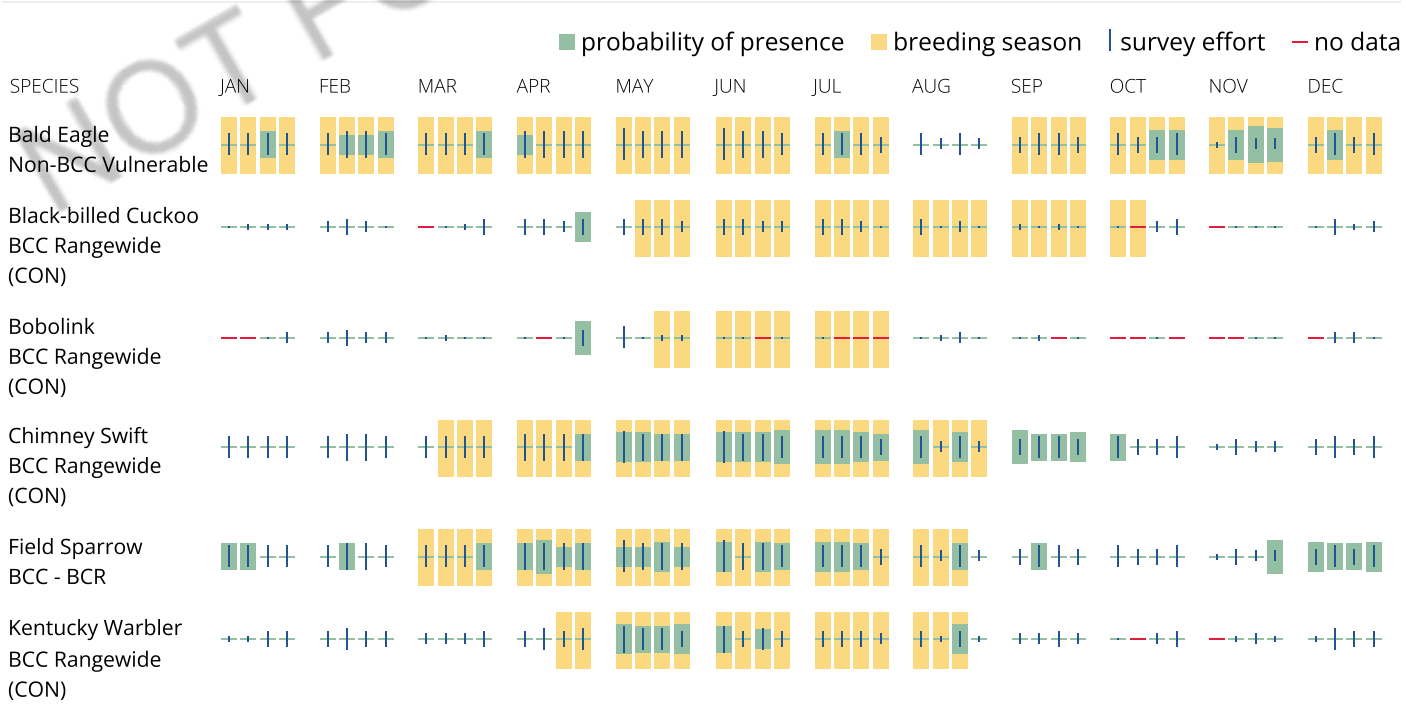

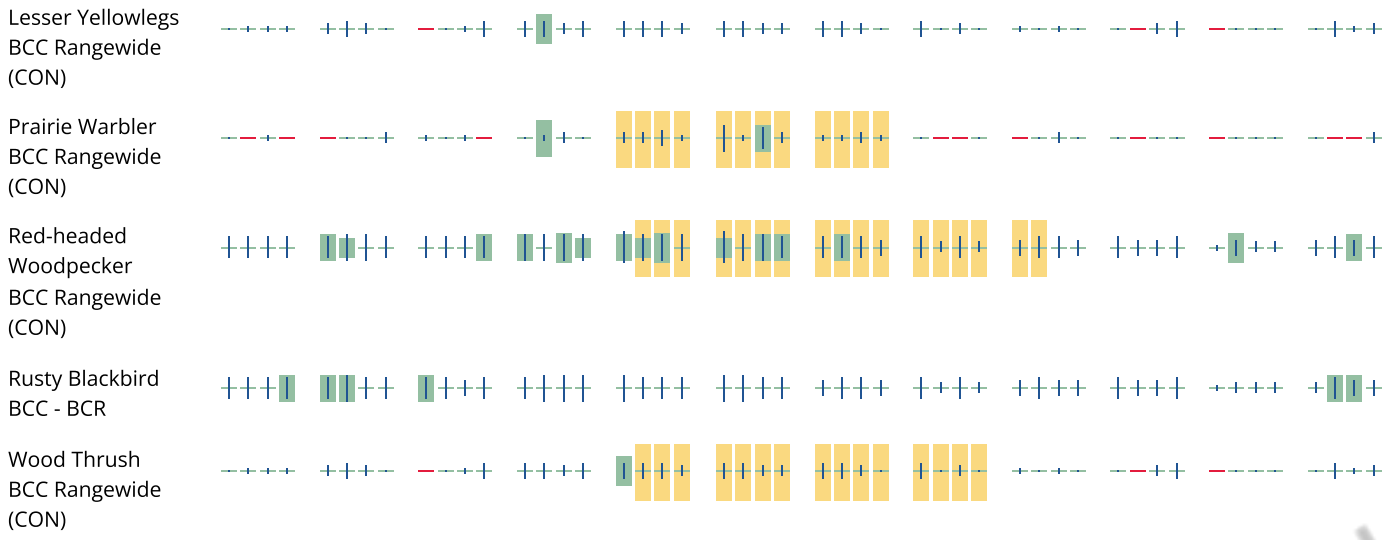

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2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Federal and State Endangered, Threatened, and Candidate Species by County

Noble

Category	Federal	State	Scientific Name	Common Name
Fish	Listed Endangered	null	Macrhybopsis tetranema	Arkansas River Speckled Chub
Fish	Listed Threatened	null	Notropis girardi	Arkansas River shiner

Federal and State Endangered, Threatened, and Candidate Species by County

Payne

Category	Federal	State	Scientific Name	Common Name
Beetle	Listed Threatened	null	Nicrophorus americanus	American Burying Beetle
Bird	Listed Threatened	null	Coccyzus americanus	Yellow-billed Cuckoo
Bird	Listed Endangered	null	Grus americana	Whooping Crane
Fish	Listed Endangered	null	Macrhybopsis tetranema	Arkansas River Speckled Chub
Fish	Listed Threatened	null	Notropis girardi	Arkansas River shiner

Federal and State Endangered, Threatened, and Candidate Species by County

Pawnee

Category	Federal	State	Scientific Name	Common Name
Bird	Listed Endangered	null	Grus americana	Whooping Crane
Fish	Listed Endangered	null	Macrhybopsis tetranema	Arkansas River Speckled Chub
Fish	Listed Threatened	null	Notropis girardi	Arkansas River shiner
Mammal	Listed Threatened	null	Myotis septentrionalis	Northern Long-eared Bat

Federal and State Endangered, Threatened, and Candidate Species by County

Osage

Category	Federal	State	Scientific Name	Common Name
Beetle	Listed Threatened	null	Nicrophorus americanus	American Burying Beetle
Fish	Listed Endangered	null	Macrhybopsis tetranema	Arkansas River Speckled Chub
Fish	Listed Threatened	null	Notropis girardi	Arkansas River shiner
Moth	Canidate; species under consideration for official listing.	null	Papaipema eryngii	Rattlesnake-master Borer Moth
Mussel	Listed Endangered	null	Lampsilis rafinesqueana	Neosho Mucket
Reptile	Proposed Threatened	null	Macrochelys temminckii	Alligator Snapping Turtle

Federal and State Endangered, Threatened, and Candidate Species by County

Tulsa

Category	Federal	State	Scientific Name	Common Name
Beetle	Listed Threatened	null	Nicrophorus americanus	American Burying Beetle
Bird	Listed Threatened	null	Coccyzus americanus	Yellow-billed Cuckoo
Fish	Listed Endangered	null	Macrhybopsis tetranema	Arkansas River Speckled Chub
Fish	Listed Threatened	null	Notropis girardi	Arkansas River shiner

Federal and State Endangered, Threatened, and Candidate Species by County

Rogers

Category	Federal	State	Scientific Name	Common Name
Beetle	Listed Threatened	null	Nicrophorus americanus	American Burying Beetle
Mussel	Listed Threatened	null	Theliderma cylindrica	Rabbitsfoot
Reptile	Proposed Threatened	null	Macrochelys temminckii	Alligator Snapping Turtle
Vascular Plant	Listed Threatened; Believed to be extirpated in Oklahoma	null	Platanthera praeclara	western prairie fringed orchid

Federal and State Endangered, Threatened, and Candidate Species by County

Wagoner

Category	Federal	State	Scientific Name	Common Name
Beetle	Listed Threatened	null	Nicrophorus americanus	American Burying Beetle
Fish	Listed Threatened	null	Notropis girardi	Arkansas River shiner
Reptile	Proposed Threatened	null	Macrochelys temminckii	Alligator Snapping Turtle

Federal and State Endangered, Threatened, and Candidate Species by County

Mayes

Category	Federal	State	Scientific Name	Common Name
Beetle	Listed Threatened	null	Nicrophorus americanus	American Burying Beetle
Bird	Listed Threatened	null	Coccyzus americanus	Yellow-billed Cuckoo
Mammal	Listed Endangered	null	Myotis grisescens	Gray Myotis
Reptile	Proposed Threatened	null	Macrochelys temminckii	Alligator Snapping Turtle

Federal and State Endangered, Threatened, and Candidate Species by County

Adair

Category	Federal	State	Scientific Name	Common Name
Fish	null	Listed Threatened	Percina maculata	Blackside darter
Fish	null	Listed Endangered	Percina nasuta	Longnose darter
Mammal	Listed Endangered	null	Corynorhinus townsendii ingens	Ozark Big-eared Bat
Mammal	Listed Endangered	null	Myotis grisescens	Gray Myotis
Mammal	Listed Threatened	null	Myotis septentrionalis	Northern Long-eared Bat
Mammal	Listed Endangered	null	Myotis sodalis	Indiana Myotis
Mussel	Listed Endangered	null	Lampsilis rafinesqueana	Neosho Mucket

Federal and State Endangered, Threatened, and Candidate Species by County

Delaware

Category	Federal	State	Scientific Name	Common Name
Bird	Listed Threatened	null	Coccyzus americanus	Yellow-billed Cuckoo
Bird	Listed Endangered	null	Sternula antillarum	Least Tern
Crayfish	null	Listed Endangered	Cambarus tartarus	Oklahoma Cave Crayfish
Fish	Listed Threatened	null	Amblyopsis rosae	Ozark cavefish
Fish	Listed Endangered	null	Macrhybopsis tetranema	Arkansas River Speckled Chub
Fish	Listed Threatened	null	Notropis girardi	Arkansas River shiner
Mammal	Listed Endangered	null	Myotis grisescens	Gray Myotis
Mammal	Listed Threatened	null	Myotis septentrionalis	Northern Long-eared Bat